HUMAN HEALTH RISK ASSESSMENT FOR RASP MINE, MODIFICATION 6

Prepared for:

Broken Hill Operations Pty Ltd
130 Eyre Street
BROKEN HILL NSW 2880

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BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Broken Hill Operations Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

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SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
640.12028-R01-v3.0	14 December 2020	Tarah Hagen, MSc, DABT, RACTRA	Roger Drew, PhD, DABT, FACTRA	Tarah Hagen, MSc, DABT, RACTRA
640.12028-R01-v2.0	19 November 2020	Tarah Hagen, MSc, DABT, RACTRA	Roger Drew, PhD, DABT, FACTRA	Tarah Hagen, MSc, DABT, RACTRA
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EXECUTIVE SUMMARY

Background

Broken Hill Operations Pty Ltd (BHOP), a wholly owned subsidiary of CBH Resources Limited (CBH) owns and operates the Rasp Mine (the Mine) located within the city of Broken Hill, New South Wales (NSW). BHOP is seeking to modify its Project Approval primarily to allow for tailings to be co-deposited with excess waste rock from underground mining operations into Kintore Pit as a Tailings Storage Facility (TSF3). This will also require relocation of the underground mine access portal and decline with associated infrastructure to a new boxcut, utilising Blackwood Pit TSF2 for harvesting solar and wind dried tailings, conducting periodical crushing of non-ore material in Kintore Pit and/or BHP Pit, and utilising waste rock material for progressive rehabilitation capping. The proposed modification is termed Modification 6 (MOD6).

SLR Consulting Australia Pty Ltd (SLR) was engaged to provide a Human Health Risk Assessment (HHRA) for the proposed modification (the Proposal). The HHRA has used air quality modelling information provided to SLR by ERM. SLR has not evaluated the air dispersion modelling, the information has been used as provided on face value.

HHRA Methodology

The HHRA is consistent with established national and international risk assessment frameworks. The chemicals of potential concern are metals within the dust potentially emitted by the Proposal. Due to historical mining and smelting lead (Pb) is the principal metal of concern and is the primary focus of the HHRA.

Locations considered

The ERM air quality modelling predicted metal concentrations in airborne dust and deposition to soil at 70 locations throughout Broken Hill. They include residences, parks, playgrounds, schools, child-care centres, etc.

Scenarios evaluated

To be able to discern and assess the change in public exposure that might occur from the Proposal, the HHRA has evaluated metal in dust emissions from two operational exposure scenarios.

- Scenario 1 (S1): Current operations. Includes background.
- Scenario 2 (S2): MOD6 Proposed operations. Includes background.

Each scenario assumes the same emissions will occur for the remainder of the mine life (i.e. 2022-2026 or approximately 5 years). Soil metal concentrations from deposition onto existing soil were estimated using standard equations from the United States Environmental Protection Agency (US EPA) which incorporate physical loss of metal from soil due to surface water runoff. Other loss processes (soil erosion, leaching) are not included.

In addition, the potential influence on soil Pb and blood lead (BPb) levels was investigated for the approximately 12-month construction period.

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Existing soil/dust metal concentrations in Broken Hill were informed by existing literature information and by a comprehensive sampling program which included collection of soil/dust from the mine site as well as in urban locations within Broken Hill. The samples were tested for bioaccessibility of Pb, arsenic (As), chromium (Cr), iron (Fe), manganese (Mn), and cadmium (Cd). Bioaccessibility is the amount of metal released from soil in the gastrointestinal tract, and which is available to be absorbed into the systemic circulation. Not all that is released from soil/dust is absorbed.

Risk characterisation methodology

The methodology for assessing risk of harm due to Pb exposure differs from the methodology used for other metals.

- For Pb, potential health impacts were assessed by using a validated model (IEUBK) from US EPA to predict BPb in 1-2 year old children. Risk characterisation was performed by comparing:
    - Modelled BPb between different Scenarios.
    - Modelled BPb with measured BPb.
    - Modelled BPb with the NHMRC (2015) action level of 5 µg/dL.

  Input parameters into the modelling were chosen based on relevant data for Broken Hill. The input assumptions into the modelling are conservative and consequently more likely to overpredict than underpredict modelled BPb.

- Other metals assessed within emitted dust were As, Cd, Cr, Mn, antimony (Sb), barium (Ba), beryllium (Be), Fe, copper (Cu), mercury (Hg), nickel (Ni), silver (Ag), and zinc (Zn). As with Pb, these metals within the dust are part of the geology of the region. Where no bioaccessibility data were available for a particular metal, it has been conservatively assumed these metals may be fully (i.e. 100%) soluble.

  For these metals, risk of exceedance of a chronic toxicity reference value (TRV; adjusted for possible 'background' exposures) or chronic air guideline value is used to judge potential risk of harm. It is assumed the metals may have additive effects even though this is very unlikely. For those metals which may cause cancer by directly altering genetic material (e.g. Ni and Cr, conservatively assumed to be present as Cr^{VI}), cancer risk from inhalation exposure was calculated. The resulting estimated 'cancer risk' was compared with a target acceptable risk of 1×10^{-5}, as recommended by Australian health authorities.

  An 'unacceptable' risk, as defined by regulatory standards and requirements, is often determined as an exposure being larger than the TRV. This definition of unacceptable risk does not equate with imminent adverse health effects or even high risk of adverse health effects. It simply means that the regulatory guideline value has been exceeded.

Results and Conclusions

Lead (Pb)

The predicted incremental increases in soil Pb potentially arising from the approximately 12-month MOD6 construction phase range from 0.03 – 2 mg/kg which represent only 0.005 – 0.43% of existing soil Pb concentrations. These increases can be considered small and insignificant. The five receptors with the largest percentage increases in soil Pb relative to existing soil Pb concentrations were R26 (0.43%), R3 (0.4%), R24

EXECUTIVE SUMMARY

(0.32%), R23 (0.28%), and R21 (0.23%) in District 3 or on the southern edge of the mine lease just east of District 4. At these locations, the IEUBK model predicts very small potential increases in BPb (0.011 – 0.021 µg/dL) for the period that MOD6 construction occurs, noting that these predictions are conservative (due to assumptions regarding bioavailability of Pb in soil/dust, as well as deposition modelling of Pb). Such small changes are within the margin of error of ±2 µg/dL for standard BPb testing (NHMRC 2016) and would not be distinguishable in a Pb monitoring program.

The IEUBK modelling undertaken for the operations scenarios predicts negligible change to BPb levels of 1-2 year old children as a result of the Proposal. Although predictions at some receptor location (R46, R45, as well as Districts 2, 6, and 7) were above the target action level of the NHMRC, this was also the case for the existing situation (S1). By far the dominant contributing exposure media to estimated BPb are existing soil and dust and background exposure via the diet. Since these assumptions are the same for both scenarios, and the Rasp mine-related contribution to overall Pb intakes is comparatively very low (0.03-0.5%), both scenarios result in very similar modelled geometric mean BPb. Importantly, the MOD6 Proposal does not change the absolute geometric mean BPb predictions.

Overall, BPb concentrations in 1-2 year old children living in Broken Hill are not anticipated to be affected by activities associated with the Proposal.

Other metals

Estimated exposure to metals other than Pb are all well below their respective health guidelines. There is also very low probability of additive effects between the metals.

It is concluded the risk of exceeding health-based toxicity reference values as a result of the Proposal is very low. The assessment is conservative.

The highest estimated cancer risk (for sum of Ni and Cr^{VI}) was 6.9×10^{-8}, which is less than the risk that NSW and other jurisdictions consider as negligible or acceptable.

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1 Introduction

Broken Hill Operations Pty Ltd (BHOP), a wholly owned subsidiary of CBH Resources Limited (CBH) owns and operates the Rasp Mine (the Mine) located within the city of Broken Hill on Consolidated Mine Lease 7 (CML7). The existing operations at the Mine include underground mining, a processing plant producing zinc and lead concentrates, a rail siding for concentrate dispatch to Port Pirie in South Australia and Newcastle in NSW, as well as associated infrastructure. The current operations are undertaken in accordance with Project Approval PA07_0018 (as amended) granted from the Minister of Planning on 31 January 2011. BHOP is seeking to modify its Project Approval primarily to allow for tailings to be co-deposited with excess waste rock from underground mining operations into Kintore Pit[1] as a Tailings Storage Facility (TSF3). This will also require:

- Relocation of the underground mine access portal and decline with associated infrastructure to a new boxcut,
- Utilising Blackwood Pit TSF2 for harvesting solar and wind dried tailings[2],
- Conducting periodical crushing of non-ore material in Kintore Pit and/or BHP Pit, and
- Utilising waste rock material for progressive rehabilitation capping[3].

These proposed modifications are collectively termed Modification 6 (MOD6)[4].

A detailed description of MOD6 is provided in the Project Brief submitted as part of the proposal (BHOP 2020). Apart from keeping workers and contractors employed and allowing the resource to be fully utilised, the proposed modification will:

[1] Kintore Pit is a large open pit mined in the 1970s until 1991. It is currently used for underground mining access via a mine portal and decline, as well as for excess waste rock storage. The Pit is approximately 100m deep on the southern perimeter and approximately 480m (north to south) by 360m (east to west). Approximately 159,000 tonnes per year of waste rock has been stored in Kintore Pit since mining commenced in 2012 to the end of 2019. An additional 135,000 tonnes is planned to be placed during 2020. This material will be left within the Pit (BHOP 2020).

[2] Studies have shown that in establishing Kintore Pit as TSF3, tailings would need to be further dewatered from the 35% moisture content left by the milling process, to approximately 10% moisture in order to reduce inrush/inundation risk to underground mining operations (BHOP 2020). BHOP propose to use the natural solar and wind drying process offered within Blackwood Pit TSF2 to harvest thin layers (up to 1m) of naturally dried tailings prior to stockpiling at the edge of TSF2 and transferring to Kintore Pit (i.e. TSF3). This would allow fresh tailings to be continually deposited into TSF2 which would be naturally dried (but not dry enough to be dust generating) and then removed, resulting in cyclical rotation of depositing, drying, harvesting and transferring of tailings to Kintore Pit TSF3.

[3] BHOP propose to commence progressive rehabilitation of ‘free areas’ (i.e. non-active mining areas) by capping some of these areas using excess waste rock from mining containing <0.5% lead. Material containing >0.5% lead will be deposited in Kintore Pit and be co-disposed with tailings or permanently stored in the infill area of BHP Pit (BHOP 2020). Waste rock from mining likely suitable for rehabilitation capping would be separated from the likely unsuitable waste rock and placed on the current Kintore Pit Tipple or BHP Pit prior to confirmation testing of lead levels.

[4] A formal HHRA was not considered to be required for approval of a previous Modification (i.e. Modification 4), which involved installation of embankments and a retaining wall at low points along the Blackwood Pit Tailings Storage Facility (TSF2) and installation of a Concrete Batching Plant (CBP) (ToxConsult 2017a). It was reasoned the small increases in air Pb concentrations and deposition to soil over a short period during construction of Modification 4 was unlikely to materially influence existing exposures to Pb.

- Extend mining at the Mine to continue post 2022 with additional storage of tailings[5]; and
- Markedly reduce the surface distance of hauling ore from underground to the Run-of-Mine Pad; and
- Provide rehabilitation capping over ‘free areas’ of the site with material with a lead content of <0.5%; and
- Allow the filling of legacy open pits;

SLR Consulting Australia Pty Ltd (SLR) was engaged to provide a Human Health Risk Assessment (HHRA) for MOD6. The HHRA has been undertaken by Tarah Hagen, MSc, DABT, RACTRA, Toxicologist and reviewed by Dr Roger Drew, PhD, DABT, FACTRA, Toxicologist. The HHRA has used air quality modelling information provided to SLR by ERM in their report (ERM 2020a) and via e-mail in a spreadsheet[6]. The information from ERM has been used on face value.

2 HHRA Methodological Considerations

2.1 General

The HHRA broadly follows the guidance provided by enHealth (2012a), World Health Organisation (WHO 1999, 2010) and the US Environmental Protection Agency (US EPA 1989a, 1999a) and uses exposure factors as appropriate from enHealth (2012b).

The general HHRA methodology follows the steps detailed in enHealth (2012a). These include:

1. *Issue identification*: BHOP proposes to modify existing mining operations at the Broken Hill Rasp Mine. The change in operations may result in a change in exposure of persons in the surrounding area due to altered dust emissions from the Mine site, and/or from associated mine site roadways.
2. *Hazard assessment*:
    - Chemicals of potential concern are metals in the emitted dust, of which the principal metal of concern is lead (Pb) (Section 2.2).
    - Dose response has been determined by authoritative bodies (e.g. NHMRC, WHO) who have established targets for blood concentrations for Pb (Section 3.2) and toxicity reference values for other metals (Section 4.3).
3. *Exposure assessment involved:*
    - Adaptation of modelling information for metals in dust emissions to calculate potential metal concentrations in soil. These are used in the HHRA to inform potential exposures by the general public[7] (Section 2.6.2).

[5] Predictions for the life of TSF2 is late 2022. Mining will cease at that time if no other tailing storage facility is available.

[6] ERM (2020b). Excel spreadsheet entitled ‘0476778_HHRA_Results_29.09.2020’. Received from ERM via e-mail on 29/09/2020.

[7] The general public includes all residents and visitors of Broken Hill and nearby surrounds. This HHRA does not consider occupational exposure at the Mine.

- Use of literature information and metal analytical data from soil/dust sampling undertaken specifically for this HHRA. This allows estimation of background metal exposures by the general public as well as potential exposures from MOD6 (Section 2.6.1).
- Review and application of metal bioaccessibility data obtained for various soil and rock samples acquired as part of the sampling program undertaken for this HHRA (Section 2.5).
- Determination of possible exposure scenarios, and
- Identification of sensitive locations[8] in the area around the mine where potential exposure to dust emissions may occur (Section 2.3 and 2.4). This HHRA does not consider occupational exposures.

4. *Risk characterisation*:
    - For Pb, potential health impacts are assessed by modelling blood lead (BPb) in children that might result from exposure to Pb in dust associated with the Proposal, and comparing the modelled BPb with recently measured child BPb, and with the NHMRC (2015) blood lead action level of 5 µg/dL (Section 3). In addition the importance of potential change in modelled BPb as a result of the Proposal is judged by comparing predicted BPb between exposure scenarios (see Section 2.3).
    - For other metals (Section 4), exceedance of a chronic toxicity reference value (TRV; which has been adjusted for possible 'background' exposures) or chronic air guideline value, and therefore risk of health effects, is judged by the hazard quotients (HQ) for individual metals and in combination (hazard index, HI)[9], excluding Pb[10].
    - For those metals for which the health effect of concern is cancer, and which show a non-threshold dose response[11] cancer risk is judged for relevant metals by comparison with 'acceptable'[12] risk levels.

[8] Sensitive locations are considered to be locations around Broken Hill where children and/or the elderly may reside or spend a great deal of their time. Such locations include residences, child care centres, schools, aged care facilities, hospitals, etc.

[9] A hazard quotient is the ratio of the estimated chemical exposure to the TRV (see also Section 4.1).

[10] Pb is excluded from the HI calculations, as it has been assessed separately using estimated blood Pb concentration.

[11] Typically, those carcinogens that are known or suspected to cause cancer by directly altering genetic material (i.e. they are genotoxic) are considered to exhibit a non-threshold dose response. This approach is in line with guidelines for undertaking health risk assessments in Australia (enHealth 2012a). For most chemicals, a threshold occurs when the dose or exposure has not reached a critical level sufficient to trigger a response. Thus, there is a dose below which there is no risk of adverse health effects. For genotoxic carcinogens, a non-threshold dose-response is generally assumed. This assumes linearity between the lowest experimentally derived dose and the zero dose. This implies there is a calculable probability of an adverse effect (i.e. cancer) no matter how small the dose.

[12] 'Acceptable' total excess cancer risks were taken to be 1 x 10^{-5} (i.e. 1 in 100,000) as per NEPM (2013) and enHealth (2012a).

2.2 Chemicals of Potential Concern

The substances of potential concern associated with the MOD6 Proposal are dust *per se* (i.e. effects due to the particulate nature and size of dust) and various metals in/on the dust. Possible exceedance of air quality standards for dust *per se* (as PM_{10}, $PM_{2.5}$, and TSP – total suspended particles) is considered in the air quality assessment by ERM (2020a)[13] and is not addressed in this HHRA[14].

The substances of potential concern for MOD6 that are the subject of this HHRA are metals embedded within the dust generated from mine-related activities.

Due to different risk assessment methodologies and also different public awareness/perception of the hazards the metals have been divided into two groups.

1. *Lead (Pb)*, assessed in Section 3:

   Pb is the principal chemical of potential concern (CoPC). This is because Broken Hill has a long history of Pb mining and there is considerable community cognisance/concern of past and present exposure to Pb, particularly by children. Past mining and smelting practices have resulted in widespread surface soil contamination of areas around the mines in Broken Hill. Smelting no longer occurs. In addition, there has historically been high prevalence of elevated blood lead (BPb) levels in children. However, BPb in children in Broken Hill has progressively decreased from the early 1990's through to 2011, after which concentrations have remained fairly constant (NSW Health 2019) (Section 3.4). The early observed decreases are due to targeted soil remediation of public spaces and selected high risk residences (Lyle et al. 2001, 2006), phasing out of leaded petrol (DEWHA 2001), and initiatives directed at modification of personal behaviour to minimise Pb exposure (e.g. educational campaigns highlighting the importance of hand washing and not using rainwater collected from roofs for drinking and cooking).

[13] From the dispersion modelling, the ERM (2020a) report found there will be no predicted exceedances of the NSW EPA impact assessment criteria at privately-owned locations of the annual average $PM_{2.5}$ (8 µg/m³), PM_{10} (25 µg/m³), TSP (90 µg/m³) or dust deposition (2 g/m²/month incremental; 4 g/m²/month cumulative) assessment criteria, either from MOD6 alone (operation and construction) or cumulatively (including background and other existing sources). ERM (2020a) concluded that following the construction associated with the proposal, future operational years will result in a net reduction in off-site air quality impacts (including Pb and Pb deposition) when compared with current operations. Cumulative impacts from the proposed Broken Hill North Mine Recommencement Project were also assessed by ERM (2020a); the results showed no exceedances of the NSW impact assessment criteria at any of the co-located receptors.

[14] Airborne particles have a range of adverse effects on health which include: i) premature mortality, ii) aggravation of cardiovascular disease such as atherosclerosis, iii) aggravation of respiratory disease such as asthma, iv) changes to lung tissue, structure and function, v) cancer due to constituents of particular matter which may be carcinogenic, vi) reproductive and developmental effects, and vii) changes in the function of the nervous system (NEPC 2014). There is a lack of evidence for a concentration threshold below which health effects do not occur. This means that there are likely to be adverse health effects at the concentrations currently experienced in Australian cities, even where these are below relevant standards and goals (NEPC 2014). Particulate matter standards in Australia have been set considering both health impacts (and benefits of reducing standards), achievability in relation to background particulate matter, social and economic aspects (NEPC 2014).

2. *Other metals/metalloids*, assessed in Section 4:

   Other metals/metalloids of potential concern (based on mineralogy analysis undertaken for ore) within emitted dust that require assessment are silver (Ag), antimony (Sb), arsenic (As), barium (Ba), beryllium (Be), cadmium (Cd), chromium (Cr), copper (Cu), iron (Fe), mercury (Hg), manganese (Mn), nickel (Ni) and zinc (Zn). It should be noted, that as with Pb, these metals within the dust are part of the geology of the mined Broken Hill ore and are in a mineralised form that requires solubilisation and absorption, which is different for each metal/metalloid, into the body for potential health effects to occur.

2.3 Exposure scenarios

2.3.1 Construction phase

MOD6 will involve a construction phase of approximately 12 months duration in which small increases of dust concentrations compared with normal operations are predicted to occur (ERM 2020a). The majority of this construction will occur within 6 months and entail construction of the boxcut. Preparation for TSF3 and TSF2 is estimated (combined) to take 6 months with some overlap with boxcut construction.

ToxConsult (2017a), when considering the potential need for an HHRA with respect to a previous modification application (MOD4), concluded small increases in air Pb over a short period and in soil Pb are unlikely to materially influence existing exposures to Pb[15].

MOD4, which involved installation of embankments and a retaining wall at low points along the Blackwood Pit Tailings Storage Facility (TSF2) and installation of a Concrete Batching Plant (CBP), was approved by the Department of Planning in 2017. Thus, to assess the potential impacts on human health of the MOD6 construction phase:

- The incremental air Pb concentration (in Total Suspended Particulates, i.e. TSP) and Pb deposition in dust estimated by ERM (2020a) during construction of MOD6 were compared with the emissions from the approved MOD4.
- In addition, the increases in Pb deposition for the MOD6 construction year were translated into predicted increases in soil Pb at all modelled receptors (see Section 3.6.1). These increases were related back to the existing measured soil Pb concentrations.

2.3.2 Operations phase

The original approval for the Rasp Mine allowed for a mine life of 15 years from 2011 to 2026. MOD6 does not propose to extend the mine life already approved as part of the original proposal. Continued mining beyond 31 December 2026 will be subject to a further modification which is planned to be submitted for assessment by the Mine in 2021.

ERM (2020a) undertook air quality and dust deposition modelling for a representative current operational year, as well as a future operational year assuming MOD6 were to go ahead.

The HHRA has evaluated the human health impacts of Pb and other metals for the following scenarios:

[15] The Department of Planning agreed with the assessment from ToxConsult (2017a) and a formal HHRA was not considered to be required.

- Scenario 1 (S1): Current operations. This uses the modelled results for the representative current operational year (i.e. business as usual) and assumes the same emissions will occur for the remainder of the approved mine life (i.e. 2022-2026 or approximately 5 years), i.e. no MOD6.
- Scenario 2 (S2): MOD6 operations. This uses the modelled results for the MOD6 future operational year and assumes the same emissions will occur for the duration of the remainder of the approved mine life (i.e. 5 years).

In both scenarios, background and non-Rasp related emissions have been included.

To assess the potential impacts on human health of MOD6 operations:

- S1 (Current operations) was compared with S2 (MOD6 operations).
- In addition, for lead only, for those locations which were originally modelled in the Preferred Project Report (PPR), i.e. the original approval for the Rasp Mine, MOD6 operations were compared with the PPR BPb predictions.

2.4 Receptor locations

For the MOD6 proposal ERM (2020a, b) has predicted concentrations for metals in airborne dust, and deposition of metals/metalloids to soil, at 70 locations throughout Broken Hill[16]. The locations include residences, parks, playgrounds, schools, etc. In order to transparently assess the information it is presented in this HHRA according to the Broken Hill 'lead risk' districts developed by Boreland et al. (2002), but with additions as required by the location of the proposed modification and some of the modelled receptor locations which are not within the 'Boreland' districts. As described in Figure 2-1 these are:

- 10 'Boreland' health risk districts (D1 – D10), with a few receptors just outside of D1 (R46 and R53) and D2 (R43 and R69).
- A group of receptors on the Mine Lease in close proximity to Rasp mining operations ('Other'):
  - West: R8 (close to D7).
  - East: R27-R30 (close to D6).
  - South: R21-R26 (close to D4).
- And one receptor (Flying Doctors Medical centre, i.e. R59) approx. 3km from the Mine Lease (at Broken Hill Airport – not shown in Figure 2-1), included because it is a medical centre.

A list of all receptor locations included in this HHRA is provided in Table 2-1. It is noted R1-R42 were also included in the PPR as part of the original approval for the Rasp Mine. Section 3.6.2 has compared the results for operational scenarios S1 (current operations) with S2 (MOD6 operations), but also presents a comparison of S2 (MOD6 operations) with the PPR results for the original 42 receptors[17].

[16] It is noted only 42 of these 70 locations were included in the modelling undertaken for the original approval for the Rasp Mine, in the Preferred Project Report (PPR).

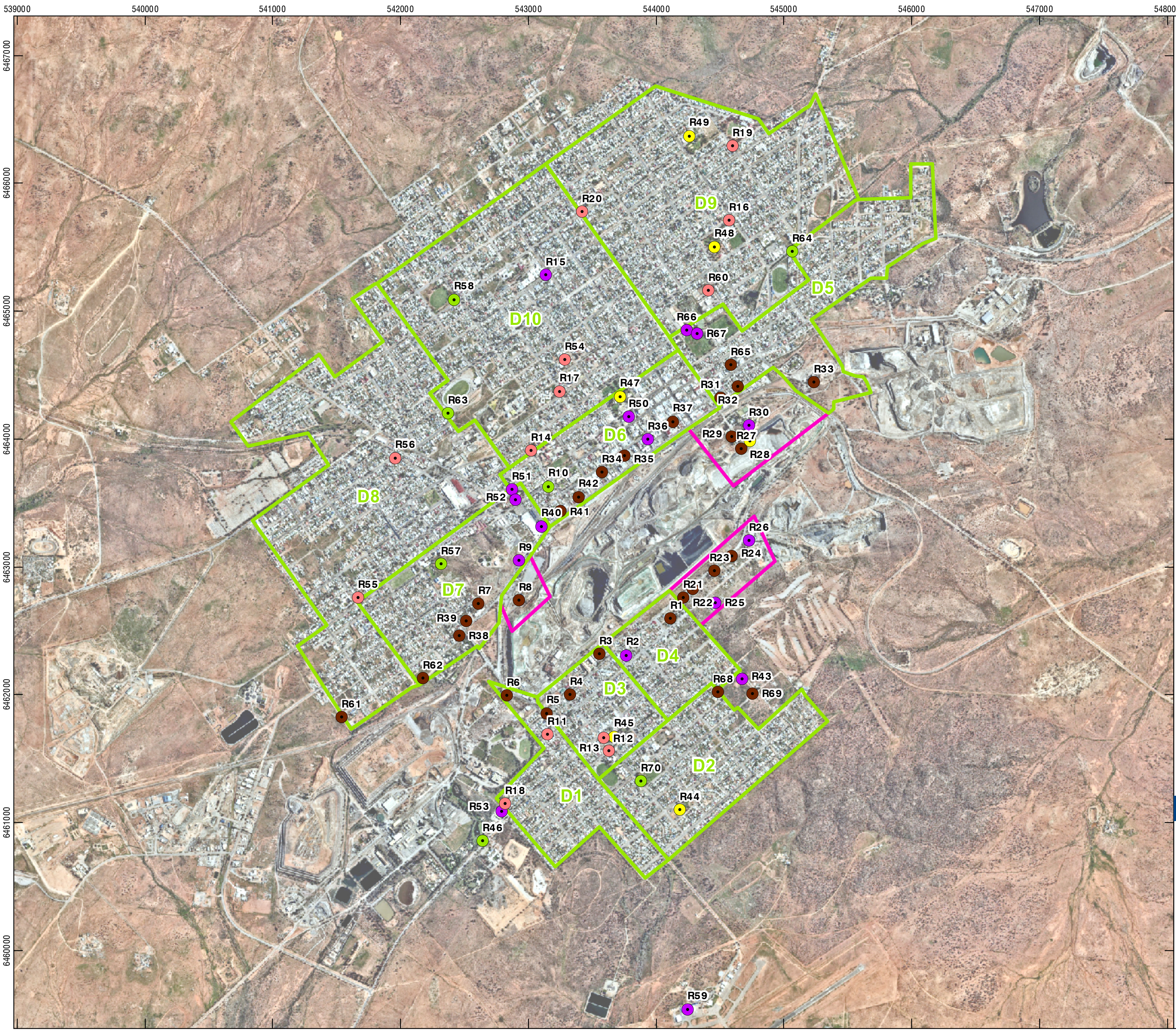
[17] ERM sourced the air modelling and dust deposition results for the original 42 receptor locations from the *Rasp Mine, Broken Hill Air Quality Assessment Addendum - Proposed Relocation of the Processing Area* by ENVIRON (dated 21 September 2010). The PPR results were provided to SLR in a spreadsheet (ERM 2020b).

Table 2-1 Receptor locations included in HHRA

'Boreland' District	Receptor	Description
D1	R6	Residence
	R11	Alma Bugdli Preschool
	R18	Rainbow Preschool
	R46	Zinc Lakes Playground
	R53	War Vets Retirement Living
D2	R43	Bowling Green
	R44	Duff Street Park Playground
	R68	Residence
	R69	Residence
	R70	Lamb Oval
'Other' (close to D2)	R59	Flying Doctors Medical Centre
D3	R3	Residence
	R4	Residence
	R5	Residence
	R12	Playtime Preschool
	R13	Alma Primary School
	R45	Patton Park Playground
D4	R1	Residence
	R2	Southern Cross Care (St Anne's)
'Other' (close to D4)	R21	Residence
	R22	Residence
	R23	Residence
	R24	Residence
	R25	Essential Water Tank
	R26	Mawsons Quarry offices
D5	R31	Residence
	R32	Residence
	R33	Brownes Shaft Residence
	R64	Jubilee Oval
	R65	Residence
	R66	O'Neill Park Soccer Grounds
	R67	Cricket Grounds
'Other' (close to D5)	R27	Residence
	R28	British Flats Playground
	R29	Residence

'Boreland' District	Receptor	Description
	R30	Perilya Social Club
D6	R10	Duke of Cornwall Park
	R34	Residence
	R35	Residence
	R36	Nachiapan Surgery
	R37	Residence
	R41	Residence
	R42	Residence
	R47	Sturt Park Playground
	R50	Aruma Lodge
D7	R7	Residence
	R9	RSPCA
	R38	Residence
	R39	Residence
	R40	Coles Supermarket
	R51	Eureka Shorty O'Neill Retirement Village
	R52	Con Crowley Retirement Village
	R57	AJ Keast Park
	R62	Residence
'Other' (close to D7)	R8	Residence
D8	R55	Railwaytown Public School
	R56	Burke Ward Public School
	R61	Residence
D9	R16	N. Broken Hill Primary School
	R19	Willyama High School
	R20	Morgan Street Primary School
	R48	Playground (QE Park)
	R49	Playground
	R60	Busy Kids Childcare
D10	R14	Broken Hill High School
	R15	Broken Hill Base Hospital
	R17	Broken Hill Public School
	R54	Sacred Heart Parish Primary School
	R58	Picton Oval
	R63	Memorial Oval

D = District; R = Receptor.



LEGEND

- Residences
- Schools/Childcare
- Ovals
- Playgrounds
- Other (Hospital, Health Centre, Aged Care Service)
- Defined by Boreland et al. (2002) Boundary
- 'Other' Boundary

*** D = District**

**** R59 is the Flying Doctors Medical Centre at Broken Hill Airport (approx. 1 km from southern edge of D2)**

0 0.5 1 km

Scale: 1:40,000 at A4

Projection:	GDA 1994 MGA Zone 54
Project No.:	(640.12028)
Date:	19-Nov-2020
Drawn by:	(PW)
Reviewed by:	(TH)

HEALTH RISK ASSESSMENT RASP MINE MOD6

Map of receptors in relation to districts and area

FIGURE 2-1

Data Source:
Nearmap Imagery October 2020

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2.5 Bioaccessibility

Inorganic substances (i.e. metals) occur in soil as a complex mixture of solid phase compounds of varying particle size and morphology. Metals are usually complexed with a number of components in soil (including soil minerals and organic matter) (Noller et al. 2017, Ruby et al. 1999). The tightness of this binding influences the amount that can be absorbed into the body and hence a metal's bioavailability from soil. The bioavailability of a given compound can vary considerably between different soils.

Oral bioavailability (absolute bioavailability) is defined as the fraction of an orally administered dose of chemical that reaches the systemic circulation (enHealth 2012b, RIVM 2009). The bioavailability of the substance from environmental media is a product of two major processes:

- *Bioaccessibility:* This is the amount of metal released from the media (e.g. during passage through the gastrointestinal tract) that is available to be absorbed from the gastrointestinal tract (GIT) into the systemic circulation. The solubility of the substance in gastrointestinal media, in the GIT location where it is absorbed, is a major determinant of bioaccessibility.
- *Absorption:* Usually only a portion of the bioaccessible fraction, the amount available for possible absorption, is transported across the intestinal epithelium to reach the systemic circulation. This is the absorbed fraction.

Thus for a chemical to be absorbed into the systemic circulation it must be in a form available for uptake. For absorption to take place there needs to be some desorption or dissociation from the medium in which it is present, the degree that this can occur is termed the substance's bioaccessibility from the medium (UK EA 2002).

Estimates of bioaccessibility and overall bioavailability (i.e. bioaccessibility plus absorption) can be obtained from experimental studies (enHealth 2012b). There are a number of test protocols for estimating bioaccessibility using *in vitro* digestion models that simulate conditions in various compartments of the gastrointestinal tract (saliva, stomach, small intestine). enHealth (2012b), Noller et al. (2017), RIVM (2009), UK Environment Agency (2002, 2005) and Van de Wiele et al. (2007) describe the protocols for many of these test systems.

One such protocol, which was employed in the metal bioaccessibility testing undertaken for this HHRA is the Solubility Bioaccessibility Research Consortium (SBRC) method. This method is a two-stage digestion system using various enzymes and solutes to simulate leaching from solid matrix in the human stomach and small intestine. The SBRC method undertaken for the samples collected for this investigation uses two different pHs, i.e. the more conservative fasted stomach pH of 1.5, and an intestinal pH of 6.5-7, and bioaccessibilities are reported at both pHs. The SBRC method was chosen for this investigation due to practical considerations, i.e. commercial scale availability and turn-around time.

SBRC validation has been undertaken for Pb using data from *in vivo* swine experiments, whereas validation of a similar method (the Physiologically Based Extraction Test or PBET)[18] has been undertaken for both Pb and As using *in vivo* oral bioavailability studies in rats, rabbits or monkeys (Ruby et al. 1996) (see also Appendix A).

[18] The PBET test uses pHs of 1.3, 2.5, 4 and 7, whereas the SBRC method is a simplified version which uses two pHs: 1.5 and 6.5-7.

Bruce et al. (2007) have used the PBET model in a risk assessment for assessing the bioavailability of Pb and As in mine waste from a Queensland mining operation and it has been applied in assessment of heavy metals (including Pb) at the Leichhardt River in Queensland (Noller et al. 2009) and in a recently published health risk assessment of Pb in Mount Isa (Noller et al. 2017). In the latter risk assessment, an average bioaccessibility obtained across four pHs (i.e. 1.3, 2.5, 4, and 7) was used. Noller et al. (2017) measured in rats *in vivo* bioavailability of Pb in 10 samples of soil/dust collected in Mount Isa, and found all of these to be <6.2% bioavailable *in vivo*. When the *in vitro* PBET data for the same samples were fitted with the *in vivo* data, the results showed that the *in vivo* rat bioavailability of a sample was less than 20% its PBET bioaccessibility (determined using the average of four pHs, i.e. 1.3, 2.5, 4, and 7). Thus, the average *in vitro* Pb PBET bioaccessibility overestimated the *in vivo* rat Pb bioavailability by at least a factor of five (see also Appendix A).

Thus, it is reasonable to expect the average bioaccessibility from the SBRC test, which only uses two pHs but in a similar range to those in the PBET test (1.5 and 6.5-7), to also result in an overestimate of the *in vivo* Pb bioavailability. The gastric-phase bioaccessibility on its own (i.e. at pH of 1.5) would result in a markedly higher overestimate of *in vivo* Pb bioavailability, whereas the intestinal phase on its own is likely to be closer to the actual *in vivo* Pb bioavailability. Additional justification to demonstrate this is provided in Appendix A.

Since there is confidence that use of an average bioaccessibility (of all pHs tested) is likely conservative (without being grossly over-conservative), this HHRA has used the average of the bioaccessibilities obtained at the two pHs (1.5 and 6.5-7) tested in the SBRC test. For Pb, bioaccessibility is translated into an absolute bioavailability after taking into account that in children solubilised Pb is only absorbed to the extent of a maximum of 50% (US EPA 1999b, ATSDR 2007a) (i.e. *in vivo* bioavailability = 0.5 x bioaccessibility).

The conservatism in the actual bioaccessibility of Pb from Broken Hill soils and dust should be kept in mind when interpreting the results of the blood lead (BPb) modelling undertaken in this report. As a result, in this HHRA less weight is placed on the individual numerical values of predicted BPb, and more on the comparison between different scenarios and the relativity of any shifts in predicted BPb population distributions (Section 3.6.2). The latter is more important because the BPb modelling for each scenario has the same input parameters, and as such uncertainty associated with bioaccessibility (and other common modelling parameters) is inherently minimised, the primary differences between scenarios are the changed Pb exposures resulting from the Proposal.

Metal/metalloid bioaccessibility in soils/dusts around and within the Mine, as well as those found in urban areas of Broken Hill was estimated from samples obtained by BHOP in 2019. The sampling program involved collection of 21 samples from urban areas around Broken Hill (BHS01-BHS21), 30 samples from 'free areas' around the Rasp Mine (CBH1-CBH30), and 5 samples of waste rock (CBH31-CBH35)[19] (see Figure 2-2). All samples were subjected to bioaccessibility testing by the SBRC method at the Future Industries Institute of the University of South Australia. Apart from providing contemporary information on bioaccessibility of Pb and other metals, the program's objective was to determine whether there are any differences in bioaccessibility of metals in soil/dust collected from within or around the mine (i.e. mine-related dust) and urban locations within Broken Hill. Dust from waste rock was collected since it will be used for rehabilitation capping. Although the SBRC method utilised has only been validated for Pb, the similar method PBET method (which differs by using four pHs instead of two) has been validated for both Pb and As. Therefore, there is high confidence in the bioaccessibility results obtained for Pb and As. Nevertheless, bioaccessibility information was also obtained for a number of other metals of interest (Cr, Fe, Mn, and Cd)[20]. Table 2-2 provides a summary of the bioaccessibility results for each area as well as the values used in the HHRA. A more detailed summary of these results is provided in Appendix B, and the bioaccessibility testing report is provided in Appendix C.

Where sample numbers were sufficient, statistical analysis was undertaken to determine whether there was a significant difference between average bioaccessibility for urban samples, 'free area' samples (from around mine site) and waste rock dust samples. For Pb, average bioaccessibility of waste rock samples (31.9%) was lower than the other groups (41.8 and 36.7% for urban samples and 'free area' samples, respectively), with the statistical analysis showing the differences were 'borderline' significant (p = 0.0504). This lines up with the findings in a previous HHRA undertaken for the Rasp mine (Toxikos 2010), in which mine ore (which has not been subjected to weathering) had lower bioaccessibility than mine site dust (i.e. from 'free areas') which would have been subjected to weathering over time.

However the air dispersion modelling undertaken by ERM (2020a, b) has not made a distinction between contribution to dust emissions from waste rock and 'free areas'. Therefore, in this HHRA the higher of the two bioaccessibilities was used for all mine-derived dust, provided:

- there was a significant difference between bioaccessibilities of mine-derived and urban dust, and
- there were enough samples to lend confidence to the statistical finding.

The only element this applied to was Mn (Table 2-2).

[19] Samples were collected in accordance with US EPA (1993) procedures for collection of dust samples from paved and unpaved roads. This procedure involves slowly sweeping the ground surface of an area ~0.5-1.0 m^2 using a hand brush and dustpan for collection of the sample. Bioaccessibility testing was undertaken for the <250 µm fraction, since this is the fraction which potentially adheres to children's skin and could be ingested. It is also the fraction of surface dust likely to become airborne.

[20] Due to logistical, timeframe and cost implications, not all metals/metalloids of potential interest were included in the bioaccessibility testing.

For all other metals/metalloids, there were either not enough samples where bioaccessibility was above the limit of reporting, or there was no significant difference between groups, or the difference was 'borderline' (as it was for Pb). For these elements, the highest bioaccessibility of the three groups of samples was used in the HHRA for all receptor locations. This applied to all metals apart from Mn (described in the previous paragraph), Cr and Cd. For Cr, total concentrations were low in all the soil/dust samples from the three locations, and all solubilised Cr results were below the limit of reporting. It was therefore assumed that Cr bioaccessibility was 100%, although it is recognised this is conservative[21]. For Cd, the highest average bioaccessibility occurred in the urban sample group, but since this was based on only two data points all sampling points were combined and an overall average bioaccessibility calculated for the HHRA.

[21] If it was assumed that the concentration of solubilised Cr in these samples was present at just below the limit of reporting (9.9 mg/kg) in order to calculate average bioaccessibilities from total Cr concentrations, there would be no difference between the three sample groups, and the overall average bioaccessibility from the three groups would be 44.9. ± 8.3%.

Table 2-2 Total metal concentrations and average of Bioaccessibility (%) of metals in Broken Hill soils/dusts collected in 2019[#]

Metal/ Metalloid ^^		Soil/dust sample location									Bioaccessibility % used in HHRA
		Urban areas (BHS01-BHS21)			'Free areas' around Rasp Mine (CBH1-CBH30)			Waste rock (CBH31-CBH35)			
		Avg ± SD	Range	n>LoR	Avg ± SD	Range	n>LoR	Avg ± SD	Range	n>LoR	
Pb	Total mg/kg	490 ± 329	104 – 1,150	21/21	7,527 ± 6127	2,155 – 29,700	30/30	3,897 ± 2,548	393 – 7,485	5/5	42 (1)
	BAc%	41.8 ± 6.1	28.8 – 50.8	17/21	36.7 ± 9.6	10.1 – 54	30/30	31.9 ± 9.9	18.5 – 45.7	5/5	
Cr	Total mg/kg	24 ± 4.8	19 - 37	21/21	21 ± 4.1	8 - 26	30/30	23 ± 3.9	20 – 30	5/5	100 (2)
	BAc%	NC	NC	0/21 (2)	NC	NC	0/30 (2)	NC	NC	0/5 (2)	
Fe	Total mg/kg	26,845 ± 3,814	21,700 – 34,200	21/21	29,258 ± 2,913	23,750 – 39,800	30/30	30,420 ± 1,131	29,200 – 31,900	5/5	3 (3)
	BAc%	0.8 ± 0.2	0.6 – 1.05	3/21 (3)	1.6 ± 1.2	0.6 – 4.6	17/30	3.0 ± 0.9	1.75 – 4.5	5/5	
Mn	Total mg/kg	556 ± 315	191 – 1,490	21/21	6,846 ± 10,914	1,700 – 53,050	29/29	697 ± 376	257 - 1285	5/5	54 (mine-derived), 35 (urban) (4)
	BAc%	34 ± 5.8*	20.9 – 42.9	21/21	27 ± 19.6*	2.9 – 81	29/29	54 ± 14.5**	37.9 – 76.3	5/5	
Cd	Total mg/kg	2.6 ± 2.0	0.9 - 8.0	17/21	27.9 ± 18 .4	8.0 - 72	30/30	22.6 ± 11.6	3.0 - 32	5/5	56 (5)
	BAc%	83 ± 19.6*	68.8, 96.4	2/21 (5)	58 ± 15.0**	27 - 82	27/30	28 ± 9.2***	22 – 39	3/5	
As	Total mg/kg	12.6 ± 7.7	6.0 - 35	21/21	118 ± 66	18 - 279	29/29	68.2 ± 35	9.0 - 100	5/5	16 (6)
	BAc%	NC	NC	0/21 (6)	16.1 ± 6.2**	4.5 – 27	24/30 (6)	12.3 ± 3.2***	10, 14.5	2/5 (6)	

Metal/ Metalloid ^^	Soil/dust sample location									Bioaccessibility % used in HHRA
	Urban areas (BHS01-BHS21)			'Free areas' around Rasp Mine (CBH1-CBH30)			Waste rock (CBH31-CBH35)			
	Avg ± SD	Range	n>LoR	Avg ± SD	Range	n>LoR	Avg ± SD	Range	n>LoR	

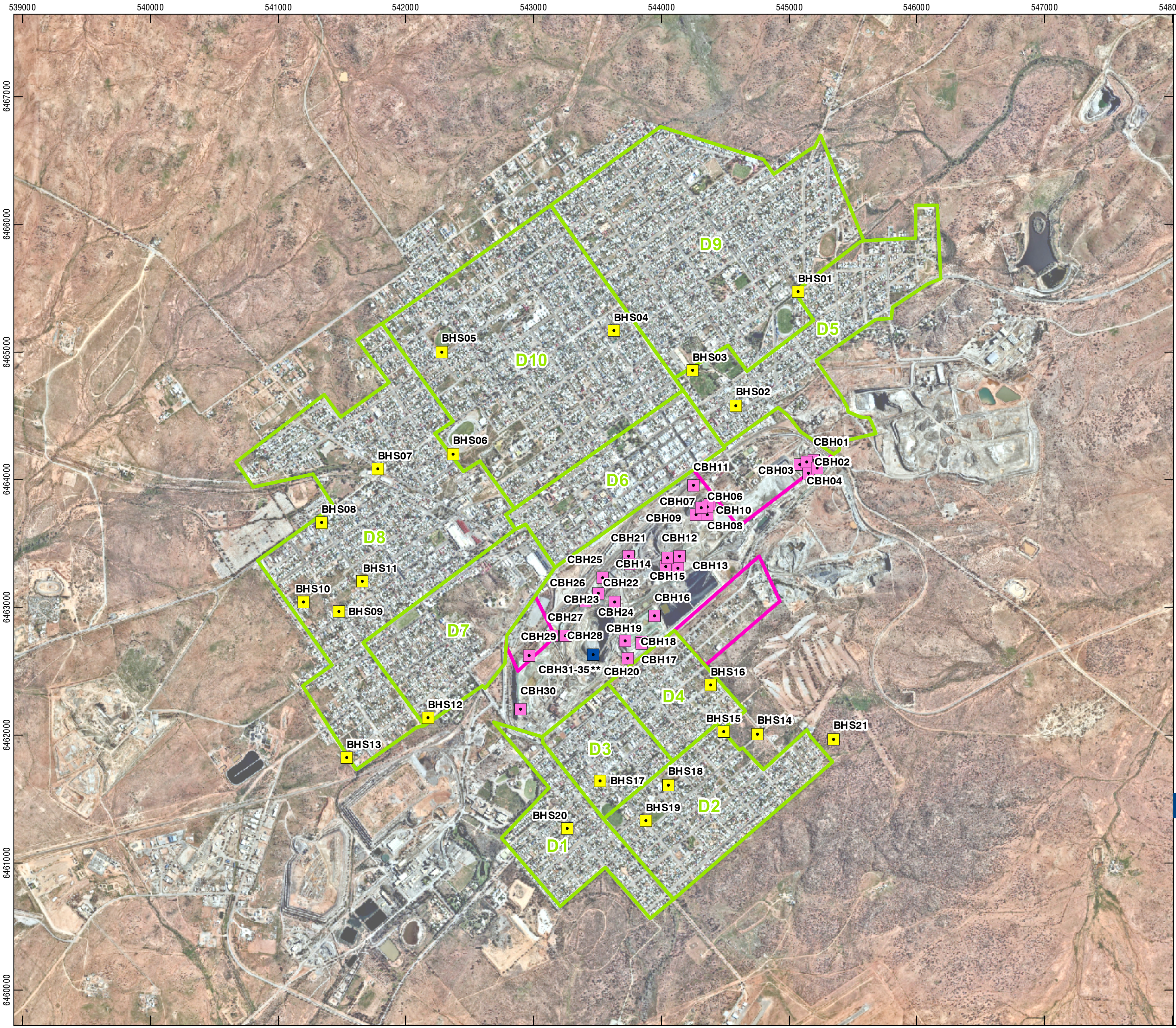
HHRA = Human Health Risk Assessment. Avg = Average. SD = Standard deviation. n = number of samples. LoR = Limit of Reporting. NC = Not calculated, as there were no samples >LoR.

^^ = Pb: lead, Cr: Chromium, Fe: Iron, Mn: Manganese, Cd: Cadmium, As: Arsenic.

= Average bioaccessibility was calculated from the SBRC test results at pH 1.5 (gastric) and 6.5-7 (intestinal) for each individual sample. The averages presented in this table are the means for each set of samples i.e. urban, 'free areas' and waste rock.

* = Statistically significantly different from average bioaccessibility (%) at locations with different asterisks in superscript ($p<0.05$). See relevant footnote for details.

1. The majority of the solubilised Pb results (for both gastric and intestinal phases) were above the LoR of 10 mg/kg. Across the three sample groups, the average bioaccessibility (BAc%) was normally distributed as assessed by the Shapiro-Wilk test of normality ($p > 0.05$). A one-way ANOVA demonstrated 'borderline' statistically significant differences between BAc% values from the sample locations $F(2, 49) = 3.177$, $p = 0.0504$. Thus, the highest average (urban areas: 41.8 ± 6.1%), rounded to 42% was used in the HHRA.
2. Total chromium (Cr) levels were low in all the dust samples from the three locations, and all solubilised Cr results were below the LoR of 10 mg/kg and so no statistical analysis could be undertaken. It was therefore assumed that Cr bioaccessibility was 100%. It is noted, however, that if it was assumed that the concentration of solubilised Cr in these samples was present at just below the LoR (9.9 mg/kg) in order to calculate average BAc% from total Cr concentrations, that there would be no difference between the three sample groups, and the overall average bioaccessibility from the three groups would be a maximum of 44.9. ± 8.3%. i.e. the 100% bioaccessibility assumption for Cr is highly conservative.
3. The majority of the solubilised iron (Fe) results for the soil/dust samples from urban areas (18/21) were below the LoR of 50 mg/kg. The BAc% results for the 'free area' samples were not normally distributed, as assessed by the Shapiro-Wilk test of normality ($p < 0.05$), whereas the other two groups of samples were. A one-way ANOVA demonstrated a statistically significant difference between BAc% values from the three sample groups $F(2, 18) = 6.194$, $p = 0.008$, with the waste rock samples showing relatively higher BAc%. It is recognised the small sample size from the urban areas (n=3) limit the veracity of this comparison. However, as the absolute differences between average BAc% are unlikely to be biologically significant (i.e. 0.8, 1.6, or 3.05%), the highest average BAc% (waste rock samples: 3.05 ± 0.01%), rounded to 3%, was conservatively used in the HHRA for all locations.
4. All of the solubilised manganese (Mn) results were above the LoR of 10 mg/kg. The BAc% results for the 'free area' samples were not normally distributed, as assessed by the Shapiro-Wilk test of normality ($p < 0.05$), whereas the other two groups of samples were. A one-way ANOVA demonstrated a statistically significant difference between the BAc% values from the three sample locations $F(2, 52) = 6.619$, p 0.003. Therefore, it was assumed mine-derived Mn has a BAc% of 54% (equivalent to that of waste rock) and Mn in existing urban soils/dust has a BAc% of 35% equivalent to that measured in samples taken from urban areas.
5. Total cadmium (Cd) levels in the samples from urban areas were low and the majority (19/21) of the solubilised Cd results in these samples were below the LoR of 5 mg/kg. For the 'free area' samples, average BAc% was normally distributed as assessed by the Shapiro-Wilk test of normality ($p > 0.05$). A one-way ANOVA demonstrated a statistically significant difference between the BAc% values from the three sample locations $F(2, 29) = 8.821$, $p = 0.001$, with each pair differing. It is recognised the small sample size from the urban areas (n=2) and waste rock (n=3) limits the veracity of this comparison. For this reason, the overall mean of average bioaccessibility across all samples was used for all locations (56.2%, rounded to 56%).
6. Total arsenic (As) in the samples taken from urban areas was low and all of the solubilised As results for these samples, and for all but two of the waste rock samples, were below the LoR of 10 mg/kg. The average BAc% results for the samples from the 'free areas' were normally distributed, as assessed by the Shapiro-Wilk test of normality ($p < 0.05$). A two sample t-test demonstrated no statistically significant difference between the 'free-area' and waste rock samples $t = 1.3479$, $p = 0.3815$. It is recognised the small sample size from the waste rock (n=2) limits the veracity of this comparison. Therefore, it was assumed that As has a BAc% of 16% (equivalent to that of the 'free areas', which was higher than waste rock, at all locations).



LEGEND

- Sampling Locations BHS1-21 - Residential areas
- Sampling Locations CBH1-30 - Free areas
- Sampling Locations CBH31-35 - Waste Rock
- Defined by Boreland et al. (2002) Boundary
- 'Other' Boundary

*** D = District**

****Waste rock samples CBH31-35 were all collected from within Kintore Pit**

0 0.5 1 km

Scale: 1:40,000 at A4

Projection:	GDA 1994 MGA Zone 54
Project No.:	(640.12028)
Date:	19-Nov-2020
Drawn by:	(PW)
Reviewed by:	(TH)

HEALTH RISK ASSESSMENT
RASP MINE MOD6

Soil/Dust sampling locations for bioaccessibility testing

FIGURE 2-2

Data Source:
Nearmap Imagery October 2020

SLR

www.slrconsulting.com

H:\Projects-SLR\640-MEL\640-MEL\640.12028 Human Health Risk Assessment for Modification 6 (Kintore Pit TSF3)\06 SLR Data\01 CADGIS\ArcGIS\Data\SLR64012028_Sampling_Locations_01.mxd

2.6 Soil metal concentrations

2.6.1 Existing soil concentrations

A literature search and consultation with officers of the Broken Hill Environmental Lead Program[22] was undertaken to source recent data on soil metal concentrations in residential areas of Broken Hill. Only information for Pb (but no other metals) was found (see Table 2-3), therefore existing soil concentrations for other metals were based solely on the concentrations in samples of soil/dust collected by BHOP for bioaccessibility testing[23] (see Table 2-4).

Taylor et al. (2014, Fig. 2c therein) reported mean soil Pb concentrations at six Broken Hill playgrounds (sampled in September 2013); these locations coincide with ERM (2020a) modelled receptors 44-49. The data are summarised in Table 2-3. Since these locations were not included in the more recent BHOP sampling program, for the HHRA existing soil Pb at these locations was assumed to be the same as that measured by Taylor et al. (2014) in 2013.

Yang and Cattle (2015, 2017) provide mean Pb concentrations for soils taken from earthen footpaths, nature strips, parks or vacant land throughout Broken Hill (sampled in May 2013)[24]. The authors have presented these data as mean concentrations for each group of 'districts'. The district codes and locations are the same as those depicted in Figure 2-1. The data are amalgamated and presented together with the soil/dust Pb concentrations from the sampling undertaken in 2019 by BHOP in Table 2-3.

The data collected by BHOP is arguably more relevant to this HHRA, since it is more recent (collected in 2019 vs. 2013) and consisted of surface dust sweepings which is more relevant for child exposure than surface soil. However, it is recognised in some districts (D6 and D9) no recent data were available, and in a few others (D1, D3, D4, D7) only one recently collected sample was available. Therefore, for this HHRA a combination of data from the BHOP sampling campaign and the Yang and Cattle (2015) research were used, with the rationale explained in the footnotes to Table 2-3.

[22] The consultation did not result in any information additional to what was found in the scientific literature.

[23] Not all metals assessed in this HHRA were included in the analytical suite of the soil/dust samples collected by BHOP. For those metals for which no soil data were available, existing soil metal concentrations could not be considered in calculations undertaken for the HHRA. The impact on conclusions of the HHRA is discussed in the uncertainty analysis (Section 4.6).

[24] Note although individual sample results were provided in supplementary information to the paper (Yang and Cattle 2015), the individual identified sample locations were not provided on a map. Therefore, the data for individual samples could not be separated into specific districts by SLR. As a result data in the format presented in the Yang and Cattle (2015) paper, as means ± standard deviation and overall range for grouped districts, are presented in Table 2-3.

Table 2-3 Existing Pb concentrations in topsoil of Broken Hill by district or specific location

District/ Location	Published topsoil Pb concentration (mg/kg), sampled in 2013 (Taylor et al. 2014, Yang and Cattle 2015) [4]		Measured soil/dust Pb concentration (mg/kg) in samples collected by BHOP in 2019 [4, 6]		Data used in HHRA
	Arithmetic mean ± SD	Range	Arithmetic mean ± SD	Range	
D1	733 ± 690 [1] (n=8) [3]	101 – 1,810 [1]	164 (n=1)	164 -573	370 [10]
D3			373 (n=1)		370 [10]
D4			573 (n=1)		370 [10]
D2	275 ± 214 [1] (n=30) [3]	41.3 – 922 [1]	735 ± 283 (n=5) [5]	368 – 1,115	735 [8]
D5			604 ± 408 (n=3)	135 - 877	604 [8]
D8			251 ± 162 (n=6)	104 - 567	251 [8]
D9			NA	NA	275 [9]
D10			343 ± 190 (n=3)	148 - 527	343 [8]
D6	1,125 ± 1,590 [1] (n=9) [3]	71 – 4,644 [1]	NA	NA	1,125 [7]
D7			1,150 (n=1)	1,150 (n=1)	1,125 [7]
Playground 1, R44 [2] (D2)	700 [2]	-	NA		700 [11]
Playground 2, R45 [2] (D3)	700 [2]	-	NA		700 [11]
Playground 3, R46 [2] (D1)	2,450 [2]	-	NA		2,450 [11]
Playground 4, R47 [2] (D6)	300 [2]	-	NA		300 [11]
Playground 5, R48 [2] (D9)	250 [2]	-	NA		250 [11]
Playground 6, R49 [2] (D9)	80 [2]	-	NA		80 [11]

- = The range of soil Pb concentrations was not provided in Taylor et al. (2014).
SD = Standard deviation
NA = No sample available from this district/location.

1 Data from Yang and Cattle (2015). Determined by portable X-ray fluorescence (pXRF). Dry weight/wet weight not stated.

2 Concentrations (not stated whether wet weight or dry weight) are approximations for these individual locations, as they were read off Figure 2c in Taylor et al. (2014). The figure is a bar graph which displays the mean Pb surface soil concentration at each individual playground. Standard deviations were not provided for the individual bars. Numbers of samples collected at each individual playground used for calculating the means displayed in the bar graphs were not provided in the paper. N=14 for all playground samples.

3 Yang and Cattle (2015) excluded two sampling sites from these areas for calculation of their statistics, because they were located outside residential areas (data for these samples were not provided in the publication).

4 Surface soil collected by Yang and Cattle (2015) was 0.1m depth. Surface soil collected by Taylor et al. (2014) was from the top 0-2 cm. Dust collected by BHOP was at the surface. The different depth of sampling likely contributes to the variability between reported Pb concentrations.

5 Includes two samples (BHS14 and BHS21) just outside District 2.

6 Metal concentrations determined by ALS by Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES). It is not clear from the analytical certificates whether concentrations are for dry weight or wet weight (see Appendix C). Nevertheless, typically ALS reports metal concentrations in soil on a dry weight basis.

7 The mean Pb concentration (1,125 mg/kg) measured by Yang and Cattle (2015) for D6 and D7 (n=9 samples) is similar to the Pb concentration measured in the single BHOP sample collected from these districts (1,150 mg/kg). Therefore, the mean presented in the Yang and Cattle (2015) paper has been used for all receptors located within these two districts.

8 Since more than one recently collected dust sample was available in each of these districts, the mean Pb concentration of the BHOP samples was used in the HHRA for receptor locations within these districts.

[9] As no dust Pb data were collected in the recent BHOP sampling program within this district, the mean surface soil Pb concentration from Yang and Cattle (2015) has been used in the HHRA.

[10] There was only one recently collected dust Pb sample available within each of districts 1, 3 and 4. However, the overall Pb concentrations range within these three samples (164 – 573 mg/kg) is much lower than the range previously reported by Yang and Cattle (2015), i.e. 101 – 1,810 mg/kg. Therefore it was considered inappropriate to adopt the older Yang and Cattle (2015) data in the HHRA for these districts. Instead the average of the three samples (370 mg/kg) was adopted for all modelled receptor locations within these districts.

[11] Since Taylor et al. (2014) presented surface soil Pb concentrations for these specific locations, and the recent BHOP sampling program did not include sampling at these locations, the data from Taylor et al. (2014) were used in the HHRA for these playgrounds.

As discussed above, since no data could be found in the literature for metals other than Pb, existing soil concentrations for other metals were based on the total metal concentrations in samples of soil/dust collected by BHOP in 2019 for bioaccessibility testing.

Receptor locations used for the assessment, together with the existing soil metal/metalloid concentration incorporated into the assessment, are summarised in Table 2-4 (see Section 2.4 for list of receptors). Note some ERM modelled locations do not fall within a particular district, thus no recent soil data were available. For these locations it has been assumed soil concentrations are similar to the average concentration measured in the nearby bordering district.

As outlined in the ERM (2020a) air dispersion modelling report, the Pb deposition model predictions for Rasp mine-only activities account for more than the actual measured Pb deposition rates across a year, i.e. the modelling currently over-predicts Pb deposition with model results higher than monitored results at the majority of monitoring locations. For this reason, no metal deposition additional to what was modelled for mine-only activities was included by ERM (2020a) in the modelling to account for ‘background’ (i.e. non-mining activity sources).

Table 2-4 Existing soil metal concentrations (mg/kg) at receptor locations used in HHRA

<table>
<tr><th rowspan="2">District/ Area</th><th rowspan="2">HHRA Receptor Location</th><th colspan="14">Metal/Metalloid</th></tr>
<tr><th>Pb (1)</th><th>As (2)</th><th>Cd (2)</th><th>Cr (2)</th><th>Fe (2)</th><th>Mn (2)</th><th>Sb</th><th>Ba</th><th>Be</th><th>Cu</th><th>Hg</th><th>Ni</th><th>Ag</th><th>Zn</th></tr>
<tr><td rowspan="2">D1</td><td>R6, R11, R18, R53</td><td>370</td><td rowspan="2">7</td><td rowspan="2">0.9</td><td rowspan="2">23</td><td rowspan="2">27,500</td><td rowspan="2">431</td><td rowspan="16" colspan="8">No data available (3)</td></tr>
<tr><td>R46</td><td>2,450</td></tr>
<tr><td rowspan="2">D2</td><td>R43, R68, R69, R70</td><td>735</td><td rowspan="2">12</td><td rowspan="2">1.3</td><td rowspan="2">27</td><td rowspan="2">28,317</td><td rowspan="2">409</td></tr>
<tr><td>R44</td><td>700</td></tr>
<tr><td>‘Other’ (airport)</td><td>R59 (4)</td><td>735</td><td>12</td><td>1.3</td><td>27</td><td>28,317</td><td>409</td></tr>
<tr><td rowspan="2">D3</td><td>R3, R4, R5, R12, R13</td><td>370</td><td rowspan="2">12</td><td rowspan="2">1.0</td><td rowspan="2">24</td><td rowspan="2">26,550</td><td rowspan="2">450</td></tr>
<tr><td>R45</td><td>700</td></tr>
<tr><td>D4</td><td>R1, R2</td><td>370</td><td>12</td><td>2.0</td><td>19</td><td>21,700</td><td>640</td></tr>
<tr><td>‘Other’ (close to D4)</td><td>R21 (4), R22 (4), R23 (4), R24 (4), R25 (4), R26 (4)</td><td>370</td><td>12</td><td>2.0</td><td>19</td><td>21,700</td><td>640</td></tr>
<tr><td>D5</td><td>R31, R32, R33, R64, R65, R66, R67</td><td>604</td><td>11</td><td>4.7</td><td>24</td><td>26,983</td><td>573</td></tr>
<tr><td rowspan="2">D6</td><td>R10, R34, R35, R36, R37, R41, R42, R50</td><td>1,125</td><td rowspan="2">35</td><td rowspan="2">5</td><td rowspan="2">24</td><td rowspan="2">31,650</td><td rowspan="2">1,490</td></tr>
<tr><td>R47</td><td>300</td></tr>
<tr><td>‘Other’ (close to D6)</td><td>R27 (4), R28 (4), R29 (4), R30 (4)</td><td>1,125</td><td>35</td><td>5</td><td>24</td><td>31,650</td><td>1,490</td></tr>
<tr><td>D7</td><td>R7, R9, R38, R39, R40, R51, R52, R57, R62</td><td>1,125</td><td>35</td><td>5</td><td>24</td><td>31,650</td><td>1,490</td></tr>
<tr><td>‘Other’ (close to D7)</td><td>R8 (4)</td><td>1,125</td><td>35</td><td>5</td><td>24</td><td>31,650</td><td>1,490</td></tr>
<tr><td>D8</td><td>R55, R56, R61</td><td>251</td><td>12</td><td>1.6</td><td>24</td><td>27,350</td><td>390</td></tr>
</table>

District/ Area	HHRA Receptor Location	Metal/Metalloid													
		Pb (1)	As (2)	Cd (2)	Cr (2)	Fe (2)	Mn (2)	Sb	Ba	Be	Cu	Hg	Ni	Ag	Zn
D9	R16, R19, R20, R48, R60	275	12	1.6	24	27,350	390								
	R49	80													
D10	R14, R15, R17, R54, R58, R63	343	12	1.3	27	28,317	409								

1. See Table 2-3 for rationale.
2. Total metal concentrations are averages of all samples collected in a particular district for bioaccessibility testing by BHOP in 2019. n=1 for D1, 5 for D2, 1 for D3, 1 for D4, 3 for D5, 1 for D7, 6 for D8, and 3 for D10. Since no samples were collected within D6 or D9, the data for the closest neighbouring district (i.e. D7 and D10, respectively) were used.
3. As no data were available for these metals, the existing soil concentration could not be incorporated into the assessment. Nevertheless, the HHRA has accounted for potential background exposure to these metals by adjusting the respective TRVs by an assumed background intake due to metal intake from diet including home-grown produce (see Section 4.3.1).
4. Since this location did not fall within a particular district, it has been assumed soil concentrations are similar to the average concentration measured in the nearest (or bordering) district. For R59 (about 3km away from the edge of D2) it was assumed existing soil metal concentrations were similar to D2. For R21-R26, the closest neighbouring district is D4, therefore concentrations for D4 were used. For R27-R30, the closest neighbouring district is D6, therefore metal soil concentrations for D6 were used. For R8, the closest neighbouring district is D7, therefore metal soil concentrations for D7 were used.

2.6.2 Calculation of metal concentrations in soil from deposition data

For each scenario evaluated in this HHRA (Section 2.3), SLR was provided with estimates of annual deposition of Pb and 13 other metals/metalloids at each of the 70 receptor locations[25] (Section 2.4).

For practical purposes metals in soil are chemically stable (i.e. they intrinsically have an infinite environmental life); the physical processes likely to remove deposited metals from soil and/or decrease exposure, at a given location are:

- wind erosion,
- transportation by rain, i.e. washing surface soil metal laden particles away from receptor soil,
- rain causing infiltration of metals to deeper soil so exposure is reduced (essentially cleansing the top soil layer), and
- removal or capping of the topsoil layer as part of remediation works.

The concentration of Pb and other metals in soil was calculated using the Equations in Table 2-5 below (from US EPA 2005). The deposition rate ($M_{ann\ dep}$) for each metal was sourced from data spreadsheets provided by ERM (2020b), values for other parameters are those recommended by US EPA (2005) for untilled (non-agricultural) soil or data specific for Broken Hill (where available). The equation incorporates physical loss from the soil due to surface water runoff. Other loss processes typically included in the Equation from US EPA (2005), i.e. biotic and abiotic degradation, soil erosion, leaching, and volatilisation were either considered not applicable to metals in soil or were assumed to be zero due to lack of specific information to enable their inclusion.

Based on a study that profiled dioxin measurements in soil, the US EPA (2005) recommend a soil mixing depth of 2 cm for untilled soils. This mixing depth has been adopted in estimating soil metal concentrations at receptor locations after the approximate 5 years of remaining operation of the Rasp Mine (see Section 2.3.2). This equation (without incorporation of loss processes) has been used in a previous risk assessment for Broken Hill (Toxikos 2010) and by Yang and Cattle (2017).

Table 2-5 Equations and Parameter Values for Estimating Soil Metal Concentration from Deposition Data

Parameter	Acronym	Units	Value	Basis/Description
Equation 1 (1): $C_s = \frac{100\ x\ M_{ann\ dep} \times [1-\exp(-ks\ x\ tD)]}{DxBDxks}$ Equation 3 (3): $ksr = \frac{RO}{\theta_{SW} x D}$ X $\left[\frac{1}{1+\left(\frac{Kd_S x BD}{\theta_{SW}}\right)}\right]$ Equation 5 (5): $S = \frac{1000}{CN} - 10$			Equation 2 (2): $ks = ksg + kse + ksr + ksl + ksv$ Equation 4 (4): $RO = \frac{(P-0.2S)^2}{(P+0.8S)}\ x\ 2.54$	
Soil metal concentration after 5 years of remaining mine life	C_s	mg metal/ kg soil	Calculated using Equation 1.	

[25] Note, since the PPR only provided information for the first 42 receptor locations, comparison with the PPR could only be undertaken for those 42 receptors.

Parameter	Acronym	Units	Value	Basis/Description
Conversion factor	100	$(mg/kg)(cm^2/m^2)^{-1}$	100	Conversion factor [(10^6 mg/kg)(10^4 cm^2/m^2)]
Annual metal deposition	$M_{ann\ dep}$	$g/m^2/year$	Receptor & scenario specific (see Appendix D).	Annual metal deposition from TSP onto receptor location soil. Provided by ERM (2020b, c).
Metal soil loss constant due to all processes	ks	$year^{-1}$	Calculated using Equation 2.	
Time period over which deposition occurs	tD	years	5	Assumed to occur for approximate period of remaining mine life (i.e. 2022-2026).
Soil mixing zone depth	D	cm	2	Default soil mixing depth recommended by US EPA (2005) for untilled soils.
Bulk density of soil	BD	g/cm^3	1.5	Recommended default from US EPA (2005). US EPA guidance states literature values for soil bulk density range from 0.93-1.84 g/cm^3, depending on soil type. It is not stated what soil type coincides with a value of 1.5 g/cm^3, and the original references were not available to SLR to verify the value selected. Therefore, the default value used by the US EPA (2005) has been adopted on face value in this risk assessment. It is noted this also lines up with the range of bulk densities for sandy soils (such as those present in Broken Hill) from the literature (1.7 – 1.7 g/cm^3) (Soil Quality 2020).
Metal loss constant due to biotic and abiotic degradation	*ksg*	$year^{-1}$	0	Negligible degradation of metals/metalloids is considered to occur.
Metal loss constant due to soil erosion	*kse*	$year^{-1}$	0	Data for Broken Hill were not available to calculate loss from soil erosion, therefore this was assumed to be zero. One would also hope at selected receptor locations soil erosion does not occur due to home landscaping and municipal engineering.
Metal loss constant due to surface runoff	*ksr*	$year^{-1}$	Metal/metalloid specific. Calculated using Equation 3.	
Metal loss constant due to leaching	*ksl*	$year^{-1}$	0	Losses of metals from soil due to leaching depends on the amount of water available to generate leachate as well as the properties of the soil. Data for domestic and park irrigation rates in Broken Hill were not available. If no irrigation is assumed to occur, then leaching is dependent on annual rainfall. Back-of-the envelope calculations using the annual average rainfall in Broken Hill revealed metal loss due to leaching makes negligible contribution to the overall loss constant, therefore for simplicity this was assumed to be zero.

Parameter	Acronym	Units	Value	Basis/Description
Metal loss constant due to volatilisation	*ksv*	$year^{-1}$	0	Volatilisation of metals/metalloids does not occur.
Average annual surface runoff from pervious areas	RO	cm/yr	Estimated for Broken Hill using the Curve Number Equation developed by USDA (1986, Eq. 2-3), reproduced as Equation 4. Curve numbers are assigned to an area based on soil type, land use cover and hydrologic conditions of the soil.	
Soil volumetric water content	θ_{sw}	mL water/ cm^3 soil	0.2	Default value in US EPA (2005).
Soil/water partition coefficient	Kd_s	mL water/ g soil	Metal/metalloid-specific.	Soil/water partition coefficients as provided by US EPA (2019), used by US EPA to calculate soil screening guidelines (6).
Conversion factor from inches to centimetres	2.54	cm/inch	2.54	Conversion factor from inch to cm.
Annual rainfall	P	inches/yr	9.8	Mean annual rainfall in Broken Hill is 248mm/year, i.e. 9.8 inches/yr (BoM 2020).
Potential maximum retention after runoff begins	S	inches	This variable is related to the soil and cover conditions of the watershed through curve numbers. Calculated using Equation 5.	
Curve Number relating direct runoff to rainfall.	CN	inches	61	The major factors that determine CN are hydrologic soil group, cover type, treatment, hydrologic condition and antecedent runoff condition. USDA (1986) provides values for CN which represent average runoff conditions for urban, cultivated agricultural, other agricultural and arid or semi-arid rangeland uses. The CN selected for this HHRA was provided in Table 2-2a of USDA (1986) for: • Hydrologic soil group A (i.e. sand, loamy sand, or sandy loam), since Broken Hill soils are primarily sandy soils (Yang and Cattle 2015). • Residential districts of 1/4 acre (i.e. ~1,000 m^2). Most residential properties in Broken Hill are of this size as determined by satellite observation (via Google® Maps).

1. Based on US EPA (2005, Equation 5-1).
2. Based on US EPA (2005, Equation 5-2A).
3. Based on US EPA (2005, Equation 5-4).
4. Based on USDA (1986, Equation 2-3).
5. Based on USDA (1986, Equation 2-4).
6. They are (mL/g): 83 for Ag, 29 for As, 41 for Ba, 790 for Be, 75 for Cd; 1,800,000 for Cr, 35 for Cu, 25 for Fe, 65 for Mn, 52 for Hg; 1,900 for Ni (from US EPA 1996 at soil pH of 8.0), 900 for Pb, 45 for Sb, and 62 for Zn.

As outlined in the ERM (2020a) report, the modelling undertaken for metal deposition over-predicts deposition with model results for the existing situation higher than monitored results (both of dust deposition and metals in TSP) at most monitoring locations. The monitoring results inherently include influence from all sources at Broken Hill (including 'background' contributions).

Equation 1 in Table 2-5 was adapted as per the Equation in Table 2-6 below to enable calculation of the existing soil metal concentrations at the end of the remaining 5-year mine life after incorporating soil metal loss due to surface runoff.

Table 2-6 Equations and Parameter Values for Estimating Existing Soil Metal Concentration after Accounting for Loss at End of Remaining Mine Life

Parameter	Acronym	Units	Value	Basis/Description
Equation 1 [(1)]: $C_{s\_existing(end)} = C_{s\_existing} - C_{s\_existing} \times [1 - \exp(-ks \ x \ tD)]$				
Existing (i.e. 'background') soil metal concentration after 5 years of remaining mine life	$C_{s\_existing(end)}$	mg metal/ kg soil	Calculated using Equation 1.	
Existing (i.e. 'background') soil metal concentration	$C_{s\_existing}$	mg metal/ kg soil	Varies for each metal and location. See Table 2-4.	
Time period over which deposition occurs	tD	years	5	Assumed to occur for approximate period of remaining mine life (i.e. 2022-2026).
Metal soil loss constant due to all processes	ks	$year^{-1}$	Calculated using Equation 2 in Table 2-5.	
1. Adapted from US EPA (2005, Equation 5-1).				

2.7 Conceptual model for exposure to metals in dust

Conceptual exposure pathways considered for mine-derived[26] Pb and other metals are summarised in Figure 2-3. At the receptor locations, exposure to mine derived metal may occur via incidental ingestion of soil, incidental ingestion of indoor dust which has either been tracked in or which has infiltrated from outdoor air, inhalation of indoor and/or outdoor airborne dust, ingestion of tank water containing metal deposited as dust on roofs, or consumption of vegetables or fruits grown in home garden soil. Although dermal contact with metal-containing soil and dust could theoretically occur, dermal absorption of inorganic metals is considered to be negligible[27] (ATSDR 2007a, US EPA 2006, RIVM 2007, UK EA 2009) and was therefore not considered in this report. Of the remaining exposure pathways, the first three have been included quantitatively in exposure estimates, i.e. ingestion of soil, ingestion of indoor dust and inhalation of indoor and/or outdoor airborne dust.

With respect to ingestion of tank water containing metal deposited as dust on roofs, this is unlikely to be a major exposure pathway, since reticulated water is supplied and the local government authorities in Broken Hill have undertaken an education campaign alerting residents to the risks of consuming tank water and advising it not be drunk or used for food preparation (LeadSmart 2020). Therefore, this exposure pathway has not been included in exposure estimates.

[26] Non mine sources of Pb or other metal exposure, such as Pb paint in soil or indoors from renovating houses, or from hobbies involving Pb, are not included in the assessment. It is however recognised that these may contribute to existing soil Pb concentrations and biomonitoring data for Pb.

[27] For example, for soluble inorganic Pb (e.g. Pb acetate) dermal absorption was 0.06% when tested *in vitro* with human skin (ATSDR 2007a). Approximately 0.93% of a soluble inorganic As acid was absorbed when applied to human cadaver skin; absorption was lower (0.43%) when the As acid was mixed with soil (ATSDR 2007b). Skin absorption of less soluble inorganic metals (such as those found in ore or rock) will be much lower than soluble forms.

As Pb is not readily translocated to edible plant parts from soil and home grown produce ingestion is only a small percentage of total vegetable intake (see Appendix E), ingestion of home-grown vegetables and fruits is not considered a major exposure pathway for Pb. In addition, the Leadsmart (2020) education campaign also provides advice when growing backyard vegetables, garden beds should be raised and contain clean soil, and vegetables should be well washed before being eaten. Ingestion of Pb by Broken Hill residents from vegetables is expected/assumed to be similar to that of people residing in unimpacted communities[28] around Australia. Therefore, for Pb, as per NEPM (2013), this pathway is accounted for in the BPb modelling by including dietary background intakes of Pb. For other metals, this exposure pathway has been considered by adjusting the relevant toxicity reference value (TRV) for background intakes and potential contribution from home grown produce (see Section 4.3.1).

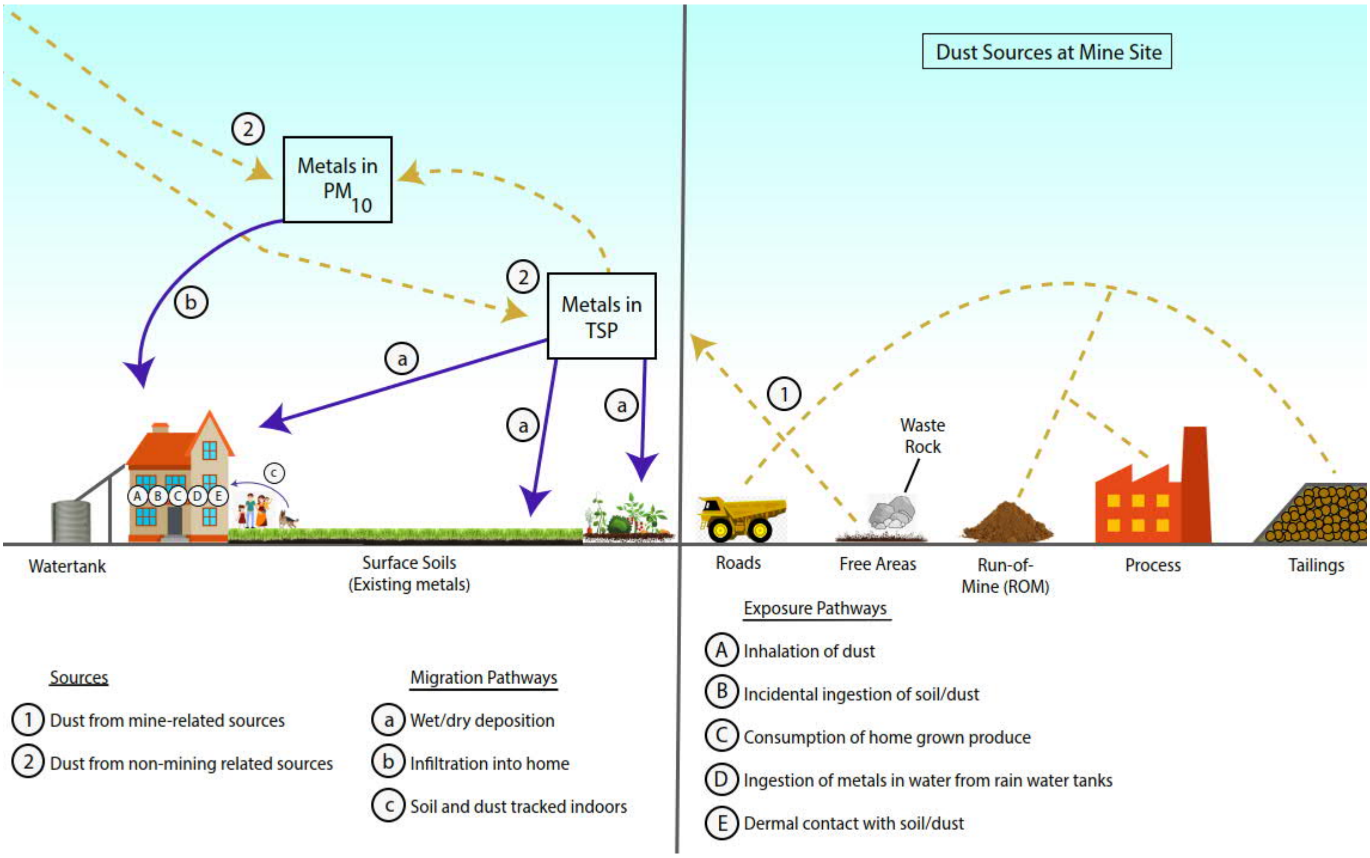


Figure 2-3 Illustrative representation of potential dust sources, migration pathways, and residential exposure pathways to metals in dust/soil.

[28] An unimpacted (non-impacted) community is considered in this risk assessment to be one whose environment is not, and has not been affected by an industrial or geological source of metals.

3 Lead risk assessment

3.1 Overview

Figure 3-1 is a summary of the risk assessment approach for Pb. As indicated in Section 2.3.1, the health risks of the construction phase of the Proposal have been evaluated in two ways:

1. Comparison of incremental air Pb and Pb dust deposition from the MOD6 construction year with the approved incremental air Pb and Pb dust deposition from the MOD4 construction year.
2. Determining the relativity of the predicted incremental increase in surface soil Pb due to the MOD6 construction year to existing soil Pb concentrations.

For each of the operational exposure scenarios described in Section 2.3.2 blood lead (BPb) concentrations for 1-2 year old children have been modelled using the US EPA (2010) *Integrated Exposure Update Biokinetic* (IEUBK) software (Section 3.5). Important aspects of the modelling are:

- Calculating accumulation of Pb in surface soil at residential and other locations around Broken Hill from the 5 year remaining mine life (this calculation incorporates metal loss from soil via surface water runoff, but all other loss processes are conservatively assumed to be zero, see Section 2.6.2).
- Incorporating into the modelling existing surface soil Pb concentrations by adding these to calculated incremental soil Pb.
- Determination of bioaccessibility and bioavailability of Pb in mine derived dust[29] and Pb already existing in surface soils at Broken Hill (Section 2.5). Since the differences between average soil/dust Pb bioaccessibilities from the three areas was only 'borderline' significant (41.8% for urban areas, 36.7% fir 'free areas' on mine site, and 31.9% for mine waste rock), the highest average bioaccessibility of the three groups of samples (i.e. 41.8%) was used in the HHRA for all receptor locations (Section 2.5).
- Incorporating inhalation exposure (indoors and outdoors) to Pb in inhalable airborne dust.
- Background Pb intake from diet.
- Background BPb concentrations in children.

Potential health risks to children exposed to mine dust containing Pb (in combination with existing background Pb exposures and sources other than the Proposal) has been assessed by modelling BPb concentrations and comparing the results with:

- the NHMRC (2015) BPb target level of 5 µg/dL; noting that this does not represent a bright-line 'safe' level of exposure but rather a BPb level above which the individual's Pb exposures should be investigated and reduced (Section 3.2).
- the most recent BPb biomonitoring available for Broken Hill children (Section 3.4).

Background BPb concentrations are detailed in Section 3.3, modelling of BPb concentrations in Section 3.5, and the risk characterisation in Sections 3.6 – 3.7.

The HHRA methodology for Pb is outlined in Figure 3-1.

[29] As outlined in Section 2.5, soil/dust samples from 'free areas' around the mine site, as well as from mining waste rock were subjected to bioaccessibility testing.

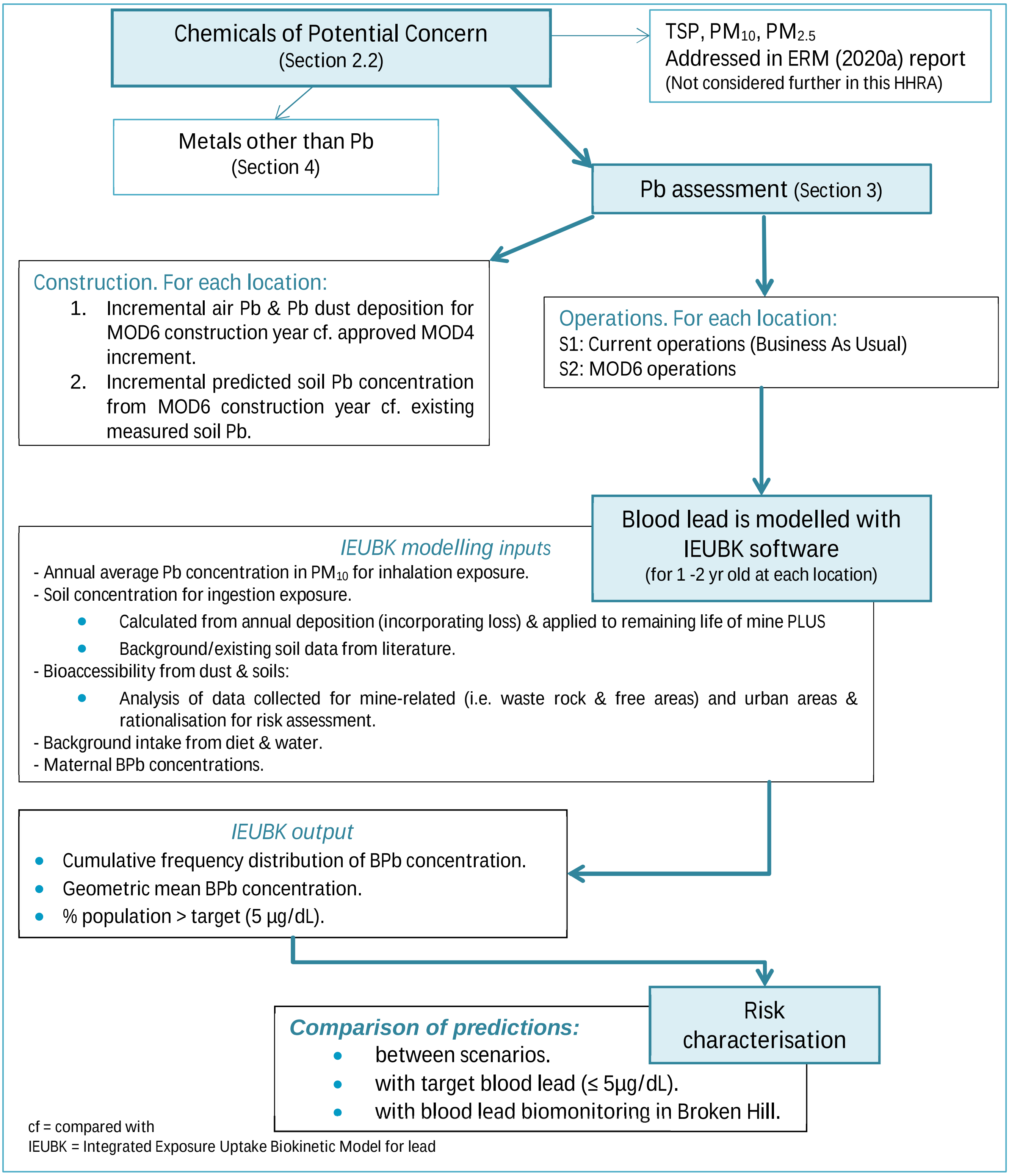


Figure 3-1 Summary of lead (Pb) HHRA methodology

3.2 Hazard assessment for Pb

Only those aspects of the toxicity of Pb that are relevant to this HHRA are presented in this section.

The World Health Organisation Joint Expert Committee on Food Additives (JECFA) originally set a provisional tolerable weekly intake (PTWI) for Pb at 25 µg/kg of body weight in 1986 (JECFA 1986). This was reconfirmed in 1999 (JECFA 1999) but later withdrawn in June 2010 (FAO/WHO 2010).

The JECFA (1986) PTWI was based on metabolic studies in infants showing mean daily intakes of 3-4 µg/kg were not associated with an increase in the body burden of Pb (3.5 µg/kg/d x 7 days = PTWI of 25 µg/kg/week). Since that time, a large number of studies investigating the impact of Pb on intellectual development in children have become available. Collectively these show measurable decrements on intellectual function at much lower BPb concentrations than previously considered. In 2010, the FAO/WHO Committee estimated that intake of Pb by children at the JECFA established PTWI is associated with a decrease of at least 3 IQ points. They considered this change important when viewed as a shift in the distribution of IQ within a population (not necessarily important for an individual). The Committee concluded the PTWI could no longer be considered public health protective, and it was therefore withdrawn. They also concluded, based on the absence of a population threshold for health effects, that it was not possible to establish a new PTWI that would be public health protective. A number of other health authorities around the World have also not derived threshold toxicity reference values for Pb (e.g. UK COT 2013, ATSDR 2007a, US EPA 2004).

The dose - response of Pb is described in terms of the effects that occur at given BPb concentrations. Indeed, throughout the world the health effects of Pb, both for the public and workers in Pb related industries, are managed by maintaining BPb concentrations below nominated target levels. In Australia the NHMRC (2009) originally recommended all Australians should have a BPb concentration below 10 µg/dL. After considering additional studies and reviews up to 2015, NHMRC (2015) concluded a BPb level greater than 5 µg/dL suggests a person has been, or continues to be, exposed to Pb at a level that is above what is considered the average 'background' exposure in Australia, and that if a person has a BPb greater than 5 µg/dL, their exposure to Pb should be investigated and reduced. The NHMRC noted that research on the effects of low-level exposure to Pb indicates there is not enough high-quality evidence to conclude that a BPb level <10 µg/dL was the causing factor for any health effects observed. Thus it was not possible to make a definitive statement on what constitutes a 'safe level' or what should be considered as a 'level of concern' for BPb concentrations in children. This arises because the tools of psychologists and psychiatrists used to investigate subtle impacts on intellectual performance and development are not precise, and the outcomes are influenced by such things as genetics, socio-economic status and early life experience/environment. NHMRC (2015) also concluded that BPb levels between 5 and 10 µg/dL are associated with increased blood pressure in adults.

Given the established dose-response for Pb (based on blood concentrations), and the management goal of the NHMRC for public health in relation to Pb (≤ 5 µg/dL), prediction of BPb concentrations associated with a given level of environmental Pb exposure is an important method in being able to interpret potential community impacts in Broken Hill. Furthermore, it is important that such predictions are made for the most susceptible sub-population, i.e. children. It is also noted that dietary Fe affects the absorption of Pb (ATSDR 2007a, IARC 2006). Children who are Fe deficient have higher PbB than similarly exposed children who are Fe replete, which suggests that Fe deficiency may result in higher absorption of Pb (ATSDR 2020).

3.3 Background blood lead concentrations

Background BPb concentrations (i.e. those measured in non-impacted communities[30]) in Australia and overseas have decreased with time (Figure 3-2 and Appendix F). This is primarily due to phasing out of leaded petrol in the mid-1990s overseas, and in Australia during the late 1990s to early 2000 (DEWHA 2001). Consequently, it is important to ensure information for background BPb (i.e. dietary exposure) that post-dates the phasing out of leaded petrol is used for BPb modelling.

Geometric mean (GM) BPb concentrations for children (<6 years) in non-impacted communities in Australia measured in 2000 or later[31] were 0.97 µg/dL in Barwon, Victoria (Symeonides et al. 2020), 1.8 µg/dL in Fremantle (Guttinger et al. 2008), 2.3 µg/dL in Port Esperance (Gulson et al. 2009) and 2.6 µg/dL in Sydney (Gulson et al. 2006), with an average GM of 1.9 µg/dL from these four studies. Background BPb levels are primarily the result of dietary intakes. In this risk assessment the children in Broken Hill are assumed to have a similar contribution to BPb from their diets. These concentrations (i.e. 0.97 – 2.6 µg/dL) are comparable with the overseas range for non-impacted children (<14 years) for the same time period (0.76 - 3.1 µg/dL, with rounded average GM of 1.5 µg/dL from 11 studies) (Appendix F).

Inspection of Figure 3-2 shows the decline in background levels of BPb in Australian children originally lagged behind those of overseas children, but both appear to have asymptomatically declined to below 2 µg/dL. This is also observed for the percentage of children with BPb levels above the previous NHMRC BPb recommendation of 10 µg/dL (NHMRC 2009). This ranges from 0 to 5% in non-impacted communities (average of 1.7%, including data from 2000 or later) in Australia, which is also consistent with overseas communities (0 - 4.1%, average of 1.0%) (Figure 3-3). The latest data obtained in Australia in 2005 (Guttinger et al. 2008) and 2013 (Symenoides et al. 2020) indicates this is 0%.

Note, as indicated in Section 3.2, in 2015, the NHMRC revised the target investigation BPb level to 5µg/dL. Because the target level was revised, previous BPb investigations have not reported the percentage of children with BPb >5 µg/dL.

Conclusion:

From the above information ‘background’ BPb concentrations for children in Australia used for determining the accuracy of IEUBK modelling assumptions for ‘background’ intakes from diet are (Section 3.5.3.7):

- BPb GMs = 0.97 - 2.6 µg/dL; average GM of 1.9 µg/dL.
- Percentage of children with BPb >10 µg/dL = 0 - 5%; latest data indicates 0%.
- Percentage of children with BPb > 5 µg/dL = no data available.

[30] An impacted community is defined as one residing near a known anthropogenic point source of atmospheric Pb. BPb concentrations in a non-impacted community represent background, or reference, concentrations.

[31] To correspond with the phasing out of leaded petrol in Australia (DEWHA 2001).

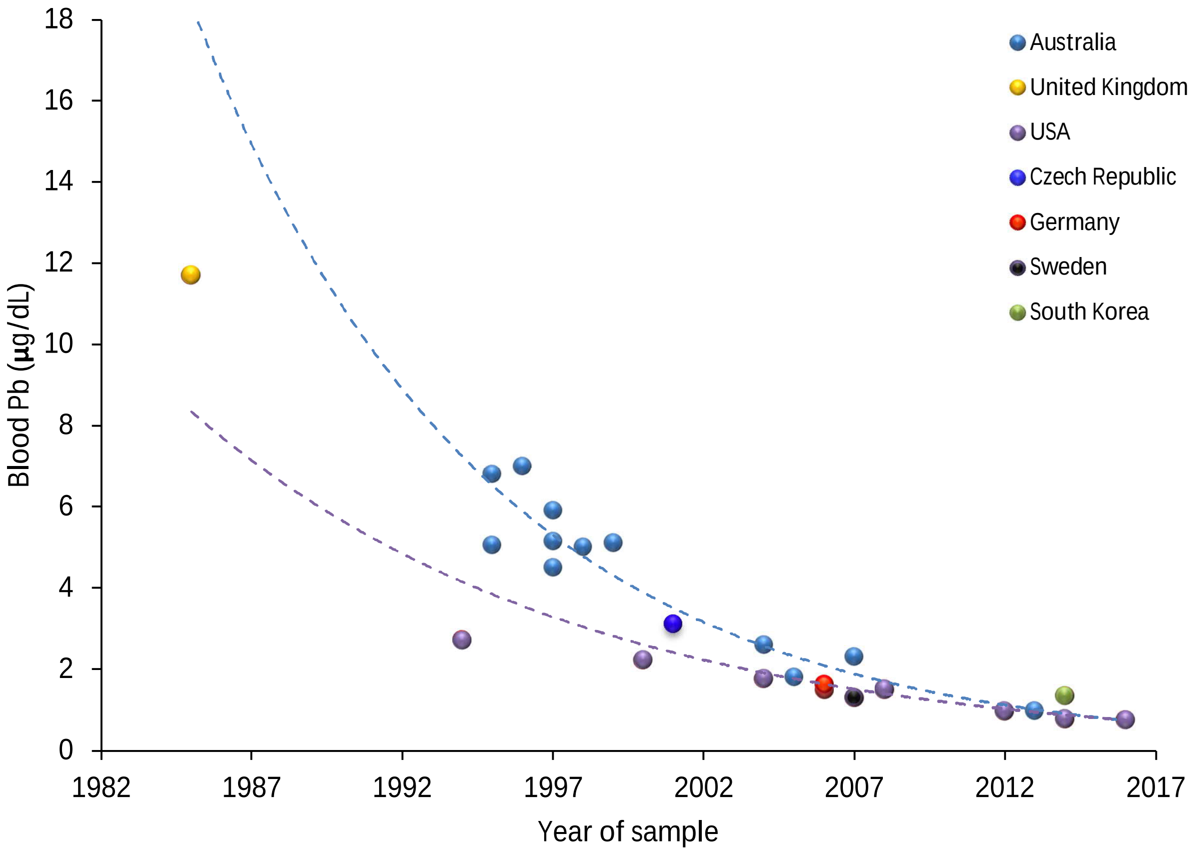


Figure 3-2 Blood lead concentrations (geometric means) in Australian (<6 yrs) and overseas (<14 yrs) children between 1984 – 2016. Dashed lines show trends (blue = Australia; purple = overseas). Graph drawn from information in Appendix F.

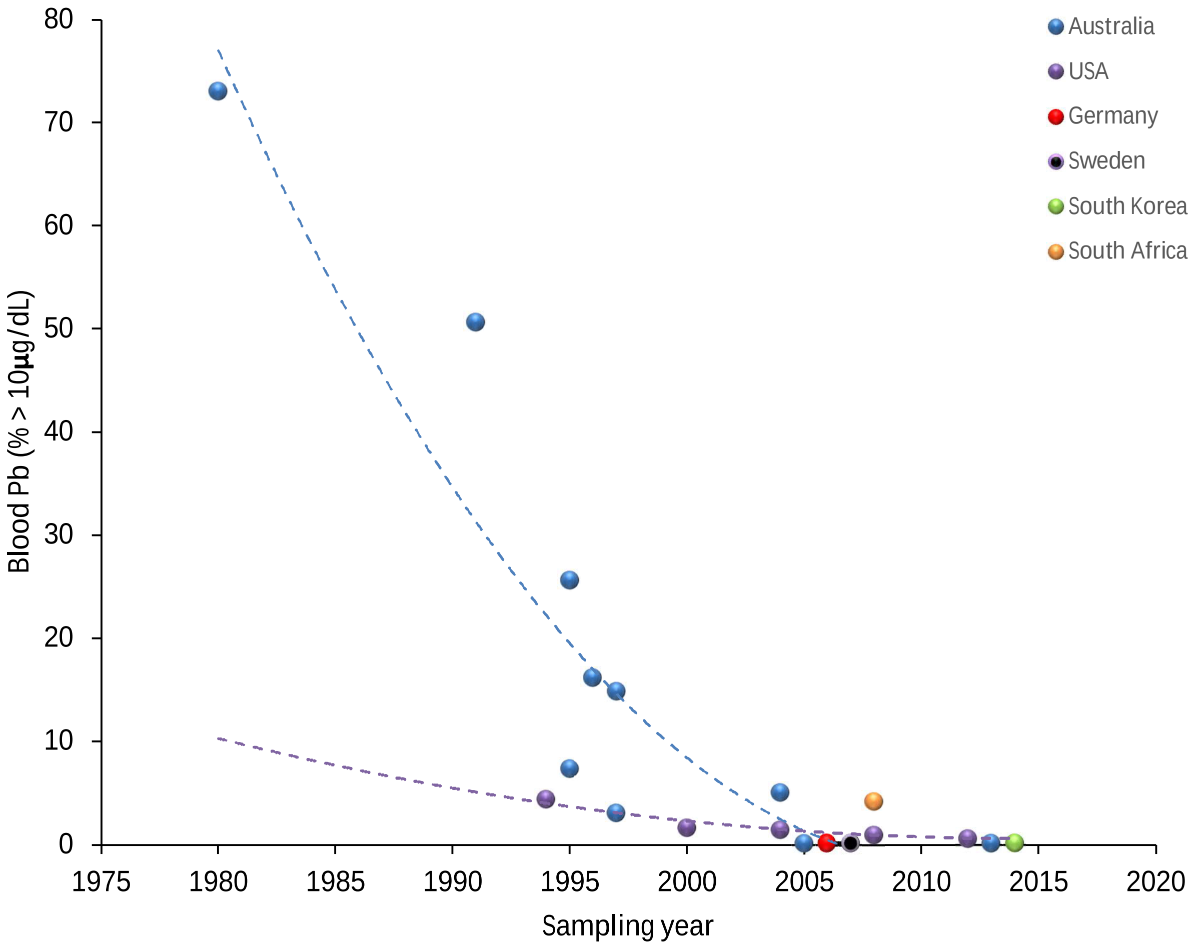


Figure 3-3 Percentage of children with blood lead concentrations > 10µg/dL in Australian (<6 yrs) and overseas (<14 yrs) children between 1980 – 2014. Dashed lines show trends (blue = Australia; purple = overseas). Graph drawn from information in Appendix F.

3.4 Existing blood lead concentrations at Broken Hill

Women

The NSW Department of Health have published information on BPb levels for people in Broken Hill, including geometric mean BPb concentrations in umbilical cord blood (at birth) and in children aged 1-5 years old, for each year from 1996-2018. Since the commencement of the Pb screening program in 1996, there appears to have been a steady decline in umbilical cord BPb levels, from 2.9 µg/dL in 1996 down to 1.2 µg/dL in 2008. Since 2008, cord BPb levels appear to have remained relatively stable (Figure 3-4). NSW Health (2019) indicate that due to improvements made in 2016 in relation to recording results, the data collected since 2016 cannot be directly compared with previous years. Since 2016, the geometric mean umbilical cord BPb has been 0.7 or 0.8 µg/dL.

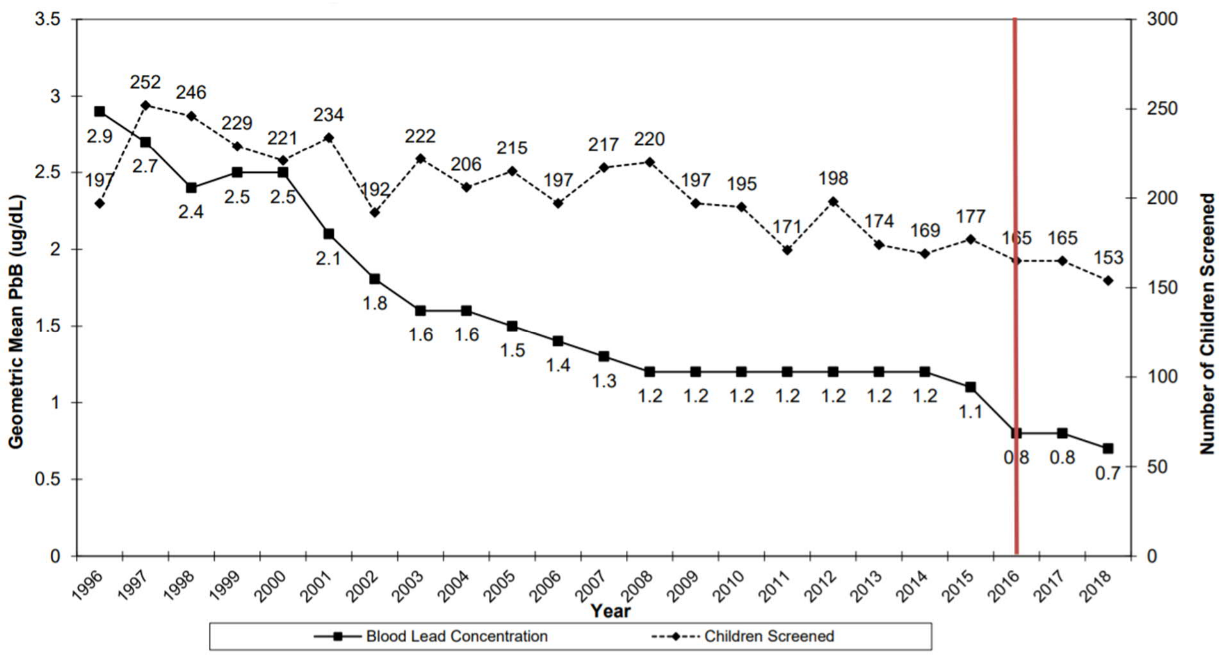


Figure 3-4 Geometric mean BPb concentrations (µg/dL) of cord blood in Broken Hill measured from 1996-2018 (NSW Health 2019). The vertical red line is indicative of the improvements made in the recording of results since 26th of April 2016. According to NSW Health (2019), the geometric means collected since 2016 should not be compared to the previous years.

Children

Over the duration of the voluntary BPb screening program in Broken Hill (initiated in 1991), there has been a trend of decreasing average BPb levels in children aged <5 years, from a high of 16.7 µg/dL in 1991 to a low of 4.5 µg/dL in 2011 (Figure 3-5). The estimated participation rate for Pb screening in all children at Broken Hill (aged 1 to <5 years) was 82% in 2018.

Although the mean result for Aboriginal and all children both decreased from 2017 to 2018 (Aboriginal children: 8.7 µg/dL to 7.9 µg/dL, all children: 4.6 µg/dL to 4.0 µg/dL), since 2013, they have both been at a pseudo-plateau (Aboriginal children: ~7.5 - 9.3 µg/dL; all children ~4.7 – 5.9 µg/dL). According to NSW Health (2019), small fluctuations in the geometric mean in later years in part reflect the number of children tested.

In 2018, the percentage of all children tested in Broken Hill with BPb:

- ≥ 10 µg/dL was 17%.
- ≥ 5 µg/dL was 49%.

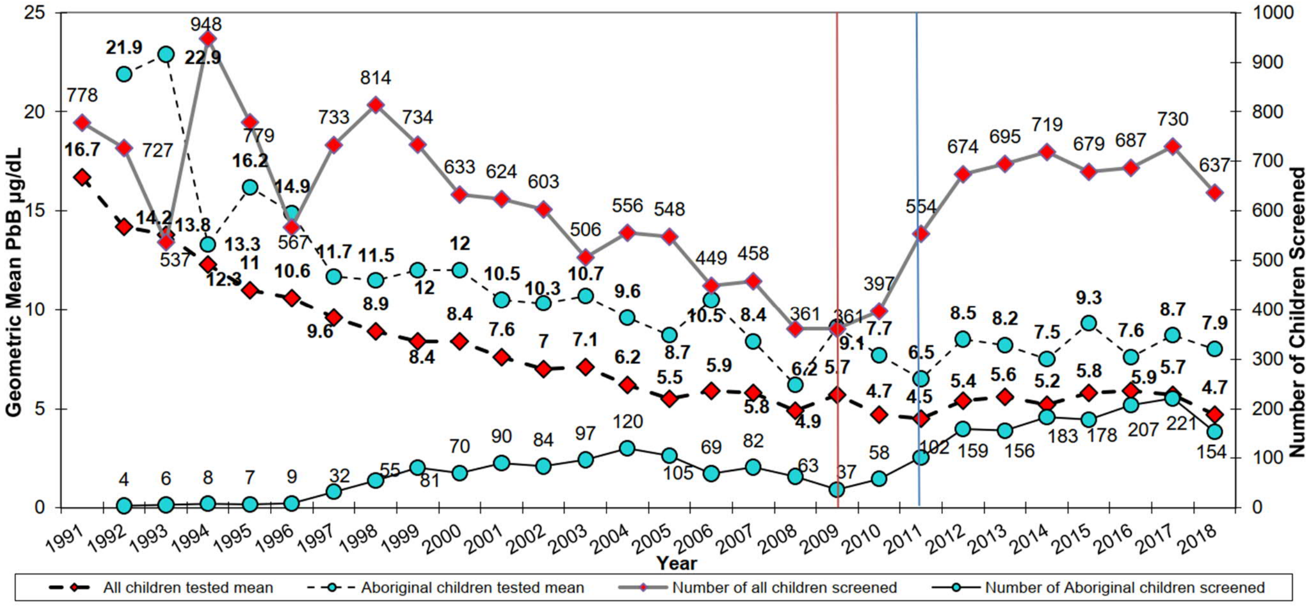


Figure 3-5 Population age-sex standardised geometric mean BPb concentrations (µg/dL) of children aged 1 to <5 years in Broken Hill measured from 1991-2018; NSW Health 2019). The red vertical line indicates the point in which both venous and capillary samples are reported together and the blue the inclusion of screening with childhood immunisation.

3.5 Modelling blood lead concentrations

3.5.1 Overview

A number of physiologically based pharmacokinetic (PBPK) models have been developed that are able to predict BPb concentrations in children, e.g. O'Flaherty 1993, 1995 and Leggett 1993, IEUBK, AALM[32]. However only the IEUBK model developed by the US EPA is publicly available in a form amenable for use. Consequently this is the predictive model used in this HHRA; apart from being readily available and validated, the IEUBK model has the advantage of being maintained and updated, having an extensive user manual, being used in regulatory decision making in the US and in health risk assessments undertaken by the Centre for Disease Control (CDC). The model has also been used in Australia for previous risk assessments for Broken Hill (Toxikos 2010, ToxConsult 2017b) and to inform deliberations in establishing a health investigation level (HIL) for Pb in soil (NEPM 2013).

Briefly, the model was applied to estimate BPb levels for the most vulnerable and sensitive life stage (1-2 year old children) residing at selected locations in Broken Hill.

Previous risk assessments for Broken Hill and conventional risk assessment wisdom (enHealth 2012a, b; Toxikos 2010, ToxConsult 2017b) have shown that the 1-2 year old age group has the highest potential BPb increase if

[32] Although the All Ages Lead Model (AALM) is an outgrowth of the IEUBK model, at the time of writing this report the latest available version of the AALM was still an external review draft (US EPA 2020). As the model is not yet available as a finalised version, it was not used in this HHRA.

exposure to all age groups occurs to the same Pb concentrations in environmental media. Hence in the remainder of this report the BPb modelling results are for the 1-2 year old age group[33].

It is noted that the IEUBK model predicts BPb concentrations for a *population* of children. In this risk assessment the model was used for predicting BPb concentrations for a hypothetical population of children exposed to the conditions at individual locations. Caution needs to be exercised when interpreting model results for individuals rather than a population as a whole. The individual location modelling is best interpreted as envisaging a large population of 1-2 year old children living at the modelled receptor location. The predicted BPb concentration is the geometric mean, or central estimate, of that hypothetical population. The modelling also provides an estimate of the proportion or probability (as a percentage) of the hypothetical population having BPb concentrations above a specific target level (in this case 5 µg/dL). Thus the model outputs relate to an individual only in a statistical sense.

A brief description of the IEUBK PBPK model for Pb is given in Section 3.5.2.

Of interest for this risk assessment is the change in population BPb concentration profile that may arise as a result of the MOD6 Proposal. Thus the predicted cumulative BPb from Scenario 2 (MOD6) was compared with the modelled existing cumulative situation for current operations (Scenario 1) as well as the modelled cumulative situation from the original approval obtained in 2011 (Scenario 3). All scenarios include existing soil and other sources.

Pb in blood due to the diet and/or in consumed water has been addressed by including 'background' dietary intakes in the IEUBK modelling for all scenarios. The model does not allow input of a BPb level which corresponds to measured 'background' (i.e. dietary) concentrations in children such as those described in Section 3.3. Instead 'background' BPb needs to be estimated by the model software from Pb dietary intakes which are provided to the model. The assumed Pb intakes for a 1-2 year old child have been based on literature information for Pb in diet and water of the general Australian population (the 'background' intake of Pb from air is negligible) (see Section 3.5.3.7). The modelled 'background' BPb estimates from assumed 'background' Pb intakes via diet and water are compared in Section 3.5.3.7 to measured 'background' BPb concentrations from overseas and Australian data to determine how well the assumed intakes predict 'background' BPb. Comparison of IEUBK modelled 'background' dietary Pb intake with measured background levels in children (Section 3.3) shows the IEUBK modelling agrees well with the published data (Section 3.5.3.7).

There are a number of important considerations in the modelling of BPb concentrations and for interpreting the results. They are discussed in the following sections.

- Measured BPb levels arising from Pb in the diet and consumed water (Section 3.3). These are dubbed 'background' BPb concentrations and are expected to occur in the absence of any anthropogenic mining activity that has, or may, result in Pb in the soil or air at Broken Hill. These are the concentrations expected in the majority of Australian children that arise from background intakes of Pb from diet and water. Background 'dietary' Pb intakes are included for 1-2 year old children in the IEUBK modelling for all Scenarios.
- Existing soil Pb concentrations (Section 2.6.1). These were sourced from the recent scientific literature and added to modelled estimates for soil Pb in each Scenario. The soil concentrations at each receptor evaluated in this HHRA and used as inputs into the IEUBK modelling are summarised in Appendix G.
- The bioaccessibility of Pb in soil and deposited mine-related and non-mine related dust (Section 2.5).

[33] The 1-2 year old modelling also takes into account Pb exposure prior to one year of age.

- The amount of soil/dust that may be ingested by a child (Section 3.5.3.1).
- The extent of absorption of Pb in soil/dust into the blood (Section 3.5.3.2).
- The contribution of Pb from a mother to her children (Section 3.5.3.3).
- The extent to which Pb in outside soil is part of indoor dust (Section 3.5.3.4).
- The time a child spends outdoors/indoors (Section 3.5.3.5).
- The inhalation (i.e. ventilation rate) of air by children (Section 3.5.3.6).
- Air Pb concentrations, modelled by ERM (2020a, b) as an annual average in PM_{10}, at each location evaluated in this HHRA are summarised in Appendix H.

3.5.2 IEUBK model description

A brief description of the IEUBK model for Pb is provided in this section. The latest Windows version of the model is the IEUBKwin v 1.1 build 11, 32-bit version, which became available in February 2010 and was used in this HHRA. The reader is referred to the detailed guidance documents of previous and current versions of the model for a detailed description of inputs and underlying equations (US EPA 1994a, b; 2002, 2007a, 2009a).

The model is designed to mimic exposure to Pb in air, water, soil, dust, diet, and paint, as well as other sources to predict BPb levels in children from 6 months to 7 years old. It consists of four major components:

1. an exposure module that relates environmental Pb concentrations to age-dependent intake via inhalation and ingestion,
2. an absorption (or uptake) module that relates Pb intake to Pb uptake,
3. a biokinetic module that relates the uptake to tissue concentrations, including blood, and
4. a module for uncertainty in exposure and for population variability in absorption and biokinetics.

The IEUBK model uses the above interrelated modules to estimate BPb levels in *populations* of children exposed to Pb-contaminated media and constructs a plausible distribution of BPb concentrations centered on a geometric mean. If one of the media components in the exposure module is not relevant for a particular risk assessment it can be 'switched off'. BPb from background intake via diet and water was included for all Scenarios by sourcing background Pb intakes for 1-2 year old children from the literature and comparing the modelled estimates with measured background BPb in Australia and overseas (Section 3.5.3.7).

The model contains more than 100 input parameters that are initially set to default values (US EPA 2007a). Almost half of these may be changed by the user. These parameters were reviewed and changed in this HHRA if site-specific or Australian-specific information existed (Section 3.5.3). The biological structure of the IEUBK model is shown pictorially in Figure 3-6.

Of relevance to this risk assessment the IEUBK model provides the following outputs:

- Geometric mean BPb levels, by age (text file) for the population.
- A distribution curve of BPb concentrations for a population with the specified exposure inputs.
- The percentage of children of a particular age group with predicted BPb concentrations in excess of a user-specified level (set at 5 µg/dL for this risk assessment).

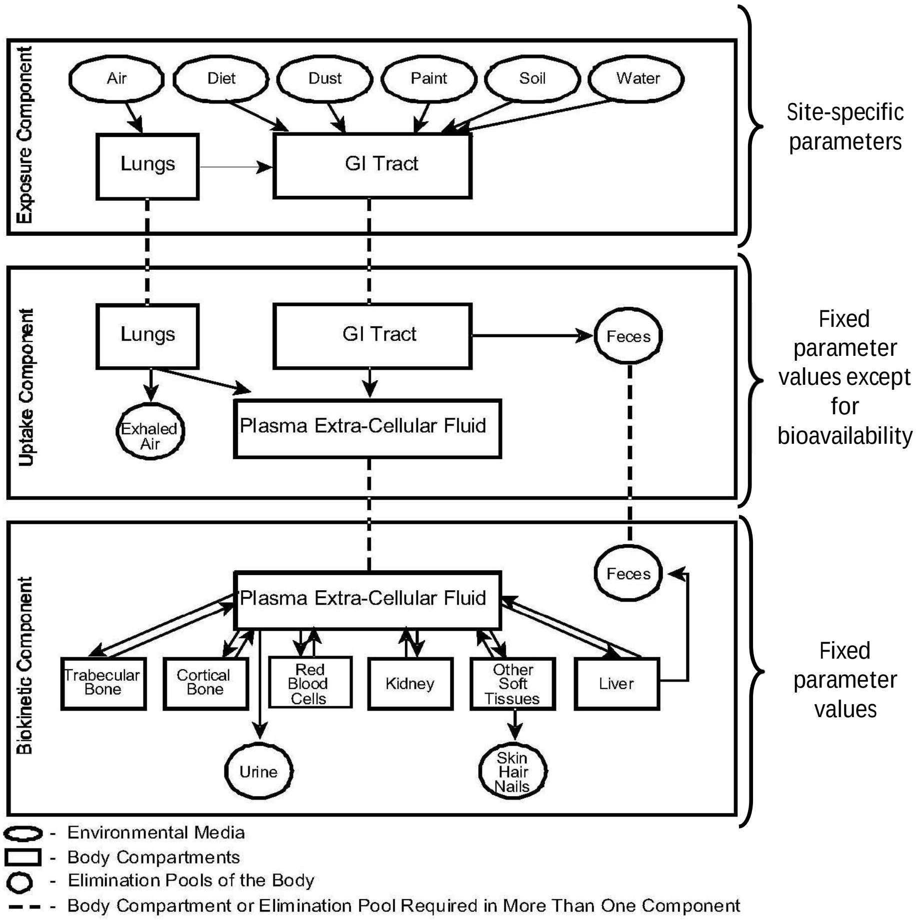


Figure 3-6 Biological structure of IEUBK model (US EPA 2007a, pg. 4)

3.5.3 IEUBK input parameters

This section briefly describes the IEUBK input parameters that were modified by SLR to undertake the BPb modelling.

It should be noted that the majority of the input parameters are common to the BPb modelling for the different scenarios described in Section 2.3.2. There are varying degrees of uncertainty associated with each parameter value used in the modelling. However, since modelling for each scenario utilises the same parameter values (except for Pb exposure) comparison of BPb modelling results between scenarios minimises parameter value uncertainties. It is therefore important not to over interpret the absolute BPb concentrations provided by the modelling. Rather it is the differences between scenarios that are important for making conclusions regarding the potential health impacts that may be associated with the Proposal.

3.5.3.1 Soil and dust ingestion

The IEUBK default values for combined ingestion of soil and dust are 0.085, 0.135, 0.1, 0.09, and 0.085 g/day for 0-1, 1-4, 4-5, 5-6 and 6-7 year olds, respectively. The values correspond to those reported by Binder et al. (1986) and Clausing et al. (1987).

These values have been changed to correspond to those recommended for use in risk assessments by enHealth (2012b) and by the US EPA child exposure factors handbook (US EPA 2008, Table 5-1). These are 0.06 g/day for 0-1 year olds and 0.1 g/day (i.e. 100 mg/day) for 1-7 year old children.

3.5.3.2 Total gastrointestinal absorption of Pb from dust and soil

The IEUBK default value for total gut absorption of Pb from soil and dust is 0.3 (i.e. 30%). This value is based on an assumed bioaccessibility of Pb in soil of 60% and a bioavailability (i.e. absorption) of soluble Pb in water and food of 50% (i.e. 60% x 50% = 30%) (US EPA 1999b, 1994a, 2007b).

As discussed in Section 2.5, this default parameter has been modified in this HHRA to correspond to the average experimental bioaccessibility (42%) measured for Pb in dust/soil samples collected by BHOP in 2019 in Broken Hill multiplied by the absorption of soluble Pb in water and food (i.e. 42% x 50% = 21%). As described in Section 2.5 and Appendix A, this assumption is conservative and more likely to over- rather than underestimate modelled BPb.

3.5.3.3 Maternal blood Pb

The default value for maternal BPb concentration in the IEUBK model is 1 µg/dL (US EPA 1994b).

This value was changed to 0.8 µg/dL to coincide with the geometric mean umbilical cord BPb concentration measured by recent biomonitoring at Broken Hill (see Section 3.4).

3.5.3.4 Ratio of indoor dust lead to soil lead concentration

The IEUBK default value for the ratio of indoor dust Pb to soil Pb concentration is 0.7 g Pb soil/g Pb dust. An analysis undertaken by Toxikos (2010) of available paired indoor dust and soil data for Broken Hill indicated a ratio of 1.5 (for indoor dust to soil Pb) is more appropriate for Broken Hill. This was based on data from Gulson et al. (1995b). Data from an investigation recently undertaken by Noller et al. (2017) in a different mining town (Mount Isa, Queensland) suggest ratios of 2-4.4 (for the approximate median Pb concentration in carpet dust to soil PM_{10} Pb or garden soil Pb) may be appropriate for Mount Isa. However, it is noted Mount Isa currently houses a copper smelter whereas the smelter in Broken Hill has been closed for over a century. Presence of a smelter may increase the amount of fine dust that can infiltrate or be tracked into the home. Therefore, a ratio of 1.5 (indoor dust to soil Pb) was adopted in the IEUBK analysis instead of the default factor of 0.7, consistent with the most recent information available for Broken Hill (Toxikos 2010, ToxConsult 2017b). [34]

[34] To do this in the model, the outdoor soil Pb concentration was set to the constant value for each relevant receptor, and the indoor dust Pb concentration was set to a constant value corresponding to 1.5 x outdoor soil Pb concentration.

3.5.3.5 Time spent outdoors

The IEUBK default values for time spent outdoors are 1, 2, 3, and 4 hours/day for 0-1, 1-2, 2-3, and 3-7 year old children, respectively. The values were derived from a literature review of the US population (Pope 1985, cited in US EPA 1994b).

In Australia, the average time spent outdoors by 0-1, 1-2, and 2-7 year old children is 0.5, 1.4, and 2 hours per day, respectively (enHealth 2012b), therefore these values were used in the IEUBK modelling.

3.5.3.6 Ventilation rate

The IEUBK default values for pulmonary ventilation rate (i.e. inhalation rate) for 0-1, 1-2, 2-5 and 5-7 year olds are 2, 3, 5, and 7 m^3/day, respectively. The estimates are based on body size in combination with data from Phalen et al. (1985).

The values were changed to correspond to those recommended for use in risk assessments by enHealth (2012b) and US EPA (2008). These are 5.4, 8, 9.5, 10.9, and 12.4 m^3/d for 0-1, 1-2, 2-3, 3-6, and 6-7 year old children, respectively.

3.5.3.7 Background intakes of Pb

Section 3.3 examines published background BPb concentrations in non-impacted communities in Australia and overseas and concluded a population geometric mean of 1.9 µg Pb/dL was a reasonable estimate for background (i.e. dietary derived) BPb for children. An estimate of 'background' intakes of Pb from diet and water by 1-2 year old children was included in the IEUBK modelling for all scenarios evaluated in this HHRA.

The IEUBK model does not allow a user to simply input a BPb level which corresponds to 'background' (i.e. dietary) intake. Instead 'background' BPb needs to be estimated within the model from provided Pb dietary intakes. The assumed Pb intakes have been based on literature information for Pb for the general Australian population, as outlined below.

Intake from food

FSANZ (2003) reported a range of mean dietary intake of Pb of 0.03 - 0.93 µg/kg bw/day for 2 year olds. For this HHRA background intake of Pb from the diet was assumed to be at or about the top end of the range (i.e. 0.9 µg/kg bw/day). Using the recommended median body weight of 11 kg for a 1-2 year old child (enHealth 2012b), the daily intake per child is 9.9 µg Pb/day from the diet. This intake was used in the IEUBK modelling for background BPb.

Intake from water

The NHMRC and NRMMC (2018) state that total Pb concentrations in Australian reticulated water supplies may be up to 10 µg/L, with typical concentrations of less than 5 µg/L. Essential Water, the supplier of the reticulated water in Broken Hill, analyses and monitors the quality of the water they supply during various stages of the storage and distribution system. All 12 samples collected from the Broken Hill water treatment plant during 2019 and tested for Pb returned a result less than the limit of reporting (i.e. <2 µg/L) (Essential Water 2019). The concentration was conservatively assumed to be at the limit of reporting of 2 µg/L for this HHRA. This Pb concentration, along with a mean daily water intake of 0.3 L/day for a 1 – 2 yr old (enHealth 2012b)[35], were used as input parameters for the calculation of background Pb intake from water.

Intake from air

Monitoring of Pb in air is no longer conducted routinely in non-impacted major Australian cities or in most other jurisdictions, as its removal from petrol has made airborne levels extremely low (Tas EPA 2020, SA EPA 2003). Thus, the contribution of Pb intake from air to 'background' BPb (i.e. other than from existing sources and the Proposal) is expected to be negligible. Thus for the IEUBK modelling of each of the scenarios evaluated, no additional Pb in air (due to 'background') was added to the modelled and measured estimates of Pb in PM_{10}.

Modelled intake from diet and water

Table 3-1 shows the predicted BPb modelling results from the above high-end background exposure dietary intake assumptions for a 1-2 year old child.

The modelled geometric mean 'dietary' background BPb for 1-2 year old children is approximately 1.8 µg/dL, which is remarkably close to the average measured geometric mean background BPb for Australian children from non-impacted communities (1.9 µg/dL) (Section 3.3).

Thus, the IEUBK modelling of 'background' BPb concentrations at the chosen parameter values agrees well with the published data summarised in Section 3.3. Therefore the 'background' dietary intake assumptions above (i.e. 9.9 µg Pb/day from the diet, 2 µg/L Pb in water) were used to account for 'background' BPb levels in modelling of all scenarios in this HHRA.

Table 3-1 Predicted background BPb results for 1-2 year old child

	Predicted blood lead (µg/dL)	% of population >5 µg/dL	% of population >10 µg/dL
Total Background	1.8 (1)	1.4	0 (2)

1. This predicted 'background' BPb is within the range of measured 'background' BPb for Australian (and overseas) children from non-impacted communities (range Australian children: 0.97 – 2.6 µg/dL; range overall: 0.76 – 3.1 µg/dL) and approximately equal to the average of the available geometric means (1.9 µg/dL) (Section 3.3).
2. This is within the range of 0 – 5% >10 µg/dL measured in Australian and overseas children from non-impacted communities, and lines up well with the most recent Australian studies also showing 0% of children with BPb > 10 µg/dL (Section 3.3).

[35] The water consumption represents mean ingestion of tap water and includes water used in food preparation. It excludes commercially produced bottled water and water intrinsic to food and beverages (e.g. milk) (enHealth 2012b, US EPA 2008).

3.5.3.8 Summary of BPb modelling parameters

Table 3-2 summarises the input parameter assumptions for the IEUBK modelling undertaken in this HHRA. Only the 1-2 year old age group results are presented in this report[36].

Table 3-2 Summary of IEUBK input parameters for this HHRA

Parameter	Units	Assumed value for this HHRA	Comment
AIR			
Outdoor air Pb concentration	µg/m^3	Modelled annual average air Pb in PM_{10}. Varies by location and Scenario.	see Appendix H for individual values
Time spent outdoors	hrs/day	0.5, 1.4, or 2 (for 0-1, 1-2, 2-7 yr old)	Section 3.5.3.5
Ventilation rate	m^3/day	5.4, 8, 9.5, 10.9, or 12.4 (for 0-1, 1-2, 2-3, 3-6, 6-7 yr old)	Section 3.5.3.6
DIET			
Dietary lead intake	µg/day	9.9 (for 1-2 year old, others set to zero)	Section 3.5.3.7
WATER			
Water consumption	L/day	0.3 (for 1-2 year old, others set to zero)	Section 3.5.3.7
Pb concentration in drinking water	µg/L	2	
SOIL/DUST			
Outdoor soil Pb concentration	µg/g	Calculated from modelled annual Pb deposition for 5-year remaining mine life (Section 2.6.2). This was added to existing soil Pb concentrations.	see Appendix G for individual values
Indoor dust Pb concentration	µg/g	Set to a 'constant value' in the model, calculated by applying a ratio of indoor dust to outdoor soil factor of 1.5 to the soil Pb concentration.	Section 3.5.3.4 See Appendix G for individual values
Total dust + soil ingestion	g/day	0.06 or 0.1 (0-1, 1-7 yr old)	Section 3.5.3.1
MATERNAL			
Mother's blood Pb concentration	µg/dL	0.8	Section 3.5.3.3
GI/BIO			
Absorbed fraction from soil	%	21 (average bioaccessibility from soil/dust samples x 50% absorption of soluble Pb)	Section 2.5

[36] The BPb modelling for various age groups showed the 1 -2 year old child as potentially having the highest BPb increase (Section 3.5.1). This is consistent with conventional risk assessment wisdom in which the behaviour of this age group confers high exposure to environmental chemicals (Toxikos 2010, ToxConsult 2017b, enHealth 2012a, b).

Parameter	Units	Assumed value for this HHRA	Comment
Absorbed fraction from dust	%	21 (average bioaccessibility from soil/dust samples x 50% absorption of soluble Pb)	Section 2.5
Absorbed fraction from diet/water	%	50	IEUBK default

3.6 Results and Conclusions

3.6.1 Construction

Construction for MOD6 is anticipated to occur for a maximum of 12 months. During this time period, small increases from normal operations to air concentrations of dust and Pb in dust, as well as dust deposition, are predicted to occur (ERM 2020a). ToxConsult (2017a), when considering the potential need for an HHRA with respect to a previous modification application (MOD4)[37], concluded small increases in air Pb over a short period and in soil Pb are unlikely to materially influence existing exposures to Pb. This is consistent with findings by Bowers and Liu (2019) that long-term chronic Pb exposures are more closely associated with IQ impacts than short-term BPb elevations.

Figure 3-7 compares the modelled incremental Pb in TSP concentrations for MOD4 (construction approved in 2017), the MOD6 construction phase, and 'background' concentrations of Pb in TSP[38] in Broken Hill. It is evident from the Figure that at the majority of receptor locations, modelled Pb in TSP concentrations resulting from construction of MOD6 are similar to or slightly higher than those predicted for the MOD4 construction phase. The comparison also shows that relative to background concentrations of Pb in TSP, the modelled increment from construction is very small.

[37] MOD4 involved installation of embankments and a retaining wall at low points along the Blackwood Pit Tailings Storage Facility (TSF2) and installation of a Concrete Batching Plant (CBP), and was approved by the Department of Planning in 2017.

[38] To provide a location-specific background Pb concentration in TSP, ERM (2020a) subtracted the Rasp Mine's predicted contribution during the 2016 modelled year from the measured annual average Pb concentration recorded at the HVAS1 TSP monitor for 2016 (i.e. 0.23 $\mu g/m^3$).

LEGEND

- Residences
- Schools/Childcare
- Ovals
- Playgrounds
- Other (Hospital, Health Centre, Aged Care Service)
- Defined by Boreland et al. (2002) Boundary
- 'Other' Boundary
- Mod4 (approved construction)
- Mod6 (proposed construction)
- Background

* D = District

0 0.5 1 km

Scale: 1:35,500 at A4

Projection:	GDA 1994 MGA Zone 54
Project No.:	(640.12028)
Date:	19-Nov-2020
Drawn by:	(PW)
Reviewed by:	(TH)

HEALTH RISK ASSESSMENT RASP MINE MOD6

Modelled Pb in TSP ($\mu g/m^3$) for Mod4 (approved) and Mod6 (Proposal) construction, and measured background Pb in TSP

FIGURE 3-7

Data Source:
Nearmap Imagery

SLR
www.slrconsulting.com

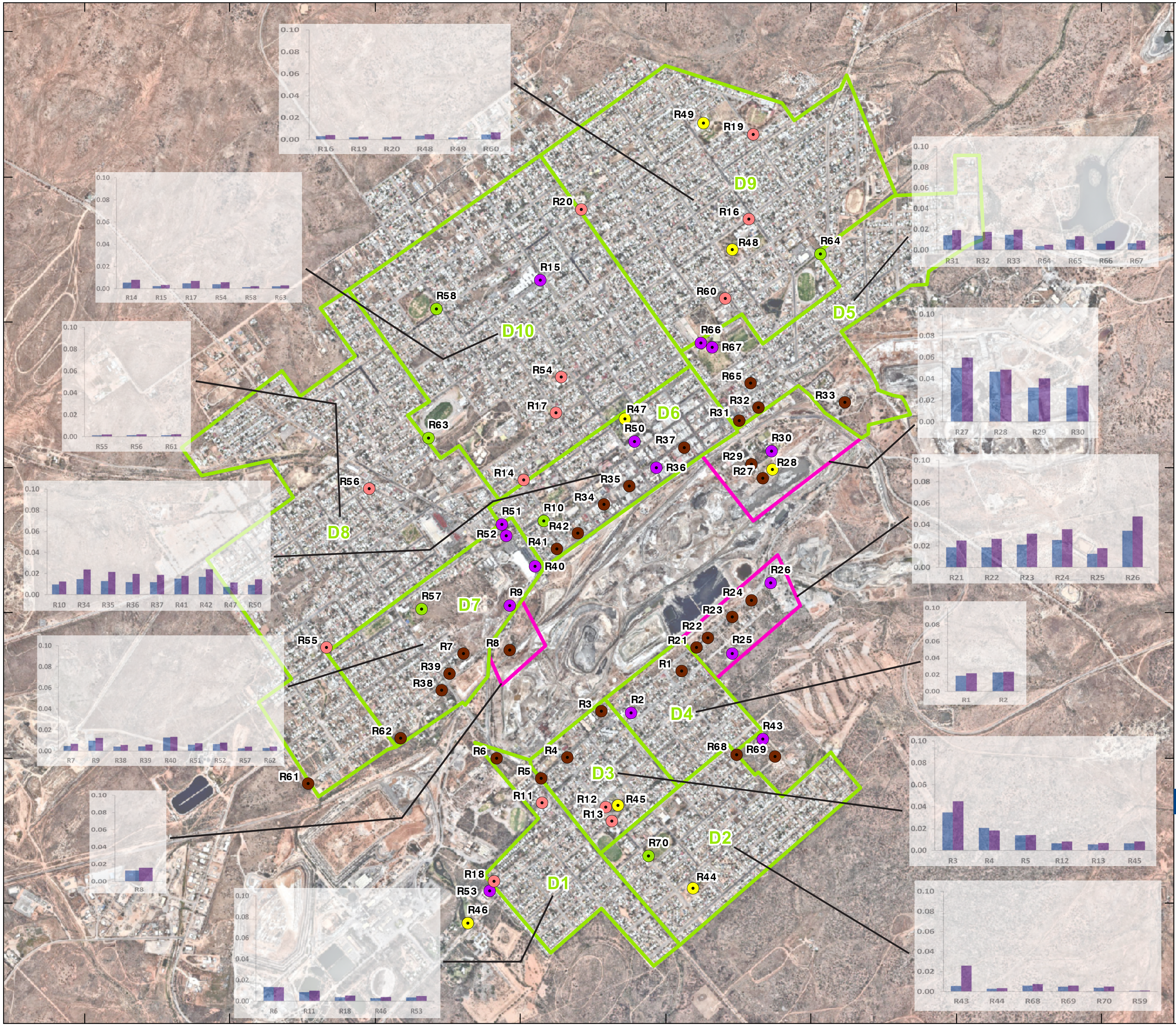
H:\Projects-SLR\640-MEL\640-MEL\640.12028 Human Health Risk Assessment for Modification 6 (Kintore Pit TSF3)\06 SLR Data\01 CADGIS\ArcGIS\SLR64012028_Receptor_Locations_Figure3_7_01.mxd

Figure 3-8 compares the modelled incremental Pb deposition for MOD4 (construction approved in 2017) with the MOD6 construction phase. Similar to the Pb in TSP concentrations shown in Figure 3-7, the modelled Pb deposition resulting from MOD6 construction is similar to or slightly higher than that predicted for MOD4 at the majority of receptor locations.

As discussed previously in this HHRA, from a human health perspective, Pb deposition by dust is important if it increases soil Pb concentrations, as this (together with tracked-in soil and indoor dust) over time is likely the principal source of Pb exposure in Broken Hill (Toxikos 2010, ToxConsult 2017a). To contextualise the incremental Pb deposition from MOD6 construction, the Equations in Section 2.6.2 have been used to calculate the predicted concentration of Pb in soil potentially arising from the approximately 12-month MOD6 construction phase. The results were related back to likely existing soil Pb concentrations in Broken Hill in Table 3-3. The predicted incremental increases in soil Pb range from 0.03 – 2 mg/kg which represent 0.005 – 0.43% of existing soil Pb concentrations outlined in Section 2.6.1. These increases can be considered small and insignificant. The five receptors with the largest percentage increases in soil Pb relative to existing soil Pb concentrations were R26 (0.43%), R3 (0.4%), R24 (0.32%), R23 (0.28%), and R21 (0.23%) in District 3 or on the southern edge of the mine lease just east of District 4.

The potential influence of the additional soil Pb concentrations on estimated BPb of a hypothetical population of 1-2 year old children was estimated for these locations (R3, R21, R23, R24, and R26) and results are presented in Table 3-4. The IEUBK model predicts very small potential increases in BPb (0.011 – 0.021 µg/dL) for the period that MOD6 construction occurs[39], noting that these predictions are conservative (due to the conservative assumption regarding bioavailability of Pb in soil/dust, as well as the conservative deposition modelling of Pb). Such small changes are within the margin of error of ±2 µg/dL for routine BPb testing (NHMRC 2016) and would not be distinguishable in a Pb monitoring program.

[39] IEUBK BPb modelling outputs can be found in Appendix I.



LEGEND

- Residences
- Schools/Childcare
- Ovals
- Playgrounds
- Other (Hospital, Health Centre, Aged Care Service)
- Defined by Boreland et al. (2002) Boundary
- 'Other' Boundary
- Mod4 (approved construction)
- Mod6 (proposed construction)

* D = District

0 0.5 1 km

Scale: 1:35,500 at A4

Projection:	GDA 1994 MGA Zone 54
Project No.:	(640.12028)
Date:	19-Nov-2020
Drawn by:	(PW)
Reviewed by:	(TH)

HEALTH RISK ASSESSMENT RASP MINE MOD6

Modelled Pb deposition ($g/m^2/month$) for Mod4 (approved) and Mod6 (Proposal)

FIGURE 3-8

Data Source:
Nearmap Imagery

www.slrconsulting.com

H:\Projects-SLR\640-MEL\640-MEL\640.12028 Human Health Risk Assessment for Modification 6 (Kintore Pit TSF3)\06 SLR Data\01 CADGIS\ArcGIS\SLR64012028_Receptor_Locations_Figure3_8_01.mxd

Table 3-3 Predicted percentage increase in existing soil Pb concentration as a result of Pb deposition from Modification 6

District	Location No.	Total incremental Pb deposition (g/m^2) (1)	Increment in soil Pb	
			mg/kg	as % of existing soil Pb (3)
1	R6	0.013	0.4	0.12
	R11	0.01	0.3	0.09
	R18	0.005	0.2	0.05
	R46 (2)	0.004	0.1	0.005
	R53 (2)	0.005	0.2	0.04
2	R43 (2)	0.026	0.9	0.12
	R44	0.003	0.1	0.02
	R68	0.007	0.2	0.03
	R69 (2)	0.006	0.2	0.03
	R70	0.005	0.2	0.02
	R59 (2)	0.001	0.03	0.005
3	R3	0.045	1.5	0.4
	R4	0.018	0.6	0.16
	R5	0.014	0.5	0.13
	R12	0.008	0.3	0.07
	R13	0.007	0.2	0.06
	R45	0.008	0.3	0.07
4	R1	0.022	0.7	0.19
	R2	0.024	0.8	0.21
Other (close to D4)	R21	0.025	0.8	0.23
	R22	0.027	0.9	0.24
	R23	0.031	1.0	0.28
	R24	0.036	1.2	0.32
	R25	0.018	0.6	0.16
	R26	0.047	1.6	0.43
5	R31	0.019	0.6	0.1
	R32	0.017	0.6	0.1
	R33	0.02	0.7	0.11
	R64	0.005	0.2	0.03
	R65	0.013	0.4	0.07
	R66	0.009	0.3	0.05
	R67	0.009	0.3	0.05

District	Location No.	Total incremental Pb deposition (g/m²) (1)	Increment in soil Pb	
			mg/kg	as % of existing soil Pb (3)
6	R10	0.012	0.4	0.04
	R34	0.024	0.8	0.07
	R35	0.022	0.7	0.06
	R36	0.02	0.7	0.06
	R37	0.019	0.6	0.06
	R41	0.018	0.6	0.05
	R42	0.024	0.8	0.07
	R47	0.011	0.4	0.13
	R50	0.014	0.5	0.04
Other (close to D6)	R27	0.06	2.0	0.18
	R28	0.048	1.6	0.14
	R29	0.04	1.3	0.12
	R30	0.033	1.1	0.1
7	R7	0.007	0.2	0.02
	R9	0.012	0.4	0.04
	R38	0.006	0.2	0.02
	R39	0.006	0.2	0.02
	R40	0.013	0.4	0.04
	R51	0.007	0.2	0.02
	R52	0.008	0.3	0.02
	R57	0.004	0.1	0.01
	R62	0.004	0.1	0.01
Other (close to D7)	R8	0.016	0.5	0.05
8	R55	0.002	0.1	0.03
	R56	0.002	0.1	0.03
	R61	0.002	0.1	0.03
9	R16	0.004	0.1	0.05
	R19	0.003	0.1	0.03
	R20	0.003	0.1	0.03
	R48	0.005	0.2	0.06
	R49	0.002	0.1	0.1
	R60	0.007	0.2	0.08

District	Location No.	Total incremental Pb deposition (g/m^2) (1)	Increment in soil Pb	
			mg/kg	as % of existing soil Pb (3)
10	R14	0.008	0.3	0.08
	R15	0.003	0.1	0.03
	R17	0.007	0.2	0.07
	R54	0.006	0.2	0.06
	R58	0.002	0.1	0.02
	R63	0.003	0.1	0.03

1. Total deposition over 12-month construction period.
2. Although this receptor is outside of the district lines conceived by Boreland et al. (2002), it has been assigned in this HHRA to the closest neighbouring district listed.
3. It is recognised the calculated percentage increase is highly dependent on the assumed existing soil dust Pb, which is uncertain for any specific receptor location. Nevertheless, as the latter have been based on recently collected data (where available) it is considered unlikely that the existing soil/dust Pb concentrations would differ dramatically from those assumed. Overall, since the increment at all locations was predicted to be very small, this uncertainty is unlikely to impact on the overall conclusion.

Table 3-4 Potential influence of construction on modelled BPb in population of 1-2 year old living at selected receptor locations 2

Receptor Location	Modelled increase in BPb due to construction (µg/dL) (1)
R3	0.021
R21	0.011
R23	0.014
R24	0.016
R26	0.021

1. This has been modelled in IEUBK by setting all background Pb exposure assumptions to zero, and only modelling the incremental influence of the small short-term increase in PM_{10} Pb and the predicted increase in soil Pb at these receptor locations. The IEUBK modelling outputs are provided in Appendix I.
2. These receptor locations have been selected in order to model predicted potential increase in BPb due to Pb in dust emissions during construction. These locations were selected because they represent the receptors with the largest potential percentage increase in soil/dust Pb due to the construction period (see Table 3-4). Note that the BPb modelling predictions are conservative (due to the conservative assumption regarding bioavailability of Pb in soil/dust, as well as the conservative deposition modelling of Pb). Such small changes are within the margin of error of ±2 µg/dL for routine BPb testing (NHMRC 2016) and would not be distinguishable in a Pb monitoring program.

3.6.2 Operation

The IEUBK model was used to estimate geometric mean BPb in hypothetical populations of 1-2 year old children living in Broken Hill. It is noted these did not only include residential properties, but also schools, childcare facilities, aged care facilities, hospitals, parks, and playgrounds. Since a child may spend a portion of their day in different locations (e.g. partially at residence, partially at childcare, and partially at a park), the assessment was simplified by assuming children may spend all of their time at the designated receptor location. The modelling incorporated incidental ingestion of Pb in soil/dust, inhalation of Pb in air (PM_{10}), as well as inclusion of modelled 'background' intakes of Pb from the diet, reticulated drinking water, soil (from measured 'existing' soil concentrations), and contribution from maternal BPb.

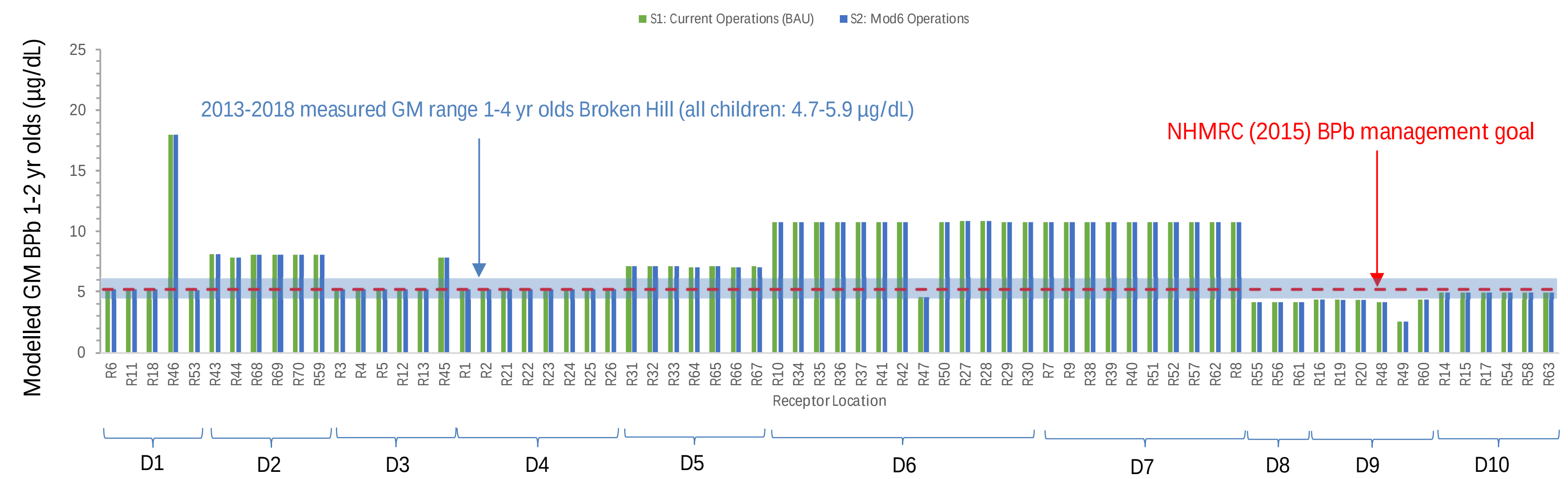
The estimated geometric mean BPb in 1-2 year old children at each receptor location is presented in Figure 3-9. The IEUBK modelling outputs, as well as a summary table of all numerical values at each receptor, are presented in Appendix I. As shown in Figure 3-9, modelled geometric mean (GM) BPb in populations of 1-2 year old children assumed to live at the various receptor locations were essentially the same[40] for S1 (Current Operations) and S2 (MOD6 Operations). This is because the vast majority of modelled BPb is attributable to the contribution from existing soil Pb (and dust). Since these assumptions are the same for both scenarios, and the mine-related contribution to overall Pb intakes is comparatively very low (see Figure 3-10), the two scenarios result in very similar modelled GM BPb.

Figure 3-9 also shows the geometric mean BPb for populations of 1-2 year old children at R46 (Zinc Lakes Playground), R45 (Patton Park Playground) or receptor locations in Districts 2, 6 and 7 are predicted to be higher than the NHMRC (2015) BPb management goal of 5 µg/dL for both scenarios. This is because of the high assumed existing soil/dust Pb concentrations at these locations (700-2,450 mg Pb/kg) (see also Section 2.6.1). Importantly, the MOD6 Proposal does not change the absolute geometric mean BPb predictions.

Note the BPb modelling assumes a child may spend all their time at these locations[41], which certainly would not be the case for the two playgrounds or any park or recreational facility. Thus, the modelling is very conservative for non-residential properties, but does cater for the eventuality that a residence may be erected in these locations in the future.

[40] Figure 3-11 shows the relative difference in GM BPb between Scenarios 1 and 2. The predicted GM BPb for 1-2 year old children in Scenario 2 (MOD6 operations) are either unchanged or slightly lower (up to 0.009 µg/dL lower) than the predictions in Scenario 1 (the current situation). Such a level of precision in absolute BPb level is considered unwarranted due to the inherent uncertainties with any modelling approach. Furthermore as indicated in Section 3.6.1, such small changes are within the margin of error of ±2 µg/dL for routine BPb testing (NHMRC 2016) and would not be distinguishable in a Pb monitoring program. Therefore, the change in BPb as a result of MOD6 construction and operation is concluded to be negligible.

[41] The modelling essentially conservatively assumes that a residence may be located at these locations, since a child's entire soil and dust intake, along with all the air inhaled by a child stems from the modelled location.



Modelled geometric mean (GM) BPb in populations of 1-2 year old children assumed to live at the various receptor locations were essentially the same for S1 (Current Operations) and S2 (MOD6 Operations). This is because the vast majority of modelled BPb is attributable to the contribution from existing soil Pb (and dust). Since these assumptions are the same for both scenarios, and the mine-related contribution to overall Pb intakes is comparatively very low (see Figure 3-10), both scenarios result in very similar modelled GM BPb.

Geometric mean BPb for populations of 1-2 year old children who are assumed to spend all their time at R46 (Zinc Lakes Playground), R45 (Patton Park Playground) or receptor locations in Districts 2, 6 and 7 are predicted to be higher than the NHMRC (2015) BPb management goal of 5 µg/dL. This is because of the high assumed existing soil/dust Pb concentrations at these locations (700-2,450 mg Pb/kg). Importantly, the MOD6 Proposal does not change the absolute geometric mean BPb predictions.

Figure 3-9 IEUBK modelled geometric mean BPb in populations of 1-2 year old children at relevant receptor locations

The proportion of estimated geometric mean BPb contributed by each exposure medium has been summarised for each scenario at three receptor locations (R46, R8, and R49)[42] in Figure 3-10. The locations were chosen to span the range of BPb estimated for each particular scenario (see also Figure 3-9). From Figure 3-10, it is evident the contribution of each medium to BPb remains almost identical for both scenarios at each respective receptor location; this is not surprising since the Proposal increment is predicted to have negligible impact on existing BPb concentrations (see also Figure 3-9). By far the dominant contributing exposure media to estimated BPb are existing soil and dust and background exposure via the diet. The contribution of existing soil and dust Pb to modelled GM BPb levels varies between approximately 28-92% depending on the measured existing concentration of Pb in soil at the specific receptor location, whereas the contribution from deposited Rasp mine-related dust is comparatively very low (0.03-0.5%) (see Figure 3-10).

The impact of the Proposal on modelled BPb levels is best judged by comparing the difference between the modelled GM BPb levels for Scenario 2 (MOD6 Proposed Operations after 5 years remaining mine life, including background) and Scenario 1 (Current Operations after 5 years remaining mine life, including background). The results are illustrated in Figure 3-11. The Figure shows the modelled relative change ranges between 0 (none) to a decrease of 0.009 µg/dL for Scenario 2, i.e. the predicted change in BPb as a result of the Proposal is negligible.

It was also considered informative to provide a comparison between modelled GM BPb for Scenario 2 (MOD6 Operations) and the PPR (i.e. the original approval for the Rasp Mine). Figure 3-12 shows modelled GM BPb levels for a population of children assumed to live at the original 42 receptor locations ranges between a very slight increase at R3 of 0.002 µg/dL (i.e. essentially negligible change) to a decrease of 0.15 µg/dL at R26 for Scenario 2 (MOD6 operations). Although these differences are small, overall MOD6 operations (including background) is predicted to result in lower BPb levels than the original approval (i.e. the PPR, including background).

Overall, BPb concentrations in 1-2 year old children living in Broken Hill are not anticipated to be affected by activities associated with the Proposal.

[42] R46 is Zinc Lakes playground just west of District 1 (southwest of Rasp mine), R8 is a residence located along the northern boundary of the Rasp mine lease just south of District 7, and R49 is another playground located in District 9 (northeast of Rasp mine).

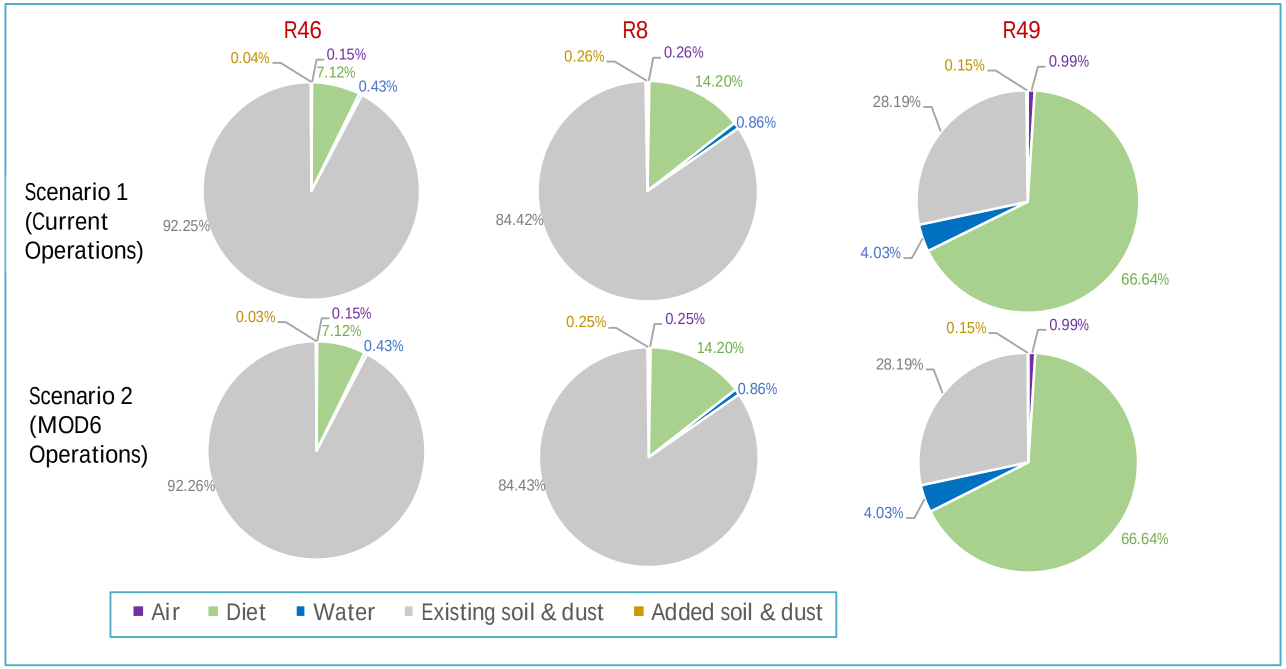
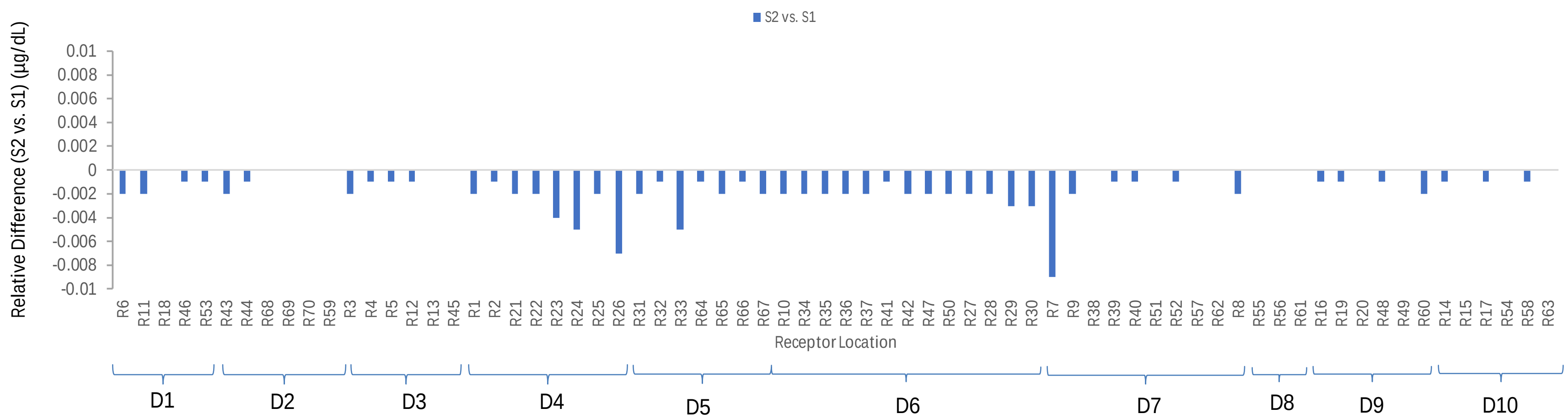
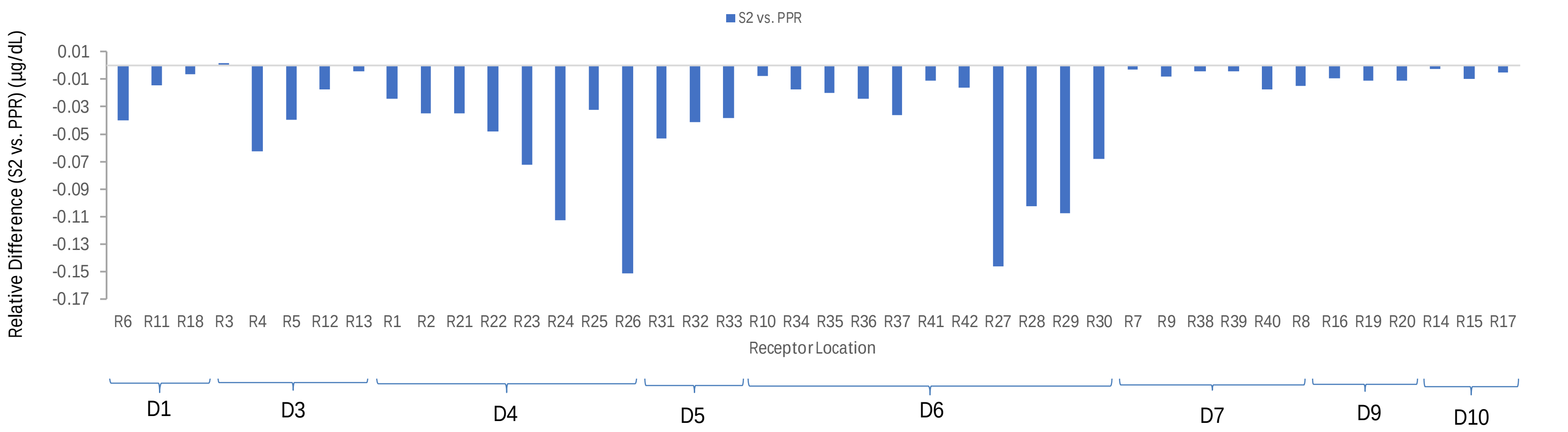


Figure 3-10 Exposure media contribution (%) to IEUBK modelled geometric mean BPb at three receptor locations



The Figure shows the relative difference (in µg/dL) in modelled geometric mean (GM) BPb between Scenario 2 (MOD6 Proposed Operations, including background) and Scenario 1 (Current Operations, including background). The modelled relative change ranges between 0 (none) to a decrease of 0.009 µg/dL for Scenario 2. Such a level of precision in absolute BPb level is considered unwarranted due to the inherent uncertainties with any modelling approach. Furthermore as indicated in Section 3.6.1, such small changes are within the margin of error of ±2 µg/dL for routine BPb testing (NHMRC 2016) and would not be distinguishable in a Pb monitoring program. Therefore, the change in BPb as a result of MOD6 construction and operation is concluded to be negligible.

Figure 3-11 Relative difference in IEUBK modelled geometric mean BPb in populations of 1-2 year old children at relevant receptor locations for Scenario 2 (MOD6 Proposed Operations) vs. Scenario 1 (Current Operations)



The Figure shows the relative difference (in µg/dL) in modelled geometric mean (GM) BPb between Scenario 2 (MOD6 Proposed Operations, including background) and the PPR (i.e. original Rasp Mine approval, including background). The modelled relative change ranges between a very slight increase at R3 of 0.002 µg/dL (i.e. essentially negligible change) to a decrease of 0.15 µg/dL at R26 for Scenario 2.
Although these differences are small, overall MOD6 operations (including background) is predicted to result in lower BPb levels than the original approval (i.e. the PPR, including background).

Figure 3-12 Relative difference in IEUBK modelled geometric mean BPb in populations of 1-2 year old children at relevant receptor locations for Scenario 2 (MOD6 Proposed Operations) vs. PPR (original Rasp Mine approval)

3.7 Uncertainty/Sensitivity Analysis for lead

The risk assessment process involves a number of steps (e.g. exposure assessment, toxicity assessment and risk characterisation), each of which incorporates the use of assumptions and simplifications to manage uncertainty or lack of knowledge about the correct value. Without such assumptions and simplifications, it would not be possible to quantitatively evaluate the potential for health effects. Although uncertainties in the risk assessment may influence its accuracy, reliability and interpretation, the assumptions used to cope with unknown data for specific parameters tend to err on the side of safety and therefore bias the evaluation to over estimation of health risk. This is appropriate for an assessment for possible impacts on public health. It must be realised however the conservatism regarding one value is at least additive, most times multiplicative with conservatisms in other values such that the cumulative or compound conservatism incorporated into the assessment can be very large. This is especially so when gross, unrealistic default parameters are used in lieu of measured data.

Table 3-5 contains a general qualitative discussion of the major uncertainties and their potential influence on the health risk assessment. The 'big picture' uncertainties fall into the following major categories.

- Those associated with external exposure estimation (air dispersion modelling, calculated soil concentrations).
- Internal exposure estimation (BPb modelling).
- Receptor specific uncertainties.

Elsewhere in this report, when particular assumptions are discussed/assessed, information on the uncertainty is provided to enable the reader to integrate the uncertainties with the assessment that has been performed at that point in the report.

Table 3-5 Uncertainties in the HHRA for Pb and potential effect on health risk assessment outcome

Uncertainty/ Assumption	Comment	Effect on Risk Assessment
Exposure estimation *Modelled Pb concentrations in air and deposited dust. Provided to SLR by ERM (2020a, b).*	SLR has not assessed the information provided by ERM for its representativeness for predicted air metal concentrations or metal deposition to soil at receptors. However we note ERM (2020a) considers the predictions to be conservative. The ERM information has been taken on face value.	The modelled Pb deposition rates and air Pb concentrations underpin the estimation of Pb exposure and BPb levels. This is based on maximum PM_{10} concentrations and average deposition information from ERM (2020a, b) which therefore results in potential overestimation of air metal concentrations at the receptor.

Uncertainty/ Assumption	Comment	Effect on Risk Assessment
Receptor location soil concentrations	The soil Pb concentrations were calculated assuming the modelled annual Pb deposition onto soil will occur for each of the 5 years of practical mining operation and deposition will be into the top 2cm of soil. Physical loss of Pb from soil due to surface water runoff was included and based on a standard equation from US EPA (2005) used for these purposes. Other loss processes typically included in the Equation, i.e. biotic and abiotic degradation, soil erosion, leaching, and volatilisation were either considered not applicable to metals in soil or were assumed to be zero due to lack of specific information to enable their inclusion.	Smaller mixing depth would increase soil concentrations and larger mixing depth would decrease them. The assumption of zero loss of mine related deposited dust from processes other than surface water runoff will over-estimate exposure and consequently modelled BPb levels. Nevertheless, as the incremental deposition rates and subsequent estimated soil Pb concentrations from the Proposal alone are very low (ranging from 0.2 – 11.1 µg/g), modifying the mixing depth or soil loss calculations would not alter the conclusions of the HHRA. For example, if no soil loss was included the incremental soil Pb concentrations would only minimally increase to 0.2 – 11.2 µg/g.
Existing soil Pb concentrations	Data for existing soil Pb concentrations were only available for some individual receptor locations. However, information for Pb in soil/dust at a number of locations roughly corresponding to the designated risk districts/areas was available from a recent dust sampling program (conducted in 2019) which was supplemented with information from the literature.	Application of the available soil Pb concentrations as an average for the assessed districts/areas are approximations and could either decrease or increase the assumed exposures and modelled BPb concentrations. However, this has minor impact on the assessment because the same assumptions are made for both Scenarios.
Existing air Pb concentration	Existing concentrations of Pb in PM_{10} are based on 2016 annual average measured data at a monitoring station (HVAS2). The 2016 modelled increment from the Rasp Mine was subtracted by ERM (2020a, b) from the measured concentration to calculate existing concentrations of Pb in air. The air modelling information has been taken on face value in this HHRA.	The existing air Pb concentration in PM_{10} is based on measured data close to the Rasp Mine. Because it is low, it has minimal impact on modelled BPb.

Uncertainty/ Assumption	Comment	Effect on Risk Assessment
Exclusion of home-grown foodstuff pathway for Pb	Literature information showed the extent of Pb exposure from eating home-grown produce is probably low due to insufficient/inefficient uptake to edible parts of most plants. This is consistent with the conclusions in NEPM (2013). In addition, the Leadsmart (2020) education program in Broken Hill provides advice on vegetable washing prior to consumption.	Exclusion of the home-grown vegetable and fruit consumption pathway for Pb is considered an appropriate simplification of the BPb modelling and is unlikely to affect the outcome of the HHRA. It is not included in any scenarios.
Bioaccessibility of Pb from soil and dust	Bioaccessibility testing was undertaken for 56 samples of soil/dust collected from around Broken Hill or within the mine lease. The highest average Pb bioaccessibility (i.e. 42%) from any of the three groups of samples (i.e. urban, waste rock, 'free areas') obtained at two pHs (1.5, 6.5-7) was used in the HHRA.	As discussed in Section 2.5 and Appendix A, this assumption is conservative and may overestimate predictions of absolute BPb concentrations. Nevertheless, this assumption is unlikely to impact on the conclusions of the HHRA since the assumptions made are the same for both Scenarios.
Internal exposure estimation (i.e. Modelling Uncertainty) *Background exposures*	For BPb modelling of both Scenarios, background Pb intake assumptions have been included.	The modelled background BPb (1.8 µg/dL) from dietary assumptions was essentially the same as the average geometric mean of measured background BPb for Australian children from non-impacted communities (1.9 µg/dL). Thus the IEUBK modelling of 'background' BPb concentrations agrees well with published measurement data. Thus, the model performs well when input parameters are appropriate. Nevertheless, background assumptions have minor impact on the comparison between scenario assessments because the same assumptions are made for both Scenarios.

Uncertainty/ Assumption	Comment	Effect on Risk Assessment
Receptor Uncertainty *There may be people within the dispersion area of mine emissions that are more susceptible or vulnerable than others to developing health effects if they are exposed to Pb and other metals from the mine site.*	It is widely accepted by health authorities that the effects of Pb are well correlated with BPb levels. Intrinsic variability (i.e. toxicodynamic variability) has not been identified as a major contributor to the effects of Pb (e.g. ATSDR 2007a). Nevertheless, it is assumed that any condition or disease which compromises physiological functions could cause increased susceptibility to Pb. It is currently not possible to quantitatively account for potential increased susceptibility to Pb due to a pre-existing condition. For most individuals, when a given population is exposed to the same environmental concentrations of Pb, the variability in effects occurs due to variability in BPb levels, which may be affected by a person's nutritional status (e.g. dietary iron intake) as well as behavioural differences between persons resulting in different personal exposures (e.g. extent of time outdoors, extent of hand to mouth activity, personal and house hygiene etc) and differences that affect the absorption of Pb.	Impact on the conclusions of the HHRA is minimal. Because: 1. Maximum modelled Pb air concentrations have been used, which together with background exposures and behavioural assumptions, ensure the most exposed persons are included in the HHRA. 2. Exposure assumptions corresponding to values at the high end of the expected range were used for most parameters as input to the IEUBK model (e.g. Pb deposition onto soils, calculated soil Pb concentrations from the Proposal). In predicting BPb levels, the IEUBK model calculates the most likely BPb level that would occur if a large population of children were exposed to the same exposures. The IEUBK model also predicts the percentage of such a theoretical population that could have BPb levels higher than the determined trigger level (5µg/dL). This is based on the observed BPb variability in US children that are in the same Pb contaminated environment. There is uncertainty regarding the applicability of the US children BPb variability to the population of Broken Hill. However appropriate data were not available to make this input parameter site specific. These considerations are likely to have minor impact on the comparison between scenarios assessment.
Modelling undertaken for non-residential locations.	The BPb modelling undertaken in this report was not only undertaken for residential receptor locations, but also for numerous non-residential locations where children may spend some of their time (e.g. playgrounds, parks, schools, childcare centres, etc).	The BPb modelling results for non-residential locations are conservative, since it was assumed children may spend their entire time at the modelled receptor location (i.e. their entire soil/dust intake and inhaled air Pb stems from that location). This is likely to over-estimate the GM BPb of 1-2 year old children at non-residential locations.

4 Risk Assessment for Other Metals

4.1 Overview

The HHRA for metals other than Pb has been undertaken as follows for Scenarios 1 (Current Operations) and 2 (MOD6 Operations):

- Calculation of lifetime time-weighted average daily intakes from ingestion of soil/dust and comparison of these with tolerable daily intakes (TDIs) (Section 4.3.1), as well as comparison of inhalation exposure concentrations with chronic air guideline values (Section 4.3.2). TDIs were adjusted for 'background' exposures. The resulting ratio of the intake or inhalation exposure concentration to the background-adjusted TDI or air guideline value is called a hazard quotient (HQ). The exposure pathways considered are the same as those described in Section 2.7. Plant uptake of metals from soil may or may not be significant for the metals/metalloids considered in this HHRA. This has been incorporated by adjusting the TDI to account for this pathway (and background intakes). The adjustment is metal-specific (Section 4.3.1). HQs for the inhalation and oral exposure pathways were summed to give an overall HQ for that metal.

- In addition, for those metals for which the health effect of concern is cancer via inhalation or ingestion, as determined by national and/or international agencies, and whose mode of action is by directly altering genetic material (i.e. they are genotoxic), excess lifetime cancer risks were calculated by multiplying the relevant exposure estimate (annual average concentration in PM_{10} or lifetime time-weighted average daily intake from incidental ingestion) by an estimate of the carcinogenic potency of the metal (Section 4.3.3). The latter is commonly termed a unit risk factor if exposure is via inhalation and a slope factor if it is via ingestion. The resulting estimated excess 'cancer risks' was compared with a target acceptable risk of 1×10^{-5} as recommended by enHealth (2012a) and NEPM (2013). Ni and chromium VI (Cr^{VI}) were the only metals which were assessed using this non-threshold approach. Justification for this is provided in Appendix K.

Hazard indices (HI) were calculated by summing the HQ's of individual metals. Calculation of an overall HI assumes the toxicological effects of the assessed individual metals are additive. In toxicological terms this assumption of additivity is only valid if the compounds assessed have a similar mode of toxicological action and affect the same target tissues. In the present HHRA, all metals included in the hazard quotient assessment were conservatively assumed to act in an additive manner, and the hazard quotients were summed to calculate an overall HI.

The above are standard risk assessment procedures used internationally and in Australia (enHealth 2012a, NEPM 2013, US EPA 1989a, 2009b; NRC 2008). The HHRA methodology for metals other than Pb is outlined in Figure 4-1.

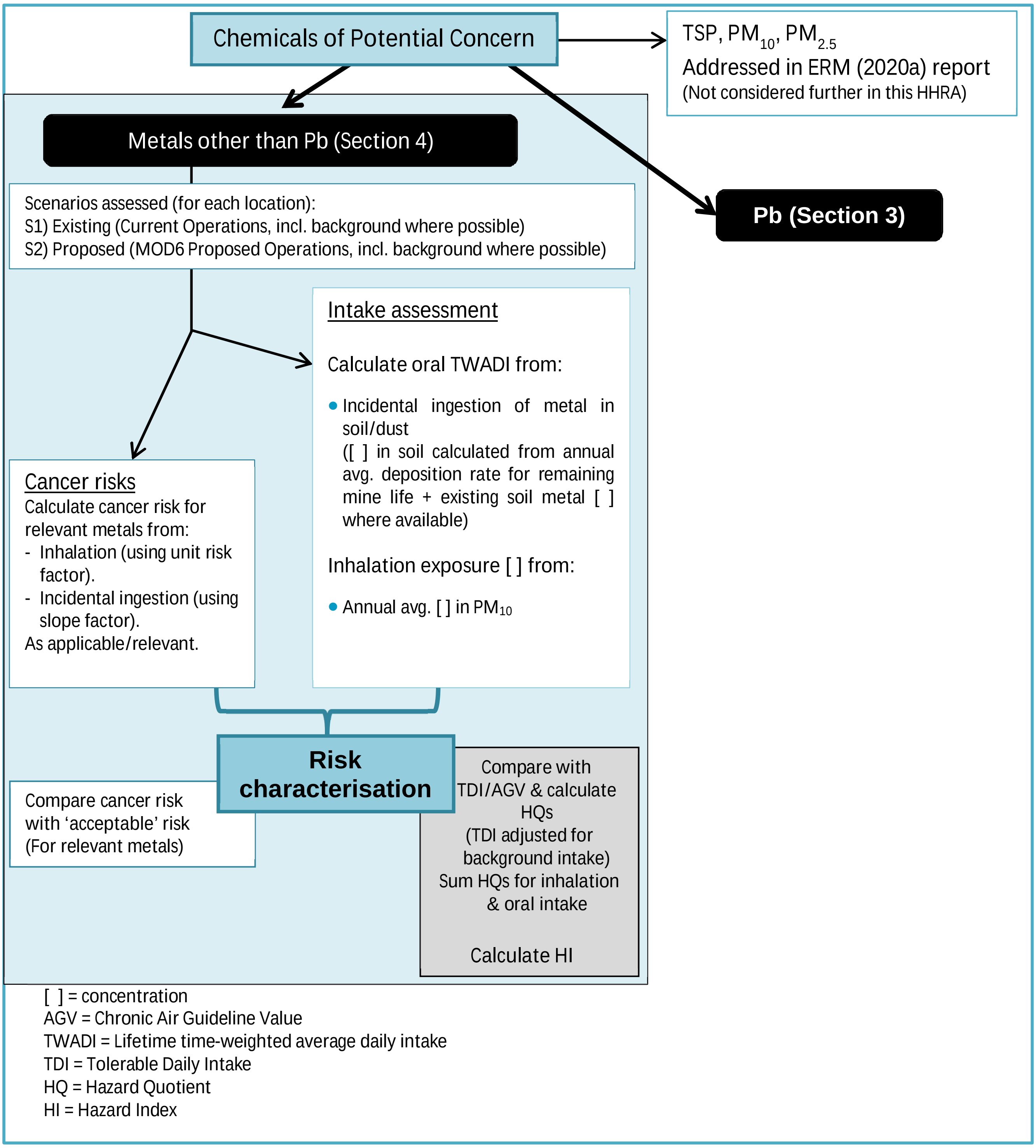


Figure 4-1 Summary of HHRA methodology for metals other than Pb

Interpretation of Hazard Quotients and Hazard Indices

If the HQ for the cumulative exposure pathways in the assessment is greater than one (HQ > 1) then there is a possibility that the TDI or chronic air guideline value for that substance might be exceeded. This does not directly equate with possibility of harm as the TDIs and chronic air guidelines have inherent safety margins incorporated within them. The TDIs are also adjusted for potential background exposure which is mostly from diet.

An 'unacceptable' risk, as defined by regulatory standards and requirements, is often determined as an exposure being larger than the toxicity reference value (TRV) used to calculate the hazard quotient, i.e. the HQ or HI>1. This definition of unacceptable risk does not equate with imminent adverse health effects or even high risk of adverse health effects. It simply means that the regulatory guideline value has been exceeded.

Notwithstanding their use in this risk assessment, HQs and HIs are relatively blunt tools used to assist in characterising and prioritising risks. Great care must be taken to the level of importance that is placed on the numerical value of the HI. Hazard indices should not be used in isolation of other pertinent data such as the reality of exposures actually happening and with the intensity and frequency assumed in the HHRA. These aspects related to the conservatism (i.e. over exposure) incorporated into the exposure assessment and TRVs.

4.2 Interactions between metals

The HI, i.e. the sum of HQs, is a screening risk assessment technique commonly used to judge whether there is concern for additive effects between chemicals. Similar to the interpretation of HQs, if the HI is less than unity (i.e. <1) there is low likelihood of additive health effects between the substances. This process does not take into account toxicological mechanisms or kinetics. However, in strict biological terms an interaction, additivity or synergy, would only be expected if chemicals were affecting the same tissue types in an equivalent manner. Nevertheless, for the purposes of the present HHRA all the metals included in the hazard index are, by default, conservatively assumed to act in an additive manner.

4.3 Hazard assessment for other metals

4.3.1 Tolerable daily intakes

A toxicity category summary for the metals assessed in this HHRA is provided in Appendix K. Table 4-1 summarises oral tolerable daily intake (TDIs) for all metals/metalloids assessed in this HHRA, except for Pb which was evaluated using predicted BPb levels (see Section 3). The TDIs were adjusted for assumed high end background intakes. The adjusted TDIs are also presented in the table. The adjusted TDIs represent the dose of metal (adjusted for background intakes) which can be ingested every day over a lifetime without adverse health effects.

Table 4-1 Tolerable daily intakes (TDIs) for metals assessed in this HHRA

Metal/Metalloid	TDI (µg/kg/d)	Basis (Reference)	Assumed background intake, as % of TDI (reference)	Adjusted TDI used in HHRA (µg/kg/d) (1)
Silver (Ag)	400	Based on oral NOAEL for argyria in humans for a total lifetime intake of 10 g of silver based on human case reports and long-term experiments. Use of UF not described (NHMRC and NRMMC 2018).	0% (NHMRC and NRMMC 2018) (2)	400
Antimony (Sb)	6	Based on a NOAEL of 6 mg/kg/d for decreased body weight gain and reduced food and water intake in a 90-day study where rats were administered potassium antimony tartrate in DW and application of an UF of 1000 (100 for intra- and inter-species variation, 10 for short duration of study) (WHO 2017).	0% (Iyengar et al. 1987) (3)	6
Arsenic (As)	2	Based on studies of human populations exposed to inorganic As in drinking water, and an assessment by NEPM (2013) on the comparability of the TDI value to international agency deliberations.	54.5% (NEPM 2013) (4)	0.91
Barium (Ba)	67	Based on a NOAEL of 0.2 mg/kg bw/d from an epidemiological study on two populations in the United States ingesting drinking water of 0.1 or 7.3 mg/L, and application of an UF of 3 (for potential human variability). No differences were observed in blood pressure or incidence of kidney disease between the two communities (NHMRC and NRMMC 2018). Since no adverse effect was observed the true NOAEL is likely higher.	25% (NHMRC and NRMMC 2018) (5)	50
Beryllium (Be)	2	TDI of 0.002 mg/kg/d (i.e. 2 µg/kg/d) based on a $BMDL_{10}$ (equivalent to a NOAEL) of 0.46 mg/kg bw/day for small intestinal lesions in dogs chronically exposed to dietary beryllium sulphate tetrahydrate, and application of an UF of 300 (100x for intra- and inter-species variation, 3x for database deficiencies) (NHMRC and NRMMC 2018).	38.4% (NEPM 2013) (6)	1.2

Metal/Metalloid	TDI (µg/kg/d)	Basis (Reference)	Assumed background intake, as % of TDI (reference)	Adjusted TDI used in HHRA (µg/kg/d) [(1)]
Cadmium (Cd)	0.8	Derived from PTMI of 25 µg/kg bw/month ÷ 30d. PTMI based on relationship of dietary Cd intake to NOEL for ß2MG urinary excretion in susceptible population (≥50yrs) (JECFA 2011b).	93.4% (NEPM 2013) [(7)]	0.053
Chromium (as Cr^{VI})	3	The TDI is based on an RfD set by the US EPA (1998a) for chronic oral exposure to soluble Cr^{VI} salts from a 1-year DW study in rats (NOAEL of 2.5 mg Cr^{VI}/kg/d with an UF of 300 applied for intra- and inter- species variation and database deficiencies, and an additional modifying factor of 3 for concerns raised of possible gastrointestinal effects observed in another study at Cr^{VI} concentrations of 20 mg/L in water). The US EPA has also derived an RfD of 1,500 µg/kg/day for Cr^{III} (US EPA 1998b). It has been conservatively assumed in this HHRA that all measured Cr is present as Cr^{VI}, although this is considered unlikely. The TDI is the same value as that recently derived by TCEQ (2016a) to protect against cytotoxicity-induced regenerative hyperplasia in the mouse duodenum as a precursor to intestinal carcinogenesis. Thus, this TDI is considered protective of both carcinogenic and non-carcinogenic oral effects of Cr.	46.9% (NEPM 2013) [(8)]	1.6
Copper (Cu)	130	WHO (2017) note a tolerable upper intake level of 10 mg Cu/day. This upper intake level is equal to a TDI of 130 µg/kg/day for a 78kg adult. This is consistent with an oral TDI of 140 µg/kg/day derived by RIVM (2001) based on an chronic oral mouse study.	70% (NEPM 2013)	39

Metal/Metalloid	TDI (µg/kg/d)	Basis (Reference)	Assumed background intake, as % of TDI (reference)	Adjusted TDI used in HHRA (µg/kg/d) [1]
Iron (Fe)	800	Provisional Maximum Tolerable Daily Intake (PTDI) of 0.8 mg/kg bw/d from FAO/WHO (1983) is based on normal individuals taking daily supplements of 50 mg/day (ferrous iron) for long periods without experiencing any adverse effects. FAO/WHO (1983) do not provide the details of how the PTDI was derived.	20% (FSANZ 2011) [9]	640
Mercury (Hg)	0.6	Based on PTWI of 4 µg/kg bw/week. PTWI based on $BMDL_{10}$ (0.06 mg/kg/d) for relative kidney weight increases in male rats in 6-month DW study with mercuric chloride, after adjustment for 5 day/week dosing schedule & molar percent of Hg in Hg (II) chloride. UF of 100 (10x for inter- and 10x for intra-species variability) was applied (JECFA 2011a).	60.5% (NEPM 2013) [10]	0.24
Manganese (Mn)	Adult: 6.4 Child & adolescent: 270	Guidance value from UK Expert Group on Vitamins and Minerals (2003). After reviewing available epidemiological studies for Mn, the Expert Group concluded it is reasonable to assume that in the general population a supplemental intake of up to 4 mg Mn/day in addition to the diet would be unlikely to produce adverse effects; this level is lower (0.5 mg Mn/day) in older people (>50 yrs). Assuming an average BW of 78 kg, this equates to 0.0064 mg/kg bw/day in persons >50 yrs old. This value was selected for use as the TDI for adults in this HHRA. For children (and adolescents) the TDI was taken to be 4 mg ÷ 15 kg bw = 0.27 mg/kg bw/d.	0% (background intake already included in TDI derivation)	Adult: 6.4 Child & adolescent: 270 (the lower of the two, the adult TDI, was used in the HHRA)
Nickel (Ni)	12	Derived from an acute LOAEL of 0.012 mg/kg/day established after oral provocation (via drinking water) of allergic contact dermatitis in fasted patients with an empty stomach. Because absorption from DW on an empty stomach is 10-40 fold higher than absorption from food, this was considered a worst-case scenario, and an UF of 1 was applied (WHO 2017).	85.2% (NEPM 2013) [11]	1.8

Metal/Metalloid	TDI (µg/kg/d)	Basis (Reference)	Assumed background intake, as % of TDI (reference)	Adjusted TDI used in HHRA (µg/kg/d) (1)
Zinc (Zn)	320	Guidance value from UK Expert Group on Vitamins and Minerals (2003). After reviewing available epidemiological information, the Expert Group concluded an upper level of 25 mg/day for supplemental zinc (i.e. in addition to the normal diet) would not be associated with adverse effects. Assuming an adult average BW of 78 kg, this equates to 0.32 mg/kg bw/day.	0% (background intake already included in derivation)	320

TDI = Tolerable Daily Intake; NOAEL = No Observed Adverse Effect Level; LOAEL = Low Observed Adverse Effect Level; UF = Uncertainty Factor; DW = Drinking Water; PTMI = Provisional Tolerable Monthly Intake; ß2MG = beta-2-microglobulin; RfD = Reference Dose (US EPA terminology); $BMDL_{10}$ = Benchmark Dose Lower 10% response level.

1 All assumed background intakes include consideration of intakes from home-grown produce.

2 NHMRC and NRMMC (2018) indicate daily dietary intake of Ag has been estimated at between 0.03 – 0.09 mg. For an adult weighing 78kg (enHealth 2012b), this equates to an intake of 0.0004 – 0.001 mg/kg/d, i.e. 0.4 – 1 µg/kg/d. This is only 0.1 – 0.25% of the TDI. In line with recommendations in enHealth (2012a), where background exposure is essentially negligible (i.e. <5% of the TDI) the TDI does not require adjustment for background intake.

3 The average intake of Sb by adults in the US from food and water has been estimated to be approximately 5 µg/day, i.e. 0.064 µg/kg bw/day for a 78 kg adult. Since this is only approximately 1% of the TDI, this indicates background intakes of Sb are likely very low. In line with recommendations in enHealth (2012a), where background exposure is essentially negligible (i.e. <5% of the TDI) the TDI does not require adjustment for background intake.

4 In deriving a health investigation level (HIL) for As in soil, NEPM (2013) assumed 50% of the TDI is attributable to background intake, and 9% of the left-over TDI (i.e. 4.5% of the total TDI) was attributed to ingestion of home-grown produce. Therefore a total potential background intake of 54.5% of the TDI was assumed in this HHRA.

5 NHMRC and NRMMC (2018) indicate daily dietary intake of Ba has been estimated at 1 mg. For an adult weighing 78kg (enHealth 2012b), this equates to an intake of 0.013 mg/kg/d, i.e. 13 µg/kg/d. This is 19% of the TDI. An additional 6% of the TDI was attributed to ingestion of home-grown produce. Therefore, a total potential background intake of 25% of the TDI was assumed in this HHRA.

6 In deriving a health investigation level (HIL) for Be in soil, NEPM (2013) assumed 30% of the TDI is attributable to background intake, and 12% of the left-over TDI (i.e. 8.4% of the total TDI) was attributed to ingestion of home-grown produce. Therefore a total potential background intake of 38.4% of the TDI was assumed in this HHRA.

7 In deriving a health investigation level (HIL) for Cd in soil, NEPM (2013) assumed 80% of the TDI is attributable to background intakes, and 67% of the left-over TDI (i.e. 13.4% of the total TDI) was attributed to ingestion of home-grown produce. Therefore a total potential background intake of 93.4% of the TDI was assumed in this HHRA.

8 In derivation of a soil health investigation level for Cr^{VI}, NEPM (2013) assumed background intakes from other sources could constitute up to 10% of the TDI. Of the left-over TDI, it was calculated in NEPM (2013) that ingestion of Cr^{VI} in home-grown produce could contribute 41% (i.e. 36.9% of the total TDI). Thus, total background intake of Cr^{VI} could be 46.9% of the TDI.

9 Background intake corresponds to the 95th percentile intake of Fe by the Australian general population, as reported by FSANZ (2011). Background intakes were reported separately for males and females, so these were averaged for this table. Male and female average 95th percentile background intake of Fe in adults was 10.5 mg/d. Assuming a 78 kg body weight (enHealth 2012b), this equates to a background intake of 135 µg/kg bw/d (i.e. approximately 17% of the TDI). A brief literature search did not reveal information which could be used to account for background intake of Fe from home-grown produce, therefore it has been assumed background intake of Fe could be approximately 20% and includes home-grown produce.

10 In deriving a health investigation level (HIL) for inorganic Hg in soil, NEPM (2013) assumed 50% of the TDI is attributable to background intake, and 21% of the left-over TDI (i.e. 10.5% of the total TDI) was attributed to ingestion of home-grown produce. Therefore a total potential background intake of 60.5% of the TDI was assumed in this HHRA.

11 In deriving a health investigation level (HIL) for Nil in soil, NEPM (2013) assumed 80% of the TDI is attributable to background intake, and 26% of the left-over TDI (i.e. 5.2% of the total TDI) was attributed to ingestion of home-grown produce. Therefore, a total potential background intake of 85.2% of the TDI was assumed in this HHRA.

4.3.2 Chronic air guideline values

Chronic air guideline values (AGVs) were sourced for all metals/metalloids assessed in this HHRA in order to calculate a HQ for the inhalational exposure pathway. Table 4-2 summarises the AGVs; they represent a concentration of metal which can be inhaled every day over a lifetime without adverse health effects.

Table 4-2 Chronic air guideline values for metals assessed in this HHRA

Metal/Metalloid	Health endpoint for guideline value	Critical effect level (mg/m^3)	UF	AGV ($\mu g/m^3$)(2)	Reference
Silver (Ag)	Argyria in humans after oral exposure	No chronic AGV located. Use TDI extrapolated to inhalational exposure: [400 µg/kg/d x 78 kg] ÷ 20 m^3/day		1,560	Oral TDI source: NHMRC and NRMMC 2018 (see Table 4-1)
Antimony (Sb)	Pulmonary toxicity in rats	0.87 (BMC_{10}) 0.074 (BMC_{HEC})	300	0.2	US EPA IRIS 1995
Arsenic (As)	Lung cancer from As trioxide exposure in smelter workers (threshold approach)	0.01 (LOAEC)	10	1.0	RIVM 2001 (also used in NEPM 2013)
Barium (Ba)	Cardiovascular effects in rats	0.11 (NOAEC)	100	1.0	RIVM 2001
Beryllium (Be)	Chronic beryllium disease in beryllia ceramics workers	0.00055 (LOAEC) 0.0002 ($LOAEC_{ADJ}$)	30	0.007	OEHHA 2008
Cadmium (Cd)	Kidney/renal effects (i.e. ß2-microglobulin proteinuria) in humans	0.0001 (air concentration corresponding to urinary $UCDL_{10}$)	9	0.011	TCEQ 2016b (same value as ATSDR 2012 chronic-duration minimal risk level)
Chromium (as Cr^{VI})	Increased relative lung weight in rats (90-day study)	0.025 (NOAEC) 0.06 ($NOAEC_{HEC}$)	270	0.22	TCEQ 2014
Copper (Cu)	Respiratory & immunological effects in rabbits	0.6 (NOAEC) 0.11 ($NOAEC_{ADJ}$)	100	1	RIVM 2001
Iron (Fe)	No adverse effects in humans from oral intakes	No chronic AGV located. Use TDI extrapolated to inhalational exposure: [800 µg/kg/d x 78 kg] ÷ 20 m^3/day		3,120	Oral TDI source: FSANZ 2011 (see Table 4-1)

Metal/Metalloid	Health endpoint for guideline value	Critical effect level (mg/m^3)	UF	AGV ($\mu g/m^3$)(2)	Reference
Mercury (Hg)	CNS effects in workers	0.025 (LOAEC) 0.009 ($LOAEC_{ADJ}$)	300	0.03	OEHHA 2008
Manganese (Mn)	Neurotoxic effects in workers	0.03 ($BMDC_5$)	200	0.15	WHO 2000
Nickel (Ni)	Combined approach protective of non-cancer (i.e. pulmonary fibrosis) and cancer (lung) effects. (1)			0.02	EC 2001
Zinc (Zn)	No adverse effects in humans from oral intakes	No chronic AGV located. Use TDI extrapolated to inhalational exposure: [320 µg/kg/d x 78 kg] ÷ 20 m^3/day		1,248	Oral TDI source: UK Expert Group on Vitamins and Minerals (2003) (see Table 4-1)

AGV = Air Guideline Value, UF = Uncertainty Factor, NOAEC = No Observed Adverse Effect Concentration, LOAEC = Lowest Observed Adverse Effect Concentration, BMC_{10} = Benchmark Concentration for 10% effect, BMC_{HEC} = Human equivalent benchmark concentration, $BMDC_5$ = Lower 95% confidence limit of the benchmark concentration for a 5% response, $LOAEC_{ADJ}$ = Time-adjusted LOAEC, $NOAEC_{ADJ}$ = Time-adjusted NOAEC, $NOAEC_{HEC}$ = Human Equivalent NOAEC, TDI = Tolerable Daily Intake, $UCDL_{10}$ = urinary cadmium dose 95% confidence limit at the 10% response level.

1. EC (2001) derived an annual AGV of 0.01 µg/m³ for non-cancer effects using a chronic LOAEC of 0.06 mg/m³ for lung fibrosis in mice exposed to nickel sulphate hexahydrate, and applied an adjustment factor of 6 to adjust from discontinuous to continuous exposure, then applied an UF of 1000 (10x for use of a LOAEC, 10x for inter- and 10x for intraspecies variability). EC (2001) also used unit risk estimates from WHO and US EPA for nickel refinery dust to calculate concentrations of nickel compounds associated with 1×10^{-6} cancer risk (2.6 – 4 ng/m³). Because the form of nickel in the occupational studies on which risk estimates were based were different from that encountered in ambient air, EC (2001) accepted that these concentrations may overestimate the true risk by about one order of magnitude. In addition, the linear extrapolation over many orders of magnitude from the observed excess risk in exposed human workers to one in a million also confers conservatism. EC (2001) concluded that "*a limit value in the range 10-50 ng/m³ as derived from non-cancer effects can be judged compatible with the aim of limiting the excess lifetime cancer risk to not more than one in a million. The majority of the Working Group proposes a limit value at the lower end of this range.*"
2. All AGVs are for chronic (i.e. long-term) exposure. Averaging time is generally not stated but presumed to be annual.

4.3.3 Inhalation unit risks and oral slope factors (cancer)

From Appendix K, two of the metals assessed in this HHRA (Ni and Cr^{VI}) are human lung carcinogens via a genotoxic mode of action at high concentrations when inhaled (occupational exposures). The other metals that may be associated with cancer (via oral or inhalation exposure) are thought to exert these effects via a threshold mode of action (see Appendix K). For Ni and Cr^{VI}, a lifetime cancer risk has been calculated using unit risk factors from a reputable international agency.

For airborne carcinogens, the "unit" is generally 1 $\mu g/m^3$ and depending on the nature of the data used to determine the carcinogenic potency, the numerical value refers to the probability of developing, or dying of cancer. If a lifetime exposure to 1 $\mu g/m^3$ of a substance may carry a risk of 1 chance in 200 of developing cancer, this is often interpreted as meaning if 200 people were exposed to 1 $\mu g/m^3$ for their lifetime then one individual may develop cancer. This probability is expressed as 0.5 in 100 or 0.5 x 10^{-2} per $\mu g/m^3$, written as 0.5 x 10^{-2} $(\mu g/m^3)^{-1}$. For the purposes of carcinogenicity, a *de minimus* risk, i.e. trivial or negligible risk, is usually taken to be a risk level of less than or equal to one in a million (1 x 10^{-6}) or one in one hundred thousand (1 x 10^{-5}) (enHealth 2012a, NEPM 2013).

The Texas Commission on Environmental Quality (TCEQ 2011) provides one of the most recent evaluations of the carcinogenicity data for nickel. The agency recognised that nickel species differ in their carcinogenic potency, and that it is important a unit risk factor be developed based on studies with nickel species exposure profiles similar to nickel emissions in Texas. Estimates of nickel emissions in Texas indicated they were predominantly metallic along with soluble nickel (i.e. nickel sulphate) and nickel oxides, rather than refinery dust containing high proportions of nickel subsulphide. Therefore, TCEQ (2011) developed a unit risk factor based on epidemiological studies where workers were exposed to relatively low concentrations of refinery dust containing low levels of nickel subsulphide (~2 -15%). These plants were in Huntington, West Virginia (Enterline and Marsh 1982) and Kristiansand, Norway (Magnus et al. 1982 updated by Grimsrud et al. 2002, 2003). TCEQ excluded studies where exposure was to high amounts of dust in which nickel subsulphide exposure was predominant (i.e. ~50%) (Chovil et al. 1981, Peto et al. 1984).

The unit risk estimate for all the workers combined from the Huntington and Kristiansand cohorts, which includes groups exposed to low levels of nickel subsulphide as well as groups mainly unexposed to nickel subsulphide, was 4.34 x 10^{-5} $(\mu g/m^3)^{-1}$, calculated with Texas specific background rates of lung cancer. For workers who were mainly non-exposed[43] to nickel subsulphide the unit risk factor was an approximate order of magnitude less at 5.65 x 10^{-6} $(\mu g/m^3)^{-1}$. The nickel in dust at Broken Hill is likely to be principally in sulphide form, rather than subsulphides as would be present around smelters. Although the nickel at Broken Hill is unlikely to contain nickel subsulphide, the former cancer potency factor was preferred for airborne exposure to nickel dust from the Rasp Mine, since cancer potency of nickel sulphide is unknown.

For Cr^{VI}, there is uncertainty with respect to the mode of action responsible for lung cancers observed in workers (TCEQ 2014). Although a consensus on the specific mode of action for Cr^{VI} lung carcinogenicity has not been reached, TCEQ (2014) indicate there is significant information which would justify consideration of a non-linear (i.e. threshold) assessment in addition to the default linear low-dose extrapolation approach employed by TCEQ when the carcinogenic mode of action is unknown. Based on two epidemiological studies in chromate production workers, TCEQ (2014) derived two URFs [1.94 x 10^{-3} $(\mu g/m^3)^{-1}$ and 2.56 x 10^{-3} $(\mu g/m^3)^{-1}$]. TCEQ (2014) combined the URFs to derive a final URF of 2.28 x 10^{-3} $(\mu g/m^3)^{-1}$ using a weighting factor to reflect statistical confidence in the URFs.

'Cancer risk' for Ni and Cr^{VI} was calculated for each receptor by multiplying the annual average modelled metal in PM_{10} concentration by the respective unit risk factor [4.34 x 10^{-5} $(\mu g/m^3)^{-1}$ for Ni and 2.28 x 10^{-3} $(\mu g/m^3)^{-1}$ for Cr^{VI}]. The cancer risk for the two metals was summed and compared with a target acceptable risk of 1 x 10^{-5} as recommended by enHealth (2012a) and NEPM (2013).

[43] Persons mainly non-exposed to nickel subsulphide were refinery workers hired after 1946 and non-refinery workers.

4.4 Exposure equations and parameterisation

Human intake of environmental chemicals is not only reliant upon the concentration of the chemical in environmental media but also on age dependent behaviour factors of population subsections that are exposed. For example, children are more likely to gather soil on their hands and have more frequent hand-mouth transfer rates.

Hazard quotients (HQs) were estimated for each receptor for Scenarios 1 (Current Operations) and 2 (MOD6 Operations). The HQs were calculated by adding up the HQ from:

- intake via air calculated by dividing the modelled metal concentration (which includes contribution from background in Broken Hill) in PM_{10} by the respective chronic air guideline value (Section 4.3.2), and
- oral intake via soil/dust calculated by dividing the estimated overall lifetime weighted daily intake for all life stages (also called the time weighted average daily intake or TWADI)[44] by the TDI adjusted for potential background exposures (Section 4.3.1) from diet, water and air; the latter includes consideration of metal intake from home-grown produce[45].

The total HQs for each metal were summed to calculate an overall hazard index. If HQs and HIs are less than unity it indicates that under the exposure scenarios being considered there is little likelihood of health effects occurring.

4.4.1 Exposure equations

Exposure pathways which were quantitatively evaluated are:

- Ingestion of metal in soil/dust, and
- Inhalation of metal in air.

Age-specific physiological parameters (e.g. body weight, soil/dust ingestion rate, etc.) for each age group were assumed to correspond to the mean age in the age group. For example, for the 0.5-3 year life stage, physiological parameters were assumed to be equivalent to those of a 2 year old child ([0.5 + 3]/2 = 1.75 yrs, rounded to 2 yrs).

4.4.1.1 Ingestion of metals in soil/dust deposited from Rasp Mine

Estimated daily intake via ingestion of soil/dust was calculated using the Equations in Table 4-3 below (from enHealth 2012a).

[44] The comparison was done using daily intake of metals for infants/toddlers (0.5 up to 3 years), children (3 up to 13 years), adolescents (13 up to 18 years) and adults (18 up to 82 years).

[45] Where possible, TDIs have been adjusted for both background intake from normal dietary exposure, but also for home-grown produce, as per the approach taken in NEPM (2013), where a certain percentage of the TDI was allocated to home-grown produce. The latter varies for each metal depending on the importance of this exposure pathway (see Section 4.3.1).

The lifetime time-weighted average daily intake (TWADI, i.e. $Intake_{ing\_lifetime}$) calculated for each metal or metalloid from soil/dust ingestion was compared with the background-adjusted TDI to generate an oral HQ for soil/dust ingestion (plus background intakes).

Table 4-3 Equation and parameters for estimating ingestion of metals in soil/dust deposited from Rasp Mine

Parameter	Acronym	Units	Value	Basis/Description
Equation 1 [(1)]: $Intake_{ing(x)} = \frac{\left[(C_S x BAc_{mine-derived}) + (C_{S_{existing(end)}} x BAc_{background})\right] x IR_{as} x CF x EF x ED_x x BA_{oral}}{365 x BW_{as} x AT_x}$ Equation 2: $Intake_{ing\_lifetime} = \frac{(Intake_{ing(0.5-3)} x 365 x AT_x) + (Intake_{ing(3-13)} x 365 x AT_x) + (Intake_{ing(13-18)} x 365 x AT_x) + (Intake_{ing(18-82)} x 365 x AT_x)}{AT_{lifetime}}$ Equation 3: $HQ_{oral} = \frac{Intake_{ing_{lifetime}}(TWADI)}{TDI_{adj}}$				
Life stage oral intake (ingestion) of metal/ metalloid from soil/dust	$Intake_{ing(x)}$ $Intake_{ing(0-3)}$ $Intake_{ing(3-13)}$ $Intake_{ing(13-18)}$ $Intake_{ing(18-82)}$	µg/kg bw/day	Calculated using Equation 1 in this table. The (x) in the subscript refers to the specific life-stage (i.e. 0-3, 3-13, 13-18, or 18-82 years) being calculated.	
Soil metal concentration after 5 years of remaining mine life	C_s	mg metal/ kg soil	Calculated using Equation in Table 2-5.	
Bioaccessibility of mine-derived soil/dust	$BAc_{mine-derived}$	unitless	Metal-specific. As determined by bioaccessibility testing for Cr, Fe, Mn, Cd, and As (Table 2-2). In the absence of data, this was assumed to be 100% (i.e. 1) for other metals.	
Existing (i.e. 'background') soil metal concentration after 5 years of remaining mine life	$C_{s\_existing(end)}$	mg metal/ kg soil	Metal-specific. Calculated using Equation in Table 2-6 for those metals/metalloids for which 'background' soil/dust data were available. For those metals for which no existing soil data were available, existing soil metal concentrations could not be considered.	
Bioaccessibility of background (i.e. existing) soil/dust	$BAc_{background}$	unitless	Metal-specific. As determined by bioaccessibility testing for Cr, Fe, Mn, Cd, and As (see Table 2-2). In the absence of data, this was assumed to be 100% (i.e. 1) for other metals.	
Age-specific rate of soil/dust ingestion per day	IR_{as}	mg/day	0.5-3yrs: 100 3-13 yrs: 100 13-18 yrs: 50 18-82 yrs: 50	Central tendency values (outside soil + indoor dust) (enHealth 2012b).
Conversion factor	CF	(kg/mg soil) (µg/mg)	0.001	(10^{-6} kg soil/mg soil) x (10^3 µg/mg) = 10^{-3}
Exposure frequency	EF	days/yr	365	Residential exposure assumes exposure throughout the whole year (365 days/year).

Parameter	Acronym	Units	Value	Basis/Description
Age-interval exposure duration	ED_x	yr	0.5-3yrs: 2.5 3-13 yrs: 10 13-18 yrs: 5 18-82 yrs: 64	Number of years in relevant age dependent exposure span. Neonate exposure is considered to be very low for the first 0.5 years of life. Hence for the ages 0-3 years the exposure interval is 2.5 years (US EPA 1994a, pg. 1-19).
Absolute bioavailability of ingested metal (i.e. absorption from the gastrointestinal tract)	BA_{oral}	unitless	1	Since the TDIs for all metals are based on applied doses in dietary or drinking water studies (Section 4.3.1), the bioavailabilities of all metals assessed in this section were assumed to be 100%.
Part of averaging time	365	days/yr	365	Number of days per year to calculate averaging time in days.
Age-interval body weight	BW_{as}	kg	0.5-3yrs: 11 3-13 yrs: 24 13-18 yrs: 56 18-82 yrs: 78	Average body weight by age range (enHealth 2012b).
Averaging time	AT_x	yrs	0.5-3yrs: 2.5 3-13 yrs: 10 13-18 yrs: 5 18-82 yrs: 64	This is the age-specific exposure period and is equal to the exposure duration.
Time-weighted average daily intake (TWADI) of metal/metalloid from soil/dust ingestion over a lifetime	$Intake_{ing\_lifetime}$	µg/kg bw/day	Calculated using Equation 2 in this table.	
Averaging time for lifetime exposure	$AT_{lifetime}$	days	29,930	Averaging time for lifetime exposure (82 years x 365 days/year = 29,930)
Hazard quotient from TWADI oral intake	HQ_{oral}	unitless	Calculated using Equation 3 in this table.	
Tolerable daily intake adjusted for background intakes from diet, water and air	TDI_{adj}	µg/kg bw/day	Varies by metal/metalloid	See Table 4-1.
1. Adapted from enHealth 2012a.				

4.4.1.2 Inhalation of metals in airborne dust from mine site

Both NEPM (2013) and the US EPA (2009b) revised guidance for inhalation risk assessment for superfund sites recommend that when estimating risk via inhalation, risk assessors should use the concentration of the chemical in air as the exposure metric rather than inhalation intake of a chemical in air. The former is then compared directly with an appropriate air guideline value. This approach has been taken in this risk assessment (see Equation in Table 4-4). The approach assumes the modelled air metal concentration in PM_{10} is the same indoors and outdoors, and exposure may occur 24 hours per day over the entire lifetime of an individual. This is conservative because only a fraction of outdoor air infiltrates indoors, and a person spends the majority of their time indoors.

Table 4-4 Equation and parameters for estimating inhalation hazard quotient

Parameter	Acronym	Units	Value	Basis/Description
Equation 1: $HQ_{inhal} = \frac{C_A}{AGV}$				
Hazard quotient from inhalation intake	HQ_{inhal}	unitless	Calculated using Equation 1 in this table.	
Modelled annual average concentration of metal in PM_{10} fraction in air	C_A	µg/m^3	Varies with metal/metalloid, receptor location, and scenario. This concentration includes background concentrations of metals in air. For individual values see Appendix H.	
Chronic air guideline value	AGV	µg/m^3	Varies with metal/metalloid. See Table 4-2.	

4.4.1.3 Hazard index

The hazard quotients for oral (HQ_{oral}) and inhalation (HQ_{inhal}) exposure were added together for each individual metal/metalloid to calculate an overall HQ. HQs for individual metals/metalloids (except Pb, which has been assessed separately) were then added together to calculate a HI.

4.5 Results and Conclusions

4.5.1 Hazard indices

The hazard indices (HIs) represent the sum of all HQs (for both the oral and inhalation exposure pathways) for metals other than Pb for incidental ingestion of metal in soil/dust, inhalation of metal in air (dust), as well as background intakes of metal from the diet including home-grown produce[46]. They are presented in Figure 4-2 for each receptor location. The scenarios evaluated assume 5 years' remaining operational life of the Rasp Mine and include intakes from 'background' (i.e. existing) soil metal concentrations. For each metal, the oral intakes for each life stage, oral and inhalation hazard quotients, as well as the overall hazard quotients are presented in Appendix J. As expected, the estimated intakes were highest for the 0-3 year old age group; this is because children have higher exposures relative to their body weights.

As shown in Figure 4-2, hazard indices (which represent the sum of HQs for all 13 metals/metalloids assessed):

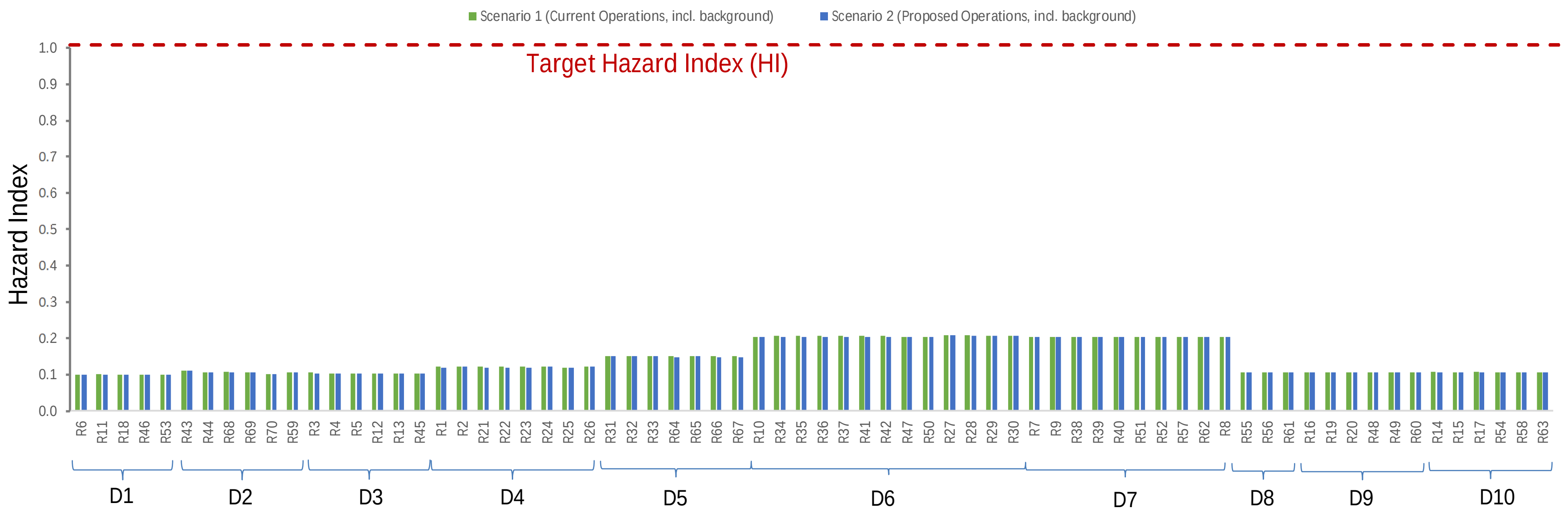
- For Scenario 1 (Current Operations) range from 0.1 (for all receptor locations in District 1) to 0.21 (for almost all receptor locations in District 6 and 7).
- For Scenario 2 (Proposed Operations) are very similar and also range from 0.1 (for all receptor locations in District 1) to 0.21 (for all receptor locations in District 6 and 7).

The estimated HIs are essentially unchanged between Scenarios 1 and 2, because:

[46] The latter has been accounted for by adjusting the TDI for background intake from the diet but also assuming an additional contribution to the TDI from home-grown produce; this contribution is metal/metalloid-specific and is described in Section 4.3.1).

- The incremental change to metal air and dust emissions from the MOD6 Proposal compared with current operations is negligible, i.e. the Scenarios result in almost identical emissions at each receptor.
- The increment from the Proposal makes negligible contribution to overall intake when compared with background oral intakes from existing soil metal concentrations in Broken Hill.

Since all HIs are distinctly less than unity, it is concluded the risk of exceeding health-based TDIs and AGVs as a result of MOD6 is very low, as a consequence the risk of harm is also very low. The assessment is conservative in that it assumes additivity between metals (see Section 4.2).



The hazard indices (HI) are the sum of hazard quotients of individual metals (As, Cd, Cr, Fe, Mn, Sb, Ba, Be, Cu, Hg, Ni, Ag, and Zn). Hazard quotients consist of an estimate of the lifetime average daily intake (TWADI) of ingestion of metal in soil/dust compared with tolerable daily intake (TDI) for each metal, the latter adjusted for background intakes including home-grown produce; these HQs were added to those calculated from comparing modelled annual average metal in PM_{10} with chronic air guideline values (AGVs). The assessment also includes existing concentrations of metals in soil. The calculated HIs from the Proposal are low indicating the likelihood of exceeding the chronic TDIs and AGVs as a result of the Proposal going forward is also low.

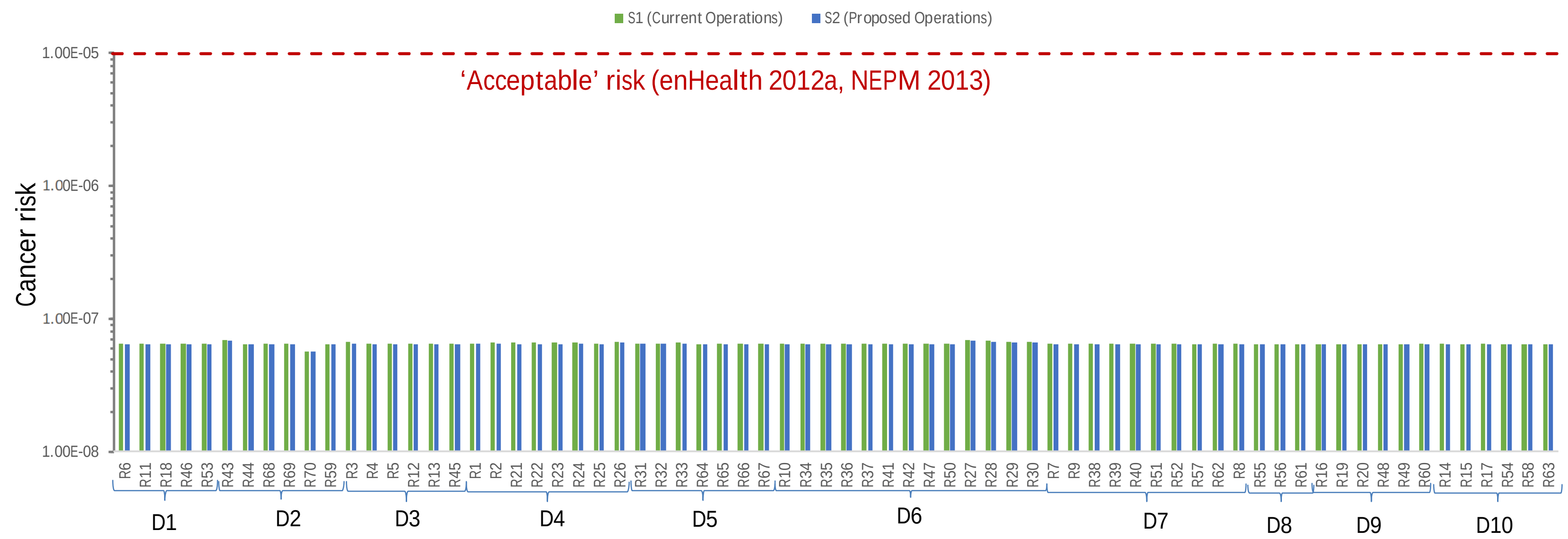
Figure 4-2 Chronic hazard indices for all evaluated receptors

4.5.2 Cancer risk

For the chemicals of potential concern evaluated in this HHRA, two metals (Ni and Cr^{VI}) are considered potential genotoxic carcinogens via the inhalational route of exposure (Appendix K). These metals have been assessed for cancer risk via inhalation exposure as per Section 4.3.3. The estimated summed 'cancer risk' was compared with a target acceptable risk of 1×10^{-5} as recommended by enHealth (2012a) and NEPM (2013).

The highest estimated cancer risk is 6.91×10^{-8} (Figure 4-3, R27, Scenario 1). This is more than two orders of magnitude below the commonly accepted risk of one in one hundred thousand[47], therefore it is concluded the emissions from the Proposed Modification MOD6 do not pose an unacceptable inhalation carcinogenic risk. The cancer risk calculations are presented in Appendix J.

[47] This is more than one order of magnitude below the 1 in a million cancer risk considered to be acceptable by NSW EPA (2016).



Incremental lifetime cancer risk from inhalation exposure to Ni from Current Operations (S1) and Proposed Operations (S2) are markedly lower than what is considered by Australian regulatory agencies to be acceptable (1 x 10^{-5}), therefore it is concluded the risk of developing cancer from the emissions of MOD6 is very low.

Note the y-axis is on a logarithmic scale.

Figure 4-3 Incremental cancer risk at all receptor locations

4.6 Uncertainty Analysis for other metals

Many of the uncertainties discussed for Pb in Section 3.7 are also applicable to the other metals assessed. Additional uncertainties/assumptions and the effect they have on the risk assessment for other metals are summarised in Table 4-5. The assumptions made in this report are considered conservative so that they are more likely to over- rather than under-estimate the risk of harm.

Table 4-5 Uncertainties in the HHRA for metals other than Pb and potential effect on health risk assessment outcome

Uncertainty/ Assumption	Comment	Effect on Risk Assessment
Exposure estimation *'Background' air metal concentrations*	'Background' concentrations of metals other than Pb in PM_{10} were estimated in a manner as advised by ERM[48], i.e. by assuming the same proportionality of metal to Pb in the orebody. Thus, to calculate the 'background' concentration in PM_{10} for metals other than Pb at each receptor location, the Pb 'background' concentration in PM_{10} provided by ERM was multiplied by the ratio of the respective metal to Pb in the orebody. ERM advised SLR this was the most appropriate manner of estimating potential 'background' metal concentrations in PM_{10} in the absence of monitoring data for these metals.	Although the estimate of 'background' concentrations for metals other than Pb in PM_{10} is uncertain, no other information for 'background' concentrations of metals in air was available. Nevertheless, compared to background-adjusted TRVs for these metals, the calculated overall intakes from soil/dust ingestion (which incorporates existing soil metal concentrations) were very small; and compared to chronic air guideline values, the air metal concentrations (including 'background') were also very small as demonstrated by the small calculated HIs (0.1 – 0.2). Therefore, the conclusions are unlikely to change if measured data were available. It is also noted that the inhalation pathway makes negligible contribution to total intake (see Figure 3-10 for Pb). A similar observation would also be applicable to metals other than Pb.
Background exposures	The TRVs were adjusted for the potential contribution from background exposures (including home-grown produce). The contribution was based on literature information, including for background dietary intakes.	The background intake assumptions are for intakes at the high end of the range of potential exposures, and are therefore likely to overestimate rather than underestimate exposure for the majority of the population.

[48] E-mail correspondence between Jordan Eastwood (ERM) and Tarah Hagen (SLR) entitled 'RE: Rasp Mine – Metals in PM10 Results', dated 22/05/2020.

Uncertainty/ Assumption	Comment	Effect on Risk Assessment
Bioaccessibility of metal from soil	For Pb, Fe, Mn, Cd and As, the highest average bioaccessibility (from pH 1.5 and pH 6.5-7) obtained in the soil/dust samples collected from mine-derived dust (i.e. 'free areas' or waste rock) or from urban locations around Broken Hill was used in the HHRA. The bioaccessibility of mine-derived dust was taken to be the higher of the two (i.e. 'free areas' or waste rock), unless all samples were combined (see Section 2.5). For other metals, in the absence of any data, or where a bioaccessibility could not be readily ascertained (Cr), 100% bioaccessibility was assumed.	Although the bioaccessibility testing has not yet been validated for metals other than As and Pb, the physiological principles underpinning the use of the test are also applicable to other metals. It is therefore considered more realistic to utilise the bioaccessibility information in the HHRA. More realistic assumptions ensure the assessment is not unnecessarily overly conservative. The assumption of 100% bioaccessibility for other metals (and Cr) is conservative and will likely over-estimate hazard indices and conclusions regarding risk of harm from exposure to these metals. Nevertheless, because calculated HIs are very low, assuming 100% bioaccessibility for all metals (other than Pb) would not alter the conclusions of the HHRA.
TRVs are protective	The HHRA relies on regulatory guidelines (TRVs) established to protect public health. These have been sourced from reputable authorities who establish the guideline to ensure the most susceptible portion of the population is protected.	It is unlikely the guidelines used will fail to be protective of all or nearly all individuals. This is the very essence of the philosophy of creating public health guidelines.
There may be interactive health effects between metals emitted	Regardless of effect or mode of toxicological action, additivity of either dose or effect has been assumed to occur between metals emitted from the Rasp Mine (Section 4.2).	This practice causes the HHRA to grossly overestimate the health risks to combined exposure to metals. This is because each TRV typically contains large safety factors applied to doses which are without adverse health effect; in addition, for chemicals to interact toxicologically they need to affect the same target organ via the same mechanism of action. The resulting hazard index, after accounting for potential background intakes and existing soil metal concentrations, at the most affected receptor location is 0.2. Therefore, even when assuming a toxicological interaction between each of the metals, the HI is low indicating the risk of harm is also low. This does not alter, in fact it strengthens, the conclusions of the HHRA.

Uncertainty/ Assumption	Comment	Effect on Risk Assessment
Toxicological potency of metals emitted from the Proposal	The metals present in the orebody at the Rasp Mine are likely present as relatively insoluble metals complexed in mineral form (e.g. as metal sulphides). It is assumed the metals in emissions are in a form which can cause a health effect (e.g. cancer) while in fact they may not be.	The form of metals typically used in toxicity experiments and for hazard assessment (e.g. for deriving the unit risk factor for nickel carcinogenicity) are soluble forms such as oxides or metal salts. The assessment assumes the metals in the orebody will be similarly available and have similar toxicity to the soluble metals on which the toxicological information has been based. This is conservative and is likely to over-estimate the risk of harm.

5 Overall Conclusions

Lead (Pb)

Overall, BPb concentrations in 1-2 year old children living in Broken Hill are not anticipated to be affected by activities associated with the Proposal.

Other metals

It is concluded the risk of exceeding health-based toxicity reference values as a result of the Proposal is very low, and cancer risks are considered negligible or acceptable. The assessment is conservative.

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APPENDIX A

Bioaccessibility Concepts

As briefly discussed in Section 2.5, SBRC validation has been undertaken for Pb (646 – 3,905 mg/kg) (Juhasz et al. 2009). Following solubility studies with a soluble form of Pb (Pb acetate), the bioaccessibility of Pb in various samples of contaminated soils was determined by Juhasz et al. (2009) using the SBRC method. In four of the five soils, Pb bioaccessibility was >60% following gastric phase dissolution, i.e. at a pH of 1.5 (the exception was one soil where 35.7% of total Pb was bioaccessible at pH 1.5). When solution conditions were modified to reflect fasted 'intestinal phase' conditions, bioaccessibility markedly decreased to 13.3 ± 2.1% at a pH of 4.0. Increasing the intestinal phase pH from 4 to 7.5, representative of fed intestinal conditions, resulted in further decreases in soluble Pb, however the concentration of Pb in solution plateaued at pH values between 6.5 and 7.5.

Juhasz et al. (2009) compared the results obtained from the SBRC method with results in swine experiments. Pb doses were administered under fasting conditions to female white swine (6-8 weeks old). The relative bioavailability[49] of Pb in contaminated soils was determined by comparing the area under the blood-Pb concentration time curve for orally administered contaminated soil and a Pb acetate reference dose. When relative Pb bioavailability in swine was plotted against gastric, intestinal and relative intestinal bioaccessibilities[50] determined using the SBRC method, relative intestinal bioaccessibility provided the best estimate of *in vivo* relative Pb bioavailability, followed by intestinal bioaccessibility (see Figure D.1). The relationship between gastric bioaccessibility and *in vivo* relative Pb bioavailability was poor (Juhasz et al. 2009). Relative intestinal Pb bioaccessibilities obtained in the SBRC test for the various soil samples tested by Juhasz et al. (2009) fell somewhere between the intestinal and gastric bioaccessibility values (see Figure D.1).

It should be noted the *in vivo* relative Pb bioavailability shown on the x-axis in Figure D.1 would still need to be corrected for the *in vivo* absorption of soluble Pb acetate in swine prior to reflecting the absolute bioavailability of Pb for use in a health risk assessment. In humans, absorption of soluble Pb from diet and water is approximately 50% in children and 20% in adults (US EPA 1999b, ATSDR 2007a).

Figure D.1 illustrates that use of gastric bioaccessibility on its own would markedly overestimate *in vivo* bioaccessibility. Since intestinal bioaccessibility values (relative to soluble Pb acetate), the parameter which showed the best correlation with *in vivo* Pb bioavailability in swine (Juhasz et al. 2009), were not reported in the bioaccessibility testing undertaken for the samples collected for this HHRA, an average of the gastric and intestinal phase bioaccessibility data have been used in this HHRA. To examine whether this assumption is likely to be conservative, data from validation experiments undertaken with a similar *in vitro* test (PBET) are discussed below.

[49] Relative bioavailability refers to a comparison of absolute bioavailabilities. This is the ratio of the bioavailability of a substance in one exposure context to that in another exposure context. For example, in the IEUBK model for Pb the default assumption is that 50% of an oral Pb dose is absorbed from food and water into the systemic circulation of children, while only 30% of a soil Pb dose is assumed to be absorbed, i.e. the relative bioavailability of a soil Pb dose is 60% (30 ÷ 0.5) of that from diet and water. Juhasz et al. (2009) calculated the Pb bioavailability of soil Pb relative to that of Pb acetate (a soluble form of Pb) as follows:

$$[(AUC_{oral\text{-}soil} \div AUC_{oral\text{-}Pbacetate}) \times (DR_{oral\text{-}Pbacetate} \div DR_{oral\text{-}soil})] \times 100$$

Where $AUC_{oral\text{-}soil}$ = area under the Pb blood concentration versus time curve for an oral Pb-contaminated soil dose, $AUC_{oral\text{-}Pbacetate}$ = area under the Pb blood concentration versus time curve for an oral dose of Pb acetate, $DR_{oral\text{-}soil}$ = dose of orally administered soil (mg/kg) and $DR_{oral\text{-}Pbacetate}$ = dose of orally administered Pb acetate (mg/kg).

[50] Intestinal bioaccessibility relative to soluble Pb acetate.

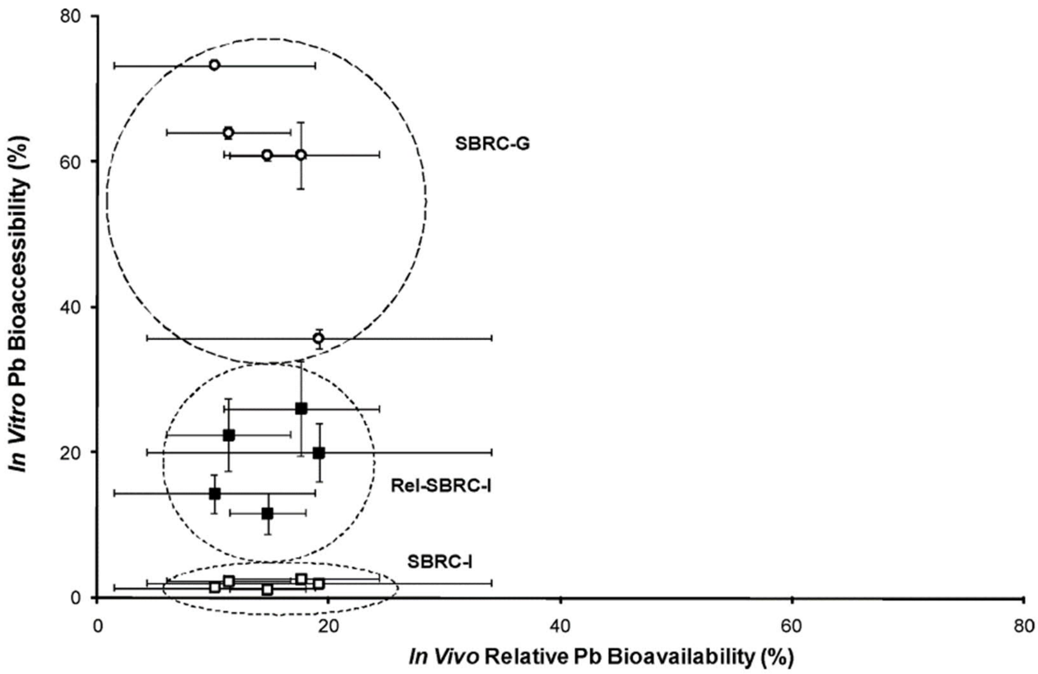

Figure D.1 Relationship between Pb bioaccessibility, determined using SBRC-gastric (G – open circles), SBRC-intestinal (I – open squares) and relative SBRC-intestinal (Rel-SBRC-I – closed squares) and relative Pb bioavailability determined *in vivo* in swine (Figure 2 from Juhasz et al. 2009)

As discussed in Section 2.5, the PBET test uses a similar methodology to the SBRC test, except that additional pHs (i.e. 1.3, 2.5, 4, and 7 instead of just 1.5 and 6.5-7) are used in the test.

PBET validation has been undertaken for Pb (1,388 – 10,230 mg/kg) and As (170 – 3,900 mg/kg) using *in vivo* oral bioavailability studies in rats, rabbits or monkeys (Ruby et al. 1996). In these experiments, on entering the small intestinal phase, solubilised Pb decreased by 74 ± 18%, consistent with extensive adsorption and precipitation reactions removing Pb from solution as the pH increases. Relative Pb bioaccessibility from the PBET test and Pb bioavailability in rats were compared using linear regression. At a simulated stomach pH of 2.5, this model yielded an r^2 of 0.93 (n=7) based on bioaccessibility calculated from the stomach phase data and an r^2 of 0.76, based on the small intestinal phase data (Ruby et al. 1996).

Bruce et al. (2007) have used the PBET model in a risk assessment for assessing the bioavailability of Pb and As in mine waste from a Queensland mining operation and it has been applied in assessment of heavy metals (including Pb) at the Leichhardt River in Queensland (Noller et al. 2009) and in a recently published health risk assessment of Pb in Mount Isa (Noller et al. 2017). Noller et al. (2017) measured the rat *in vivo* bioavailability of Pb in 10 samples of soil/dust collected in Mount Isa and found all of these to be <6.2% bioavailable *in vivo*. When the *in vitro* PBET data were fitted to the *in vivo* data, the results showed that the *in vivo* rat bioavailability of a sample was less than 20% its PBET bioaccessibility (determined using the average of four pHs as noted above) (see Table A1). Noller et al. (2017) advocate that their study indirectly confirms that use of gastric-only bioaccessibility data over-predicts Pb bioavailability in children.

Table A1 *In vivo* bioavailability of Pb in rats compared with PBET average *in vitro* bioaccessibility (Noller et al. 2017)

Sample ID	% *in vivo* bioavailability (blood) (A)	% *in vitro* PBET bioaccessibility (average at pH 1.3, 2.5, 4, and 7) (B)	Slope (Ratio A/B)
CS	1.2	9.8	0.12
RG	1.0	15.4	0.06
CD	1.1	5.6	0.2
SS22	0.4	19.9	0.02
SS13	3.0	14.4	0.21
LR10	0.2	24.0	0.01
H2	0.2	3.8	0.05
SS26	0.01	25.4	0.0
SS27	1.4	9.36	0.15
HVAP PM_{10}	6.2	20.5	0.3
Mean ± SD	1.47 ± 1.78	14.82 ± 7.19	0.11 ± 0.1
95% UCI	2.57	19.27	0.17
SD = Standard Deviation. UCI = Upper Confidence Interval.			

The conclusions from the work by Noller et al. (2017) can be applied to determine whether use of the average bioaccessibility from the SBRC test is likely a conservative assumption.

As discussed above Noller et al. (2017) found *in vivo* rat bioavailability of a sample was less than 20% of the average bioaccessibility obtained using four different pHs (1.3, 2.5, 4 and 7), i.e. the *in vitro* average bioaccessibility overestimated the *in vivo* rat bioavailability of Pb. The SBRC test only uses two pHs but these pHs cover a similar range to those in the PBET test (1.5 and 6.5-7.5). Therefore, one would expect the average bioaccessibility of the two pHs in the SBRC test to also be an overestimate of the *in vivo* bioavailability. Keeping in mind that the *in vitro* Pb bioaccessibility result is typically adjusted by 50% to account for gastrointestinal absorption of soluble Pb from diet and water, then one could expect the *in vitro* bioaccessibility (as an average of the gastric and intestinal bioaccessibilities) still to overestimate *in vivo* bioavailability once corrected for absorption. This has been illustrated below with an example.

- The average of gastric and intestinal Pb BAc obtained in the SBRC test undertaken on the samples collected for this HHRA was 42% (approximate average[51] of gastric values of 68% and an intestinal value of 16%).
- According to the Noller et al. (2017) work on the PBET, the corresponding *in vivo* bioavailability in rats would be expected to be <20% of this value (i.e. *in vivo* bioavailability of <8.4%).
- If the average *in vitro* bioaccessibility obtained in the SBRC tests of 42% is then adjusted for 50% absorption of soluble Pb in diet and water, this would result in a Pb bioavailability of 21% in soil/dust from the Rasp mine and Broken Hill.
- This Pb bioavailability (21%) is therefore still an overestimate of the expected *in vivo* bioavailability in rats (<8.4%).
- Thus, the use of average bioaccessibility (at pH of 1.5 and 6.5-7) from the SBRC test is likely a conservative assumption.

[51] Averages for gastric and intestinal bioaccessibilities on their own are approximates based on the overall average of 42% calculated by using the average bioaccessibility obtained at pH 1.5 and 6.5-7 for each individual sample.

References for Appendix A

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APPENDIX B

Summary of Bioaccessibility Data

1 LEAD

The majority of the Pb results (for the gastric and intestinal bioaccessible concentrations) were above the LoR of 10 mg/kg. A one-way ANOVA demonstrated 'borderline' statistically significant differences between BAc% values from the sample locations $F(2, 49) = 3.177$, $p = 0.0504$. Thus the highest average (urban areas: 41.8 ± 6.1%) was used in the HHRA.

		Total Pb mg/kg	Gastric Bioaccessibility (%)[1]	Intestinal Bioaccessibility (%)[1]	Average Gastric Intestinal Bioaccessibility (%)[1]
Receptors (BHS01-BHS21)	Average	490	69.5%	11.8%	41.8%
	ST DEV	329	9.5%	5.8%	6.1%
	MIN	104	48.3%	4.9%	28.8%
	MAX	1150	87.8%	23.7%	50.8%
	COUNT (>LoR)	21	21	17	17
Free areas (CBH01-CBH30)	Average	7527	59.3%	14.1%	36.7%
	ST DEV	6127	14.5%	6.2%	9.6%
	MIN	2155	17.1%	3.0%	10.1%
	MAX	29700	89.4%	30.5%	54.0%
	COUNT (>LoR)	30	30	30	30
Waste rock (CBH31-CBH35)	Average	3897	53.1%	10.8%	31.9%
	ST DEV	2548	17.3%	3.0%	10.0%
	MIN	393	29.3%	7.6%	18.5%
	MAX	7485	76.4%	15.0%	45.7%
	COUNT (>LoR)	5	5	5	5
Average	Average	4564	62.6%	13.0%	36.8%
	ST DEV	5610	14.1%	5.9%	8.6%
	MIN	104	17.1%	3.0%	19.1%
	MAX	29700	89.4%	30.5%	50.2%

[1] The Limit of Reporting (LoR; 10 mg/kg) was appropriate for most of this data and intestinal bioaccessibility (BAc) summary statistics were calculated from raw data for the three sample locations. Across these three groups, the average of gastric and intestinal bioaccessibility (BAc%) was normally distributed as assessed by the Shapiro-Wilk test of normality (p > 0.05).

2 CHROMIUM

Total chromium (Cr) levels were low in all the dust samples from the three locations, and all gastric and intestinal bioaccessibility (BAc) results were below the LoR of 10 mg/kg and so no statistical analysis could be undertaken. It was therefore assumed that Cr bioaccessibility was 100%. It is noted, however, that if it was assumed that the concentration in these samples was present at just below the LoR (9.9 mg/kg) in order to calculate average gastric and intestinal BAc% from total Cr concentrations, that there would be no difference between the three sample groups, and the overall average bioaccessibility from the three groups would be a maximum of 44.9. ± 8.3%. i.e. the 100% bioaccessibility assumption for Cr is highly conservative.

		Total Cr mg/kg	Gastric Bioaccessibility (%)[1]	Intestinal Bioaccessibility (%)[1]	Average Gastric Intestinal Bioaccessibility (%)[1]
Receptors (BHS01-BHS21)	Average	24.10	<10	<10	<10
	ST DEV	4.78			
	MIN	19.00			
	MAX	37.00			
	COUNT (>LoR)	21	0	0	0
Free areas (CBH01-CBH30)	Average	20.50	<10	<10	<10
	ST DEV	4.14			
	MIN	8.00			
	MAX	26.00			
	COUNT (>LoR)	30.00	0	0	0
Waste rock (CBH31-CBH35)	Average	23.40	<10	<10	<10
	ST DEV	3.97			
	MIN	20.00			
	MAX	30.00			
	COUNT (>LoR)	5	0	0	0

[1] The Limit of Reporting (LoR; 10 mg/kg) was not appropriate for this data as all bioaccessibility (BAc) results from the three sample locations were below the LoR.

3 IRON

The majority of iron (Fe) intestinal bioaccessibility (BAc) results for the soil/dust samples from urban areas (18/21) were below the LoR of 50 mg/kg. A one-way ANOVA demonstrated a statistically significant difference between BAc% values from the three sample groups $F(2, 18) = 6.194$, $p = 0.008$, with the waste rock samples showing relatively higher BAc%. It is recognised the small sample size from the urban areas (n=3) limit the veracity of this comparison. However, as the absolute differences are unlikely to be biologically significant (i.e. 0.8, 1.6, or 3.05%), the highest average BAc% (waste rock samples: 3.05 ± 0.01%) was conservatively used in the HHRA for all locations.

		Total Fe (mg/kg)	Gastric Bioaccessibility (%)[1]	Intestinal Bioaccessibility (%)[1]	Average Gastric Intestinal Bioaccessibility (%)[1]
Urban (BHS01-BHS21)	Average	26845	1.0%	0.4%	0.8%
	ST DEV	3908	0.3%	0.2%	0.2%
	MIN	21700	0.5%	0.2%	0.6%
	MAX	34200	1.9%	0.6%	1.1%
	COUNT (>LoR)	21	21	3	3
Free areas (CBH01-CBH30)	Average	29258	2.8%	0.3%	1.6%
	ST DEV	2963	2.6%	0.1%	1.3%
	MIN	23750	0.5%	0.2%	0.6%
	MAX	39800	9.1%	0.8%	4.6%
	COUNT (>LoR)	30	30	17	17
Waste rock (CBH31-CBH35)	Average	30420	5.6%	0.5%	3.05%
	ST DEV	1265	2.1%	0.3%	0.9%
	MIN	29200	2.7%	0.3%	1.8%
	MAX	31900	8.7%	0.9%	4.5%
	COUNT (>LoR)	5	5	5	5
Average	Average	28457	2.4%	0.30%	1.8%
	ST DEV	3463	2.4%	0.18%	0.8%
	MIN	21700	0.5%	0.15%	1.0%
	MAX	39800	9.1%	0.90%	3.4%

[1] The Limit of Reporting (LoR; 50 mg/kg) was not appropriate for intestinal bioaccessibility (BAc) for the Receptor samples. The BAc% results for the 'free area' samples were not normally distributed, as assessed by the Shapiro-Wilk test of normality ($p < 0.05$), whereas the other two groups of samples were.

4 MANGANESE

All of the manganese (Mn) results were above the LoR of 10 mg/kg. A one-way ANOVA demonstrated a statistically significant difference between the BAc% values from the three sample locations $F(2, 52) = 6.619$, p 0.003. Therefore, it was assumed mine-derived Mn has a BAc% of 54% (equivalent to that of waste rock) and Mn in urban soils/dust has a BAc% of 35% equivalent to that measured in samples taken from urban areas.

		Total Mn mg/kg	Gastric Bioaccessibility (%)[1]	Intestinal Bioaccessibility (%)[1]	Average Gastric Intestinal Bioaccessibility (%)[1]
Urban (BHS01-BHS21)	Average	556	40.7%	28.3%	34.5%
	ST DEV	315	7.8%	4.5%	5.8%
	MIN	191	22.7%	19.2%	21.0%
	MAX	1490	52.3%	34.6%	42.9%
	COUNT (>LoR)	21	21	21	21
Free areas (CBH01-CBH30)	Average	6686	29.7%	24.9%	27.3%
	ST DEV	10761	22.6%	17.1%	19.6%
	MIN	1700	0.4%	2.4%	3.0%
	MAX	53050	89.7%	72.3%	81.0%
	COUNT (>LoR)	30	29	29	29
Waste rock (CBH31-CBH35)	Average	697	57.3%	50.1%	53.7%
	ST DEV	376	15.7%	13.4%	14.5%
	MIN	257	39.0%	36.8%	37.9%
	MAX	1285	81.7%	70.8%	76.3%
	COUNT (>LoR)	5	5	5	5

[1] The Limit of Reporting (LoR) was appropriate for all the Mn data and bioaccessibility (BAc) summary statistics were calculated from raw data for the three sample locations. The BAc% results for the 'free area' samples were not normally distributed, as assessed by the Shapiro-Wilk test of normality ($p < 0.05$), whereas the other two groups of samples were.

5 CADMIUM

Total cadmium (Cd) levels in the samples from urban areas were low and the majority (19/21) of the intestinal and gastric bioaccessibility (BAc) results in these samples were below the LoR of 5 mg/kg. A one-way ANOVA demonstrated a statistically significant difference between the BAc% values from the three sample locations $F(2, 29) = 8.821$, $p = 0.001$, with each pair differing. It is recognised the small sample size from the urban area (n=2) and waste rock (n=3) limits the veracity of this comparison. For this reason, the average value of gastric and intestinal bioaccessibility across the all samples was used for all locations (i.e. 56%).

		Total Cd (mg/kg)	Gastric Bioaccessibility (%)[1]	Intestinal Bioaccessibility (%)[1]	Average Gastric Intestinal Bioaccessibility (%)[1]
Urban (BHS01-BHS21) #	Average	2.6	91.00%	74.00%	83.00%
	ST DEV	2.0	23.00%	16.00%	20.00%
	MIN	0.9	75.00%	62.50%	68.75%
	MAX	8.0	107.10%	85.70%	96.40%
	COUNT (>LoR)	21	2	2	2
Free areas (CBH01-CBH30)	Average	27.9	63.00%	54.00%	58.00%
	ST DEV	18.4	17.00%	13.00%	15.00%
	MIN	8.0	28.80%	26.00%	27.40%
	MAX	72.0	88.70%	75.00%	81.65%
	COUNT (>LoR)	30	27	27	27
Waste rock dust (CBH31-CBH35)	Average	22.6	32.00%	26.00%	28.00%
	ST DEV	11.6	12.00%	8.00%	9.00%
	MIN	3.0	23.30%	20.00%	21.65%
	MAX	32.0	40.60%	35.90%	38.25%
	COUNT (>LoR)	5	2	3	3
Average	Average	28457	62.00%	51.33%	56.3%
	ST DEV	3463	17.33%	12.33%	14.67%
	MIN	21700	42.37%	36.17%	39.27%
	MAX	39800	78.80%	65.53%	72.10%

[1] The Limit of Reporting (LoR; 5mg/kg) was not appropriate for the Cd data from the Urban samples as most results were <LoR. For the 'free area' samples, average BAc% was normally distributed as assessed by the Shapiro-Wilk test of normality (p > 0.05).

6 ARSENIC

Total arsenic (As) in the samples taken from urban areas was low and all of the gastric and intestinal bioaccessibility (BAc) results for these samples, and for all but two of the waste rock samples, were below the LoR of 10 mg/kg. A two sample t-test demonstrated no statistically significant difference between the 'free-area' and waste rock samples $t = 1.3479$, $p = 0.3815$. It is recognised the small sample size from the waste rock (n=2) limits the veracity of this comparison. Therefore, it was assumed that As has a BAc% of 16% (equivalent to that of the free areas, which was higher than waste rock).

		Total As (mg/kg)	Gastric Bioaccessibility (%)[1]	Intestinal Bioaccessibility (%)[1]	Average Gastric Intestinal Bioaccessibility (%)[1]
Urban (BHS01-BHS21)	Average	12.62	<10	<10	<10
	ST DEV	7.66			
	MIN	6.00			
	MAX	35.00			
	COUNT (>LoR)	21	2		
Free areas (CBH01-CBH30)	Average	116.77	22.1%	13.7%	16.1%
	ST DEV	66.01	10.6%	6.5%	6.1%
	MIN	18.00	4.5%	4.2%	4.5%
	MAX	279.00	55.0%	27.8%	27.3%
	COUNT (>LoR)	30	29	29	24
Waste rock dust (CBH31-CBH35)	Average	68.20	14.9%	12.3%	12.25%
	ST DEV	34.98	0.4%	3.2%	3.2%
	MIN	9.00	14.6%	10.0%	10.0%
	MAX	100.00	15.1%	14.5%	14.5%
	COUNT (>LoR)	5	2	2	2

[1] The Limit of Reporting (LoR, 10 mg/kg) was not appropriate for the As data from the Urban or Waste rock samples as the majority returned results <LoR. The average gastric and intestinal BAc% results for the samples from the 'free areas' were normally distributed, as assessed by the Shapiro-Wilk test of normality ($p < 0.05$).

7 TOTAL ELEMENT SUMMARY STATISTICS BY DISTRICT

Element (mg/kg)	District	n	mean	sd	median	min	max	range
Pb	D1	1	164	NA	164	164	164	0
	D10	3	342.7	189.7	353	148	527	379
	D2	5	734.6	282.6	692	368	1115	747
	D3	1	373	NA	373	373	373	0
	D4	1	573	NA	573	573	573	0
	D5	3	603.7	407.7	799	135	877	742
	D7	1	1150	NA	1150	1150	1150	0
	D8	6	251.3	162	213.5	104	567	463
Cr	D1	1	23	NA	23	23	23	0
	D10	3	27	8.7	23	21	37	16
	D2	5	24	7.3	21	20	37	17
	D3	1	24	NA	24	24	24	0
	D4	1	19	NA	19	19	19	0
	D5	3	24.3	2.1	25	22	26	4
	D7	1	24	NA	24	24	24	0
	D8	6	23.7	2.4	23	21	27	6
Fe	D1	1	27500	NA	27500	27500	27500	0
	D10	3	28316.7	4986.3	27250	23950	33750	9800
	D2	5	25270	3982.6	24150	22000	32200	10200
	D3	1	26550	NA	26550	26550	26550	0
	D4	1	21700	NA	21700	21700	21700	0
	D5	3	26983.3	3754.1	26250	23650	31050	7400
	D7	1	31650	NA	31650	31650	31650	0
	D8	6	27350	4325.6	26700	22850	34200	11350
Mn	D1	1	431	NA	431	431	431	0
	D10	3	409.3	105.9	470	287	471	184
	D2	5	677.4	332.3	633	328	1140	812
	D3	1	450	NA	450	450	450	0
	D4	1	640	NA	640	640	640	0
	D5	3	573	255	614	300	805	505
	D7	1	1490	NA	1490	1490	1490	0
	D8	6	389.8	187.2	317.5	191	673	482
Cd	D1	1	0.9	NA	0.9	0.9	0.9	0
	D10	3	1.3	0.6	1	0.9	2	1.1
	D2	5	3.6	2.6	3	1	8	7
	D3	1	1	NA	1	1	1	0
	D4	1	2	NA	2	2	2	0
	D5	3	4.7	2.1	4	3	7	4
	D7	1	5	NA	5	5	5	0

Element (mg/kg)	District	n	mean	sd	median	min	max	range
	D8	6	1.6	0.9	1.5	0.9	3	2.1
As	D1	1	7	NA	7	7	7	0
	D10	3	12.3	5.1	11	8	18	10
	D2	5	11.8	5.8	11	6	20	14
	D3	1	12	NA	12	12	12	0
	D4	1	12	NA	12	12	12	0
	D5	3	10.7	4	10	7	15	8
	D7	1	35	NA	35	35	35	0
	D8	6	11.8	9	7	6	28	22

APPENDIX C

Bioaccessibility Test Reports

University of South Australia

Assessment of Arsenic, Cadmium, Chromium, Iron, Lead and Manganese Bioaccessibility in Broken Hill Soil

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INTRODUCTION

This report was prepared for CBH Resources to assess arsenic, cadmium, chromium, iron, lead and manganese bioaccessibility in impacted soil. The bioaccessibility testing was conducted at the Future Industries Institute, based at the Mawson Lakes Campus of the University of South Australia (UniSA). UniSA's Flagship Institute focuses on building knowledge and capacity in core research strengths of physical chemistry and environmental science and management. The Institute has four distinct yet inter-related strands: Minerals and Resources; Energy and Advanced Manufacturing; Environmental Science and Engineering; and Bioengineering and Nanomedicine. The Institute aggregates and builds upon existing expertise and infrastructure from the Ian Wark Research Institute, the Mawson Institute and the Centre for Environmental Risk Assessment and Remediation. The vision for the Future Industries Institute aligns strongly with South Australian and National economic and research priorities by building a critical mass of trans-disciplinary research capacity focused on pressing real-world challenges.

OBJECTIVES

The objective of this assessment was to:

- Assess the concentration of arsenic, cadmium, chromium, iron, lead and manganese in the < 2 mm and < 250 μm soil particle size fractions;
- Assess arsenic, cadmium, chromium, iron, lead and manganese bioaccessibility in the < 250 μm soil particle size fraction using the gastric phase of the SBRC assay;
- Assess arsenic, cadmium, chromium, iron, lead and manganese bioaccessibility in the < 250 μm soil particle size fraction using the intestinal phase of the SBRC assay; and

OUTCOMES AND DELIVERABLES

The expected outcome from this assessment was:

- A report assessing the bioaccessibility of arsenic, cadmium, chromium, iron, lead and manganese in soil. The report was to include:
    - Assessment of arsenic, cadmium, chromium, iron, lead and manganese concentration in the < 2 mm and < 250 μm soil particle size fractions;
    - Assessment of arsenic, cadmium, chromium, iron, lead and manganese bioaccessibility in the < 250 μm soil particle size fractions using an vitro method;
    - Methodology procedures; and
    - QA/QC protocols

PROJECT BACKGROUND

Soil testing was initiated at the invitation of CBH Resources for an assessment of arsenic, cadmium, chromium, iron, lead and manganese bioaccessibility in impacted soil. Human exposure to a contaminant may be through a number of pathways including inhalation, dermal absorption and ingestion. For many metal contaminants, the most significant metal exposure pathway is via soil ingestion. Generally, soil ingestion results from the accidental or, in the case of children less than 5 years old, the incidental ingestion of soil (< 250 μm particle size fraction) via hand-to-mouth contact (Basta et al., 2001). In assessing contaminant exposure, it is often assumed that the contaminant is 100% bioaccessible / bioavailable, however, there is growing evidence to suggest that contaminant bioaccessibility / bioavailability in soil may be less than 100%. Therefore, incorporation of metal bioaccessibility / bioavailability may reduce the uncertainty in estimating exposure associated with the incidental ingestion of contaminated soil.

Contaminant bioaccessibility may be estimated using *in vitro* assays that simulate processes that occur in the human body that lead to the release of contaminants from the soil matrix. A frequently used assay for the determination of contaminant bioaccessibility is the Solubility Bioaccessibility Research Consortium (SBRC) method (Kelly *et al.,* 2002). The gastric phase of this method (termed the Simplified Bioaccessibility Extraction Test [SBET] for arsenic or the Relative Bioavailability Leaching Procedure [RBALP] for lead) has been correlated to *in vivo* arsenic and lead relative bioavailability when determined using juvenile swine (Juhasz *et al*., 2007; USEPA 2007).

FINDINGS

Total arsenic, cadmium, chromium, iron, lead and manganese concentration in the < 2 mm and < 250 μm soil particle size fractions is shown in Tables 1 (BHS01-21), 2 (CBH01-30) and 3 (WR01-05) while bioaccessibility results are shown in Tables 4 (arsenic), 5 (cadmium), 6 (chromium), 7 (iron), 8 (lead), 9 (manganese) and 10 (bioaccessibility QA/QC).

- The total elemental concentration in the < 2 mm soil particle size fraction varied considerably between soils with average concentrations ranging from <5-363 mg As kg^{-1}, <1-82 mg Cd kg^{-1}, 8-30 mg Cr kg^{-1}, 9275-38200 mg Fe kg^{-1}, 38-25950 mg Pb kg^{-1} and 92-35750 mg Mn kg^{-1}. Similar variability was observed in the < 250 μm soil particle size fraction (6-279 mg As kg^{-1}, <1-72 mg Cd kg^{-1}, 8-37 mg Cr kg^{-1}, 21700-39800 mg Fe kg^{-1}, 104-29700 mg Pb kg^{-1} and 191-53050 mg Mn kg^{-1}) (Tables 1-3).

- For some soils and elements, percent bioaccessibility was unable to be determined as arsenic, cadmium, chromium, iron and / or lead concentrations in gastric (SBRC-G) or intestinal (SBRC-I) phase extractions were below the level of reporting (Tables 4-9).

- Arsenic bioaccessibility determined using gastric phase extraction (SBRC-G) ranged from 4.5% to 33.9%. When assays parameters were modified to reflect intestinal phase conditions (SBRC-I), arsenic bioaccessibility ranged from 4.2% to 27.3% (Table 4).

- Cadmium bioaccessibility determined using gastric phase extraction (SBRC-G) ranged from 23.3% to ~100%. When assays parameters were modified to reflect intestinal phase conditions (SBRC-I), cadmium bioaccessibility ranged from 20.0% to 85.7% (Table 5).

- Chromium percent bioaccessibility was unable to be determined as concentrations in gastric (SBRC-G) and intestinal (SBRC-I) phase extractions were below the level of reporting (Table 6).

- Iron bioaccessibility determined using gastric phase extraction (SBRC-G) ranged from 0.5% to 9.1%. When assays parameters were modified to reflect intestinal phase conditions (SBRC-I), iron bioaccessibility ranged from 0.2% to 0.9% (Table 7).

- Lead bioaccessibility determined using gastric phase extraction (SBRC-G) ranged from 17.1% to 89.7%. When assays parameters were modified to reflect intestinal phase conditions (SBRC-I), lead bioaccessibility ranged from 3.0% to 23.7% (Table 8). An anomalous result was returned for CBH28 (lead bioaccessibility in excess of 100%) presumable due to an underestimation of total soil lead concentration as a result of incomplete digestion.

- Manganese bioaccessibility determined using gastric phase extraction (SBRC-G) ranged from 3.5% to 89.7%. When assays parameters were modified to reflect intestinal phase conditions (SBRC-I), manganese bioaccessibility ranged from 2.4% to 72.3% (Table 9).

- QC1 comprised an arsenic and lead-contaminated (740 mg As kg^{-1}, 6400 mg Pb kg^{-1}) reference soil (SoFC-1) with gastric phase bioaccessibility values of 16-21% (arsenic) and 64-76% (lead). Average arsenic and lead bioaccessibility for QC1 was within an acceptable range for this reference material. Bioaccessibility reference values are not available for cadmium, chromium, iron and manganese in this or other reference soils. Arsenic, cadmium, chromium, iron, lead and manganese were below the level of reporting in the assay blank (QC2).

Table 1. Arsenic, cadmium, chromium, iron, lead and manganese concentration in the < 2 mm and < 250 µm soil particle size fractions of BHS01-21.

Sample	Elemental concentration (mg kg^{-1}) in the < 2 mm and < 250 µm soil particle size fractions											
	As		Cd		Cr		Fe		Pb		Mn	
	<2 mm	<250 µm	<2 mm	<250 µm	<2 mm	<250 µm	<2 mm	<250 µm	<2 mm	<250 µm	<2 mm	<250 µm
BHS01-A	<5	6	2	3	19	25	20700	26000	134	134	245	298
BHS01-B	6	8	2	3	19	26	21400	26500	328	136	532	302
Av. BHS01	**<6**	**7**	**2**	**3**	**19**	**26**	**21050**	**26250**	**231**	**135**	**389**	**300**
BHS02-A	<5	10	2	4	12	22	15200	23800	396	899	320	634
BHS02-B	<5	9	2	4	13	21	16300	23500	503	854	330	594
Av. BHS02	**<5**	**10**	**2**	**4**	**13**	**22**	**15750**	**23650**	**450**	**877**	**325**	**614**
BHS03-A	11	16	8	7	22	25	27200	31300	634	810	677	815
BHS03-B	13	14	9	7	22	25	27600	30800	656	788	836	794
Av. BHS03	**12**	**15**	**9**	**7**	**22**	**25**	**27400**	**31050**	**645**	**799**	**757**	**805**
BHS04-A	6	13	1	1	28	36	26200	33800	349	530	336	462
BHS04-B	5	9	<1	2	23	37	25200	33700	338	524	375	479
Av. BHS04	**6**	**11**	**<1**	**2**	**26**	**37**	**25700**	**33750**	**344**	**527**	**356**	**471**
BHS05-A	5	8	<1	1	15	22	20800	26800	317	352	387	464
BHS05-B	6	8	<1	1	15	23	20000	27700	414	353	432	476
Av. BHS05	**6**	**8**	**<1**	**1**	**15**	**23**	**20400**	**27250**	**366**	**353**	**410**	**470**
BHS06-A	7	23	<1	<1	12	22	15000	23900	88	148	184	290
BHS06-B	<5	12	<1	<1	10	20	13000	24000	65	148	144	283
Av. BHS06	**<7**	**18**	**<1**	**<1**	**11**	**21**	**14000**	**23950**	**77**	**148**	**164**	**287**
BHS07-A	5	7	2	2	16	24	21400	28600	104	172	194	272
BHS07-B	5	7	2	2	19	23	23000	26900	171	168	221	276
Av. BHS07	**5**	**7**	**2**	**2**	**18**	**24**	**22200**	**27750**	**138**	**170**	**208**	**274**
BHS08-A	<5	<5	<1	2	8	21	7450	23300	62	240	110	335
BHS08-B	<5	7	<1	2	9	22	11100	23600	90	240	154	334
Av. BHS08	**<5**	**<7**	**<1**	**2**	**9**	**22**	**9275**	**23450**	**76**	**240**	**132**	**335**
BHS09-A	12	15	3	3	22	26	27400	30200	508	573	450	564
BHS09-B	12	18	3	3	22	26	26800	30200	492	560	468	567
Av. BHS09	**12**	**17**	**3**	**3**	**22**	**26**	**27100**	**30200**	**500**	**567**	**459**	**566**

Table 1. cont.

Sample	Elemental concentration (mg kg^{-1}) in the < 2 mm and < 250 µm soil particle size fractions											
	As		Cd		Cr		Fe		Pb		Mn	
	<2 mm	<250 µm	<2 mm	<250 µm	<2 mm	<250 µm	<2 mm	<250 µm	<2 mm	<250 µm	<2 mm	<250 µm
BHS10-A	<5	5	<1	<1	11	21	14400	24400	35	96	92	183
BHS10-B	<5	6	<1	<1	13	23	15900	26900	41	111	91	198
Av. BHS10	**<5**	**6**	**<1**	**<1**	**12**	**22**	**15150**	**25650**	**38**	**104**	**92**	**191**
BHS11-A	<5	7	<1	<1	11	21	15400	23000	94	195	224	299
BHS11-B	<5	6	<1	1	12	21	14500	22700	101	210	195	300
Av. BHS11	**<5**	**7**	**<1**	**<1**	**12**	**21**	**14950**	**22850**	**98**	**203**	**210**	**300**
BHS12-A	20	33	3	5	20	24	24300	32100	680	1160	774	1490
BHS12-B	27	37	4	5	21	24	26900	31200	1040	1140	1120	1490
Av. BHS12	**24**	**35**	**4**	**5**	**21**	**24**	**25600**	**31650**	**860**	**1150**	**947**	**1490**
BHS13-A	15	28	<1	1	21	26	27500	33700	158	221	448	668
BHS13-B	14	27	<1	1	21	27	27700	34700	145	226	409	678
Av. BHS13	**15**	**28**	**<1**	**1**	**21**	**27**	**27600**	**34200**	**152**	**224**	**429**	**673**
BHS14-A	6	10	3	3	15	21	16800	24100	435	690	369	641
BHS14-B	7	11	4	3	15	21	17600	23400	460	694	374	624
Av. BHS14	**7**	**11**	**4**	**3**	**15**	**21**	**17200**	**23750**	**448**	**692**	**372**	**633**
BHS15-A	14	14	3	3	15	22	16400	24300	550	885	414	892
BHS15-B	10	15	3	3	18	22	19200	24400	679	889	550	843
Av. BHS15	**12**	**15**	**3**	**3**	**17**	**22**	**17800**	**24350**	**615**	**887**	**482**	**868**
BHS16-A	7	13	<1	2	12	18	14700	21200	306	558	355	618
BHS16-B	6	11	<1	2	11	19	13900	22200	304	587	315	661
Av. BHS16	**7**	**12**	**<1**	**2**	**12**	**19**	**14300**	**21700**	**305**	**573**	**335**	**640**
BHS17-A	8	13	1	1	19	24	22700	26300	306	366	354	448
BHS17-B	9	10	1	1	17	24	19900	26800	312	380	377	452
Av. BHS17	**9**	**12**	**1**	**1**	**18**	**24**	**21300**	**26550**	**309**	**373**	**366**	**450**
BHS18-A	<5	6	2	3	11	19	14700	21600	324	596	284	418
BHS18-B	<5	8	2	3	11	20	14300	22400	316	626	236	418
Av. BHS18	**<5**	**7**	**2**	**3**	**11**	**20**	**14500**	**22000**	**320**	**611**	**260**	**418**

Table 1. cont.

Sample	Elemental concentration (mg kg^{-1}) in the < 2 mm and < 250 µm soil particle size fractions											
	As		Cd		Cr		Fe		Pb		Mn	
	<2 mm	<250 µm	<2 mm	<250 µm	<2 mm	<250 µm	<2 mm	<250 µm	<2 mm	<250 µm	<2 mm	<250 µm
BHS19-A	14	19	6	8	15	20	18300	24300	866	1110	785	1120
BHS19-B	17	21	7	8	16	20	19300	24000	952	1120	1020	1160
Av. BHS19	**16**	**20**	**7**	**8**	**16**	**20**	**18800**	**24150**	**909**	**1115**	**903**	**1140**
BHS20-A	6	7	<1	<1	18	23	23200	27900	141	165	285	351
BHS20-B	6	7	<1	<1	19	23	23600	27100	135	162	287	330
Av. BHS20	**6**	**7**	**<1**	**<1**	**19**	**23**	**23400**	**27500**	**138**	**164**	**286**	**341**
BHS21-A	<5	6	<1	1	30	38	26400	33200	283	392	244	338
BHS21-B	<5	6	<1	1	29	36	24300	31200	278	344	195	317
Av. BHS21	**<5**	**6**	**<1**	**1**	**30**	**37**	**25350**	**32200**	**281**	**368**	**220**	**328**

Table 2. Arsenic, cadmium, chromium, iron, lead and manganese concentration in the < 2 mm and < 250 μm soil particle size fractions of CBH01-30.

Sample	Elemental concentration (mg kg^{-1}) in the < 2 mm and < 250 μm soil particle size fractions											
	As		Cd		Cr		Fe		Pb		Mn	
	<2 mm	<250 μm	<2 mm	<250 μm	<2 mm	<250 μm	<2 mm	<250 μm	<2 mm	<250 μm	<2 mm	<250 μm
CBH01-A	12	17	8	10	18	22	32000	30400	2140	2160	3390	1740
CBH01-B	12	18	8	10	18	22	30800	30500	2210	2150	3710	1660
Av. CBH01	**12**	**18**	**8**	**10**	**18**	**22**	**31400**	**30450**	**2175**	**2155**	**3550**	**1700**
CBH02-A	31	57	12	14	20	25	28600	32100	3460	4560	4130	1970
CBH02-B	149	63	11	14	21	25	29700	31600	4270	4250	2720	1900
Av. CBH02	**90**	**60**	**12**	**14**	**21**	**25**	**29150**	**31850**	**3865**	**4405**	**3425**	**1935**
CBH03-A	8	33	7	8	16	24	28800	31000	3870	2670	6500	2290
CBH03-B	11	32	9	8	14	22	26200	30200	3330	2600	5900	2150
Av. CBH03	**10**	**33**	**8**	**8**	**15**	**23**	**27500**	**30600**	**3600**	**2635**	**6200**	**2220**
CBH04-A	33	38	26	30	20	23	35800	31900	3670	2900	3180	1960
CBH04-B	59	35	24	31	20	24	35100	33000	2850	3230	2400	2000
Av. CBH04	**46**	**37**	**25**	**31**	**20**	**24**	**35450**	**32450**	**3260**	**3065**	**2790**	**1980**
CBH05-A	16	22	20	22	19	21	31200	30200	2570	2600	2390	1840
CBH05-B	13	19	20	21	17	20	30500	27900	2530	2320	3310	1720
Av. CBH05	**15**	**21**	**20**	**22**	**18**	**21**	**30850**	**29050**	**2550**	**2460**	**2850**	**1780**
CBH06-A	76	100	33	37	10	17	20300	27500	6910	8040	5760	3440
CBH06-B	87	107	39	36	11	17	21400	27100	6990	8050	3550	3480
Av. CBH06	**82**	**104**	**36**	**37**	**11**	**17**	**20850**	**27300**	**6950**	**8045**	**4655**	**3460**
CBH07-A	34	54	19	21	11	14	20400	23700	6380	5490	3070	2320
CBH07-B	41	56	32	21	11	14	21400	23800	6800	5010	1960	2310
Av. CBH07	**38**	**55**	**26**	**21**	**11**	**14**	**20900**	**23750**	**6590**	**5250**	**2515**	**2315**
CBH08-A	30	86	14	21	10	18	19400	27400	4100	4340	3880	3340
CBH08-B	52	88	15	20	12	17	21700	26700	4400	4280	4360	3300
Av. CBH08	**41**	**87**	**15**	**21**	**11**	**18**	**20550**	**27050**	**4250**	**4310**	**4120**	**3320**
CBH09-A	96	112	12	18	18	24	24300	30300	4900	4940	4950	3740
CBH09-B	55	114	11	17	15	23	21700	29000	4830	4910	4650	3710
Av. CBH09	**76**	**113**	**12**	**18**	**17**	**24**	**23000**	**29650**	**4865**	**4925**	**4800**	**3725**

Table 2. cont.

Sample	Elemental concentration (mg kg^{-1}) in the < 2 mm and < 250 µm soil particle size fractions											
	As		Cd		Cr		Fe		Pb		Mn	
	<2 mm	<250 µm	<2 mm	<250 µm	<2 mm	<250 µm	<2 mm	<250 µm	<2 mm	<250 µm	<2 mm	<250 µm
CBH10-A	54	96	7	12	16	26	20800	31200	3020	4240	2930	3720
CBH10-B	56	98	9	11	18	25	23700	30800	4260	4260	5130	3720
Av. CBH10	**55**	**97**	**8**	**12**	**17**	**26**	**22250**	**31000**	**3640**	**4250**	**4030**	**3720**
CBH11-A	75	124	30	36	16	20	23900	26500	4210	4400	5440	6340
CBH11-B	109	119	28	35	16	19	23900	26200	4050	4220	4830	6060
Av. CBH11	**92**	**122**	**29**	**36**	**16**	**20**	**23900**	**26350**	**4130**	**4310**	**5135**	**6200**
CBH12-A	255	231	44	51	16	21	24800	28100	14500	10400	12600	7430
CBH12-B	471	248	38	53	16	22	21200	30600	16800	9280	14300	8040
Av. CBH12	**363**	**240**	**41**	**52**	**16**	**22**	**23000**	**29350**	**15650**	**9840**	**13450**	**7735**
CBH13-A	138	150	7	10	11	18	23000	28200	4940	4740	3930	3310
CBH13-B	128	140	8	10	13	19	28600	29500	7040	4670	3690	3360
Av. CBH13	**133**	**145**	**8**	**10**	**12**	**19**	**25800**	**28850**	**5990**	**4705**	**3810**	**3335**
CBH14-A	75	98	11	26	14	24	23500	30100	3200	4270	2500	3810
CBH14-B	51	96	11	26	15	23	26900	29600	2850	4200	2270	3720
Av. CBH14	**63**	**97**	**11**	**26**	**15**	**24**	**25200**	**29850**	**3025**	**4235**	**2385**	**3765**
CBH15-A	145	102	14	19	18	22	24800	29800	4980	4430	5640	5380
CBH15-B	83	108	14	20	16	23	23600	32700	5220	4730	6280	5660
Av. CBH15	**114**	**105**	**14**	**20**	**17**	**23**	**24200**	**31250**	**5100**	**4580**	**5960**	**5520**
CBH16-A	121	153	10	13	12	19	21100	28900	5580	6920	6320	8460
CBH16-B	113	159	11	14	13	19	23200	28000	6300	6980	8030	8160
Av. CBH16	**117**	**156**	**11**	**14**	**13**	**19**	**22150**	**28450**	**5940**	**6950**	**7175**	**8310**
CBH17-A	38	43	9	9	18	23	29500	32300	10400	5810	6550	3700
CBH17-B	37	44	8	9	17	22	27600	31300	6950	5930	6920	3780
Av. CBH17	38	44	9	9	18	23	28550	31800	8675	5870	6735	3740
CBH18-A	153	203	7	15	12	24	17200	30500	4090	6370	3170	3250
CBH18-B	171	202	9	14	14	24	19600	29400	3840	6190	3950	3090
Av. CBH18	**162**	**203**	**8**	**15**	**13**	**24**	**18400**	**29950**	**3965**	**6280**	**3560**	**3170**

Table 2. cont.

Sample	Elemental concentration (mg kg^{-1}) in the < 2 mm and < 250 μm soil particle size fractions											
	As		Cd		Cr		Fe		Pb		Mn	
	<2 mm	<250 μm	<2 mm	<250 μm	<2 mm	<250 μm	<2 mm	<250 μm	<2 mm	<250 μm	<2 mm	<250 μm
CBH19-A	184	163	7	11	10	18	19200	24700	5400	7070	3740	3640
CBH19-B	259	159	12	11	14	19	22200	25600	6380	6860	4470	3700
Av. CBH19	**222**	**161**	**10**	**11**	**12**	**19**	**20700**	**25150**	**5890**	**6965**	**4105**	**3670**
CBH20-A	170	215	15	21	14	21	24500	29600	7040	7080	3910	2920
CBH20-B	226	231	17	22	17	23	28200	31800	8350	7480	5080	3050
Av. CBH20	**198**	**223**	**16**	**22**	**16**	**22**	**26350**	**30700**	**7695**	**7280**	**4495**	**2985**
CBH21-A	146	154	15	12	19	20	27800	27100	11200	10500	5050	4280
CBH21-B	130	151	12	13	18	22	26100	29500	10100	8800	4300	4480
Av. CBH21	**138**	**153**	**14**	**13**	**19**	**21**	**26950**	**28300**	**10650**	**9650**	**4675**	**4380**
CBH22-A	153	176	45	39	12	20	19600	27000	15900	15100	5960	5440
CBH22-B	134	183	41	38	13	19	21500	27100	13500	14800	5160	5450
Av. CBH22	**144**	**180**	**43**	**39**	**13**	**20**	**20550**	**27050**	**14700**	**14950**	**5560**	**5445**
CBH23-A	77	81	55	63	18	20	24400	26300	6170	6290	9760	5520
CBH23-B	73	96	53	69	17	23	22700	29300	5600	7160	8540	5980
Av. CBH23	**75**	**89**	**54**	**66**	**18**	**22**	**23550**	**27800**	**5885**	**6725**	**9150**	**5750**
CBH24-A	59	73	18	18	16	20	23800	26800	3880	4160	3280	3190
CBH24-B	62	82	15	19	16	22	24800	29000	4200	4510	3330	3460
Av. CBH24	**61**	**78**	**17**	**19**	**16**	**21**	**24300**	**27900**	**4040**	**4335**	**3305**	**3325**
CBH25-A	114	129	39	37	12	10	26700	31600	25600	31800	16500	38900
CBH25-B	136	119	45	35	13	9	27100	29000	26300	27600	16400	35000
Av. CBH25	**125**	**124**	**42**	**36**	**13**	**10**	**26900**	**30300**	**25950**	**29700**	**16450**	**36950**
CBH26-A	75	81	37	49	18	19	20700	24800	6070	5100	5220	4160
CBH26-B	73	88	39	49	16	18	20900	24200	6180	5130	4820	4160
Av. CBH26	**74**	**85**	**38**	**49**	**17**	**19**	**20800**	**24500**	**6125**	**5115**	**5020**	**4160**
CBH27-A	106	107	57	71	15	19	23600	28600	8290	7790	6030	6330
CBH27-B	102	140	55	73	18	19	26700	28600	7280	7490	6440	6340
Av. CBH27	**104**	**124**	**56**	**72**	**17**	**19**	**25150**	**28600**	**7785**	**7640**	**6235**	**6335**

Table 2. cont.

Sample	As		Cd		Cr		Fe		Pb		Mn	
	Elemental concentration (mg kg^{-1}) in the < 2 mm and < 250 μm soil particle size fractions											
	<2 mm	<250 μm	<2 mm	<250 μm	<2 mm	<250 μm	<2 mm	<250 μm	<2 mm	<250 μm	<2 mm	<250 μm
CBH28-A	216	188	82	70	10	8	38000	39500	19500	20600	38500	52300
CBH28-B	200	189	81	71	11	7	38400	40100	18400	23400	33000	53800
Av. CBH28	**208**	**189**	**82**	**71**	**11**	**8**	**38200**	**39800**	**18950**	**22000**	**35750**	**53050**
CBH29-A	198	276	24	33	18	20	25900	28200	16600	18200	4210	4680
CBH29-B	252	281	21	32	17	20	25900	27500	18200	18300	5950	4470
Av. CBH29	**225**	**279**	**23**	**33**	**18**	**20**	**25900**	**27850**	**17400**	**18250**	**5080**	**4575**
CBH30-A	51	87	30	31	18	26	23800	32300	3900	5100	2480	2090
CBH30-B	68	75	19	30	19	26	24300	31100	4390	4750	1480	1930
Av. CBH30	**60**	**81**	**25**	**31**	**19**	**26**	**24050**	**31700**	**4145**	**4925**	**1980**	**2010**

Table 3. Arsenic, cadmium, chromium, iron, lead and manganese concentration in the < 2 mm and < 250 μm soil particle size fractions of WR01-05.

Sample	Elemental concentration (mg kg^{-1}) in the < 2 mm and < 250 μm soil particle size fractions											
	As		Cd		Cr		Fe		Pb		Mn	
	<2 mm	<250 μm	<2 mm	<250 μm	<2 mm	<250 μm	<2 mm	<250 μm	<2 mm	<250 μm	<2 mm	<250 μm
WR01-A	45	78	19	32	17	24	22200	29800	2210	3740	744	1280
WR01-B	29	59	22	32	21	24	21000	30000	1950	3520	684	1290
Av. WR01	**37**	**69**	**21**	**32**	**19**	**24**	**21600**	**29900**	**2080**	**3630**	**714**	**1285**
WR02-A	56	88	12	21	16	21	24800	29300	1560	3310	465	741
WR02-B	58	82	18	22	16	21	23600	29100	2670	3450	536	730
Av. WR02	**57**	**85**	**15**	**22**	**16**	**21**	**24200**	**29200**	**2115**	**3380**	**501**	**736**
WR03-A	124	62	16	26	16	22	22000	29800	2270	4460	346	545
WR03-B	44	93	20	26	18	22	23800	29100	2880	4730	397	538
Av. WR03	**84**	**78**	**18**	**26**	**17**	**22**	**22900**	**29450**	**2575**	**4595**	**372**	**542**
WR04-A	<5	6	2	3	22	29	27100	31800	213	431	174	256
WR04-B	<5	12	2	3	24	30	27500	31500	342	354	202	257
Av. WR04	**<5**	**9**	**2**	**3**	**23**	**30**	**27300**	**31650**	**278**	**393**	**188**	**257**
WR05-A	80	104	23	30	16	19	27900	31700	5210	7510	556	658
WR05-B	94	95	27	30	17	20	27700	32100	7000	7460	556	675
Av. WR05	**87**	**100**	**25**	**30**	**17**	**20**	**27800**	**31900**	**6105**	**7485**	**556**	**667**

Table 4. Arsenic bioaccessibility in the < 250 μm soil particle size fraction of BHS01-21, CBH01-30 and WR-1-05 determined using gastric (SBRC-G) and intestinal (SBRC-I) phase extraction.

Sample	Total As (mg kg^{-1})	ICP-OES As (mg l^{-1})		Solid:Solution ratio	Dilution Factor	As Bioaccessibility (mg kg^{-1})		As Bioaccessibility (%)	
		SBRC-G	SBRC-I			SBRC-G	SBRC-I	SBRC-G	SBRC-I
BHS01	7	<0.01	<0.01	100	10	<10	<10	nd†	nd
BHS02	10	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS03	15	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS04	11	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS05	8	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS06	18	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS07	7	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS08	<7	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS09	17	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS10	6	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS11	7	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS12	35	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS13	28	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS14	11	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS15	15	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS16	12	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS17	12	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS18	7	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS19	20	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS20	7	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS21	6	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH01	18	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH02	60	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH03	33	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH04	37	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH05	21	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH06	104	0.030	0.020	100	10	30	20	29.0	19.3
CBH07	55	0.015	0.015	100	10	15	15	27.3	27.3
CBH08	87	0.020	0.015	100	10	20	15	23.0	17.2
CBH09	113	0.030	0.025	100	10	30	25	26.5	22.1
CBH10	97	0.025	0.020	100	10	25	20	25.8	20.6
CBH11	122	0.020	0.015	100	10	20	15	16.5	12.3

Table 4. cont.

Sample	Total As (mg kg^{-1})	ICP-OES As (mg l^{-1})		Solid:Solution ratio	Dilution Factor	As Bioaccessibility (mg kg^{-1})		As Bioaccessibility (%)	
		SBRC-G	SBRC-I			SBRC-G	SBRC-I	SBRC-G	SBRC-I
CBH12	240	0.015	0.010	100	10	15	10	6.3	4.2
CBH13	145	0.020	0.020	100	10	20	20	13.8	13.8
CBH14	97	0.015	0.010	100	10	15	10	15.5	10.3
CBH15	105	0.020	0.010	100	10	20	10	19.0	9.5
CBH16	156	0.030	0.020	100	10	30	20	19.2	12.8
CBH17	44	0.010	<0.01	100	10	10	<10	23.0	<23.0
CBH18	203	0.025	0.020	100	10	25	20	12.3	9.9
CBH19	161	0.040	0.030	100	10	40	30	24.8	18.6
CBH20	223	0.010	<0.01	100	10	10	<10	4.5	<4.5
CBH21	153	0.030	0.015	100	10	30	15	19.7	9.8
CBH22	180	0.025	<0.01	100	10	25	<10	13.9	<5.6
CBH23	89	0.030	<0.01	100	10	30	<10	33.9	<11.3
CBH24	78	0.010	<0.01	100	10	10	<10	12.9	<12.9
CBH25	124	0.020	<0.01	100	10	20	<10	16.1	<8.1
CBH26	85	0.020	<0.01	100	10	20	<10	23.7	<11.8
CBH27	124	0.025	<0.01	100	10	25	<10	20.2	<8.1
CBH28	189	0.020	<0.01	100	10	20	<10	10.6	<5.3
CBH29	279	0.075	0.035	100	10	75	35	26.9	12.6
CBH30	81	0.020	0.010	100	10	20	10	24.7	12.3
WR01	69	0.010	<0.01	100	10	10	<10	14.6	<14.6
WR02	85	<0.01	<0.01	100	10	<10	<10	nd	nd
WR03	78	<0.01	<0.01	100	10	<10	<10	nd	nd
WR04	9	<0.01	<0.01	100	10	<10	<10	nd	nd
WR05	100	0.015	<0.01	100	10	15	<10	15.1	<10.1

†nd: not determined

Table 5. Cadmium bioaccessibility in the < 250 µm soil particle size fraction of BHS01-21, CBH01-30 and WR-1-05 determined using gastric (SBRC-G) and intestinal (SBRC-I) phase extraction.

Sample	Total Cd (mg kg^{-1})	ICP-OES Cd (mg l^{-1})		Solid:Solution ratio	Dilution Factor	Cd Bioaccessibility (mg kg^{-1})		Cd Bioaccessibility (%)	
		SBRC-G	SBRC-I			SBRC-G	SBRC-I	SBRC-G	SBRC-I
BHS01	3	<0.005	<0.005	100	10	<5	<5	nd†	nd
BHS02	4	<0.005	<0.005	100	10	<5	<5	nd	nd
BHS03	7	0.008	0.006	100	10	8	6	107.1	85.7
BHS04	2	<0.005	<0.005	100	10	<5	<5	nd	nd
BHS05	1	<0.005	<0.005	100	10	<5	<5	nd	nd
BHS06	<1	<0.005	<0.005	100	10	<5	<5	nd	nd
BHS07	2	<0.005	<0.005	100	10	<5	<5	nd	nd
BHS08	2	<0.005	<0.005	100	10	<5	<5	nd	nd
BHS09	3	<0.005	<0.005	100	10	<5	<5	nd	nd
BHS10	<1	<0.005	<0.005	100	10	<5	<5	nd	nd
BHS11	<1	<0.005	<0.005	100	10	<5	<5	nd	nd
BHS12	5	<0.005	<0.005	100	10	<5	<5	nd	nd
BHS13	1	<0.005	<0.005	100	10	<5	<5	nd	nd
BHS14	3	<0.005	<0.005	100	10	<5	<5	nd	nd
BHS15	3	<0.005	<0.005	100	10	<5	<5	nd	nd
BHS16	2	<0.005	<0.005	100	10	<5	<5	nd	nd
BHS17	1	<0.005	<0.005	100	10	<5	<5	nd	nd
BHS18	3	<0.005	<0.005	100	10	<5	<5	nd	nd
BHS19	8	0.006	0.005	100	10	6	5	75.0	62.5
BHS20	<1	<0.005	<0.005	100	10	<5	<5	nd	nd
BHS21	1	<0.005	<0.005	100	10	<5	<5	nd	nd
CBH01	10	0.005	<0.005	100	10	5	<5	50.0	<50.0
CBH02	14	0.006	0.006	100	10	6	6	42.9	39.3
CBH03	8	<0.005	<0.005	100	10	<5	<5	nd	nd
CBH04	31	0.022	0.019	100	10	22	19	72.1	60.7
CBH05	22	0.014	0.012	100	10	14	12	65.1	55.8
CBH06	37	0.011	0.010	100	10	11	10	28.8	26.0
CBH07	21	0.009	0.008	100	10	9	8	40.5	38.1
CBH08	21	0.008	0.007	100	10	8	7	39.0	34.1
CBH09	18	0.007	0.006	100	10	7	6	40.0	34.3
CBH10	12	<0.005	<0.005	100	10	<5	<5	nd	nd
CBH11	36	0.032	0.027	100	10	32	27	88.7	74.6

Table 5. cont.

Sample	Total Cd (mg kg^{-1})	ICP-OES Cd (mg l^{-1})		Solid:Solution ratio	Dilution Factor	Cd Bioaccessibility (mg kg^{-1})		Cd Bioaccessibility (%)	
		SBRC-G	SBRC-I			SBRC-G	SBRC-I	SBRC-G	SBRC-I
CBH12	52	0.037	0.032	100	10	37	32	71.2	60.6
CBH13	10	<0.005	<0.005	100	10	<5	<5	nd	nd
CBH14	26	0.018	0.015	100	10	18	15	67.3	57.7
CBH15	20	0.014	0.012	100	10	14	12	71.8	61.5
CBH16	14	0.006	0.006	100	10	6	6	44.4	40.7
CBH17	9	0.006	0.005	100	10	6	5	66.7	55.6
CBH18	15	0.007	0.006	100	10	7	6	48.3	41.4
CBH19	11	0.006	<0.005	100	10	6	<5	54.5	<45.5
CBH20	22	0.016	0.014	100	10	16	14	74.4	62.8
CBH21	13	0.009	0.008	100	10	9	8	72.0	64.0
CBH22	39	0.032	0.027	100	10	32	27	81.8	70.1
CBH23	66	0.059	0.049	100	10	59	49	88.6	74.2
CBH24	19	0.013	0.011	100	10	13	11	70.3	59.5
CBH25	36	0.032	0.027	100	10	32	27	87.5	75.0
CBH26	49	0.034	0.029	100	10	34	29	69.4	58.2
CBH27	72	0.057	0.048	100	10	57	48	79.2	66.7
CBH28	71	0.039	0.033	100	10	39	33	54.6	46.1
CBH29	33	0.019	0.016	100	10	19	16	56.9	47.7
CBH30	31	0.021	0.018	100	10	21	18	68.9	59.0
WR01	32	0.013	0.012	100	10	13	12	40.6	35.9
WR02	22	0.005	<0.005	100	10	5	<5	23.3	<23.3
WR03	26	<0.005	<0.005	100	10	<5	<5	nd	nd
WR04	3	<0.005	<0.005	100	10	<5	<5	nd	nd
WR05	30	0.007	0.006	100	10	7	6	23.3	20.0

†nd: not determined

Table 6. Chromium bioaccessibility in the < 250 μm soil particle size fraction of BHS01-21, CBH01-30 and WR-1-05 determined using gastric (SBRC-G) and intestinal (SBRC-I) phase extraction.

Sample	Total Cr (mg kg^{-1})	ICP-OES Cr (mg l^{-1})		Solid:Solution ratio	Dilution Factor	Cr Bioaccessibility (mg kg^{-1})		Cr Bioaccessibility (%)	
		SBRC-G	SBRC-I			SBRC-G	SBRC-I	SBRC-G	SBRC-I
BHS01	26	<0.01	<0.01	100	10	<10	<10	nd†	nd
BHS02	22	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS03	25	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS04	37	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS05	23	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS06	21	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS07	24	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS08	22	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS09	26	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS10	22	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS11	21	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS12	24	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS13	27	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS14	21	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS15	22	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS16	19	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS17	24	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS18	20	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS19	20	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS20	23	<0.01	<0.01	100	10	<10	<10	nd	nd
BHS21	37	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH01	22	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH02	25	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH03	23	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH04	24	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH05	21	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH06	17	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH07	14	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH08	18	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH09	24	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH10	26	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH11	20	<0.01	<0.01	100	10	<10	<10	nd	nd

Table 6. cont.

Sample	Total Cr (mg kg^{-1})	ICP-OES Cr (mg l^{-1})		Solid:Solution ratio	Dilution Factor	Cr Bioaccessibility (mg kg^{-1})		Cr Bioaccessibility (%)	
		SBRC-G	SBRC-I			SBRC-G	SBRC-I	SBRC-G	SBRC-I
CBH12	22	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH13	19	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH14	24	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH15	23	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH16	19	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH17	23	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH18	24	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH19	19	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH20	22	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH21	21	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH22	20	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH23	22	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH24	21	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH25	10	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH26	19	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH27	19	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH28	8	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH29	20	<0.01	<0.01	100	10	<10	<10	nd	nd
CBH30	26	<0.01	<0.01	100	10	<10	<10	nd	nd
WR01	24	<0.01	<0.01	100	10	<10	<10	nd	nd
WR02	21	<0.01	<0.01	100	10	<10	<10	nd	nd
WR03	22	<0.01	<0.01	100	10	<10	<10	nd	nd
WR04	30	<0.01	<0.01	100	10	<10	<10	nd	nd
WR05	20	<0.01	<0.01	100	10	<10	<10	nd	nd

†nd: not determined

Table 7. Iron bioaccessibility in the < 250 µm soil particle size fraction of BHS01-21, CBH01-30 and WR-1-05 determined using gastric (SBRC-G) and intestinal (SBRC-I) phase extraction.

Sample	Total Fe (mg kg^{-1})	ICP-OES Fe (mg l^{-1})		Solid:Solution ratio	Dilution Factor	Fe Bioaccessibility (mg kg^{-1})		Fe Bioaccessibility (%)	
		SBRC-G	SBRC-I			SBRC-G	SBRC-I	SBRC-G	SBRC-I
BHS01	26250	0.18	<0.05	100	10	180	<50	0.7	nd†
BHS02	23650	0.26	0.09	100	10	260	90	1.1	0.4
BHS03	31050	0.51	<0.05	100	10	510	<50	1.6	nd
BHS04	33750	0.27	<0.88	100	10	270	<880	0.8	nd
BHS05	27250	0.22	<0.06	100	10	220	<60	0.8	nd
BHS06	23950	0.22	<0.05	100	10	220	<50	0.9	nd
BHS07	27750	0.24	<0.05	100	10	240	<50	0.9	nd
BHS08	23450	0.22	<0.05	100	10	220	<50	0.9	nd
BHS09	30200	0.29	<0.05	100	10	290	<50	1.0	nd
BHS10	25650	0.14	<0.05	100	10	140	<50	0.5	nd
BHS11	22850	0.18	<0.05	100	10	180	<50	0.8	nd
BHS12	31650	0.43	<0.05	100	10	430	<50	1.4	nd
BHS13	34200	0.31	<0.05	100	10	310	<50	0.9	nd
BHS14	23750	0.46	<0.05	100	10	460	<50	1.9	nd
BHS15	24350	0.24	0.06	100	10	240	60	1.0	0.2
BHS16	21700	0.22	<0.05	100	10	220	<50	1.0	nd
BHS17	26550	0.24	<0.05	100	10	240	<50	0.9	nd
BHS18	22000	0.26	<0.05	100	10	260	<50	1.2	nd
BHS19	24150	0.37	0.16	100	10	370	160	1.5	0.6
BHS20	27500	0.18	<0.05	100	10	180	<50	0.7	nd
BHS21	32200	0.22	<0.05	100	10	220	<50	0.7	nd
CBH01	30450	0.31	<0.05	100	10	310	<50	1.0	nd
CBH02	31850	0.36	0.07	100	10	360	70	1.1	0.2
CBH03	30600	0.38	0.06	100	10	380	60	1.2	0.2
CBH04	32450	0.31	<0.05	100	10	310	<50	0.9	nd
CBH05	29050	0.30	<0.05	100	10	300	<50	1.0	nd
CBH06	27300	0.66	0.11	100	10	660	110	2.4	0.4
CBH07	23750	0.52	0.07	100	10	520	70	2.2	0.3
CBH08	27050	0.41	0.07	100	10	410	70	1.5	0.2
CBH09	29650	0.31	0.05	100	10	310	50	1.0	0.2
CBH10	31000	0.28	<0.05	100	10	280	<50	0.9	nd
CBH11	26350	1.01	0.22	100	10	1010	220	3.8	0.8

Table 7. cont.

Sample	Total Fe (mg kg^{-1})	ICP-OES Fe (mg l^{-1})		Solid:Solution ratio	Dilution Factor	Fe Bioaccessibility (mg kg^{-1})		Fe Bioaccessibility (%)	
		SBRC-G	SBRC-I			SBRC-G	SBRC-I	SBRC-G	SBRC-I
CBH12	29350	0.36	<0.05	100	10	360	<50	1.2	nd
CBH13	28850	0.30	<0.07	100	10	300	<70	1.0	nd
CBH14	29850	0.54	0.12	100	10	540	120	1.8	0.4
CBH15	31250	0.51	<0.05	100	10	510	<50	1.6	nd
CBH16	28450	0.90	<0.08	100	10	900	<80	3.2	nd
CBH17	31800	0.54	0.06	100	10	540	60	1.7	0.2
CBH18	29950	0.37	0.08	100	10	370	80	1.2	0.3
CBH19	25150	0.41	0.10	100	10	410	100	1.6	0.4
CBH20	30700	0.14	<0.05	100	10	140	<50	0.5	nd
CBH21	28300	1.09	<0.05	100	10	1090	<50	3.9	nd
CBH22	27050	1.20	0.07	100	10	1200	70	4.4	0.3
CBH23	27800	2.48	0.08	100	10	2480	80	8.9	0.3
CBH24	27900	0.73	<0.06	100	10	730	<60	2.6	nd
CBH25	30300	2.76	<0.05	100	10	2760	<50	9.1	nd
CBH26	24500	1.90	0.08	100	10	1900	80	7.7	0.3
CBH27	28600	2.00	0.08	100	10	2000	80	7.0	0.3
CBH28	39800	2.83	<0.05	100	10	2830	<50	7.1	nd
CBH29	27850	0.33	0.15	100	10	330	150	1.2	0.5
CBH30	31700	0.30	0.09	100	10	300	090	0.9	0.3
WR01	29900	1.72	0.10	100	10	1720	100	5.8	0.3
WR02	29200	1.47	0.11	100	10	1470	110	5.0	0.4
WR03	29450	1.66	0.28	100	10	1660	280	5.6	0.9
WR04	31650	0.86	0.27	100	10	860	270	2.7	0.8
WR05	31900	2.79	0.09	100	10	2790	90	8.7	0.3

†nd: not determined

Table 8. Lead bioaccessibility in the < 250 μm soil particle size fraction of BHS01-21, CBH01-30 and WR-1-05 determined using gastric (SBRC-G) and intestinal (SBRC-I) phase extraction.

Sample	Total Pb (mg kg^{-1})	ICP-OES Pb (mg l^{-1})		Solid:Solution ratio	Dilution Factor	Pb Bioaccessibility (mg kg^{-1})		Pb Bioaccessibility (%)	
		SBRC-G	SBRC-I			SBRC-G	SBRC-I	SBRC-G	SBRC-I
BHS01	135	0.08	<0.01	100	10	80	<10	59.3	nd†
BHS02	877	0.70	0.18	100	10	700	180	79.3	20.5
BHS03	799	0.56	0.06	100	10	560	60	69.5	6.9
BHS04	527	0.38	0.07	100	10	380	70	71.2	12.3
BHS05	353	0.24	0.03	100	10	240	30	66.7	8.5
BHS06	148	0.08	0.01	100	10	80	10	50.7	6.8
BHS07	170	0.12	0.02	100	10	120	20	70.6	8.8
BHS08	240	0.17	0.02	100	10	170	20	70.8	8.3
BHS09	567	0.44	0.05	100	10	440	50	76.8	8.8
BHS10	104	0.05	<0.01	100	10	50	<10	48.3	nd
BHS11	203	0.14	0.01	100	10	140	10	66.7	4.9
BHS12	1150	1.01	0.16	100	10	1010	160	87.8	13.5
BHS13	224	0.16	<0.01	100	10	160	<10	71.6	nd
BHS14	692	0.51	0.06	100	10	510	60	73.0	8.7
BHS15	887	0.69	0.21	100	10	690	210	77.8	23.7
BHS16	573	0.39	0.12	100	10	390	120	67.2	21.0
BHS17	373	0.27	0.04	100	10	270	40	72.4	10.7
BHS18	611	0.48	0.10	100	10	480	100	77.7	15.5
BHS19	1115	0.89	0.19	100	10	890	190	79.4	16.6
BHS20	164	0.10	<0.01	100	10	100	<10	61.2	nd
BHS21	368	0.23	0.02	100	10	230	20	62.5	5.4
CBH01	2155	1.21	0.30	100	10	1210	300	56.1	13.7
CBH02	4405	2.52	0.54	100	10	2520	540	57.2	12.1
CBH03	2635	1.09	0.28	100	10	1090	280	41.4	10.4
CBH04	3065	1.74	0.30	100	10	1740	300	56.8	9.8
CBH05	2460	1.34	0.25	100	10	1340	250	54.5	10.0
CBH06	8045	6.41	1.84	100	10	6410	1840	79.6	22.9
CBH07	5250	4.03	0.92	100	10	4030	920	76.8	17.5
CBH08	4310	2.50	0.47	100	10	2500	470	58.0	10.8
CBH09	4925	2.32	0.38	100	10	2320	380	47.1	7.6
CBH10	4250	2.26	0.36	100	10	2260	360	53.1	8.4
CBH11	4310	2.20	0.44	100	10	2200	440	51.0	10.2

Table 8. cont.

Sample	Total Pb (mg kg^{-1})	ICP-OES Pb (mg l^{-1})		Solid:Solution ratio	Dilution Factor	Pb Bioaccessibility (mg kg^{-1})		Pb Bioaccessibility (%)	
		SBRC-G	SBRC-I			SBRC-G	SBRC-I	SBRC-G	SBRC-I
CBH12	9840	1.68	0.30	100	10	1680	300	17.1	3.0
CBH13	4705	1.91	0.38	100	10	1910	380	40.6	8.1
CBH14	4235	2.50	0.52	100	10	2500	520	58.9	12.2
CBH15	4580	2.24	0.43	100	10	2240	430	48.8	9.3
CBH16	6950	3.54	0.50	100	10	3540	500	50.9	7.1
CBH17	5870	3.70	0.72	100	10	3700	720	62.9	12.2
CBH18	6280	3.51	0.73	100	10	3510	730	55.8	11.5
CBH19	6965	5.01	1.63	100	10	5010	1630	71.9	23.4
CBH20	7280	3.25	0.74	100	10	3250	740	44.6	10.2
CBH21	9650	6.30	1.15	100	10	6300	1150	65.3	11.9
CBH22	14950	9.62	2.51	100	10	9620	2510	64.3	16.8
CBH23	6725	6.01	1.25	100	10	6010	1250	89.4	18.6
CBH24	4335	2.89	0.78	100	10	2890	780	66.7	17.9
CBH25	29700	21.20	5.31	100	10	21200	5310	71.4	17.9
CBH26	5115	4.21	0.90	100	10	4210	900	82.3	17.5
CBH27	7640	5.07	1.05	100	10	5070	1050	66.4	13.7
CBH28	22000	46.7	24.2	100	10	46700	24200	212.3‡	109.8‡
CBH29	18250	10.09	4.04	100	10	10090	4040	55.3	22.1
CBH30	4925	3.78	1.21	100	10	3780	1210	76.6	24.6
WR01	3630	1.90	0.29	100	10	1900	290	52.3	8.0
WR02	3380	2.04	0.39	100	10	2040	390	60.4	11.4
WR03	4595	2.17	0.54	100	10	2170	540	47.2	11.8
WR04	393	0.12	0.03	100	10	120	30	29.3	7.6
WR05	7485	5.72	1.12	100	10	5720	1120	76.4	15.0

†nd: not determined

‡An anomalous Pb bioaccessibility result was returned for CBH28 presumable due to an underestimation of total soil lead concentration as a result of incomplete digestion.

Table 9. Manganese bioaccessibility in the < 250 μm soil particle size fraction of BHS01-21, CBH01-30 and WR-1-05 determined using gastric (SBRC-G) and intestinal (SBRC-I) phase extraction.

Sample	Total Mn (mg kg^{-1})	ICP-OES Mn (mg l^{-1})		Solid:Solution ratio	Dilution Factor	Mn Bioaccessibility (mg kg^{-1})		Mn Bioaccessibility (%)	
		SBRC-G	SBRC-I			SBRC-G	SBRC-I	SBRC-G	SBRC-I
BHS01	300	0.12	0.08	100	10	120	80	40.0	26.7
BHS02	614	0.24	0.17	100	10	240	170	39.1	27.7
BHS03	805	0.42	0.28	100	10	420	280	51.6	34.2
BHS04	471	0.15	0.12	100	10	150	120	30.8	24.4
BHS05	470	0.20	0.12	100	10	200	120	42.6	24.5
BHS06	287	0.07	0.06	100	10	70	60	22.7	19.2
BHS07	274	0.09	0.07	100	10	90	70	32.8	23.7
BHS08	335	0.18	0.11	100	10	180	110	52.3	31.4
BHS09	566	0.28	0.18	100	10	280	180	49.5	30.9
BHS10	191	0.06	0.04	100	10	60	40	31.5	21.0
BHS11	300	0.12	0.09	100	10	120	90	40.1	30.1
BHS12	1490	0.62	0.46	100	10	620	460	41.6	30.9
BHS13	673	0.32	0.22	100	10	320	220	47.5	31.9
BHS14	633	0.27	0.20	100	10	270	200	41.9	30.8
BHS15	868	0.34	0.29	100	10	340	290	39.2	32.9
BHS16	640	0.21	0.19	100	10	210	190	32.8	28.9
BHS17	450	0.22	0.15	100	10	220	150	48.9	32.2
BHS18	418	0.18	0.13	100	10	180	130	43.1	31.1
BHS19	1140	0.55	0.40	100	10	550	400	48.2	34.6
BHS20	341	0.15	0.09	100	10	150	90	44.1	25.0
BHS21	328	0.11	0.08	100	10	110	80	33.6	22.9
CBH01	1700	0.35	0.28	100	10	350	280	20.3	16.5
CBH02	1935	0.57	0.48	100	10	570	480	29.5	24.5
CBH03	2220	0.29	0.23	100	10	290	230	13.1	10.1
CBH04	1980	0.51	0.44	100	10	510	440	25.8	22.0
CBH05	1780	0.45	0.39	100	10	450	390	25.0	21.6
CBH06	3460	0.77	0.63	100	10	770	630	22.1	18.1
CBH07	2315	0.54	0.47	100	10	540	470	23.1	20.3
CBH08	3320	0.60	0.52	100	10	600	520	18.1	15.7
CBH09	3725	0.43	0.36	100	10	430	360	11.4	9.5
CBH10	3720	0.61	0.53	100	10	610	530	16.4	14.1
CBH11	6200	2.54	1.89	100	10	2540	1890	41.0	30.5

Table 9. cont.

Sample	Total Mn (mg kg^{-1})	ICP-OES Mn (mg l^{-1})		Solid:Solution ratio	Dilution Factor	Mn Bioaccessibility (mg kg^{-1})		Mn Bioaccessibility (%)	
		SBRC-G	SBRC-I			SBRC-G	SBRC-I	SBRC-G	SBRC-I
CBH12	7735	1.14	0.92	100	10	1140	920	14.7	11.8
CBH13	3335	0.72	0.60	100	10	720	600	21.4	18.0
CBH14	3765	1.11	0.95	100	10	1110	950	29.5	25.2
CBH15	5520	2.48	1.88	100	10	2480	1880	44.9	34.0
CBH16	8310	2.37	1.83	100	10	2370	1830	28.5	22.0
CBH17	3740	0.96	0.83	100	10	960	830	25.7	22.2
CBH18	3170	0.72	0.60	100	10	720	600	22.6	18.9
CBH19	3670	1.01	0.87	100	10	1010	870	27.4	23.6
CBH20	2985	0.58	0.46	100	10	580	460	19.3	15.2
CBH21	4380	2.11	1.59	100	10	2110	1590	48.2	36.2
CBH22	5445	2.81	2.10	100	10	2810	2100	51.5	38.5
CBH23	5750	5.16	4.16	100	10	5160	4160	89.7	72.3
CBH24	3325	1.62	1.32	100	10	1620	1320	48.7	39.5
CBH25	36950	2.75	2.03	100	10	2750	2030	7.4	5.5
CBH26	4160	3.25	2.56	100	10	3250	2560	78.1	61.4
CBH27	6335	5.27	4.13	100	10	5270	4130	83.2	65.2
CBH28	53050	1.85	1.28	100	10	1850	1280	3.5	2.4
CBH29	4575	0.49	0.41	100	10	490	410	10.6	8.9
CBH30	2010	0.53	0.45	100	10	530	450	26.1	22.1
WR01	1285	1.05	0.91	100	10	1050	910	81.7	70.8
WR02	736	0.45	0.41	100	10	450	410	60.5	55.7
WR03	542	0.28	0.23	100	10	280	230	50.8	42.5
WR04	257	0.14	0.12	100	10	140	120	54.6	44.8
WR05	667	0.26	0.25	100	10	260	250	39.0	36.8

Table 10. Gastric (SBRC-G) and intestinal (SBRC-I) phase extraction of quality assurance and quality control samples.

Sample	Element	Total (mg kg^{-1})	ICP-OES (mg l^{-1})		Solid:Solution ratio	Dilution Factor	Bioaccessibility (mg kg^{-1})		Bioaccessibility (%)	
			SBRC-G	SBRC-I			SBRC-G	SBRC-I	SBRC-G	SBRC-I
QC1[†]	Arsenic	740	0.17	0.09	100	10	170	90	23.0	12.2
			0.17	0.09	100	10	170	90	23.0	12.2
			0.16	0.09	100	10	160	90	21.6	12.2
			0.15	0.08	100	10	150	80	20.3	10.8
			0.16	0.10	100	10	160	100	21.6	13.5
			0.15	0.12	100	10	150	120	20.3	16.2
QC1	Cadmium	61	0.022	0.018	100	10	22	18	36.1	29.5
			0.023	0.018	100	10	23	18	37.7	29.5
			0.023	0.019	100	10	23	19	37.7	31.1
			0.023	0.018	100	10	23	18	36.1	29.5
			0.023	0.019	100	10	23	19	37.7	31.1
			0.023	0.019	100	10	23	19	37.7	31.1
QC1	Chromium	25	<0.01	<0.01	100	10	<10	<10	nd*	nd
			<0.01	<0.01	100	10	<10	<10	nd	nd
			<0.01	<0.01	100	10	<10	<10	nd	nd
			<0.01	<0.01	100	10	<10	<10	nd	nd
			<0.01	<0.01	100	10	<10	<10	nd	nd
			<0.01	<0.01	100	10	<10	<10	nd	nd
QC1	Iron	41400	1.40	0.32	100	10	1400	320	3.4	0.8
			1.33	0.31	100	10	1330	310	3.2	0.7
			1.30	0.33	100	10	1300	330	3.1	0.8
			1.24	0.29	100	10	1240	290	3.0	0.7
			1.24	0.32	100	10	1240	320	3.0	0.8
			1.25	0.24	100	10	1250	240	3.0	0.6
QC1	Lead	6400	4.83	0.83	100	10	4830	830	75.5	13.0
			4.83	0.69	100	10	4830	690	75.5	10.8
			4.85	0.90	100	10	4850	900	75.8	14.1
			4.79	0.84	100	10	4790	840	74.8	13.1
			4.79	0.82	100	10	4790	820	74.8	12.8
			4.73	0.54	100	10	4730	540	73.9	8.4

Table 10. cont.

Sample	Element	Total (mg kg^{-1})	ICP-OES (mg l^{-1})		Solid:Solution ratio	Dilution Factor	Bioaccessibility (mg kg^{-1})		Bioaccessibility (%)	
			SBRC-G	SBRC-I			SBRC-G	SBRC-I	SBRC-G	SBRC-I
QC1	Manganese	2560	0.60	0.46	100	10	600	460	23.4	18.0
			0.57	0.43	100	10	570	430	22.3	16.8
			0.60	0.46	100	10	600	460	23.4	18.0
			0.57	0.44	100	10	570	440	22.3	17.2
			0.57	0.42	100	10	570	420	22.3	16.4
			0.56	0.43	100	10	560	430	21.9	16.8
QC2‡	Assay blank	-	<LOR	<LOR	-	-	<LOR	<LOR	-	-

†QC1 comprised an arsenic and lead-contaminated (740 mg As kg^{-1}, 6400 mg Pb kg^{-1}) reference soil (SoFC-1) with gastric phase bioaccessibility values of 16-21% (arsenic) and 64-76% (lead). Intestinal phase arsenic and lead bioaccessibility values are not available for SoFC-1. Bioaccessibility reference values are not available for cadmium, chromium, iron and manganese in this or other reference soils.

‡QC2 comprised SBRC gastrointestinal phase solution without soil addition (assay blank).

*nd: not determined

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CONFIDENTIALITY

We acknowledge the confidential nature of the results of this project and will treat the results and project reports with appropriate confidentiality and security.

APPENDIX 1 - METHODOLOGY

Soil samples

Samples supplied by CBH Resources Pty Ltd were oven-dried at 105°C for 24 hours and sieved to obtain 2 soil particle size fractions; < 2 mm and < 250 µm. The < 250 µm soil particle size fraction was used to assess lead bioaccessibility.

Assessment of total elemental concentration in the < 2 mm and < 250 µm soil fractions

Total elemental concentration in the < 2 mm and < 250 µm soil fractions were determined by ALS Environmental Laboratories. A copy of the ALS Environmental Laboratories analytical report is included in Appendix 3.

Assessment of elemental bioaccessibility in the < 250 µm soil particle size fraction

A frequently used assay for the determination of contaminant bioaccessibility is the Solubility Bioaccessibility Research Consortium (SBRC) method (Kelly *et al*., 2002). The gastric phase of this method (termed the Relative Bioavailability Leaching Procedure [RBALP] for lead) has been correlated to *in vivo* lead relative bioavailability when determined using juvenile swine (USEPA 2007). Contaminated soil and gastric solution (30.03 g l^{-1} glycine adjusted to pH 1.5 with concentrated HCl) were combined in polyethylene screw cap flasks at a soil:solution ratio of 1:100. The pH was noted then the flasks were incubated at 37°C, 40 rpm on a Ratek suspension mixer. After 1 hour incubation, the pH was determined and gastric phase samples (10 ml) were collected, filtered through 0.45 µm filters and analysed by ICP-OES by ALS Environmental Laboratories.

Following gastric phase dissolution, the gastric solution was modified to the intestinal phase by adjusting the pH from 1.5 to 6.5-7.0 using 5 or 50% NaOH and by the addition of bovine bile (1750 mg l^{-1}) and porcine pancreatin (500 mg l^{-1}). After a further 4 hours incubation, intestinal phase samples (10 ml) were collected, filtered through 0.45 µm filters and analysed by ICP-MS. Gastric and intestinal phase extractions were performed in triplicate for each soil sample. Lead bioaccessibility was calculated by dividing the gastric or intestinal phase extractable lead by the total soil lead concentration. Lead relative bioaccessibility was determined by adjusting the dissolution of lead from contaminated soils by the solubility of lead acetate at the corresponding pH value. All extracts were analysed by ICP-MS by ALS Environmental Laboratories. A copy of the ALS Environmental Laboratories analytical report is included in Appendix 3.

QA/QC procedures

ALS Environmental Laboratories conducted the analysis for total and bioaccessible lead concentrations for all samples. ALS Environmental Laboratories are a NATA accredited laboratory for the chemical testing of environmental materials. Quality Control results are reported in Appendix 2. Two additional samples were included in bioaccessibility assays for quality assurance and quality control. The samples consisted of:

a. QC1 – Arsenic, Lead-contaminated (740 mg As kg^{-1}, 6400 mg Pb kg^{-1}) reference soil.
b. QC2 – SBRC solution without soil addition (assay blank).

APPENDIX 2 – CHAIN OF CUSTODY FORMS

CHAIN OF CUSTODY

CLIENT: CBH Resources - Broken Hill Operations	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☐ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):
OFFICE:		
PROJECT: HHRA 2019		COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7
	COUNTRY OF ORIGIN:	
PROJECT MANAGER: Devon Roberts	CONTACT PH: 08 8088 9126	

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comment:			

SAMPLER: Georgy Seward	SAMPLER MOBILE: 0400297340	RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
COC Emailed (YES / NO)	EDD FORMAT (or default):	*Georgy Seward*			
Email Reports to bhoenvironmental@cbhresources.com.au,georginaseward@cbhresources.com.au		DATE/TIME:	DATE/TIME:	DATE/TIME:	DATE/TIME:
Email Invoice to (will default to PM if no other addresses are listed): travisbow@cbhresources.com.au		*11/02/2019*	12/2/19		

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL BOTTLES	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	BHS01	7/02/2019 0:00	S	Soil sample		
	BHS02	7/02/2019 0:00	S	Soil sample		
	BHS03	7/02/2019 0:00	S	Soil sample		
	BHS04	7/02/2019 0:00	S	Soil sample		
	BHS05	7/02/2019 0:00	S	Soil sample		
	BHS06	7/02/2019 0:00	S	Soil sample		
	BHS07	7/02/2019 0:00	S	Soil sample		
	BHS08	7/02/2019 0:00	S	Soil sample		
	BHS09	7/02/2019 0:00	S	Soil sample		
	BHS10	7/02/2019 0:00	S	Soil sample		
	BHS11	7/02/2019 0:00	S	Soil sample		
	BHS12	7/02/2019 0:00	S	Soil sample		

CHAIN OF CUSTODY

CLIENT: CBH Resources - Broken Hill Operations	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☐ Standard TAT **(List due date):** ☐ Non Standard or urgent TAT **(List due date):**	**FOR LABORATORY USE ONLY (Circle)**
OFFICE:			Custody Seal Intact? Yes No N/A
PROJECT: HHRA 2019		COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7	Free ice / frozen ice bricks present upon receipt? Yes No N/A
	COUNTRY OF ORIGIN:		Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Devon Roberts	CONTACT PH: 08 8088 9126		Other comment:

SAMPLER: Georgy Seward	SAMPLER MOBILE: 0400297340	RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
COC Emailed (YES / NO)	EDD FORMAT (or default):	*Georgy Seward*			
Email Reports to bhoenvironmental@cbhresources.com.au,georginaseward@cbhresources.com.au		DATE/TIME:	DATE/TIME: 12/2/19	DATE/TIME:	DATE/TIME:
Email Invoice to (will default to PM if no other addresses are listed): travisbow@cbhresources.com.au		*11/02/2019*			

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL BOTTLES	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	BHS13	7/02/2019 0:00	S	Soil sample		
	BHS14	7/02/2019 0:00	S	Soil sample		
	BHS15	7/02/2019 0:00	S	Soil sample		
	BHS16	7/02/2019 0:00	S	Soil sample		
	BHS17	7/02/2019 0:00	S	Soil sample		
	BHS18	7/02/2019 0:00	S	Soil sample		
	BHS19	7/02/2019 0:00	S	Soil sample		
	BHS20	7/02/2019 0:00	S	Soil sample		
	BHS21	7/02/2019 0:00	S	Soil sample		
		7/02/2019 0:00	S	Soil sample		
		7/02/2019 0:00	S	Soil sample		
		7/02/2019 0:00	S	Soil sample		

CHAIN OF CUSTODY

CLIENT: CBH Resources - Broken Hill Operations

OFFICE:

PROJECT: HHRA 2019

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)

☐ Standard TAT **(List due date):**

☐ Non Standard or urgent TAT **(List due date):**

COUNTRY OF ORIGIN:

COC SEQUENCE NUMBER (Circle)

COC: 1 2 3 4 5 6 7

OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comment:			

PROJECT MANAGER: Devon Roberts — CONTACT PH: 08 8088 9126

SAMPLER: Georgy Seward — SAMPLER MOBILE: 0400297340

COC Emailed (YES / NO) — EDD FORMAT (or default):

Email Reports to bhoenvironmental@cbhresources.com.au,georginaseward@cbhresources.com.au

Email Invoice to (will default to PM if no other addresses are listed): travisbow@cbhresources.com.au

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Georgy Seward			
DATE/TIME:	DATE/TIME:	DATE/TIME:	DATE/TIME:
11/02/2019	12/2/19		

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL BOTTLES	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	CBH01	7/02/2019 0:00	S	Soil sample		
	CBH02	7/02/2019 0:00	S	Soil sample		
	CBH03	8/02/2019 0:00	S	Soil sample		
	CBH04	8/02/2019 0:00	S	Soil sample		
	CBH05	8/02/2019 0:00	S	Soil sample		
	CBH06	8/02/2019 0:00	S	Soil sample		
	CBH07	8/02/2019 0:00	S	Soil sample		
	CBH08	8/02/2019 0:00	S	Soil sample		
	CBH09	8/02/2019 0:00	S	Soil sample		
	CBH10	8/02/2019 0:00	S	Soil sample		
	CBH11	8/02/2019 0:00	S	Soil sample		
	CBH12	8/02/2019 0:00	S	Soil sample		

CHAIN OF CUSTODY

CLIENT: CBH Resources - Broken Hill Operations

OFFICE:

PROJECT: HHRA 2019

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)

☐ Standard TAT **(List due date):**

☐ Non Standard or urgent TAT **(List due date):**

COUNTRY OF ORIGIN:

COC SEQUENCE NUMBER (Circle)

COC: 1 2 3 4 5 6 7

OF: 1 2 3 4 5 6 7

6

PROJECT MANAGER: Devon Roberts | CONTACT PH: 08 8088 9126

SAMPLER: Georgy Seward | SAMPLER MOBILE: 0400297340

COC Emailed (YES / NO) | EDD FORMAT (or default):

Email Reports to bhoenvironmental@cbhresources.com.au,georginaseward@cbhresources.com.au

Email Invoice to (will default to PM if no other addresses are listed): travisbow@cbhresources.com.au

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Georgy Seward			
DATE/TIME:	DATE/TIME:	DATE/TIME:	DATE/TIME:
11/02/2019	12/2/19		

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:	°C		
Other comment:			

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (*refer to codes below*)	TOTAL BOTTLES	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	CBH13	7/02/2019 0:00	S	Soil sample		
	CBH14	7/02/2019 0:00	S	Soil sample		
	CBH15	8/02/2019 0:00	S	Soil sample		
	CBH16	8/02/2019 0:00	S	Soil sample		
	CBH17	8/02/2019 0:00	S	Soil sample		
	CBH18	8/02/2019 0:00	S	Soil sample		
	CBH19	8/02/2019 0:00	S	Soil sample		
	CBH20	8/02/2019 0:00	S	Soil sample		
	CBH21	8/02/2019 0:00	S	Soil sample		
	CBH22	8/02/2019 0:00	S	Soil sample		
	CBH23	8/02/2019 0:00	S	Soil sample		
	CBH24	8/02/2019 0:00	S	Soil sample		

CHAIN OF CUSTODY

CLIENT: CBH Resources - Broken Hill Operations	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☐ Standard TAT **(List due date):** ☐ Non Standard or urgent TAT **(List due date):**	**FOR LABORATORY USE ONLY (Circle)**
OFFICE:			Custody Seal Intact? Yes No N/A
PROJECT: HHRA 2019		COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7	Free ice / frozen ice bricks present upon receipt? Yes No N/A
	COUNTRY OF ORIGIN:	OF: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Devon Roberts	CONTACT PH: 08 8088 9126		Other comment:

SAMPLER: Georgy Seward	SAMPLER MOBILE: 0400297340	RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
COC Emailed (YES / NO)	EDD FORMAT (or default):	*Georgy Seward*			
Email Reports to bhoenvironmental@cbhresources.com.au,georginaseward@cbhresources.com.au		DATE/TIME:	DATE/TIME:	DATE/TIME:	DATE/TIME:
Email Invoice to (will default to PM if no other addresses are listed): travisbow@cbhresources.com.au		*11/02/2019*	12/2/19		

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL BOTTLES	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	CBH25	7/02/2019 0:00	S	Soil sample		
	CBH26	7/02/2019 0:00	S	Soil sample		
	CBH27	8/02/2019 0:00	S	Soil sample		
	CBH28	8/02/2019 0:00	S	Soil sample		
	CBH29	8/02/2019 0:00	S	Soil sample		
	CBH30	8/02/2019 0:00	S	Soil sample		
	CBH31	8/02/2019 0:00	S	Soil sample		Sample missing
	WR01	8/02/2019 0:00	S	Soil sample		
	WR02	8/02/2019 0:00	S	Soil sample		
	WR03	8/02/2019 0:00	S	Soil sample		
	WR04	8/02/2019 0:00	S	Soil sample		
	WR05	8/02/2019 0:00	S	Soil sample		

CHAIN OF CUSTODY

ALS

ALS Laboratory: please tick →

☐ **Sydney:** 277 Woodpark Rd, Smithfield NSW 2176 Ph: 02 8784 8555 E:samples.sydney@alsenviro.com
☐ **Newcastle:** 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ **Brisbane:** 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ **Townsville:** 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ **Melbourne:** 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ **Adelaide:** 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ **Perth:** 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ **Launceston:** 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc - 2
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz **CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz **SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO) **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)
☒ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz	Sam		Sam
DATE/TIME: 12/9/19	DATE/TIME: 13/9/19 9:25	DATE/TIME:	DATE/TIME: 9:25 13/9/19

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).	Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Total As, Cd, Cr, Fe, Mn, Pb	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	WR01-2A	12/09/2019	S		1	1	
2	WR01-2B	12/09/2019	S		1	1	Soils have been oven dried and sieved
3	WR01-250A	12/09/2019	S		1	1	
4	WR01-250B	12/09/2019	S		1	1	
5	WR02-2A	12/09/2019	S		1	1	
6	WR02-2B	12/09/2019	S		1	1	
7	WR02-250A	12/09/2019	S		1	1	
8	WR02-250B	12/09/2019	S		1	1	
9	WR03-2A	12/09/2019	S		1	1	
10	WR03-2B	12/09/2019	S		1	1	
11	WR03-250A	12/09/2019	S		1	1	
12	WR03-250B	12/09/2019	S		1	1	
				TOTAL	12	12	

Environmental Division
Melbourne
Work Order Reference
EM1915187
Telephone : + 61-3-8549 9600

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF COUSTODY

ALS Laboratory: please tick →

☐ Sydney: 277 Woodpark Rd, Smithfield NSW 2176 Ph: 02 8784 8555 E:samples.sydney@alsenviro.com
☐ Newcastle: 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ Brisbane: 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ Adelaide: 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ Perth: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc - 2
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz — CONTACT PH: 08 8302 5045
SAMPLER: Albert Juhasz — SAMPLER MOBILE: 0418 818 121
COC emailed to ALS? (NO) — EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):
ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY: Sam
Albert Juhasz			
DATE/TIME: 12/9/19	DATE/TIME:	DATE/TIME:	DATE/TIME: 13/9/19 9:25

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).	Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Total As, Cd, Cr, Fe, Mn, Pb	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
13	WR04-2A	12/09/2019	S		1	1	Soils have been oven dried and sieved
14	WR04-2B	12/09/2019	S		1	1	
15	WR04-250A	12/09/2019	S		1	1	
16	WR04-250B	12/09/2019	S		1	1	
17	WR05-2A	12/09/2019	S		1	1	
18	WR05-2B	12/09/2019	S		1	1	
19	WR05-250A	12/09/2019	S		1	1	
20	WR05-250B	12/09/2019	S		1	1	
				TOTAL	8	8	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: *please tick →*

☐ **Sydney**: 277 Woodpark Rd, Smithfield NSW 2176 Ph: 02 8784 8555 E:samples.sydney@alsenviro.com
☐ **Newcastle**: 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ **Brisbane**: 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ **Townsville**: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ **Melbourne**: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ **Adelaide**: 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ **Perth**: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ **Launceston**: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☒ Standard TAT (**List due date**): ☐ Non Standard or urgent TAT (**List due date**):	**FOR LABORATORY USE ONLY (Circle)**
OFFICE: Mawson Lakes Campus X1-17			Custody Seal Intact? Yes No N/A
PROJECT: CBH BioAcc - 2	**ALS QUOTE NO.:**	**COC SEQUENCE NUMBER (Circle)**	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:		COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Albert Juhasz	**CONTACT PH:** 08 8302 5045	OF: 1 2 3 4 5 6 7	Other comment:

SAMPLER: Albert Juhasz	**SAMPLER MOBILE:** 0418 818 121	**RELINQUISHED BY:** *Albert Juhasz*	**RECEIVED BY:**	**RELINQUISHED BY:**	**RECEIVED BY:**
COC emailed to ALS? (NO)	**EDD FORMAT (or default):**	DATE/TIME: 12/9/19	DATE/TIME:	DATE/TIME:	DATE/TIME: 13/9/19 9:25
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au					
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au					

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (*refer to codes below*)	TOTAL BOTTLES	Dissolved As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
21	WR01-G1	12/09/2019	S		1	1								samples have been filtered (0.45 um)
22	WR01-G2	12/09/2019	S		1	1								
23	WR01-I1	12/09/2019	S		1	1								
24	WR01-I2	12/09/2019	S		1	1								
25	WR02-G1	12/09/2019	S		1	1								
26	WR02-G2	12/09/2019	S		1	1								
27	WR02-I1	12/09/2019	S		1	1								
28	WR02-I2	12/09/2019	S		1	1								
29	WR03-G1	12/09/2019	S		1	1								
30	WR03-G2	12/09/2019	S		1	1								
31	WR03-I1	12/09/2019	S		1	1								
32	WR03-I2	12/09/2019	S		1	1								
				TOTAL	12	12								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS

*ALS Laboratory: **please tick →***

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☐ **Newcastle:** 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ **Brisbane:** 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ **Townsville:** 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ **Melbourne:** 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ **Adelaide:** 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ **Perth:** 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ **Launceston:** 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc - 2
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz **CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz **SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO) **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT **(List due date):**
☐ Non Standard or urgent TAT **(List due date):**

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz			
DATE/TIME: 12/9/19	DATE/TIME:	DATE/TIME:	DATE/TIME: 13/9/19 9:28

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Dissolved As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
33	WR04-G1	12/09/2019	S		1	1								samples have been filtered (0.45 um)
34	WR04-G2	12/09/2019	S		1	1								
35	WR04-I1	12/09/2019	S		1	1								
36	WR04-I2	12/09/2019	S		1	1								
37	WR05-G1	12/09/2019	S		1	1								
38	WR05-G2	12/09/2019	S		1	1								
39	WR05-I1	12/09/2019	S		1	1								
40	WR05-I2	12/09/2019	S		1	1								
				TOTAL	8	8								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ **Sydney**: 277 Woodpark Rd, Smithfield NSW 2176 Ph: 02 8784 8555 E:samples.sydney@alsenviro.com
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☐ **Townsville**: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ **Melbourne**: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ **Adelaide**: 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ **Perth**: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ **Launceston**: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☒ Standard TAT (**List due date**): ☐ Non Standard or urgent TAT (**List due date**):	**FOR LABORATORY USE ONLY (Circle)**
OFFICE: Mawson Lakes Campus X1-17			Custody Seal Intact? Yes No N/A
PROJECT: CBH BioAcc ~2	**ALS QUOTE NO.:**	**COC SEQUENCE NUMBER (Circle)**	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:		COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Albert Juhasz	**CONTACT PH:** 08 8302 5045	OF: 1 2 3 4 5 6 7	Other comment:

SAMPLER: Albert Juhasz	**SAMPLER MOBILE:** 0418 818 121	**RELINQUISHED BY:**	**RECEIVED BY:**	**RELINQUISHED BY:**
COC emailed to ALS? (NO)	**EDD FORMAT (or default):**	*Albert Juhasz*		
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au		DATE/TIME: 12/9/19	DATE/TIME:	DATE/TIME:
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au				

RECEIVED BY: Sm
DATE/TIME: 13/9/19 9:25

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).								Additional Information
LAB ID	**SAMPLE ID**	**DATE / TIME**	**MATRIX**	**TYPE & PRESERVATIVE** *(refer to codes below)*	**TOTAL BOTTLES**	Dissolved As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
41	QC1-G1	12/09/2019	S		1	1								samples have been filtered (0.45 um)
42	QC1-G2	12/09/2019	S		1	1								
43	QC1-I1	12/09/2019	S		1	1								
44	QC1-I2	12/09/2019	S		1	1								
45	QC2-G1	12/09/2019	S		1	1								
46	QC2-G2	12/09/2019	S		1	1								
47	QC2-I1	12/09/2019	S		1	1								
48 -	QC2-I2	12/09/2019	S		1	1								
				TOTAL	8	8								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Split batch of EM1915198 and EM19152cc

CHAIN OF CUSTODY

ALS

ALS Laboratory: please tick →

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☐ Newcastle: 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ Brisbane: 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ Adelaide: 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ Perth: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc - 3
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz — CONTACT PH: 08 8302 5045
SAMPLER: Albert Juhasz — SAMPLER MOBILE: 0418 818 121
COC emailed to ALS? (NO) — EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):
ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 2 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt:
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz	Sam		
DATE/TIME: 12/9/19	DATE/TIME: 9:25 13/9/19	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).	Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Total As, Cd, Cr, Fe, Mn, Pb	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	CBH01-2A	12/09/2019	S		1	1	Soils have been oven dried and sieved
2	CBH01-2B	12/09/2019	S		1	1	
3	CBH01-250A	12/09/2019	S		1	1	
4	CBH01-250B	12/09/2019	S		1	1	
5	CBH02-2A	12/09/2019	S		1	1	
6	CBH02-2B	12/09/2019	S		1	1	
7	CBH02-250A	12/09/2019	S		1	1	
8	CBH02-250B	12/09/2019	S		1	1	
9	CBH03-2A	12/09/2019	S		1	1	
10	CBH03-2B	12/09/2019	S		1	1	
11	CBH03-250A	12/09/2019	S		1	1	
12	CBH03-250B	12/09/2019	S		1	1	
				TOTAL	12	12	

Environmental Division
Melbourne
Work Order Reference
EM1915195
Telephone : + 61-3-8549 9600

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐ **Townsville:** 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
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☐ **Adelaide:** 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ **Perth:** 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ **Launceston:** 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc - 3
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz **CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz **SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO**)** **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)
☒ Standard TAT **(List due date):**
☐ Non Standard or urgent TAT **(List due date):**

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 2 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz DATE/TIME: 12/9/19	DATE/TIME: 13/9/19 9:25	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY LAB ID	SAMPLE DETAILS MATRIX: Solid(S) Water(W) SAMPLE ID	DATE / TIME	MATRIX	CONTAINER INFORMATION TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required). Total As, Cd, Cr, Fe, Mn, Pb								Additional Information Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
13	CBH04-2A	12/09/2019	S		1	1								Soils have been oven dried and sieved
14	CBH04-2B	12/09/2019	S		1	1								
15	CBH04-250A	12/09/2019	S		1	1								
16	CBH04-250B	12/09/2019	S		1	1								
17	CBH05-2A	12/09/2019	S		1	1								
18	CBH05-2B	12/09/2019	S		1	1								
19	CBH05-250A	12/09/2019	S		1	1								
20	CBH05-250B	12/09/2019	S		1	1								
21	CBH06-2A	12/09/2019	S		1	1								
22	CBH06-2B	12/09/2019	S		1	1								
23	CBH06-250A	12/09/2019	S		1	1								
24	CBH06-250B	12/09/2019	S		1	1								
				TOTAL	12	12								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐ **Townsville:** 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
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☐ **Perth:** 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ **Launceston:** 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT:	University of South Australia	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☒ Standard TAT (**List due date**): ☐ Non Standard or urgent TAT (**List due date**):
OFFICE:	Mawson Lakes Campus X1-17		
PROJECT:	CBH BioAcc - 3	**ALS QUOTE NO.:**	
ORDER NUMBER:			**COC SEQUENCE NUMBER (Circle)** COC: 1 2 3 4 5 6 7 / OF: 27 2 3 4 5 6 7
PROJECT MANAGER:	Albert Juhasz	**CONTACT PH:** 08 8302 5045	
SAMPLER:	Albert Juhasz	**SAMPLER MOBILE:** 0418 818 121	
COC emailed to ALS? (NO)		**EDD FORMAT (or default):**	

Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz	Sam		
DATE/TIME: 12/9/19	DATE/TIME: 13/9/19 9:25	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).								Additional Information
LAB ID	**SAMPLE ID**	**DATE / TIME**	**MATRIX**	**TYPE & PRESERVATIVE** *(refer to codes below)*	**TOTAL BOTTLES**	Total As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
25	CBH07-2A	12/09/2019	S		1	1								Soils have been oven dried and sieved
26	CBH07-2B	12/09/2019	S		1	1								
27	CBH07-250A	12/09/2019	S		1	1								
28	CBH07-250B	12/09/2019	S		1	1								
29	CBH08-2A	12/09/2019	S		1	1								
30	CBH08-2B	12/09/2019	S		1	1								
31	CBH08-250A	12/09/2019	S		1	1								
32	CBH08-250B	12/09/2019	S		1	1								
33	CBH09-2A	12/09/2019	S		1	1								
34	CBH09-2B	12/09/2019	S		1	1								
35	CBH09-250A	12/09/2019	S		1	1								
36	CBH09-250B	12/09/2019	S		1	1								
				TOTAL	12	12								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ALS

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐ **Brisbane:** 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ **Townsville:** 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ **Melbourne:** 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ **Adelaide:** 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ **Perth:** 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ **Launceston:** 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc -3
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz **CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz **SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO**)** **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (**List due date):**
☐ Non Standard or urgent TAT (**List due date):**
ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 21 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt:
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz	Sam		
DATE/TIME: 12/9/19	DATE/TIME: 13/9/19 9:25	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).	Additional Information
LAB ID	**SAMPLE ID**	**DATE / TIME**	**MATRIX**	**TYPE & PRESERVATIVE** *(refer to codes below)*	**TOTAL BOTTLES**	**Total As, Cd, Cr, Fe, Mn, Pb**	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
37	CBH10-2A	12/09/2019	S		1	1	Soils have been oven dried and sieved
38	CBH10-2B	12/09/2019	S		1	1	
39	CBH10-250A	12/09/2019	S		1	1	
40	CBH10-250B	12/09/2019	S		1	1	
41	CBH11-2A	12/09/2019	S		1	1	
42	CBH11-2B	12/09/2019	S		1	1	
43	CBH11-250A	12/09/2019	S		1	1	
44	CBH11-250B	12/09/2019	S		1	1	
45	CBH12-2A	12/09/2019	S		1	1	
46	CBH12-2B	12/09/2019	S		1	1	
47	CBH12-250A	12/09/2019	S		1	1	
48	CBH12-250B	12/09/2019	S		1	1	
				TOTAL	12	12	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF COUSTODY

ALS Laboratory: please tick →

☐ **Sydney**: 277 Woodpark Rd, Smithfield NSW 2176 Ph: 02 8784 8555 E:samples.sydney@alsenviro.com
☐ **Newcastle**: 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ **Brisbane**: 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ **Townsville**: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ **Melbourne**: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ **Adelaide**: 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ **Perth**: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ **Launceston**: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc -3
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz — **CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz — **SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO**)** — **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (**List due date):**
☐ Non Standard or urgent TAT (**List due date):**
ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 21 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz			
DATE/TIME: 12/9/19	DATE/TIME: 13/9/19 9:25	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).	Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Total As, Cd, Cr, Fe, Mn, Pb	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
49	CBH13-2A	12/09/2019	S		1	1	Soils have been oven dried and sieved
50	CBH13-2B	12/09/2019	S		1	1	
51	CBH13-250A	12/09/2019	S		1	1	
52	CBH13-250B	12/09/2019	S		1	1	
53	CBH14-2A	12/09/2019	S		1	1	
54	CBH14-2B	12/09/2019	S		1	1	
55	CBH14-250A	12/09/2019	S		1	1	
56	CBH14-250B	12/09/2019	S		1	1	
57	CBH15-2A	12/09/2019	S		1	1	
58	CBH15-2B	12/09/2019	S		1	1	
59	CBH15-250A	12/09/2019	S		1	1	
60	CBH15-250B	12/09/2019	S		1	1	
				TOTAL	12	12	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐ Newcastle: 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
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☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ Adelaide: 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ Perth: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc – 3
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz — CONTACT PH: 08 8302 5045
SAMPLER: Albert Juhasz — SAMPLER MOBILE: 0418 818 121
COC emailed to ALS? (NO) — EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):
ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7 (6 circled)
OF: 21 2 3 4 5 6 7 (21 circled)

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz	Sw		
DATE/TIME: 12/9/19	DATE/TIME: 13/9/19 9:25	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Total As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
61	CBH16-2A	12/09/2019	S		1	1								Soils have been oven dried and sieved
62	CBH16-2B	12/09/2019	S		1	1								
63	CBH16-250A	12/09/2019	S		1	1								
64	CBH16-250B	12/09/2019	S		1	1								
65	CBH17-2A	12/09/2019	S		1	1								
66	CBH17-2B	12/09/2019	S		1	1								
67	CBH17-250A	12/09/2019	S		1	1								
68	CBH17-250B	12/09/2019	S		1	1								
69	CBH18-2A	12/09/2019	S		1	1								
70	CBH18-2B	12/09/2019	S		1	1								
71	CBH18-250A	12/09/2019	S		1	1								
72	CBH18-250B	12/09/2019	S		1	1								
				TOTAL	12	12								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐ **Newcastle:** 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
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☐ **Townsville:** 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
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☐ **Adelaide:** 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ **Perth:** 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ **Launceston:** 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc -3
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz — **CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz — **SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO**)** — **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (**List due date**):
☐ Non Standard or urgent TAT (**List due date**):
ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 21 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz DATE/TIME: 12/9/19	San DATE/TIME: 13/9/19 9:25	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Total As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
73	CBH19-2A	12/09/2019	S		1	1								Soils have been oven dried and sieved
74	CBH19-2B	12/09/2019	S		1	1								
75	CBH19-250A	12/09/2019	S		1	1								
76	CBH19-250B	12/09/2019	S		1	1								
77	CBH20-2A	12/09/2019	S		1	1								
78	CBH20-2B	12/09/2019	S		1	1								
79	CBH20-250A	12/09/2019	S		1	1								
80	CBH20-250B	12/09/2019	S		1	1								
81	CBH21-2A	12/09/2019	S		1	1								
82	CBH21-2B	12/09/2019	S		1	1								
83	CBH21-250A	12/09/2019	S		1	1								
84	CBH21-250B	12/09/2019	S		1	1								
				TOTAL	12	12								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Split part of EM1915173 and EM1915200.

CHAIN OF CUSTODY

ALS Laboratory: *please tick →*

☐ Sydney: 277 Woodpark Rd, Smithfield NSW 2176 Ph: 02 8784 8555 E:samples.sydney@alsenviro.com
☐ Newcastle: 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
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☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
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☐ Perth: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc -3
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz CONTACT PH: 08 8302 5045
SAMPLER: Albert Juhasz SAMPLER MOBILE: 0418 818 121
COC emailed to ALS? (NO) EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)
☒ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):
ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 8 2 3 4 5 6 7
OF: 1 21 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY: Albert Juhasz
DATE/TIME: 12/9/19
RECEIVED BY:
DATE/TIME: 13/9/19 9:25
RELINQUISHED BY:
DATE/TIME:
RECEIVED BY:
DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Total As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	CBH22-2A	12/09/2019	S		1	1								Soils have been oven dried and sieved
2	CBH22-2B	12/09/2019	S		1	1								
3	CBH22-250A	12/09/2019	S		1	1								
4	CBH22-250B	12/09/2019	S		1	1								
5	CBH23-2A	12/09/2019	S		1	1								
6	CBH23-2B	12/09/2019	S		1	1								
7	CBH23-250A	12/09/2019	S		1	1								
8	CBH23-250B	12/09/2019	S		1	1								
9	CBH24-2A	12/09/2019	S		1	1								
10	CBH24-2B	12/09/2019	S		1	1								
11	CBH24-250A	12/09/2019	S		1	1								
12	CBH24-250B	12/09/2019	S		1	1								
				TOTAL	12	12								

Environmental Division
Melbourne
Work Order Reference
EM1915198
Telephone : + 61-3-8549 9600

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: *please tick* →

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CLIENT: University of South Australia	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics) ☒ Standard TAT (**List due date**): ☐ Non Standard or urgent TAT (**List due date**):
OFFICE: Mawson Lakes Campus X1-17	
PROJECT: CBH BioAcc ~ 3	**ALS QUOTE NO.:**
ORDER NUMBER:	**COC SEQUENCE NUMBER (Circle)** COC: 9 2 3 4 5 6 7 OF: 1 21 3 4 5 6 7
PROJECT MANAGER: Albert Juhasz	**CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz	**SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO)	**EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au	
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au	

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz	Sam		
DATE/TIME: 12/9/19	DATE/TIME: 13/9/19 9:25	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Total As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
13	CBH25-2A	12/09/2019	S		1	1								Soils have been oven dried and sieved
14	CBH25-2B	12/09/2019	S		1	1								
15	CBH25-250A	12/09/2019	S		1	1								
16	CBH25-250B	12/09/2019	S		1	1								
17	CBH26-2A	12/09/2019	S		1	1								
18	CBH26-2B	12/09/2019	S		1	1								
19	CBH26-250A	12/09/2019	S		1	1								
20	CBH26-250B	12/09/2019	S		1	1								
21	CBH27-2A	12/09/2019	S		1	1								
22	CBH27-2B	12/09/2019	S		1	1								
23	CBH27-250A	12/09/2019	S		1	1								
24	CBH27-250B	12/09/2019	S		1	1								
				TOTAL	12	12								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ Sydney: 277 Woodpark Rd, Smithfield NSW 2176 Ph: 02 8784 8555 E:samples.sydney@alsenviro.com
☐ Newcastle: 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ Brisbane: 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ Adelaide: 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ Perth: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc -3
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz **CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz **SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO**)** **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):
ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 10 2 3 4 5 6 7
OF: 1 21 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz			
DATE/TIME: 12/9/19	DATE/TIME: 13/9/19 9:25	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Total As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
25	CBH28-2A	12/09/2019	S		1	1								Soils have been oven dried and sieved
26	CBH28-2B	12/09/2019	S		1	1								
27	CBH28-250A	12/09/2019	S		1	1								
28	CBH28-250B	12/09/2019	S		1	1								
29	CBH29-2A	12/09/2019	S		1	1								
30	CBH29-2B	12/09/2019	S		1	1								
31	CBH29-250A	12/09/2019	S		1	1								
32	CBH29-250B	12/09/2019	S		1	1								
33	CBH30-2A	12/09/2019	S		1	1								
34	CBH30-2B	12/09/2019	S		1	1								
35	CBH30-250A	12/09/2019	S		1	1								
36	CBH30-250B	12/09/2019	S		1	1								
				TOTAL	12	12								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

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CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐ **Adelaide:** 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ **Perth:** 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ **Launceston:** 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc ~3
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz **CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz **SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO) **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

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☒ Standard TAT **(List due date):**
☐ Non Standard or urgent TAT **(List due date):**

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz	Sa		
DATE/TIME: 12/9/19	DATE/TIME: 13/9/19 9:25	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Dissolved As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
37	CBH01-G1	12/09/2019	S		1	1								samples have been filtered (0.45 um)
38	CBH01-G2	12/09/2019	S		1	1								
39	CBH01-I1	12/09/2019	S		1	1								
40	CBH01-I2	12/09/2019	S		1	1								
41	CBH02-G1	12/09/2019	S		1	1								
42	CBH02-G2	12/09/2019	S		1	1								
43	CBH02-I1	12/09/2019	S		1	1								
44	CBH02-I2	12/09/2019	S		1	1								
45	CBH03-G1	12/09/2019	S		1	1								
46	CBH03-G2	12/09/2019	S		1	1								
47	CBH03-I1	12/09/2019	S		1	1								
48	CBH03-I2	12/09/2019	S		1	1								
				TOTAL	12	12								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ALS

CHAIN OF COUSTODY

ALS Laboratory: please tick →

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☐ **Townsville:** 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
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☐ **Launceston:** 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT:	University of South Australia
OFFICE:	Mawson Lakes Campus X1-17
PROJECT:	CBH BioAcc – 3
ORDER NUMBER:	
PROJECT MANAGER:	Albert Juhasz — **CONTACT PH:** 08 8302 5045
SAMPLER:	Albert Juhasz — **SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO)	**EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au	
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au	

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)

☒ Standard TAT (**List due date):**

☐ Non Standard or urgent TAT (**List due date):**

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)

COC: 12 2 3 4 5 6 7

OF: 1 21 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comment:

RELINQUISHED BY:	**RECEIVED BY:**	**RELINQUISHED BY:**	**RECEIVED BY:**
Albert Juhasz			
DATE/TIME: 12/9/19	DATE/TIME: 13/9/19 9:25	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).	Additional Information
LAB ID	**SAMPLE ID**	**DATE / TIME**	**MATRIX**	**TYPE & PRESERVATIVE** *(refer to codes below)*	**TOTAL BOTTLES**	Dissolved As, Cd, Cr, Fe, Mn, Pb	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
49	CBH04-G1	12/09/2019	S		1	1	samples have been filtered (0.45 um)
50	CBH04-G2	12/09/2019	S		1	1	
51	CBH04-I1	12/09/2019	S		1	1	
52	CBH04-I2	12/09/2019	S		1	1	
53	CBH05-G1	12/09/2019	S		1	1	
54	CBH05-G2	12/09/2019	S		1	1	
55	CBH05-I1	12/09/2019	S		1	1	
56	CBH05-I2	12/09/2019	S		1	1	
57	CBH06-G1	12/09/2019	S		1	1	
58	CBH06-G2	12/09/2019	S		1	1	
59	CBH06-I1	12/09/2019	S		1	1	
60	CBH06-I2	12/09/2019	S		1	1	
				TOTAL	12	12	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF COUSTODY

ALS Laboratory: please tick →

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☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
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☐ Perth: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☒ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Mawson Lakes Campus X1-17			Custody Seal Intact? Yes No N/A
PROJECT: CBH BioAcc -3	ALS QUOTE NO.:	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:		COC: 13 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Albert Juhasz	CONTACT PH: 08 8302 5045	OF: 1 21 3 4 5 6 7	Other comment:
SAMPLER: Albert Juhasz	SAMPLER MOBILE: 0418 818 121		
COC emailed to ALS? (NO)	EDD FORMAT (or default):		
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au			
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz	Snw		
DATE/TIME: 12/9/19	DATE/TIME: 13/9/19 9:25	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).									Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Dissolved As, Cd, Cr, Fe, Mn, Pb									Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
61	CBH07-G1	12/09/2019	S		1	1									samples have been filtered (0.45 um)
62	CBH07-G2	12/09/2019	S		1	1									
63	CBH07-I1	12/09/2019	S		1	1									
64	CBH07-I2	12/09/2019	S		1	1									
65	CBH08-G1	12/09/2019	S		1	1									
66	CBH08-G2	12/09/2019	S		1	1									
67	CBH08-I1	12/09/2019	S		1	1									
68	CBH08-I2	12/09/2019	S		1	1									
69	CBH09-G1	12/09/2019	S		1	1									
70	CBH09-G2	12/09/2019	S		1	1									
71	CBH09-I1	12/09/2019	S		1	1									
72	CBH09-I2	12/09/2019	S		1	1									
				TOTAL	12	12									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐ **Launceston**: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc - 3
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz **CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz **SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO) **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
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TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (**List due date**):
☐ Non Standard or urgent TAT (**List due date**):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 14 2 3 4 5 6 7
OF: 1 21 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz	Sam		
DATE/TIME: 12/9/19	DATE/TIME: 13/9/19 9:25	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).									Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL BOTTLES	Dissolved As, Cd, Cr, Fe, Mn, Pb									Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
73	CBH10-G1	12/09/2019	S		1	1									samples have been filtered (0.45 um)
74	CBH10-G2	12/09/2019	S		1	1									
75	CBH10-I1	12/09/2019	S		1	1									
76	CBH10-I2	12/09/2019	S		1	1									
77	CBH11-G1	12/09/2019	S		1	1									
78	CBH11-G2	12/09/2019	S		1	1									
79	CBH11-I1	12/09/2019	S		1	1									
80	CBH11-I2	12/09/2019	S		1	1									
81	CBH12-G1	12/09/2019	S		1	1									
82	CBH12-G2	12/09/2019	S		1	1									
83	CBH12-I1	12/09/2019	S		1	1									
84	CBH12-I2	12/09/2019	S		1	1									
				TOTAL	12	12									

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V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Split batch of EM1915195 and EM1915198.

CHAIN OF CUSTODY

ALS Laboratory: *please tick* →

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CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc -3
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz **CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz **SAMPLER MOBILE:** 0418 818 121
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☒ Standard TAT (**List due date**):
☐ Non Standard or urgent TAT (**List due date**):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 15 2 3 4 5 6 7
OF: 1 21 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz	Sam		
DATE/TIME: 12/9/19	DATE/TIME: 13/9/19 9:25	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	**SAMPLE ID**	**DATE / TIME**	**MATRIX**	**TYPE & PRESERVATIVE** *(refer to codes below)*	**TOTAL BOTTLES**	Dissolved As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	CBH13-G1	12/09/2019	S		1	1								samples have been filtered (0.45 um)
2	CBH13-G2	12/09/2019	S		1	1								
3	CBH13-I1	12/09/2019	S		1	1								
4	CBH13-I2	12/09/2019	S		1	1								
5	CBH14-G1	12/09/2019	S		1	1								
6	CBH14-G2	12/09/2019	S		1	1								
7	CBH14-I1	12/09/2019	S		1	1								
8	CBH14-I2	12/09/2019	S		1	1								
9	CBH15-G1	12/09/2019	S		1	1								
10	CBH15-G2	12/09/2019	S		1	1								
11	CBH15-I1	12/09/2019	S		1	1								
12	CBH15-I2	12/09/2019	S		1	1								
				TOTAL	12	12								

Environmental Division
Melbourne
Work Order Reference
EM1915200

Telephone : + 61-3-8549 9600

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: *please tick* →

☐ Sydney: 277 Woodpark Rd, Smithfield NSW 2176 Ph: 02 8784 8555 E:samples.sydney@alsenviro.com
☐ Newcastle: 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ Brisbane: 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
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☐ Perth: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc -3
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz **CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz **SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO) **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 16 2 3 4 5 6 7
OF: 1 21 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz	Sam		
DATE/TIME: 12/9/19	DATE/TIME: 9.25 13/9/19	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL BOTTLES	Dissolved As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
13	CBH16-G1	12/09/2019	S		1	1								samples have been filtered (0.45 um)
14	CBH16-G2	12/09/2019	S		1	1								
15	CBH16-I1	12/09/2019	S		1	1								
16	CBH16-I2	12/09/2019	S		1	1								
17	CBH17-G1	12/09/2019	S		1	1								
18	CBH17-G2	12/09/2019	S		1	1								
19	CBH17-I1	12/09/2019	S		1	1								
20	CBH17-I2	12/09/2019	S		1	1								
21	CBH18-G1	12/09/2019	S		1	1								
22	CBH18-G2	12/09/2019	S		1	1								
23	CBH18-I1	12/09/2019	S		1	1								
24	CBH18-I2	12/09/2019	S		1	1								
				TOTAL	12	12								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: **please tick →**

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☐ **Adelaide:** 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ **Perth:** 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ **Launceston:** 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc - 3
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz **CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz **SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO**)** **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT **(List due date):**
☐ Non Standard or urgent TAT **(List due date):**

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 17 2 3 4 5 6 7
OF: 1 26 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz	Sam		
DATE/TIME: 12/9/19	DATE/TIME: 13/9/19 9:25	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Dissolved As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
25	CBH19-G1	12/09/2019	S		1	1								samples have been filtered (0.45 um)
26	CBH19-G2	12/09/2019	S		1	1								
27	CBH19-I1	12/09/2019	S		1	1								
28	CBH19-I2	12/09/2019	S		1	1								
29	CBH20-G1	12/09/2019	S		1	1								
30	CBH20-G2	12/09/2019	S		1	1								
31	CBH20-I1	12/09/2019	S		1	1								
32	CBH20-I2	12/09/2019	S		1	1								
33	CBH21-G1	12/09/2019	S		1	1								
34	CBH21-G2	12/09/2019	S		1	1								
35	CBH21-I1	12/09/2019	S		1	1								
36	CBH21-I2	12/09/2019	S		1	1								
				TOTAL	12	12								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: *please tick →*

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☐ **Townsville**: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ **Melbourne**: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ **Adelaide**: 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ **Perth**: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ **Launceston**: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc -3
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz **CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz **SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO**)** **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT **(List due date):**
☐ Non Standard or urgent TAT **(List due date):**
ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 18 2 3 4 5 6 7
OF: 1 21 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz	Sam		
DATE/TIME: 12/9/19	DATE/TIME: 13/9/19 9:25	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).									Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Dissolved As, Cd, Cr, Fe, Mn, Pb									Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
37	CBH22-G1	12/09/2019	S		1	1									samples have been filtered (0.45 um)
38	CBH22-G2	12/09/2019	S		1	1									
39	CBH22-I1	12/09/2019	S		1	1									
40	CBH22-I2	12/09/2019	S		1	1									
41	CBH23-G1	12/09/2019	S		1	1									
42	CBH23-G2	12/09/2019	S		1	1									
43	CBH23-I1	12/09/2019	S		1	1									
44	CBH23-I2	12/09/2019	S		1	1									
45	CBH24-G1	12/09/2019	S		1	1									
46	CBH24-G2	12/09/2019	S		1	1									
47	CBH24-I1	12/09/2019	S		1	1									
48	CBH24-I2	12/09/2019	S		1	1									
				TOTAL	12	12									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF COUNTY

ALS Laboratory: please tick →

☐ Sydney: 277 Woodpark Rd, Smithfield NSW 2176 Ph: 02 8784 8555 E:samples.sydney@alsenviro.com
☐ Newcastle: 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ Brisbane: 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ Adelaide: 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ Perth: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc - 3
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz   CONTACT PH: 08 8302 5045
SAMPLER: Albert Juhasz   SAMPLER MOBILE: 0418 818 121
COC emailed to ALS? (NO)   EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):
ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 19 2 3 4 5 6 7
OF: 1 21 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz	Sam		
DATE/TIME: 12/8/19	DATE/TIME: 13/9/19 9:25	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Dissolved As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
49	CBH25-G1	12/09/2019	S		1	1								samples have been filtered
50	CBH25-G2	12/09/2019	S		1	1								
51	CBH25-I1	12/09/2019	S		1	1								
52	CBH25-I2	12/09/2019	S		1	1								
53	CBH26-G1	12/09/2019	S		1	1								
54	CBH26-G2	12/09/2019	S		1	1								
55	CBH26-I1	12/09/2019	S		1	1								
56	CBH26-I2	12/09/2019	S		1	1								
57	CBH27-G1	12/09/2019	S		1	1								
58	CBH27-G2	12/09/2019	S		1	1								
59	CBH27-I1	12/09/2019	S		1	1								
60	CBH27-I2	12/09/2019	S		1	1								
				TOTAL	12	12								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: *please tick →*

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CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc – 3
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz **CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz **SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO) **EDD FORMAT (or default):**
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Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (**List due date**):
☐ Non Standard or urgent TAT (**List due date**):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 20 3 4 5 6 7
OF: 1 21 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz	Sam		
DATE/TIME: 12/9/19	DATE/TIME: 13/9/19 9:25	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL BOTTLES	Dissolved As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
61	CBH28-G1	12/09/2019	S		1	1								samples have been filtered (0.45 um)
62	CBH28-G2	12/09/2019	S		1	1								
63	CBH28-I1	12/09/2019	S		1	1								
64	CBH28-I2	12/09/2019	S		1	1								
65	CBH29-G1	12/09/2019	S		1	1								
66	CBH29-G2	12/09/2019	S		1	1								
67	CBH29-I1	12/09/2019	S		1	1								
68	CBH29-I2	12/09/2019	S		1	1								
69	CBH30-G1	12/09/2019	S		1	1								
70	CBH30-G2	12/09/2019	S		1	1								
71	CBH30-I1	12/09/2019	S		1	1								
72	CBH30-I2	12/09/2019	S		1	1								
				TOTAL	12	12								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF COUNTODY

ALS Laboratory: *please tick →*

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☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ Adelaide: 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ Perth: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT:	University of South Australia	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☒ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):
OFFICE:	Mawson Lakes Campus X1-17		
PROJECT:	CBH BioAcc ~3	ALS QUOTE NO.:	COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7
ORDER NUMBER:			
PROJECT MANAGER:	Albert Juhasz	CONTACT PH: 08 8302 5045	
SAMPLER:	Albert Juhasz	SAMPLER MOBILE: 0418 818 121	
COC emailed to ALS? (NO)		EDD FORMAT (or default):	

Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz	Sam		
DATE/TIME: 12/9/19	DATE/TIME: 13/9/19 9:25	DATE/TIME:	DATE/TIME:

FOR LABORATORY USE ONLY (Circle)			
Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:	°C		
Other comment:			

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Dissolved As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
73	QC1-G1	12/09/2019	S		1	1								samples have been filtered (0.45 um)
74	QC1-G2	12/09/2019	S		1	1								
75	QC1-I1	12/09/2019	S		1	1								
76	QC1-I2	12/09/2019	S		1	1								
77	QC2-G1	12/09/2019	S		1	1								
78	QC2-G2	12/09/2019	S		1	1								
79	QC2-I1	12/09/2019	S		1	1								
80	QC2-I2	12/09/2019	S		1	1								
				TOTAL	8	8								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Split batch with EM1915321

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ Sydney: 277 Woodpark Rd, Smithfield NSW 2176 Ph: 02 8784 8555 E:samples.sydney@alsenviro.com
☐ Newcastle: 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ Brisbane: 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ Adelaide: 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ Perth: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☒ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Mawson Lakes Campus X1-17			Custody Seal Intact? Yes No N/A
PROJECT: CBH BioAcc – 1	ALS QUOTE NO.:	COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:		OF: 1 5 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Albert Juhasz	CONTACT PH: 08 8302 5045		Other comment:

SAMPLER: Albert Juhasz	SAMPLER MOBILE: 0418 818 121	RELINQUISHED BY: Albert Juhasz	RECEIVED BY: 0925	RELINQUISHED BY:	RECEIVED BY:
COC emailed to ALS? (NO)	EDD FORMAT (or default):	DATE/TIME: 12/9/19	DATE/TIME: 13/9/19	DATE/TIME:	DATE/TIME:
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au					
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au					

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).	Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Total As, Cd, Cr, Fe, Mn, Pb	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	BHS01-2A	12/09/2019	S		1	1	Soils have been oven dried and sieved
2	BHS01-2B	12/09/2019	S		1	1	
3	BHS01-250A	12/09/2019	S		1	1	
4	BHS01-250B	12/09/2019	S		1	1	
5	BHS02-2A	12/09/2019	S		1	1	
6	BHS02-2B	12/09/2019	S		1	1	
7	BHS02-250A	12/09/2019	S		1	1	
8	BHS02-250B	12/09/2019	S		1	1	
9	BHS03-2A	12/09/2019	S		1	1	
10	BHS03-2B	12/09/2019	S		1	1	
11	BHS03-250A	12/09/2019	S		1	1	
12	BHS03-250B	12/09/2019	S		1	1	
				TOTAL	12	12	

Environmental Division
Melbourne
Work Order Reference
EM1915317

Telephone : + 61-3-8549 9600

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐ **Newcastle:** 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ **Brisbane:** 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ **Townsville:** 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
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☐ **Launceston:** 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc – 1
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz **CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz **SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO) **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 15 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz			
DATE/TIME: 12/9/19	DATE/TIME:	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Total As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
13	BHS04-2A	12/09/2019	S		1	1								Soils have been oven dried and sieved
14	BHS04-2B	12/09/2019	S		1	1								
15	BHS04-250A	12/09/2019	S		1	1								
16	BHS04-250B	12/09/2019	S		1	1								
17	BHS05-2A	12/09/2019	S		1	1								
18	BHS05-2B	12/09/2019	S		1	1								
19	BHS05-250A	12/09/2019	S		1	1								
20	BHS05-250B	12/09/2019	S		1	1								
21	BHS06-2A	12/09/2019	S		1	1								
22	BHS06-2B	12/09/2019	S		1	1								
23	BHS06-250A	12/09/2019	S		1	1								
24	BHS06-250B	12/09/2019	S		1	1								
				TOTAL	12	12								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: **please tick →**

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☐ **Newcastle:** 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
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☐ **Townsville:** 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
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☐ **Launceston:** 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc – 1
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz **CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz **SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO**)** **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (**List due date**):
☐ Non Standard or urgent TAT (**List due date**):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 15 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz			
DATE/TIME: 12/9/19	DATE/TIME:	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Total As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
25	BHS07-2A	12/09/2019	S		1	1								Soils have been oven dried and sieved
26	BHS07-2B	12/09/2019	S		1	1								
27	BHS07-250A	12/09/2019	S		1	1								
28	BHS07-250B	12/09/2019	S		1	1								
29	BHS08-2A	12/09/2019	S		1	1								
30	BHS08-2B	12/09/2019	S		1	1								
31	BHS08-250A	12/09/2019	S		1	1								
32	BHS08-250B	12/09/2019	S		1	1								
33	BHS09-2A	12/09/2019	S		1	1								
34	BHS09-2B	12/09/2019	S		1	1								
35	BHS09-250A	12/09/2019	S		1	1								
36	BHS09-250B	12/09/2019	S		1	1								
				TOTAL	12	12								

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V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ALS

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐ **Newcastle**: 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
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☐ **Launceston**: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc – 1
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz **CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz **SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO**)** **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
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TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (**List due date**):
☐ Non Standard or urgent TAT (**List due date**):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 5 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz			
DATE/TIME: 12/9/19	DATE/TIME:	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL BOTTLES	Total As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
37	BHS10-2A	12/09/2019	S		1	1								Soils have been oven dried and sieved
38	BHS10-2B	12/09/2019	S		1	1								
39	BHS10-250A	12/09/2019	S		1	1								
40	BHS10-250B	12/09/2019	S		1	1								
41	BHS11-2A	12/09/2019	S		1	1								
42	BHS11-2B	12/09/2019	S		1	1								
43	BHS11-250A	12/09/2019	S		1	1								
44	BHS11-250B	12/09/2019	S		1	1								
45	BHS12-2A	12/09/2019	S		1	1								
46	BHS12-2B	12/09/2019	S		1	1								
47	BHS12-250A	12/09/2019	S		1	1								
48	BHS12-250B	12/09/2019	S		1	1								
				TOTAL	12	12								

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V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc – 1
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz **CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz **SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO) **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (**List due date**):
☐ Non Standard or urgent TAT (**List due date**):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 15 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz			
DATE/TIME: 12/9/19	DATE/TIME:	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Total As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
49	BHS13-2A	12/09/2019	S		1	1								Soils have been oven dried and sieved
50	BHS13-2B	12/09/2019	S		1	1								
51	BHS13-250A	12/09/2019	S		1	1								
52	BHS13-250B	12/09/2019	S		1	1								
53	BHS14-2A	12/09/2019	S		1	1								
54	BHS14-2B	12/09/2019	S		1	1								
55	BHS14-250A	12/09/2019	S		1	1								
56	BHS14-250B	12/09/2019	S		1	1								
57	BHS15-2A	12/09/2019	S		1	1								
58	BHS15-2B	12/09/2019	S		1	1								
59	BHS15-250A	12/09/2019	S		1	1								
60	BHS15-250B	12/09/2019	S		1	1								
				TOTAL	12	12								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ALS

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ Sydney: 277 Woodpark Rd, Smithfield NSW 2176 Ph: 02 8784 8555 E:samples.sydney@alsenviro.com
☐ Newcastle: 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ Brisbane: 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171 Ph 03 8549 9600 E: samples.melbourne@alsenviro.com
☐ Adelaide: 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ Perth: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☒ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Mawson Lakes Campus X1-17			Custody Seal Intact? Yes No N/A
PROJECT: CBH BioAcc - 1	ALS QUOTE NO.:	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:		COC: 1 2 3 4 5 6 7 (6 circled)	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Albert Juhasz	CONTACT PH: 08 8302 5045	OF: 15 2 3 4 5 6 7 (15 circled)	Other comment:

SAMPLER: Albert Juhasz	SAMPLER MOBILE: 0418 818 121	RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
COC emailed to ALS? (NO)	EDD FORMAT (or default):	Albert Juhasz			
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au		DATE/TIME:	DATE/TIME:	DATE/TIME:	DATE/TIME:
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au		12/9/19			

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL BOTTLES	Total As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
61	BHS16-2A	12/09/2019	S		1	1								Soils have been oven dried and sieved
62	BHS16-2B	12/09/2019	S		1	1								
63	BHS16-250A	12/09/2019	S		1	1								
64	BHS16-250B	12/09/2019	S		1	1								
65	BHS17-2A	12/09/2019	S		1	1								
66	BHS17-2B	12/09/2019	S		1	1								
67	BHS17-250A	12/09/2019	S		1	1								
68	BHS17-250B	12/09/2019	S		1	1								
69	BHS18-2A	12/09/2019	S		1	1								
70	BHS18-2B	12/09/2019	S		1	1								
71	BHS18-250A	12/09/2019	S		1	1								
72	BHS18-250B	12/09/2019	S		1	1								
				TOTAL	12	12								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐ Adelaide: 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ Perth: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc – 1
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz **CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz **SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO**)** **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (**List due date**):
☐ Non Standard or urgent TAT (**List due date**):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 15 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz			
DATE/TIME: 12/9/19	DATE/TIME:	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).	Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Total As, Cd, Cr, Fe, Mn, Pb	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
73	BHS19-2A	12/09/2019	S		1	1	Soils have been oven dried and sieved
74	BHS19-2B	12/09/2019	S		1	1	
75	BHS19-250A	12/09/2019	S		1	1	
76	BHS19-250B	12/09/2019	S		1	1	
77	BHS20-2A	12/09/2019	S		1	1	
78	BHS20-2B	12/09/2019	S		1	1	
79	BHS20-250A	12/09/2019	S		1	1	
80	BHS20-250B	12/09/2019	S		1	1	
81	BHS21-2A	12/09/2019	S		1	1	
82	BHS21-2B	12/09/2019	S		1	1	
83	BHS21-250A	12/09/2019	S		1	1	
84	BHS21-250B	12/09/2019	S		1	1	
				TOTAL	12	12	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Split batch with EM1915317

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐ Perth: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc ← 1
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz — **CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz — **SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO) — **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 8 2 3 4 5 6 7
OF: 15 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz			
DATE/TIME: 12/9/19	DATE/TIME:	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Dissolved As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	BHS01-G1	12/09/2019	S		1	1								Samples have been filtered (0.45 um)
2	BHS01-G2	12/09/2019	S		1	1								
3	BHS01-I1	12/09/2019	S		1	1								
4	BHS01-I2	12/09/2019	S		1	1								
5	BHS02-G1	12/09/2019	S		1	1								
6	BHS02-G2	12/09/2019	S		1	1								
7	BHS02-I1	12/09/2019	S		1	1								
8	BHS02-I2	12/09/2019	S		1	1								
9	BHS03-G1	12/09/2019	S		1	1								
10	BHS03-G2	12/09/2019	S		1	1								
11	BHS03-I1	12/09/2019	S		1	1								
12	BHS03-I2	12/09/2019	S		1	1								
				TOTAL	12	12								

Environmental Division
Melbourne
Work Order Reference
EM1915325

Telephone : + 61-3-8549 9600

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐ Perth: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc ~1
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz — **CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz — **SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO) — **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (**List due date**):
☐ Non Standard or urgent TAT (**List due date**):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 9 2 3 4 5 6 7
OF: 15 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz			
DATE/TIME: 12/9/19	DATE/TIME:	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).	Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (*refer to codes below*)	TOTAL BOTTLES	Dissolved As, Cd, Cr, Fe, Mn, Pb	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
13	BHS04-G1	12/09/2019	S		1	1	Samples have been filtered (0.45 um)
14	BHS04-G2	12/09/2019	S		1	1	
15	BHS04-I1	12/09/2019	S		1	1	
16	BHS04-I2	12/09/2019	S		1	1	
17	BHS05-G1	12/09/2019	S		1	1	
18	BHS05-G2	12/09/2019	S		1	1	
19	BHS05-I1	12/09/2019	S		1	1	
20	BHS05-I2	12/09/2019	S		1	1	
21	BHS06-G1	12/09/2019	S		1	1	
22	BHS06-G2	12/09/2019	S		1	1	
23	BHS06-I1	12/09/2019	S		1	1	
24	BHS06-I2	12/09/2019	S		1	1	
				TOTAL	12	12	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐ Perth: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☒ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Mawson Lakes Campus X1-17			Custody Seal Intact? Yes No N/A
PROJECT: CBH BioAcc – 1	ALS QUOTE NO.:	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:		COC: 10 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Albert Juhasz	CONTACT PH: 08 8302 5045	OF: 15 2 3 4 5 6 7	Other comment:
SAMPLER: Albert Juhasz	SAMPLER MOBILE: 0418 818 121	RELINQUISHED BY: Albert Juhasz DATE/TIME: 12/9/19	RECEIVED BY: DATE/TIME:
COC emailed to ALS? (NO)	EDD FORMAT (or default):	RELINQUISHED BY: DATE/TIME:	RECEIVED BY: DATE/TIME:
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au			
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au			

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Dissolved As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
25	BHS07-G1	12/09/2019	S		1	1								samples have been filtered (0.45 um)
26	BHS07-G2	12/09/2019	S		1	1								
27	BHS07-I1	12/09/2019	S		1	1								
28	BHS07-I2	12/09/2019	S		1	1								
29	BHS08-G1	12/09/2019	S		1	1								
30	BHS08-G2	12/09/2019	S		1	1								
31	BHS08-I1	12/09/2019	S		1	1								
32	BHS08-I2	12/09/2019	S		1	1								
33	BHS09-G1	12/09/2019	S		1	1								
34	BHS09-G2	12/09/2019	S		1	1								
35	BHS09-I1	12/09/2019	S		1	1								
36	BHS09-I2	12/09/2019	S		1	1								
				TOTAL	12	12								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: *please tick* →

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☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT:	University of South Australia	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☒ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):
OFFICE:	Mawson Lakes Campus X1-17		
PROJECT:	CBH BioAcc – 1	ALS QUOTE NO.:	COC SEQUENCE NUMBER (Circle) COC: 11 2 3 4 5 6 7 OF: 15 2 3 4 5 6 7
ORDER NUMBER:			
PROJECT MANAGER:	Albert Juhasz	CONTACT PH: 08 8302 5045	
SAMPLER:	Albert Juhasz	SAMPLER MOBILE: 0418 818 121	
COC emailed to ALS? (NO)		EDD FORMAT (or default):	
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au			
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au			

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comment:			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz			
DATE/TIME: 12/9/19	DATE/TIME:	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Dissolved As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
37	BHS10-G1	12/09/2019	S		1	1								samples have been filtered (0.45 um)
38	BHS10-G2	12/09/2019	S		1	1								
39	BHS10-I1	12/09/2019	S		1	1								
40	BHS10-I2	12/09/2019	S		1	1								
41	BHS11-G1	12/09/2019	S		1	1								
42	BHS11-G2	12/09/2019	S		1	1								
43	BHS11-I1	12/09/2019	S		1	1								
44	BHS11-I2	12/09/2019	S		1	1								
45	BHS12-G1	12/09/2019	S		1	1								
46	BHS12-G2	12/09/2019	S		1	1								
47	BHS12-I1	12/09/2019	S		1	1								
48	BHS12-I2	12/09/2019	S		1	1								
				TOTAL	12	12								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: *please tick* →

☐ Sydney: 277 Woodpark Rd, Smithfield NSW 2176 Ph: 02 8784 8555 E:samples.sydney@alsenviro.com
☐ Newcastle: 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ Brisbane: 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ Adelaide: 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ Perth: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc – 1
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz **CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz **SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO) **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (**List due date**):
☐ Non Standard or urgent TAT (**List due date**):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 12 2 3 4 5 6 7
OF: 15 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz			
DATE/TIME: 12/9/19	DATE/TIME:	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Dissolved As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
49	BHS13-G1	12/09/2019	S		1	1								samples have been filtered (0.45 um)
50	BHS13-G2	12/09/2019	S		1	1								
51	BHS13-I1	12/09/2019	S		1	1								
52	BHS13-I2	12/09/2019	S		1	1								
53	BHS14-G1	12/09/2019	S		1	1								
54	BHS14-G2	12/09/2019	S		1	1								
55	BHS14-I1	12/09/2019	S		1	1								
56	BHS14-I2	12/09/2019	S		1	1								
57	BHS15-G1	12/09/2019	S		1	1								
58	BHS15-G2	12/09/2019	S		1	1								
59	BHS15-I1	12/09/2019	S		1	1								
60	BHS15-I2	12/09/2019	S		1	1								
				TOTAL	12	12								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

*ALS Laboratory: **please tick →***

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☐ **Newcastle:** 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ **Brisbane:** 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ **Townsville:** 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ **Melbourne:** 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ **Adelaide:** 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ **Perth:** 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ **Launceston:** 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc ~1
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz **CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz **SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO) **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT **(List due date):**
☐ Non Standard or urgent TAT **(List due date):**
ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 15 2 3 4 5 6 7
OF: 15 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz			
DATE/TIME: 12/9/19	DATE/TIME:	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).

LAB ID (ALS USE ONLY)	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL BOTTLES	Dissolved As, Cd, Cr, Fe, Mn, Pb	Additional Information (Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.)
61	BHS16-G1	12/09/2019	S		1	1	samples have been filtered (0.45 um)
62	BHS16-G2	12/09/2019	S		1	1	
63	BHS16-I1	12/09/2019	S		1	1	
64	BHS16-I2	12/09/2019	S		1	1	
65	BHS17-G1	12/09/2019	S		1	1	
66	BHS17-G2	12/09/2019	S		1	1	
67	BHS17-I1	12/09/2019	S		1	1	
68	BHS17-I2	12/09/2019	S		1	1	
69	BHS18-G1	12/09/2019	S		1	1	
70	BHS18-G2	12/09/2019	S		1	1	
71	BHS18-I1	12/09/2019	S		1	1	
72	BHS18-I2	12/09/2019	S		1	1	
				TOTAL	12	12	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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CLIENT: University of South Australia
OFFICE: Mawson Lakes Campus X1-17
PROJECT: CBH BioAcc ~1
ORDER NUMBER:
PROJECT MANAGER: Albert Juhasz **CONTACT PH:** 08 8302 5045
SAMPLER: Albert Juhasz **SAMPLER MOBILE:** 0418 818 121
COC emailed to ALS? (NO) **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au
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TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):
ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 14 2 3 4 5 6 7
OF: 15 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz DATE/TIME: 12/9/19	DATE/TIME:	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Dissolved As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
73	BHS19-G1	12/09/2019	S		1	1								samples have been filtered (0.45 um)
74	BHS19-G2	12/09/2019	S		1	1								
75	BHS19-I1	12/09/2019	S		1	1								
76	BHS19-I2	12/09/2019	S		1	1								
77	BHS20-G1	12/09/2019	S		1	1								
78	BHS20-G2	12/09/2019	S		1	1								
79	BHS20-I1	12/09/2019	S		1	1								
80	BHS20-I2	12/09/2019	S		1	1								
81	BHS21-G1	12/09/2019	S		1	1								
82	BHS21-G2	12/09/2019	S		1	1								
83	BHS21-I1	12/09/2019	S		1	1								
84	BHS21-I2	12/09/2019	S		1	1								
				TOTAL	12	12								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

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☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
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☐ Perth: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
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CLIENT:	University of South Australia
OFFICE:	Mawson Lakes Campus X1-17
PROJECT:	CBH BioAcc – 1
ORDER NUMBER:	
PROJECT MANAGER:	Albert Juhasz — CONTACT PH: 08 8302 5045
SAMPLER:	Albert Juhasz — SAMPLER MOBILE: 0418 818 121
COC emailed to ALS? (NO)	EDD FORMAT (or default):

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Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 15 2 3 4 5 6 7
OF: 15 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz			
DATE/TIME: 12/9/19	DATE/TIME:	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Dissolved As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
85	QC1-G1	12/09/2019	S		1	1								samples have been filtered (0.45 um)
86	QC1-G2	12/09/2019	S		1	1								
87	QC1-I1	12/09/2019	S		1	1								
88	QC1-I2	12/09/2019	S		1	1								
89	QC2-G1	12/09/2019	S		1	1								
90	QC2-G2	12/09/2019	S		1	1								
91	QC2-I1	12/09/2019	S		1	1								
92	QC2-I2	12/09/2019	S		1	1								
				TOTAL	8	8								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

APPENDIX 3 – ANALYTICAL RESULTS AND QA/QC

CERTIFICATE OF ANALYSIS

Work Order	: **EM1915187**	Page	: 1 of 12
Client	: **UNISA - CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION**	Laboratory	: Environmental Division Melbourne
Contact	: MR ALBERT JUHASZ	Contact	: Customer Services EM
Address	: UNIVERSITY OF SOUTH AUSTRALIA CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION BUILDING X MAWSON LAKES CAMPUS MAWSON LAKES SOUTH AUSTRALIA 5095	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 08 8302 6273	Telephone	: +61-3-8549 9600
Project	: CBH BioAcc-2	Date Samples Received	: 13-Sep-2019 09:25
Order number	: ----	Date Analysis Commenced	: 17-Sep-2019
C-O-C number	: ----	Issue Date	: 19-Sep-2019 14:54
Sampler	: ALBERT JUHASZ		
Site	: ----		
Quote number	: ADBQ/011/10		
No. of samples received	: 48		
No. of samples analysed	: 48		

NATA
Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	WR01-2A	WR01-2B	WR01-250A	WR01-250B	WR02-2A
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915187-001	EM1915187-002	EM1915187-003	EM1915187-004	EM1915187-005
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**45**	**29**	**78**	**59**	**56**
Cadmium	7440-43-9	1	mg/kg	**19**	**22**	**32**	**32**	**12**
Chromium	7440-47-3	2	mg/kg	**17**	**21**	**24**	**24**	**16**
Iron	7439-89-6	50	mg/kg	**22200**	**21000**	**29800**	**30000**	**24800**
Lead	7439-92-1	5	mg/kg	**2210**	**1950**	**3740**	**3520**	**1560**
Manganese	7439-96-5	5	mg/kg	**744**	**684**	**1280**	**1290**	**465**

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL)**

			Client sample ID	**WR02-2B**	**WR02-250A**	**WR02-250B**	**WR03-2A**	**WR03-2B**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EM1915187-006**	**EM1915187-007**	**EM1915187-008**	**EM1915187-009**	**EM1915187-010**
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**58**	**88**	**82**	**124**	**44**
Cadmium	7440-43-9	1	mg/kg	**18**	**21**	**22**	**16**	**20**
Chromium	7440-47-3	2	mg/kg	**16**	**21**	**21**	**16**	**18**
Iron	7439-89-6	50	mg/kg	**23600**	**29300**	**29100**	**22000**	**23800**
Lead	7439-92-1	5	mg/kg	**2670**	**3310**	**3450**	**2270**	**2880**
Manganese	7439-96-5	5	mg/kg	**536**	**741**	**730**	**346**	**397**

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

			Client sample ID	WR03-250A	WR03-250B	WR04-2A	WR04-2B	WR04-250A
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915187-011	EM1915187-012	EM1915187-013	EM1915187-014	EM1915187-015
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**62**	**93**	<5	<5	**6**
Cadmium	7440-43-9	1	mg/kg	**26**	**26**	**2**	**2**	**3**
Chromium	7440-47-3	2	mg/kg	**22**	**22**	**22**	**24**	**29**
Iron	7439-89-6	50	mg/kg	**29800**	**29100**	**27100**	**27500**	**31800**
Lead	7439-92-1	5	mg/kg	**4460**	**4730**	**213**	**342**	**431**
Manganese	7439-96-5	5	mg/kg	**545**	**538**	**174**	**202**	**256**

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL)**

			Client sample ID	**WR04-250B**	**WR05-2A**	**WR05-2B**	**WR05-250A**	**WR05-250B**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	**EM1915187-016**	**EM1915187-017**	**EM1915187-018**	**EM1915187-019**	**EM1915187-020**
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**12**	**80**	**94**	**104**	**95**
Cadmium	7440-43-9	1	mg/kg	**3**	**23**	**27**	**30**	**30**
Chromium	7440-47-3	2	mg/kg	**30**	**16**	**17**	**19**	**20**
Iron	7439-89-6	50	mg/kg	**31500**	**27900**	**27700**	**31700**	**32100**
Lead	7439-92-1	5	mg/kg	**354**	**5210**	**7000**	**7510**	**7460**
Manganese	7439-96-5	5	mg/kg	**257**	**556**	**556**	**658**	**675**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

			Client sample ID	WR01-G1	WR01-G2	WR01-I1	WR01-I2	WR02-G1
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915187-021	EM1915187-022	EM1915187-023	EM1915187-024	EM1915187-025
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.01**	**0.01**	<0.01	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	**0.013**	**0.013**	**0.011**	**0.012**	**0.005**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**1.70**	**1.74**	**0.10**	**0.09**	**1.44**
Lead	7439-92-1	0.01	mg/L	**1.88**	**1.92**	**0.29**	**0.29**	**2.02**
Manganese	7439-96-5	0.01	mg/L	**1.04**	**1.06**	**0.89**	**0.93**	**0.44**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			*Client sample ID*	**WR02-G2**	**WR02-I1**	**WR02-I2**	**WR03-G1**	**WR03-G2**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EM1915187-026**	**EM1915187-027**	**EM1915187-028**	**EM1915187-029**	**EM1915187-030**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.01**	<0.01	<0.01	**0.01**	<0.01
Cadmium	7440-43-9	0.005	mg/L	**0.005**	<0.005	<0.005	<0.005	<0.005
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**1.50**	**0.10**	**0.11**	**1.65**	**1.67**
Lead	7439-92-1	0.01	mg/L	**2.06**	**0.37**	**0.40**	**2.17**	**2.17**
Manganese	7439-96-5	0.01	mg/L	**0.45**	**0.39**	**0.43**	**0.27**	**0.28**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	WR03-I1	WR03-I2	WR04-G1	WR04-G2	WR04-I1
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915187-031	EM1915187-032	EM1915187-033	EM1915187-034	EM1915187-035
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.30**	**0.25**	**0.84**	**0.87**	**0.26**
Lead	7439-92-1	0.01	mg/L	**0.55**	**0.53**	**0.12**	**0.11**	**0.03**
Manganese	7439-96-5	0.01	mg/L	**0.22**	**0.24**	**0.14**	**0.14**	**0.11**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**WR04-I2**	**WR05-G1**	**WR05-G2**	**WR05-I1**	**WR05-I2**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	**EM1915187-036**	**EM1915187-037**	**EM1915187-038**	**EM1915187-039**	**EM1915187-040**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	**0.02**	**0.01**	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	<0.005	**0.007**	**0.007**	**0.006**	**0.006**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.27**	**2.75**	**2.82**	**0.09**	**0.09**
Lead	7439-92-1	0.01	mg/L	**0.03**	**5.71**	**5.73**	**1.08**	**1.16**
Manganese	7439-96-5	0.01	mg/L	**0.12**	**0.25**	**0.27**	**0.24**	**0.25**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	QC1-G1	QC1-G2	QC1-I1	QC1-I2	QC2-G1
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915187-041	EM1915187-042	EM1915187-043	EM1915187-044	EM1915187-045
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.16**	**0.15**	**0.10**	**0.12**	<0.01
Cadmium	7440-43-9	0.005	mg/L	**0.023**	**0.023**	**0.019**	**0.019**	<0.005
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**1.24**	**1.25**	**0.32**	**0.24**	<0.05
Lead	7439-92-1	0.01	mg/L	**4.79**	**4.73**	**0.82**	**0.54**	<0.01
Manganese	7439-96-5	0.01	mg/L	**0.57**	**0.56**	**0.42**	**0.43**	<0.01

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QC2-G2	QC2-I1	QC2-I2	----	----
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1915187-046	EM1915187-047	EM1915187-048	--------	--------
				Result	Result	Result	----	----
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Cadmium	7440-43-9	0.005	mg/L	<0.005	<0.005	<0.005	----	----
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	----	----
Lead	7439-92-1	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Manganese	7439-96-5	0.01	mg/L	<0.01	<0.01	<0.01	----	----

CERTIFICATE OF ANALYSIS

Work Order	: **EM1915195**	Page	: 1 of 19
Client	: **UNISA - CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION**	Laboratory	: Environmental Division Melbourne
Contact	: MR ALBERT JUHASZ	Contact	: Customer Services EM
Address	: UNIVERSITY OF SOUTH AUSTRALIA CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION BUILDING X MAWSON LAKES CAMPUS MAWSON LAKES SOUTH AUSTRALIA 5095	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 08 8302 6273	Telephone	: +61-3-8549 9600
Project	: CBH BioAcc-3	Date Samples Received	: 13-Sep-2019 09:25
Order number	: ----	Date Analysis Commenced	: 18-Sep-2019
C-O-C number	: ----	Issue Date	: 20-Sep-2019 11:42
Sampler	: ALBERT JUHASZ		
Site	: ----		
Quote number	: ADBQ/011/10		
No. of samples received	: 84		
No. of samples analysed	: 84		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG005T:EM1915195_021 Poor duplicate precision for manganese due to sample heterogeneity. Confirmed by re-extraction and re-analysis.
- This is a split batch of EM1915198 and EM1915200 due to the large number of samples.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH01-2A	CBH01-2B	CBH01-250A	CBH01-250B	CBH02-2A
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915195-001	EM1915195-002	EM1915195-003	EM1915195-004	EM1915195-005
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**12**	**12**	**17**	**18**	**31**
Cadmium	7440-43-9	1	mg/kg	**8**	**8**	**10**	**10**	**12**
Chromium	7440-47-3	2	mg/kg	**18**	**18**	**22**	**22**	**20**
Iron	7439-89-6	50	mg/kg	**32000**	**30800**	**30400**	**30500**	**28600**
Lead	7439-92-1	5	mg/kg	**2140**	**2210**	**2160**	**2150**	**3460**
Manganese	7439-96-5	5	mg/kg	**3390**	**3710**	**1740**	**1660**	**4130**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH02-2B	CBH02-250A	CBH02-250B	CBH03-2A	CBH03-2B
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915195-006	EM1915195-007	EM1915195-008	EM1915195-009	EM1915195-010
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**149**	**57**	**63**	**8**	**11**
Cadmium	7440-43-9	1	mg/kg	**11**	**14**	**14**	**7**	**9**
Chromium	7440-47-3	2	mg/kg	**21**	**25**	**25**	**16**	**14**
Iron	7439-89-6	50	mg/kg	**29700**	**32100**	**31600**	**28800**	**26200**
Lead	7439-92-1	5	mg/kg	**4270**	**4560**	**4250**	**3870**	**3330**
Manganese	7439-96-5	5	mg/kg	**2720**	**1970**	**1900**	**6500**	**5900**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH03-250A	CBH03-250B	CBH04-2A	CBH04-2B	CBH04-250A
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915195-011	EM1915195-012	EM1915195-013	EM1915195-014	EM1915195-015
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	33	32	33	59	38
Cadmium	7440-43-9	1	mg/kg	8	8	26	24	30
Chromium	7440-47-3	2	mg/kg	24	22	20	20	23
Iron	7439-89-6	50	mg/kg	31000	30200	35800	35100	31900
Lead	7439-92-1	5	mg/kg	2670	2600	3670	2850	2900
Manganese	7439-96-5	5	mg/kg	2290	2150	3180	2400	1960

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Client sample ID*	**CBH04-250B**	**CBH05-2A**	**CBH05-2B**	**CBH05-250A**	**CBH05-250B**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EM1915195-016**	**EM1915195-017**	**EM1915195-018**	**EM1915195-019**	**EM1915195-020**
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**35**	**16**	**13**	**22**	**19**
Cadmium	7440-43-9	1	mg/kg	**31**	**20**	**20**	**22**	**21**
Chromium	7440-47-3	2	mg/kg	**24**	**19**	**17**	**21**	**20**
Iron	7439-89-6	50	mg/kg	**33000**	**31200**	**30500**	**30200**	**27900**
Lead	7439-92-1	5	mg/kg	**3230**	**2570**	**2530**	**2600**	**2320**
Manganese	7439-96-5	5	mg/kg	**2000**	**2390**	**3310**	**1840**	**1720**

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

			Client sample ID	CBH06-2A	CBH06-2B	CBH06-250A	CBH06-250B	CBH07-2A
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915195-021	EM1915195-022	EM1915195-023	EM1915195-024	EM1915195-025
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**76**	**87**	**100**	**107**	**34**
Cadmium	7440-43-9	1	mg/kg	**33**	**39**	**37**	**36**	**19**
Chromium	7440-47-3	2	mg/kg	**10**	**11**	**17**	**17**	**11**
Iron	7439-89-6	50	mg/kg	**20300**	**21400**	**27500**	**27100**	**20400**
Lead	7439-92-1	5	mg/kg	**6910**	**6990**	**8040**	**8050**	**6380**
Manganese	7439-96-5	5	mg/kg	**5760**	**3550**	**3440**	**3480**	**3070**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH07-2B	CBH07-250A	CBH07-250B	CBH08-2A	CBH08-2B
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915195-026	EM1915195-027	EM1915195-028	EM1915195-029	EM1915195-030
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	41	54	56	30	52
Cadmium	7440-43-9	1	mg/kg	32	21	21	14	15
Chromium	7440-47-3	2	mg/kg	11	14	14	10	12
Iron	7439-89-6	50	mg/kg	21400	23700	23800	19400	21700
Lead	7439-92-1	5	mg/kg	6800	5490	5010	4100	4400
Manganese	7439-96-5	5	mg/kg	1960	2320	2310	3880	4360

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH08-250A	CBH08-250B	CBH09-2A	CBH09-2B	CBH09-250A
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915195-031	EM1915195-032	EM1915195-033	EM1915195-034	EM1915195-035
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	86	88	96	55	112
Cadmium	7440-43-9	1	mg/kg	21	20	12	11	18
Chromium	7440-47-3	2	mg/kg	18	17	18	15	24
Iron	7439-89-6	50	mg/kg	27400	26700	24300	21700	30300
Lead	7439-92-1	5	mg/kg	4340	4280	4900	4830	4940
Manganese	7439-96-5	5	mg/kg	3340	3300	4950	4650	3740

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

			Client sample ID	CBH09-250B	CBH10-2A	CBH10-2B	CBH10-250A	CBH10-250B
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915195-036	EM1915195-037	EM1915195-038	EM1915195-039	EM1915195-040
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**114**	**54**	**56**	**96**	**98**
Cadmium	7440-43-9	1	mg/kg	**17**	**7**	**9**	**12**	**11**
Chromium	7440-47-3	2	mg/kg	**23**	**16**	**18**	**26**	**25**
Iron	7439-89-6	50	mg/kg	**29000**	**20800**	**23700**	**31200**	**30800**
Lead	7439-92-1	5	mg/kg	**4910**	**3020**	**4260**	**4240**	**4260**
Manganese	7439-96-5	5	mg/kg	**3710**	**2930**	**5130**	**3720**	**3720**

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

			Client sample ID	CBH11-2A	CBH11-2B	CBH11-250A	CBH11-250B	CBH12-2A
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915195-041	EM1915195-042	EM1915195-043	EM1915195-044	EM1915195-045
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**75**	**109**	**124**	**119**	**255**
Cadmium	7440-43-9	1	mg/kg	**30**	**28**	**36**	**35**	**44**
Chromium	7440-47-3	2	mg/kg	**16**	**16**	**20**	**19**	**16**
Iron	7439-89-6	50	mg/kg	**23900**	**23900**	**26500**	**26200**	**24800**
Lead	7439-92-1	5	mg/kg	**4210**	**4050**	**4400**	**4220**	**14500**
Manganese	7439-96-5	5	mg/kg	**5440**	**4830**	**6340**	**6060**	**12600**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH12-2B	CBH12-250A	CBH12-250B	CBH13-2A	CBH13-2B
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915195-046	EM1915195-047	EM1915195-048	EM1915195-049	EM1915195-050
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	471	231	248	138	128
Cadmium	7440-43-9	1	mg/kg	38	51	53	7	8
Chromium	7440-47-3	2	mg/kg	16	21	22	11	13
Iron	7439-89-6	50	mg/kg	21200	28100	30600	23000	28600
Lead	7439-92-1	5	mg/kg	16800	10400	9280	4940	7040
Manganese	7439-96-5	5	mg/kg	14300	7430	8040	3930	3690

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

			Client sample ID	CBH13-250A	CBH13-250B	CBH14-2A	CBH14-2B	CBH14-250A
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915195-051	EM1915195-052	EM1915195-053	EM1915195-054	EM1915195-055
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**150**	**140**	**75**	**51**	**98**
Cadmium	7440-43-9	1	mg/kg	**10**	**10**	**11**	**11**	**26**
Chromium	7440-47-3	2	mg/kg	**18**	**19**	**14**	**15**	**24**
Iron	7439-89-6	50	mg/kg	**28200**	**29500**	**23500**	**26900**	**30100**
Lead	7439-92-1	5	mg/kg	**4740**	**4670**	**3200**	**2850**	**4270**
Manganese	7439-96-5	5	mg/kg	**3310**	**3360**	**2500**	**2270**	**3810**

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL)**

			Client sample ID	CBH14-250B	CBH15-2A	CBH15-2B	CBH15-250A	CBH15-250B
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	EM1915195-056	EM1915195-057	EM1915195-058	EM1915195-059	EM1915195-060
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**96**	**145**	**83**	**102**	**108**
Cadmium	7440-43-9	1	mg/kg	**26**	**14**	**14**	**19**	**20**
Chromium	7440-47-3	2	mg/kg	**23**	**18**	**16**	**22**	**23**
Iron	7439-89-6	50	mg/kg	**29600**	**24800**	**23600**	**29800**	**32700**
Lead	7439-92-1	5	mg/kg	**4200**	**4980**	**5220**	**4430**	**4730**
Manganese	7439-96-5	5	mg/kg	**3720**	**5640**	**6280**	**5380**	**5660**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH16-2A	CBH16-2B	CBH16-250A	CBH16-250B	CBH17-2A
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915195-061	EM1915195-062	EM1915195-063	EM1915195-064	EM1915195-065
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**121**	**113**	**153**	**159**	**38**
Cadmium	7440-43-9	1	mg/kg	**10**	**11**	**13**	**14**	**9**
Chromium	7440-47-3	2	mg/kg	**12**	**13**	**19**	**19**	**18**
Iron	7439-89-6	50	mg/kg	**21100**	**23200**	**28900**	**28000**	**29500**
Lead	7439-92-1	5	mg/kg	**5580**	**6300**	**6920**	**6980**	**10400**
Manganese	7439-96-5	5	mg/kg	**6320**	**8030**	**8460**	**8160**	**6550**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH17-2B	CBH17-250A	CBH17-250B	CBH18-2A	CBH18-2B
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915195-066	EM1915195-067	EM1915195-068	EM1915195-069	EM1915195-070
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**37**	**43**	**44**	**153**	**171**
Cadmium	7440-43-9	1	mg/kg	**8**	**9**	**9**	**7**	**9**
Chromium	7440-47-3	2	mg/kg	**17**	**23**	**22**	**12**	**14**
Iron	7439-89-6	50	mg/kg	**27600**	**32300**	**31300**	**17200**	**19600**
Lead	7439-92-1	5	mg/kg	**6950**	**5810**	**5930**	**4090**	**3840**
Manganese	7439-96-5	5	mg/kg	**6920**	**3700**	**3780**	**3170**	**3950**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH18-250A	CBH18-250B	CBH19-2A	CBH19-2B	CBH19-250A
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915195-071	EM1915195-072	EM1915195-073	EM1915195-074	EM1915195-075
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**203**	**202**	**184**	**259**	**163**
Cadmium	7440-43-9	1	mg/kg	**15**	**14**	**7**	**12**	**11**
Chromium	7440-47-3	2	mg/kg	**24**	**24**	**10**	**14**	**18**
Iron	7439-89-6	50	mg/kg	**30500**	**29400**	**19200**	**22200**	**24700**
Lead	7439-92-1	5	mg/kg	**6370**	**6190**	**5400**	**6380**	**7070**
Manganese	7439-96-5	5	mg/kg	**3250**	**3090**	**3740**	**4470**	**3640**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH19-250B	CBH20-2A	CBH20-2B	CBH20-250A	CBH20-250B
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915195-076	EM1915195-077	EM1915195-078	EM1915195-079	EM1915195-080
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	159	170	226	215	231
Cadmium	7440-43-9	1	mg/kg	11	15	17	21	22
Chromium	7440-47-3	2	mg/kg	19	14	17	21	23
Iron	7439-89-6	50	mg/kg	25600	24500	28200	29600	31800
Lead	7439-92-1	5	mg/kg	6860	7040	8350	7080	7480
Manganese	7439-96-5	5	mg/kg	3700	3910	5080	2920	3050

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH21-2A	CBH21-2B	CBH21-250A	CBH21-250B	----
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	----
Compound	CAS Number	LOR	Unit	EM1915195-081	EM1915195-082	EM1915195-083	EM1915195-084	--------
				Result	Result	Result	Result	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	146	130	154	151	----
Cadmium	7440-43-9	1	mg/kg	15	12	12	13	----
Chromium	7440-47-3	2	mg/kg	19	18	20	22	----
Iron	7439-89-6	50	mg/kg	27800	26100	27100	29500	----
Lead	7439-92-1	5	mg/kg	11200	10100	10500	8800	----
Manganese	7439-96-5	5	mg/kg	5050	4300	4280	4480	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1915198**	Page	: 1 of 20
Client	: **UNISA - CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION**	Laboratory	: Environmental Division Melbourne
Contact	: MR ALBERT JUHASZ	Contact	: Customer Services EM
Address	: UNIVERSITY OF SOUTH AUSTRALIA CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION BUILDING X MAWSON LAKES CAMPUS MAWSON LAKES SOUTH AUSTRALIA 5095	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 08 8302 6273	Telephone	: +61-3-8549 9600
Project	: CBH BioAcc-3	Date Samples Received	: 13-Sep-2019 09:25
Order number	: ----	Date Analysis Commenced	: 17-Sep-2019
C-O-C number	: ----	Issue Date	: 20-Sep-2019 17:06
Sampler	: ALBERT JUHASZ		
Site	: ----		
Quote number	: ADBQ/011/10		
No. of samples received	: 84		
No. of samples analysed	: 84		

ilac-MRA NATA

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- This is a split batch of EM1915195 and EM1915200 due to the large number of samples.

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	CBH22-2A	CBH22-2B	CBH22-250A	CBH22-250B	CBH23-2A
Client sampling date / time				12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
				EM1915198-001	EM1915198-002	EM1915198-003	EM1915198-004	EM1915198-005
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	153	134	176	183	77
Cadmium	7440-43-9	1	mg/kg	45	41	39	38	55
Chromium	7440-47-3	2	mg/kg	12	13	20	19	18
Iron	7439-89-6	50	mg/kg	19600	21500	27000	27100	24400
Lead	7439-92-1	5	mg/kg	15900	13500	15100	14800	6170
Manganese	7439-96-5	5	mg/kg	5960	5160	5440	5450	9760

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

			Client sample ID	CBH23-2B	CBH23-250A	CBH23-250B	CBH24-2A	CBH24-2B
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915198-006	EM1915198-007	EM1915198-008	EM1915198-009	EM1915198-010
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**73**	**81**	**96**	**59**	**62**
Cadmium	7440-43-9	1	mg/kg	**53**	**63**	**69**	**18**	**15**
Chromium	7440-47-3	2	mg/kg	**17**	**20**	**23**	**16**	**16**
Iron	7439-89-6	50	mg/kg	**22700**	**26300**	**29300**	**23800**	**24800**
Lead	7439-92-1	5	mg/kg	**5600**	**6290**	**7160**	**3880**	**4200**
Manganese	7439-96-5	5	mg/kg	**8540**	**5520**	**5980**	**3280**	**3330**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH24-250A	CBH24-250B	CBH25-2A	CBH25-2B	CBH25-250A
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915198-011	EM1915198-012	EM1915198-013	EM1915198-014	EM1915198-015
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**73**	**82**	**114**	**136**	**129**
Cadmium	7440-43-9	1	mg/kg	**18**	**19**	**39**	**45**	**37**
Chromium	7440-47-3	2	mg/kg	**20**	**22**	**12**	**13**	**10**
Iron	7439-89-6	50	mg/kg	**26800**	**29000**	**26700**	**27100**	**31600**
Lead	7439-92-1	5	mg/kg	**4160**	**4510**	**25600**	**26300**	**31800**
Manganese	7439-96-5	5	mg/kg	**3190**	**3460**	**16500**	**16400**	**38900**

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

			Client sample ID	CBH25-250B	CBH26-2A	CBH26-2B	CBH26-250A	CBH26-250B
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915198-016	EM1915198-017	EM1915198-018	EM1915198-019	EM1915198-020
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**119**	**75**	**73**	**81**	**88**
Cadmium	7440-43-9	1	mg/kg	**35**	**37**	**39**	**49**	**49**
Chromium	7440-47-3	2	mg/kg	**9**	**18**	**16**	**19**	**18**
Iron	7439-89-6	50	mg/kg	**29000**	**20700**	**20900**	**24800**	**24200**
Lead	7439-92-1	5	mg/kg	**27600**	**6070**	**6180**	**5100**	**5130**
Manganese	7439-96-5	5	mg/kg	**35000**	**5220**	**4820**	**4160**	**4160**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH27-2A	CBH27-2B	CBH27-250A	CBH27-250B	CBH28-2A
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915198-021	EM1915198-022	EM1915198-023	EM1915198-024	EM1915198-025
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	106	102	107	140	216
Cadmium	7440-43-9	1	mg/kg	57	55	71	73	82
Chromium	7440-47-3	2	mg/kg	15	18	19	19	10
Iron	7439-89-6	50	mg/kg	23600	26700	28600	28600	38000
Lead	7439-92-1	5	mg/kg	8290	7280	7790	7490	19500
Manganese	7439-96-5	5	mg/kg	6030	6440	6330	6340	38500

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

			Client sample ID	CBH28-2B	CBH28-250A	CBH28-250B	CBH29-2A	CBH29-2B
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915198-026	EM1915198-027	EM1915198-028	EM1915198-029	EM1915198-030
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**200**	**188**	**189**	**198**	**252**
Cadmium	7440-43-9	1	mg/kg	**81**	**70**	**71**	**24**	**21**
Chromium	7440-47-3	2	mg/kg	**11**	**8**	**7**	**18**	**17**
Iron	7439-89-6	50	mg/kg	**38400**	**39500**	**40100**	**25900**	**25900**
Lead	7439-92-1	5	mg/kg	**18400**	**20600**	**23400**	**16600**	**18200**
Manganese	7439-96-5	5	mg/kg	**33000**	**52300**	**53800**	**4210**	**5950**

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

Client sample ID				CBH29-250A	CBH29-250B	CBH30-2A	CBH30-2B	CBH30-250A
Client sampling date / time				12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915198-031	EM1915198-032	EM1915198-033	EM1915198-034	EM1915198-035
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**276**	**281**	**51**	**68**	**87**
Cadmium	7440-43-9	1	mg/kg	**33**	**32**	**30**	**19**	**31**
Chromium	7440-47-3	2	mg/kg	**20**	**20**	**18**	**19**	**26**
Iron	7439-89-6	50	mg/kg	**28200**	**27500**	**23800**	**24300**	**32300**
Lead	7439-92-1	5	mg/kg	**18200**	**18300**	**3900**	**4390**	**5100**
Manganese	7439-96-5	5	mg/kg	**4680**	**4470**	**2480**	**1480**	**2090**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH30-250B	----	----	----	----
			Client sampling date / time	12-Sep-2019 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1915198-036	--------	--------	--------	--------
				Result	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**75**	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	**30**	----	----	----	----
Chromium	7440-47-3	2	mg/kg	**26**	----	----	----	----
Iron	7439-89-6	50	mg/kg	**31100**	----	----	----	----
Lead	7439-92-1	5	mg/kg	**4750**	----	----	----	----
Manganese	7439-96-5	5	mg/kg	**1930**	----	----	----	----

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

			Client sample ID	CBH01-G1	CBH01-G2	CBH01-I1	CBH01-I2	CBH02-G1
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915198-037	EM1915198-038	EM1915198-039	EM1915198-040	EM1915198-041
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	**0.005**	**0.005**	<0.005	<0.005	**0.006**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.30**	**0.32**	<0.05	<0.05	**0.36**
Lead	7439-92-1	0.01	mg/L	**1.22**	**1.20**	**0.26**	**0.33**	**2.60**
Manganese	7439-96-5	0.01	mg/L	**0.34**	**0.35**	**0.28**	**0.28**	**0.59**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

			Client sample ID	CBH02-G2	CBH02-I1	CBH02-I2	CBH03-G1	CBH03-G2
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915198-042	EM1915198-043	EM1915198-044	EM1915198-045	EM1915198-046
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	<0.01	**0.01**	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	**0.006**	**0.005**	**0.006**	<0.005	<0.005
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.36**	**0.06**	**0.07**	**0.39**	**0.36**
Lead	7439-92-1	0.01	mg/L	**2.44**	**0.53**	**0.54**	**1.08**	**1.10**
Manganese	7439-96-5	0.01	mg/L	**0.55**	**0.48**	**0.47**	**0.30**	**0.28**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			*Client sample ID*	**CBH03-I1**	**CBH03-I2**	**CBH04-G1**	**CBH04-G2**	**CBH04-I1**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EM1915198-047**	**EM1915198-048**	**EM1915198-049**	**EM1915198-050**	**EM1915198-051**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	<0.01	<0.01	**0.01**	<0.01
Cadmium	7440-43-9	0.005	mg/L	<0.005	<0.005	**0.022**	**0.022**	**0.018**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.07**	**0.05**	**0.29**	**0.32**	**0.05**
Lead	7439-92-1	0.01	mg/L	**0.28**	**0.27**	**1.71**	**1.77**	**0.30**
Manganese	7439-96-5	0.01	mg/L	**0.23**	**0.22**	**0.51**	**0.51**	**0.43**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	CBH04-I2	CBH05-G1	CBH05-G2	CBH05-I1	CBH05-I2
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	**EM1915198-052**	**EM1915198-053**	**EM1915198-054**	**EM1915198-055**	**EM1915198-056**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.01**	<0.01	<0.01	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	**0.019**	**0.014**	**0.014**	**0.012**	**0.012**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	<0.05	**0.30**	**0.29**	<0.05	<0.05
Lead	7439-92-1	0.01	mg/L	**0.30**	**1.32**	**1.36**	**0.24**	**0.25**
Manganese	7439-96-5	0.01	mg/L	**0.44**	**0.45**	**0.44**	**0.39**	**0.38**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	CBH06-G1	CBH06-G2	CBH06-I1	CBH06-I2	CBH07-G1
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915198-057	EM1915198-058	EM1915198-059	EM1915198-060	EM1915198-061
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.03**	**0.03**	**0.02**	**0.02**	**0.01**
Cadmium	7440-43-9	0.005	mg/L	**0.011**	**0.010**	**0.009**	**0.010**	**0.009**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.65**	**0.66**	**0.07**	**0.14**	**0.52**
Lead	7439-92-1	0.01	mg/L	**6.44**	**6.37**	**1.65**	**2.03**	**4.04**
Manganese	7439-96-5	0.01	mg/L	**0.77**	**0.76**	**0.62**	**0.63**	**0.55**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	CBH07-G2	CBH07-I1	CBH07-I2	CBH08-G1	CBH08-G2
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EM1915198-062**	**EM1915198-063**	**EM1915198-064**	**EM1915198-065**	**EM1915198-066**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.02**	**0.01**	**0.02**	**0.02**	**0.02**
Cadmium	7440-43-9	0.005	mg/L	**0.008**	**0.008**	**0.008**	**0.008**	**0.008**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.52**	**0.06**	**0.07**	**0.40**	**0.41**
Lead	7439-92-1	0.01	mg/L	**4.02**	**0.89**	**0.95**	**2.58**	**2.42**
Manganese	7439-96-5	0.01	mg/L	**0.52**	**0.47**	**0.47**	**0.60**	**0.60**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**CBH08-I1**	**CBH08-I2**	**CBH09-G1**	**CBH09-G2**	**CBH09-I1**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	**EM1915198-067**	**EM1915198-068**	**EM1915198-069**	**EM1915198-070**	**EM1915198-071**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.02**	**0.01**	**0.03**	**0.03**	**0.02**
Cadmium	7440-43-9	0.005	mg/L	**0.007**	**0.007**	**0.007**	**0.007**	**0.006**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.06**	**0.07**	**0.30**	**0.31**	**0.05**
Lead	7439-92-1	0.01	mg/L	**0.48**	**0.45**	**2.27**	**2.37**	**0.36**
Manganese	7439-96-5	0.01	mg/L	**0.51**	**0.53**	**0.42**	**0.43**	**0.35**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**CBH09-I2**	**CBH10-G1**	**CBH10-G2**	**CBH10-I1**	**CBH10-I2**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	**EM1915198-072**	**EM1915198-073**	**EM1915198-074**	**EM1915198-075**	**EM1915198-076**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.03**	**0.02**	**0.03**	**0.02**	**0.02**
Cadmium	7440-43-9	0.005	mg/L	**0.006**	<0.005	<0.005	<0.005	<0.005
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.05**	**0.28**	**0.27**	<0.05	<0.05
Lead	7439-92-1	0.01	mg/L	**0.39**	**2.23**	**2.28**	**0.33**	**0.38**
Manganese	7439-96-5	0.01	mg/L	**0.36**	**0.62**	**0.60**	**0.52**	**0.53**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**CBH11-G1**	**CBH11-G2**	**CBH11-I1**	**CBH11-I2**	**CBH12-G1**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	**EM1915198-077**	**EM1915198-078**	**EM1915198-079**	**EM1915198-080**	**EM1915198-081**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.02**	**0.02**	**0.01**	**0.02**	**0.02**
Cadmium	7440-43-9	0.005	mg/L	**0.032**	**0.031**	**0.026**	**0.027**	**0.037**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**1.00**	**1.02**	**0.19**	**0.25**	**0.35**
Lead	7439-92-1	0.01	mg/L	**2.28**	**2.12**	**0.42**	**0.46**	**1.67**
Manganese	7439-96-5	0.01	mg/L	**2.55**	**2.53**	**1.86**	**1.92**	**1.13**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**CBH12-G2**	**CBH12-I1**	**CBH12-I2**	**----**	**----**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	**EM1915198-082**	**EM1915198-083**	**EM1915198-084**	**--------**	**--------**
				Result	Result	Result	----	----
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.01**	**0.01**	**0.01**	----	----
Cadmium	7440-43-9	0.005	mg/L	**0.037**	**0.031**	**0.032**	----	----
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Iron	7439-89-6	0.05	mg/L	**0.37**	<0.05	<0.05	----	----
Lead	7439-92-1	0.01	mg/L	**1.69**	**0.30**	**0.30**	----	----
Manganese	7439-96-5	0.01	mg/L	**1.15**	**0.91**	**0.92**	----	----

CERTIFICATE OF ANALYSIS

Work Order	: **EM1915200**	Page	: 1 of 18
Client	: **UNISA - CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION**	Laboratory	: Environmental Division Melbourne
Contact	: MR ALBERT JUHASZ	Contact	: Customer Services EM
Address	: UNIVERSITY OF SOUTH AUSTRALIA CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION BUILDING X MAWSON LAKES CAMPUS MAWSON LAKES SOUTH AUSTRALIA 5095	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 08 8302 6273	Telephone	: +61-3-8549 9600
Project	: CBH BioAcc-3	Date Samples Received	: 13-Sep-2019 09:25
Order number	: ----	Date Analysis Commenced	: 18-Sep-2019
C-O-C number	: ----	Issue Date	: 19-Sep-2019 14:59
Sampler	: ALBERT JUHASZ		
Site	: ----		
Quote number	: ADBQ/011/10		
No. of samples received	: 80		
No. of samples analysed	: 80		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- This is a split batch of EM1915195 and EM1915198 due to the large number of samples.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	CBH13-G1	CBH13-G2	CBH13-I1	CBH13-I2	CBH14-G1
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915200-001	EM1915200-002	EM1915200-003	EM1915200-004	EM1915200-005
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.02**	**0.02**	**0.02**	**0.02**	**0.01**
Cadmium	7440-43-9	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	**0.018**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.31**	**0.29**	<0.05	**0.07**	**0.54**
Lead	7439-92-1	0.01	mg/L	**1.91**	**1.91**	**0.37**	**0.39**	**2.54**
Manganese	7439-96-5	0.01	mg/L	**0.73**	**0.70**	**0.60**	**0.60**	**1.12**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**CBH14-G2**	**CBH14-I1**	**CBH14-I2**	**CBH15-G1**	**CBH15-G2**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EM1915200-006**	**EM1915200-007**	**EM1915200-008**	**EM1915200-009**	**EM1915200-010**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.02**	<0.01	**0.01**	**0.02**	**0.02**
Cadmium	7440-43-9	0.005	mg/L	**0.017**	**0.015**	**0.015**	**0.014**	**0.014**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.54**	**0.14**	**0.09**	**0.50**	**0.52**
Lead	7439-92-1	0.01	mg/L	**2.45**	**0.56**	**0.47**	**2.30**	**2.17**
Manganese	7439-96-5	0.01	mg/L	**1.10**	**0.95**	**0.95**	**2.48**	**2.48**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

			Client sample ID	CBH15-I1	CBH15-I2	CBH16-G1	CBH16-G2	CBH16-I1
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915200-011	EM1915200-012	EM1915200-013	EM1915200-014	EM1915200-015
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.01**	**0.01**	**0.03**	**0.03**	**0.02**
Cadmium	7440-43-9	0.005	mg/L	**0.012**	**0.012**	**0.006**	**0.006**	**0.005**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	**0.88**	**0.92**	**0.08**
Lead	7439-92-1	0.01	mg/L	**0.44**	**0.41**	**3.49**	**3.58**	**0.53**
Manganese	7439-96-5	0.01	mg/L	**1.85**	**1.90**	**2.33**	**2.40**	**1.79**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

			Client sample ID	CBH16-I2	CBH17-G1	CBH17-G2	CBH17-I1	CBH17-I2
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915200-016	EM1915200-017	EM1915200-018	EM1915200-019	EM1915200-020
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.02**	**0.01**	**0.01**	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	**0.006**	**0.006**	**0.006**	**0.005**	**0.005**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	<0.05	**0.54**	**0.54**	**0.06**	**0.06**
Lead	7439-92-1	0.01	mg/L	**0.46**	**3.72**	**3.67**	**0.73**	**0.70**
Manganese	7439-96-5	0.01	mg/L	**1.87**	**0.97**	**0.95**	**0.83**	**0.83**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**CBH18-G1**	**CBH18-G2**	**CBH18-I1**	**CBH18-I2**	**CBH19-G1**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	**EM1915200-021**	**EM1915200-022**	**EM1915200-023**	**EM1915200-024**	**EM1915200-025**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.03**	**0.02**	**0.02**	**0.02**	**0.04**
Cadmium	7440-43-9	0.005	mg/L	**0.007**	**0.007**	**0.006**	**0.006**	**0.006**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.36**	**0.38**	**0.08**	**0.07**	**0.42**
Lead	7439-92-1	0.01	mg/L	**3.47**	**3.54**	**0.74**	**0.71**	**5.09**
Manganese	7439-96-5	0.01	mg/L	**0.70**	**0.73**	**0.58**	**0.62**	**1.03**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	CBH19-G2	CBH19-I1	CBH19-I2	CBH20-G1	CBH20-G2
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915200-026	EM1915200-027	EM1915200-028	EM1915200-029	EM1915200-030
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.04**	**0.03**	**0.03**	**0.01**	**0.01**
Cadmium	7440-43-9	0.005	mg/L	**0.006**	<0.005	<0.005	**0.016**	**0.016**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.39**	**0.10**	**0.09**	**0.14**	**0.14**
Lead	7439-92-1	0.01	mg/L	**4.92**	**1.64**	**1.62**	**3.29**	**3.21**
Manganese	7439-96-5	0.01	mg/L	**0.98**	**0.86**	**0.87**	**0.58**	**0.57**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			*Client sample ID*	**CBH20-I1**	**CBH20-I2**	**CBH21-G1**	**CBH21-G2**	**CBH21-I1**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EM1915200-031**	**EM1915200-032**	**EM1915200-033**	**EM1915200-034**	**EM1915200-035**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	**0.01**	**0.03**	**0.03**	**0.02**
Cadmium	7440-43-9	0.005	mg/L	**0.013**	**0.014**	**0.009**	**0.009**	**0.008**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	**1.10**	**1.08**	<0.05
Lead	7439-92-1	0.01	mg/L	**0.77**	**0.71**	**6.36**	**6.24**	**1.05**
Manganese	7439-96-5	0.01	mg/L	**0.45**	**0.46**	**2.14**	**2.08**	**1.57**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**CBH21-I2**	**CBH22-G1**	**CBH22-G2**	**CBH22-I1**	**CBH22-I2**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	**EM1915200-036**	**EM1915200-037**	**EM1915200-038**	**EM1915200-039**	**EM1915200-040**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.01**	**0.02**	**0.03**	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	**0.008**	**0.032**	**0.031**	**0.027**	**0.027**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	<0.05	**1.20**	**1.19**	**0.07**	**0.07**
Lead	7439-92-1	0.01	mg/L	**1.24**	**9.78**	**9.46**	**2.47**	**2.54**
Manganese	7439-96-5	0.01	mg/L	**1.60**	**2.80**	**2.81**	**2.03**	**2.16**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			*Client sample ID*	**CBH23-G1**	**CBH23-G2**	**CBH23-I1**	**CBH23-I2**	**CBH24-G1**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EM1915200-041**	**EM1915200-042**	**EM1915200-043**	**EM1915200-044**	**EM1915200-045**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.03**	**0.03**	<0.01	<0.01	**0.01**
Cadmium	7440-43-9	0.005	mg/L	**0.058**	**0.059**	**0.048**	**0.050**	**0.013**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**2.48**	**2.48**	**0.08**	**0.07**	**0.73**
Lead	7439-92-1	0.01	mg/L	**5.99**	**6.03**	**1.19**	**1.31**	**2.89**
Manganese	7439-96-5	0.01	mg/L	**5.16**	**5.16**	**4.09**	**4.23**	**1.63**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	CBH24-G2	CBH24-I1	CBH24-I2	CBH25-G1	CBH25-G2
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EM1915200-046**	**EM1915200-047**	**EM1915200-048**	**EM1915200-049**	**EM1915200-050**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.01**	<0.01	<0.01	**0.02**	**0.02**
Cadmium	7440-43-9	0.005	mg/L	**0.013**	**0.011**	**0.011**	**0.032**	**0.031**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.73**	**0.06**	<0.05	**2.78**	**2.74**
Lead	7439-92-1	0.01	mg/L	**2.89**	**0.76**	**0.79**	**21.4**	**21.0**
Manganese	7439-96-5	0.01	mg/L	**1.61**	**1.31**	**1.32**	**2.78**	**2.72**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			*Client sample ID*	**CBH25-I1**	**CBH25-I2**	**CBH26-G1**	**CBH26-G2**	**CBH26-I1**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EM1915200-051**	**EM1915200-052**	**EM1915200-053**	**EM1915200-054**	**EM1915200-055**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	<0.01	**0.02**	**0.02**	<0.01
Cadmium	7440-43-9	0.005	mg/L	**0.027**	**0.027**	**0.034**	**0.034**	**0.028**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	**1.90**	**1.89**	**0.08**
Lead	7439-92-1	0.01	mg/L	**5.43**	**5.18**	**4.20**	**4.22**	**0.86**
Manganese	7439-96-5	0.01	mg/L	**2.04**	**2.01**	**3.28**	**3.22**	**2.53**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**CBH26-I2**	**CBH27-G1**	**CBH27-G2**	**CBH27-I1**	**CBH27-I2**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	**EM1915200-056**	**EM1915200-057**	**EM1915200-058**	**EM1915200-059**	**EM1915200-060**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	**0.02**	**0.03**	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	**0.029**	**0.058**	**0.056**	**0.048**	**0.048**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.07**	**2.00**	**1.99**	**0.07**	**0.08**
Lead	7439-92-1	0.01	mg/L	**0.93**	**5.12**	**5.02**	**1.07**	**1.02**
Manganese	7439-96-5	0.01	mg/L	**2.58**	**5.29**	**5.25**	**4.13**	**4.13**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	CBH28-G1	CBH28-G2	CBH28-I1	CBH28-I2	CBH29-G1
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915200-061	EM1915200-062	EM1915200-063	EM1915200-064	EM1915200-065
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.02**	**0.02**	<0.01	<0.01	**0.07**
Cadmium	7440-43-9	0.005	mg/L	**0.039**	**0.038**	**0.032**	**0.033**	**0.019**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**2.82**	**2.84**	<0.05	<0.05	**0.33**
Lead	7439-92-1	0.01	mg/L	**47.0**	**46.4**	**23.4**	**24.9**	**9.88**
Manganese	7439-96-5	0.01	mg/L	**1.87**	**1.83**	**1.26**	**1.30**	**0.48**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	CBH29-G2	CBH29-I1	CBH29-I2	CBH30-G1	CBH30-G2
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915200-066	EM1915200-067	EM1915200-068	EM1915200-069	EM1915200-070
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.08**	**0.04**	**0.03**	**0.02**	**0.02**
Cadmium	7440-43-9	0.005	mg/L	**0.018**	**0.015**	**0.016**	**0.021**	**0.021**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.32**	**0.18**	**0.12**	**0.27**	**0.32**
Lead	7439-92-1	0.01	mg/L	**10.3**	**4.31**	**3.77**	**3.71**	**3.84**
Manganese	7439-96-5	0.01	mg/L	**0.49**	**0.40**	**0.41**	**0.53**	**0.52**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	CBH30-I1	CBH30-I2	QC1-G1	QC1-G2	QC1-I1
Client sampling date / time				12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
				EM1915200-071	EM1915200-072	EM1915200-073	EM1915200-074	EM1915200-075
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.01**	**0.01**	**0.16**	**0.15**	**0.09**
Cadmium	7440-43-9	0.005	mg/L	**0.018**	**0.018**	**0.023**	**0.022**	**0.019**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.07**	**0.11**	**1.30**	**1.24**	**0.33**
Lead	7439-92-1	0.01	mg/L	**1.12**	**1.30**	**4.85**	**4.79**	**0.90**
Manganese	7439-96-5	0.01	mg/L	**0.45**	**0.44**	**0.60**	**0.57**	**0.46**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**QC1-I2**	**QC2-G1**	**QC2-G2**	**QC2-I1**	**QC2-I2**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	**EM1915200-076**	**EM1915200-077**	**EM1915200-078**	**EM1915200-079**	**EM1915200-080**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.08**	<0.01	<0.01	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	**0.018**	<0.005	<0.005	<0.005	<0.005
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.29**	<0.05	<0.05	<0.05	<0.05
Lead	7439-92-1	0.01	mg/L	**0.84**	<0.01	<0.01	<0.01	<0.01
Manganese	7439-96-5	0.01	mg/L	**0.44**	<0.01	<0.01	<0.01	<0.01

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1915317**	Page	: 1 of 19
Client	: **UNISA - CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION**	Laboratory	: Environmental Division Melbourne
Contact	: MR ALBERT JUHASZ	Contact	: Customer Services EM
Address	: UNIVERSITY OF SOUTH AUSTRALIA CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION BUILDING X MAWSON LAKES CAMPUS MAWSON LAKES SOUTH AUSTRALIA 5095	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 08 8302 6273	Telephone	: +61-3-8549 9600
Project	: CBH BioAcc-1	Date Samples Received	: 13-Sep-2019 09:25
Order number	: ----	Date Analysis Commenced	: 18-Sep-2019
C-O-C number	: ----	Issue Date	: 20-Sep-2019 11:41
Sampler	: AJ		
Site	: ----		
Quote number	: ADBQ/011/10		
No. of samples received	: 84		
No. of samples analysed	: 84		

ilac-MRA NATA

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- This is a split batch with EM1915325 due to the large number of samples.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHS01-2A	BHS01-2B	BHS01-250A	BHS01-250B	BHS02-2A
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915317-001	EM1915317-002	EM1915317-003	EM1915317-004	EM1915317-005
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	**6**	**6**	**8**	<5
Cadmium	7440-43-9	1	mg/kg	**2**	**2**	**3**	**3**	**2**
Chromium	7440-47-3	2	mg/kg	**19**	**19**	**25**	**26**	**12**
Iron	7439-89-6	50	mg/kg	**20700**	**21400**	**26000**	**26500**	**15200**
Lead	7439-92-1	5	mg/kg	**134**	**328**	**134**	**136**	**396**
Manganese	7439-96-5	5	mg/kg	**245**	**532**	**298**	**302**	**320**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHS02-2B	BHS02-250A	BHS02-250B	BHS03-2A	BHS03-2B
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915317-006	EM1915317-007	EM1915317-008	EM1915317-009	EM1915317-010
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	**10**	**9**	**11**	**13**
Cadmium	7440-43-9	1	mg/kg	**2**	**4**	**4**	**8**	**9**
Chromium	7440-47-3	2	mg/kg	**13**	**22**	**21**	**22**	**22**
Iron	7439-89-6	50	mg/kg	**16300**	**23800**	**23500**	**27200**	**27600**
Lead	7439-92-1	5	mg/kg	**503**	**899**	**854**	**634**	**656**
Manganese	7439-96-5	5	mg/kg	**330**	**634**	**594**	**677**	**836**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHS03-250A	BHS03-250B	BHS04-2A	BHS04-2B	BHS04-250A
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915317-011	EM1915317-012	EM1915317-013	EM1915317-014	EM1915317-015
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**16**	**14**	**6**	**5**	**13**
Cadmium	7440-43-9	1	mg/kg	**7**	**7**	**1**	<1	**1**
Chromium	7440-47-3	2	mg/kg	**25**	**25**	**28**	**23**	**36**
Iron	7439-89-6	50	mg/kg	**31300**	**30800**	**26200**	**25200**	**33800**
Lead	7439-92-1	5	mg/kg	**810**	**788**	**349**	**338**	**530**
Manganese	7439-96-5	5	mg/kg	**815**	**794**	**336**	**375**	**462**

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

			Client sample ID	BHS04-250B	BHS05-2A	BHS05-2B	BHS05-250A	BHS05-250B
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915317-016	EM1915317-017	EM1915317-018	EM1915317-019	EM1915317-020
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**9**	**5**	**6**	**8**	**8**
Cadmium	7440-43-9	1	mg/kg	**2**	<1	<1	**1**	**1**
Chromium	7440-47-3	2	mg/kg	**37**	**15**	**15**	**22**	**23**
Iron	7439-89-6	50	mg/kg	**33700**	**20800**	**20000**	**26800**	**27700**
Lead	7439-92-1	5	mg/kg	**524**	**317**	**414**	**352**	**353**
Manganese	7439-96-5	5	mg/kg	**479**	**387**	**432**	**464**	**476**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHS06-2A	BHS06-2B	BHS06-250A	BHS06-250B	BHS07-2A
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915317-021	EM1915317-022	EM1915317-023	EM1915317-024	EM1915317-025
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**7**	<5	**23**	**12**	**5**
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	**2**
Chromium	7440-47-3	2	mg/kg	**12**	**10**	**22**	**20**	**16**
Iron	7439-89-6	50	mg/kg	**15000**	**13000**	**23900**	**24000**	**21400**
Lead	7439-92-1	5	mg/kg	**88**	**65**	**148**	**148**	**104**
Manganese	7439-96-5	5	mg/kg	**184**	**144**	**290**	**283**	**194**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHS07-2B	BHS07-250A	BHS07-250B	BHS08-2A	BHS08-2B
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915317-026	EM1915317-027	EM1915317-028	EM1915317-029	EM1915317-030
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	5	7	7	<5	<5
Cadmium	7440-43-9	1	mg/kg	2	2	2	<1	<1
Chromium	7440-47-3	2	mg/kg	19	24	23	8	9
Iron	7439-89-6	50	mg/kg	23000	28600	26900	7450	11100
Lead	7439-92-1	5	mg/kg	171	172	168	62	90
Manganese	7439-96-5	5	mg/kg	221	272	276	110	154

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHS08-250A	BHS08-250B	BHS09-2A	BHS09-2B	BHS09-250A
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915317-031	EM1915317-032	EM1915317-033	EM1915317-034	EM1915317-035
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	7	12	12	15
Cadmium	7440-43-9	1	mg/kg	2	2	3	3	3
Chromium	7440-47-3	2	mg/kg	21	22	22	22	26
Iron	7439-89-6	50	mg/kg	23300	23600	27400	26800	30200
Lead	7439-92-1	5	mg/kg	240	240	508	492	573
Manganese	7439-96-5	5	mg/kg	335	334	450	468	564

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHS09-250B	BHS10-2A	BHS10-2B	BHS10-250A	BHS10-250B
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915317-036	EM1915317-037	EM1915317-038	EM1915317-039	EM1915317-040
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**18**	<5	<5	**5**	**6**
Cadmium	7440-43-9	1	mg/kg	**3**	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**26**	**11**	**13**	**21**	**23**
Iron	7439-89-6	50	mg/kg	**30200**	**14400**	**15900**	**24400**	**26900**
Lead	7439-92-1	5	mg/kg	**560**	**35**	**41**	**96**	**111**
Manganese	7439-96-5	5	mg/kg	**567**	**92**	**91**	**183**	**198**

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

			Client sample ID	BHS11-2A	BHS11-2B	BHS11-250A	BHS11-250B	BHS12-2A
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EM1915317-041**	**EM1915317-042**	**EM1915317-043**	**EM1915317-044**	**EM1915317-045**
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	**7**	**6**	**20**
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	**1**	**3**
Chromium	7440-47-3	2	mg/kg	**11**	**12**	**21**	**21**	**20**
Iron	7439-89-6	50	mg/kg	**15400**	**14500**	**23000**	**22700**	**24300**
Lead	7439-92-1	5	mg/kg	**94**	**101**	**195**	**210**	**680**
Manganese	7439-96-5	5	mg/kg	**224**	**195**	**299**	**300**	**774**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHS12-2B	BHS12-250A	BHS12-250B	BHS13-2A	BHS13-2B
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915317-046	EM1915317-047	EM1915317-048	EM1915317-049	EM1915317-050
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	27	33	37	15	14
Cadmium	7440-43-9	1	mg/kg	4	5	5	<1	<1
Chromium	7440-47-3	2	mg/kg	21	24	24	21	21
Iron	7439-89-6	50	mg/kg	26900	32100	31200	27500	27700
Lead	7439-92-1	5	mg/kg	1040	1160	1140	158	145
Manganese	7439-96-5	5	mg/kg	1120	1490	1490	448	409

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHS13-250A	BHS13-250B	BHS14-2A	BHS14-2B	BHS14-250A
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915317-051	EM1915317-052	EM1915317-053	EM1915317-054	EM1915317-055
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**28**	**27**	**6**	**7**	**10**
Cadmium	7440-43-9	1	mg/kg	**1**	**1**	**3**	**4**	**3**
Chromium	7440-47-3	2	mg/kg	**26**	**27**	**15**	**15**	**21**
Iron	7439-89-6	50	mg/kg	**33700**	**34700**	**16800**	**17600**	**24100**
Lead	7439-92-1	5	mg/kg	**221**	**226**	**435**	**460**	**690**
Manganese	7439-96-5	5	mg/kg	**668**	**678**	**369**	**374**	**641**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHS14-250B	BHS15-2A	BHS15-2B	BHS15-250A	BHS15-250B
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915317-056	EM1915317-057	EM1915317-058	EM1915317-059	EM1915317-060
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**11**	**14**	**10**	**14**	**15**
Cadmium	7440-43-9	1	mg/kg	**3**	**3**	**3**	**3**	**3**
Chromium	7440-47-3	2	mg/kg	**21**	**15**	**18**	**22**	**22**
Iron	7439-89-6	50	mg/kg	**23400**	**16400**	**19200**	**24300**	**24400**
Lead	7439-92-1	5	mg/kg	**694**	**550**	**679**	**885**	**889**
Manganese	7439-96-5	5	mg/kg	**624**	**414**	**550**	**892**	**843**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHS16-2A	BHS16-2B	BHS16-250A	BHS16-250B	BHS17-2A
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915317-061	EM1915317-062	EM1915317-063	EM1915317-064	EM1915317-065
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**7**	**6**	**13**	**11**	**8**
Cadmium	7440-43-9	1	mg/kg	<1	<1	**2**	**2**	**1**
Chromium	7440-47-3	2	mg/kg	**12**	**11**	**18**	**19**	**19**
Iron	7439-89-6	50	mg/kg	**14700**	**13900**	**21200**	**22200**	**22700**
Lead	7439-92-1	5	mg/kg	**306**	**304**	**558**	**587**	**306**
Manganese	7439-96-5	5	mg/kg	**355**	**315**	**618**	**661**	**354**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHS17-2B	BHS17-250A	BHS17-250B	BHS18-2A	BHS18-2B
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915317-066	EM1915317-067	EM1915317-068	EM1915317-069	EM1915317-070
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**9**	**13**	**10**	<5	<5
Cadmium	7440-43-9	1	mg/kg	**1**	**1**	**1**	**2**	**2**
Chromium	7440-47-3	2	mg/kg	**17**	**24**	**24**	**11**	**11**
Iron	7439-89-6	50	mg/kg	**19900**	**26300**	**26800**	**14700**	**14300**
Lead	7439-92-1	5	mg/kg	**312**	**366**	**380**	**324**	**316**
Manganese	7439-96-5	5	mg/kg	**377**	**448**	**452**	**284**	**236**

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

			Client sample ID	BHS18-250A	BHS18-250B	BHS19-2A	BHS19-2B	BHS19-250A
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915317-071	EM1915317-072	EM1915317-073	EM1915317-074	EM1915317-075
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**6**	**8**	**14**	**17**	**19**
Cadmium	7440-43-9	1	mg/kg	**3**	**3**	**6**	**7**	**8**
Chromium	7440-47-3	2	mg/kg	**19**	**20**	**15**	**16**	**20**
Iron	7439-89-6	50	mg/kg	**21600**	**22400**	**18300**	**19300**	**24300**
Lead	7439-92-1	5	mg/kg	**596**	**626**	**866**	**952**	**1110**
Manganese	7439-96-5	5	mg/kg	**418**	**418**	**785**	**1020**	**1120**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHS19-250B	BHS20-2A	BHS20-2B	BHS20-250A	BHS20-250B
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915317-076	EM1915317-077	EM1915317-078	EM1915317-079	EM1915317-080
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**21**	**6**	**6**	**7**	**7**
Cadmium	7440-43-9	1	mg/kg	**8**	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**20**	**18**	**19**	**23**	**23**
Iron	7439-89-6	50	mg/kg	**24000**	**23200**	**23600**	**27900**	**27100**
Lead	7439-92-1	5	mg/kg	**1120**	**141**	**135**	**165**	**162**
Manganese	7439-96-5	5	mg/kg	**1160**	**285**	**287**	**351**	**330**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHS21-2A	BHS21-2B	BHS21-250A	BHS21-250B	----
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	----
Compound	CAS Number	LOR	Unit	EM1915317-081	EM1915317-082	EM1915317-083	EM1915317-084	--------
				Result	Result	Result	Result	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	**6**	**6**	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	**1**	**1**	----
Chromium	7440-47-3	2	mg/kg	**30**	**29**	**38**	**36**	----
Iron	7439-89-6	50	mg/kg	**26400**	**24300**	**33200**	**31200**	----
Lead	7439-92-1	5	mg/kg	**283**	**278**	**392**	**344**	----
Manganese	7439-96-5	5	mg/kg	**244**	**195**	**338**	**317**	----

CERTIFICATE OF ANALYSIS

Work Order	: **EM1915325**	Page	: 1 of 21
Client	: **UNISA - CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION**	Laboratory	: Environmental Division Melbourne
Contact	: MR ALBERT JUHASZ	Contact	: Customer Services EM
Address	: UNIVERSITY OF SOUTH AUSTRALIA CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION BUILDING X MAWSON LAKES CAMPUS MAWSON LAKES SOUTH AUSTRALIA 5095	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 08 8302 6273	Telephone	: +61-3-8549 9600
Project	: CBH BioAcc-1	Date Samples Received	: 13-Sep-2019 09:25
Order number	: ----	Date Analysis Commenced	: 18-Sep-2019
C-O-C number	: ----	Issue Date	: 20-Sep-2019 13:51
Sampler	: AJ		
Site	: ----		
Quote number	: ADBQ/011/10		
No. of samples received	: 92		
No. of samples analysed	: 92		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG005F:EM1915325_092 has been confirmed for dissolved metals by re-analysis.
- This is a split batch with EM1915317 due to the large number of samples.

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**BHS01-G1**	**BHS01-G2**	**BHS01-I1**	**BHS01-I2**	**BHS02-G1**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	**EM1915325-001**	**EM1915325-002**	**EM1915325-003**	**EM1915325-004**	**EM1915325-005**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.18**	**0.18**	<0.05	<0.05	**0.25**
Lead	7439-92-1	0.01	mg/L	**0.08**	**0.08**	<0.01	<0.01	**0.70**
Manganese	7439-96-5	0.01	mg/L	**0.12**	**0.12**	**0.08**	**0.08**	**0.24**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**BHS02-G2**	**BHS02-I1**	**BHS02-I2**	**BHS03-G1**	**BHS03-G2**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	**EM1915325-006**	**EM1915325-007**	**EM1915325-008**	**EM1915325-009**	**EM1915325-010**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	<0.005	<0.005	<0.005	**0.007**	**0.008**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.26**	**0.09**	**0.09**	**0.48**	**0.53**
Lead	7439-92-1	0.01	mg/L	**0.69**	**0.18**	**0.18**	**0.55**	**0.56**
Manganese	7439-96-5	0.01	mg/L	**0.24**	**0.17**	**0.17**	**0.41**	**0.42**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			*Client sample ID*	**BHS03-I1**	**BHS03-I2**	**BHS04-G1**	**BHS04-G2**	**BHS04-I1**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EM1915325-011**	**EM1915325-012**	**EM1915325-013**	**EM1915325-014**	**EM1915325-015**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	**0.006**	**0.006**	<0.005	<0.005	<0.005
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	**0.27**	**0.27**	**0.88**
Lead	7439-92-1	0.01	mg/L	**0.06**	**0.05**	**0.37**	**0.38**	**0.07**
Manganese	7439-96-5	0.01	mg/L	**0.26**	**0.29**	**0.15**	**0.14**	**0.12**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**BHS04-I2**	**BHS05-G1**	**BHS05-G2**	**BHS05-I1**	**BHS05-I2**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	**EM1915325-016**	**EM1915325-017**	**EM1915325-018**	**EM1915325-019**	**EM1915325-020**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	<0.05	**0.22**	**0.21**	<0.05	**0.06**
Lead	7439-92-1	0.01	mg/L	**0.06**	**0.24**	**0.23**	**0.03**	**0.03**
Manganese	7439-96-5	0.01	mg/L	**0.11**	**0.20**	**0.20**	**0.11**	**0.12**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	BHS06-G1	BHS06-G2	BHS06-I1	BHS06-I2	BHS07-G1
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915325-021	EM1915325-022	EM1915325-023	EM1915325-024	EM1915325-025
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.21**	**0.22**	<0.05	<0.05	**0.24**
Lead	7439-92-1	0.01	mg/L	**0.07**	**0.08**	**0.01**	**0.01**	**0.13**
Manganese	7439-96-5	0.01	mg/L	**0.06**	**0.07**	**0.05**	**0.06**	**0.09**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			*Client sample ID*	**BHS07-G2**	**BHS07-I1**	**BHS07-I2**	**BHS08-G1**	**BHS08-G2**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EM1915325-026**	**EM1915325-027**	**EM1915325-028**	**EM1915325-029**	**EM1915325-030**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.24**	<0.05	<0.05	**0.22**	**0.22**
Lead	7439-92-1	0.01	mg/L	**0.11**	**0.02**	**0.01**	**0.17**	**0.17**
Manganese	7439-96-5	0.01	mg/L	**0.09**	**0.06**	**0.07**	**0.17**	**0.18**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

			Client sample ID	BHS08-I1	BHS08-I2	BHS09-G1	BHS09-G2	BHS09-I1
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EM1915325-031**	**EM1915325-032**	**EM1915325-033**	**EM1915325-034**	**EM1915325-035**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	**0.29**	**0.29**	<0.05
Lead	7439-92-1	0.01	mg/L	**0.02**	**0.02**	**0.44**	**0.43**	**0.04**
Manganese	7439-96-5	0.01	mg/L	**0.10**	**0.11**	**0.28**	**0.28**	**0.17**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**BHS09-I2**	**BHS10-G1**	**BHS10-G2**	**BHS10-I1**	**BHS10-I2**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	**EM1915325-036**	**EM1915325-037**	**EM1915325-038**	**EM1915325-039**	**EM1915325-040**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	<0.05	**0.14**	**0.14**	<0.05	<0.05
Lead	7439-92-1	0.01	mg/L	**0.06**	**0.05**	**0.05**	<0.01	<0.01
Manganese	7439-96-5	0.01	mg/L	**0.18**	**0.06**	**0.06**	**0.04**	**0.04**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	BHS11-G1	BHS11-G2	BHS11-I1	BHS11-I2	BHS12-G1
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915325-041	EM1915325-042	EM1915325-043	EM1915325-044	EM1915325-045
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.17**	**0.18**	<0.05	<0.05	**0.43**
Lead	7439-92-1	0.01	mg/L	**0.14**	**0.13**	**0.01**	**0.01**	**1.02**
Manganese	7439-96-5	0.01	mg/L	**0.12**	**0.12**	**0.09**	**0.09**	**0.63**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	BHS12-G2	BHS12-I1	BHS12-I2	BHS13-G1	BHS13-G2
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915325-046	EM1915325-047	EM1915325-048	EM1915325-049	EM1915325-050
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.43**	<0.05	<0.05	**0.31**	**0.31**
Lead	7439-92-1	0.01	mg/L	**1.00**	**0.16**	**0.15**	**0.16**	**0.16**
Manganese	7439-96-5	0.01	mg/L	**0.61**	**0.46**	**0.46**	**0.32**	**0.32**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**BHS13-I1**	**BHS13-I2**	**BHS14-G1**	**BHS14-G2**	**BHS14-I1**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	**EM1915325-051**	**EM1915325-052**	**EM1915325-053**	**EM1915325-054**	**EM1915325-055**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	**0.46**	**0.46**	<0.05
Lead	7439-92-1	0.01	mg/L	**0.01**	<0.01	**0.51**	**0.50**	**0.06**
Manganese	7439-96-5	0.01	mg/L	**0.21**	**0.22**	**0.26**	**0.27**	**0.19**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

			Client sample ID	BHS14-I2	BHS15-G1	BHS15-G2	BHS15-I1	BHS15-I2
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	**EM1915325-056**	**EM1915325-057**	**EM1915325-058**	**EM1915325-059**	**EM1915325-060**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	<0.05	**0.24**	**0.24**	**0.06**	**0.06**
Lead	7439-92-1	0.01	mg/L	**0.06**	**0.70**	**0.68**	**0.21**	**0.21**
Manganese	7439-96-5	0.01	mg/L	**0.20**	**0.35**	**0.33**	**0.29**	**0.28**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

			Client sample ID	BHS16-G1	BHS16-G2	BHS16-I1	BHS16-I2	BHS17-G1
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915325-061	EM1915325-062	EM1915325-063	EM1915325-064	EM1915325-065
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.22**	**0.22**	<0.05	<0.05	**0.24**
Lead	7439-92-1	0.01	mg/L	**0.39**	**0.38**	**0.12**	**0.12**	**0.27**
Manganese	7439-96-5	0.01	mg/L	**0.22**	**0.20**	**0.19**	**0.18**	**0.22**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

			Client sample ID	BHS17-G2	BHS17-I1	BHS17-I2	BHS18-G1	BHS18-G2
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915325-066	EM1915325-067	EM1915325-068	EM1915325-069	EM1915325-070
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.24**	<0.05	<0.05	**0.25**	**0.27**
Lead	7439-92-1	0.01	mg/L	**0.27**	**0.04**	**0.04**	**0.50**	**0.45**
Manganese	7439-96-5	0.01	mg/L	**0.22**	**0.14**	**0.15**	**0.18**	**0.18**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**BHS18-I1**	**BHS18-I2**	**BHS19-G1**	**BHS19-G2**	**BHS19-I1**
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	**EM1915325-071**	**EM1915325-072**	**EM1915325-073**	**EM1915325-074**	**EM1915325-075**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	<0.005	<0.005	**0.006**	**0.006**	**0.005**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	**0.36**	**0.37**	**0.07**
Lead	7439-92-1	0.01	mg/L	**0.10**	**0.09**	**0.88**	**0.89**	**0.18**
Manganese	7439-96-5	0.01	mg/L	**0.13**	**0.13**	**0.54**	**0.56**	**0.39**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

			Client sample ID	BHS19-I2	BHS20-G1	BHS20-G2	BHS20-I1	BHS20-I2
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915325-076	EM1915325-077	EM1915325-078	EM1915325-079	EM1915325-080
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	**0.005**	<0.005	<0.005	<0.005	<0.005
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.24**	**0.18**	**0.18**	<0.05	<0.05
Lead	7439-92-1	0.01	mg/L	**0.19**	**0.10**	**0.10**	<0.01	<0.01
Manganese	7439-96-5	0.01	mg/L	**0.40**	**0.15**	**0.15**	**0.08**	**0.09**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

			Client sample ID	BHS21-G1	BHS21-G2	BHS21-I1	BHS21-I2	QC1-G1
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915325-081	EM1915325-082	EM1915325-083	EM1915325-084	EM1915325-085
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	**0.17**
Cadmium	7440-43-9	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	**0.022**
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**0.21**	**0.22**	<0.05	<0.05	**1.40**
Lead	7439-92-1	0.01	mg/L	**0.23**	**0.23**	**0.02**	**0.02**	**4.83**
Manganese	7439-96-5	0.01	mg/L	**0.11**	**0.11**	**0.07**	**0.08**	**0.60**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QC1-G2	QC1-I1	QC1-I2	QC2-G1	QC2-G2
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00	12-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1915325-086	EM1915325-087	EM1915325-088	EM1915325-089	EM1915325-090
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.17**	**0.09**	**0.09**	<0.01	<0.01
Cadmium	7440-43-9	0.005	mg/L	**0.023**	**0.018**	**0.018**	<0.005	<0.005
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	7439-89-6	0.05	mg/L	**1.33**	**0.32**	**0.31**	<0.05	<0.05
Lead	7439-92-1	0.01	mg/L	**4.83**	**0.83**	**0.69**	<0.01	<0.01
Manganese	7439-96-5	0.01	mg/L	**0.57**	**0.46**	**0.43**	<0.01	<0.01

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

			Client sample ID	QC2-I1	QC2-I2	----	----	----
			Client sampling date / time	12-Sep-2019 00:00	12-Sep-2019 00:00	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EM1915325-091**	**EM1915325-092**	--------	--------	--------
				Result	Result	----	----	----
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	<0.01	----	----	----
Cadmium	7440-43-9	0.005	mg/L	<0.005	<0.005	----	----	----
Chromium	7440-47-3	0.01	mg/L	<0.01	<0.01	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	----	----	----
Lead	7439-92-1	0.01	mg/L	<0.01	**0.01**	----	----	----
Manganese	7439-96-5	0.01	mg/L	<0.01	<0.01	----	----	----

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1915187**	Page	: 1 of 4
Client	: **UNISA - CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION**	Laboratory	: Environmental Division Melbourne
Contact	: MR ALBERT JUHASZ	Contact	: Customer Services EM
Address	: UNIVERSITY OF SOUTH AUSTRALIA CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION BUILDING X MAWSON LAKES CAMPUS MAWSON LAKES SOUTH AUSTRALIA 5095	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 08 8302 6273	Telephone	: +61-3-8549 9600
Project	: CBH BioAcc-2	Date Samples Received	: 13-Sep-2019
Order number	: ----	Date Analysis Commenced	: 17-Sep-2019
C-O-C number	: ----	Issue Date	: 19-Sep-2019
Sampler	: ALBERT JUHASZ		
Site	: ----		
Quote number	: ADBQ/011/10		
No. of samples received	: 48		
No. of samples analysed	: 48		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2589635)									
EM1915187-001	WR01-2A	EG005T: Cadmium	7440-43-9	1	mg/kg	19	21	10.8	0% - 20%
		EG005T: Chromium	7440-47-3	2	mg/kg	17	20	16.3	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	45	45	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	2210	2120	3.91	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	744	842	12.4	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	22200	23900	7.46	0% - 20%
EM1915187-010	WR03-2B	EG005T: Cadmium	7440-43-9	1	mg/kg	20	22	7.97	0% - 20%
		EG005T: Chromium	7440-47-3	2	mg/kg	18	17	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	44	44	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	2880	3260	12.3	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	397	384	3.11	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	23800	26000	8.60	0% - 20%

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589635)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	89.8	78.5	107
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	87.5	76.2	108
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	83.3	77.7	110
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	98.2	83.5	112
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	83.3	78.4	106
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	96.2	80.6	110

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)F: Dissolved Metals by ICP-AES (QCLot: 2588466)								
EG005F: Arsenic	7440-38-2	0.01	mg/L	<0.01	1 mg/L	110	82.0	114
EG005F: Cadmium	7440-43-9	0.005	mg/L	<0.005	1 mg/L	104	90.2	115
EG005F: Chromium	7440-47-3	0.01	mg/L	<0.01	1 mg/L	101	88.0	112
EG005F: Iron	7439-89-6	0.05	mg/L	<0.05	1 mg/L	107	85.0	119
EG005F: Lead	7439-92-1	0.01	mg/L	<0.01	1 mg/L	109	84.0	111
EG005F: Manganese	7439-96-5	0.01	mg/L	<0.01	1 mg/L	109	89.4	117
EG005(ED093)F: Dissolved Metals by ICP-AES (QCLot: 2588467)								
EG005F: Arsenic	7440-38-2	0.01	mg/L	<0.01	1 mg/L	102	82.0	114
EG005F: Cadmium	7440-43-9	0.005	mg/L	<0.005	1 mg/L	100	90.2	115
EG005F: Chromium	7440-47-3	0.01	mg/L	<0.01	1 mg/L	98.1	88.0	112
EG005F: Iron	7439-89-6	0.05	mg/L	<0.05	1 mg/L	98.9	85.0	119
EG005F: Lead	7439-92-1	0.01	mg/L	<0.01	1 mg/L	101	84.0	111
EG005F: Manganese	7439-96-5	0.01	mg/L	<0.01	1 mg/L	104	89.4	117

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589635)							
EM1915187-002	WR01-2B	EG005T: Arsenic	7440-38-2	50 mg/kg	108	78.0	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	89.0	84.0	116

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589635) - continued							
EM1915187-002	WR01-2B	EG005T: Chromium	7440-47-3	50 mg/kg	84.4	79.0	121
		EG005T: Lead	7439-92-1	50 mg/kg	# Not Determined	76.0	124
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	68.0	136

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1915187**	Page	: 1 of 5
Client	: **UNISA - CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION**	Laboratory	: Environmental Division Melbourne
Contact	: MR ALBERT JUHASZ	Telephone	: +61-3-8549 9600
Project	: CBH BioAcc-2	Date Samples Received	: 13-Sep-2019
Site	: ----	Issue Date	: 19-Sep-2019
Sampler	: ALBERT JUHASZ	No. of samples received	: 48
Order number	: ----	No. of samples analysed	: 48

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG005(ED093)T: Total Metals by ICP-AES	EM1915187--002	WR01-2B	**Lead**	7439-92-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005(ED093)T: Total Metals by ICP-AES	EM1915187--002	WR01-2B	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Dissolved Metals by ICP-AES	0	28	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Dissolved Metals by ICP-AES	0	28	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method		*Sample Date*	*Extraction / Preparation*			*Analysis*		
Container / Client Sample ID(s)			*Date extracted*	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EG005(ED093)T: Total Metals by ICP-AES								
Miscellaneous Plastic Container (EG005T)								
WR01-2A,	WR01-2B,	**12-Sep-2019**	**18-Sep-2019**	10-Mar-2020	✓	**18-Sep-2019**	10-Mar-2020	✓
WR01-250A,	WR01-250B,							
WR02-2A,	WR02-2B,							
WR02-250A,	WR02-250B,							
WR03-2A,	WR03-2B,							
WR03-250A,	WR03-250B,							
WR04-2A,	WR04-2B,							
WR04-250A,	WR04-250B,							
WR05-2A,	WR05-2B,							
WR05-250A,	WR05-250B							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005(ED093)F: Dissolved Metals by ICP-AES								
Miscellaneous Plastic Container (EG005F)								
WR01-G1,	WR01-G2,	**12-Sep-2019**	**----**	----	----	**17-Sep-2019**	10-Mar-2020	✓
WR01-I1,	WR01-I2,							
WR02-G1,	WR02-G2,							
WR02-I1,	WR02-I2,							
WR03-G1,	WR03-G2,							
WR03-I1,	WR03-I2,							
WR04-G1,	WR04-G2,							
WR04-I1,	WR04-I2,							
WR05-G1,	WR05-G2,							
WR05-I1,	WR05-I2,							
QC1-G1,	QC1-G2,							
QC1-I1,	QC1-I2,							
QC2-G1,	QC2-G2,							
QC2-I1,	QC2-I2							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✗ = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type / *Analytical Methods*	*Method*	*Count* QC	Regular	*Rate (%)* **Actual**	**Expected**	*Evaluation*	*Quality Control Specification*
Laboratory Duplicates (DUP)							
Total Metals by ICP-AES	EG005T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✗ = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type / *Analytical Methods*	*Method*	*Count* QC	Regular	*Rate (%)* **Actual**	**Expected**	*Evaluation*	*Quality Control Specification*
Laboratory Duplicates (DUP)							
Dissolved Metals by ICP-AES	EG005F	0	28	**0.00**	**10.00**	✗	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Metals by ICP-AES	EG005F	4	28	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Metals by ICP-AES	EG005F	2	28	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Metals by ICP-AES	EG005F	0	28	**0.00**	**5.00**	✗	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-AES	EG005F	WATER	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. The ICPAES technique ionises the 0.45µm filtered samples, emitting a characteristic spectrum which is compared against matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)

QUALITY CONTROL REPORT

Work Order	: **EM1915195**		Page	: 1 of 6
Client	: **UNISA - CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION**		Laboratory	: Environmental Division Melbourne
Contact	: MR ALBERT JUHASZ		Contact	: Customer Services EM
Address	: UNIVERSITY OF SOUTH AUSTRALIA CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION BUILDING X MAWSON LAKES CAMPUS MAWSON LAKES SOUTH AUSTRALIA 5095		Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 08 8302 6273		Telephone	: +61-3-8549 9600
Project	: CBH BioAcc-3		Date Samples Received	: 13-Sep-2019
Order number	: ----		Date Analysis Commenced	: 18-Sep-2019
C-O-C number	: ----		Issue Date	: 20-Sep-2019
Sampler	: ALBERT JUHASZ			
Site	: ----			
Quote number	: ADBQ/011/10			
No. of samples received	: 84			
No. of samples analysed	: 84			

Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2589636)									
EM1915195-001	CBH01-2A	EG005T: Cadmium	7440-43-9	1	mg/kg	8	8	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	18	17	7.76	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	12	12	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	2140	2270	5.92	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	3390	3590	5.52	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	32000	30800	3.78	0% - 20%
EM1915195-010	CBH03-2B	EG005T: Cadmium	7440-43-9	1	mg/kg	9	7	33.4	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	14	14	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	11	10	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	3330	3040	9.22	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	5900	5600	5.19	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	26200	24700	5.68	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2589637)									
EM1915195-021	CBH06-2A	EG005T: Cadmium	7440-43-9	1	mg/kg	33	33	0.00	0% - 20%
		EG005T: Chromium	7440-47-3	2	mg/kg	10	13	24.4	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	76	77	1.35	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	6910	7740	11.3	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	5760	# 3960	37.1	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	20300	22800	11.6	0% - 20%
EM1915195-030	CBH08-2B	EG005T: Cadmium	7440-43-9	1	mg/kg	15	19	24.4	0% - 50%
		EG005T: Chromium	7440-47-3	2	mg/kg	12	14	17.6	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	52	77	38.4	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	4400	4680	6.10	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	4360	4680	7.16	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	21700	24400	11.6	0% - 20%

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2589638)									
EM1915195-041	CBH11-2A	EG005T: Cadmium	7440-43-9	1	mg/kg	30	28	7.30	0% - 20%
		EG005T: Chromium	7440-47-3	2	mg/kg	16	16	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	75	75	0.00	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	4210	4280	1.62	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	5440	5620	3.30	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	23900	23200	2.85	0% - 20%
EM1915195-050	CBH13-2B	EG005T: Cadmium	7440-43-9	1	mg/kg	8	8	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	13	13	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	128	134	4.99	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	7040	5840	18.7	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	3690	3750	1.51	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	28600	25700	11.0	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2589639)									
EM1915195-061	CBH16-2A	EG005T: Cadmium	7440-43-9	1	mg/kg	10	12	17.1	0% - 50%
		EG005T: Chromium	7440-47-3	2	mg/kg	12	14	12.9	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	121	126	3.84	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	5580	6640	17.4	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	6320	6640	4.83	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	21100	23800	12.2	0% - 20%
EM1915195-070	CBH18-2B	EG005T: Cadmium	7440-43-9	1	mg/kg	9	7	15.3	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	14	11	20.8	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	171	158	7.96	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	3840	4620	18.4	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	3950	3590	9.62	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	19600	17900	8.79	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2589640)									
EM1915195-081	CBH21-2A	EG005T: Cadmium	7440-43-9	1	mg/kg	15	13	13.6	0% - 50%
		EG005T: Chromium	7440-47-3	2	mg/kg	19	19	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	146	141	3.20	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	11200	13000	14.6	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	5050	4310	15.9	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	27800	29400	5.81	0% - 20%
EM1915198-006	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	53	55	2.76	0% - 20%
		EG005T: Chromium	7440-47-3	2	mg/kg	17	17	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	73	76	4.14	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	5600	5890	5.05	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	8540	8940	4.53	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	22700	23100	1.83	0% - 20%

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589636)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	89.1	78.5	107
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	86.7	76.2	108
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	83.5	77.7	110
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	99.3	83.5	112
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	83.7	78.4	106
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	96.4	80.6	110
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589637)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	94.6	78.5	107
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	89.4	76.2	108
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	97.6	77.7	110
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	99.2	83.5	112
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	90.7	78.4	106
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	99.3	80.6	110
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589638)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	93.8	78.5	107
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	88.5	76.2	108
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	96.8	77.7	110
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	98.9	83.5	112
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	91.1	78.4	106
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	99.1	80.6	110
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589639)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	95.0	78.5	107
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	88.2	76.2	108
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	82.7	77.7	110
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	100	83.5	112
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	87.8	78.4	106
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	91.5	80.6	110
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589640)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	97.7	78.5	107
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	90.1	76.2	108
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	86.1	77.7	110
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	102	83.5	112
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	91.7	78.4	106
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	94.3	80.6	110

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589636)							
EM1915195-002	CBH01-2B	EG005T: Arsenic	7440-38-2	50 mg/kg	92.3	78.0	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	84.4	84.0	116
		EG005T: Chromium	7440-47-3	50 mg/kg	79.5	79.0	121
		EG005T: Lead	7439-92-1	50 mg/kg	# Not Determined	76.0	124
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	68.0	136
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589637)							
EM1915195-022	CBH06-2B	EG005T: Arsenic	7440-38-2	50 mg/kg	105	78.0	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	98.3	84.0	116
		EG005T: Chromium	7440-47-3	50 mg/kg	93.7	79.0	121
		EG005T: Lead	7439-92-1	50 mg/kg	# Not Determined	76.0	124
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	68.0	136
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589638)							
EM1915195-042	CBH11-2B	EG005T: Arsenic	7440-38-2	50 mg/kg	106	78.0	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	92.2	84.0	116
		EG005T: Chromium	7440-47-3	50 mg/kg	93.1	79.0	121
		EG005T: Lead	7439-92-1	50 mg/kg	# Not Determined	76.0	124
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	68.0	136
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589639)							
EM1915195-062	CBH16-2B	EG005T: Arsenic	7440-38-2	50 mg/kg	112	78.0	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	90.1	84.0	116
		EG005T: Chromium	7440-47-3	50 mg/kg	91.6	79.0	121
		EG005T: Lead	7439-92-1	50 mg/kg	# Not Determined	76.0	124
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	68.0	136
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589640)							
EM1915195-082	CBH21-2B	EG005T: Arsenic	7440-38-2	50 mg/kg	95.5	78.0	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	85.2	84.0	116

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589640) - continued							
EM1915195-082	CBH21-2B	EG005T: Chromium	7440-47-3	50 mg/kg	83.5	79.0	121
		EG005T: Lead	7439-92-1	50 mg/kg	# Not Determined	76.0	124
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	68.0	136

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1915195**	Page	: 1 of 7
Client	: **UNISA - CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION**	Laboratory	: Environmental Division Melbourne
Contact	: MR ALBERT JUHASZ	Telephone	: +61-3-8549 9600
Project	: CBH BioAcc-3	Date Samples Received	: 13-Sep-2019
Site	: ----	Issue Date	: 20-Sep-2019
Sampler	: ALBERT JUHASZ	No. of samples received	: 84
Order number	: ----	No. of samples analysed	: 84

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Duplicate outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005(ED093)T: Total Metals by ICP-AES	EM1915195--021	CBH06-2A	**Manganese**	7439-96-5	37.1 %	0% - 20%	**RPD exceeds LOR based limits**
Matrix Spike (MS) Recoveries							
EG005(ED093)T: Total Metals by ICP-AES	EM1915195--002	CBH01-2B	**Lead**	7439-92-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005(ED093)T: Total Metals by ICP-AES	EM1915195--022	CBH06-2B	**Lead**	7439-92-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005(ED093)T: Total Metals by ICP-AES	EM1915195--042	CBH11-2B	**Lead**	7439-92-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005(ED093)T: Total Metals by ICP-AES	EM1915195--062	CBH16-2B	**Lead**	7439-92-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005(ED093)T: Total Metals by ICP-AES	EM1915195--082	CBH21-2B	**Lead**	7439-92-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005(ED093)T: Total Metals by ICP-AES	EM1915195--002	CBH01-2B	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005(ED093)T: Total Metals by ICP-AES	EM1915195--022	CBH06-2B	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005(ED093)T: Total Metals by ICP-AES	EM1915195--042	CBH11-2B	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005(ED093)T: Total Metals by ICP-AES	EM1915195--062	CBH16-2B	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005(ED093)T: Total Metals by ICP-AES	EM1915195--082	CBH21-2B	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005(ED093)T: Total Metals by ICP-AES							
Miscellaneous Plastic Container (EG005T)							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005(ED093)T: Total Metals by ICP-AES - Continued								
CBH01-2A,	CBH01-2B,	**12-Sep-2019**	**18-Sep-2019**	10-Mar-2020	✓	**18-Sep-2019**	10-Mar-2020	✓
CBH01-250A,	CBH01-250B,							
CBH02-2A,	CBH02-2B,							
CBH02-250A,	CBH02-250B,							
CBH03-2A,	CBH03-2B,							
CBH03-250A,	CBH03-250B,							
CBH04-2A,	CBH04-2B,							
CBH04-250A,	CBH04-250B,							
CBH05-2A,	CBH05-2B,							
CBH05-250A,	CBH05-250B,							
CBH06-2A,	CBH06-2B,							
CBH06-250A,	CBH06-250B,							
CBH07-2A,	CBH07-2B,							
CBH07-250A,	CBH07-250B,							
CBH08-2A,	CBH08-2B,							
CBH08-250A,	CBH08-250B,							
CBH09-2A,	CBH09-2B,							
CBH09-250A,	CBH09-250B,							
CBH10-2A,	CBH10-2B,							
CBH10-250A,	CBH10-250B,							
CBH11-2A,	CBH11-2B,							
CBH11-250A,	CBH11-250B,							
CBH12-2A,	CBH12-2B,							
CBH12-250A,	CBH12-250B,							
CBH13-2A,	CBH13-2B,							
CBH13-250A,	CBH13-250B,							
CBH14-2A,	CBH14-2B,							
CBH14-250A,	CBH14-250B,							
CBH15-2A,	CBH15-2B,							
CBH15-250A,	CBH15-250B,							
CBH16-2A,	CBH16-2B,							
CBH16-250A,	CBH16-250B,							
CBH17-2A,	CBH17-2B,							
CBH17-250A,	CBH17-250B,							
CBH18-2A,	CBH18-2B,							
CBH18-250A,	CBH18-250B,							
CBH19-2A,	CBH19-2B,							
CBH19-250A,	CBH19-250B,							
CBH20-2A,	CBH20-2B,							
CBH20-250A,	CBH20-250B,							
CBH21-2A,	CBH21-2B,							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005(ED093)T: Total Metals by ICP-AES - Continued							
CBH21-250A, CBH21-250B							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Total Metals by ICP-AES	EG005T	10	100	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Metals by ICP-AES	EG005T	5	100	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Metals by ICP-AES	EG005T	5	100	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Metals by ICP-AES	EG005T	5	100	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1915198**	Page	: 1 of 4
Client	: **UNISA - CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION**	Laboratory	: Environmental Division Melbourne
Contact	: MR ALBERT JUHASZ	Contact	: Customer Services EM
Address	: UNIVERSITY OF SOUTH AUSTRALIA CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION BUILDING X MAWSON LAKES CAMPUS MAWSON LAKES SOUTH AUSTRALIA 5095	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 08 8302 6273	Telephone	: +61-3-8549 9600
Project	: CBH BioAcc-3	Date Samples Received	: 13-Sep-2019
Order number	: ----	Date Analysis Commenced	: 17-Sep-2019
C-O-C number	: ----	Issue Date	: 20-Sep-2019
Sampler	: ALBERT JUHASZ		
Site	: ----		
Quote number	: ADBQ/011/10		
No. of samples received	: 84		
No. of samples analysed	: 84		

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Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2589640)									
EM1915195-081	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	15	13	13.6	0% - 50%
		EG005T: Chromium	7440-47-3	2	mg/kg	19	19	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	146	141	3.20	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	11200	13000	14.6	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	5050	4310	15.9	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	27800	29400	5.81	0% - 20%
EM1915198-006	CBH23-2B	EG005T: Cadmium	7440-43-9	1	mg/kg	53	55	2.76	0% - 20%
		EG005T: Chromium	7440-47-3	2	mg/kg	17	17	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	73	76	4.14	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	5600	5890	5.05	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	8540	8940	4.53	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	22700	23100	1.83	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2589641)									
EM1915198-017	CBH26-2A	EG005T: Cadmium	7440-43-9	1	mg/kg	37	40	6.54	0% - 20%
		EG005T: Chromium	7440-47-3	2	mg/kg	18	14	20.8	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	75	72	3.10	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	6070	6350	4.47	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	5220	5380	3.02	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	20700	21300	2.72	0% - 20%
EM1915198-026	CBH28-2B	EG005T: Cadmium	7440-43-9	1	mg/kg	81	84	3.14	0% - 20%
		EG005T: Chromium	7440-47-3	2	mg/kg	11	9	22.9	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	200	189	5.39	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	18400	20300	9.84	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	33000	34100	3.00	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	38400	38100	0.810	0% - 20%

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589640)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	97.7	78.5	107
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	90.1	76.2	108
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	86.1	77.7	110
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	102	83.5	112
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	91.7	78.4	106
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	94.3	80.6	110
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589641)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	93.9	78.5	107
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	88.4	76.2	108
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	98.6	77.7	110
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	103	83.5	112
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	91.0	78.4	106
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	99.4	80.6	110

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)F: Dissolved Metals by ICP-AES (QCLot: 2588506)								
EG005F: Arsenic	7440-38-2	0.01	mg/L	<0.01	1 mg/L	102	82.0	114
EG005F: Cadmium	7440-43-9	0.005	mg/L	<0.005	1 mg/L	100.0	90.2	115
EG005F: Chromium	7440-47-3	0.01	mg/L	<0.01	1 mg/L	97.8	88.0	112
EG005F: Iron	7439-89-6	0.05	mg/L	<0.05	1 mg/L	97.2	85.0	119
EG005F: Lead	7439-92-1	0.01	mg/L	<0.01	1 mg/L	100	84.0	111
EG005F: Manganese	7439-96-5	0.01	mg/L	<0.01	1 mg/L	104	89.4	117
EG005(ED093)F: Dissolved Metals by ICP-AES (QCLot: 2588507)								
EG005F: Arsenic	7440-38-2	0.01	mg/L	<0.01	1 mg/L	102	82.0	114
EG005F: Cadmium	7440-43-9	0.005	mg/L	<0.005	1 mg/L	106	90.2	115
EG005F: Chromium	7440-47-3	0.01	mg/L	<0.01	1 mg/L	104	88.0	112
EG005F: Iron	7439-89-6	0.05	mg/L	<0.05	1 mg/L	96.9	85.0	119
EG005F: Lead	7439-92-1	0.01	mg/L	<0.01	1 mg/L	100.0	84.0	111
EG005F: Manganese	7439-96-5	0.01	mg/L	<0.01	1 mg/L	111	89.4	117
EG005(ED093)F: Dissolved Metals by ICP-AES (QCLot: 2588508)								
EG005F: Arsenic	7440-38-2	0.01	mg/L	<0.01	1 mg/L	102	82.0	114
EG005F: Cadmium	7440-43-9	0.005	mg/L	<0.005	1 mg/L	107	90.2	115
EG005F: Chromium	7440-47-3	0.01	mg/L	<0.01	1 mg/L	105	88.0	112

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EG005(ED093)F: Dissolved Metals by ICP-AES (QCLot: 2588508) - continued								
EG005F: Iron	7439-89-6	0.05	mg/L	<0.05	1 mg/L	97.1	85.0	119
EG005F: Lead	7439-92-1	0.01	mg/L	<0.01	1 mg/L	100.0	84.0	111
EG005F: Manganese	7439-96-5	0.01	mg/L	<0.01	1 mg/L	112	89.4	117

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	Recovery Limits (%) High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589640)							
EM1915195-082	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	95.5	78.0	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	85.2	84.0	116
		EG005T: Chromium	7440-47-3	50 mg/kg	83.5	79.0	121
		EG005T: Lead	7439-92-1	50 mg/kg	# Not Determined	76.0	124
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	68.0	136
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589641)							
EM1915198-018	CBH26-2B	EG005T: Arsenic	7440-38-2	50 mg/kg	97.5	78.0	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	92.6	84.0	116
		EG005T: Chromium	7440-47-3	50 mg/kg	86.6	79.0	121
		EG005T: Lead	7439-92-1	50 mg/kg	# Not Determined	76.0	124
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	68.0	136

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1915198	Page	: 1 of 6
Client	: UNISA - CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION	Laboratory	: Environmental Division Melbourne
Contact	: MR ALBERT JUHASZ	Telephone	: +61-3-8549 9600
Project	: CBH BioAcc-3	Date Samples Received	: 13-Sep-2019
Site	: ----	Issue Date	: 20-Sep-2019
Sampler	: ALBERT JUHASZ	No. of samples received	: 84
Order number	: ----	No. of samples analysed	: 84

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG005(ED093)T: Total Metals by ICP-AES	EM1915195--082	Anonymous	**Lead**	7439-92-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005(ED093)T: Total Metals by ICP-AES	EM1915198--018	CBH26-2B	**Lead**	7439-92-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005(ED093)T: Total Metals by ICP-AES	EM1915195--082	Anonymous	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005(ED093)T: Total Metals by ICP-AES	EM1915198--018	CBH26-2B	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Dissolved Metals by ICP-AES	0	48	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Dissolved Metals by ICP-AES	0	48	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method	***Sample Date***	*Extraction / Preparation*			*Analysis*		
Container */ Client Sample ID(s)*		***Date extracted***	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005(ED093)T: Total Metals by ICP-AES								
Miscellaneous Plastic Container (EG005T)								
CBH22-2A,	CBH22-2B,	**12-Sep-2019**	**18-Sep-2019**	10-Mar-2020	✓	**18-Sep-2019**	10-Mar-2020	✓
CBH22-250A,	CBH22-250B,							
CBH23-2A,	CBH23-2B,							
CBH23-250A,	CBH23-250B,							
CBH24-2A,	CBH24-2B,							
CBH24-250A,	CBH24-250B,							
CBH25-2A,	CBH25-2B,							
CBH25-250A,	CBH25-250B,							
CBH26-2A,	CBH26-2B,							
CBH26-250A,	CBH26-250B,							
CBH27-2A,	CBH27-2B,							
CBH27-250A,	CBH27-250B,							
CBH28-2A,	CBH28-2B,							
CBH28-250A,	CBH28-250B,							
CBH29-2A,	CBH29-2B,							
CBH29-250A,	CBH29-250B,							
CBH30-2A,	CBH30-2B,							
CBH30-250A,	CBH30-250B							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005(ED093)F: Dissolved Metals by ICP-AES							
Miscellaneous Plastic Container (EG005F)							
CBH01-G1, CBH01-G2, CBH01-I1, CBH01-I2, CBH02-G1, CBH02-G2, CBH02-I1, CBH02-I2, CBH03-G1, CBH03-G2, CBH03-I1, CBH03-I2, CBH04-G1, CBH04-G2, CBH04-I1, CBH04-I2, CBH05-G1, CBH05-G2, CBH05-I1, CBH05-I2, CBH06-G1, CBH06-G2, CBH06-I1, CBH06-I2, CBH07-G1, CBH07-G2, CBH07-I1, CBH07-I2, CBH08-G1, CBH08-G2, CBH08-I1, CBH08-I2, CBH09-G1, CBH09-G2, CBH09-I1, CBH09-I2, CBH10-G1, CBH10-G2, CBH10-I1, CBH10-I2, CBH11-G1, CBH11-G2, CBH11-I1, CBH11-I2, CBH12-G1, CBH12-G2, CBH12-I1, CBH12-I2	**12-Sep-2019**	----	----	----	**17-Sep-2019**	10-Mar-2020	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✗ = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type / *Analytical Methods*	*Method*	*Count* QC	*Count* Regular	*Rate (%)* Actual	*Rate (%)* Expected	Evaluation	*Quality Control Specification*
Laboratory Duplicates (DUP)							
Total Metals by ICP-AES	EG005T	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Metals by ICP-AES	EG005T	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Metals by ICP-AES	EG005T	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Metals by ICP-AES	EG005T	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✗ = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type / *Analytical Methods*	*Method*	*Count* QC	*Count* Regular	*Rate (%)* Actual	*Rate (%)* Expected	Evaluation	*Quality Control Specification*
Laboratory Duplicates (DUP)							
Dissolved Metals by ICP-AES	EG005F	0	48	**0.00**	**10.00**	✗	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Metals by ICP-AES	EG005F	6	48	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Metals by ICP-AES	EG005F	3	48	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Metals by ICP-AES	EG005F	0	48	**0.00**	**5.00**	✗	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-AES	EG005F	WATER	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. The ICPAES technique ionises the 0.45µm filtered samples, emitting a characteristic spectrum which is compared against matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1915200**	Page	: 1 of 3
Client	: **UNISA - CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION**	Laboratory	: Environmental Division Melbourne
Contact	: MR ALBERT JUHASZ	Contact	: Customer Services EM
Address	: UNIVERSITY OF SOUTH AUSTRALIA CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION BUILDING X MAWSON LAKES CAMPUS MAWSON LAKES SOUTH AUSTRALIA 5095	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 08 8302 6273	Telephone	: +61-3-8549 9600
Project	: CBH BioAcc-3	Date Samples Received	: 13-Sep-2019
Order number	: ----	Date Analysis Commenced	: 18-Sep-2019
C-O-C number	: ----	Issue Date	: 19-Sep-2019
Sampler	: ALBERT JUHASZ		
Site	: ----		
Quote number	: ADBQ/011/10		
No. of samples received	: 80		
No. of samples analysed	: 80		

NATA

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Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)F: Dissolved Metals by ICP-AES (QCLot: 2588955)								
EG005F: Arsenic	7440-38-2	0.01	mg/L	<0.01	1 mg/L	106	82.0	114
EG005F: Cadmium	7440-43-9	0.005	mg/L	<0.005	1 mg/L	105	90.2	115
EG005F: Chromium	7440-47-3	0.01	mg/L	<0.01	1 mg/L	103	88.0	112
EG005F: Iron	7439-89-6	0.05	mg/L	<0.05	1 mg/L	102	85.0	119
EG005F: Lead	7439-92-1	0.01	mg/L	<0.01	1 mg/L	105	84.0	111
EG005F: Manganese	7439-96-5	0.01	mg/L	<0.01	1 mg/L	110	89.4	117
EG005(ED093)F: Dissolved Metals by ICP-AES (QCLot: 2588956)								
EG005F: Arsenic	7440-38-2	0.01	mg/L	<0.01	1 mg/L	103	82.0	114
EG005F: Cadmium	7440-43-9	0.005	mg/L	<0.005	1 mg/L	102	90.2	115
EG005F: Chromium	7440-47-3	0.01	mg/L	<0.01	1 mg/L	100	88.0	112
EG005F: Iron	7439-89-6	0.05	mg/L	<0.05	1 mg/L	99.8	85.0	119
EG005F: Lead	7439-92-1	0.01	mg/L	<0.01	1 mg/L	103	84.0	111
EG005F: Manganese	7439-96-5	0.01	mg/L	<0.01	1 mg/L	107	89.4	117
EG005(ED093)F: Dissolved Metals by ICP-AES (QCLot: 2588958)								
EG005F: Arsenic	7440-38-2	0.01	mg/L	<0.01	1 mg/L	102	82.0	114
EG005F: Cadmium	7440-43-9	0.005	mg/L	<0.005	1 mg/L	104	90.2	115
EG005F: Chromium	7440-47-3	0.01	mg/L	<0.01	1 mg/L	102	88.0	112
EG005F: Iron	7439-89-6	0.05	mg/L	<0.05	1 mg/L	98.6	85.0	119
EG005F: Lead	7439-92-1	0.01	mg/L	<0.01	1 mg/L	102	84.0	111
EG005F: Manganese	7439-96-5	0.01	mg/L	<0.01	1 mg/L	108	89.4	117
EG005(ED093)F: Dissolved Metals by ICP-AES (QCLot: 2588959)								
EG005F: Arsenic	7440-38-2	0.01	mg/L	<0.01	1 mg/L	103	82.0	114
EG005F: Cadmium	7440-43-9	0.005	mg/L	<0.005	1 mg/L	106	90.2	115
EG005F: Chromium	7440-47-3	0.01	mg/L	<0.01	1 mg/L	104	88.0	112
EG005F: Iron	7439-89-6	0.05	mg/L	<0.05	1 mg/L	99.1	85.0	119
EG005F: Lead	7439-92-1	0.01	mg/L	<0.01	1 mg/L	102	84.0	111
EG005F: Manganese	7439-96-5	0.01	mg/L	<0.01	1 mg/L	110	89.4	117

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1915200**	Page	: 1 of 5
Client	: **UNISA - CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION**	Laboratory	: Environmental Division Melbourne
Contact	: MR ALBERT JUHASZ	Telephone	: +61-3-8549 9600
Project	: CBH BioAcc-3	Date Samples Received	: 13-Sep-2019
Site	: ----	Issue Date	: 19-Sep-2019
Sampler	: ALBERT JUHASZ	No. of samples received	: 80
Order number	: ----	No. of samples analysed	: 80

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Dissolved Metals by ICP-AES	0	80	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Dissolved Metals by ICP-AES	0	80	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method	*Sample Date*	*Extraction / Preparation*			*Analysis*		
Container / Client Sample ID(s)		***Date extracted***	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*
EG005(ED093)F: Dissolved Metals by ICP-AES							
Miscellaneous Plastic Container (EG005F)							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation: Date extracted	Due for extraction	Evaluation	Analysis: Date analysed	Due for analysis	Evaluation
EG005(ED093)F: Dissolved Metals by ICP-AES - Continued								
CBH13-G1,	CBH13-G2,	**12-Sep-2019**	**----**	----	----	**18-Sep-2019**	10-Mar-2020	✓
CBH13-I1,	CBH13-I2,							
CBH14-G1,	CBH14-G2,							
CBH14-I1,	CBH14-I2,							
CBH15-G1,	CBH15-G2,							
CBH15-I1,	CBH15-I2,							
CBH16-G1,	CBH16-G2,							
CBH16-I1,	CBH16-I2,							
CBH17-G1,	CBH17-G2,							
CBH17-I1,	CBH17-I2,							
CBH18-G1,	CBH18-G2,							
CBH18-I1,	CBH18-I2,							
CBH19-G1,	CBH19-G2,							
CBH19-I1,	CBH19-I2,							
CBH20-G1,	CBH20-G2,							
CBH20-I1,	CBH20-I2,							
CBH21-G1,	CBH21-G2,							
CBH21-I1,	CBH21-I2,							
CBH22-G1,	CBH22-G2,							
CBH22-I1,	CBH22-I2,							
CBH23-G1,	CBH23-G2,							
CBH23-I1,	CBH23-I2,							
CBH24-G1,	CBH24-G2,							
CBH24-I1,	CBH24-I2,							
CBH25-G1,	CBH25-G2,							
CBH25-I1,	CBH25-I2,							
CBH26-G1,	CBH26-G2,							
CBH26-I1,	CBH26-I2,							
CBH27-G1,	CBH27-G2,							
CBH27-I1,	CBH27-I2,							
CBH28-G1,	CBH28-G2,							
CBH28-I1,	CBH28-I2,							
CBH29-G1,	CBH29-G2,							
CBH29-I1,	CBH29-I2,							
CBH30-G1,	CBH30-G2,							
CBH30-I1,	CBH30-I2,							
QC1-G1,	QC1-G2,							
QC1-I1,	QC1-I2,							
QC2-G1,	QC2-G2,							
QC2-I1,	QC2-I2							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✗ = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Metals by ICP-AES	EG005F	0	80	**0.00**	**10.00**	✗	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Metals by ICP-AES	EG005F	8	80	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Metals by ICP-AES	EG005F	4	80	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Metals by ICP-AES	EG005F	0	80	**0.00**	**5.00**	✗	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Dissolved Metals by ICP-AES	EG005F	WATER	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. The ICPAES technique ionises the 0.45µm filtered samples, emitting a characteristic spectrum which is compared against matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1915317**	Page	: 1 of 6
Client	: **UNISA - CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION**	Laboratory	: Environmental Division Melbourne
Contact	: MR ALBERT JUHASZ	Contact	: Customer Services EM
Address	: UNIVERSITY OF SOUTH AUSTRALIA CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION BUILDING X MAWSON LAKES CAMPUS MAWSON LAKES SOUTH AUSTRALIA 5095	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 08 8302 6273	Telephone	: +61-3-8549 9600
Project	: CBH BioAcc-1	Date Samples Received	: 13-Sep-2019
Order number	: ----	Date Analysis Commenced	: 18-Sep-2019
C-O-C number	: ----	Issue Date	: 20-Sep-2019
Sampler	: AJ		
Site	: ----		
Quote number	: ADBQ/011/10		
No. of samples received	: 84		
No. of samples analysed	: 84		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2589642)									
EM1915317-001	BHS01-2A	EG005T: Cadmium	7440-43-9	1	mg/kg	2	2	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	19	17	14.9	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	134	151	12.2	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	245	242	1.17	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	20700	17900	14.1	0% - 20%
EM1915317-010	BHS03-2B	EG005T: Cadmium	7440-43-9	1	mg/kg	9	8	14.5	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	22	22	0.00	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	13	13	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	656	765	15.4	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	836	802	4.11	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	27600	27000	2.34	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2589656)									
EM1915317-021	BHS06-2A	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12	12	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	9	24.1	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	88	100	13.8	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	184	176	4.15	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	15000	15000	0.0675	0% - 20%
EM1915317-030	BHS08-2B	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	9	11	23.7	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	90	104	14.5	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	154	154	0.00	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	11100	10600	4.64	0% - 20%

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2589657)									
EM1915317-041	BHS11-2A	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	11	15	28.5	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	94	110	15.0	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	224	195	13.8	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	15400	16300	6.20	0% - 20%
EM1915317-050	BHS13-2B	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	21	22	0.00	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	14	19	26.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	145	158	8.89	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	409	443	8.07	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	27700	28500	2.59	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2589713)									
EM1915317-061	BHS16-2A	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12	12	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	6	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	306	314	2.80	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	355	341	3.86	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	14700	13800	6.55	0% - 20%
EM1915317-070	BHS18-2B	EG005T: Cadmium	7440-43-9	1	mg/kg	2	2	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	11	12	10.7	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	316	348	9.43	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	236	265	11.4	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	14300	15000	4.74	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2589714)									
EM1915317-081	BHS21-2A	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	30	32	6.69	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	6	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	283	291	2.82	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	244	212	14.0	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	26400	26800	1.55	0% - 20%

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589642)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	94.9	78.5	107
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	87.9	76.2	108
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	98.8	77.7	110
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	103	83.5	112
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	92.7	78.4	106
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	99.7	80.6	110
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589656)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	98.2	78.5	107
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	92.7	76.2	108
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	104	77.7	110
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	112	83.5	112
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	95.9	78.4	106
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	100	80.6	110
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589657)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	94.2	78.5	107
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	91.5	76.2	108
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	102	77.7	110
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	110	83.5	112
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	94.5	78.4	106
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	99.0	80.6	110
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589713)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	99.6	78.5	107
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	95.5	76.2	108
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	100	77.7	110
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	98.9	83.5	112
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	96.4	78.4	106
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	102	80.6	110
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589714)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	96.1	78.5	107
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	93.3	76.2	108
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	98.2	77.7	110
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	97.4	83.5	112
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	94.6	78.4	106
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	100	80.6	110

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589642)							
EM1915317-002	BHS01-2B	EG005T: Arsenic	7440-38-2	50 mg/kg	96.2	78.0	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	86.2	84.0	116
		EG005T: Chromium	7440-47-3	50 mg/kg	85.5	79.0	121
		EG005T: Lead	7439-92-1	50 mg/kg	# Not Determined	76.0	124
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	68.0	136
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589656)							
EM1915317-022	BHS06-2B	EG005T: Arsenic	7440-38-2	50 mg/kg	96.6	78.0	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.4	84.0	116
		EG005T: Chromium	7440-47-3	50 mg/kg	99.8	79.0	121
		EG005T: Lead	7439-92-1	50 mg/kg	103	76.0	124
		EG005T: Manganese	7439-96-5	50 mg/kg	108	68.0	136
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589657)							
EM1915317-042	BHS11-2B	EG005T: Arsenic	7440-38-2	50 mg/kg	101	78.0	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.1	84.0	116
		EG005T: Chromium	7440-47-3	50 mg/kg	96.5	79.0	121
		EG005T: Lead	7439-92-1	50 mg/kg	89.9	76.0	124
		EG005T: Manganese	7439-96-5	50 mg/kg	87.7	68.0	136
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589713)							
EM1915317-062	BHS16-2B	EG005T: Arsenic	7440-38-2	50 mg/kg	99.8	78.0	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	95.3	84.0	116
		EG005T: Chromium	7440-47-3	50 mg/kg	94.2	79.0	121
		EG005T: Lead	7439-92-1	50 mg/kg	# Not Determined	76.0	124
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	68.0	136
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589714)							
EM1915317-082	BHS21-2B	EG005T: Arsenic	7440-38-2	50 mg/kg	96.3	78.0	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.7	84.0	116
		EG005T: Chromium	7440-47-3	50 mg/kg	87.5	79.0	121
		EG005T: Lead	7439-92-1	50 mg/kg	# Not Determined	76.0	124

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2589714) - continued							
EM1915317-082	BHS21-2B	EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	68.0	136

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1915317**	Page	: 1 of 6
Client	: **UNISA - CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION**	Laboratory	: Environmental Division Melbourne
Contact	: MR ALBERT JUHASZ	Telephone	: +61-3-8549 9600
Project	: CBH BioAcc-1	Date Samples Received	: 13-Sep-2019
Site	: ----	Issue Date	: 20-Sep-2019
Sampler	: AJ	No. of samples received	: 84
Order number	: ----	No. of samples analysed	: 84

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG005(ED093)T: Total Metals by ICP-AES	EM1915317--002	BHS01-2B	**Lead**	7439-92-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005(ED093)T: Total Metals by ICP-AES	EM1915317--062	BHS16-2B	**Lead**	7439-92-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005(ED093)T: Total Metals by ICP-AES	EM1915317--082	BHS21-2B	**Lead**	7439-92-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005(ED093)T: Total Metals by ICP-AES	EM1915317--002	BHS01-2B	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005(ED093)T: Total Metals by ICP-AES	EM1915317--062	BHS16-2B	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005(ED093)T: Total Metals by ICP-AES	EM1915317--082	BHS21-2B	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method	*Sample Date*	*Extraction / Preparation*			*Analysis*		
Container / Client Sample ID(s)		*Date extracted*	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005(ED093)T: Total Metals by ICP-AES								
Miscellaneous Plastic Container (EG005T)								
BHS01-2A,	BHS01-2B,	**12-Sep-2019**	**18-Sep-2019**	10-Mar-2020	✓	**18-Sep-2019**	10-Mar-2020	✓
BHS01-250A,	BHS01-250B,							
BHS02-2A,	BHS02-2B,							
BHS02-250A,	BHS02-250B,							
BHS03-2A,	BHS03-2B,							
BHS03-250A,	BHS03-250B,							
BHS04-2A,	BHS04-2B,							
BHS04-250A,	BHS04-250B,							
BHS05-2A,	BHS05-2B,							
BHS05-250A,	BHS05-250B							
Miscellaneous Plastic Container (EG005T)								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005(ED093)T: Total Metals by ICP-AES - Continued								
BHS06-2A,	BHS06-2B,	**12-Sep-2019**	**18-Sep-2019**	10-Mar-2020	✓	**19-Sep-2019**	10-Mar-2020	✓
BHS06-250A,	BHS06-250B,							
BHS07-2A,	BHS07-2B,							
BHS07-250A,	BHS07-250B,							
BHS08-2A,	BHS08-2B,							
BHS08-250A,	BHS08-250B,							
BHS09-2A,	BHS09-2B,							
BHS09-250A,	BHS09-250B,							
BHS10-2A,	BHS10-2B,							
BHS10-250A,	BHS10-250B,							
BHS11-2A,	BHS11-2B,							
BHS11-250A,	BHS11-250B,							
BHS12-2A,	BHS12-2B,							
BHS12-250A,	BHS12-250B,							
BHS13-2A,	BHS13-2B,							
BHS13-250A,	BHS13-250B,							
BHS14-2A,	BHS14-2B,							
BHS14-250A,	BHS14-250B,							
BHS15-2A,	BHS15-2B,							
BHS15-250A,	BHS15-250B,							
BHS16-2A,	BHS16-2B,							
BHS16-250A,	BHS16-250B,							
BHS17-2A,	BHS17-2B,							
BHS17-250A,	BHS17-250B,							
BHS18-2A,	BHS18-2B,							
BHS18-250A,	BHS18-250B,							
BHS19-2A,	BHS19-2B,							
BHS19-250A,	BHS19-250B,							
BHS20-2A,	BHS20-2B,							
BHS20-250A,	BHS20-250B,							
BHS21-2A,	BHS21-2B,							
BHS21-250A,	BHS21-250B							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Total Metals by ICP-AES	EG005T	9	84	**10.71**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Metals by ICP-AES	EG005T	5	84	**5.95**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Metals by ICP-AES	EG005T	5	84	**5.95**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Metals by ICP-AES	EG005T	5	84	**5.95**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1915325**	Page	: 1 of 4
Client	: **UNISA - CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION**	Laboratory	: Environmental Division Melbourne
Contact	: MR ALBERT JUHASZ	Contact	: Customer Services EM
Address	: UNIVERSITY OF SOUTH AUSTRALIA CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION BUILDING X MAWSON LAKES CAMPUS MAWSON LAKES SOUTH AUSTRALIA 5095	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 08 8302 6273	Telephone	: +61-3-8549 9600
Project	: CBH BioAcc-1	Date Samples Received	: 13-Sep-2019
Order number	: ----	Date Analysis Commenced	: 18-Sep-2019
C-O-C number	: ----	Issue Date	: 20-Sep-2019
Sampler	: AJ		
Site	: ----		
Quote number	: ADBQ/011/10		
No. of samples received	: 92		
No. of samples analysed	: 92		

ilac-MRA NATA

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)F: Dissolved Metals by ICP-AES (QCLot: 2588965)								
EG005F: Arsenic	7440-38-2	0.01	mg/L	<0.01	1 mg/L	105	82.0	114
EG005F: Cadmium	7440-43-9	0.005	mg/L	<0.005	1 mg/L	106	90.2	115
EG005F: Chromium	7440-47-3	0.01	mg/L	<0.01	1 mg/L	105	88.0	112
EG005F: Iron	7439-89-6	0.05	mg/L	<0.05	1 mg/L	100	85.0	119
EG005F: Lead	7439-92-1	0.01	mg/L	<0.01	1 mg/L	103	84.0	111
EG005F: Manganese	7439-96-5	0.01	mg/L	<0.01	1 mg/L	111	89.4	117
EG005(ED093)F: Dissolved Metals by ICP-AES (QCLot: 2588966)								
EG005F: Arsenic	7440-38-2	0.01	mg/L	<0.01	1 mg/L	103	82.0	114
EG005F: Cadmium	7440-43-9	0.005	mg/L	<0.005	1 mg/L	103	90.2	115
EG005F: Chromium	7440-47-3	0.01	mg/L	<0.01	1 mg/L	101	88.0	112
EG005F: Iron	7439-89-6	0.05	mg/L	<0.05	1 mg/L	98.2	85.0	119
EG005F: Lead	7439-92-1	0.01	mg/L	<0.01	1 mg/L	101	84.0	111
EG005F: Manganese	7439-96-5	0.01	mg/L	<0.01	1 mg/L	108	89.4	117
EG005(ED093)F: Dissolved Metals by ICP-AES (QCLot: 2588967)								
EG005F: Arsenic	7440-38-2	0.01	mg/L	<0.01	1 mg/L	103	82.0	114
EG005F: Cadmium	7440-43-9	0.005	mg/L	<0.005	1 mg/L	104	90.2	115
EG005F: Chromium	7440-47-3	0.01	mg/L	<0.01	1 mg/L	102	88.0	112
EG005F: Iron	7439-89-6	0.05	mg/L	<0.05	1 mg/L	98.3	85.0	119
EG005F: Lead	7439-92-1	0.01	mg/L	<0.01	1 mg/L	102	84.0	111
EG005F: Manganese	7439-96-5	0.01	mg/L	<0.01	1 mg/L	108	89.4	117
EG005(ED093)F: Dissolved Metals by ICP-AES (QCLot: 2588968)								
EG005F: Arsenic	7440-38-2	0.01	mg/L	<0.01	1 mg/L	103	82.0	114
EG005F: Cadmium	7440-43-9	0.005	mg/L	<0.005	1 mg/L	103	90.2	115
EG005F: Chromium	7440-47-3	0.01	mg/L	<0.01	1 mg/L	101	88.0	112
EG005F: Iron	7439-89-6	0.05	mg/L	<0.05	1 mg/L	98.2	85.0	119
EG005F: Lead	7439-92-1	0.01	mg/L	<0.01	1 mg/L	102	84.0	111
EG005F: Manganese	7439-96-5	0.01	mg/L	<0.01	1 mg/L	107	89.4	117
EG005(ED093)F: Dissolved Metals by ICP-AES (QCLot: 2588969)								
EG005F: Arsenic	7440-38-2	0.01	mg/L	<0.01	1 mg/L	104	82.0	114
EG005F: Cadmium	7440-43-9	0.005	mg/L	<0.005	1 mg/L	103	90.2	115
EG005F: Chromium	7440-47-3	0.01	mg/L	<0.01	1 mg/L	101	88.0	112
EG005F: Iron	7439-89-6	0.05	mg/L	<0.05	1 mg/L	98.4	85.0	119
EG005F: Lead	7439-92-1	0.01	mg/L	<0.01	1 mg/L	102	84.0	111
EG005F: Manganese	7439-96-5	0.01	mg/L	<0.01	1 mg/L	108	89.4	117

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1915325**	Page	: 1 of 6
Client	: **UNISA - CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION**	Laboratory	: Environmental Division Melbourne
Contact	: MR ALBERT JUHASZ	Telephone	: +61-3-8549 9600
Project	: CBH BioAcc-1	Date Samples Received	: 13-Sep-2019
Site	: ----	Issue Date	: 20-Sep-2019
Sampler	: AJ	No. of samples received	: 92
Order number	: ----	No. of samples analysed	: 92

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
Dissolved Metals by ICP-AES	0	92	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Dissolved Metals by ICP-AES	0	92	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / ***Container*** / *Client Sample ID(s)*	***Sample Date***	*Extraction / Preparation* ***Date extracted***	*Due for extraction*	*Evaluation*	*Analysis* ***Date analysed***	*Due for analysis*	*Evaluation*
EG005(ED093)F: Dissolved Metals by ICP-AES							
Miscellaneous Plastic Container (EG005F)							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation: Date extracted	Due for extraction	Evaluation	Analysis: Date analysed	Due for analysis	Evaluation
EG005(ED093)F: Dissolved Metals by ICP-AES - Continued								
BHS01-G1,	BHS01-G2,	**12-Sep-2019**	**----**	----	----	**18-Sep-2019**	10-Mar-2020	✓
BHS01-I1,	BHS01-I2,							
BHS02-G1,	BHS02-G2,							
BHS02-I1,	BHS02-I2,							
BHS03-G1,	BHS03-G2,							
BHS03-I1,	BHS03-I2,							
BHS04-G1,	BHS04-G2,							
BHS04-I1,	BHS04-I2,							
BHS05-G1,	BHS05-G2,							
BHS05-I1,	BHS05-I2,							
BHS06-G1,	BHS06-G2,							
BHS06-I1,	BHS06-I2,							
BHS07-G1,	BHS07-G2,							
BHS07-I1,	BHS07-I2,							
BHS08-G1,	BHS08-G2,							
BHS08-I1,	BHS08-I2,							
BHS09-G1,	BHS09-G2,							
BHS09-I1,	BHS09-I2,							
BHS10-G1,	BHS10-G2,							
BHS10-I1,	BHS10-I2,							
BHS11-G1,	BHS11-G2,							
BHS11-I1,	BHS11-I2,							
BHS12-G1,	BHS12-G2,							
BHS12-I1,	BHS12-I2,							
BHS13-G1,	BHS13-G2,							
BHS13-I1,	BHS13-I2,							
BHS14-G1,	BHS14-G2,							
BHS14-I1,	BHS14-I2,							
BHS15-G1,	BHS15-G2,							
BHS15-I1,	BHS15-I2,							
BHS16-G1,	BHS16-G2,							
BHS16-I1,	BHS16-I2,							
BHS17-G1,	BHS17-G2,							
BHS17-I1,	BHS17-I2,							
BHS18-G1,	BHS18-G2,							
BHS18-I1,	BHS18-I2,							
BHS19-G1,	BHS19-G2,							
BHS19-I1,	BHS19-I2,							
BHS20-G1,	BHS20-G2,							
BHS20-I1,	BHS20-I2,							
BHS21-G1,	BHS21-G2,							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005(ED093)F: Dissolved Metals by ICP-AES - Continued								
BHS21-I1,	BHS21-I2,							
QC1-G1,	QC1-G2,							
QC1-I1,	QC1-I2,							
QC2-G1,	QC2-G2,							
QC2-I1,	QC2-I2							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Metals by ICP-AES	EG005F	0	92	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Metals by ICP-AES	EG005F	10	92	**10.87**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Metals by ICP-AES	EG005F	5	92	**5.43**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Metals by ICP-AES	EG005F	0	92	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Metals by ICP-AES	EG005F	WATER	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. The ICPAES technique ionises the 0.45µm filtered samples, emitting a characteristic spectrum which is compared against matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)

University of South Australia

Assessment of Arsenic, Cadmium, Chromium, Iron, Lead and Manganese Bioaccessibility in Broken Hill Soil – Supplementary Data

Prepared for:	CBH Resources – Rasp Mine Broken Hill Operations Pty Ltd, Broken Hill, NSW, 2880
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Date of issue: 10 October 2019

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INTRODUCTION

A report dated 26 September 2019 was delivered to CBH Resources detailing arsenic, cadmium, chromium, iron, lead and manganese bioaccessibility in impacted soil. For one sample (CBH28), an anomalous lead bioaccessibility result was returned presumably due to an underestimation of total soil lead concentration as a result of incomplete digestion. Repeat analysis of total lead concentration in CBH28 was proposed in order to reconcile the lead bioaccessibility result. In addition to CBH28, other samples which reported total lead concentration > 10,000 mg kg^{-1} (CBH22, CBH25, CBH29) were included in the analysis. A modified digestion approach was utilised for the assessment of total elemental concentration, whereby varying amounts of soil were digested using aqua-regia. Conceivably, incomplete digestion of CBH28 may have occurred during the initial analysis as a result of the soil-acid ratio being too small (inadequate for complete digestion).

OBJECTIVES

The objective of this assessment was to:

- Assess the concentration of lead and other elements of concern (arsenic, cadmium, chromium, iron and manganese) in the < 250 μm soil particle size fraction of CBH22, CBH25, CBH28 and CBH29.

OUTCOMES AND DELIVERABLES

The expected outcome from this assessment was:

- A report confirming the bioaccessibility of arsenic, cadmium, chromium, iron, lead and manganese in CBH28.

METHODOLOGY

Varying amounts of soil (0.1-0.5 g) were digested using aqua-regia (5 ml) and USEPA method 3051 (Microwave assisted acid digestion of sediments, sludges, soils and oils). Digests were diluted to 50 ml with MilliQ water, filtered (0.45 μm) and submitted to ALS Environmental Laboratories for the determination of dissolved arsenic, cadmium, chromium, iron, lead and manganese. A copy of the ALS Environmental Laboratories analytical report is included in Appendix 3. For quality assurance and quality control, a standard reference material (QC1; NIST SRM 2710a) and a digest blank (QC2) were included in the analytical procedure.

FINDINGS

Total arsenic, cadmium, chromium, iron, lead and manganese concentration in the < 250 µm soil particle size fraction of CBH28 is shown in Table 1 while values for CBH22, CBH25 and CBH29 are shown in Table 2. Recalculated bioaccessibility results for CBH28 are shown in Table 3.

- Although some variability was observed, varying the amount of soil in the digestion process did not influence the derived total arsenic, cadmium, chromium, iron and manganese concentration in the < 250 µm soil particle size fraction of CBH28. However, decreasing the amount of soil from 0.5 g to 0.2 g in the digestion process influenced the total lead concentration; the concentration increased from ~69,000 mg kg^{-1} (for the 0.5 g digest) to ~79,000 mg kg^{-1} (for the 0.2 g digest). No significant difference in total lead concentration was observed when 0.1 g and 0.2 g soil digests were compared.

- Varying the amount of soil in the digestion process has little influence on the derived total arsenic, cadmium, chromium, iron, lead and manganese concentration in the < 250 µm soil particle size fraction of CBH22, CBH25 and CBH29. Some variability was observed between initial and repeat analyses particularly for manganese.

- Lead bioaccessibility in CBH28 was re-calculated using the average total lead concentration from 0.1 g and 0.2 g soil digests. Lead bioaccessibility, determined using gastric (SBRC-G) and intestinal phase extraction (SBRC-I), was 58.8% and 30.5% respectively (Table 3).

- The recovery of arsenic, cadmium, iron, lead and manganese from NTST SRM 2710 (QC1) ranged from 81-101% while all elements were below the level of reporting in QC2 (digest blank).

Table 1. Arsenic, cadmium, chromium, iron, lead and manganese concentration in the < 250 µm soil particle size fractions of CBH29.

Sample	Amount (g)	Dilution Factor	ICP-OES (mg l^{-1})						Soil (mg kg^{-1})					
			As	Cd	Cr	Fe	Pb	Mn	As	Cd	Cr	Fe	Pb	Mn
CBH28-0.1A	0.108	462	0.42	0.176	0.03	79.2	171	75.6	194	81	14	36579	78977	34916
CBH28-0.1B	0.108	461	0.41	0.172	0.02	77.1	172	69.4	189	79	9	35563	79336	32011
CBH28-0.2A	0.200	249	0.77	0.321	0.04	148	320	135	192	80	10	36922	79832	33679
CBH28-0.2B	0.205	244	0.78	0.320	0.05	157	326	148	191	78	12	38375	79683	36175
CBH28-0.5A	0.505	99	1.86	0.726	0.11	396	696	344	184	72	11	39232	68953	34080
CBH28-0.5B	0.501	100	1.91	0.752	0.10	390	695	320	191	75	10	38915	69349	31930
CBH28-250A	Original analysis								188	70	8	39500	20600	52300
CBH28-250B									189	71	7	40100	23400	53800
QC1 - 2710a	0.104	481	3.24	0.023	0.03	77.6	11.3	3.63	1558	11	14	37308	5433	1745
QC1 – certified reference values									1540	12	-	43200	5520	2140

Table 2. Arsenic, cadmium, chromium, iron, lead and manganese concentration in the < 250 µm soil particle size fractions of CBH22, CBH25 and CBH29.

Sample	Amount (g)	Dilution Factor	ICP-OES (mg l^{-1})						Soil (mg kg^{-1})					
			As	Cd	Cr	Fe	Pb	Mn	As	Cd	Cr	Fe	Pb	Mn
CBH2~~2~~5-0.1A†	0.109	459	0.27	0.089	0.03	65.4	64.2	69.1	124	41	14	30006	29455	31703
CBH2~~2~~5-0.1B	0.107	468	0.27	0.092	0.03	61.9	63.7	61.4	126	43	14	28990	29833	28756
CBH2~~2~~5-0.2A	0.201	248	0.51	0.164	0.06	114	126	123	127	41	15	28308	31287	30542
CBH2~~2~~5-0.2B	0.203	247	0.54	0.162	0.06	124	124	141	133	40	15	30573	30573	34765
CBH2~~2~~5-0.5A	0.500	100	1.27	0.385	0.16	344	319	355	127	38	16	34398	31898	35498
CBH2~~2~~5-0.5B	0.501	100	1.24	0.377	0.15	330	305	328	124	38	15	32917	30423	32718
CBH25-250A	Original analysis								129	37	10	31600	31800	38900
CBH25-250B									119	35	9	29000	27600	35000
CBH2~~5~~2-0.1A‡	0.101	493	0.44	0.087	0.05	62.3	30.2	14.5	217	43	25	30717	14890	7149
CBH2~~5~~2-0.1B	0.101	494	0.37	0.086	0.05	62.8	30.3	13.2	183	43	25	31052	14982	6527
CBH2~~5~~2-0.2A	0.204	245	0.88	0.168	0.09	115	58.3	26.7	216	41	22	28167	14279	6540
CBH2~~5~~2-0.2B	0.200	249	0.92	0.163	0.1	132	56.3	33.1	230	41	25	32929	14045	8257
CBH2~~5~~2-0.5A	0.509	98	1.76	0.39	0.26	357	147	80.2	173	38	26	35053	14434	7875
CBH2~~5~~2-0.5B	0.501	100	1.9	0.405	0.25	350	147	79.7	189	40	25	34904	14660	7948
CBH22-250A	Original analysis								176	39	20	27000	15100	5440
CBH22-250B									183	38	19	27100	14800	5450
CBH29-0.1A	0.108	462	0.58	0.073	0.05	60.8	35.2	11.4	268	34	23	28073	16253	5264
CBH29-0.1B	0.100	499	0.54	0.068	0.06	68	32.5	19.8	269	34	30	33898	16201	9870
CBH29-0.2A	0.206	243	1.35	0.141	0.12	144	65.1	37.1	328	34	29	35008	15826	9019
CBH29-0.2B	0.201	249	1.04	0.137	0.11	136	61.5	36.2	259	34	27	33839	15302	9007
CBH29-0.5A	0.506	99	2.81	0.301	0.31	405	168	119	278	30	31	40042	16610	11765
CBH29-0.5B	0.508	98	2.71	0.318	0.27	365	171	90.5	267	31	27	35941	16838	8911
CBH29-250A	Original analysis								276	33	20	28200	18200	4680
CBH29-250B									281	32	20	27500	18300	4470
QC1 - 2710a	0.104	481	3.24	0.023	0.03	77.6	11.3	3.63	1558	11	14	37308	5433	1745
QC1 – certified reference values									1540	12	-	43200	5520	2140

†Sample CBH22 was mislabelled – should read CBH25.

‡Sample CBH25 was mislabelled – should read CBH22.

Table 3. Arsenic bioaccessibility in the < 250 µm soil particle size fraction of CBH28 determined using gastric (SBRC-G) and intestinal (SBRC-I) phase extraction.

Element	Total Conc. (mg kg^{-1})	As Bioaccessibility (mg kg^{-1})		As Bioaccessibility (%)	
		SBRC-G	SBRC-I	SBRC-G	SBRC-I
Arsenic	189[a] 190[b,d]	20	<10	10.6 10.5	nd[c]
Cadmium	71[a] 78[b,d]	39	33	54.6 50.0	46.1 42.3
Chromium	8[a] 11[b,d]	<10	<10	nd nd	nd nd
Iron	39800[a] 37598[b,d]	2830	<50	7.1 7.5	nd nd
Lead	22000[a] 79457[b,e]	46700	24200	212.3 58.8	109.8 30.5
Manganese	53050[a] 33799[b,d]	1850	1280	3.5 5.5	2.4 3.8

[a]Initial analysis
[b]Repeat analysis
[c]Not determined
[d]The total concentration was the average value from 0.1, 0.2 and 0.5 g digests (see Table 1).
[e]The total concentration was the average value from 0.1 and 0.2 g digests (see Table 1).

CONFIDENTIALITY

We acknowledge the confidential nature of the results of this project and will treat the results and project reports with appropriate confidentiality and security.

APPENDIX 1 – CHAIN OF CUSTODY FORMS

CHAIN OF COUSTODY

ALS Laboratory: please tick →

☐ **Sydney:** 277 Woodpark Rd, Smithfield NSW 2176 Ph: 02 8784 8555 E:samples.sydney@alsenviro.com
☐ **Newcastle:** 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ **Brisbane:** 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ **Townsville:** 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ **Melbourne:** 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ **Adelaide:** 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ **Perth:** 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ **Launceston:** 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

FREIGHT

CLIENT:	University of South Australia
OFFICE:	Mawson Lakes Campus X1-17
PROJECT:	CBH BioAcc - 4
ORDER NUMBER:	
PROJECT MANAGER:	Albert Juhasz
CONTACT PH:	08 8302 5045
SAMPLER:	Albert Juhasz
SAMPLER MOBILE:	0418 818 121
COC emailed to ALS?	(NO)
EDD FORMAT (or default):	
Email Reports to (will default to PM if no other addresses are listed):	Albert.Juhasz@unisa.edu.au
Email Invoice to (will default to PM if no other addresses are listed):	Albert.Juhasz@unisa.edu.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (**List due date**):
☐ Non Standard or urgent TAT (**List due date**):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

[illegible]

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz			Marra Ou
DATE/TIME: 30/9/19	DATE/TIME:	DATE/TIME:	DATE/TIME: 1/10, 9-30

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).	Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Dissolved As, Cd, Cr, Fe, Mn, Pb	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	CBH22-0.1A	30/09/2019	W		1	1	Samples have been filtered (0.45 um)
2	CBH22-0.1B	30/09/2019	W		1	1	
3	CBH22-0.2A	30/09/2019	W		1	1	
4	CBH22-0.2B	30/09/2019	W		1	1	
5	CBH22-0.5A	30/09/2019	W		1	1	
6	CBH22-0.5B	30/09/2019	W		1	1	
7	CBH25-0.1A	30/09/2019	W		1	1	
8	CBH25-0.1B	30/09/2019	W		1	1	
9	CBH25-0.2A	30/09/2019	W		1	1	
10	CBH25-0.2B	30/09/2019	W		1	1	
11	CBH25-0.5A	30/09/2019	W		1	1	
12	CBH25-0.5B	30/09/2019	W		1	1	
				TOTAL	12	12	

Environmental Division
Melbourne
Work Order Reference
EM1916335
Telephone : + 61-3-8549 9600

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

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☐ **Launceston**: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT:	University of South Australia	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☒ Standard TAT **(List due date):** ☐ Non Standard or urgent TAT **(List due date):**
OFFICE:	Mawson Lakes Campus X1-17		
PROJECT:	CBH BioAcc - 4	**ALS QUOTE NO.:**	**COC SEQUENCE NUMBER (Circle)** COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7
ORDER NUMBER:			
PROJECT MANAGER:	Albert Juhasz	**CONTACT PH: 08 8302 5045**	
SAMPLER:	Albert Juhasz	**SAMPLER MOBILE: 0418 818 121**	
COC emailed to ALS? (NO)		**EDD FORMAT (or default):**	
Email Reports to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au			
Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au			

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RELINQUISHED BY:	**RECEIVED BY:**	**RELINQUISHED BY:**	**RECEIVED BY:**
Albert Juhasz			[illegible]
DATE/TIME: 30/9/19	DATE/TIME:	DATE/TIME:	DATE/TIME: 1/10 9:30

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	**SAMPLE ID**	**DATE / TIME**	**MATRIX**	**TYPE & PRESERVATIVE** *(refer to codes below)*	**TOTAL BOTTLES**	**Dissolved As, Cd, Cr, Fe, Mn, Pb**								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
13	CBH28-0.1A	30/09/2019	W		1	1								Samples have been filtered (0.45 um)
14	CBH28-0.1B	30/09/2019	W		1	1								
15	CBH28-0.2A	30/09/2019	W		1	1								
16	CBH28-0.2B	30/09/2019	W		1	1								
17	CBH28-0.5A	30/09/2019	W		1	1								
18	CBH28-0.5B	30/09/2019	W		1	1								
19	CBH29-0.1A	30/09/2019	W		1	1								
20	CBH29-0.1B	30/09/2019	W		1	1								
21	CBH29-0.2A	30/09/2019	W		1	1								
22	CBH29-0.2B	30/09/2019	W		1	1								
23	CBH29-0.5A	30/09/2019	W		1	1								
24	CBH29-0.5B	30/09/2019	W		1	1								
				TOTAL	12	12								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

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☐ **Launceston**: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: University of South Australia

OFFICE: Mawson Lakes Campus X1-17

PROJECT: CBH BioAcc - 4

ORDER NUMBER:

PROJECT MANAGER: Albert Juhasz **CONTACT PH: 08 8302 5045**

SAMPLER: Albert Juhasz **SAMPLER MOBILE: 0418 818 121**

COC emailed to ALS? (NO) **EDD FORMAT (or default):**

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Email Invoice to (will default to PM if no other addresses are listed): Albert.Juhasz@unisa.edu.au

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☒ Standard TAT **(List due date):**

☐ Non Standard or urgent TAT **(List due date):**

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)

COC: 1 2 3 4 5 6 7

OF: 1 2 3 4 5 6 7

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RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Albert Juhasz			Maven Ami
DATE/TIME: 30/9/19	DATE/TIME:	DATE/TIME:	DATE/TIME: 1/10 9.30

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	**SAMPLE ID**	**DATE / TIME**	**MATRIX**	**TYPE & PRESERVATIVE** *(refer to codes below)*	**TOTAL BOTTLES**	Dissolved As, Cd, Cr, Fe, Mn, Pb								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
25	QC1	30/09/2019	W		1	1								Samples have been filtered (0.45 um)
26	QC2	30/09/2019	W		1	1								
					TOTAL	2	2							

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
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APPENDIX 2 – ANALYTICAL RESULTS AND QA/QC

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1916335**	Page	: 1 of 8
Client	: **UNISA - CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION**	Laboratory	: Environmental Division Melbourne
Contact	: MR ALBERT JUHASZ	Contact	: Customer Services EM
Address	: UNIVERSITY OF SOUTH AUSTRALIA CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION BUILDING X MAWSON LAKES CAMPUS MAWSON LAKES SOUTH AUSTRALIA 5095	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 08 8302 6273	Telephone	: +61-3-8549 9600
Project	: CBH BioAcc - 4	Date Samples Received	: 01-Oct-2019 09:30
Order number	: ----	Date Analysis Commenced	: 03-Oct-2019
C-O-C number	: ----	Issue Date	: 07-Oct-2019 16:32
Sampler	: ALBERT JUHASZ		
Site	: ----		
Quote number	: ADBQ/011/10		
No. of samples received	: 26		
No. of samples analysed	: 26		

NATA
Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG005F: Metals for EM1916335 #25 and #26 has been confirmed by re-analysis.

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER)**

			Client sample ID	CBH22-0.1A	CBH22-0.1B	CBH22-0.2A	CBH22-0.2B	CBH22-0.5A
			Client sampling date / time	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1916335-001	EM1916335-002	EM1916335-003	EM1916335-004	EM1916335-005
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.27**	**0.27**	**0.51**	**0.54**	**1.27**
Cadmium	7440-43-9	0.005	mg/L	**0.089**	**0.092**	**0.164**	**0.162**	**0.385**
Chromium	7440-47-3	0.01	mg/L	**0.03**	**0.03**	**0.06**	**0.06**	**0.16**
Iron	7439-89-6	0.05	mg/L	**65.4**	**61.9**	**114**	**124**	**344**
Lead	7439-92-1	0.01	mg/L	**64.2**	**63.7**	**126**	**124**	**319**
Manganese	7439-96-5	0.01	mg/L	**69.1**	**61.4**	**123**	**141**	**355**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

			Client sample ID	CBH22-0.5B	CBH25-0.1A	CBH25-0.1B	CBH25-0.2A	CBH25-0.2B
			Client sampling date / time	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1916335-006	EM1916335-007	EM1916335-008	EM1916335-009	EM1916335-010
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**1.24**	**0.44**	**0.37**	**0.88**	**0.92**
Cadmium	7440-43-9	0.005	mg/L	**0.377**	**0.087**	**0.086**	**0.168**	**0.163**
Chromium	7440-47-3	0.01	mg/L	**0.15**	**0.05**	**0.05**	**0.09**	**0.10**
Iron	7439-89-6	0.05	mg/L	**330**	**62.3**	**62.8**	**115**	**132**
Lead	7439-92-1	0.01	mg/L	**305**	**30.2**	**30.3**	**58.3**	**56.3**
Manganese	7439-96-5	0.01	mg/L	**328**	**14.5**	**13.2**	**26.7**	**33.1**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			*Client sample ID*	**CBH25-0.5A**	**CBH25-0.5B**	**CBH28-0.1A**	**CBH28-0.1B**	**CBH28-0.2A**
			Client sampling date / time	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EM1916335-011**	**EM1916335-012**	**EM1916335-013**	**EM1916335-014**	**EM1916335-015**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**1.76**	**1.90**	**0.42**	**0.41**	**0.77**
Cadmium	7440-43-9	0.005	mg/L	**0.390**	**0.405**	**0.176**	**0.172**	**0.321**
Chromium	7440-47-3	0.01	mg/L	**0.26**	**0.25**	**0.03**	**0.02**	**0.04**
Iron	7439-89-6	0.05	mg/L	**357**	**350**	**79.2**	**77.1**	**148**
Lead	7439-92-1	0.01	mg/L	**147**	**147**	**171**	**172**	**320**
Manganese	7439-96-5	0.01	mg/L	**80.2**	**79.7**	**75.6**	**69.4**	**135**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

			Client sample ID	CBH28-0.2B	CBH28-0.5A	CBH28-0.5B	CBH29-0.1A	CBH29-0.1B
			Client sampling date / time	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EM1916335-016	EM1916335-017	EM1916335-018	EM1916335-019	EM1916335-020
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**0.78**	**1.86**	**1.91**	**0.58**	**0.54**
Cadmium	7440-43-9	0.005	mg/L	**0.320**	**0.726**	**0.752**	**0.073**	**0.068**
Chromium	7440-47-3	0.01	mg/L	**0.05**	**0.11**	**0.10**	**0.05**	**0.06**
Iron	7439-89-6	0.05	mg/L	**157**	**396**	**390**	**60.8**	**68.0**
Lead	7439-92-1	0.01	mg/L	**326**	**696**	**695**	**35.2**	**32.5**
Manganese	7439-96-5	0.01	mg/L	**148**	**344**	**320**	**11.4**	**19.8**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**CBH29-0.2A**	**CBH29-0.2B**	**CBH29-0.5A**	**CBH29-0.5B**	**QC1**
			Client sampling date / time	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	**EM1916335-021**	**EM1916335-022**	**EM1916335-023**	**EM1916335-024**	**EM1916335-025**
				Result	Result	Result	Result	Result
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	**1.35**	**1.04**	**2.81**	**2.71**	**3.24**
Cadmium	7440-43-9	0.005	mg/L	**0.141**	**0.137**	**0.301**	**0.318**	**0.023**
Chromium	7440-47-3	0.01	mg/L	**0.12**	**0.11**	**0.31**	**0.27**	**0.03**
Iron	7439-89-6	0.05	mg/L	**144**	**136**	**405**	**365**	**77.6**
Lead	7439-92-1	0.01	mg/L	**65.1**	**61.5**	**168**	**171**	**11.3**
Manganese	7439-96-5	0.01	mg/L	**37.1**	**36.2**	**119**	**90.5**	**3.63**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QC2	----	----	----	----
			Client sampling date / time	30-Sep-2019 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1916335-026	--------	--------	--------	--------
				Result	----	----	----	----
EG005(ED093)F: Dissolved Metals by ICP-AES								
Arsenic	7440-38-2	0.01	mg/L	<0.01	----	----	----	----
Cadmium	7440-43-9	0.005	mg/L	<0.005	----	----	----	----
Chromium	7440-47-3	0.01	mg/L	<0.01	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----
Lead	7439-92-1	0.01	mg/L	<0.01	----	----	----	----
Manganese	7439-96-5	0.01	mg/L	<0.01	----	----	----	----

QUALITY CONTROL REPORT

Work Order	: **EM1916335**	Page	: 1 of 3
Client	: **UNISA - CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION**	Laboratory	: Environmental Division Melbourne
Contact	: MR ALBERT JUHASZ	Contact	: Customer Services EM
Address	: UNIVERSITY OF SOUTH AUSTRALIA CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION BUILDING X MAWSON LAKES CAMPUS MAWSON LAKES SOUTH AUSTRALIA 5095	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 08 8302 6273	Telephone	: +61-3-8549 9600
Project	: CBH BioAcc - 4	Date Samples Received	: 01-Oct-2019
Order number	: ----	Date Analysis Commenced	: 03-Oct-2019
C-O-C number	: ----	Issue Date	: 07-Oct-2019
Sampler	: ALBERT JUHASZ		
Site	: ----		
Quote number	: ADBQ/011/10		
No. of samples received	: 26		
No. of samples analysed	: 26		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)F: Dissolved Metals by ICP-AES (QCLot: 2620143)								
EG005F: Arsenic	7440-38-2	0.01	mg/L	<0.01	1 mg/L	102	82.0	114
EG005F: Cadmium	7440-43-9	0.005	mg/L	<0.005	1 mg/L	100	90.2	115
EG005F: Chromium	7440-47-3	0.01	mg/L	<0.01	1 mg/L	98.3	88.0	112
EG005F: Iron	7439-89-6	0.05	mg/L	<0.05	1 mg/L	112	85.0	119
EG005F: Lead	7439-92-1	0.01	mg/L	<0.01	1 mg/L	102	84.0	111
EG005F: Manganese	7439-96-5	0.01	mg/L	<0.01	1 mg/L	104	89.4	117
EG005(ED093)F: Dissolved Metals by ICP-AES (QCLot: 2620144)								
EG005F: Arsenic	7440-38-2	0.01	mg/L	<0.01	1 mg/L	101	82.0	114
EG005F: Cadmium	7440-43-9	0.005	mg/L	<0.005	1 mg/L	99.9	90.2	115
EG005F: Chromium	7440-47-3	0.01	mg/L	<0.01	1 mg/L	98.9	88.0	112
EG005F: Iron	7439-89-6	0.05	mg/L	<0.05	1 mg/L	96.4	85.0	119
EG005F: Lead	7439-92-1	0.01	mg/L	<0.01	1 mg/L	100	84.0	111
EG005F: Manganese	7439-96-5	0.01	mg/L	<0.01	1 mg/L	109	89.4	117

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1916335**	Page	: 1 of 4
Client	: **UNISA - CENTRE FOR ENVIRONMENT RISK ASSESSMENT & REMEDIATION**	Laboratory	: Environmental Division Melbourne
Contact	: MR ALBERT JUHASZ	Telephone	: +61-3-8549 9600
Project	: CBH BioAcc - 4	Date Samples Received	: 01-Oct-2019
Site	: ----	Issue Date	: 07-Oct-2019
Sampler	: ALBERT JUHASZ	No. of samples received	: 26
Order number	: ----	No. of samples analysed	: 26

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
Dissolved Metals by ICP-AES	0	26	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Dissolved Metals by ICP-AES	0	26	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation: Date extracted	Due for extraction	Evaluation	Analysis: Date analysed	Due for analysis	Evaluation
EG005(ED093)F: Dissolved Metals by ICP-AES								
Miscellaneous Plastic Container (EG005F)								
CBH22-0.1A,	CBH22-0.1B,	**30-Sep-2019**	**----**	----	----	**03-Oct-2019**	28-Mar-2020	✓
CBH22-0.2A,	CBH22-0.2B,							
CBH22-0.5A,	CBH22-0.5B,							
CBH25-0.1A,	CBH25-0.1B,							
CBH25-0.2A,	CBH25-0.2B,							
CBH25-0.5A,	CBH25-0.5B,							
CBH28-0.1A,	CBH28-0.1B,							
CBH28-0.2A,	CBH28-0.2B,							
CBH28-0.5A,	CBH28-0.5B,							
CBH29-0.1A,	CBH29-0.1B,							
CBH29-0.2A,	CBH29-0.2B,							
CBH29-0.5A,	CBH29-0.5B,							
QC1,	QC2							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✘ = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Metals by ICP-AES	EG005F	0	26	**0.00**	**10.00**	✘	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Metals by ICP-AES	EG005F	4	26	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Metals by ICP-AES	EG005F	2	26	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Metals by ICP-AES	EG005F	0	26	**0.00**	**5.00**	✘	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Dissolved Metals by ICP-AES	EG005F	WATER	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. The ICPAES technique ionises the 0.45µm filtered samples, emitting a characteristic spectrum which is compared against matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)

APPENDIX D

Spreadsheet provided by ERM (2020b)

ERM (2020b). Excel spreadsheet entitled ‘0476778_HHRA_Results_29.09.2020’. Received from ERM via e-mail on 29/09/2020.

List of Scenarios

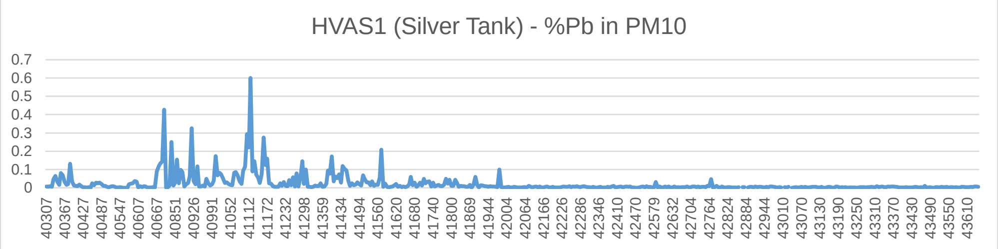
MOD4	*Results previously acquired for construction phase of approved MOD4*
MOD 6 Construction Scenario	*Results for construction phase of MOD6 at Rasp Mine*
Representative Operational year (BAU)	*Results for current operations at Rasp Mine*
MOD 6 Operational Scenario	*Results for approved operations at Rasp Mine for the preferred option*

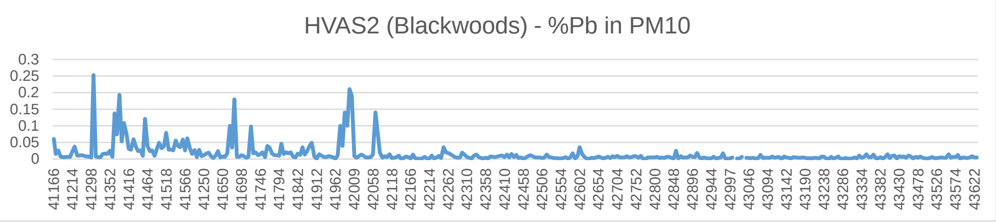
Percentage Lead in PM10 Calculation

Pb in PM10 monitoring has been historically undertaken at two locations around Rasp Mine: HVAS1 EPL11 Silver Tank
HVAS2 EPL12 Blackwoods

The annual average of lead in PM10 concentration, and percentage of lead in PM10 at each site has been calculated and is shown below

	HVAS1 (Silver Tank)		Blackwoods	
	Pb in PM10 (ug/m3)	%Pb in PM10	Pb in PM10 (ug/m3)	%Pb in PM10
2010	0.160	2.08%	-	-
2011	0.263	4.77%	-	-
2012	0.389	7.26%	0.313	1.76%
2013	0.344	3.77%	0.317	3.90%
2014	0.085	1.74%	0.097	3.31%
2015	0.046	0.39%	0.058	1.10%
2016	0.069	0.45%	**0.079**	0.67%
2017	0.062	0.45%	0.069	0.52%
2018	0.085	0.34%	0.108	0.51%
2019	0.123	0.35%	0.205	0.49%
AVERAGE	0.163	2.16%	0.156	**1.53%**





The historical record for percentage lead in PM10 shows that between 2010 and 2015 percentage lead was highly variable but has since lowered to a consistent rate of less than 1%.
To remain conservative, the data from 2010 to 2015 has been included in the data record.
The averages of the entire dataset was taken from both HVAS monitors.

To determine the annual average lead in PM10 concentration, a factor of **1.53%** (timeseries average for HVAS2 monitor at Blackwood Put) has been applied to the annual average PM_{10} concentrations for the discrete receptors R1 - R70 for each scenario (2019, 2021 and 2026).
HVAS2 was chosen as it is closer and therefore more representative of the conditions at Rasp Mine.

To determine the annual average concentrations in PM_{10} for each metal, the respective ratio shown in the 'Metal Emissions per Year' tab was applied to the annual average lead in PM_{10} concentration results for each scenario.

Background Lead in PM10 Calculation

To remain consistent with the rest of the assessment, the method of determining annual average lead in PM_{10} background concentration follows the same method as that used for lead in TSP.

The annual average Pb in PM_{10} concentration recorded at HVAS2 for 2016 **(0.079 ug/m^3)** has been used as the background concentration at each receptor minus their respective 2016 Rasp Mine (modelled) increment

PPR Results Determination

Annual average Pb in TSP concentration, annual average Pb deposition and annual average PM_{10} concentration results for Receptors R1 - 42 were provided in the following report: *Rasp Mine, Broken Hill Air Quality Assessment Addendum - Proposed Relocation of the Processing Area,* ENVIRON (21 September 2010)

Using the method described above, the annual average Pb in PM_{10} concentrations were derived from the annual average PM_{10} concentrations for receptors R1 to R42.

A contour plot of the annual average results for R1 to R42 was drafted and imported into Surfer.

Using grid interpolation from the contour plots, the annual average Pb in TSP and PM_{10} concentrations and annual average Pb deposition values were determined for receptors R43 - R70.

Metal Emissions per Year

Metal	Total Emissions (kg/year)	Pb Ratio
Lead	455.4	-
Antimony	0.8	0.0018
Arsenic	4.5	0.0098
Barium	0.2	0.0004
Beryllium	0.0	0.0000
Cadmium	1.8	0.0040
Chromium	0.2	0.0004
Copper	30.5	0.0669
Iron	2810.5	6.1719
Manganese	7.7	0.0168
Mercury	0.0	0.0000
Nickel	0.1	0.0003
Silver	0.9	0.0020
Zinc	1114.9	2.4483

ID	x	y	Lead (in TSP)										Annual Average TSP Concentration					Lead (in PM10)					Annual Average PM_{10} Concentration ($\mu g/m^3$)					Maximum 24-hour A	
			PPR Ann Avg Conc $\mu g/m^3$	PPR Total Deposition g/m^2/annum	MOD4+2016 Ann Avg Conc $\mu g/m^3$	MOD4+2016 Total Deposition g/m^2/annum	Representative Operational year (BAU) Ann Avg Conc $\mu g/m^3$	Representative Operational year (BAU) Total Deposition g/m^2/annum	MOD 6 Construction Scenario Ann Avg Conc $\mu g/m^3$	MOD 6 Construction Scenario Total Deposition g/m^2/annum	MOD 6 Operational Scenario Ann Avg Conc $\mu g/m^3$	MOD 6 Operational Scenario Total Deposition g/m^2/annum	PPR $\mu g/m^3$	MOD4+2016 $\mu g/m^3$	Representative Operational year (BAU) $\mu g/m^3$	MOD 6 Construction Scenario $\mu g/m^3$	MOD 6 Operational Scenario $\mu g/m^3$	PPR $\mu g/m^3$	MOD4+2016 $\mu g/m^3$	Representative Operational year (BAU) $\mu g/m^3$	MOD 6 Construction Scenario $\mu g/m^3$	MOD 6 Operational Scenario $\mu g/m^3$	PPR $\mu g/m^3$	MOD4+2016 $\mu g/m^3$	Representative Operational year (BAU) $\mu g/m^3$	MOD 6 Construction Scenario $\mu g/m^3$	MOD 6 Operational Scenario $\mu g/m^3$	PPR $\mu g/m^3$	MOD4+2016 Max 24H Avg $\mu g/m^3$
R1	544110	6462598	0.0100	0.0400	0.0080	0.0187	0.0093	0.0228	0.0085	0.0215	0.0085	0.0223	1.5000	0.3553	0.6252	0.5251	0.5769	0.0061	0.0051	0.0069	0.0063	0.0057	0.4000	0.3349	0.4481	0.4096	0.3731	2.3000	2.5036
R2	543763	6462312	0.0120	0.0500	0.0106	0.0226	0.0096	0.0255	0.0084	0.0236	0.0087	0.0249	1.4000	0.4422	0.7817	0.5882	0.6711	0.0077	0.0052	0.0082	0.0075	0.0065	0.5000	0.3412	0.5378	0.4889	0.4254	3.6000	2.3785
R3	543555	6462322	0.0260	0.0900	0.0187	0.0347	0.0165	0.0459	0.0152	0.0449	0.0150	0.0451	2.1000	0.7510	1.3667	1.1459	1.1396	0.0123	0.0083	0.0123	0.0120	0.0098	0.8000	0.5425	0.8014	0.7870	0.6381	5.9000	3.9565
R4	543324	6462003	0.0200	0.0600	0.0103	0.0206	0.0082	0.0194	0.0073	0.0182	0.0074	0.0185	1.4000	0.4177	0.6044	0.4639	0.4789	0.0077	0.0049	0.0067	0.0062	0.0051	0.5000	0.3221	0.4392	0.4032	0.3362	4.2000	3.4064
R5	543140	6461859	0.0180	0.0400	0.0082	0.0139	0.0069	0.0153	0.0062	0.0141	0.0062	0.0143	1.0000	0.3253	0.4860	0.3594	0.3738	0.0061	0.0040	0.0057	0.0052	0.0043	0.4000	0.2589	0.3729	0.3374	0.2807	4.3000	3.1522
R6	542833	6462000	0.0140	0.0400	0.0089	0.0134	0.0073	0.0145	0.0065	0.0131	0.0065	0.0132	1.2000	0.3468	0.4765	0.3516	0.3494	0.0092	0.0040	0.0049	0.0045	0.0037	0.6000	0.2604	0.3189	0.2939	0.2410	6.5000	2.1103
R7	542604	6462718	0.0040	0.0100	0.0038	0.0047	0.0039	0.0073	0.0036	0.0068	0.0036	0.0068	0.5000	0.1499	0.2237	0.1794	0.1796	0.0031	0.0021	0.0027	0.0025	0.0021	0.2000	0.1364	0.1733	0.1612	0.1387	3.1000	1.4378
R8	542923	6462744	0.0090	0.0300	0.0083	0.0126	0.0080	0.0173	0.0072	0.0157	0.0071	0.0160	0.9000	0.3302	0.5277	0.3953	0.3951	0.0061	0.0042	0.0056	0.0051	0.0042	0.4000	0.2730	0.3643	0.3362	0.2777	10.5000	1.9028
R9	542926	6463052	0.0080	0.0200	0.0066	0.0095	0.0063	0.0136	0.0056	0.0122	0.0056	0.0126	0.8000	0.2598	0.4192	0.3111	0.3241	0.0046	0.0033	0.0046	0.0042	0.0036	0.3000	0.2158	0.3010	0.2760	0.2337	3.4000	1.9721
R10	543158	6463633	0.0060	0.0200	0.0061	0.0095	0.0060	0.0137	0.0055	0.0125	0.0054	0.0129	0.8000	0.2466	0.3760	0.2908	0.2960	0.0031	0.0031	0.0044	0.0040	0.0034	0.2000	0.2049	0.2864	0.2622	0.2204	1.8000	1.8020
R11	543150	6461692	0.0070	0.0200	0.0055	0.0084	0.0049	0.0106	0.0044	0.0098	0.0044	0.0099	0.7000	0.2190	0.3325	0.2513	0.2603	0.0046	0.0027	0.0041	0.0037	0.0031	0.3000	0.1779	0.2705	0.2434	0.2025	2.8000	2.0117
R12	543587	6461665	0.0050	0.0200	0.0041	0.0065	0.0039	0.0087	0.0036	0.0081	0.0036	0.0082	0.5000	0.1625	0.2430	0.1986	0.2013	0.0031	0.0022	0.0033	0.0030	0.0025	0.2000	0.1406	0.2179	0.1960	0.1630	1.7000	1.0952
R13	543631	6461566	0.0050	0.0100	0.0035	0.0054	0.0035	0.0074	0.0032	0.0070	0.0032	0.0070	0.5000	0.1405	0.2086	0.1717	0.1733	0.0031	0.0018	0.0029	0.0026	0.0021	0.2000	0.1204	0.1871	0.1682	0.1398	1.5000	0.8927
R14	543019	6463916	0.0040	0.0100	0.0040	0.0055	0.0043	0.0086	0.0039	0.0079	0.0039	0.0081	0.5000	0.1586	0.2438	0.1963	0.1941	0.0031	0.0020	0.0028	0.0026	0.0021	0.2000	0.1327	0.1831	0.1686	0.1397	1.5000	1.1371
R15	543133	6465290	0.0020	0.0100	0.0014	0.0023	0.0015	0.0034	0.0014	0.0032	0.0013	0.0031	0.2000	0.0562	0.0844	0.0718	0.0696	0.0015	0.0009	0.0012	0.0011	0.0009	0.1000	0.0560	0.0809	0.0729	0.0613	0.9000	0.6067
R16	544570	6465713	0.0020	0.0100	0.0016	0.0030	0.0019	0.0044	0.0017	0.0041	0.0017	0.0041	0.2000	0.0675	0.1035	0.0926	0.0883	0.0015	0.0010	0.0014	0.0013	0.0011	0.1000	0.0629	0.0942	0.0846	0.0720	0.7000	0.6375
R17	543245	6464378	0.0040	0.0100	0.0031	0.0047	0.0034	0.0074	0.0032	0.0070	0.0031	0.0069	0.4000	0.1247	0.1916	0.1647	0.1569	0.0015	0.0017	0.0024	0.0022	0.0018	0.1000	0.1113	0.1538	0.1446	0.1189	1.2000	1.0064
R18	542815	6461151	0.0030	0.0100	0.0031	0.0036	0.0029	0.0055	0.0026	0.0051	0.0026	0.0051	0.3000	0.1216	0.1709	0.1343	0.1335	0.0015	0.0016	0.0024	0.0021	0.0017	0.1000	0.1016	0.1561	0.1393	0.1133	1.3000	1.6091
R19	544599	6466299	0.0020	0.0100	0.0011	0.0020	0.0012	0.0029	0.0011	0.0027	0.0011	0.0027	0.2000	0.0454	0.0677	0.0601	0.0573	0.0015	0.0007	0.0010	0.0009	0.0008	0.1000	0.0449	0.0675	0.0608	0.0513	0.5000	0.6414
R20	543420	6465782	0.0020	0.0100	0.0011	0.0020	0.0011	0.0028	0.0011	0.0026	0.0010	0.0026	0.2000	0.0449	0.0674	0.0578	0.0562	0.0015	0.0007	0.0011	0.0010	0.0008	0.1000	0.0481	0.0701	0.0632	0.0540	0.7000	0.5208
R21	544212	6462762	0.0130	0.0500	0.0080	0.0188	0.0107	0.0259	0.0099	0.0251	0.0096	0.0250	1.8000	0.3642	0.6952	0.6124	0.6109	0.0092	0.0057	0.0077	0.0071	0.0062	0.6000	0.3741	0.5051	0.4669	0.4021	3.0000	2.6784
R22	544288	6462828	0.0140	0.0600	0.0079	0.0188	0.0114	0.0274	0.0106	0.0267	0.0101	0.0260	1.9000	0.3610	0.7018	0.6383	0.6045	0.0092	0.0058	0.0078	0.0073	0.0061	0.6000	0.3772	0.5116	0.4765	0.3982	3.6000	2.4515
R23	544456	6462974	0.0170	0.0800	0.0083	0.0213	0.0135	0.0324	0.0127	0.0314	0.0120	0.0298	2.0000	0.3734	0.7591	0.7351	0.6507	0.0092	0.0058	0.0081	0.0077	0.0063	0.6000	0.3770	0.5294	0.5003	0.4096	2.6000	2.5068
R24	544591	6463090	0.0240	0.1100	0.0090	0.0253	0.0148	0.0368	0.0140	0.0357	0.0131	0.0336	2.2000	0.3936	0.7963	0.8148	0.7014	0.0107	0.0056	0.0083	0.0081	0.0066	0.7000	0.3637	0.5432	0.5322	0.4332	2.4000	2.5112
R25	544460	6462723	0.0090	0.0400	0.0055	0.0125	0.0077	0.0185	0.0072	0.0178	0.0070	0.0175	1.2000	0.2419	0.4604	0.4228	0.3994	0.0061	0.0040	0.0051	0.0048	0.0041	0.4000	0.2584	0.3350	0.3158	0.2678	1.9000	1.8364
R26	544723	6463208	0.0330	0.1500	0.0112	0.0342	0.0207	0.0506	0.0193	0.0474	0.0186	0.0460	2.3000	0.4746	1.0101	0.9961	0.9077	0.0123	0.0059	0.0102	0.0097	0.0084	0.8000	0.3826	0.6662	0.6322	0.5478	2.6000	2.4264
R27	544666	6463926	0.0360	0.2000	0.0160	0.0501	0.0261	0.0687	0.0227	0.0596	0.0242	0.0672	2.9000	0.9458	1.5176	1.3177	1.7633	0.0153	0.0101	0.0159	0.0136	0.0157	1.0000	0.6583	1.0421	0.8857	1.0271	2.0000	7.7474
R28	544731	6463988	0.0260	0.1500	0.0153	0.0466	0.0224	0.0566	0.0192	0.0483	0.0207	0.0550	2.3000	1.0626	1.4941	1.1365	1.4945	0.0123	0.0099	0.0152	0.0120	0.0138	0.8000	0.6496	0.9952	0.7863	0.9032	2.2000	6.0291
R29	544592	6464026	0.0220	0.1400	0.0106	0.0317	0.0165	0.0442	0.0150	0.0402	0.0151	0.0422	2.2000	0.5238	0.9305	0.8926	0.9934	0.0107	0.0064	0.0102	0.0093	0.0092	0.7000	0.4154	0.6664	0.6087	0.6019	1.8000	2.3024
R30	544728	6464112	0.0170	0.1000	0.0103	0.0315	0.0150	0.0386	0.0131	0.0335	0.0137	0.0365	1.7000	0.6340	0.9991	0.7850	0.9164	0.0092	0.0066	0.0105	0.0084	0.0086	0.6000	0.4333	0.6833	0.5475	0.5639	1.5000	3.1442
R31	544503	6464328	0.0100	0.0600	0.0058	0.0141	0.0081	0.0202	0.0075	0.0191	0.0073	0.0188	1.1000	0.2637	0.4591	0.4419	0.4328	0.0061	0.0034	0.0051	0.0047	0.0042	0.4000	0.2194	0.3342	0.3061	0.2733	1.4000	2.3688
R32	544637	6464415	0.0090	0.0500	0.0053	0.0136	0.0075	0.0191	0.0068	0.0174	0.0068	0.0178	1.0000	0.2546	0.4433	0.3996	0.4066	0.0046	0.0032	0.0049	0.0043	0.0039	0.3000	0.2101	0.3176	0.2818	0.2564	1.4000	1.3199
R33	545231	6464450	0.0100	0.0500	0.0048	0.0144	0.0087	0.0233	0.0073	0.0196	0.0078	0.0207	0.9000	0.2493	0.6333	0.4782	0.5079	0.0046	0.0040	0.0067	0.0052	0.0052	0.3000	0.2596	0.4349	0.3378	0.3386	1.6000	2.8243
R34	543572	6463746	0.0090	0.0400	0.0085	0.0146	0.0092	0.0250	0.0086	0.0238	0.0083	0.0236	1.2000	0.3565	0.5715	0.4835	0.4507	0.0061	0.0049	0.0066	0.0062	0.0050	0.4000	0.3189	0.4292	0.4042	0.3248	2.2000	2.5495
R35	543748	6463873	0.0090	0.0400	0.0079	0.0128	0.0091	0.0220	0.0087	0.0216	0.0082	0.0206	1.2000	0.3292	0.5504	0.5043	0.4338	0.0061	0.0043	0.0061	0.0059	0.0045	0.4000	0.2837	0.3977	0.3882	0.2924	2.0000	1.7486
R36	543934	6464002	0.0100	0.0400	0.0072	0.0118	0.0089	0.0195	0.0086	0.0197	0.0080	0.0181	1.2000	0.3012	0.5118	0.4985	0.4207	0.0061	0.0040	0.0057	0.0056	0.0043	0.4000	0.2590	0.3748	0.3647	0.2819	1.5000	1.6793
R37	544127	6464141	0.0100	0.0500	0.0062	0.0119	0.0081	0.0184	0.0078	0.0187	0.0073	0.0170	1.2000	0.2644	0.4602	0.4687	0.4011	0.0061	0.0036	0.0053	0.0052	0.0041	0.4000	0.2347	0.3481	0.3381	0.2700	1.4000	1.6171
R38	542459	6462467	0.0040	0.0100	0.0034	0.0041	0.0034	0.0062	0.0030	0.0057	0.0030	0.0057	0.4000	0.1345	0.2164	0.1598	0.1607	0.0015	0.0016	0.0026	0.0023	0.0019	0.1000	0.1070	0.1720	0.1520	0.1226	2.3000	1.2093
R39	542512	6462581	0.0040	0.0100	0.0036	0.0043	0.0035	0.0066	0.0032	0.0060	0.0031	0.0060	0.4000	0.1396	0.2193	0.1657	0.1616	0.0031	0.0018	0.0027	0.0024	0.0019	0.2000	0.1148	0.1735	0.1552	0.1234	2.5000	1.2894
R40	543099	6463321	0.0080	0.0300	0.0069	0.0127	0.0064	0.0152	0.0056	0.0134	0.0057	0.0142	0.9000	0.2816	0.4606	0.3300	0.3570	0.0046	0.0037	0.0052	0.0047	0.0040	0.3000	0.2421	0.3366	0.3051	0.2644	2.6000	2.3038
R41	543249	6463439	0.0080	0.0300	0.0085	0.0151	0.0078	0.0196	0.0069	0.0176	0.0070	0.0185	1.1000	0.3484	0.5388	0.4006	0.4228	0.0046	0.0045	0.0062	0.0057	0.0049	0.3000	0.2962	0.4081	0.3742	0.3235	2.7000	2.7695
R42	543394	6463551	0.0090	0.0400	0.0094	0.0168	0.0092	0.0258	0.0084	0.0238	0.0083	0.0245	1.2000	0.3883	0.6063	0.4786	0.4793	0.0061	0.0053	0.0071	0.0066	0.0055	0.4000	0.3450	0.4614	0.4283	0.3604	2.7000	3.1138
R43	544670	6464213	0.0091	0.0598	0.0063	0.0056	0.0110	0.0290	0.0098	0.0259	0.0100	0.0272		0.1174	0.6741	0.5870	0.6386	0.0051	0.0015	0.0072	0.0062	0.0060		0.1005	0.4704	0.4075	0.3910		1.1625
R44	544186	6461103	0.0042	0.0140	0.0019	0.0027	0.0018	0.0037	0.0017	0.0034	0.0016	0.0035		0.0730	0.1069	0.0868	0.0864	0.0026	0.0009	0.0015	0.0013	0.0011		0.0618	0.0960	0.0866	0.0705		0.7288
R45	543670	6461675	0.0059	0.0197	0.0043	0.0065	0.0040	0.0087	0.0036	0.0081	0.0036	0.0082		0.1611	0.2431	0.1990	0.2012	0.0035	0.0021	0.0033	0.0030	0.0025		0.1377	0.2154	0.1940	0.1614		0.9909
R46	542637	6460861	0.0029	0.0060	0.0026	0.0027	0.0023	0.0042	0.0021	0.0039	0.0020	0.0039		0.0935	0.1306	0.1037	0.1020	0.0010	0.0012	0.0019	0.0017	0.0014		0.0806	0.1220	0.1089	0.0886		1.1189
R47	543716	6464336	0.0055	0.0210	0.0045	0.0074	0.0050	0.0117	0.0047	0.0113	0.0045	0.0109		0.1778	0.2857	0.2583	0.2366	0.0035	0.0023	0.0034	0.0032	0.0026		0.1521	0.2228	0.2070	0.1677		0.9938
R48	544457	6465505	0.0024	0.0118	0.0019	0.0035	0.0022	0.0052	0.0021	0.0049	0.0020	0.0048		0.0795	0.1224	0.1112	0.1047	0.0017	0.0011	0.0016	0.0015	0.0012		0.0708	0.1069	0.0971	0.0815		0.6911
R49	544257	6466375	0.0016	0.0080	0.0009	0.0019	0.0010	0.0026	0.0009	0.0024	0.0009	0.0024		0.0379	0.0578	0.0522	0.0490	0.0014	0.0006	0.0009	0.0008	0.0007		0.0402	0.0596	0.0549	0.0454		0.4416
R50	543782	6464178	0.0045	0.0276	0.0005	0.0091	0.0065	0.0148	0.0062	0.0145	0.0059	0.0138		0.2260	0.3697	0.3405	0.3044	0.0045	0.0028	0.0042	0.0039	0.0031		0.1862	0.2738	0.2575	0.2041		1.3267
R51	542870	6463609	0.0045	0.0115	0.0004	0.0058	0.0040	0.0081	0.0036	0.0073	0.0036	0.0075		0.1595	0.2478	0.1884	0.1952	0.0027	0.0021	0.0029	0.0026	0.0022		0.1350	0.1865	0.1681	0.1412		1.3717
R52	542900	6463529	0.0050	0.0144	0.0004	0.0065	0.0043	0.0088	0.0038	0.0079	0.0039	0.0082		0.1747	0.2719	0.2037	0.2126	0.0029	0.0023	0.0032	0.0028	0.0024		0.1479	0.2067	0.1858	0.1565		1.4466
R53	542787	6461088	0.0029	0.0080	0.0002	0.0034	0.0027	0.0052	0.0025	0.0048	0.0025	0.0048		0.1146	0.1605	0.1266	0.1256	0.0016	0.0015	0.0023	0.0020	0.0016		0.0961	0.1475	0.1316	0.1071		1.5200
R54	543282	6464626	0.0033	0.0094	0.0002	0.0040	0.0028	0.0061	0.0026	0.0058	0.0026	0.0057		0.1029	0.1594	0.1358	0.1314	0.0016	0.0014	0.0020	0.0018	0.0016		0.0946	0.1295	0.1197	0.1021		1.0365
R55	541663	6462761	0.0008	0.0020	0.0001	0.0011	0.0013	0.0021	0.0012	0.0020	0.0012	0.0020		0.0475	0.0669	0.0571	0.0554	0.0008	0.0007	0.0010	0.0009	0.0007		0.0440	0.0658	0.0596	0.0482		0.7158
R56	541956	6463856	0.0008	0.0020	0.0001	0.0014	0.0013	0.0023	0.0012	0.0021	0.0012	0.0021		0.0518	0.0758	0.0590	0.0597	0.0009	0.0008	0.0011	0.0010	0.0008		0.0498	0.0730	0.0654	0.0534		0.7926
R57	542316	6463028	0.0021	0.0020	0.0002	0.0024	0.0026	0.0043	0.0024	0.0040	0.0024	0.0040		0.0943	0.1424	0.1175	0.1140	0.0017	0.0013	0.0018	0.0017	0.0014		0.0830	0.1175	0.1088	0.0901		0.8436
R58	542418	6465095	0.0008	0.0020	0.0001	0.0014	0.0010	0.0022	0.0010	0.0020	0.0009	0.0020		0.0407	0.0621	0.0509	0.0496	0.0008	0.0007	0.0010	0.0009	0.0007		0.0440	0.0625	0.0579	0.0482		0.4247
R59	544243	6459543	0.0008	0.0010	0.0000	0.0007	0.0005	0.0011	0.0005	0.0010	0.0005	0.0010		0.0202	0.0298	0.0245	0.0246	0.0006	0.0004	0.0006	0.0005	0.0004		0.0237	0.0362	0.0327	0.0268		0.2339
R60	544409	6465165	0.0033	0.0163	0.0002	0.0047	0.0029	0.0070	0.0027	0.0066	0.0027	0.0064		0.1037	0.1648	0.1514	0.1410	0.0022	0.0014	0.0021	0.0019	0.0016		0.0897	0.1356	0.1241	0.1034		0.7321
R61	541538	6461826	0.0011	0.0010	0.0001	0.0013	0.0013	0.0023	0.0012	0.0021	0.0012	0.0021		0.0528	0.0743	0.0598	0.0574	0.0008	0.0007	0.0010	0.0009	0.0007		0.0443	0.0684	0.0614	0.0482		0.6946
R62	542174	6462135	0.0033	0.0020	0.0002	0.0028	0.0026	0.0045	0.0024	0.0042	0.0023	0.0042		0.1039	0.1503	0.1180	0.1144	0.0025	0.0012	0.0019	0.0017	0.0014		0.0790	0.1269	0.1135	0.0890		0.8913
R63	542368	6464205	0.0012	0.0010	0.0001	0.0020	0.0017	0.0032	0.0016	0.0030	0.0016	0.0030		0.0672	0.0977	0.0790	0.0789	0.0008	0.0010	0.0013	0.0012	0.0010		0.0650	0.0861	0.0797	0.0678		0.6227
R64	545067	6465474	0.0039	0.0194	0.0002	0.0036	0.0022	0.0053	0.0020	0.0048	0.0020	0.0048		0.0778	0.1257	0.1098	0.1072	0.0022	0.0011	0.0016	0.0015	0.0013		0.0720	0.1070	0.0959	0.0820		0.7813
R65	544584	6464584	0.0069	0.0376	0.0005	0.0099	0.0058	0.0143	0.0053	0.0132	0.0052	0.0132		0.1948	0.3331	0.3045	0.2999	0.0038	0.0025	0.0038	0.0034	0.0030		0.1645	0.2495	0.2220	0.1976		1.0405
R66	544241	6464857	0.0042	0.0209	0.0003	0.0059	0.0040	0.0090	0.0037	0.0086	0.0036	0.0083		0.1381	0.2189	0.2050	0.1884	0.0028	0.0017	0.0026	0.0024	0.0020		0.1118	0.1703	0.1574	0.1304		0.8916
R67	544319	6464830	0.0045	0.0230	0.0003	0.0063	0.0040	0.0095	0.0038	0.0090	0.0037	0.0087		0.1390	0.2269	0.2134	0.1953	0.0029	0.0018	0.0027	0.0025	0.0021		0.1178	0.1786	0.1657	0.1370		0.9968
R68	544485	Operation	0.0079	0.0338	0.0004	0.0059	0.0032	0.0078	0.0029	0.0073	0.0029	0.0074		0.1249	0.1957	0.1672	0.1701	0.0047	0.0017	0.0025	0.0023	0.0019		0.1108	0.1624	0.1481	0.1250		0.9798
R69	544751	6462012	0.0091	0.0404	0.0003	0.0047	0.0026	0.0063	0.0024	0.0059	0.0024	0.0059		0.1006	0.1574	0.1375	0.1352	0.0049	0.0013	0.0019	0.0018	0.0015		0.0869	0.1273	0.1163	0.0960		0.9875
R70	543879	6461328	0.0041	0.0111	0.0002	0.0037	0.0025	0.0052	0.0023	0.0049	0.0023	0.0049		0.0994	0.1463	0.1214	0.1218	0.0026	0.0013	0.0020	0.0018	0.0015		0.0844	0.1318	0.1189	0.0987		0.7394

ID	x	y	verage PM_{10} Concentration (μg/m³)			Annual Average $PM_{2.5}$ Concentration (μg/m³)					Maximum 24-hour Average $PM_{2.5}$ Concentration (μg/m³)					Monthly Total Dust Deposition (g/m²/month)				
			Representative Operational year (BAU) Max 24H Avg μg/m³	MOD 6 Construction Scenario Max 24H Avg μg/m³	MOD 6 Operational Scenario Max 24 Avg μg/m³	PPR μg/m³	MOD4+2016 μg/m³	Representative Operational year (BAU) μg/m³	MOD 6 Construction Scenario μg/m³	MOD 6 Operational Scenario μg/m³	PPR μg/m³	MOD4+2016 Max 24H Avg μg/m³	Representative Operational year (BAU) Max 24H Avg μg/m³	MOD 6 Construction Scenario Max 24H Avg μg/m³	MOD 6 Operational Scenario Max 24 Avg μg/m³	PPR g/m²/month	MOD4+2016 g/m²/month	Representative Operational year (BAU) g/m²/month	MOD 6 Construction Scenario g/m²/month	MOD 6 Operational Scenario g/m²/month
R1	544110	6462598	2.7106	3.9714	2.3858	0.1200	0.0720	0.1354	0.1296	0.1306	1.0000	0.8538	0.9747	1.3135	0.9061	0.1900	0.0903	0.1332	0.1205	0.1401
R2	543763	6462312	5.0692	5.0113	4.5000	0.1300	0.0774	0.1424	0.1448	0.1351	1.1000	0.6203	1.1469	1.6863	1.0622	0.1800	0.1141	0.1638	0.1397	0.1640
R3	543555	6462322	5.2081	5.4761	4.6228	0.2400	0.1256	0.2079	0.2413	0.2011	1.5000	1.1291	1.4889	2.4932	1.4767	0.3200	0.1970	0.2858	0.2761	0.2804
R4	543324	6462003	3.5197	3.5394	2.6820	0.1700	0.0760	0.1199	0.1232	0.1111	0.9000	1.1173	0.9802	1.1525	0.8611	0.2500	0.1079	0.1165	0.0989	0.1038
R5	543140	6461859	3.6748	3.6790	3.0438	0.1300	0.0626	0.1025	0.1022	0.0931	0.9000	0.7463	1.0855	1.2268	1.0225	0.1600	0.0757	0.0869	0.0700	0.0751
R6	542833	6462000	2.6637	3.6446	2.0070	0.1400	0.0628	0.0877	0.0872	0.0777	1.6000	0.5608	0.7364	1.3916	0.6683	0.1700	0.0734	0.0808	0.0614	0.0639
R7	542604	6462718	1.9978	1.8872	1.7502	0.0500	0.0342	0.0540	0.0525	0.0480	0.5000	0.6814	0.6351	0.6183	0.6073	0.0400	0.0295	0.0389	0.0315	0.0336
R8	542923	6462744	2.5154	2.9071	1.9911	0.1100	0.0679	0.1009	0.1015	0.0894	0.8000	0.5249	0.7317	1.1864	0.6983	0.1200	0.0767	0.0958	0.0749	0.0809
R9	542926	6463052	2.1332	2.7487	1.9076	0.0800	0.0544	0.0877	0.0860	0.0769	0.5000	0.5728	0.7152	0.8257	0.6736	0.0900	0.0566	0.0795	0.0610	0.0692
R10	543158	6463633	2.0076	2.5303	1.7981	0.0700	0.0515	0.0878	0.0852	0.0748	0.3000	0.5563	0.6788	1.0400	0.6686	0.0900	0.0563	0.0776	0.0616	0.0697
R11	543150	6461692	2.6181	2.4258	1.8822	0.0700	0.0430	0.0760	0.0749	0.0686	0.6000	0.4994	0.6735	0.8486	0.6090	0.0800	0.0475	0.0599	0.0489	0.0526
R12	543587	6461665	1.5658	1.9987	1.1306	0.0500	0.0351	0.0648	0.0634	0.0579	0.6000	0.4990	0.4485	0.6407	0.3990	0.0600	0.0362	0.0463	0.0407	0.0432
R13	543631	6461566	1.2738	1.9909	0.9423	0.0400	0.0303	0.0564	0.0548	0.0501	0.5000	0.6248	0.4105	0.6389	0.3697	0.0500	0.0303	0.0394	0.0346	0.0367
R14	543019	6463916	1.5108	2.2090	1.2702	0.0500	0.0344	0.0598	0.0578	0.0508	0.2000	0.3981	0.5408	0.8343	0.5089	0.0500	0.0334	0.0467	0.0382	0.0415
R15	543133	6465290	0.7405	0.8416	0.5959	0.0200	0.0152	0.0278	0.0260	0.0233	0.1000	0.3673	0.2475	0.3652	0.2286	0.0200	0.0127	0.0179	0.0162	0.0162
R16	544570	6465713	0.8574	1.2981	0.9298	0.0300	0.0161	0.0308	0.0282	0.0255	0.2000	0.6766	0.2446	0.4158	0.2478	0.0300	0.0160	0.0221	0.0217	0.0213
R17	543245	6464378	1.3584	2.8473	1.1059	0.0400	0.0294	0.0519	0.0498	0.0440	0.2000	0.6204	0.4520	0.8792	0.4166	0.0500	0.0279	0.0396	0.0350	0.0352
R18	542815	6461151	1.6971	1.6109	1.3058	0.0300	0.0255	0.0456	0.0438	0.0399	0.3000	0.7094	0.5401	0.5640	0.4873	0.0200	0.0224	0.0295	0.0241	0.0250
R19	544599	6466299	0.8543	1.1648	0.8603	0.0200	0.0116	0.0219	0.0201	0.0182	0.2000	0.6747	0.2090	0.3430	0.2099	0.0200	0.0107	0.0147	0.0142	0.0140
R20	543420	6465782	0.7188	0.6551	0.5641	0.0200	0.0131	0.0244	0.0228	0.0206	0.1000	0.7291	0.2724	0.2847	0.2478	0.0200	0.0107	0.0151	0.0139	0.0138
R21	544212	6462762	2.8286	4.9930	3.0228	0.1600	0.0795	0.1589	0.1524	0.1442	1.4000	0.6582	0.9784	1.4299	0.8719	0.2800	0.0916	0.1413	0.1393	0.1454
R22	544288	6462828	2.9948	4.6823	2.6007	0.1800	0.0811	0.1652	0.1585	0.1441	1.4000	0.5077	1.0239	1.6070	0.8879	0.3200	0.0904	0.1413	0.1446	0.1420
R23	544456	6462974	2.7555	6.0248	2.3419	0.1700	0.0827	0.1779	0.1695	0.1522	1.1000	0.4600	0.9734	1.9412	0.8885	0.3100	0.0951	0.1521	0.1662	0.1489
R24	544591	6463090	2.8825	6.9595	2.5759	0.1900	0.0840	0.1897	0.1811	0.1639	1.5000	0.4292	1.1925	2.5429	1.0350	0.3700	0.1050	0.1644	0.1877	0.1635
R25	544460	6462723	1.9529	4.3057	1.6580	0.1100	0.0579	0.1132	0.1083	0.0982	0.7000	0.5271	0.7573	1.3013	0.6953	0.1700	0.0606	0.0940	0.0952	0.0943
R26	544723	6463208	3.8962	13.0068	3.6704	0.2000	0.0997	0.2463	0.2322	0.2169	1.8000	0.4694	1.8022	3.7679	1.6030	0.4300	0.1330	0.2054	0.2227	0.2064
R27	544666	6463926	6.0472	14.2086	6.4369	0.2500	0.1735	0.3104	0.2583	0.2799	2.3000	0.5115	2.0047	4.0044	1.7737	0.4700	0.3199	0.3167	0.2939	0.4744
R28	544731	6463988	6.6168	11.4778	6.3830	0.2100	0.1806	0.3061	0.2308	0.2488	1.6000	0.5227	2.2321	3.2632	1.9437	0.3700	0.3308	0.2939	0.2455	0.3895
R29	544592	6464026	3.7467	9.1361	4.0163	0.1900	0.1059	0.2129	0.1853	0.1833	1.3000	0.3991	1.4099	2.8169	1.3841	0.3400	0.1597	0.1982	0.2093	0.2654
R30	544728	6464112	4.4027	8.6385	3.9679	0.1500	0.1186	0.2228	0.1653	0.1680	1.0000	0.4020	1.5146	2.5114	1.1927	0.2600	0.2035	0.2028	0.1734	0.2354
R31	544503	6464328	1.9338	4.6659	1.9922	0.1000	0.0555	0.1094	0.0980	0.0901	0.7000	0.2833	0.7202	1.3411	0.6670	0.1600	0.0683	0.0954	0.1055	0.1086
R32	544637	6464415	1.7877	4.0929	1.7952	0.0900	0.0533	0.1039	0.0896	0.0837	0.6000	0.2357	0.6540	1.1986	0.5888	0.1500	0.0707	0.0939	0.0933	0.1033
R33	545231	6464450	3.3741	3.8528	2.4848	0.0900	0.0556	0.1302	0.1004	0.1015	1.0000	0.2870	0.9595	1.1846	0.7245	0.1500	0.0756	0.1319	0.1069	0.1165
R34	543572	6463746	3.5195	4.8148	3.0751	0.1000	0.0802	0.1358	0.1331	0.1118	0.5000	0.8094	1.1759	1.9079	1.1032	0.1500	0.0952	0.1344	0.1195	0.1205
R35	543748	6463873	2.3080	10.3788	1.8500	0.1000	0.0684	0.1268	0.1253	0.1011	0.6000	0.4179	0.7058	3.0729	0.6860	0.1600	0.0805	0.1185	0.1163	0.1058
R36	543934	6464002	2.8806	3.3181	2.4337	0.1000	0.0607	0.1217	0.1196	0.0980	0.6000	0.4321	0.9286	1.3594	0.8653	0.1600	0.0670	0.1011	0.1134	0.0934
R37	544127	6464141	2.5176	3.2595	1.9967	0.1000	0.0553	0.1131	0.1093	0.0927	0.5000	0.4198	0.7635	1.1631	0.6915	0.1600	0.0603	0.0908	perational Scena	0.0916
R38	542459	6462467	1.3605	1.4181	1.5421	0.0400	0.0262	0.0477	0.0457	0.0410	0.4000	0.2311	0.3570	0.4458	0.3406	0.0300	0.0249	0.0345	0.0269	0.0284
R39	542512	6462581	1.5304	1.6130	1.2523	0.0400	0.0282	0.0491	0.0474	0.0419	0.4000	0.3193	0.4420	0.4974	0.4237	0.0400	0.0262	0.0358	0.0284	0.0298
R40	543099	6463321	3.4393	3.8177	3.2959	0.0900	0.0610	0.0995	0.0956	0.0882	0.4000	0.6322	1.2118	1.1972	1.1759	0.1100	0.0681	0.0967	0.0713	0.0862
R41	543249	6463439	3.0409	3.2661	2.7391	0.1000	0.0739	0.1229	0.1193	0.1071	0.5000	0.7798	1.1044	1.3210	1.0605	0.1300	0.0856	0.1188	0.0905	0.1075
R42	543394	6463551	3.8493	3.6845	3.4527	0.1000	0.0867	0.1390	0.1372	0.1176	0.5000	0.9705	1.2956	1.3323	1.2652	0.1500	0.1048	0.1436	0.1170	0.1298
R43	544670	6464213	2.7302	5.9558	2.48647		0.0239	0.1532	0.1260	0.1223		0.2723	0.9495	1.7223	0.83177		0.0285	0.1429	0.1360	0.1673
R44	544186	6461103	0.6792	1.1873	0.52575		0.0160	0.0299	0.0289	0.0261		0.2660	0.2128	0.3821	0.21599		0.0148	0.0200	0.0172	0.0182
R45	543670	6461675	1.2936	2.1515	1.02999		0.0346	0.0641	0.0627	0.0573		0.3790	0.4365	0.6854	0.39339		0.0359	0.0466	0.0408	0.0435
R46	542637	6460861	1.2789	1.1943	0.97129		0.0204	0.0362	0.0346	0.0315		0.3867	0.4204	0.4556	0.37754		0.0166	0.0222	0.0181	0.0185
R47	543716	6464336	1.3093	1.7729	1.06265		0.0385	0.0732	0.0698	0.0603		0.3692	0.4182	0.7454	0.38286		0.0420	0.0612	0.0601	0.0563
R48	544457	6465505	0.8871	1.9592	0.88404		0.0181	0.0350	0.0320	0.0288		1.5781	0.2527	0.5966	0.2477		0.0184	0.0258	0.0256	0.0249
R49	544257	6466375	0.5119	1.2717	0.39266		0.0106	0.0199	0.0184	0.0165		1.5178	0.1484	0.3730	0.13248		0.0096	0.0135	0.0129	0.0127
R50	543782	6464178	1.6312	2.1375	1.49276		0.0460	0.0887	0.0856	0.0726		0.6314	0.4599	0.9153	0.44176		0.0525	0.0770	0.0780	0.0707
R51	542870	6463609	1.4825	1.4123	1.24402		0.0342	0.0579	0.0554	0.0492		1.2090	0.5349	0.6611	0.49468		0.0333	0.0467	0.0361	0.0410
R52	542900	6463529	1.6223	1.5442	1.36296		0.0376	0.0633	0.0607	0.0539		0.9466	0.5600	0.7144	0.52466		0.0372	0.0520	0.0398	0.0457
R53	542787	6461088	1.6022	1.5187	1.22647		0.0242	0.0433	0.0415	0.0378		0.3863	0.5117	0.5335	0.46069		0.0209	0.0276	0.0226	0.0233
R54	543282	6464626	1.1475	1.3659	1.03098		0.0257	0.0448	0.0426	0.0384		0.8305	0.3973	0.5802	0.39034		0.0228	0.0327	0.0292	0.0293
R55	541663	6462761	0.9168	1.1782	0.75835		0.0115	0.0217	0.0208	0.0184		0.2114	0.3109	0.3618	0.27945		0.0076	0.0106	0.0090	0.0091
R56	541956	6463856	0.8870	0.7907	0.65791		0.0131	0.0240	0.0229	0.0202		0.2126	0.2581	0.2922	0.23398		0.0089	0.0123	0.0099	0.0105
R57	542316	6463028	1.2655	1.7776	0.92879		0.0216	0.0376	0.0367	0.0322		0.3013	0.3403	0.5149	0.31793		0.0161	0.0221	0.0184	0.0189
R58	542418	6465095	0.5725	1.1149	0.50828		0.0122	0.0218	0.0208	0.0186		0.2888	0.1860	0.3301	0.16912		0.0084	0.0119	0.0103	0.0106
R59	544243	6459543	0.4148	0.5262	0.27295		0.0064	0.0117	0.0111	0.0100		0.1011	0.1321	0.1916	0.11259		0.0042	0.0058	0.0050	0.0053
R60	544409	6465165	1.0895	2.5143	0.81599		0.0228	0.0441	0.0405	0.0363		0.1942	0.3347	0.7637	0.28922		0.0243	0.0345	0.0351	0.0338
R61	541538	6461826	0.6026	0.7752	0.38684		0.0114	0.0208	0.0200	0.0177		0.1985	0.1556	0.2585	0.14087		0.0087	0.0120	0.0098	0.0098
R62	542174	6462135	1.0896	1.3336	0.68133		0.0199	0.0365	0.0353	0.0311		0.1854	0.2627	0.3897	0.2558		0.0175	0.0240	0.0192	0.0196
R63	542368	6464205	0.7406	1.5517	0.6651		0.0174	0.0290	0.0280	0.0253		0.2244	0.2743	0.5568	0.26722		0.0126	0.0174	0.0141	0.0151
R64	545067	6465474	0.8018	1.4804	0.6311		0.0180	0.0345	0.0311	0.0283		0.1452	0.2710	0.4319	0.22157		0.0200	0.0265	0.0248	0.0256
R65	544584	6464584	1.2733	3.4302	1.57865		0.0411	0.0817	0.0719	0.0663		0.2242	0.4981	1.0312	0.46517		0.0506	0.0697	0.0713	0.0739
R66	544241	6464857	1.3553	2.6013	1.03633		0.0281	0.0554	0.0513	0.0457		0.2146	0.4210	0.8005	0.37925		0.0309	0.0444	0.0465	0.0438
R67	544319	6464830	1.4600	3.3467	1.12788		0.0296	0.0582	0.0537	0.0478		0.2381	0.4408	1.0128	0.39573		0.0324	0.0467	0.0492	0.0465
R68	544485	Operation	1.0043	1.7092	0.80349		0.0266	0.0516	0.0496	0.0458		0.2067	0.3050	0.4998	0.30625		0.0303	0.0422	0.0383	0.0412
R69	544751	6462012	0.9792	1.2352	0.70887		0.0211	0.0418	0.0400	0.0364		0.1642	0.3240	0.4654	0.30707		0.0241	0.0337	0.0315	0.0325
R70	543879	6461328	0.8687	1.4303	0.67815		0.0218	0.0407	0.0394	0.0359		0.1764	0.2956	0.4095	0.26697		0.0207	0.0275	0.0241	0.0255

ID	x	y	Lead: PPR Ann Avg Conc (µg/m³)	Lead: PPR Dry Depo (g/m²/annum)	Lead: MOD4+2016 Ann Avg Conc (µg/m³)	Lead: MOD4+2016 Total Depo (g/m²/annum)	Lead: Representative Operational year (BAU) Ann Avg Conc (µg/m³)	Lead: Representative Operational year (BAU) Total Deposition (g/m²/annum)	Lead: MOD 6 Construction Scenario Ann Avg Conc (µg/m³)	Lead: MOD 6 Construction Scenario Total Deposition (g/m²/annum)	Lead: MOD 6 Operational Scenario Ann Avg Conc (µg/m³)	Lead: MOD 6 Operational Scenario Total Deposition (g/m²/annum)
R1	544110	6462598	1.00E-02	4.00E-02	8.03E-03	1.87E-02	9.25E-03	2.28E-02	8.48E-03	2.15E-02	8.51E-03	2.23E-02
R2	543763	6462312	1.20E-02	5.00E-02	1.06E-02	2.26E-02	9.55E-03	2.55E-02	8.39E-03	2.36E-02	8.67E-03	2.49E-02
R3	543555	6462322	2.60E-02	9.00E-02	1.87E-02	3.47E-02	1.65E-02	4.59E-02	1.52E-02	4.49E-02	1.50E-02	4.51E-02
R4	543324	6462003	2.00E-02	6.00E-02	1.03E-02	2.06E-02	8.15E-03	1.94E-02	7.33E-03	1.82E-02	7.38E-03	1.85E-02
R5	543140	6461859	1.80E-02	4.00E-02	8.20E-03	1.39E-02	6.91E-03	1.53E-02	6.16E-03	1.41E-02	6.18E-03	1.43E-02
R6	542833	6462000	1.40E-02	4.00E-02	8.86E-03	1.34E-02	7.27E-03	1.45E-02	6.54E-03	1.31E-02	6.47E-03	1.32E-02
R7	542604	6462718	4.00E-03	1.00E-02	3.84E-03	4.70E-03	3.87E-03	7.33E-03	3.59E-03	6.75E-03	3.56E-03	6.83E-03
R8	542923	6462744	9.00E-03	3.00E-02	8.31E-03	1.26E-02	7.95E-03	1.73E-02	7.18E-03	1.57E-02	7.11E-03	1.60E-02
R9	542926	6463052	8.00E-03	2.00E-02	6.55E-03	9.51E-03	6.27E-03	1.36E-02	5.61E-03	1.22E-02	5.63E-03	1.26E-02
R10	543158	6463633	6.00E-03	2.00E-02	6.14E-03	9.51E-03	5.98E-03	1.37E-02	5.45E-03	1.25E-02	5.42E-03	1.29E-02
R11	543150	6461692	7.00E-03	2.00E-02	5.50E-03	8.42E-03	4.91E-03	1.06E-02	4.41E-03	9.78E-03	4.41E-03	9.93E-03
R12	543587	6461665	5.00E-03	2.00E-02	4.07E-03	6.51E-03	3.93E-03	8.66E-03	3.62E-03	8.11E-03	3.58E-03	8.19E-03
R13	543631	6461566	5.00E-03	1.00E-02	3.53E-03	5.45E-03	3.45E-03	7.43E-03	3.19E-03	6.95E-03	3.15E-03	7.01E-03
R14	543019	6463916	4.00E-03	1.00E-02	4.04E-03	5.46E-03	4.25E-03	8.61E-03	3.94E-03	7.94E-03	3.89E-03	8.08E-03
R15	543133	6465290	2.00E-03	1.00E-02	1.40E-03	2.27E-03	1.47E-03	3.37E-03	1.36E-03	3.15E-03	1.34E-03	3.12E-03
R16	544570	6465713	2.00E-03	1.00E-02	1.62E-03	3.03E-03	1.85E-03	4.44E-03	1.71E-03	4.13E-03	1.67E-03	4.07E-03
R17	543245	6464378	4.00E-03	1.00E-02	3.13E-03	4.75E-03	3.37E-03	7.41E-03	3.17E-03	6.96E-03	3.09E-03	6.91E-03
R18	542815	6461151	3.00E-03	1.00E-02	3.12E-03	3.65E-03	2.86E-03	5.54E-03	2.62E-03	5.08E-03	2.59E-03	5.10E-03
R19	544599	6466299	2.00E-03	1.00E-02	1.10E-03	2.03E-03	1.21E-03	2.93E-03	1.12E-03	2.72E-03	1.09E-03	2.69E-03
R20	543420	6465782	2.00E-03	1.00E-02	1.10E-03	1.98E-03	1.14E-03	2.81E-03	1.06E-03	2.63E-03	1.03E-03	2.60E-03
R21	544212	6462762	1.30E-02	5.00E-02	8.00E-03	1.88E-02	1.07E-02	2.59E-02	9.86E-03	2.51E-02	9.56E-03	2.50E-02
R22	544288	6462828	1.40E-02	6.00E-02	7.94E-03	1.88E-02	1.14E-02	2.74E-02	1.06E-02	2.67E-02	1.01E-02	2.60E-02
R23	544456	6462974	1.70E-02	8.00E-02	8.31E-03	2.13E-02	1.35E-02	3.24E-02	1.27E-02	3.14E-02	1.20E-02	2.98E-02
R24	544591	6463090	2.40E-02	1.10E-01	8.98E-03	2.53E-02	1.48E-02	3.68E-02	1.40E-02	3.57E-02	1.31E-02	3.36E-02
R25	544460	6462723	9.00E-03	4.00E-02	5.48E-03	1.25E-02	7.73E-03	1.85E-02	7.23E-03	1.78E-02	6.96E-03	1.75E-02
R26	544723	6463208	3.30E-02	1.50E-01	1.12E-02	3.42E-02	2.07E-02	5.06E-02	1.93E-02	4.74E-02	1.86E-02	4.60E-02
R27	544666	6463926	3.60E-02	2.00E-01	1.60E-02	5.01E-02	2.61E-02	6.87E-02	2.27E-02	5.96E-02	2.42E-02	6.72E-02
R28	544731	6463988	2.60E-02	1.50E-01	1.53E-02	4.66E-02	2.24E-02	5.66E-02	1.92E-02	4.83E-02	2.07E-02	5.50E-02
R29	544592	6464026	2.20E-02	1.40E-01	1.06E-02	3.17E-02	1.65E-02	4.42E-02	1.50E-02	4.02E-02	1.51E-02	4.22E-02
R30	544728	6464112	1.70E-02	1.00E-01	1.03E-02	3.15E-02	1.50E-02	3.86E-02	1.31E-02	3.35E-02	1.37E-02	3.65E-02
R31	544503	6464328	1.00E-02	6.00E-02	5.81E-03	1.41E-02	8.08E-03	2.02E-02	7.48E-03	1.91E-02	7.33E-03	1.88E-02
R32	544637	6464415	9.00E-03	5.00E-02	5.33E-03	1.36E-02	7.48E-03	1.91E-02	6.77E-03	1.74E-02	6.76E-03	1.78E-02
R33	545231	6464450	1.00E-02	5.00E-02	4.84E-03	1.44E-02	8.73E-03	2.33E-02	7.27E-03	1.96E-02	7.80E-03	2.07E-02
R34	543572	6463746	9.00E-03	4.00E-02	8.53E-03	1.46E-02	9.23E-03	2.50E-02	8.60E-03	2.38E-02	8.31E-03	2.36E-02
R35	543748	6463873	9.00E-03	4.00E-02	7.87E-03	1.28E-02	9.13E-03	2.20E-02	8.70E-03	2.16E-02	8.19E-03	2.06E-02
R36	543934	6464002	1.00E-02	4.00E-02	7.21E-03	1.18E-02	8.90E-03	1.95E-02	8.57E-03	1.97E-02	8.01E-03	1.81E-02
R37	544127	6464141	1.00E-02	5.00E-02	6.25E-03	1.19E-02	8.12E-03	1.84E-02	7.80E-03	1.87E-02	7.29E-03	1.70E-02
R38	542459	6462467	4.00E-03	1.00E-02	3.43E-03	4.06E-03	3.35E-03	6.24E-03	3.00E-03	5.66E-03	2.98E-03	5.71E-03
R39	542512	6462581	4.00E-03	1.00E-02	3.56E-03	4.26E-03	3.49E-03	6.57E-03	3.16E-03	5.99E-03	3.11E-03	6.04E-03
R40	543099	6463321	8.00E-03	3.00E-02	6.92E-03	1.27E-02	6.40E-03	1.52E-02	5.62E-03	1.34E-02	5.70E-03	1.42E-02
R41	543249	6463439	8.00E-03	3.00E-02	8.54E-03	1.51E-02	7.78E-03	1.96E-02	6.94E-03	1.76E-02	6.97E-03	1.85E-02
R42	543394	6463551	9.00E-03	4.00E-02	9.36E-03	1.68E-02	9.22E-03	2.58E-02	8.41E-03	2.38E-02	8.31E-03	2.45E-02
R43	544670	6464213	9.12E-03	5.98E-02	6.29E-03	5.62E-03	1.10E-02	2.90E-02	9.81E-03	2.59E-02	1.00E-02	2.72E-02
R44	544186	6461103	4.21E-03	1.40E-02	1.90E-03	2.70E-03	1.80E-03	3.73E-03	1.65E-03	3.44E-03	1.63E-03	3.47E-03
R45	543670	6461675	5.88E-03	1.97E-02	4.31E-03	6.49E-03	3.95E-03	8.68E-03	3.63E-03	8.12E-03	3.60E-03	8.21E-03
R46	542637	6460861	2.92E-03	6.00E-03	2.60E-03	2.66E-03	2.25E-03	4.20E-03	2.07E-03	3.86E-03	2.04E-03	3.85E-03
R47	543716	6464336	5.53E-03	2.10E-02	4.48E-03	7.41E-03	4.99E-03	1.17E-02	4.71E-03	1.13E-02	4.53E-03	1.09E-02
R48	544457	6465505	2.39E-03	1.18E-02	1.92E-03	3.50E-03	2.21E-03	5.19E-03	2.05E-03	4.86E-03	2.00E-03	4.77E-03
R49	544257	6466375	1.62E-03	8.00E-03	9.32E-04	1.86E-03	1.00E-03	2.61E-03	9.30E-04	2.43E-03	9.10E-04	2.40E-03
R50	543782	6464178	4.55E-03	2.76E-02	4.64E-04	9.08E-03	6.53E-03	1.48E-02	6.21E-03	1.45E-02	5.92E-03	1.38E-02
R51	542870	6463609	4.48E-03	1.15E-02	3.58E-04	5.76E-03	4.00E-03	8.08E-03	3.63E-03	7.28E-03	3.63E-03	7.54E-03
R52	542900	6463529	5.05E-03	1.44E-02	4.08E-04	6.54E-03	4.27E-03	8.82E-03	3.84E-03	7.90E-03	3.85E-03	8.21E-03
R53	542787	6461088	2.92E-03	8.00E-03	2.05E-04	3.39E-03	2.71E-03	5.20E-03	2.49E-03	4.77E-03	2.45E-03	4.78E-03
R54	543282	6464626	3.28E-03	9.36E-03	2.06E-04	3.96E-03	2.80E-03	6.14E-03	2.61E-03	5.76E-03	2.56E-03	5.71E-03
R55	541663	6462761	7.59E-04	2.00E-03	7.10E-05	1.13E-03	1.27E-03	2.11E-03	1.20E-03	1.96E-03	1.18E-03	1.95E-03
R56	541956	6463856	7.73E-04	2.00E-03	1.02E-04	1.43E-03	1.30E-03	2.28E-03	1.19E-03	2.08E-03	1.18E-03	2.10E-03
R57	542316	6463028	2.08E-03	2.00E-03	1.59E-04	2.42E-03	2.56E-03	4.32E-03	2.40E-03	4.02E-03	2.36E-03	4.01E-03
R58	542418	6465095	7.93E-04	2.00E-03	7.48E-05	1.43E-03	1.04E-03	2.20E-03	9.60E-04	2.04E-03	9.40E-04	2.04E-03
R59	544243	6459543	8.00E-04	1.00E-03	4.06E-05	7.37E-04	5.10E-04	1.09E-03	4.70E-04	1.00E-03	4.60E-04	1.01E-03
R60	544409	6465165	3.27E-03	1.63E-02	2.31E-04	4.68E-03	2.93E-03	6.97E-03	2.73E-03	6.56E-03	2.65E-03	6.40E-03
R61	541538	6461826	1.11E-03	1.00E-03	9.59E-05	1.33E-03	1.30E-03	2.30E-03	1.21E-03	2.11E-03	1.18E-03	2.10E-03
R62	542174	6462135	3.30E-03	2.00E-03	2.02E-04	2.75E-03	2.58E-03	4.54E-03	2.37E-03	4.15E-03	2.34E-03	4.15E-03
R63	542368	6464205	1.15E-03	1.00E-03	1.20E-04	2.02E-03	1.74E-03	3.23E-03	1.61E-03	2.95E-03	1.60E-03	2.99E-03
R64	545067	6465474	3.91E-03	1.94E-02	1.99E-04	3.62E-03	2.18E-03	5.30E-03	1.98E-03	4.79E-03	1.96E-03	4.83E-03
R65	544584	6464584	6.86E-03	3.76E-02	5.36E-04	9.95E-03	5.78E-03	1.43E-02	5.29E-03	1.32E-02	5.23E-03	1.32E-02
R66	544241	6464857	4.18E-03	2.09E-02	2.90E-04	5.90E-03	3.98E-03	9.01E-03	3.74E-03	8.62E-03	3.61E-03	8.32E-03
R67	544319	6464830	4.48E-03	2.30E-02	3.10E-04	6.29E-03	4.04E-03	9.47E-03	3.78E-03	9.03E-03	3.65E-03	8.73E-03
R68	544485	6462026	7.86E-03	3.38E-02	3.57E-04	5.87E-03	3.17E-03	7.75E-03	2.93E-03	7.26E-03	2.90E-03	7.36E-03
R69	544751	6462012	9.14E-03	4.04E-02	2.60E-04	4.71E-03	2.62E-03	6.27E-03	2.43E-03	5.91E-03	2.38E-03	5.90E-03
R70	543879	6461328	4.05E-03	1.11E-02	2.11E-04	3.73E-03	2.51E-03	5.24E-03	2.32E-03	4.87E-03	2.30E-03	4.92E-03

ID	x	y	Antimony: PPR Ann Avg Conc (µg/m³)	Antimony: PPR Dry Depo (g/m²/annum)	Antimony: MOD4+2016 Ann Avg Conc (µg/m³)	Antimony: MOD4+2016 Total Depo (g/m²/annum)	Antimony: Representative Operational year (BAU) Ann Avg Conc (µg/m³)	Antimony: Representative Operational year (BAU) Total Deposition (g/m²/annum)	Antimony: MOD 6 Construction Scenario Ann Avg Conc (µg/m³)	Antimony: MOD 6 Construction Scenario Total Deposition (g/m²/annum)	Antimony: MOD 6 Operational Scenario Ann Avg Conc (µg/m³)	Antimony: MOD 6 Operational Scenario Total Deposition (g/m²/annum)
R1	544110	6462598	1.78E-05	7.11E-05	1.43E-05	3.32E-05	1.64E-05	4.05E-05	1.51E-05	3.82E-05	1.51E-05	3.97E-05
R2	543763	6462312	2.13E-05	8.89E-05	1.88E-05	4.03E-05	1.70E-05	4.53E-05	1.49E-05	4.20E-05	1.54E-05	4.43E-05
R3	543555	6462322	4.62E-05	1.60E-04	3.33E-05	6.16E-05	2.93E-05	8.15E-05	2.70E-05	7.99E-05	2.66E-05	8.01E-05
R4	543324	6462003	3.55E-05	1.07E-04	1.84E-05	3.66E-05	1.45E-05	3.45E-05	1.30E-05	3.23E-05	1.31E-05	3.29E-05
R5	543140	6461859	3.20E-05	7.11E-05	1.46E-05	2.47E-05	1.23E-05	2.72E-05	1.09E-05	2.50E-05	1.10E-05	2.54E-05
R6	542833	6462000	2.49E-05	7.11E-05	1.57E-05	2.39E-05	1.29E-05	2.57E-05	1.16E-05	2.32E-05	1.15E-05	2.34E-05
R7	542604	6462718	7.11E-06	1.78E-05	6.82E-06	8.36E-06	6.88E-06	1.30E-05	6.38E-06	1.20E-05	6.33E-06	1.21E-05
R8	542923	6462744	1.60E-05	5.33E-05	1.48E-05	2.24E-05	1.41E-05	3.07E-05	1.28E-05	2.80E-05	1.26E-05	2.84E-05
R9	542926	6463052	1.42E-05	3.55E-05	1.16E-05	1.69E-05	1.11E-05	2.41E-05	9.97E-06	2.17E-05	1.00E-05	2.25E-05
R10	543158	6463633	1.07E-05	3.55E-05	1.09E-05	1.69E-05	1.06E-05	2.43E-05	9.69E-06	2.22E-05	9.63E-06	2.29E-05
R11	543150	6461692	1.24E-05	3.55E-05	9.78E-06	1.50E-05	8.73E-06	1.89E-05	7.84E-06	1.74E-05	7.84E-06	1.76E-05
R12	543587	6461665	8.89E-06	3.55E-05	7.23E-06	1.16E-05	6.99E-06	1.54E-05	6.43E-06	1.44E-05	6.36E-06	1.46E-05
R13	543631	6461566	8.89E-06	1.78E-05	6.28E-06	9.68E-06	6.13E-06	1.32E-05	5.67E-06	1.24E-05	5.60E-06	1.25E-05
R14	543019	6463916	7.11E-06	1.78E-05	7.17E-06	9.71E-06	7.55E-06	1.53E-05	7.00E-06	1.41E-05	6.91E-06	1.44E-05
R15	543133	6465290	3.55E-06	1.78E-05	2.49E-06	4.03E-06	2.61E-06	5.99E-06	2.42E-06	5.60E-06	2.38E-06	5.55E-06
R16	544570	6465713	3.55E-06	1.78E-05	2.88E-06	5.39E-06	3.29E-06	7.89E-06	3.04E-06	7.34E-06	2.97E-06	7.23E-06
R17	543245	6464378	7.11E-06	1.78E-05	5.57E-06	8.44E-06	5.99E-06	1.32E-05	5.63E-06	1.24E-05	5.49E-06	1.23E-05
R18	542815	6461151	5.33E-06	1.78E-05	5.55E-06	6.49E-06	5.08E-06	9.85E-06	4.66E-06	9.03E-06	4.60E-06	9.06E-06
R19	544599	6466299	3.55E-06	1.78E-05	1.95E-06	3.62E-06	2.15E-06	5.21E-06	1.99E-06	4.83E-06	1.94E-06	4.78E-06
R20	543420	6465782	3.55E-06	1.78E-05	1.96E-06	3.52E-06	2.03E-06	4.99E-06	1.88E-06	4.67E-06	1.83E-06	4.62E-06
R21	544212	6462762	2.31E-05	8.89E-05	1.42E-05	3.33E-05	1.89E-05	4.61E-05	1.75E-05	4.46E-05	1.70E-05	4.44E-05
R22	544288	6462828	2.49E-05	1.07E-04	1.41E-05	3.34E-05	2.02E-05	4.88E-05	1.88E-05	4.74E-05	1.80E-05	4.62E-05
R23	544456	6462974	3.02E-05	1.42E-04	1.48E-05	3.79E-05	2.40E-05	5.76E-05	2.26E-05	5.58E-05	2.13E-05	5.30E-05
R24	544591	6463090	4.27E-05	1.96E-04	1.60E-05	4.51E-05	2.63E-05	6.55E-05	2.49E-05	6.34E-05	2.33E-05	5.97E-05
R25	544460	6462723	1.60E-05	7.11E-05	9.75E-06	2.22E-05	1.37E-05	3.29E-05	1.29E-05	3.17E-05	1.24E-05	3.11E-05
R26	544723	6463208	5.87E-05	2.67E-04	2.00E-05	6.07E-05	3.67E-05	8.99E-05	3.42E-05	8.43E-05	3.30E-05	8.17E-05
R27	544666	6463926	6.40E-05	3.55E-04	2.84E-05	8.91E-05	4.63E-05	1.22E-04	4.03E-05	1.06E-04	4.31E-05	1.19E-04
R28	544731	6463988	4.62E-05	2.67E-04	2.71E-05	8.29E-05	3.97E-05	1.01E-04	3.41E-05	8.59E-05	3.69E-05	9.78E-05
R29	544592	6464026	3.91E-05	2.49E-04	1.88E-05	5.64E-05	2.93E-05	7.85E-05	2.66E-05	7.14E-05	2.69E-05	7.50E-05
R30	544728	6464112	3.02E-05	1.78E-04	1.83E-05	5.60E-05	2.67E-05	6.86E-05	2.32E-05	5.96E-05	2.44E-05	6.49E-05
R31	544503	6464328	1.78E-05	1.07E-04	1.03E-05	2.50E-05	1.44E-05	3.58E-05	1.33E-05	3.39E-05	1.30E-05	3.34E-05
R32	544637	6464415	1.60E-05	8.89E-05	9.47E-06	2.42E-05	1.33E-05	3.40E-05	1.20E-05	3.10E-05	1.20E-05	3.15E-05
R33	545231	6464450	1.78E-05	8.89E-05	8.61E-06	2.56E-05	1.55E-05	4.15E-05	1.29E-05	3.48E-05	1.39E-05	3.67E-05
R34	543572	6463746	1.60E-05	7.11E-05	1.52E-05	2.59E-05	1.64E-05	4.44E-05	1.53E-05	4.22E-05	1.48E-05	4.19E-05
R35	543748	6463873	1.60E-05	7.11E-05	1.40E-05	2.28E-05	1.62E-05	3.92E-05	1.55E-05	3.83E-05	1.46E-05	3.66E-05
R36	543934	6464002	1.78E-05	7.11E-05	1.28E-05	2.09E-05	1.58E-05	3.46E-05	1.52E-05	3.50E-05	1.42E-05	3.21E-05
R37	544127	6464141	1.78E-05	8.89E-05	1.11E-05	2.11E-05	1.44E-05	3.26E-05	1.39E-05	3.33E-05	1.30E-05	3.03E-05
R38	542459	6462467	7.11E-06	1.78E-05	6.09E-06	7.22E-06	5.95E-06	1.11E-05	5.33E-06	1.01E-05	5.30E-06	1.01E-05
R39	542512	6462581	7.11E-06	1.78E-05	6.32E-06	7.56E-06	6.20E-06	1.17E-05	5.62E-06	1.06E-05	5.53E-06	1.07E-05
R40	543099	6463321	1.42E-05	5.33E-05	1.23E-05	2.25E-05	1.14E-05	2.70E-05	9.99E-06	2.38E-05	1.01E-05	2.53E-05
R41	543249	6463439	1.42E-05	5.33E-05	1.52E-05	2.69E-05	1.38E-05	3.48E-05	1.23E-05	3.12E-05	1.24E-05	3.29E-05
R42	543394	6463551	1.60E-05	7.11E-05	1.66E-05	2.99E-05	1.64E-05	4.58E-05	1.49E-05	4.23E-05	1.48E-05	4.35E-05
R43	544670	6464213	1.62E-05	1.06E-04	1.12E-05	9.99E-06	1.96E-05	5.15E-05	1.74E-05	4.60E-05	1.78E-05	4.84E-05
R44	544186	6461103	7.48E-06	2.49E-05	3.38E-06	4.80E-06	3.20E-06	6.63E-06	2.93E-06	6.11E-06	2.90E-06	6.17E-06
R45	543670	6461675	1.04E-05	3.50E-05	7.66E-06	1.15E-05	7.02E-06	1.54E-05	6.45E-06	1.44E-05	6.40E-06	1.46E-05
R46	542637	6460861	5.19E-06	1.07E-05	4.61E-06	4.73E-06	4.00E-06	7.47E-06	3.68E-06	6.86E-06	3.63E-06	6.84E-06
R47	543716	6464336	9.83E-06	3.73E-05	7.96E-06	1.32E-05	8.87E-06	2.08E-05	8.37E-06	2.01E-05	8.05E-06	1.94E-05
R48	544457	6465505	4.25E-06	2.11E-05	3.41E-06	6.22E-06	3.93E-06	9.22E-06	3.64E-06	8.64E-06	3.55E-06	8.48E-06
R49	544257	6466375	2.88E-06	1.42E-05	1.66E-06	3.31E-06	1.78E-06	4.64E-06	1.65E-06	4.32E-06	1.62E-06	4.27E-06
R50	543782	6464178	8.09E-06	4.90E-05	8.24E-07	1.61E-05	1.16E-05	2.63E-05	1.10E-05	2.58E-05	1.05E-05	2.46E-05
R51	542870	6463609	7.96E-06	2.04E-05	6.36E-07	1.02E-05	7.11E-06	1.44E-05	6.45E-06	1.29E-05	6.45E-06	1.34E-05
R52	542900	6463529	8.97E-06	2.56E-05	7.25E-07	1.16E-05	7.59E-06	1.57E-05	6.83E-06	1.40E-05	6.84E-06	1.46E-05
R53	542787	6461088	5.19E-06	1.42E-05	3.64E-07	6.03E-06	4.82E-06	9.24E-06	4.43E-06	8.48E-06	4.35E-06	8.50E-06
R54	543282	6464626	5.83E-06	1.66E-05	3.66E-07	7.04E-06	4.98E-06	1.09E-05	4.64E-06	1.02E-05	4.55E-06	1.01E-05
R55	541663	6462761	1.35E-06	3.55E-06	1.26E-07	2.01E-06	2.26E-06	3.75E-06	2.13E-06	3.48E-06	2.10E-06	3.47E-06
R56	541956	6463856	1.37E-06	3.55E-06	1.81E-07	2.54E-06	2.31E-06	4.05E-06	2.12E-06	3.70E-06	2.10E-06	3.73E-06
R57	542316	6463028	3.69E-06	3.55E-06	2.83E-07	4.31E-06	4.55E-06	7.68E-06	4.27E-06	7.15E-06	4.19E-06	7.13E-06
R58	542418	6465095	1.41E-06	3.55E-06	1.33E-07	2.54E-06	1.85E-06	3.91E-06	1.71E-06	3.63E-06	1.67E-06	3.63E-06
R59	544243	6459543	1.42E-06	1.78E-06	7.22E-08	1.31E-06	9.06E-07	1.94E-06	8.35E-07	1.78E-06	8.18E-07	1.80E-06
R60	544409	6465165	5.81E-06	2.89E-05	4.10E-07	8.31E-06	5.21E-06	1.24E-05	4.85E-06	1.17E-05	4.71E-06	1.14E-05
R61	541538	6461826	1.96E-06	1.78E-06	1.70E-07	2.37E-06	2.31E-06	4.09E-06	2.15E-06	3.75E-06	2.10E-06	3.73E-06
R62	542174	6462135	5.87E-06	3.55E-06	3.59E-07	4.89E-06	4.59E-06	8.07E-06	4.21E-06	7.38E-06	4.16E-06	7.38E-06
R63	542368	6464205	2.05E-06	1.78E-06	2.13E-07	3.60E-06	3.09E-06	5.74E-06	2.86E-06	5.24E-06	2.84E-06	5.31E-06
R64	545067	6465474	6.95E-06	3.44E-05	3.55E-07	6.44E-06	3.87E-06	9.42E-06	3.52E-06	8.51E-06	3.48E-06	8.59E-06
R65	544584	6464584	1.22E-05	6.69E-05	9.53E-07	1.77E-05	1.03E-05	2.54E-05	9.40E-06	2.35E-05	9.30E-06	2.34E-05
R66	544241	6464857	7.44E-06	3.72E-05	5.16E-07	1.05E-05	7.07E-06	1.60E-05	6.65E-06	1.53E-05	6.42E-06	1.48E-05
R67	544319	6464830	7.97E-06	4.10E-05	5.51E-07	1.12E-05	7.18E-06	1.68E-05	6.72E-06	1.61E-05	6.49E-06	1.55E-05
R68	544485	6462026	1.40E-05	6.01E-05	6.34E-07	1.04E-05	5.63E-06	1.38E-05	5.21E-06	1.29E-05	5.15E-06	1.31E-05
R69	544751	6462012	1.63E-05	7.19E-05	4.62E-07	8.38E-06	4.66E-06	1.11E-05	4.32E-06	1.05E-05	4.23E-06	1.05E-05
R70	543879	6461328	7.20E-06	1.97E-05	3.74E-07	6.63E-06	4.46E-06	9.31E-06	4.12E-06	8.66E-06	4.09E-06	8.74E-06

ID	x	y	Arsenic: PPR Ann Avg Conc (µg/m³)	Arsenic: PPR Dry Depo (g/m²/annum)	Arsenic: MOD4+2016 Ann Avg Conc (µg/m³)	Arsenic: MOD4+2016 Total Depo (g/m²/annum)	Arsenic: Representative Operational year (BAU) Ann Avg Conc (µg/m³)	Arsenic: Representative Operational year (BAU) Total Deposition (g/m²/annum)
R1	544110	6462598	9.84E-05	3.94E-04	7.90E-05	1.84E-04	9.10E-05	2.24E-04
R2	543763	6462312	1.18E-04	4.92E-04	1.04E-04	2.23E-04	9.40E-05	2.51E-04
R3	543555	6462322	2.56E-04	8.85E-04	1.84E-04	3.41E-04	1.62E-04	4.51E-04
R4	543324	6462003	1.97E-04	5.90E-04	1.02E-04	2.02E-04	8.02E-05	1.91E-04
R5	543140	6461859	1.77E-04	3.94E-04	8.07E-05	1.37E-04	6.80E-05	1.51E-04
R6	542833	6462000	1.38E-04	3.94E-04	8.71E-05	1.32E-04	7.15E-05	1.42E-04
R7	542604	6462718	3.94E-05	9.84E-05	3.78E-05	4.63E-05	3.81E-05	7.21E-05
R8	542923	6462744	8.85E-05	2.95E-04	8.18E-05	1.24E-04	7.82E-05	1.70E-04
R9	542926	6463052	7.87E-05	1.97E-04	6.45E-05	9.36E-05	6.17E-05	1.33E-04
R10	543158	6463633	5.90E-05	1.97E-04	6.04E-05	9.35E-05	5.88E-05	1.34E-04
R11	543150	6461692	6.89E-05	1.97E-04	5.42E-05	8.29E-05	4.83E-05	1.05E-04
R12	543587	6461665	4.92E-05	1.97E-04	4.00E-05	6.40E-05	3.87E-05	8.52E-05
R13	543631	6461566	4.92E-05	9.84E-05	3.48E-05	5.36E-05	3.39E-05	7.31E-05
R14	543019	6463916	3.94E-05	9.84E-05	3.97E-05	5.37E-05	4.18E-05	8.47E-05
R15	543133	6465290	1.97E-05	9.84E-05	1.38E-05	2.23E-05	1.45E-05	3.32E-05
R16	544570	6465713	1.97E-05	9.84E-05	1.59E-05	2.98E-05	1.82E-05	4.37E-05
R17	543245	6464378	3.94E-05	9.84E-05	3.08E-05	4.67E-05	3.32E-05	7.29E-05
R18	542815	6461151	2.95E-05	9.84E-05	3.07E-05	3.59E-05	2.81E-05	5.45E-05
R19	544599	6466299	1.97E-05	9.84E-05	1.08E-05	2.00E-05	1.19E-05	2.88E-05
R20	543420	6465782	1.97E-05	9.84E-05	1.08E-05	1.95E-05	1.12E-05	2.76E-05
R21	544212	6462762	1.28E-04	4.92E-04	7.87E-05	1.84E-04	1.05E-04	2.55E-04
R22	544288	6462828	1.38E-04	5.90E-04	7.81E-05	1.85E-04	1.12E-04	2.70E-04
R23	544456	6462974	1.67E-04	7.87E-04	8.18E-05	2.10E-04	1.33E-04	3.19E-04
R24	544591	6463090	2.36E-04	1.08E-03	8.84E-05	2.49E-04	1.45E-04	3.62E-04
R25	544460	6462723	8.85E-05	3.94E-04	5.40E-05	1.23E-04	7.60E-05	1.82E-04
R26	544723	6463208	3.25E-04	1.48E-03	1.11E-04	3.36E-04	2.03E-04	4.98E-04
R27	544666	6463926	3.54E-04	1.97E-03	1.57E-04	4.93E-04	2.56E-04	6.76E-04
R28	544731	6463988	2.56E-04	1.48E-03	1.50E-04	4.59E-04	2.20E-04	5.56E-04
R29	544592	6464026	2.16E-04	1.38E-03	1.04E-04	3.12E-04	1.62E-04	4.35E-04
R30	544728	6464112	1.67E-04	9.84E-04	1.01E-04	3.10E-04	1.48E-04	3.79E-04
R31	544503	6464328	9.84E-05	5.90E-04	5.71E-05	1.38E-04	7.95E-05	1.98E-04
R32	544637	6464415	8.85E-05	4.92E-04	5.24E-05	1.34E-04	7.36E-05	1.88E-04
R33	545231	6464450	9.84E-05	4.92E-04	4.76E-05	1.42E-04	8.59E-05	2.30E-04
R34	543572	6463746	8.85E-05	3.94E-04	8.40E-05	1.43E-04	9.08E-05	2.46E-04
R35	543748	6463873	8.85E-05	3.94E-04	7.74E-05	1.26E-04	8.98E-05	2.17E-04
R36	543934	6464002	9.84E-05	3.94E-04	7.09E-05	1.16E-04	8.76E-05	1.92E-04
R37	544127	6464141	9.84E-05	4.92E-04	6.15E-05	1.17E-04	7.99E-05	1.81E-04
R38	542459	6462467	3.94E-05	9.84E-05	3.37E-05	4.00E-05	3.30E-05	6.14E-05
R39	542512	6462581	3.94E-05	9.84E-05	3.50E-05	4.19E-05	3.43E-05	6.46E-05
R40	543099	6463321	7.87E-05	2.95E-04	6.81E-05	1.25E-04	6.30E-05	1.50E-04
R41	543249	6463439	7.87E-05	2.95E-04	8.40E-05	1.49E-04	7.65E-05	1.93E-04
R42	543394	6463551	8.85E-05	3.94E-04	9.21E-05	1.65E-04	9.07E-05	2.53E-04
R43	544670	6464213	8.97E-05	5.89E-04	6.19E-05	5.53E-05	1.08E-04	2.85E-04
R44	544186	6461103	4.14E-05	1.38E-04	1.87E-05	2.66E-05	1.77E-05	3.67E-05
R45	543670	6461675	5.78E-05	1.94E-04	4.24E-05	6.39E-05	3.89E-05	8.54E-05
R46	542637	6460861	2.87E-05	5.90E-05	2.55E-05	2.62E-05	2.21E-05	4.13E-05
R47	543716	6464336	5.44E-05	2.07E-04	4.40E-05	7.29E-05	4.91E-05	1.15E-04
R48	544457	6465505	2.35E-05	1.17E-04	1.89E-05	3.44E-05	2.17E-05	5.11E-05
R49	544257	6466375	1.59E-05	7.87E-05	9.17E-06	1.83E-05	9.84E-06	2.57E-05
R50	543782	6464178	4.48E-05	2.71E-04	4.56E-06	8.94E-05	6.42E-05	1.46E-04
R51	542870	6463609	4.41E-05	1.13E-04	3.52E-06	5.67E-05	3.94E-05	7.95E-05
R52	542900	6463529	4.97E-05	1.41E-04	4.01E-06	6.44E-05	4.20E-05	8.68E-05
R53	542787	6461088	2.87E-05	7.87E-05	2.01E-06	3.34E-05	2.67E-05	5.12E-05
R54	543282	6464626	3.23E-05	9.21E-05	2.03E-06	3.90E-05	2.75E-05	6.04E-05
R55	541663	6462761	7.47E-06	1.97E-05	6.99E-07	1.11E-05	1.25E-05	2.08E-05
R56	541956	6463856	7.60E-06	1.97E-05	1.00E-06	1.41E-05	1.28E-05	2.24E-05
R57	542316	6463028	2.05E-05	1.97E-05	1.57E-06	2.38E-05	2.52E-05	4.25E-05
R58	542418	6465095	7.80E-06	1.97E-05	7.36E-07	1.41E-05	1.02E-05	2.16E-05
R59	544243	6459543	7.87E-06	9.84E-06	3.99E-07	7.25E-06	5.02E-06	1.07E-05
R60	544409	6465165	3.22E-05	1.60E-04	2.27E-06	4.60E-05	2.88E-05	6.86E-05
R61	541538	6461826	1.09E-05	9.84E-06	9.43E-07	1.31E-05	1.28E-05	2.26E-05
R62	542174	6462135	3.25E-05	1.97E-05	1.99E-06	2.71E-05	2.54E-05	4.47E-05
R63	542368	6464205	1.13E-05	9.84E-06	1.18E-06	1.99E-05	1.71E-05	3.18E-05
R64	545067	6465474	3.85E-05	1.91E-04	1.96E-06	3.56E-05	2.14E-05	5.21E-05
R65	544584	6464584	6.74E-05	3.70E-04	5.28E-06	9.79E-05	5.69E-05	1.41E-04
R66	544241	6464857	4.12E-05	2.06E-04	2.86E-06	5.81E-05	3.92E-05	8.86E-05
R67	544319	6464830	4.41E-05	2.27E-04	3.05E-06	6.19E-05	3.97E-05	9.32E-05
R68	544485	6462026	7.74E-05	3.33E-04	3.51E-06	5.78E-05	3.12E-05	7.62E-05
R69	544751	6462012	9.00E-05	3.98E-04	2.56E-06	4.64E-05	2.58E-05	6.17E-05
R70	543879	6461328	3.99E-05	1.09E-04	2.07E-06	3.67E-05	2.47E-05	5.16E-05

ID	x	y					Barium										Beryllium										
			MOD 6 Construction Scenario Ann Avg Conc µg/m³	MOD 6 Construction Scenario Total Deposition g/m²/annum	MOD 6 Operational Scenario Ann Avg Conc µg/m³	MOD 6 Operational Scenario Total Deposition g/m²/annum	PPR Ann Avg Conc µg/m³	PPR Dry Depo g/m²/annum	MOD4+2016 Ann Avg Conc µg/m³	MOD4+2016 Total Depo g/m²/annum	Representative Operational year (BAU) Ann Avg Conc µg/m³	Representative Operational year (BAU) Total Deposition g/m²/annum	MOD 6 Construction Scenario Ann Avg Conc µg/m³	MOD 6 Construction Scenario Total Deposition g/m²/annum	MOD 6 Operational Scenario Ann Avg Conc µg/m³	MOD 6 Operational Scenario Total Deposition g/m²/annum	PPR Ann Avg Conc µg/m³	PPR Dry Depo g/m²/annum	MOD4+2016 Ann Avg Conc µg/m³	MOD4+2016 Total Depo g/m²/annum	Representative Operational year (BAU) Ann Avg Conc µg/m³	Representative Operational year (BAU) Total Deposition g/m²/annum	MOD 6 Construction Scenario Ann Avg Conc µg/m³	MOD 6 Construction Scenario Total Deposition g/m²/annum	MOD 6 Operational Scenario Ann Avg Conc µg/m³	MOD 6 Operational Scenario Total Deposition g/m²/annum	PPR Ann Avg Conc µg/m³
R1	544110	6462598	8.34E-05	2.12E-04	8.37E-05	2.19E-04	4.42E-06	1.77E-05	3.55E-06	8.26E-06	4.09E-06	1.01E-05	3.75E-06	9.51E-06	3.76E-06	9.86E-06	4.80E-08	1.92E-07	3.85E-08	8.97E-08	4.44E-08	1.09E-07	4.07E-08	1.03E-07	4.08E-08	1.07E-07	3.97E-05
R2	543763	6462312	8.25E-05	2.32E-04	8.53E-05	2.45E-04	5.30E-06	2.21E-05	4.68E-06	1.00E-05	4.22E-06	1.13E-05	3.71E-06	1.04E-05	3.83E-06	1.10E-05	5.76E-08	2.40E-07	5.08E-08	1.09E-07	4.58E-08	1.22E-07	4.03E-08	1.13E-07	4.16E-08	1.20E-07	4.76E-05
R3	543555	6462322	1.49E-04	4.42E-04	1.47E-04	4.43E-04	1.15E-05	3.98E-05	8.28E-06	1.53E-05	7.28E-06	2.03E-05	6.71E-06	1.99E-05	6.62E-06	1.99E-05	1.25E-07	4.32E-07	8.99E-08	1.66E-07	7.91E-08	2.20E-07	7.29E-08	2.16E-07	7.19E-08	2.16E-07	1.03E-04
R4	543324	6462003	7.21E-05	1.79E-04	7.26E-05	1.82E-04	8.84E-06	2.65E-05	4.57E-06	9.09E-06	3.60E-06	8.58E-06	3.24E-06	8.02E-06	3.26E-06	8.18E-06	9.60E-08	2.88E-07	4.96E-08	9.87E-08	3.91E-08	9.32E-08	3.52E-08	8.71E-08	3.54E-08	8.88E-08	7.94E-05
R5	543140	6461859	6.06E-05	1.38E-04	6.08E-05	1.41E-04	7.95E-06	1.77E-05	3.62E-06	6.14E-06	3.05E-06	6.76E-06	2.72E-06	6.21E-06	2.73E-06	6.32E-06	8.64E-08	1.92E-07	3.93E-08	6.67E-08	3.32E-08	7.34E-08	2.96E-08	6.74E-08	2.96E-08	6.86E-08	7.14E-05
R6	542833	6462000	6.43E-05	1.29E-04	6.37E-05	1.29E-04	6.19E-06	1.77E-05	3.91E-06	5.93E-06	3.21E-06	6.39E-06	2.89E-06	5.78E-06	2.86E-06	5.82E-06	6.72E-08	1.92E-07	4.25E-08	6.44E-08	3.49E-08	6.94E-08	3.14E-08	6.28E-08	3.10E-08	6.31E-08	5.56E-05
R7	542604	6462718	3.53E-05	6.64E-05	3.50E-05	6.72E-05	1.77E-06	4.42E-06	1.70E-06	2.08E-06	1.71E-06	3.24E-06	1.59E-06	2.98E-06	1.57E-06	3.02E-06	1.92E-08	4.80E-08	1.84E-08	2.26E-08	1.86E-08	3.52E-08	1.72E-08	3.24E-08	1.71E-08	3.28E-08	1.59E-05
R8	542923	6462744	7.06E-05	1.55E-04	6.99E-05	1.57E-04	3.98E-06	1.33E-05	3.67E-06	5.57E-06	3.51E-06	7.62E-06	3.17E-06	6.96E-06	3.14E-06	7.07E-06	4.32E-08	1.44E-07	3.99E-08	6.05E-08	3.81E-08	8.28E-08	3.44E-08	7.55E-08	3.41E-08	7.67E-08	3.57E-05
R9	542926	6463052	5.52E-05	1.20E-04	5.54E-05	1.24E-04	3.54E-06	8.84E-06	2.90E-06	4.20E-06	2.77E-06	5.99E-06	2.48E-06	5.40E-06	2.49E-06	5.59E-06	3.84E-08	9.60E-08	3.14E-08	4.56E-08	3.01E-08	6.51E-08	2.69E-08	5.86E-08	2.70E-08	6.06E-08	3.18E-05
R10	543158	6463633	5.36E-05	1.23E-04	5.33E-05	1.27E-04	2.65E-06	8.84E-06	2.71E-06	4.20E-06	2.64E-06	6.04E-06	2.41E-06	5.51E-06	2.40E-06	5.70E-06	2.88E-08	9.60E-08	2.95E-08	4.56E-08	2.87E-08	6.56E-08	2.61E-08	5.98E-08	2.60E-08	6.18E-08	2.38E-05
R11	543150	6461692	4.34E-05	9.62E-05	4.34E-05	9.77E-05	3.09E-06	8.84E-06	2.43E-06	3.72E-06	2.17E-06	4.70E-06	1.95E-06	4.32E-06	1.95E-06	4.39E-06	3.36E-08	9.60E-08	2.64E-08	4.04E-08	2.36E-08	5.10E-08	2.12E-08	4.69E-08	2.12E-08	4.76E-08	2.78E-05
R12	543587	6461665	3.56E-05	7.98E-05	3.52E-05	8.06E-05	2.21E-06	8.84E-06	1.80E-06	2.88E-06	1.74E-06	3.83E-06	1.60E-06	3.58E-06	1.58E-06	3.62E-06	2.40E-08	9.60E-08	1.95E-08	3.12E-08	1.89E-08	4.15E-08	1.74E-08	3.89E-08	1.72E-08	3.93E-08	1.98E-05
R13	543631	6461566	3.14E-05	6.84E-05	3.10E-05	6.90E-05	2.21E-06	4.42E-06	1.56E-06	2.41E-06	1.52E-06	3.28E-06	1.41E-06	3.07E-06	1.39E-06	3.10E-06	2.40E-08	4.80E-08	1.69E-08	2.61E-08	1.66E-08	3.56E-08	1.53E-08	3.33E-08	1.51E-08	3.36E-08	1.98E-05
R14	543019	6463916	3.88E-05	7.81E-05	3.83E-05	7.95E-05	1.77E-06	4.42E-06	1.78E-06	2.41E-06	1.88E-06	3.81E-06	1.74E-06	3.51E-06	1.72E-06	3.57E-06	1.92E-08	4.80E-08	1.94E-08	2.62E-08	2.04E-08	4.13E-08	1.89E-08	3.81E-08	1.87E-08	3.88E-08	1.59E-05
R15	543133	6465290	1.34E-05	3.10E-05	1.32E-05	3.07E-05	8.84E-07	4.42E-06	6.19E-07	1.00E-06	6.50E-07	1.49E-06	6.01E-07	1.39E-06	5.92E-07	1.38E-06	9.60E-09	4.80E-08	6.72E-09	1.09E-08	7.05E-09	1.62E-08	6.52E-09	1.51E-08	6.43E-09	1.50E-08	7.94E-06
R16	544570	6465713	1.68E-05	4.06E-05	1.64E-05	4.00E-05	8.84E-07	4.42E-06	7.15E-07	1.34E-06	8.18E-07	1.96E-06	7.56E-07	1.83E-06	7.38E-07	1.80E-06	9.60E-09	4.80E-08	7.76E-09	1.45E-08	8.88E-09	2.13E-08	8.20E-09	1.98E-08	8.01E-09	1.95E-08	7.94E-06
R17	543245	6464378	3.12E-05	6.85E-05	3.04E-05	6.80E-05	1.77E-06	4.42E-06	1.38E-06	2.10E-06	1.49E-06	3.27E-06	1.40E-06	3.08E-06	1.37E-06	3.05E-06	1.92E-08	4.80E-08	1.50E-08	2.28E-08	1.62E-08	3.56E-08	1.52E-08	3.34E-08	1.48E-08	3.32E-08	1.59E-05
R18	542815	6461151	2.58E-05	5.00E-05	2.55E-05	5.02E-05	1.33E-06	4.42E-06	1.38E-06	1.61E-06	1.26E-06	2.45E-06	1.16E-06	2.25E-06	1.14E-06	2.25E-06	1.44E-08	4.80E-08	1.50E-08	1.75E-08	1.37E-08	2.66E-08	1.26E-08	2.44E-08	1.24E-08	2.45E-08	1.19E-05
R19	544599	6466299	1.10E-05	2.68E-05	1.07E-05	2.65E-05	8.84E-07	4.42E-06	4.86E-07	8.99E-07	5.35E-07	1.29E-06	4.95E-07	1.20E-06	4.82E-07	1.19E-06	9.60E-09	4.80E-08	5.27E-09	9.76E-09	5.81E-09	1.41E-08	5.37E-09	1.30E-08	5.23E-09	1.29E-08	7.94E-06
R20	543420	6465782	1.04E-05	2.59E-05	1.01E-05	2.56E-05	8.84E-07	4.42E-06	4.87E-07	8.76E-07	5.04E-07	1.24E-06	4.68E-07	1.16E-06	4.55E-07	1.15E-06	9.60E-09	4.80E-08	5.29E-09	9.51E-09	5.47E-09	1.35E-08	5.09E-09	1.26E-08	4.94E-09	1.25E-08	7.94E-06
R21	544212	6462762	9.70E-05	2.47E-04	9.41E-05	2.46E-04	5.75E-06	2.21E-05	3.53E-06	8.29E-06	4.71E-06	1.15E-05	4.36E-06	1.11E-05	4.22E-06	1.10E-05	6.24E-08	2.40E-07	3.84E-08	9.00E-08	5.11E-08	1.24E-07	4.73E-08	1.20E-07	4.59E-08	1.20E-07	5.16E-05
R22	544288	6462828	1.04E-04	2.62E-04	9.98E-05	2.56E-04	6.19E-06	2.65E-05	3.51E-06	8.30E-06	5.03E-06	1.21E-05	4.68E-06	1.18E-05	4.48E-06	1.15E-05	6.72E-08	2.88E-07	3.81E-08	9.01E-08	5.46E-08	1.32E-07	5.09E-08	1.28E-07	4.86E-08	1.25E-07	5.56E-05
R23	544456	6462974	1.25E-04	3.09E-04	1.18E-04	2.93E-04	7.51E-06	3.54E-05	3.67E-06	9.42E-06	5.97E-06	1.43E-05	5.61E-06	1.39E-05	5.29E-06	1.32E-05	8.16E-08	3.84E-07	3.99E-08	1.02E-07	6.48E-08	1.55E-07	6.09E-08	1.51E-07	5.74E-08	1.43E-07	6.75E-05
R24	544591	6463090	1.38E-04	3.51E-04	1.29E-04	3.30E-04	1.06E-05	4.86E-05	3.97E-06	1.12E-05	6.53E-06	1.63E-05	6.19E-06	1.58E-05	5.80E-06	1.48E-05	1.15E-07	5.28E-07	4.31E-08	1.22E-07	7.09E-08	1.77E-07	6.72E-08	1.71E-07	6.29E-08	1.61E-07	9.53E-05
R25	544460	6462723	7.11E-05	1.75E-04	6.85E-05	1.72E-04	3.98E-06	1.77E-05	2.42E-06	5.53E-06	3.42E-06	8.17E-06	3.20E-06	7.87E-06	3.08E-06	7.72E-06	4.32E-08	1.92E-07	2.63E-08	6.00E-08	3.71E-08	8.87E-08	3.47E-08	8.54E-08	3.34E-08	8.39E-08	3.57E-05
R26	544723	6463208	1.89E-04	4.67E-04	1.82E-04	4.52E-04	1.46E-05	6.63E-05	4.97E-06	1.51E-05	9.13E-06	2.24E-05	8.51E-06	2.10E-05	8.20E-06	2.03E-05	1.58E-07	7.20E-07	5.39E-08	1.64E-07	9.92E-08	2.43E-07	9.24E-08	2.28E-07	8.90E-08	2.21E-07	1.31E-04
R27	544666	6463926	2.23E-04	5.86E-04	2.38E-04	6.61E-04	1.59E-05	8.84E-05	7.06E-06	2.22E-05	1.15E-05	3.04E-05	1.00E-05	2.63E-05	1.07E-05	2.97E-05	1.73E-07	9.60E-07	7.66E-08	2.41E-07	1.25E-07	3.30E-07	1.09E-07	2.86E-07	1.16E-07	3.22E-07	1.43E-04
R28	544731	6463988	1.89E-04	4.75E-04	2.04E-04	5.41E-04	1.15E-05	6.63E-05	6.74E-06	2.06E-05	9.88E-06	2.50E-05	8.48E-06	2.14E-05	9.17E-06	2.43E-05	1.25E-07	7.20E-07	7.32E-08	2.24E-07	1.07E-07	2.71E-07	9.20E-08	2.32E-07	9.95E-08	2.64E-07	1.03E-04
R29	544592	6464026	1.47E-04	3.95E-04	1.49E-04	4.15E-04	9.72E-06	6.19E-05	4.68E-06	1.40E-05	7.29E-06	1.95E-05	6.61E-06	1.78E-05	6.68E-06	1.86E-05	1.06E-07	6.72E-07	5.08E-08	1.52E-07	7.92E-08	2.12E-07	7.18E-08	1.93E-07	7.25E-08	2.02E-07	8.73E-05
R30	544728	6464112	1.29E-04	3.30E-04	1.35E-04	3.59E-04	7.51E-06	4.42E-05	4.55E-06	1.39E-05	6.63E-06	1.70E-05	5.78E-06	1.48E-05	6.05E-06	1.61E-05	8.16E-08	4.80E-07	4.94E-08	1.51E-07	7.20E-08	1.85E-07	6.28E-08	1.61E-07	6.57E-08	1.75E-07	6.75E-05
R31	544503	6464328	7.36E-05	1.87E-04	7.21E-05	1.85E-04	4.42E-06	2.65E-05	2.57E-06	6.22E-06	3.57E-06	8.91E-06	3.31E-06	8.42E-06	3.24E-06	8.31E-06	4.80E-08	2.88E-07	2.79E-08	6.75E-08	3.88E-08	9.67E-08	3.59E-08	9.14E-08	3.52E-08	9.02E-08	3.97E-05
R32	544637	6464415	6.66E-05	1.71E-04	6.65E-05	1.75E-04	3.98E-06	2.21E-05	2.35E-06	6.02E-06	3.31E-06	8.45E-06	2.99E-06	7.70E-06	2.99E-06	7.84E-06	4.32E-08	2.40E-07	2.56E-08	6.53E-08	3.59E-08	9.18E-08	3.25E-08	8.36E-08	3.24E-08	8.52E-08	3.57E-05
R33	545231	6464450	7.15E-05	1.93E-04	7.67E-05	2.03E-04	4.42E-06	2.21E-05	2.14E-06	6.37E-06	3.86E-06	1.03E-05	3.21E-06	8.65E-06	3.45E-06	9.13E-06	4.80E-08	2.40E-07	2.32E-08	6.92E-08	4.19E-08	1.12E-07	3.49E-08	9.39E-08	3.74E-08	9.92E-08	3.97E-05
R34	543572	6463746	8.46E-05	2.34E-04	8.18E-05	2.32E-04	3.98E-06	1.77E-05	3.77E-06	6.44E-06	4.08E-06	1.10E-05	3.80E-06	1.05E-05	3.67E-06	1.04E-05	4.32E-08	1.92E-07	4.09E-08	6.99E-08	4.43E-08	1.20E-07	4.13E-08	1.14E-07	3.99E-08	1.13E-07	3.57E-05
R35	543748	6463873	8.56E-05	2.12E-04	8.06E-05	2.02E-04	3.98E-06	1.77E-05	3.48E-06	5.68E-06	4.03E-06	9.74E-06	3.84E-06	9.52E-06	3.62E-06	9.09E-06	4.32E-08	1.92E-07	3.77E-08	6.16E-08	4.38E-08	1.06E-07	4.17E-08	1.03E-07	3.93E-08	9.87E-08	3.57E-05
R36	543934	6464002	8.43E-05	1.94E-04	7.88E-05	1.78E-04	4.42E-06	1.77E-05	3.18E-06	5.21E-06	3.93E-06	8.60E-06	3.79E-06	8.70E-06	3.54E-06	7.98E-06	4.80E-08	1.92E-07	3.46E-08	5.65E-08	4.27E-08	9.34E-08	4.11E-08	9.44E-08	3.84E-08	8.66E-08	3.97E-05
R37	544127	6464141	7.67E-05	1.84E-04	7.17E-05	1.68E-04	4.42E-06	2.21E-05	2.76E-06	5.25E-06	3.59E-06	8.11E-06	3.45E-06	8.28E-06	3.22E-06	7.53E-06	4.80E-08	2.40E-07	3.00E-08	5.70E-08	3.90E-08	8.80E-08	3.74E-08	8.99E-08	3.50E-08	8.17E-08	3.97E-05
R38	542459	6462467	2.95E-05	5.57E-05	2.93E-05	5.62E-05	1.77E-06	4.42E-06	1.51E-06	1.79E-06	1.48E-06	2.76E-06	1.33E-06	2.50E-06	1.32E-06	2.52E-06	1.92E-08	4.80E-08	1.64E-08	1.95E-08	1.61E-08	2.99E-08	1.44E-08	2.72E-08	1.43E-08	2.74E-08	1.59E-05
R39	542512	6462581	3.11E-05	5.89E-05	3.06E-05	5.94E-05	1.77E-06	4.42E-06	1.57E-06	1.88E-06	1.54E-06	2.90E-06	1.40E-06	2.65E-06	1.37E-06	2.67E-06	1.92E-08	4.80E-08	1.71E-08	2.04E-08	1.67E-08	3.15E-08	1.52E-08	2.87E-08	1.49E-08	2.90E-08	1.59E-05
R40	543099	6463321	5.53E-05	1.32E-04	5.61E-05	1.40E-04	3.54E-06	1.33E-05	3.06E-06	5.60E-06	2.83E-06	6.72E-06	2.48E-06	5.91E-06	2.52E-06	6.29E-06	3.84E-08	1.44E-07	3.32E-08	6.08E-08	3.07E-08	7.30E-08	2.70E-08	6.42E-08	2.73E-08	6.83E-08	3.18E-05
R41	543249	6463439	6.83E-05	1.73E-04	6.86E-05	1.82E-04	3.54E-06	1.33E-05	3.77E-06	6.69E-06	3.44E-06	8.66E-06	3.07E-06	7.76E-06	3.08E-06	8.18E-06	3.84E-08	1.44E-07	4.10E-08	7.26E-08	3.73E-08	9.40E-08	3.33E-08	8.42E-08	3.34E-08	8.89E-08	3.18E-05
R42	543394	6463551	8.27E-05	2.34E-04	8.18E-05	2.41E-04	3.98E-06	1.77E-05	4.14E-06	7.43E-06	4.07E-06	1.14E-05	3.72E-06	1.05E-05	3.67E-06	1.08E-05	4.32E-08	1.92E-07	4.49E-08	8.07E-08	4.42E-08	1.24E-07	4.03E-08	1.14E-07	3.99E-08	1.17E-07	3.57E-05
R43	544670	6464213	9.65E-05	2.54E-04	9.84E-05	2.68E-04	4.03E-06	2.64E-05	2.78E-06	2.48E-06	4.86E-06	1.28E-05	4.34E-06	1.14E-05	4.42E-06	1.20E-05	4.37E-08	2.87E-07	3.02E-08	2.70E-08	5.28E-08	1.39E-07	4.71E-08	1.24E-07	4.80E-08	1.31E-07	3.62E-05
R44	544186	6461103	1.62E-05	3.38E-05	1.60E-05	3.41E-05	1.86E-06	6.19E-06	8.41E-07	1.19E-06	7.95E-07	1.65E-06	7.29E-07	1.52E-06	7.20E-07	1.53E-06	2.02E-08	6.72E-08	9.13E-09	1.29E-08	8.64E-09	1.79E-08	7.92E-09	1.65E-08	7.82E-09	1.66E-08	1.67E-05
R45	543670	6461675	3.57E-05	7.99E-05	3.54E-05	8.08E-05	2.60E-06	8.71E-06	1.90E-06	2.87E-06	1.75E-06	3.84E-06	1.60E-06	3.59E-06	1.59E-06	3.63E-06	2.82E-08	9.46E-08	2.07E-08	3.11E-08	1.90E-08	4.16E-08	1.74E-08	3.90E-08	1.73E-08	3.94E-08	2.33E-05
R46	542637	6460861	2.04E-05	3.80E-05	2.01E-05	3.79E-05	1.29E-06	2.65E-06	1.15E-06	1.18E-06	9.94E-07	1.86E-06	9.15E-07	1.71E-06	9.02E-07	1.70E-06	1.40E-08	2.88E-08	1.25E-08	1.28E-08	1.08E-08	2.02E-08	9.93E-09	1.85E-08	9.79E-09	1.85E-08	1.16E-05
R47	543716	6464336	4.63E-05	1.11E-04	4.46E-05	1.07E-04	2.44E-06	9.28E-06	1.98E-06	3.28E-06	2.21E-06	5.17E-06	2.08E-06	5.00E-06	2.00E-06	4.82E-06	2.65E-08	1.01E-07	2.15E-08	3.56E-08	2.39E-08	5.61E-08	2.26E-08	5.43E-08	2.17E-08	5.23E-08	2.19E-05
R48	544457	6465505	2.02E-05	4.78E-05	1.97E-05	4.69E-05	1.06E-06	5.23E-06	8.49E-07	1.55E-06	9.77E-07	2.29E-06	9.06E-07	2.15E-06	8.84E-07	2.11E-06	1.15E-08	5.68E-08	9.21E-09	1.68E-08	1.06E-08	2.49E-08	9.84E-09	2.33E-08	9.60E-09	2.29E-08	9.50E-06
R49	544257	6466375	9.15E-06	2.39E-05	8.95E-06	2.36E-05	7.16E-07	3.54E-06	4.12E-07	8.22E-07	4.42E-07	1.15E-06	4.11E-07	1.07E-06	4.02E-07	1.06E-06	7.77E-09	3.84E-08	4.47E-09	8.92E-09	4.80E-09	1.25E-08	4.46E-09	1.17E-08	4.37E-09	1.15E-08	6.43E-06
R50	543782	6464178	6.11E-05	1.43E-04	5.82E-05	1.36E-04	2.01E-06	1.22E-05	2.05E-07	4.01E-06	2.89E-06	6.54E-06	2.74E-06	6.40E-06	2.62E-06	6.11E-06	2.18E-08	1.32E-07	2.22E-09	4.36E-08	3.13E-08	7.11E-08	2.98E-08	6.95E-08	2.84E-08	6.63E-08	1.81E-05
R51	542870	6463609	3.57E-05	7.16E-05	3.57E-05	7.42E-05	1.98E-06	5.07E-06	1.58E-07	2.55E-06	1.77E-06	3.57E-06	1.60E-06	3.22E-06	1.60E-06	3.33E-06	2.15E-08	5.50E-08	1.72E-09	2.76E-08	1.92E-08	3.88E-08	1.74E-08	3.49E-08	1.74E-08	3.62E-08	1.78E-05
R52	542900	6463529	3.78E-05	7.77E-05	3.79E-05	8.08E-05	2.23E-06	6.36E-06	1.80E-07	2.89E-06	1.89E-06	3.90E-06	1.70E-06	3.49E-06	1.70E-06	3.63E-06	2.42E-08	6.90E-08	1.96E-09	3.14E-08	2.05E-08	4.23E-08	1.84E-08	3.79E-08	1.85E-08	3.94E-08	2.00E-05
R53	542787	6461088	2.45E-05	4.69E-05	2.41E-05	4.70E-05	1.29E-06	3.54E-06	9.04E-08	1.50E-06	1.20E-06	2.30E-06	1.10E-06	2.11E-06	1.08E-06	2.11E-06	1.40E-08	3.84E-08	9.82E-10	1.63E-08	1.30E-08	2.49E-08	1.19E-08	2.29E-08	1.18E-08	2.29E-08	1.16E-05
R54	543282	6464626	2.57E-05	5.67E-05	2.52E-05	5.62E-05	1.45E-06	4.14E-06	9.11E-08	1.75E-06	1.24E-06	2.71E-06	1.15E-06	2.55E-06	1.13E-06	2.52E-06	1.57E-08	4.49E-08	9.89E-10	1.90E-08	1.34E-08	2.95E-08	1.25E-08	2.76E-08	1.23E-08	2.74E-08	1.30E-05
R55	541663	6462761	1.18E-05	1.93E-05	1.16E-05	1.92E-05	3.35E-07	8.84E-07	3.14E-08	4.99E-07	5.61E-07	9.32E-07	5.30E-07	8.66E-07	5.21E-07	8.62E-07	3.64E-09	9.60E-09	3.41E-10	5.41E-09	6.09E-09	1.01E-08	5.76E-09	9.40E-09	5.66E-09	9.36E-09	3.01E-06
R56	541956	6463856	1.17E-05	2.05E-05	1.16E-05	2.07E-05	3.42E-07	8.84E-07	4.50E-08	6.31E-07	5.75E-07	1.01E-06	5.26E-07	9.19E-07	5.21E-07	9.28E-07	3.71E-09	9.60E-09	4.88E-10	6.85E-09	6.24E-09	1.09E-08	5.71E-09	9.98E-09	5.66E-09	1.01E-08	3.07E-06
R57	542316	6463028	2.36E-05	3.95E-05	2.32E-05	3.95E-05	9.19E-07	8.84E-07	7.03E-08	1.07E-06	1.13E-06	1.91E-06	1.06E-06	1.78E-06	1.04E-06	1.77E-06	9.97E-09	9.60E-09	7.63E-10	1.16E-08	1.23E-08	2.07E-08	1.15E-08	1.93E-08	1.13E-08	1.92E-08	8.25E-06
R58	542418	6465095	9.44E-06	2.01E-05	9.25E-06	2.01E-05	3.50E-07	8.84E-07	3.31E-08	6.32E-07	4.60E-07	9.72E-07	4.24E-07	9.02E-07	4.15E-07	9.02E-07	3.80E-09	9.60E-09	3.59E-10	6.86E-09	4.99E-09	1.06E-08	4.61E-09	9.79E-09	4.51E-09	9.79E-09	3.15E-06
R59	544243	6459543	4.62E-06	9.84E-06	4.53E-06	9.94E-06	3.54E-07	4.42E-07	1.79E-08	3.26E-07	2.25E-07	4.82E-07	2.08E-07	4.42E-07	2.03E-07	4.46E-07	3.84E-09	4.80E-09	1.95E-10	3.54E-09	2.45E-09	5.23E-09	2.25E-09	4.80E-09	2.21E-09	4.85E-09	3.18E-06
R60	544409	6465165	2.69E-05	6.45E-05	2.61E-05	6.30E-05	1.44E-06	7.18E-06	1.02E-07	2.07E-06	1.29E-06	3.08E-06	1.21E-06	2.90E-06	1.17E-06	2.83E-06	1.57E-08	7.80E-08	1.11E-09	2.24E-08	1.41E-08	3.34E-08	1.31E-08	3.15E-08	1.27E-08	3.07E-08	1.30E-05
R61	541538	6461826	1.19E-05	2.08E-05	1.16E-05	2.07E-05	4.88E-07	4.42E-07	4.24E-08	5.89E-07	5.75E-07	1.02E-06	5.35E-07	9.32E-07	5.21E-07	9.28E-07	5.30E-09	4.80E-09	4.60E-10	6.40E-09	6.24E-09	1.10E-08	5.81E-09	1.01E-08	5.66E-09	1.01E-08	4.39E-06
R62	542174	6462135	2.33E-05	4.08E-05	2.30E-05	4.08E-05	1.46E-06	8.84E-07	8.93E-08	1.22E-06	1.14E-06	2.01E-06	1.05E-06	1.83E-06	1.03E-06	1.83E-06	1.58E-08	9.60E-09	9.70E-10	1.32E-08	1.24E-08	2.18E-08	1.14E-08	1.99E-08	1.12E-08	1.99E-08	1.31E-05
R63	542368	6464205	1.58E-05	2.90E-05	1.57E-05	2.94E-05	5.09E-07	4.42E-07	5.29E-08	8.94E-07	7.69E-07	1.43E-06	7.12E-07	1.30E-06	7.07E-07	1.32E-06	5.53E-09	4.80E-09	5.74E-10	9.71E-09	8.35E-09	1.55E-08	7.72E-09	1.42E-08	7.68E-09	1.43E-08	4.57E-06
R64	545067	6465474	1.95E-05	4.71E-05	1.93E-05	4.75E-05	1.73E-06	8.56E-06	8.82E-08	1.60E-06	9.63E-07	2.34E-06	8.75E-07	2.12E-06	8.66E-07	2.13E-06	1.88E-08	9.30E-08	9.57E-10	1.74E-08	1.05E-08	2.54E-08	9.50E-09	2.30E-08	9.40E-09	2.32E-08	1.55E-05
R65	544584	6464584	5.20E-05	1.30E-04	5.15E-05	1.30E-04	3.03E-06	1.66E-05	2.37E-07	4.40E-06	2.55E-06	6.32E-06	2.34E-06	5.85E-06	2.31E-06	5.83E-06	3.29E-08	1.81E-07	2.57E-09	4.77E-08	2.77E-08	6.86E-08	2.54E-08	6.35E-08	2.51E-08	6.33E-08	2.72E-05
R66	544241	6464857	3.68E-05	8.48E-05	3.55E-05	8.19E-05	1.85E-06	9.25E-06	1.28E-07	2.61E-06	1.76E-06	3.98E-06	1.65E-06	3.81E-06	1.60E-06	3.68E-06	2.01E-08	1.00E-07	1.39E-09	2.83E-08	1.91E-08	4.32E-08	1.79E-08	4.14E-08	1.73E-08	3.99E-08	1.66E-05
R67	544319	6464830	3.72E-05	8.88E-05	3.59E-05	8.59E-05	1.98E-06	1.02E-05	1.37E-07	2.78E-06	1.79E-06	4.19E-06	1.67E-06	3.99E-06	1.61E-06	3.86E-06	2.15E-08	1.11E-07	1.49E-09	3.02E-08	1.94E-08	4.54E-08	1.81E-08	4.33E-08	1.75E-08	4.19E-08	1.78E-05
R68	544485	6462026	2.88E-05	7.14E-05	2.85E-05	7.24E-05	3.48E-06	1.49E-05	1.58E-07	2.59E-06	1.40E-06	3.42E-06	1.29E-06	3.21E-06	1.28E-06	3.25E-06	3.77E-08	1.62E-07	1.71E-09	2.82E-08	1.52E-08	3.72E-08	1.41E-08	3.48E-08	1.39E-08	3.53E-08	3.12E-05
R69	544751	6462012	2.39E-05	5.81E-05	2.34E-05	5.80E-05	4.04E-06	1.79E-05	1.15E-07	2.08E-06	1.16E-06	2.77E-06	1.07E-06	2.61E-06	1.05E-06	2.61E-06	4.39E-08	1.94E-07	1.25E-09	2.26E-08	1.26E-08	3.01E-08	1.17E-08	2.84E-08	1.14E-08	2.83E-08	3.63E-05
R70	543879	6461328	2.28E-05	4.79E-05	2.26E-05	4.84E-05	1.79E-06	4.89E-06	9.30E-08	1.65E-06	1.11E-06	2.32E-06	1.03E-06	2.15E-06	1.02E-06	2.17E-06	1.94E-08	5.31E-08	1.01E-09	1.79E-08	1.20E-08	2.51E-08	1.11E-08	2.34E-08	1.10E-08	2.36E-08	1.61E-05

ID	x	y	Cadmium									Chromium										Copper					
			PPR Dry Depo	MOD4+2016 Ann Avg Conc	MOD4+2016 Total Depo	Representative Operational year (BAU) Ann Avg Conc	Representative Operational year (BAU) Total Deposition	MOD 6 Construction Scenario Ann Avg Conc	MOD 6 Construction Scenario Total Deposition	MOD 6 Operational Scenario Ann Avg Conc	MOD 6 Operational Scenario Total Deposition	PPR Ann Avg Conc	PPR Dry Depo	MOD4+2016 Ann Avg Conc	MOD4+2016 Total Depo	Representative Operational year (BAU) Ann Avg Conc	Representative Operational year (BAU) Total Deposition	MOD 6 Construction Scenario Ann Avg Conc	MOD 6 Construction Scenario Total Deposition	MOD 6 Operational Scenario Ann Avg Conc	MOD 6 Operational Scenario Total Deposition	PPR Ann Avg Conc	PPR Dry Depo	MOD4+2016 Ann Avg Conc	MOD4+2016 Total Depo	Representative Operational year (BAU) Ann Avg Conc	Representative Operational year (BAU) Total Deposition
			g/m^2/annum	µg/m^3	g/m^2/annum	µg/m^3	g/m^2/annum	µg/m^3	g/m^2/annum	µg/m^3	g/m^2/annum	µg/m^3	g/m^2/annum	µg/m^3	g/m^2/annum	µg/m^3	g/m^2/annum	µg/m^3	g/m^2/annum	µg/m^3	g/m^2/annum	µg/m^3	g/m^2/annum	µg/m^3	g/m^2/annum	µg/m^3	g/m^2/annum
R1	544110	6462598	1.59E-04	3.19E-05	7.42E-05	3.67E-05	9.04E-05	3.37E-05	8.54E-05	3.38E-05	8.85E-05	3.51E-06	1.40E-05	2.82E-06	6.56E-06	3.25E-06	8.00E-06	2.98E-06	7.55E-06	2.99E-06	7.83E-06	6.69E-04	2.68E-03	5.37E-04	1.25E-03	6.19E-04	1.52E-03
R2	543763	6462312	1.98E-04	4.20E-05	8.99E-05	3.79E-05	1.01E-04	3.33E-05	9.38E-05	3.44E-05	9.89E-05	4.21E-06	1.75E-05	3.72E-06	7.95E-06	3.35E-06	8.95E-06	2.94E-06	8.29E-06	3.04E-06	8.74E-06	8.03E-04	3.34E-03	7.08E-04	1.51E-03	6.39E-04	1.71E-03
R3	543555	6462322	3.57E-04	7.44E-05	1.38E-04	6.54E-05	1.82E-04	6.03E-05	1.78E-04	5.95E-05	1.79E-04	9.13E-06	3.16E-05	6.58E-06	1.22E-05	5.78E-06	1.61E-05	5.33E-06	1.58E-05	5.26E-06	1.58E-05	1.74E-03	6.02E-03	1.25E-03	2.32E-03	1.10E-03	3.07E-03
R4	543324	6462003	2.38E-04	4.10E-05	8.17E-05	3.23E-05	7.71E-05	2.91E-05	7.20E-05	2.93E-05	7.35E-05	7.02E-06	2.11E-05	3.63E-06	7.22E-06	2.86E-06	6.82E-06	2.57E-06	6.37E-06	2.59E-06	6.50E-06	1.34E-03	4.01E-03	6.92E-04	1.38E-03	5.45E-04	1.30E-03
R5	543140	6461859	1.59E-04	3.25E-05	5.52E-05	2.74E-05	6.07E-05	2.44E-05	5.58E-05	2.45E-05	5.68E-05	6.32E-06	1.40E-05	2.88E-06	4.88E-06	2.43E-06	5.37E-06	2.16E-06	4.93E-06	2.17E-06	5.02E-06	1.20E-03	2.68E-03	5.48E-04	9.30E-04	4.62E-04	1.02E-03
R6	542833	6462000	1.59E-04	3.52E-05	5.33E-05	2.89E-05	5.74E-05	2.60E-05	5.19E-05	2.57E-05	5.22E-05	4.91E-06	1.40E-05	3.11E-06	4.71E-06	2.55E-06	5.08E-06	2.30E-06	4.59E-06	2.27E-06	4.62E-06	9.36E-04	2.68E-03	5.92E-04	8.98E-04	4.86E-04	9.68E-04
R7	542604	6462718	3.97E-05	1.52E-05	1.87E-05	1.54E-05	2.91E-05	1.42E-05	2.68E-05	1.41E-05	2.71E-05	1.40E-06	3.51E-06	1.35E-06	1.65E-06	1.36E-06	2.57E-06	1.26E-06	2.37E-06	1.25E-06	2.40E-06	2.68E-04	6.69E-04	2.57E-04	3.15E-04	2.59E-04	4.90E-04
R8	542923	6462744	1.19E-04	3.30E-05	5.01E-05	3.16E-05	6.85E-05	2.85E-05	6.25E-05	2.82E-05	6.35E-05	3.16E-06	1.05E-05	2.92E-06	4.43E-06	2.79E-06	6.05E-06	2.52E-06	5.52E-06	2.50E-06	5.61E-06	6.02E-04	2.01E-03	5.56E-04	8.44E-04	5.32E-04	1.15E-03
R9	542926	6463052	7.94E-05	2.60E-05	3.78E-05	2.49E-05	5.38E-05	2.23E-05	4.85E-05	2.23E-05	5.02E-05	2.81E-06	7.02E-06	2.30E-06	3.34E-06	2.20E-06	4.76E-06	1.97E-06	4.29E-06	1.98E-06	4.44E-06	5.35E-04	1.34E-03	4.38E-04	6.36E-04	4.19E-04	9.07E-04
R10	543158	6463633	7.94E-05	2.44E-05	3.77E-05	2.37E-05	5.43E-05	2.16E-05	4.95E-05	2.15E-05	5.12E-05	2.11E-06	7.02E-06	2.15E-06	3.34E-06	2.10E-06	4.80E-06	1.91E-06	4.38E-06	1.90E-06	4.52E-06	4.01E-04	1.34E-03	4.11E-04	6.36E-04	4.00E-04	9.14E-04
R11	543150	6461692	7.94E-05	2.18E-05	3.34E-05	1.95E-05	4.22E-05	1.75E-05	3.88E-05	1.75E-05	3.94E-05	2.46E-06	7.02E-06	1.93E-06	2.96E-06	1.72E-06	3.73E-06	1.55E-06	3.43E-06	1.55E-06	3.49E-06	4.68E-04	1.34E-03	3.68E-04	5.63E-04	3.28E-04	7.11E-04
R12	543587	6461665	7.94E-05	1.61E-05	2.58E-05	1.56E-05	3.44E-05	1.44E-05	3.22E-05	1.42E-05	3.25E-05	1.75E-06	7.02E-06	1.43E-06	2.28E-06	1.38E-06	3.04E-06	1.27E-06	2.85E-06	1.26E-06	2.87E-06	3.34E-04	1.34E-03	2.72E-04	4.35E-04	2.63E-04	5.79E-04
R13	543631	6461566	3.97E-05	1.40E-05	2.16E-05	1.37E-05	2.95E-05	1.27E-05	2.76E-05	1.25E-05	2.78E-05	1.75E-06	3.51E-06	1.24E-06	1.91E-06	1.21E-06	2.61E-06	1.12E-06	2.44E-06	1.11E-06	2.46E-06	3.34E-04	6.69E-04	2.36E-04	3.64E-04	2.31E-04	4.97E-04
R14	543019	6463916	3.97E-05	1.60E-05	2.17E-05	1.69E-05	3.42E-05	1.56E-05	3.15E-05	1.54E-05	3.21E-05	1.40E-06	3.51E-06	1.42E-06	1.92E-06	1.49E-06	3.02E-06	1.38E-06	2.79E-06	1.37E-06	2.84E-06	2.68E-04	6.69E-04	2.70E-04	3.65E-04	2.84E-04	5.76E-04
R15	543133	6465290	3.97E-05	5.56E-06	8.99E-06	5.83E-06	1.34E-05	5.40E-06	1.25E-05	5.32E-06	1.24E-05	7.02E-07	3.51E-06	4.91E-07	7.95E-07	5.16E-07	1.18E-06	4.77E-07	1.11E-06	4.70E-07	1.10E-06	1.34E-04	6.69E-04	9.36E-05	1.52E-04	9.83E-05	2.25E-04
R16	544570	6465713	3.97E-05	6.42E-06	1.20E-05	7.34E-06	1.76E-05	6.79E-06	1.64E-05	6.63E-06	1.62E-05	7.02E-07	3.51E-06	5.68E-07	1.06E-06	6.49E-07	1.56E-06	6.00E-07	1.45E-06	5.86E-07	1.43E-06	1.34E-04	6.69E-04	1.08E-04	2.03E-04	1.24E-04	2.97E-04
R17	543245	6464378	3.97E-05	1.24E-05	1.88E-05	1.34E-05	2.94E-05	1.26E-05	2.76E-05	1.23E-05	2.74E-05	1.40E-06	3.51E-06	1.10E-06	1.67E-06	1.18E-06	2.60E-06	1.11E-06	2.44E-06	1.08E-06	2.43E-06	2.68E-04	6.69E-04	2.09E-04	3.18E-04	2.25E-04	4.96E-04
R18	542815	6461151	3.97E-05	1.24E-05	1.45E-05	1.14E-05	2.20E-05	1.04E-05	2.02E-05	1.03E-05	2.02E-05	1.05E-06	3.51E-06	1.10E-06	1.28E-06	1.00E-06	1.94E-06	9.20E-07	1.78E-06	9.09E-07	1.79E-06	2.01E-04	6.69E-04	2.09E-04	2.44E-04	1.91E-04	3.71E-04
R19	544599	6466299	3.97E-05	4.36E-06	8.07E-06	4.80E-06	1.16E-05	4.45E-06	1.08E-05	4.33E-06	1.07E-05	7.02E-07	3.51E-06	3.86E-07	7.14E-07	4.25E-07	1.03E-06	3.93E-07	9.55E-07	3.83E-07	9.44E-07	1.34E-04	6.69E-04	7.35E-05	1.36E-04	8.09E-05	1.96E-04
R20	543420	6465782	3.97E-05	4.38E-06	7.87E-06	4.52E-06	1.12E-05	4.21E-06	1.04E-05	4.09E-06	1.03E-05	7.02E-07	3.51E-06	3.87E-07	6.96E-07	4.00E-07	9.86E-07	3.72E-07	9.23E-07	3.62E-07	9.13E-07	1.34E-04	6.69E-04	7.38E-05	1.33E-04	7.63E-05	1.88E-04
R21	544212	6462762	1.98E-04	3.17E-05	7.44E-05	4.23E-05	1.03E-04	3.91E-05	9.97E-05	3.79E-05	9.91E-05	4.56E-06	1.75E-05	2.81E-06	6.58E-06	3.74E-06	9.09E-06	3.46E-06	8.81E-06	3.36E-06	8.76E-06	8.70E-04	3.34E-03	5.35E-04	1.25E-03	7.12E-04	1.73E-03
R22	544288	6462828	2.38E-04	3.15E-05	7.45E-05	4.52E-05	1.09E-04	4.21E-05	1.06E-04	4.02E-05	1.03E-04	4.91E-06	2.11E-05	2.79E-06	6.59E-06	4.00E-06	9.63E-06	3.72E-06	9.36E-06	3.56E-06	9.12E-06	9.36E-04	4.01E-03	5.31E-04	1.26E-03	7.62E-04	1.83E-03
R23	544456	6462974	3.18E-04	3.30E-05	8.46E-05	5.36E-05	1.29E-04	5.04E-05	1.25E-04	4.75E-05	1.18E-04	5.97E-06	2.81E-05	2.92E-06	7.48E-06	4.74E-06	1.14E-05	4.45E-06	1.10E-05	4.20E-06	1.05E-05	1.14E-03	5.35E-03	5.56E-04	1.43E-03	9.04E-04	2.17E-03
R24	544591	6463090	4.37E-04	3.56E-05	1.01E-04	5.87E-05	1.46E-04	5.56E-05	1.41E-04	5.21E-05	1.33E-04	8.42E-06	3.86E-05	3.15E-06	8.90E-06	5.19E-06	1.29E-05	4.92E-06	1.25E-05	4.61E-06	1.18E-05	1.61E-03	7.36E-03	6.01E-04	1.70E-03	9.89E-04	2.46E-03
R25	544460	6462723	1.59E-04	2.18E-05	4.96E-05	3.07E-05	7.34E-05	2.87E-05	7.07E-05	2.76E-05	6.94E-05	3.16E-06	1.40E-05	1.93E-06	4.39E-06	2.71E-06	6.49E-06	2.54E-06	6.25E-06	2.44E-06	6.14E-06	6.02E-04	2.68E-03	3.67E-04	8.36E-04	5.17E-04	1.24E-03
R26	544723	6463208	5.95E-04	4.46E-05	1.36E-04	8.20E-05	2.01E-04	7.64E-05	1.88E-04	7.36E-05	1.82E-04	1.16E-05	5.26E-05	3.95E-06	1.20E-05	7.26E-06	1.78E-05	6.76E-06	1.67E-05	6.51E-06	1.61E-05	2.21E-03	1.00E-02	7.52E-04	2.28E-03	1.38E-03	3.38E-03
R27	544666	6463926	7.94E-04	6.34E-05	1.99E-04	1.03E-04	2.73E-04	9.00E-05	2.36E-04	9.62E-05	2.67E-04	1.26E-05	7.02E-05	5.61E-06	1.76E-05	9.14E-06	2.41E-05	7.96E-06	2.09E-05	8.51E-06	2.36E-05	2.41E-03	1.34E-02	1.07E-03	3.35E-03	1.74E-03	4.59E-03
R28	544731	6463988	5.95E-04	6.06E-05	1.85E-04	8.87E-05	2.24E-04	7.61E-05	1.92E-04	8.23E-05	2.18E-04	9.13E-06	5.26E-05	5.36E-06	1.64E-05	7.84E-06	1.99E-05	6.73E-06	1.70E-05	7.28E-06	1.93E-05	1.74E-03	1.00E-02	1.02E-03	3.12E-03	1.50E-03	3.78E-03
R29	544592	6464026	5.56E-04	4.20E-05	1.26E-04	6.55E-05	1.75E-04	5.94E-05	1.60E-04	6.00E-05	1.67E-04	7.72E-06	4.91E-05	3.72E-06	1.11E-05	5.79E-06	1.55E-05	5.25E-06	1.41E-05	5.31E-06	1.48E-05	1.47E-03	9.36E-03	7.08E-04	2.12E-03	1.10E-03	2.95E-03
R30	544728	6464112	3.97E-04	4.08E-05	1.25E-04	5.96E-05	1.53E-04	5.19E-05	1.33E-04	5.44E-05	1.45E-04	5.97E-06	3.51E-05	3.61E-06	1.11E-05	5.27E-06	1.35E-05	4.59E-06	1.18E-05	4.81E-06	1.28E-05	1.14E-03	6.69E-03	6.88E-04	2.11E-03	1.00E-03	2.58E-03
R31	544503	6464328	2.38E-04	2.30E-05	5.58E-05	3.21E-05	8.00E-05	2.97E-05	7.56E-05	2.91E-05	7.47E-05	3.51E-06	2.11E-05	2.04E-06	4.94E-06	2.84E-06	7.08E-06	2.63E-06	6.69E-06	2.57E-06	6.60E-06	6.69E-04	4.01E-03	3.88E-04	9.41E-04	5.40E-04	1.35E-03
R32	544637	6464415	1.98E-04	2.11E-05	5.40E-05	2.97E-05	7.59E-05	2.69E-05	6.91E-05	2.68E-05	7.04E-05	3.16E-06	1.75E-05	1.87E-06	4.78E-06	2.63E-06	6.71E-06	2.38E-06	6.11E-06	2.37E-06	6.23E-06	6.02E-04	3.34E-03	3.56E-04	9.11E-04	5.00E-04	1.28E-03
R33	545231	6464450	1.98E-04	1.92E-05	5.72E-05	3.46E-05	9.26E-05	2.89E-05	7.77E-05	3.10E-05	8.20E-05	3.51E-06	1.75E-05	1.70E-06	5.06E-06	3.06E-06	8.19E-06	2.55E-06	6.87E-06	2.74E-06	7.26E-06	6.69E-04	3.34E-03	3.24E-04	9.65E-04	5.84E-04	1.56E-03
R34	543572	6463746	1.59E-04	3.39E-05	5.79E-05	3.66E-05	9.91E-05	3.41E-05	9.43E-05	3.30E-05	9.36E-05	3.16E-06	1.40E-05	3.00E-06	5.12E-06	3.24E-06	8.77E-06	3.02E-06	8.34E-06	2.92E-06	8.28E-06	6.02E-04	2.68E-03	5.71E-04	9.75E-04	6.17E-04	1.67E-03
R35	543748	6463873	1.59E-04	3.12E-05	5.10E-05	3.62E-05	8.74E-05	3.45E-05	8.55E-05	3.25E-05	8.17E-05	3.16E-06	1.40E-05	2.76E-06	4.51E-06	3.20E-06	7.73E-06	3.05E-06	7.56E-06	2.87E-06	7.22E-06	6.02E-04	2.68E-03	5.26E-04	8.59E-04	6.11E-04	1.47E-03
R36	543934	6464002	1.59E-04	2.86E-05	4.68E-05	3.53E-05	7.73E-05	3.40E-05	7.81E-05	3.18E-05	7.16E-05	3.51E-06	1.40E-05	2.53E-06	4.14E-06	3.12E-06	6.83E-06	3.01E-06	6.91E-06	2.81E-06	6.34E-06	6.69E-04	2.68E-03	4.82E-04	7.88E-04	5.95E-04	1.30E-03
R37	544127	6464141	1.98E-04	2.48E-05	4.71E-05	3.22E-05	7.28E-05	3.10E-05	7.44E-05	2.89E-05	6.76E-05	3.51E-06	1.75E-05	2.19E-06	4.17E-06	2.85E-06	6.44E-06	2.74E-06	6.58E-06	2.56E-06	5.98E-06	6.69E-04	3.34E-03	4.18E-04	7.94E-04	5.43E-04	1.23E-03
R38	542459	6462467	3.97E-05	1.36E-05	1.61E-05	1.33E-05	2.48E-05	1.19E-05	2.25E-05	1.18E-05	2.27E-05	1.40E-06	3.51E-06	1.20E-06	1.43E-06	1.18E-06	2.19E-06	1.05E-06	1.99E-06	1.05E-06	2.00E-06	2.68E-04	6.69E-04	2.29E-04	2.72E-04	2.24E-04	4.17E-04
R39	542512	6462581	3.97E-05	1.41E-05	1.69E-05	1.39E-05	2.61E-05	1.25E-05	2.38E-05	1.23E-05	2.40E-05	1.40E-06	3.51E-06	1.25E-06	1.49E-06	1.22E-06	2.31E-06	1.11E-06	2.10E-06	1.09E-06	2.12E-06	2.68E-04	6.69E-04	2.38E-04	2.85E-04	2.33E-04	4.39E-04
R40	543099	6463321	1.19E-04	2.75E-05	5.03E-05	2.54E-05	6.04E-05	2.23E-05	5.31E-05	2.26E-05	5.65E-05	2.81E-06	1.05E-05	2.43E-06	4.45E-06	2.25E-06	5.34E-06	1.97E-06	4.70E-06	2.00E-06	5.00E-06	5.35E-04	2.01E-03	4.63E-04	8.47E-04	4.28E-04	1.02E-03
R41	543249	6463439	1.19E-04	3.39E-05	6.00E-05	3.09E-05	7.77E-05	2.75E-05	6.97E-05	2.77E-05	7.35E-05	2.81E-06	1.05E-05	3.00E-06	5.31E-06	2.73E-06	6.88E-06	2.44E-06	6.16E-06	2.45E-06	6.50E-06	5.35E-04	2.01E-03	5.71E-04	1.01E-03	5.20E-04	1.31E-03
R42	543394	6463551	1.59E-04	3.71E-05	6.67E-05	3.66E-05	1.02E-04	3.34E-05	9.45E-05	3.30E-05	9.70E-05	3.16E-06	1.40E-05	3.28E-06	5.90E-06	3.24E-06	9.04E-06	2.95E-06	8.36E-06	2.92E-06	8.58E-06	6.02E-04	2.68E-03	6.26E-04	1.12E-03	6.17E-04	1.72E-03
R43	544670	6464213	2.37E-04	2.50E-05	2.23E-05	4.37E-05	1.15E-04	3.89E-05	1.03E-04	3.97E-05	1.08E-04	3.20E-06	2.10E-05	2.21E-06	1.97E-06	3.86E-06	1.02E-05	3.44E-06	9.08E-06	3.51E-06	9.55E-06	6.10E-04	4.00E-03	4.21E-04	3.76E-04	7.36E-04	1.94E-03
R44	544186	6461103	5.56E-05	7.55E-06	1.07E-05	7.14E-06	1.48E-05	6.55E-06	1.37E-05	6.47E-06	1.38E-05	1.48E-06	4.91E-06	6.68E-07	9.47E-07	6.32E-07	1.31E-06	5.79E-07	1.21E-06	5.72E-07	1.22E-06	2.82E-04	9.36E-04	1.27E-04	1.81E-04	1.20E-04	2.50E-04
R45	543670	6461675	7.82E-05	1.71E-05	2.58E-05	1.57E-05	3.44E-05	1.44E-05	3.22E-05	1.43E-05	3.26E-05	2.06E-06	6.92E-06	1.51E-06	2.28E-06	1.39E-06	3.05E-06	1.27E-06	2.85E-06	1.26E-06	2.88E-06	3.93E-04	1.32E-03	2.88E-04	4.34E-04	2.64E-04	5.81E-04
R46	542637	6460861	2.38E-05	1.03E-05	1.06E-05	8.93E-06	1.67E-05	8.22E-06	1.53E-05	8.10E-06	1.53E-05	1.02E-06	2.11E-06	9.11E-07	9.34E-07	7.90E-07	1.47E-06	7.27E-07	1.35E-06	7.16E-07	1.35E-06	1.95E-04	4.01E-04	1.74E-04	1.78E-04	1.51E-04	2.81E-04
R47	543716	6464336	8.34E-05	1.78E-05	2.94E-05	1.98E-05	4.64E-05	1.87E-05	4.49E-05	1.80E-05	4.33E-05	1.94E-06	7.37E-06	1.57E-06	2.60E-06	1.75E-06	4.11E-06	1.65E-06	3.97E-06	1.59E-06	3.83E-06	3.70E-04	1.41E-03	2.99E-04	4.96E-04	3.34E-04	7.83E-04
R48	544457	6465505	4.70E-05	7.62E-06	1.39E-05	8.77E-06	2.06E-05	8.14E-06	1.93E-05	7.94E-06	1.89E-05	8.40E-07	4.16E-06	6.74E-07	1.23E-06	7.76E-07	1.82E-06	7.20E-07	1.71E-06	7.02E-07	1.67E-06	1.60E-04	7.92E-04	1.28E-04	2.34E-04	1.48E-04	3.47E-04
R49	544257	6466375	3.18E-05	3.70E-06	7.38E-06	3.97E-06	1.04E-05	3.69E-06	9.64E-06	3.61E-06	9.53E-06	5.68E-07	2.81E-06	3.27E-07	6.53E-07	3.51E-07	9.16E-07	3.26E-07	8.53E-07	3.19E-07	8.42E-07	1.08E-04	5.35E-04	6.24E-05	1.24E-04	6.69E-05	1.75E-04
R50	543782	6464178	1.09E-04	1.84E-06	3.61E-05	2.59E-05	5.88E-05	2.46E-05	5.75E-05	2.35E-05	5.48E-05	1.60E-06	9.68E-06	1.63E-07	3.19E-06	2.29E-06	5.20E-06	2.18E-06	5.09E-06	2.08E-06	4.85E-06	3.04E-04	1.84E-03	3.10E-05	6.08E-04	4.37E-04	9.91E-04
R51	542870	6463609	4.55E-05	1.42E-06	2.29E-05	1.59E-05	3.21E-05	1.44E-05	2.89E-05	1.44E-05	2.99E-05	1.57E-06	4.03E-06	1.26E-07	2.02E-06	1.40E-06	2.84E-06	1.27E-06	2.56E-06	1.27E-06	2.65E-06	3.00E-04	7.67E-04	2.39E-05	3.85E-04	2.68E-04	5.40E-04
R52	542900	6463529	5.71E-05	1.62E-06	2.60E-05	1.69E-05	3.50E-05	1.52E-05	3.14E-05	1.53E-05	3.26E-05	1.77E-06	5.05E-06	1.43E-07	2.30E-06	1.50E-06	3.10E-06	1.35E-06	2.77E-06	1.35E-06	2.88E-06	3.38E-04	9.62E-04	2.73E-05	4.38E-04	2.86E-04	5.90E-04
R53	542787	6461088	3.18E-05	8.12E-07	1.35E-05	1.08E-05	2.06E-05	9.88E-06	1.89E-05	9.72E-06	1.90E-05	1.02E-06	2.81E-06	7.18E-08	1.19E-06	9.51E-07	1.83E-06	8.74E-07	1.67E-06	8.60E-07	1.68E-06	1.95E-04	5.35E-04	1.37E-05	2.27E-04	1.81E-04	3.48E-04
R54	543282	6464626	3.71E-05	8.18E-07	1.57E-05	1.11E-05	2.44E-05	1.04E-05	2.29E-05	1.02E-05	2.27E-05	1.15E-06	3.28E-06	7.24E-08	1.39E-06	9.83E-07	2.16E-06	9.16E-07	2.02E-06	8.99E-07	2.00E-06	2.20E-04	6.26E-04	1.38E-05	2.65E-04	1.87E-04	4.11E-04
R55	541663	6462761	7.94E-06	2.82E-07	4.48E-06	5.04E-06	8.37E-06	4.76E-06	7.78E-06	4.68E-06	7.74E-06	2.66E-07	7.02E-07	2.49E-08	3.96E-07	4.46E-07	7.41E-07	4.21E-07	6.88E-07	4.14E-07	6.84E-07	5.08E-05	1.34E-04	4.75E-06	7.55E-05	8.50E-05	1.41E-04
R56	541956	6463856	7.94E-06	4.04E-07	5.67E-06	5.16E-06	9.05E-06	4.72E-06	8.26E-06	4.68E-06	8.33E-06	2.71E-07	7.02E-07	3.57E-08	5.01E-07	4.56E-07	8.00E-07	4.18E-07	7.30E-07	4.14E-07	7.37E-07	5.17E-05	1.34E-04	6.80E-06	9.56E-05	8.70E-05	1.53E-04
R57	542316	6463028	7.94E-06	6.31E-07	9.62E-06	1.02E-05	1.71E-05	9.53E-06	1.60E-05	9.37E-06	1.59E-05	7.30E-07	7.02E-07	5.58E-08	8.51E-07	8.99E-07	1.52E-06	8.42E-07	1.41E-06	8.28E-07	1.41E-06	1.39E-04	1.34E-04	1.06E-05	1.62E-04	1.71E-04	2.89E-04
R58	542418	6465095	7.94E-06	2.97E-07	5.67E-06	4.13E-06	8.73E-06	3.81E-06	8.10E-06	3.73E-06	8.10E-06	2.78E-07	7.02E-07	2.63E-08	5.02E-07	3.65E-07	7.72E-07	3.37E-07	7.16E-07	3.30E-07	7.16E-07	5.30E-05	1.34E-04	5.00E-06	9.56E-05	6.96E-05	1.47E-04
R59	544243	6459543	3.97E-06	1.61E-07	2.93E-06	2.02E-06	4.33E-06	1.87E-06	3.97E-06	1.83E-06	4.01E-06	2.81E-07	3.51E-07	1.43E-08	2.59E-07	1.79E-07	3.83E-07	1.65E-07	3.51E-07	1.61E-07	3.55E-07	5.35E-05	6.69E-05	2.72E-06	4.93E-05	3.41E-05	7.29E-05
R60	544409	6465165	6.45E-05	9.15E-07	1.86E-05	1.16E-05	2.77E-05	1.08E-05	2.60E-05	1.05E-05	2.54E-05	1.15E-06	5.70E-06	8.09E-08	1.64E-06	1.03E-06	2.45E-06	9.58E-07	2.30E-06	9.30E-07	2.25E-06	2.19E-04	1.09E-03	1.54E-05	3.13E-04	1.96E-04	4.66E-04
R61	541538	6461826	3.97E-06	3.81E-07	5.29E-06	5.16E-06	9.13E-06	4.80E-06	8.37E-06	4.68E-06	8.33E-06	3.88E-07	3.51E-07	3.37E-08	4.68E-07	4.56E-07	8.07E-07	4.25E-07	7.41E-07	4.14E-07	7.37E-07	7.39E-05	6.69E-05	6.41E-06	8.92E-05	8.70E-05	1.54E-04
R62	542174	6462135	7.94E-06	8.02E-07	1.09E-05	1.02E-05	1.80E-05	9.41E-06	1.65E-05	9.29E-06	1.65E-05	1.16E-06	7.02E-07	7.09E-08	9.66E-07	9.06E-07	1.59E-06	8.32E-07	1.46E-06	8.21E-07	1.46E-06	2.21E-04	1.34E-04	1.35E-05	1.84E-04	1.73E-04	3.04E-04
R63	542368	6464205	3.97E-06	4.75E-07	8.03E-06	6.91E-06	1.28E-05	6.39E-06	1.17E-05	6.35E-06	1.19E-05	4.05E-07	3.51E-07	4.20E-08	7.10E-07	6.11E-07	1.13E-06	5.65E-07	1.04E-06	5.62E-07	1.05E-06	7.71E-05	6.69E-05	8.01E-06	1.35E-04	1.16E-04	2.16E-04
R64	545067	6465474	7.69E-05	7.92E-07	1.44E-05	8.65E-06	2.10E-05	7.86E-06	1.90E-05	7.78E-06	1.92E-05	1.37E-06	6.80E-06	7.00E-08	1.27E-06	7.65E-07	1.86E-06	6.95E-07	1.68E-06	6.88E-07	1.70E-06	2.62E-04	1.30E-03	1.33E-05	2.42E-04	1.46E-04	3.55E-04
R65	544584	6464584	1.49E-04	2.13E-06	3.95E-05	2.29E-05	5.68E-05	2.10E-05	5.25E-05	2.08E-05	5.23E-05	2.41E-06	1.32E-05	1.88E-07	3.49E-06	2.03E-06	5.02E-06	1.86E-06	4.64E-06	1.84E-06	4.63E-06	4.59E-04	2.52E-03	3.59E-05	6.65E-04	3.87E-04	9.57E-04
R66	544241	6464857	8.31E-05	1.15E-06	2.34E-05	1.58E-05	3.58E-05	1.48E-05	3.42E-05	1.43E-05	3.30E-05	1.47E-06	7.35E-06	1.02E-07	2.07E-06	1.40E-06	3.16E-06	1.31E-06	3.03E-06	1.27E-06	2.92E-06	2.80E-04	1.40E-03	1.94E-05	3.95E-04	2.66E-04	6.03E-04
R67	544319	6464830	9.14E-05	1.23E-06	2.50E-05	1.60E-05	3.76E-05	1.50E-05	3.58E-05	1.45E-05	3.46E-05	1.57E-06	8.09E-06	1.09E-07	2.21E-06	1.42E-06	3.32E-06	1.33E-06	3.17E-06	1.28E-06	3.06E-06	3.00E-04	1.54E-03	2.07E-05	4.21E-04	2.70E-04	6.33E-04
R68	544485	6462026	1.34E-04	1.42E-06	2.33E-05	1.26E-05	3.08E-05	1.16E-05	2.88E-05	1.15E-05	2.92E-05	2.76E-06	1.19E-05	1.25E-07	2.06E-06	1.11E-06	2.72E-06	1.03E-06	2.55E-06	1.02E-06	2.58E-06	5.26E-04	2.26E-03	2.39E-05	3.93E-04	2.12E-04	5.18E-04
R69	544751	6462012	1.61E-04	1.03E-06	1.87E-05	1.04E-05	2.49E-05	9.64E-06	2.35E-05	9.45E-06	2.34E-05	3.21E-06	1.42E-05	9.12E-08	1.65E-06	9.20E-07	2.20E-06	8.53E-07	2.07E-06	8.35E-07	2.07E-06	6.12E-04	2.71E-03	1.74E-05	3.15E-04	1.75E-04	4.19E-04
R70	543879	6461328	4.39E-05	8.36E-07	1.48E-05	9.96E-06	2.08E-05	9.21E-06	1.93E-05	9.13E-06	1.95E-05	1.42E-06	3.88E-06	7.39E-08	1.31E-06	8.81E-07	1.84E-06	8.14E-07	1.71E-06	8.07E-07	1.73E-06	2.71E-04	7.40E-04	1.41E-05	2.50E-04	1.68E-04	3.51E-04

ID	x	y					Iron										Manganese										
			MOD 6 Construction Scenario Ann Avg Conc	MOD 6 Construction Scenario Total Deposition	MOD 6 Operational Scenario Ann Avg Conc	MOD 6 Operational Scenario Total Deposition	PPR Ann Avg Conc	PPR Dry Depo	MOD4+2016 Ann Avg Conc	MOD4+2016 Total Depo	Representative Operational year (BAU) Ann Avg Conc	Representative Operational year (BAU) Total Deposition	MOD 6 Construction Scenario Ann Avg Conc	MOD 6 Construction Scenario Total Deposition	MOD 6 Operational Scenario Ann Avg Conc	MOD 6 Operational Scenario Total Deposition	PPR Ann Avg Conc	PPR Dry Depo	MOD4+2016 Ann Avg Conc	MOD4+2016 Total Depo	Representative Operational year (BAU) Ann Avg Conc	Representative Operational year (BAU) Total Deposition	MOD 6 Construction Scenario Ann Avg Conc	MOD 6 Construction Scenario Total Deposition	MOD 6 Operational Scenario Ann Avg Conc	MOD 6 Operational Scenario Total Deposition	PPR Ann Avg Conc
			μg/m^3	g/m^2/annum	μg/m^3	g/m^2/annum	μg/m^3	g/m^2/annum	μg/m^3	g/m^2/annum	μg/m^3	g/m^2/annum	μg/m^3	g/m^2/annum	μg/m^3	g/m^2/annum	μg/m^3	g/m^2/annum	μg/m^3	g/m^2/annum	μg/m^3	g/m^2/annum	μg/m^3	g/m^2/annum	μg/m^3	g/m^2/annum	μg/m^3
R1	544110	6462598	5.67E-04	1.44E-03	5.69E-04	1.49E-03	6.17E-02	2.47E-01	4.96E-02	1.15E-01	5.71E-02	1.41E-01	5.23E-02	1.33E-01	5.25E-02	1.38E-01	1.68E-04	6.73E-04	1.35E-04	3.15E-04	1.56E-04	3.83E-04	1.43E-04	3.62E-04	1.43E-04	3.75E-04	9.57E-08
R2	543763	6462312	5.61E-04	1.58E-03	5.80E-04	1.67E-03	7.41E-02	3.09E-01	6.54E-02	1.40E-01	5.89E-02	1.57E-01	5.18E-02	1.46E-01	5.35E-02	1.54E-01	2.02E-04	8.41E-04	1.78E-04	3.81E-04	1.61E-04	4.29E-04	1.41E-04	3.98E-04	1.46E-04	4.19E-04	1.15E-07
R3	543555	6462322	1.02E-03	3.01E-03	1.00E-03	3.01E-03	1.60E-01	5.55E-01	1.16E-01	2.14E-01	1.02E-01	2.83E-01	9.38E-02	2.77E-01	9.25E-02	2.78E-01	4.38E-04	1.51E-03	3.15E-04	5.83E-04	2.77E-04	7.72E-04	2.56E-04	7.56E-04	2.52E-04	7.58E-04	2.49E-07
R4	543324	6462003	4.90E-04	1.21E-03	4.94E-04	1.24E-03	1.23E-01	3.70E-01	6.38E-02	1.27E-01	5.03E-02	1.20E-01	4.52E-02	1.12E-01	4.55E-02	1.14E-01	3.37E-04	1.01E-03	1.74E-04	3.46E-04	1.37E-04	3.27E-04	1.23E-04	3.05E-04	1.24E-04	3.11E-04	1.91E-07
R5	543140	6461859	4.12E-04	9.40E-04	4.13E-04	9.57E-04	1.11E-01	2.47E-01	5.06E-02	8.58E-02	4.26E-02	9.44E-02	3.80E-02	8.67E-02	3.81E-02	8.83E-02	3.03E-04	6.73E-04	1.38E-04	2.34E-04	1.16E-04	2.57E-04	1.04E-04	2.36E-04	1.04E-04	2.41E-04	1.72E-07
R6	542833	6462000	4.37E-04	8.75E-04	4.33E-04	8.80E-04	8.64E-02	2.47E-01	5.47E-02	8.29E-02	4.49E-02	8.93E-02	4.04E-02	8.07E-02	3.99E-02	8.12E-02	2.36E-04	6.73E-04	1.49E-04	2.26E-04	1.22E-04	2.43E-04	1.10E-04	2.20E-04	1.09E-04	2.21E-04	1.34E-07
R7	542604	6462718	2.40E-04	4.52E-04	2.38E-04	4.57E-04	2.47E-02	6.17E-02	2.37E-02	2.90E-02	2.39E-02	4.52E-02	2.22E-02	4.17E-02	2.20E-02	4.22E-02	6.73E-05	1.68E-04	6.46E-05	7.91E-05	6.51E-05	1.23E-04	6.04E-05	1.14E-04	5.99E-05	1.15E-04	3.83E-08
R8	542923	6462744	4.80E-04	1.05E-03	4.76E-04	1.07E-03	5.55E-02	1.85E-01	5.13E-02	7.79E-02	4.91E-02	1.06E-01	4.43E-02	9.71E-02	4.39E-02	9.87E-02	1.51E-04	5.05E-04	1.40E-04	2.12E-04	1.34E-04	2.90E-04	1.21E-04	2.65E-04	1.20E-04	2.69E-04	8.61E-08
R9	542926	6463052	3.75E-04	8.17E-04	3.77E-04	8.46E-04	4.94E-02	1.23E-01	4.04E-02	5.87E-02	3.87E-02	8.37E-02	3.46E-02	7.54E-02	3.47E-02	7.80E-02	1.35E-04	3.37E-04	1.10E-04	1.60E-04	1.06E-04	2.28E-04	9.44E-05	2.05E-04	9.47E-05	2.13E-04	7.65E-08
R10	543158	6463633	3.65E-04	8.34E-04	3.63E-04	8.62E-04	3.70E-02	1.23E-01	3.79E-02	5.87E-02	3.69E-02	8.44E-02	3.36E-02	7.70E-02	3.35E-02	7.96E-02	1.01E-04	3.37E-04	1.03E-04	1.60E-04	1.01E-04	2.30E-04	9.17E-05	2.10E-04	9.12E-05	2.17E-04	5.74E-08
R11	543150	6461692	2.95E-04	6.54E-04	2.95E-04	6.64E-04	4.32E-02	1.23E-01	3.40E-02	5.20E-02	3.03E-02	6.56E-02	2.72E-02	6.04E-02	2.72E-02	6.13E-02	1.18E-04	3.37E-04	9.26E-05	1.42E-04	8.26E-05	1.79E-04	7.42E-05	1.65E-04	7.42E-05	1.67E-04	6.70E-08
R12	543587	6461665	2.42E-04	5.42E-04	2.39E-04	5.48E-04	3.09E-02	1.23E-01	2.51E-02	4.02E-02	2.43E-02	5.34E-02	2.23E-02	5.01E-02	2.21E-02	5.05E-02	8.41E-05	3.37E-04	6.84E-05	1.09E-04	6.61E-05	1.46E-04	6.09E-05	1.36E-04	6.02E-05	1.38E-04	4.78E-08
R13	543631	6461566	2.13E-04	4.65E-04	2.11E-04	4.69E-04	3.09E-02	6.17E-02	2.18E-02	3.36E-02	2.13E-02	4.59E-02	1.97E-02	4.29E-02	1.94E-02	4.33E-02	8.41E-05	1.68E-04	5.94E-05	9.16E-05	5.81E-05	1.25E-04	5.37E-05	1.17E-04	5.30E-05	1.18E-04	4.78E-08
R14	543019	6463916	2.64E-04	5.31E-04	2.60E-04	5.40E-04	2.47E-02	6.17E-02	2.49E-02	3.37E-02	2.62E-02	5.31E-02	2.43E-02	4.90E-02	2.40E-02	4.99E-02	6.73E-05	1.68E-04	6.79E-05	9.19E-05	7.15E-05	1.45E-04	6.63E-05	1.34E-04	6.55E-05	1.36E-04	3.83E-08
R15	543133	6465290	9.10E-05	2.11E-04	8.96E-05	2.09E-04	1.23E-02	6.17E-02	8.64E-03	1.40E-02	9.07E-03	2.08E-02	8.39E-03	1.94E-02	8.27E-03	1.93E-02	3.37E-05	1.68E-04	2.36E-05	3.81E-05	2.47E-05	5.67E-05	2.29E-05	5.30E-05	2.25E-05	5.25E-05	1.91E-08
R16	544570	6465713	1.14E-04	2.76E-04	1.12E-04	2.72E-04	1.23E-02	6.17E-02	9.98E-03	1.87E-02	1.14E-02	2.74E-02	1.06E-02	2.55E-02	1.03E-02	2.51E-02	3.37E-05	1.68E-04	2.72E-05	5.10E-05	3.11E-05	7.47E-05	2.88E-05	6.95E-05	2.81E-05	6.85E-05	1.91E-08
R17	543245	6464378	2.12E-04	4.66E-04	2.07E-04	4.62E-04	2.47E-02	6.17E-02	1.93E-02	2.93E-02	2.08E-02	4.57E-02	1.96E-02	4.30E-02	1.91E-02	4.26E-02	6.73E-05	1.68E-04	5.27E-05	7.99E-05	5.67E-05	1.25E-04	5.33E-05	1.17E-04	5.20E-05	1.16E-04	3.83E-08
R18	542815	6461151	1.75E-04	3.40E-04	1.73E-04	3.41E-04	1.85E-02	6.17E-02	1.93E-02	2.25E-02	1.77E-02	3.42E-02	1.62E-02	3.14E-02	1.60E-02	3.15E-02	5.05E-05	1.68E-04	5.26E-05	6.14E-05	4.81E-05	9.32E-05	4.41E-05	8.55E-05	4.36E-05	8.58E-05	2.87E-08
R19	544599	6466299	7.49E-05	1.82E-04	7.29E-05	1.80E-04	1.23E-02	6.17E-02	6.78E-03	1.26E-02	7.47E-03	1.81E-02	6.91E-03	1.68E-02	6.73E-03	1.66E-02	3.37E-05	1.68E-04	1.85E-05	3.42E-05	2.04E-05	4.93E-05	1.88E-05	4.58E-05	1.83E-05	4.53E-05	1.91E-08
R20	543420	6465782	7.09E-05	1.76E-04	6.89E-05	1.74E-04	1.23E-02	6.17E-02	6.81E-03	1.22E-02	7.04E-03	1.73E-02	6.54E-03	1.62E-02	6.36E-03	1.60E-02	3.37E-05	1.68E-04	1.86E-05	3.34E-05	1.92E-05	4.73E-05	1.78E-05	4.43E-05	1.73E-05	4.38E-05	1.91E-08
R21	544212	6462762	6.60E-04	1.68E-03	6.39E-04	1.67E-03	8.02E-02	3.09E-01	4.94E-02	1.16E-01	6.57E-02	1.60E-01	6.09E-02	1.55E-01	5.90E-02	1.54E-01	2.19E-04	8.41E-04	1.35E-04	3.16E-04	1.79E-04	4.36E-04	1.66E-04	4.23E-04	1.61E-04	4.20E-04	1.24E-07
R22	544288	6462828	7.09E-04	1.78E-03	6.78E-04	1.74E-03	8.64E-02	3.70E-01	4.90E-02	1.16E-01	7.03E-02	1.69E-01	6.54E-02	1.65E-01	6.26E-02	1.60E-01	2.36E-04	1.01E-03	1.34E-04	3.16E-04	1.92E-04	4.62E-04	1.78E-04	4.49E-04	1.71E-04	4.37E-04	1.34E-07
R23	544456	6462974	8.49E-04	2.10E-03	8.01E-04	1.99E-03	1.05E-01	4.94E-01	5.13E-02	1.32E-01	8.34E-02	2.00E-01	7.83E-02	1.94E-01	7.39E-02	1.84E-01	2.86E-04	1.35E-03	1.40E-04	3.59E-04	2.27E-04	5.45E-04	2.14E-04	5.29E-04	2.01E-04	5.02E-04	1.63E-07
R24	544591	6463090	9.37E-04	2.38E-03	8.78E-04	2.25E-03	1.48E-01	6.79E-01	5.54E-02	1.56E-01	9.12E-02	2.27E-01	8.65E-02	2.20E-01	8.10E-02	2.07E-01	4.04E-04	1.85E-03	1.51E-04	4.27E-04	2.49E-04	6.20E-04	2.36E-04	6.00E-04	2.21E-04	5.65E-04	2.30E-07
R25	544460	6462723	4.84E-04	1.19E-03	4.66E-04	1.17E-03	5.55E-02	2.47E-01	3.39E-02	7.72E-02	4.77E-02	1.14E-01	4.46E-02	1.10E-01	4.30E-02	1.08E-01	1.51E-04	6.73E-04	9.23E-05	2.10E-04	1.30E-04	3.11E-04	1.22E-04	3.00E-04	1.17E-04	2.94E-04	8.61E-08
R26	544723	6463208	1.29E-03	3.17E-03	1.24E-03	3.08E-03	2.04E-01	9.26E-01	6.94E-02	2.11E-01	1.28E-01	3.12E-01	1.19E-01	2.93E-01	1.14E-01	2.84E-01	5.55E-04	2.52E-03	1.89E-04	5.75E-04	3.48E-04	8.51E-04	3.24E-04	7.98E-04	3.12E-04	7.74E-04	3.16E-07
R27	544666	6463926	1.52E-03	3.99E-03	1.62E-03	4.50E-03	2.22E-01	1.23E+00	9.86E-02	3.09E-01	1.61E-01	4.24E-01	1.40E-01	3.68E-01	1.50E-01	4.15E-01	6.06E-04	3.37E-03	2.69E-04	8.44E-04	4.38E-04	1.16E-03	3.82E-04	1.00E-03	4.08E-04	1.13E-03	3.44E-07
R28	544731	6463988	1.28E-03	3.23E-03	1.39E-03	3.68E-03	1.60E-01	9.26E-01	9.42E-02	2.88E-01	1.38E-01	3.49E-01	1.18E-01	2.98E-01	1.28E-01	3.39E-01	4.38E-04	2.52E-03	2.57E-04	7.84E-04	3.76E-04	9.52E-04	3.23E-04	8.13E-04	3.49E-04	9.25E-04	2.49E-07
R29	544592	6464026	1.00E-03	2.69E-03	1.01E-03	2.82E-03	1.36E-01	8.64E-01	6.54E-02	1.96E-01	1.02E-01	2.73E-01	9.23E-02	2.48E-01	9.33E-02	2.60E-01	3.70E-04	2.36E-03	1.78E-04	5.34E-04	2.78E-04	7.43E-04	2.52E-04	6.76E-04	2.54E-04	7.10E-04	2.10E-07
R30	544728	6464112	8.75E-04	2.24E-03	9.16E-04	2.44E-03	1.05E-01	6.17E-01	6.35E-02	1.94E-01	9.26E-02	2.38E-01	8.07E-02	2.07E-01	8.46E-02	2.25E-01	2.86E-04	1.68E-03	1.73E-04	5.30E-04	2.53E-04	6.49E-04	2.20E-04	5.64E-04	2.31E-04	6.15E-04	1.63E-07
R31	544503	6464328	5.00E-04	1.27E-03	4.90E-04	1.26E-03	6.17E-02	3.70E-01	3.58E-02	8.68E-02	4.99E-02	1.24E-01	4.62E-02	1.18E-01	4.52E-02	1.16E-01	1.68E-04	1.01E-03	9.77E-05	2.37E-04	1.36E-04	3.39E-04	1.26E-04	3.21E-04	1.23E-04	3.17E-04	9.57E-08
R32	544637	6464415	4.53E-04	1.17E-03	4.52E-04	1.19E-03	5.55E-02	3.09E-01	3.29E-02	8.40E-02	4.62E-02	1.18E-01	4.18E-02	1.08E-01	4.17E-02	1.10E-01	1.51E-04	8.41E-04	8.97E-05	2.29E-04	1.26E-04	3.22E-04	1.14E-04	2.93E-04	1.14E-04	2.99E-04	8.61E-08
R33	545231	6464450	4.86E-04	1.31E-03	5.22E-04	1.38E-03	6.17E-02	3.09E-01	2.99E-02	8.90E-02	5.39E-02	1.44E-01	4.49E-02	1.21E-01	4.81E-02	1.28E-01	1.68E-04	8.41E-04	8.15E-05	2.43E-04	1.47E-04	3.93E-04	1.22E-04	3.29E-04	1.31E-04	3.48E-04	9.57E-08
R34	543572	6463746	5.75E-04	1.59E-03	5.56E-04	1.58E-03	5.55E-02	2.47E-01	5.27E-02	9.00E-02	5.70E-02	1.54E-01	5.31E-02	1.47E-01	5.13E-02	1.46E-01	1.51E-04	6.73E-04	1.44E-04	2.45E-04	1.55E-04	4.20E-04	1.45E-04	4.00E-04	1.40E-04	3.97E-04	8.61E-08
R35	543748	6463873	5.82E-04	1.44E-03	5.48E-04	1.38E-03	5.55E-02	2.47E-01	4.85E-02	7.93E-02	5.63E-02	1.36E-01	5.37E-02	1.33E-01	5.05E-02	1.27E-01	1.51E-04	6.73E-04	1.32E-04	2.16E-04	1.54E-04	3.71E-04	1.46E-04	3.63E-04	1.38E-04	3.46E-04	8.61E-08
R36	543934	6464002	5.73E-04	1.32E-03	5.36E-04	1.21E-03	6.17E-02	2.47E-01	4.45E-02	7.27E-02	5.49E-02	1.20E-01	5.29E-02	1.21E-01	4.94E-02	1.11E-01	1.68E-04	6.73E-04	1.21E-04	1.98E-04	1.50E-04	3.28E-04	1.44E-04	3.31E-04	1.35E-04	3.04E-04	9.57E-08
R37	544127	6464141	5.22E-04	1.25E-03	4.88E-04	1.14E-03	6.17E-02	3.09E-01	3.86E-02	7.33E-02	5.01E-02	1.13E-01	4.81E-02	1.16E-01	4.50E-02	1.05E-01	1.68E-04	8.41E-04	1.05E-04	2.00E-04	1.37E-04	3.09E-04	1.31E-04	3.15E-04	1.23E-04	2.87E-04	9.57E-08
R38	542459	6462467	2.01E-04	3.79E-04	1.99E-04	3.82E-04	2.47E-02	6.17E-02	2.12E-02	2.51E-02	2.07E-02	3.85E-02	1.85E-02	3.49E-02	1.84E-02	3.52E-02	6.73E-05	1.68E-04	5.77E-05	6.83E-05	5.64E-05	1.05E-04	5.05E-05	9.52E-05	5.01E-05	9.61E-05	3.83E-08
R39	542512	6462581	2.11E-04	4.01E-04	2.08E-04	4.04E-04	2.47E-02	6.17E-02	2.19E-02	2.63E-02	2.15E-02	4.05E-02	1.95E-02	3.70E-02	1.92E-02	3.73E-02	6.73E-05	1.68E-04	5.98E-05	7.16E-05	5.87E-05	1.11E-04	5.32E-05	1.01E-04	5.23E-05	1.02E-04	3.83E-08
R40	543099	6463321	3.76E-04	8.95E-04	3.81E-04	9.53E-04	4.94E-02	1.85E-01	4.27E-02	7.82E-02	3.95E-02	9.39E-02	3.47E-02	8.26E-02	3.52E-02	8.79E-02	1.35E-04	5.05E-04	1.16E-04	2.13E-04	1.08E-04	2.56E-04	9.46E-05	2.25E-04	9.59E-05	2.40E-04	7.65E-08
R41	543249	6463439	4.64E-04	1.17E-03	4.66E-04	1.24E-03	4.94E-02	1.85E-01	5.27E-02	9.34E-02	4.80E-02	1.21E-01	4.28E-02	1.08E-01	4.30E-02	1.14E-01	1.35E-04	5.05E-04	1.44E-04	2.55E-04	1.31E-04	3.30E-04	1.17E-04	2.95E-04	1.17E-04	3.12E-04	7.65E-08
R42	543394	6463551	5.63E-04	1.59E-03	5.56E-04	1.64E-03	5.55E-02	2.47E-01	5.78E-02	1.04E-01	5.69E-02	1.59E-01	5.19E-02	1.47E-01	5.13E-02	1.51E-01	1.51E-04	6.73E-04	1.57E-04	2.83E-04	1.55E-04	4.33E-04	1.42E-04	4.01E-04	1.40E-04	4.11E-04	8.61E-08
R43	544670	6464213	6.56E-04	1.73E-03	6.69E-04	1.82E-03	5.63E-02	3.69E-01	3.88E-02	3.47E-02	6.79E-02	1.79E-01	6.05E-02	1.60E-01	6.17E-02	1.68E-01	1.53E-04	1.01E-03	1.06E-04	9.46E-05	1.85E-04	4.87E-04	1.65E-04	4.35E-04	1.68E-04	4.58E-04	8.72E-08
R44	544186	6461103	1.10E-04	2.30E-04	1.09E-04	2.32E-04	2.60E-02	8.64E-02	1.17E-02	1.67E-02	1.11E-02	2.30E-02	1.02E-02	2.12E-02	1.01E-02	2.14E-02	7.08E-05	2.36E-04	3.20E-05	4.54E-05	3.03E-05	6.28E-05	2.78E-05	5.79E-05	2.74E-05	5.84E-05	4.03E-08
R45	543670	6461675	2.43E-04	5.43E-04	2.41E-04	5.49E-04	3.63E-02	1.22E-01	2.66E-02	4.01E-02	2.44E-02	5.36E-02	2.24E-02	5.01E-02	2.22E-02	5.07E-02	9.89E-05	3.32E-04	7.25E-05	1.09E-04	6.65E-05	1.46E-04	6.11E-05	1.37E-04	6.06E-05	1.38E-04	5.62E-08
R46	542637	6460861	1.38E-04	2.58E-04	1.36E-04	2.58E-04	1.80E-02	3.70E-02	1.60E-02	1.64E-02	1.39E-02	2.59E-02	1.28E-02	2.38E-02	1.26E-02	2.38E-02	4.91E-05	1.01E-04	4.37E-05	4.48E-05	3.79E-05	7.07E-05	3.48E-05	6.50E-05	3.43E-05	6.48E-05	2.79E-08
R47	543716	6464336	3.15E-04	7.57E-04	3.03E-04	7.30E-04	3.41E-02	1.30E-01	2.76E-02	4.58E-02	3.08E-02	7.22E-02	2.91E-02	6.98E-02	2.80E-02	6.73E-02	9.30E-05	3.53E-04	7.53E-05	1.25E-04	8.40E-05	1.97E-04	7.93E-05	1.90E-04	7.62E-05	1.84E-04	5.29E-08
R48	544457	6465505	1.37E-04	3.25E-04	1.34E-04	3.19E-04	1.48E-02	7.31E-02	1.19E-02	2.16E-02	1.36E-02	3.20E-02	1.27E-02	3.00E-02	1.23E-02	2.94E-02	4.03E-05	1.99E-04	3.23E-05	5.89E-05	3.72E-05	8.73E-05	3.45E-05	8.18E-05	3.37E-05	8.03E-05	2.29E-08
R49	544257	6466375	6.22E-05	1.63E-04	6.09E-05	1.61E-04	9.99E-03	4.94E-02	5.75E-03	1.15E-02	6.17E-03	1.61E-02	5.74E-03	1.50E-02	5.62E-03	1.48E-02	2.72E-05	1.35E-04	1.57E-05	3.13E-05	1.68E-05	4.39E-05	1.56E-05	4.09E-05	1.53E-05	4.04E-05	1.55E-08
R50	543782	6464178	4.15E-04	9.69E-04	3.96E-04	9.24E-04	2.81E-02	1.70E-01	2.86E-03	5.61E-02	4.03E-02	9.14E-02	3.83E-02	8.94E-02	3.65E-02	8.53E-02	7.65E-05	4.64E-04	7.80E-06	1.53E-04	1.10E-04	2.49E-04	1.04E-04	2.44E-04	9.96E-05	2.33E-04	4.35E-08
R51	542870	6463609	2.43E-04	4.87E-04	2.43E-04	5.04E-04	2.76E-02	7.08E-02	2.21E-03	3.55E-02	2.47E-02	4.99E-02	2.24E-02	4.49E-02	2.24E-02	4.65E-02	7.54E-05	1.93E-04	6.02E-06	9.69E-05	6.73E-05	1.36E-04	6.11E-05	1.23E-04	6.11E-05	1.27E-04	4.28E-08
R52	542900	6463529	2.57E-04	5.28E-04	2.58E-04	5.49E-04	3.12E-02	8.88E-02	2.52E-03	4.04E-02	2.64E-02	5.44E-02	2.37E-02	4.88E-02	2.38E-02	5.07E-02	8.49E-05	2.42E-04	6.86E-06	1.10E-04	7.19E-05	1.48E-04	6.46E-05	1.33E-04	6.48E-05	1.38E-04	4.83E-08
R53	542787	6461088	1.67E-04	3.19E-04	1.64E-04	3.20E-04	1.80E-02	4.94E-02	1.26E-03	2.09E-02	1.67E-02	3.21E-02	1.54E-02	2.94E-02	1.51E-02	2.95E-02	4.91E-05	1.35E-04	3.44E-06	5.71E-05	4.56E-05	8.75E-05	4.19E-05	8.03E-05	4.12E-05	8.04E-05	2.79E-08
R54	543282	6464626	1.75E-04	3.85E-04	1.71E-04	3.82E-04	2.03E-02	5.78E-02	1.27E-03	2.44E-02	1.73E-02	3.79E-02	1.61E-02	3.56E-02	1.58E-02	3.52E-02	5.52E-05	1.57E-04	3.47E-06	6.67E-05	4.71E-05	1.03E-04	4.39E-05	9.69E-05	4.31E-05	9.61E-05	3.14E-08
R55	541663	6462761	8.03E-05	1.31E-04	7.89E-05	1.30E-04	4.68E-03	1.23E-02	4.38E-04	6.97E-03	7.84E-03	1.30E-02	7.41E-03	1.21E-02	7.28E-03	1.20E-02	1.28E-05	3.37E-05	1.19E-06	1.90E-05	2.14E-05	3.55E-05	2.02E-05	3.30E-05	1.99E-05	3.28E-05	7.26E-09
R56	541956	6463856	7.96E-05	1.39E-04	7.89E-05	1.40E-04	4.77E-03	1.23E-02	6.28E-04	8.82E-03	8.02E-03	1.41E-02	7.34E-03	1.28E-02	7.28E-03	1.30E-02	1.30E-05	3.37E-05	1.71E-06	2.40E-05	2.19E-05	3.84E-05	2.00E-05	3.50E-05	1.99E-05	3.53E-05	7.39E-09
R57	542316	6463028	1.61E-04	2.69E-04	1.58E-04	2.68E-04	1.28E-02	1.23E-02	9.82E-04	1.50E-02	1.58E-02	2.67E-02	1.48E-02	2.48E-02	1.46E-02	2.47E-02	3.50E-05	3.37E-05	2.68E-06	4.08E-05	4.31E-05	7.27E-05	4.04E-05	6.76E-05	3.97E-05	6.75E-05	1.99E-08
R58	542418	6465095	6.42E-05	1.36E-04	6.29E-05	1.36E-04	4.89E-03	1.23E-02	4.62E-04	8.82E-03	6.42E-03	1.36E-02	5.93E-03	1.26E-02	5.80E-03	1.26E-02	1.33E-05	3.37E-05	1.26E-06	2.41E-05	1.75E-05	3.70E-05	1.62E-05	3.43E-05	1.58E-05	3.43E-05	7.58E-09
R59	544243	6459543	3.14E-05	6.69E-05	3.08E-05	6.76E-05	4.94E-03	6.17E-03	2.51E-04	4.55E-03	3.15E-03	6.73E-03	2.90E-03	6.17E-03	2.84E-03	6.23E-03	1.35E-05	1.68E-05	6.83E-07	1.24E-05	8.58E-06	1.83E-05	7.91E-06	1.68E-05	7.74E-06	1.70E-05	7.65E-09
R60	544409	6465165	1.83E-04	4.39E-04	1.77E-04	4.28E-04	2.02E-02	1.00E-01	1.42E-03	2.89E-02	1.81E-02	4.30E-02	1.68E-02	4.05E-02	1.64E-02	3.95E-02	5.50E-05	2.73E-04	3.88E-06	7.87E-05	4.93E-05	1.17E-04	4.59E-05	1.10E-04	4.46E-05	1.08E-04	3.13E-08
R61	541538	6461826	8.09E-05	1.41E-04	7.89E-05	1.40E-04	6.82E-03	6.17E-03	5.92E-04	8.23E-03	8.02E-03	1.42E-02	7.47E-03	1.30E-02	7.28E-03	1.30E-02	1.86E-05	1.68E-05	1.61E-06	2.24E-05	2.19E-05	3.87E-05	2.04E-05	3.55E-05	1.99E-05	3.53E-05	1.06E-08
R62	542174	6462135	1.59E-04	2.78E-04	1.57E-04	2.78E-04	2.04E-02	1.23E-02	1.25E-03	1.70E-02	1.59E-02	2.80E-02	1.46E-02	2.56E-02	1.44E-02	2.56E-02	5.56E-05	3.37E-05	3.40E-06	4.63E-05	4.34E-05	7.64E-05	3.99E-05	6.98E-05	3.94E-05	6.98E-05	3.16E-08
R63	542368	6464205	1.08E-04	1.97E-04	1.07E-04	2.00E-04	7.11E-03	6.17E-03	7.39E-04	1.25E-02	1.07E-02	1.99E-02	9.94E-03	1.82E-02	9.88E-03	1.85E-02	1.94E-05	1.68E-05	2.01E-06	3.41E-05	2.93E-05	5.44E-05	2.71E-05	4.96E-05	2.69E-05	5.03E-05	1.10E-08
R64	545067	6465474	1.32E-04	3.20E-04	1.31E-04	3.23E-04	2.41E-02	1.20E-01	1.23E-03	2.24E-02	1.35E-02	3.27E-02	1.22E-02	2.96E-02	1.21E-02	2.98E-02	6.58E-05	3.26E-04	3.36E-06	6.10E-05	3.67E-05	8.92E-05	3.33E-05	8.06E-05	3.30E-05	8.13E-05	3.74E-08
R65	544584	6464584	3.54E-04	8.85E-04	3.50E-04	8.82E-04	4.23E-02	2.32E-01	3.31E-03	6.14E-02	3.57E-02	8.83E-02	3.26E-02	8.17E-02	3.23E-02	8.14E-02	1.15E-04	6.33E-04	9.03E-06	1.67E-04	9.73E-05	2.41E-04	8.90E-05	2.23E-04	8.80E-05	2.22E-04	6.56E-08
R66	544241	6464857	2.50E-04	5.77E-04	2.41E-04	5.57E-04	2.58E-02	1.29E-01	1.79E-03	3.64E-02	2.46E-02	5.56E-02	2.31E-02	5.32E-02	2.23E-02	5.14E-02	7.04E-05	3.52E-04	4.89E-06	9.93E-05	6.70E-05	1.52E-04	6.29E-05	1.45E-04	6.07E-05	1.40E-04	4.00E-08
R67	544319	6464830	2.53E-04	6.04E-04	2.44E-04	5.84E-04	2.77E-02	1.42E-01	1.91E-03	3.88E-02	2.49E-02	5.84E-02	2.33E-02	5.57E-02	2.25E-02	5.39E-02	7.54E-05	3.88E-04	5.22E-06	1.06E-04	6.80E-05	1.59E-04	6.36E-05	1.52E-04	6.14E-05	1.47E-04	4.29E-08
R68	544485	6462026	1.96E-04	4.86E-04	1.94E-04	4.92E-04	4.85E-02	2.09E-01	2.20E-03	3.62E-02	1.96E-02	4.78E-02	1.81E-02	4.48E-02	1.79E-02	4.54E-02	1.32E-04	5.69E-04	6.00E-06	9.88E-05	5.33E-05	1.30E-04	4.93E-05	1.22E-04	4.88E-05	1.24E-04	7.52E-08
R69	544751	6462012	1.63E-04	3.95E-04	1.59E-04	3.95E-04	5.64E-02	2.50E-01	1.60E-03	2.91E-02	1.62E-02	3.87E-02	1.50E-02	3.65E-02	1.47E-02	3.64E-02	1.54E-04	6.81E-04	4.37E-06	7.93E-05	4.41E-05	1.06E-04	4.09E-05	9.94E-05	4.00E-05	9.93E-05	8.75E-08
R70	543879	6461328	1.55E-04	3.26E-04	1.54E-04	3.29E-04	2.50E-02	6.83E-02	1.30E-03	2.30E-02	1.55E-02	3.23E-02	1.43E-02	3.01E-02	1.42E-02	3.04E-02	6.82E-05	1.86E-04	3.54E-06	6.28E-05	4.22E-05	8.82E-05	3.90E-05	8.19E-05	3.87E-05	8.28E-05	3.88E-08

Mine Increment - Metals (TSP)

ID	x	y	Mercury: PPR Dry Depo (g/m²/annum)	Mercury: MOD4+2016 Ann Avg Conc (µg/m³)	Mercury: MOD4+2016 Total Depo (g/m²/annum)	Mercury: Representative Operational year (BAU) Ann Avg Conc (µg/m³)	Mercury: Representative Operational year (BAU) Total Deposition (g/m²/annum)	Mercury: MOD 6 Construction Scenario Ann Avg Conc (µg/m³)	Mercury: MOD 6 Construction Scenario Total Deposition (g/m²/annum)	Mercury: MOD 6 Operational Scenario Ann Avg Conc (µg/m³)	Mercury: MOD 6 Operational Scenario Total Deposition (g/m²/annum)	Nickel: PPR Ann Avg Conc (µg/m³)	Nickel: PPR Dry Depo (g/m²/annum)	Nickel: MOD4+2016 Ann Avg Conc (µg/m³)	Nickel: MOD4+2016 Total Depo (g/m²/annum)	Nickel: Representative Operational year (BAU) Ann Avg Conc (µg/m³)	Nickel: Representative Operational year (BAU) Total Deposition (g/m²/annum)	Nickel: MOD 6 Construction Scenario Ann Avg Conc (µg/m³)	Nickel: MOD 6 Construction Scenario Total Deposition (g/m²/annum)	Nickel: MOD 6 Operational Scenario Ann Avg Conc (µg/m³)	Nickel: MOD 6 Operational Scenario Total Deposition (g/m²/annum)	Silver: PPR Ann Avg Conc (µg/m³)	Silver: PPR Dry Depo (g/m²/annum)	Silver: MOD4+2016 Ann Avg Conc (µg/m³)	Silver: MOD4+2016 Total Depo (g/m²/annum)	Silver: Representative Operational year (BAU) Ann Avg Conc (µg/m³)	Silver: Representative Operational year (BAU) Total Deposition (g/m²/annum)
R1	544110	6462598	3.83E-07	7.68E-08	1.79E-07	8.85E-08	2.18E-07	8.11E-08	2.06E-07	8.14E-08	2.13E-07	2.69E-06	1.08E-05	2.16E-06	5.03E-06	2.49E-06	6.13E-06	2.28E-06	5.79E-06	2.29E-06	6.01E-06	2.03E-05	8.13E-05	1.63E-05	3.80E-05	1.88E-05	4.63E-05
R2	543763	6462312	4.78E-07	1.01E-07	2.17E-07	9.13E-08	2.44E-07	8.03E-08	2.26E-07	8.29E-08	2.38E-07	3.23E-06	1.35E-05	2.85E-06	6.10E-06	2.57E-06	6.87E-06	2.26E-06	6.36E-06	2.33E-06	6.71E-06	2.44E-05	1.02E-04	2.15E-05	4.60E-05	1.94E-05	5.18E-05
R3	543555	6462322	8.61E-07	1.79E-07	3.32E-07	1.58E-07	4.39E-07	1.45E-07	4.30E-07	1.43E-07	4.31E-07	7.00E-06	2.42E-05	5.05E-06	9.33E-06	4.44E-06	1.24E-05	4.09E-06	1.21E-05	4.04E-06	1.21E-05	5.28E-05	1.83E-04	3.81E-05	7.04E-05	3.35E-05	9.32E-05
R4	543324	6462003	5.74E-07	9.89E-08	1.97E-07	7.80E-08	1.86E-07	7.01E-08	1.74E-07	7.06E-08	1.77E-07	5.39E-06	1.62E-05	2.78E-06	5.54E-06	2.19E-06	5.23E-06	1.97E-06	4.89E-06	1.99E-06	4.98E-06	4.06E-05	1.22E-04	2.10E-05	4.18E-05	1.66E-05	3.95E-05
R5	543140	6461859	3.83E-07	7.84E-08	1.33E-07	6.61E-08	1.46E-07	5.89E-08	1.34E-07	5.91E-08	1.37E-07	4.85E-06	1.08E-05	2.21E-06	3.74E-06	1.86E-06	4.12E-06	1.66E-06	3.78E-06	1.66E-06	3.85E-06	3.66E-05	8.13E-05	1.67E-05	2.83E-05	1.40E-05	3.11E-05
R6	542833	6462000	3.83E-07	8.47E-08	1.28E-07	6.95E-08	1.38E-07	6.26E-08	1.25E-07	6.19E-08	1.26E-07	3.77E-06	1.08E-05	2.39E-06	3.62E-06	1.96E-06	3.90E-06	1.76E-06	3.52E-06	1.74E-06	3.54E-06	2.84E-05	8.13E-05	1.80E-05	2.73E-05	1.48E-05	2.94E-05
R7	542604	6462718	9.57E-08	3.67E-08	4.50E-08	3.70E-08	7.01E-08	3.43E-08	6.46E-08	3.41E-08	6.53E-08	1.08E-06	2.69E-06	1.03E-06	1.27E-06	1.04E-06	1.97E-06	9.67E-07	1.82E-06	9.59E-07	1.84E-06	8.13E-06	2.03E-05	7.80E-06	9.56E-06	7.86E-06	1.49E-05
R8	542923	6462744	2.87E-07	7.95E-08	1.21E-07	7.60E-08	1.65E-07	6.87E-08	1.51E-07	6.80E-08	1.53E-07	2.42E-06	8.08E-06	2.24E-06	3.40E-06	2.14E-06	4.65E-06	1.93E-06	4.24E-06	1.91E-06	4.31E-06	1.83E-05	6.10E-05	1.69E-05	2.56E-05	1.62E-05	3.51E-05
R9	542926	6463052	1.91E-07	6.27E-08	9.10E-08	6.00E-08	1.30E-07	5.37E-08	1.17E-07	5.39E-08	1.21E-07	2.15E-06	5.39E-06	1.76E-06	2.56E-06	1.69E-06	3.65E-06	1.51E-06	3.29E-06	1.52E-06	3.40E-06	1.63E-05	4.06E-05	1.33E-05	1.93E-05	1.27E-05	2.76E-05
R10	543158	6463633	1.91E-07	5.87E-08	9.09E-08	5.72E-08	1.31E-07	5.21E-08	1.19E-07	5.18E-08	1.23E-07	1.62E-06	5.39E-06	1.65E-06	2.56E-06	1.61E-06	3.68E-06	1.47E-06	3.36E-06	1.46E-06	3.47E-06	1.22E-05	4.06E-05	1.25E-05	1.93E-05	1.22E-05	2.78E-05
R11	543150	6461692	1.91E-07	5.27E-08	8.06E-08	4.70E-08	1.02E-07	4.22E-08	9.35E-08	4.22E-08	9.50E-08	1.88E-06	5.39E-06	1.48E-06	2.27E-06	1.32E-06	2.86E-06	1.19E-06	2.63E-06	1.19E-06	2.67E-06	1.42E-05	4.06E-05	1.12E-05	1.71E-05	9.98E-06	2.16E-05
R12	543587	6461665	1.91E-07	3.89E-08	6.22E-08	3.76E-08	8.28E-08	3.46E-08	7.76E-08	3.42E-08	7.83E-08	1.35E-06	5.39E-06	1.10E-06	1.75E-06	1.06E-06	2.33E-06	9.75E-07	2.18E-06	9.64E-07	2.21E-06	1.02E-05	4.06E-05	8.26E-06	1.32E-05	7.99E-06	1.76E-05
R13	543631	6461566	9.57E-08	3.38E-08	5.21E-08	3.30E-08	7.11E-08	3.05E-08	6.65E-08	3.01E-08	6.71E-08	1.35E-06	2.69E-06	9.51E-07	1.47E-06	9.29E-07	2.00E-06	8.59E-07	1.87E-06	8.48E-07	1.89E-06	1.02E-05	2.03E-05	7.18E-06	1.11E-05	7.01E-06	1.51E-05
R14	543019	6463916	9.57E-08	3.86E-08	5.22E-08	4.07E-08	8.24E-08	3.77E-08	7.59E-08	3.72E-08	7.73E-08	1.08E-06	2.69E-06	1.09E-06	1.47E-06	1.14E-06	2.32E-06	1.06E-06	2.14E-06	1.05E-06	2.18E-06	8.13E-06	2.03E-05	8.20E-06	1.11E-05	8.64E-06	1.75E-05
R15	543133	6465290	9.57E-08	1.34E-08	2.17E-08	1.41E-08	3.22E-08	1.30E-08	3.01E-08	1.28E-08	2.98E-08	5.39E-07	2.69E-06	3.77E-07	6.10E-07	3.96E-07	9.07E-07	3.66E-07	8.48E-07	3.61E-07	8.40E-07	4.06E-06	2.03E-05	2.84E-06	4.60E-06	2.99E-06	6.85E-06
R16	544570	6465713	9.57E-08	1.55E-08	2.90E-08	1.77E-08	4.25E-08	1.64E-08	3.95E-08	1.60E-08	3.89E-08	5.39E-07	2.69E-06	4.36E-07	8.16E-07	4.98E-07	1.20E-06	4.60E-07	1.11E-06	4.50E-07	1.10E-06	4.06E-06	2.03E-05	3.29E-06	6.16E-06	3.76E-06	9.02E-06
R17	543245	6464378	9.57E-08	3.00E-08	4.54E-08	3.22E-08	7.09E-08	3.03E-08	6.66E-08	2.96E-08	6.61E-08	1.08E-06	2.69E-06	8.43E-07	1.28E-06	9.07E-07	2.00E-06	8.54E-07	1.87E-06	8.32E-07	1.86E-06	8.13E-06	2.03E-05	6.36E-06	9.65E-06	6.85E-06	1.51E-05
R18	542815	6461151	9.57E-08	2.99E-08	3.49E-08	2.74E-08	5.30E-08	2.51E-08	4.86E-08	2.48E-08	4.88E-08	8.08E-07	2.69E-06	8.41E-07	9.83E-07	7.70E-07	1.49E-06	7.06E-07	1.37E-06	6.97E-07	1.37E-06	6.10E-06	2.03E-05	6.35E-06	7.41E-06	5.81E-06	1.13E-05
R19	544599	6466299	9.57E-08	1.05E-08	1.95E-08	1.16E-08	2.80E-08	1.07E-08	2.60E-08	1.04E-08	2.57E-08	5.39E-07	2.69E-06	2.96E-07	5.48E-07	3.26E-07	7.89E-07	3.02E-07	7.32E-07	2.94E-07	7.24E-07	4.06E-06	2.03E-05	2.23E-06	4.13E-06	2.46E-06	5.95E-06
R20	543420	6465782	9.57E-08	1.05E-08	1.90E-08	1.09E-08	2.69E-08	1.01E-08	2.52E-08	9.85E-09	2.49E-08	5.39E-07	2.69E-06	2.97E-07	5.34E-07	3.07E-07	7.57E-07	2.85E-07	7.08E-07	2.77E-07	7.00E-07	4.06E-06	2.03E-05	2.24E-06	4.03E-06	2.32E-06	5.71E-06
R21	544212	6462762	4.78E-07	7.65E-08	1.79E-07	1.02E-07	2.48E-07	9.43E-08	2.40E-07	9.14E-08	2.39E-07	3.50E-06	1.35E-05	2.15E-06	5.05E-06	2.87E-06	6.98E-06	2.66E-06	6.76E-06	2.57E-06	6.72E-06	2.64E-05	1.02E-04	1.62E-05	3.81E-05	2.16E-05	5.27E-05
R22	544288	6462828	5.74E-07	7.59E-08	1.80E-07	1.09E-07	2.62E-07	1.01E-07	2.55E-07	9.70E-08	2.49E-07	3.77E-06	1.62E-05	2.14E-06	5.06E-06	3.07E-06	7.39E-06	2.85E-06	7.18E-06	2.73E-06	7.00E-06	2.84E-05	1.22E-04	1.61E-05	3.82E-05	2.31E-05	5.57E-05
R23	544456	6462974	7.65E-07	7.95E-08	2.04E-07	1.29E-07	3.10E-07	1.21E-07	3.00E-07	1.14E-07	2.85E-07	4.58E-06	2.15E-05	2.24E-06	5.74E-06	3.64E-06	8.72E-06	3.42E-06	8.46E-06	3.22E-06	8.03E-06	3.45E-05	1.63E-04	1.69E-05	4.33E-05	2.75E-05	6.58E-05
R24	544591	6463090	1.05E-06	8.59E-08	2.42E-07	1.41E-07	3.52E-07	1.34E-07	3.41E-07	1.25E-07	3.21E-07	6.46E-06	2.96E-05	2.42E-06	6.83E-06	3.98E-06	9.92E-06	3.77E-06	9.60E-06	3.53E-06	9.04E-06	4.88E-05	2.24E-04	1.83E-05	5.15E-05	3.00E-05	7.49E-05
R25	544460	6462723	3.83E-07	5.25E-08	1.20E-07	7.39E-08	1.77E-07	6.92E-08	1.70E-07	6.66E-08	1.67E-07	2.42E-06	1.08E-05	1.48E-06	3.37E-06	2.08E-06	4.98E-06	1.95E-06	4.80E-06	1.87E-06	4.71E-06	1.83E-05	8.13E-05	1.11E-05	2.54E-05	1.57E-05	3.76E-05
R26	544723	6463208	1.43E-06	1.08E-07	3.27E-07	1.98E-07	4.84E-07	1.84E-07	4.54E-07	1.77E-07	4.40E-07	8.89E-06	4.04E-05	3.03E-06	9.20E-06	5.57E-06	1.36E-05	5.18E-06	1.28E-05	5.00E-06	1.24E-05	6.71E-05	3.05E-04	2.28E-05	6.94E-05	4.20E-05	1.03E-04
R27	544666	6463926	1.91E-06	1.53E-07	4.80E-07	2.49E-07	6.57E-07	2.17E-07	5.70E-07	2.32E-07	6.43E-07	9.69E-06	5.39E-05	4.30E-06	1.35E-05	7.01E-06	1.85E-05	6.11E-06	1.60E-05	6.53E-06	1.81E-05	7.32E-05	4.06E-04	3.25E-05	1.02E-04	5.29E-05	1.40E-04
R28	544731	6463988	1.43E-06	1.46E-07	4.46E-07	2.14E-07	5.41E-07	1.83E-07	4.62E-07	1.98E-07	5.26E-07	7.00E-06	4.04E-05	4.11E-06	1.26E-05	6.02E-06	1.52E-05	5.16E-06	1.30E-05	5.58E-06	1.48E-05	5.28E-05	3.05E-04	3.10E-05	9.47E-05	4.54E-05	1.15E-04
R29	544592	6464026	1.34E-06	1.01E-07	3.03E-07	1.58E-07	4.23E-07	1.43E-07	3.84E-07	1.45E-07	4.03E-07	5.92E-06	3.77E-05	2.85E-06	8.54E-06	4.44E-06	1.19E-05	4.03E-06	1.08E-05	4.07E-06	1.14E-05	4.47E-05	2.84E-04	2.15E-05	6.45E-05	3.35E-05	8.98E-05
R30	544728	6464112	9.57E-07	9.84E-08	3.01E-07	1.44E-07	3.69E-07	1.25E-07	3.21E-07	1.31E-07	3.49E-07	4.58E-06	2.69E-05	2.77E-06	8.48E-06	4.04E-06	1.04E-05	3.52E-06	9.03E-06	3.69E-06	9.84E-06	3.45E-05	2.03E-04	2.09E-05	6.40E-05	3.05E-05	7.84E-05
R31	544503	6464328	5.74E-07	5.56E-08	1.35E-07	7.73E-08	1.93E-07	7.15E-08	1.82E-07	7.01E-08	1.80E-07	2.69E-06	1.62E-05	1.56E-06	3.79E-06	2.18E-06	5.43E-06	2.01E-06	5.13E-06	1.97E-06	5.07E-06	2.03E-05	1.22E-04	1.18E-05	2.86E-05	1.64E-05	4.10E-05
R32	544637	6464415	4.78E-07	5.10E-08	1.30E-07	7.15E-08	1.83E-07	6.48E-08	1.67E-07	6.47E-08	1.70E-07	2.42E-06	1.35E-05	1.43E-06	3.67E-06	2.01E-06	5.15E-06	1.82E-06	4.69E-06	1.82E-06	4.78E-06	1.83E-05	1.02E-04	1.08E-05	2.77E-05	1.52E-05	3.89E-05
R33	545231	6464450	4.78E-07	4.63E-08	1.38E-07	8.35E-08	2.23E-07	6.95E-08	1.87E-07	7.46E-08	1.98E-07	2.69E-06	1.35E-05	1.30E-06	3.88E-06	2.35E-06	6.28E-06	1.96E-06	5.27E-06	2.10E-06	5.57E-06	2.03E-05	1.02E-04	9.84E-06	2.93E-05	1.77E-05	4.74E-05
R34	543572	6463746	3.83E-07	8.16E-08	1.39E-07	8.83E-08	2.39E-07	8.23E-08	2.27E-07	7.95E-08	2.26E-07	2.42E-06	1.08E-05	2.30E-06	3.93E-06	2.49E-06	6.73E-06	2.32E-06	6.40E-06	2.24E-06	6.35E-06	1.83E-05	8.13E-05	1.73E-05	2.96E-05	1.88E-05	5.08E-05
R35	543748	6463873	3.83E-07	7.52E-08	1.23E-07	8.73E-08	2.11E-07	8.32E-08	2.06E-07	7.83E-08	1.97E-07	2.42E-06	1.08E-05	2.12E-06	3.46E-06	2.46E-06	5.93E-06	2.34E-06	5.80E-06	2.21E-06	5.54E-06	1.83E-05	8.13E-05	1.60E-05	2.61E-05	1.86E-05	4.48E-05
R36	543934	6464002	3.83E-07	6.89E-08	1.13E-07	8.51E-08	1.86E-07	8.20E-08	1.88E-07	7.66E-08	1.73E-07	2.69E-06	1.08E-05	1.94E-06	3.17E-06	2.40E-06	5.24E-06	2.31E-06	5.30E-06	2.16E-06	4.86E-06	2.03E-05	8.13E-05	1.46E-05	2.39E-05	1.81E-05	3.96E-05
R37	544127	6464141	4.78E-07	5.98E-08	1.14E-07	7.77E-08	1.76E-07	7.46E-08	1.79E-07	6.97E-08	1.63E-07	2.69E-06	1.35E-05	1.68E-06	3.20E-06	2.19E-06	4.94E-06	2.10E-06	5.05E-06	1.96E-06	4.59E-06	2.03E-05	1.02E-04	1.27E-05	2.41E-05	1.65E-05	3.73E-05
R38	542459	6462467	9.57E-08	3.28E-08	3.89E-08	3.20E-08	5.97E-08	2.87E-08	5.41E-08	2.85E-08	5.46E-08	1.08E-06	2.69E-06	9.23E-07	1.09E-06	9.02E-07	1.68E-06	8.08E-07	1.52E-06	8.02E-07	1.54E-06	8.13E-06	2.03E-05	6.96E-06	8.25E-06	6.81E-06	1.27E-05
R39	542512	6462581	9.57E-08	3.40E-08	4.07E-08	3.34E-08	6.28E-08	3.02E-08	5.73E-08	2.97E-08	5.78E-08	1.08E-06	2.69E-06	9.57E-07	1.15E-06	9.40E-07	1.77E-06	8.51E-07	1.61E-06	8.37E-07	1.63E-06	8.13E-06	2.03E-05	7.22E-06	8.65E-06	7.09E-06	1.34E-05
R40	543099	6463321	2.87E-07	6.62E-08	1.21E-07	6.12E-08	1.45E-07	5.38E-08	1.28E-07	5.45E-08	1.36E-07	2.15E-06	8.08E-06	1.86E-06	3.41E-06	1.72E-06	4.10E-06	1.51E-06	3.60E-06	1.53E-06	3.83E-06	1.63E-05	6.10E-05	1.41E-05	2.57E-05	1.30E-05	3.09E-05
R41	543249	6463439	2.87E-07	8.16E-08	1.45E-07	7.44E-08	1.87E-07	6.64E-08	1.68E-07	6.67E-08	1.77E-07	2.15E-06	8.08E-06	2.30E-06	4.07E-06	2.09E-06	5.28E-06	1.87E-06	4.73E-06	1.88E-06	4.99E-06	1.63E-05	6.10E-05	1.73E-05	3.07E-05	1.58E-05	3.98E-05
R42	543394	6463551	3.83E-07	8.95E-08	1.61E-07	8.82E-08	2.46E-07	8.04E-08	2.28E-07	7.95E-08	2.34E-07	2.42E-06	1.08E-05	2.52E-06	4.53E-06	2.48E-06	6.93E-06	2.26E-06	6.41E-06	2.24E-06	6.58E-06	1.83E-05	8.13E-05	1.90E-05	3.42E-05	1.87E-05	5.23E-05
R43	544670	6464213	5.72E-07	6.02E-08	5.38E-08	1.05E-07	2.77E-07	9.38E-08	2.47E-07	9.57E-08	2.60E-07	2.46E-06	1.61E-05	1.69E-06	1.51E-06	2.96E-06	7.80E-06	2.64E-06	6.96E-06	2.69E-06	7.33E-06	1.85E-05	1.22E-04	1.28E-05	1.14E-05	2.24E-05	5.89E-05
R44	544186	6461103	1.34E-07	1.82E-08	2.58E-08	1.72E-08	3.57E-08	1.58E-08	3.29E-08	1.56E-08	3.32E-08	1.13E-06	3.77E-06	5.12E-07	7.27E-07	4.85E-07	1.00E-06	4.44E-07	9.26E-07	4.39E-07	9.34E-07	8.55E-06	2.84E-05	3.87E-06	5.48E-06	3.66E-06	7.58E-06
R45	543670	6461675	1.89E-07	4.12E-08	6.21E-08	3.78E-08	8.30E-08	3.47E-08	7.77E-08	3.44E-08	7.85E-08	1.58E-06	5.31E-06	1.16E-06	1.75E-06	1.06E-06	2.34E-06	9.77E-07	2.19E-06	9.69E-07	2.21E-06	1.19E-05	4.01E-05	8.75E-06	1.32E-05	8.03E-06	1.76E-05
R46	542637	6460861	5.74E-08	2.48E-08	2.55E-08	2.15E-08	4.02E-08	1.98E-08	3.69E-08	1.95E-08	3.68E-08	7.86E-07	1.62E-06	6.99E-07	7.17E-07	6.06E-07	1.13E-06	5.57E-07	1.04E-06	5.49E-07	1.04E-06	5.93E-06	1.22E-05	5.27E-06	5.41E-06	4.57E-06	8.53E-06
R47	543716	6464336	2.01E-07	4.28E-08	7.09E-08	4.77E-08	1.12E-07	4.51E-08	1.08E-07	4.33E-08	1.04E-07	1.49E-06	5.66E-06	1.21E-06	2.00E-06	1.34E-06	3.15E-06	1.27E-06	3.05E-06	1.22E-06	2.94E-06	1.12E-05	4.27E-05	9.10E-06	1.51E-05	1.01E-05	2.38E-05
R48	544457	6465505	1.13E-07	1.84E-08	3.35E-08	2.11E-08	4.96E-08	1.96E-08	4.65E-08	1.91E-08	4.56E-08	6.44E-07	3.19E-06	5.17E-07	9.42E-07	5.95E-07	1.40E-06	5.52E-07	1.31E-06	5.39E-07	1.28E-06	4.86E-06	2.41E-05	3.90E-06	7.11E-06	4.49E-06	1.05E-05
R49	544257	6466375	7.65E-08	8.92E-09	1.78E-08	9.57E-09	2.50E-08	8.90E-09	2.32E-08	8.70E-09	2.30E-08	4.36E-07	2.15E-06	2.51E-07	5.01E-07	2.69E-07	7.03E-07	2.50E-07	6.54E-07	2.45E-07	6.46E-07	3.29E-06	1.63E-05	1.89E-06	3.78E-06	2.03E-06	5.30E-06
R50	543782	6464178	2.64E-07	4.44E-09	8.69E-08	6.25E-08	1.42E-07	5.94E-08	1.39E-07	5.66E-08	1.32E-07	1.22E-06	7.42E-06	1.25E-07	2.45E-06	1.76E-06	3.99E-06	1.67E-06	3.90E-06	1.59E-06	3.72E-06	9.24E-06	5.60E-05	9.42E-07	1.85E-05	1.33E-05	3.01E-05
R51	542870	6463609	1.10E-07	3.42E-09	5.51E-08	3.83E-08	7.73E-08	3.47E-08	6.96E-08	3.47E-08	7.21E-08	1.21E-06	3.09E-06	9.64E-08	1.55E-06	1.08E-06	2.18E-06	9.77E-07	1.96E-06	9.77E-07	2.03E-06	9.10E-06	2.33E-05	7.27E-07	1.17E-05	8.13E-06	1.64E-05
R52	542900	6463529	1.38E-07	3.90E-09	6.26E-08	4.08E-08	8.44E-08	3.67E-08	7.56E-08	3.68E-08	7.85E-08	1.36E-06	3.87E-06	1.10E-07	1.76E-06	1.15E-06	2.38E-06	1.03E-06	2.13E-06	1.04E-06	2.21E-06	1.03E-05	2.92E-05	8.29E-07	1.33E-05	8.68E-06	1.79E-05
R53	542787	6461088	7.65E-08	1.96E-09	3.25E-08	2.59E-08	4.97E-08	2.38E-08	4.56E-08	2.34E-08	4.57E-08	7.86E-07	2.15E-06	5.51E-08	9.14E-07	7.30E-07	1.40E-06	6.71E-07	1.28E-06	6.60E-07	1.29E-06	5.93E-06	1.63E-05	4.16E-07	6.90E-06	5.51E-06	1.06E-05
R54	543282	6464626	8.95E-08	1.97E-09	3.79E-08	2.68E-08	5.87E-08	2.50E-08	5.51E-08	2.45E-08	5.46E-08	8.84E-07	2.52E-06	5.55E-08	1.07E-06	7.54E-07	1.65E-06	7.03E-07	1.55E-06	6.89E-07	1.54E-06	6.67E-06	1.90E-05	4.19E-07	8.05E-06	5.69E-06	1.25E-05
R55	541663	6462761	1.91E-08	6.79E-10	1.08E-08	1.21E-08	2.02E-08	1.15E-08	1.87E-08	1.13E-08	1.87E-08	2.04E-07	5.39E-07	1.91E-08	3.04E-07	3.42E-07	5.68E-07	3.23E-07	5.28E-07	3.18E-07	5.25E-07	1.54E-06	4.06E-06	1.44E-07	2.29E-06	2.58E-06	4.29E-06
R56	541956	6463856	1.91E-08	9.73E-10	1.37E-08	1.24E-08	2.18E-08	1.14E-08	1.99E-08	1.13E-08	2.01E-08	2.08E-07	5.39E-07	2.74E-08	3.85E-07	3.50E-07	6.14E-07	3.20E-07	5.60E-07	3.18E-07	5.65E-07	1.57E-06	4.06E-06	2.07E-07	2.90E-06	2.64E-06	4.63E-06
R57	542316	6463028	1.91E-08	1.52E-09	2.32E-08	2.45E-08	4.13E-08	2.30E-08	3.85E-08	2.26E-08	3.84E-08	5.60E-07	5.39E-07	4.28E-08	6.53E-07	6.89E-07	1.16E-06	6.46E-07	1.08E-06	6.36E-07	1.08E-06	4.22E-06	4.06E-06	3.23E-07	4.92E-06	5.20E-06	8.78E-06
R58	542418	6465095	1.91E-08	7.15E-10	1.37E-08	9.95E-09	2.10E-08	9.18E-09	1.95E-08	8.99E-09	1.95E-08	2.13E-07	5.39E-07	2.01E-08	3.85E-07	2.80E-07	5.92E-07	2.59E-07	5.49E-07	2.53E-07	5.49E-07	1.61E-06	4.06E-06	1.52E-07	2.91E-06	2.11E-06	4.47E-06
R59	544243	6459543	9.57E-09	3.88E-10	7.05E-09	4.88E-09	1.04E-08	4.50E-09	9.57E-09	4.40E-09	9.66E-09	2.15E-07	2.69E-07	1.09E-08	1.99E-07	1.37E-07	2.94E-07	1.27E-07	2.69E-07	1.24E-07	2.72E-07	1.63E-06	2.03E-06	8.25E-08	1.50E-06	1.04E-06	2.22E-06
R60	544409	6465165	1.55E-07	2.21E-09	4.47E-08	2.80E-08	6.67E-08	2.61E-08	6.27E-08	2.53E-08	6.12E-08	8.80E-07	4.38E-06	6.21E-08	1.26E-06	7.89E-07	1.88E-06	7.35E-07	1.77E-06	7.14E-07	1.72E-06	6.64E-06	3.30E-05	4.69E-07	9.50E-06	5.95E-06	1.42E-05
R61	541538	6461826	9.57E-09	9.17E-10	1.28E-08	1.24E-08	2.20E-08	1.16E-08	2.02E-08	1.13E-08	2.01E-08	2.98E-07	2.69E-07	2.58E-08	3.59E-07	3.50E-07	6.19E-07	3.26E-07	5.68E-07	3.18E-07	5.65E-07	2.25E-06	2.03E-06	1.95E-07	2.71E-06	2.64E-06	4.67E-06
R62	542174	6462135	1.91E-08	1.93E-09	2.63E-08	2.47E-08	4.34E-08	2.27E-08	3.97E-08	2.24E-08	3.97E-08	8.89E-07	5.39E-07	5.44E-08	7.41E-07	6.95E-07	1.22E-06	6.38E-07	1.12E-06	6.30E-07	1.12E-06	6.71E-06	4.06E-06	4.11E-07	5.59E-06	5.24E-06	9.23E-06
R63	542368	6464205	9.57E-09	1.15E-09	1.94E-08	1.66E-08	3.09E-08	1.54E-08	2.82E-08	1.53E-08	2.86E-08	3.10E-07	2.69E-07	3.22E-08	5.45E-07	4.69E-07	8.70E-07	4.34E-07	7.94E-07	4.31E-07	8.05E-07	2.34E-06	2.03E-06	2.43E-07	4.11E-06	3.54E-06	6.56E-06
R64	545067	6465474	1.85E-07	1.91E-09	3.46E-08	2.09E-08	5.07E-08	1.89E-08	4.58E-08	1.87E-08	4.62E-08	1.05E-06	5.22E-06	5.37E-08	9.75E-07	5.87E-07	1.43E-06	5.33E-07	1.29E-06	5.28E-07	1.30E-06	7.95E-06	3.94E-05	4.05E-07	7.36E-06	4.43E-06	1.08E-05
R65	544584	6464584	3.60E-07	5.13E-09	9.52E-08	5.53E-08	1.37E-07	5.06E-08	1.27E-07	5.00E-08	1.26E-07	1.85E-06	1.01E-05	1.44E-07	2.68E-06	1.56E-06	3.85E-06	1.42E-06	3.56E-06	1.41E-06	3.55E-06	1.39E-05	7.65E-05	1.09E-06	2.02E-05	1.17E-05	2.91E-05
R66	544241	6464857	2.00E-07	2.78E-09	5.64E-08	3.81E-08	8.62E-08	3.58E-08	8.25E-08	3.45E-08	7.96E-08	1.13E-06	5.64E-06	7.82E-08	1.59E-06	1.07E-06	2.43E-06	1.01E-06	2.32E-06	9.72E-07	2.24E-06	8.50E-06	4.25E-05	5.90E-07	1.20E-05	8.09E-06	1.83E-05
R67	544319	6464830	2.20E-07	2.97E-09	6.02E-08	3.86E-08	9.06E-08	3.62E-08	8.64E-08	3.49E-08	8.35E-08	1.21E-06	6.20E-06	8.35E-08	1.69E-06	1.09E-06	2.55E-06	1.02E-06	2.43E-06	9.83E-07	2.35E-06	9.11E-06	4.68E-05	6.30E-07	1.28E-05	8.21E-06	1.92E-05
R68	544485	6462026	3.24E-07	3.41E-09	5.62E-08	3.03E-08	7.41E-08	2.80E-08	6.94E-08	2.77E-08	7.04E-08	2.12E-06	9.11E-06	9.60E-08	1.58E-06	8.54E-07	2.09E-06	7.89E-07	1.95E-06	7.81E-07	1.98E-06	1.60E-05	6.87E-05	7.25E-07	1.19E-05	6.44E-06	1.57E-05
R69	544751	6462012	3.87E-07	2.49E-09	4.51E-08	2.51E-08	6.00E-08	2.32E-08	5.65E-08	2.28E-08	5.64E-08	2.46E-06	1.09E-05	7.00E-08	1.27E-06	7.06E-07	1.69E-06	6.54E-07	1.59E-06	6.41E-07	1.59E-06	1.86E-05	8.22E-05	5.28E-07	9.58E-06	5.32E-06	1.27E-05
R70	543879	6461328	1.06E-07	2.01E-09	3.57E-08	2.40E-08	5.01E-08	2.22E-08	4.66E-08	2.20E-08	4.71E-08	1.09E-06	2.98E-06	5.67E-08	1.00E-06	6.76E-07	1.41E-06	6.25E-07	1.31E-06	6.19E-07	1.32E-06	8.24E-06	2.25E-05	4.28E-07	7.58E-06	5.10E-06	1.06E-05

ID	x	y					Zinc									
			MOD 6 Construction Scenario Ann Avg Conc	MOD 6 Construction Scenario Total Deposition	MOD 6 Operational Scenario Ann Avg Conc	MOD 6 Operational Scenario Total Deposition	PPR Ann Avg Conc	PPR Dry Depo	MOD4+2016 Ann Avg Conc	MOD4+2016 Total Depo	Representative Operational year (BAU) Ann Avg Conc	Representative Operational year (BAU) Total Deposition	MOD 6 Construction Scenario Ann Avg Conc	MOD 6 Construction Scenario Total Deposition	MOD 6 Operational Scenario Ann Avg Conc	MOD 6 Operational Scenario Total Deposition
			μg/m^3	g/m^2/annum	μg/m^3	g/m^2/annum	μg/m^3	g/m^2/annum	μg/m^3	g/m^2/annum	μg/m^3	g/m^2/annum	μg/m^3	g/m^2/annum	μg/m^3	g/m^2/annum
R1	544110	6462598	1.72E-05	4.37E-05	1.73E-05	4.53E-05	2.45E-02	9.79E-02	1.97E-02	4.58E-02	2.26E-02	5.58E-02	2.08E-02	5.27E-02	2.08E-02	5.46E-02
R2	543763	6462312	1.70E-05	4.80E-05	1.76E-05	5.06E-05	2.94E-02	1.22E-01	2.59E-02	5.54E-02	2.34E-02	6.24E-02	2.05E-02	5.79E-02	2.12E-02	6.10E-02
R3	543555	6462322	3.09E-05	9.13E-05	3.05E-05	9.15E-05	6.37E-02	2.20E-01	4.59E-02	8.49E-02	4.03E-02	1.12E-01	3.72E-02	1.10E-01	3.67E-02	1.10E-01
R4	543324	6462003	1.49E-05	3.69E-05	1.50E-05	3.76E-05	4.90E-02	1.47E-01	2.53E-02	5.04E-02	2.00E-02	4.75E-02	1.79E-02	4.44E-02	1.81E-02	4.53E-02
R5	543140	6461859	1.25E-05	2.86E-05	1.26E-05	2.91E-05	4.41E-02	9.79E-02	2.01E-02	3.40E-02	1.69E-02	3.75E-02	1.51E-02	3.44E-02	1.51E-02	3.50E-02
R6	542833	6462000	1.33E-05	2.66E-05	1.31E-05	2.67E-05	3.43E-02	9.79E-02	2.17E-02	3.29E-02	1.78E-02	3.54E-02	1.60E-02	3.20E-02	1.58E-02	3.22E-02
R7	542604	6462718	7.30E-06	1.37E-05	7.23E-06	1.39E-05	9.79E-03	2.45E-02	9.40E-03	1.15E-02	9.47E-03	1.79E-02	8.79E-03	1.65E-02	8.72E-03	1.67E-02
R8	542923	6462744	1.46E-05	3.20E-05	1.44E-05	3.25E-05	2.20E-02	7.34E-02	2.04E-02	3.09E-02	1.95E-02	4.22E-02	1.76E-02	3.85E-02	1.74E-02	3.91E-02
R9	542926	6463052	1.14E-05	2.48E-05	1.14E-05	2.57E-05	1.96E-02	4.90E-02	1.60E-02	2.33E-02	1.54E-02	3.32E-02	1.37E-02	2.99E-02	1.38E-02	3.09E-02
R10	543158	6463633	1.11E-05	2.53E-05	1.10E-05	2.62E-05	1.47E-02	4.90E-02	1.50E-02	2.33E-02	1.46E-02	3.35E-02	1.33E-02	3.05E-02	1.33E-02	3.16E-02
R11	543150	6461692	8.96E-06	1.99E-05	8.96E-06	2.02E-05	1.71E-02	4.90E-02	1.35E-02	2.06E-02	1.20E-02	2.60E-02	1.08E-02	2.39E-02	1.08E-02	2.43E-02
R12	543587	6461665	7.36E-06	1.65E-05	7.28E-06	1.66E-05	1.22E-02	4.90E-02	9.96E-03	1.59E-02	9.62E-03	2.12E-02	8.86E-03	1.99E-02	8.76E-03	2.01E-02
R13	543631	6461566	6.48E-06	1.41E-05	6.40E-06	1.42E-05	1.22E-02	2.45E-02	8.65E-03	1.33E-02	8.45E-03	1.82E-02	7.81E-03	1.70E-02	7.71E-03	1.72E-02
R14	543019	6463916	8.01E-06	1.61E-05	7.90E-06	1.64E-05	9.79E-03	2.45E-02	9.88E-03	1.34E-02	1.04E-02	2.11E-02	9.65E-03	1.94E-02	9.52E-03	1.98E-02
R15	543133	6465290	2.76E-06	6.40E-06	2.72E-06	6.34E-06	4.90E-03	2.45E-02	3.43E-03	5.55E-03	3.60E-03	8.25E-03	3.33E-03	7.71E-03	3.28E-03	7.64E-03
R16	544570	6465713	3.47E-06	8.39E-06	3.39E-06	8.27E-06	4.90E-03	2.45E-02	3.96E-03	7.42E-03	4.53E-03	1.09E-02	4.19E-03	1.01E-02	4.09E-03	9.96E-03
R17	543245	6464378	6.44E-06	1.41E-05	6.28E-06	1.40E-05	9.79E-03	2.45E-02	7.67E-03	1.16E-02	8.25E-03	1.81E-02	7.76E-03	1.70E-02	7.57E-03	1.69E-02
R18	542815	6461151	5.32E-06	1.03E-05	5.26E-06	1.04E-05	7.34E-03	2.45E-02	7.65E-03	8.93E-03	7.00E-03	1.36E-02	6.41E-03	1.24E-02	6.34E-03	1.25E-02
R19	544599	6466299	2.28E-06	5.53E-06	2.22E-06	5.47E-06	4.90E-03	2.45E-02	2.69E-03	4.98E-03	2.96E-03	7.17E-03	2.74E-03	6.66E-03	2.67E-03	6.59E-03
R20	543420	6465782	2.15E-06	5.34E-06	2.09E-06	5.28E-06	4.90E-03	2.45E-02	2.70E-03	4.85E-03	2.79E-03	6.88E-03	2.60E-03	6.44E-03	2.52E-03	6.37E-03
R21	544212	6462762	2.00E-05	5.10E-05	1.94E-05	5.07E-05	3.18E-02	1.22E-01	1.96E-02	4.59E-02	2.61E-02	6.34E-02	2.41E-02	6.15E-02	2.34E-02	6.11E-02
R22	544288	6462828	2.15E-05	5.42E-05	2.06E-05	5.28E-05	3.43E-02	1.47E-01	1.94E-02	4.60E-02	2.79E-02	6.72E-02	2.60E-02	6.53E-02	2.48E-02	6.36E-02
R23	544456	6462974	2.58E-05	6.38E-05	2.43E-05	6.06E-05	4.16E-02	1.96E-01	2.04E-02	5.22E-02	3.31E-02	7.93E-02	3.11E-02	7.69E-02	2.93E-02	7.30E-02
R24	544591	6463090	2.85E-05	7.24E-05	2.67E-05	6.82E-05	5.88E-02	2.69E-01	2.20E-02	6.21E-02	3.62E-02	9.02E-02	3.43E-02	8.73E-02	3.21E-02	8.22E-02
R25	544460	6462723	1.47E-05	3.62E-05	1.41E-05	3.55E-05	2.20E-02	9.79E-02	1.34E-02	3.06E-02	1.89E-02	4.53E-02	1.77E-02	4.36E-02	1.70E-02	4.28E-02
R26	544723	6463208	3.91E-05	9.64E-05	3.77E-05	9.34E-05	8.08E-02	3.67E-01	2.75E-02	8.36E-02	5.06E-02	1.24E-01	4.71E-02	1.16E-01	4.54E-02	1.13E-01
R27	544666	6463926	4.61E-05	1.21E-04	4.93E-05	1.37E-04	8.81E-02	4.90E-01	3.91E-02	1.23E-01	6.38E-02	1.68E-01	5.55E-02	1.46E-01	5.93E-02	1.65E-01
R28	544731	6463988	3.90E-05	9.82E-05	4.21E-05	1.12E-04	6.37E-02	3.67E-01	3.74E-02	1.14E-01	5.47E-02	1.38E-01	4.70E-02	1.18E-01	5.08E-02	1.35E-01
R29	544592	6464026	3.04E-05	8.17E-05	3.07E-05	8.57E-05	5.39E-02	3.43E-01	2.59E-02	7.76E-02	4.04E-02	1.08E-01	3.66E-02	9.84E-02	3.70E-02	1.03E-01
R30	544728	6464112	2.66E-05	6.81E-05	2.78E-05	7.42E-05	4.16E-02	2.45E-01	2.52E-02	7.71E-02	3.67E-02	9.44E-02	3.20E-02	8.21E-02	3.35E-02	8.94E-02
R31	544503	6464328	1.52E-05	3.87E-05	1.49E-05	3.82E-05	2.45E-02	1.47E-01	1.42E-02	3.44E-02	1.98E-02	4.94E-02	1.83E-02	4.66E-02	1.79E-02	4.61E-02
R32	544637	6464415	1.38E-05	3.54E-05	1.37E-05	3.61E-05	2.20E-02	1.22E-01	1.30E-02	3.33E-02	1.83E-02	4.68E-02	1.66E-02	4.26E-02	1.66E-02	4.35E-02
R33	545231	6464450	1.48E-05	3.98E-05	1.59E-05	4.20E-05	2.45E-02	1.22E-01	1.19E-02	3.53E-02	2.14E-02	5.71E-02	1.78E-02	4.79E-02	1.91E-02	5.06E-02
R34	543572	6463746	1.75E-05	4.83E-05	1.69E-05	4.79E-05	2.20E-02	9.79E-02	2.09E-02	3.57E-02	2.26E-02	6.12E-02	2.11E-02	5.82E-02	2.03E-02	5.77E-02
R35	543748	6463873	1.77E-05	4.38E-05	1.66E-05	4.18E-05	2.20E-02	9.79E-02	1.93E-02	3.14E-02	2.24E-02	5.39E-02	2.13E-02	5.28E-02	2.01E-02	5.04E-02
R36	543934	6464002	1.74E-05	4.00E-05	1.63E-05	3.67E-05	2.45E-02	9.79E-02	1.76E-02	2.88E-02	2.18E-02	4.77E-02	2.10E-02	4.82E-02	1.96E-02	4.42E-02
R37	544127	6464141	1.59E-05	3.81E-05	1.48E-05	3.46E-05	2.45E-02	1.22E-01	1.53E-02	2.91E-02	1.99E-02	4.49E-02	1.91E-02	4.59E-02	1.78E-02	4.17E-02
R38	542459	6462467	6.10E-06	1.15E-05	6.06E-06	1.16E-05	9.79E-03	2.45E-02	8.39E-03	9.94E-03	8.20E-03	1.53E-02	7.34E-03	1.39E-02	7.30E-03	1.40E-02
R39	542512	6462581	6.42E-06	1.22E-05	6.32E-06	1.23E-05	9.79E-03	2.45E-02	8.70E-03	1.04E-02	8.54E-03	1.61E-02	7.74E-03	1.47E-02	7.61E-03	1.48E-02
R40	543099	6463321	1.14E-05	2.72E-05	1.16E-05	2.89E-05	1.96E-02	7.34E-02	1.69E-02	3.10E-02	1.57E-02	3.72E-02	1.38E-02	3.28E-02	1.40E-02	3.49E-02
R41	543249	6463439	1.41E-05	3.57E-05	1.42E-05	3.76E-05	1.96E-02	7.34E-02	2.09E-02	3.70E-02	1.90E-02	4.80E-02	1.70E-02	4.30E-02	1.71E-02	4.53E-02
R42	543394	6463551	1.71E-05	4.84E-05	1.69E-05	4.97E-05	2.20E-02	9.79E-02	2.29E-02	4.12E-02	2.26E-02	6.30E-02	2.06E-02	5.83E-02	2.03E-02	5.99E-02
R43	544670	6464213	1.99E-05	5.26E-05	2.03E-05	5.53E-05	2.23E-02	1.46E-01	1.54E-02	1.38E-02	2.69E-02	7.09E-02	2.40E-02	6.33E-02	2.45E-02	6.66E-02
R44	544186	6461103	3.35E-06	6.99E-06	3.31E-06	7.05E-06	1.03E-02	3.43E-02	4.66E-03	6.61E-03	4.41E-03	9.13E-03	4.04E-03	8.42E-03	3.99E-03	8.50E-03
R45	543670	6461675	7.38E-06	1.65E-05	7.32E-06	1.67E-05	1.44E-02	4.83E-02	1.05E-02	1.59E-02	9.67E-03	2.13E-02	8.89E-03	1.99E-02	8.81E-03	2.01E-02
R46	542637	6460861	4.21E-06	7.84E-06	4.15E-06	7.82E-06	7.14E-03	1.47E-02	6.35E-03	6.52E-03	5.51E-03	1.03E-02	5.07E-03	9.45E-03	4.99E-03	9.43E-03
R47	543716	6464336	9.57E-06	2.30E-05	9.21E-06	2.22E-05	1.35E-02	5.14E-02	1.10E-02	1.81E-02	1.22E-02	2.86E-02	1.15E-02	2.77E-02	1.11E-02	2.67E-02
R48	544457	6465505	4.17E-06	9.88E-06	4.06E-06	9.69E-06	5.86E-03	2.90E-02	4.70E-03	8.57E-03	5.41E-03	1.27E-02	5.02E-03	1.19E-02	4.90E-03	1.17E-02
R49	544257	6466375	1.89E-06	4.94E-06	1.85E-06	4.88E-06	3.96E-03	1.96E-02	2.28E-03	4.55E-03	2.45E-03	6.39E-03	2.28E-03	5.95E-03	2.23E-03	5.88E-03
R50	543782	6464178	1.26E-05	2.94E-05	1.20E-05	2.81E-05	1.11E-02	6.75E-02	1.14E-03	2.22E-02	1.60E-02	3.63E-02	1.52E-02	3.55E-02	1.45E-02	3.38E-02
R51	542870	6463609	7.38E-06	1.48E-05	7.38E-06	1.53E-05	1.10E-02	2.81E-02	8.76E-04	1.41E-02	9.79E-03	1.98E-02	8.89E-03	1.78E-02	8.89E-03	1.85E-02
R52	542900	6463529	7.80E-06	1.61E-05	7.82E-06	1.67E-05	1.24E-02	3.52E-02	9.98E-04	1.60E-02	1.05E-02	2.16E-02	9.40E-03	1.93E-02	9.43E-03	2.01E-02
R53	542787	6461088	5.06E-06	9.69E-06	4.98E-06	9.71E-06	7.14E-03	1.96E-02	5.01E-04	8.31E-03	6.63E-03	1.27E-02	6.10E-03	1.17E-02	6.00E-03	1.17E-02
R54	543282	6464626	5.30E-06	1.17E-05	5.20E-06	1.16E-05	8.04E-03	2.29E-02	5.05E-04	9.70E-03	6.86E-03	1.50E-02	6.39E-03	1.41E-02	6.27E-03	1.40E-02
R55	541663	6462761	2.44E-06	3.98E-06	2.40E-06	3.96E-06	1.86E-03	4.90E-03	1.74E-04	2.76E-03	3.11E-03	5.17E-03	2.94E-03	4.80E-03	2.89E-03	4.77E-03
R56	541956	6463856	2.42E-06	4.23E-06	2.40E-06	4.27E-06	1.89E-03	4.90E-03	2.49E-04	3.50E-03	3.18E-03	5.58E-03	2.91E-03	5.09E-03	2.89E-03	5.14E-03
R57	542316	6463028	4.88E-06	8.17E-06	4.80E-06	8.15E-06	5.09E-03	4.90E-03	3.89E-04	5.93E-03	6.27E-03	1.06E-02	5.88E-03	9.84E-03	5.78E-03	9.82E-03
R58	542418	6465095	1.95E-06	4.15E-06	1.91E-06	4.15E-06	1.94E-03	4.90E-03	1.83E-04	3.50E-03	2.55E-03	5.39E-03	2.35E-03	4.99E-03	2.30E-03	4.99E-03
R59	544243	6459543	9.55E-07	2.03E-06	9.35E-07	2.05E-06	1.96E-03	2.45E-03	9.94E-05	1.81E-03	1.25E-03	2.67E-03	1.15E-03	2.45E-03	1.13E-03	2.47E-03
R60	544409	6465165	5.55E-06	1.33E-05	5.39E-06	1.30E-05	8.00E-03	3.98E-02	5.65E-04	1.14E-02	7.17E-03	1.71E-02	6.68E-03	1.61E-02	6.49E-03	1.57E-02
R61	541538	6461826	2.46E-06	4.29E-06	2.40E-06	4.27E-06	2.71E-03	2.45E-03	2.35E-04	3.26E-03	3.18E-03	5.63E-03	2.96E-03	5.17E-03	2.89E-03	5.14E-03
R62	542174	6462135	4.82E-06	8.43E-06	4.76E-06	8.43E-06	8.08E-03	4.90E-03	4.95E-04	6.74E-03	6.32E-03	1.11E-02	5.80E-03	1.02E-02	5.73E-03	1.02E-02
R63	542368	6464205	3.27E-06	5.99E-06	3.25E-06	6.08E-06	2.82E-03	2.45E-03	2.93E-04	4.96E-03	4.26E-03	7.91E-03	3.94E-03	7.22E-03	3.92E-03	7.32E-03
R64	545067	6465474	4.02E-06	9.73E-06	3.98E-06	9.82E-06	9.58E-03	4.74E-02	4.88E-04	8.87E-03	5.34E-03	1.30E-02	4.85E-03	1.17E-02	4.80E-03	1.18E-02
R65	544584	6464584	1.07E-05	2.69E-05	1.06E-05	2.68E-05	1.68E-02	9.22E-02	1.31E-03	2.44E-02	1.42E-02	3.50E-02	1.30E-02	3.24E-02	1.28E-02	3.23E-02
R66	544241	6464857	7.60E-06	1.75E-05	7.34E-06	1.69E-05	1.02E-02	5.13E-02	7.11E-04	1.44E-02	9.74E-03	2.21E-02	9.16E-03	2.11E-02	8.84E-03	2.04E-02
R67	544319	6464830	7.68E-06	1.84E-05	7.42E-06	1.77E-05	1.10E-02	5.64E-02	7.59E-04	1.54E-02	9.89E-03	2.32E-02	9.25E-03	2.21E-02	8.94E-03	2.14E-02
R68	544485	6462026	5.95E-06	1.48E-05	5.89E-06	1.50E-05	1.93E-02	8.28E-02	8.73E-04	1.44E-02	7.76E-03	1.90E-02	7.17E-03	1.78E-02	7.10E-03	1.80E-02
R69	544751	6462012	4.94E-06	1.20E-05	4.84E-06	1.20E-05	2.24E-02	9.90E-02	6.36E-04	1.15E-02	6.41E-03	1.54E-02	5.95E-03	1.45E-02	5.83E-03	1.44E-02
R70	543879	6461328	4.71E-06	9.90E-06	4.67E-06	1.00E-05	9.92E-03	2.71E-02	5.15E-04	9.14E-03	6.15E-03	1.28E-02	5.68E-03	1.19E-02	5.63E-03	1.20E-02

ID	x	y	Lead PPR Ann Avg Conc	Lead MOD4+2016 Ann Avg Conc	Lead Representative Operational year (BAU)	Lead MOD 6 Construction Scenario	Lead MOD 6 Operational Scenario	Antimony PPR Ann Avg Conc	Antimony MOD4+2016 Ann Avg Conc	Antimony Representative Operational year (BAU)	Antimony MOD 6 Construction Scenario	Antimony MOD 6 Operational Scenario	Arsenic PPR Ann Avg Conc	Arsenic MOD4+2016 Ann Avg Conc	Arsenic Representative Operational year (BAU)	Arsenic MOD 6 Construction Scenario	Arsenic MOD 6 Operational Scenario	Barium PPR Ann Avg Conc	Barium MOD4+2016 Ann Avg Conc	Barium Representative Operational year (BAU)	Barium MOD 6 Construction Scenario	Barium MOD 6 Operational Scenario	Beryllium PPR Ann Avg Conc	Beryllium MOD4+2016 Ann Avg Conc	Beryllium Representative Operational year (BAU)	Beryllium MOD 6 Construction Scenario	Beryllium MOD 6 Operational Scenario
			µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
R1	544110	6462598	6.13E-03	5.13E-03	6.86E-03	6.27E-03	5.71E-03	1.09E-05	9.12E-06	1.22E-05	1.11E-05	1.01E-05	6.03E-05	5.05E-05	6.75E-05	6.16E-05	5.62E-05	2.71E-06	2.27E-06	3.03E-06	2.77E-06	2.52E-06	2.94E-08	2.46E-08	3.29E-08	3.01E-08	2.74E-08
R2	543763	6462312	7.67E-03	5.23E-03	8.23E-03	7.48E-03	6.51E-03	1.36E-05	9.30E-06	1.46E-05	1.33E-05	1.16E-05	7.54E-05	5.15E-05	8.10E-05	7.36E-05	6.40E-05	3.39E-06	2.31E-06	3.64E-06	3.31E-06	2.88E-06	3.68E-08	2.51E-08	3.95E-08	3.59E-08	3.12E-08
R3	543555	6462322	1.23E-02	8.32E-03	1.23E-02	1.20E-02	9.76E-03	2.18E-05	1.48E-05	2.18E-05	2.14E-05	1.74E-05	1.21E-04	8.18E-05	1.21E-04	1.18E-04	9.61E-05	5.42E-06	3.68E-06	5.42E-06	5.32E-06	4.31E-06	5.88E-08	3.99E-08	5.88E-08	5.78E-08	4.68E-08
R4	543324	6462003	7.67E-03	4.94E-03	6.72E-03	6.17E-03	5.14E-03	1.36E-05	8.78E-06	1.19E-05	1.10E-05	9.14E-06	7.54E-05	4.86E-05	6.61E-05	6.07E-05	5.06E-05	3.39E-06	2.18E-06	2.97E-06	2.73E-06	2.27E-06	3.68E-08	2.37E-08	3.22E-08	2.96E-08	2.47E-08
R5	543140	6461859	6.13E-03	3.97E-03	5.71E-03	5.16E-03	4.30E-03	1.09E-05	7.06E-06	1.01E-05	9.17E-06	7.63E-06	6.03E-05	3.91E-05	5.61E-05	5.08E-05	4.23E-05	2.71E-06	1.75E-06	2.52E-06	2.28E-06	1.90E-06	2.94E-08	1.90E-08	2.74E-08	2.48E-08	2.06E-08
R6	542833	6462000	9.20E-03	3.99E-03	4.88E-03	4.50E-03	3.69E-03	1.64E-05	7.10E-06	8.67E-06	7.99E-06	6.56E-06	9.05E-05	3.93E-05	4.80E-05	4.42E-05	3.63E-05	4.07E-06	1.76E-06	2.16E-06	1.99E-06	1.63E-06	4.41E-08	1.92E-08	2.34E-08	2.16E-08	1.77E-08
R7	542604	6462718	3.07E-03	2.09E-03	2.65E-03	2.47E-03	2.12E-03	5.45E-06	3.72E-06	4.71E-06	4.38E-06	3.77E-06	3.02E-05	2.06E-05	2.61E-05	2.43E-05	2.09E-05	1.36E-06	9.24E-07	1.17E-06	1.09E-06	9.38E-07	1.47E-08	1.00E-08	1.27E-08	1.18E-08	1.02E-08
R8	542923	6462744	6.13E-03	4.19E-03	5.57E-03	5.14E-03	4.25E-03	1.09E-05	7.44E-06	9.91E-06	9.14E-06	7.55E-06	6.03E-05	4.12E-05	5.48E-05	5.06E-05	4.18E-05	2.71E-06	1.85E-06	2.46E-06	2.27E-06	1.88E-06	2.94E-08	2.01E-08	2.67E-08	2.47E-08	2.04E-08
R9	542926	6463052	4.60E-03	3.31E-03	4.60E-03	4.22E-03	3.58E-03	8.18E-06	5.88E-06	8.18E-06	7.51E-06	6.36E-06	4.52E-05	3.25E-05	4.53E-05	4.15E-05	3.52E-05	2.03E-06	1.46E-06	2.03E-06	1.87E-06	1.58E-06	2.21E-08	1.59E-08	2.21E-08	2.03E-08	1.72E-08
R10	543158	6463633	3.07E-03	3.14E-03	4.38E-03	4.01E-03	3.37E-03	5.45E-06	5.58E-06	7.79E-06	7.13E-06	5.99E-06	3.02E-05	3.09E-05	4.31E-05	3.95E-05	3.32E-05	1.36E-06	1.39E-06	1.94E-06	1.77E-06	1.49E-06	1.47E-08	1.51E-08	2.10E-08	1.92E-08	1.62E-08
R11	543150	6461692	4.60E-03	2.73E-03	4.14E-03	3.72E-03	3.10E-03	8.18E-06	4.85E-06	7.35E-06	6.62E-06	5.51E-06	4.52E-05	2.68E-05	4.07E-05	3.66E-05	3.05E-05	2.03E-06	1.21E-06	1.83E-06	1.65E-06	1.37E-06	2.21E-08	1.31E-08	1.99E-08	1.79E-08	1.49E-08
R12	543587	6461665	3.07E-03	2.16E-03	3.33E-03	3.00E-03	2.49E-03	5.45E-06	3.83E-06	5.93E-06	5.33E-06	4.43E-06	3.02E-05	2.12E-05	3.28E-05	2.95E-05	2.45E-05	1.36E-06	9.53E-07	1.47E-06	1.33E-06	1.10E-06	1.47E-08	1.03E-08	1.60E-08	1.44E-08	1.20E-08
R13	543631	6461566	3.07E-03	1.85E-03	2.86E-03	2.57E-03	2.14E-03	5.45E-06	3.28E-06	5.09E-06	4.57E-06	3.80E-06	3.02E-05	1.82E-05	2.82E-05	2.53E-05	2.10E-05	1.36E-06	8.16E-07	1.26E-06	1.14E-06	9.45E-07	1.47E-08	8.86E-09	1.37E-08	1.23E-08	1.03E-08
R14	543019	6463916	3.07E-03	2.03E-03	2.80E-03	2.58E-03	2.14E-03	5.45E-06	3.61E-06	4.98E-06	4.59E-06	3.80E-06	3.02E-05	2.00E-05	2.76E-05	2.54E-05	2.10E-05	1.36E-06	8.99E-07	1.24E-06	1.14E-06	9.44E-07	1.47E-08	9.76E-09	1.34E-08	1.24E-08	1.03E-08
R15	543133	6465290	1.53E-03	8.58E-04	1.24E-03	1.12E-03	9.38E-04	2.73E-06	1.52E-06	2.20E-06	1.98E-06	1.67E-06	1.51E-05	8.44E-06	1.22E-05	1.10E-05	9.22E-06	6.78E-07	3.79E-07	5.47E-07	4.93E-07	4.14E-07	7.36E-09	4.12E-09	5.94E-09	5.35E-09	4.50E-09
R16	544570	6465713	1.53E-03	9.64E-04	1.44E-03	1.29E-03	1.10E-03	2.73E-06	1.71E-06	2.56E-06	2.30E-06	1.96E-06	1.51E-05	9.48E-06	1.42E-05	1.27E-05	1.08E-05	6.78E-07	4.26E-07	6.37E-07	5.72E-07	4.87E-07	7.36E-09	4.62E-09	6.91E-09	6.21E-09	5.28E-09
R17	543245	6464378	1.53E-03	1.71E-03	2.35E-03	2.21E-03	1.82E-03	2.73E-06	3.03E-06	4.18E-06	3.93E-06	3.23E-06	1.51E-05	1.68E-05	2.31E-05	2.18E-05	1.79E-05	6.78E-07	7.54E-07	1.04E-06	9.78E-07	8.04E-07	7.36E-09	8.19E-09	1.13E-08	1.06E-08	8.73E-09
R18	542815	6461151	1.53E-03	1.56E-03	2.39E-03	2.13E-03	1.73E-03	2.73E-06	2.77E-06	4.25E-06	3.79E-06	3.08E-06	1.51E-05	1.53E-05	2.35E-05	2.10E-05	1.71E-05	6.78E-07	6.88E-07	1.06E-06	9.42E-07	7.66E-07	7.36E-09	7.47E-09	1.15E-08	1.02E-08	8.32E-09
R19	544599	6466299	1.53E-03	6.88E-04	1.03E-03	9.30E-04	7.86E-04	2.73E-06	1.22E-06	1.84E-06	1.65E-06	1.40E-06	1.51E-05	6.77E-06	1.02E-05	9.15E-06	7.73E-06	6.78E-07	3.04E-07	4.57E-07	4.11E-07	3.47E-07	7.36E-09	3.30E-09	4.96E-09	4.46E-09	3.77E-09
R20	543420	6465782	1.53E-03	7.37E-04	1.07E-03	9.67E-04	8.26E-04	2.73E-06	1.31E-06	1.91E-06	1.72E-06	1.47E-06	1.51E-05	7.25E-06	1.05E-05	9.51E-06	8.13E-06	6.78E-07	3.26E-07	4.74E-07	4.27E-07	3.65E-07	7.36E-09	3.53E-09	5.14E-09	4.64E-09	3.96E-09
R21	544212	6462762	9.20E-03	5.74E-03	7.73E-03	7.14E-03	6.15E-03	1.64E-05	1.02E-05	1.37E-05	1.27E-05	1.09E-05	9.05E-05	5.64E-05	7.60E-05	7.03E-05	6.05E-05	4.07E-06	2.53E-06	3.42E-06	3.16E-06	2.72E-06	4.41E-08	2.75E-08	3.71E-08	3.43E-08	2.95E-08
R22	544288	6462828	9.20E-03	5.78E-03	7.83E-03	7.29E-03	6.09E-03	1.64E-05	1.03E-05	1.39E-05	1.30E-05	1.08E-05	9.05E-05	5.69E-05	7.70E-05	7.17E-05	5.99E-05	4.07E-06	2.56E-06	3.46E-06	3.22E-06	2.69E-06	4.41E-08	2.77E-08	3.76E-08	3.50E-08	2.92E-08
R23	544456	6462974	9.20E-03	5.78E-03	8.10E-03	7.65E-03	6.27E-03	1.64E-05	1.03E-05	1.44E-05	1.36E-05	1.11E-05	9.05E-05	5.69E-05	7.97E-05	7.53E-05	6.17E-05	4.07E-06	2.55E-06	3.58E-06	3.38E-06	2.77E-06	4.41E-08	2.77E-08	3.89E-08	3.67E-08	3.01E-08
R24	544591	6463090	1.07E-02	5.58E-03	8.31E-03	8.14E-03	6.63E-03	1.91E-05	9.91E-06	1.48E-05	1.45E-05	1.18E-05	1.06E-04	5.49E-05	8.18E-05	8.01E-05	6.52E-05	4.74E-06	2.46E-06	3.67E-06	3.60E-06	2.93E-06	5.15E-08	2.68E-08	3.99E-08	3.91E-08	3.18E-08
R25	544460	6462723	6.13E-03	3.96E-03	5.13E-03	4.83E-03	4.10E-03	1.09E-05	7.04E-06	9.11E-06	8.59E-06	7.28E-06	6.03E-05	3.90E-05	5.04E-05	4.75E-05	4.03E-05	2.71E-06	1.75E-06	2.27E-06	2.14E-06	1.81E-06	2.94E-08	1.90E-08	2.46E-08	2.32E-08	1.97E-08
R26	544723	6463208	1.23E-02	5.87E-03	1.02E-02	9.67E-03	8.38E-03	2.18E-05	1.04E-05	1.81E-05	1.72E-05	1.49E-05	1.21E-04	5.77E-05	1.00E-04	9.52E-05	8.25E-05	5.42E-06	2.59E-06	4.50E-06	4.27E-06	3.70E-06	5.88E-08	2.81E-08	4.89E-08	4.64E-08	4.02E-08
R27	544666	6463926	1.53E-02	1.01E-02	1.59E-02	1.36E-02	1.57E-02	2.73E-05	1.79E-05	2.83E-05	2.41E-05	2.79E-05	1.51E-04	9.93E-05	1.57E-04	1.33E-04	1.55E-04	6.78E-06	4.46E-06	7.05E-06	5.99E-06	6.94E-06	7.36E-08	4.84E-08	7.65E-08	6.50E-08	7.54E-08
R28	544731	6463988	1.23E-02	9.96E-03	1.52E-02	1.20E-02	1.38E-02	2.18E-05	1.77E-05	2.71E-05	2.14E-05	2.46E-05	1.21E-04	9.80E-05	1.50E-04	1.18E-04	1.36E-04	5.42E-06	4.40E-06	6.73E-06	5.32E-06	6.11E-06	5.88E-08	4.78E-08	7.31E-08	5.77E-08	6.63E-08
R29	544592	6464026	1.07E-02	6.37E-03	1.02E-02	9.31E-03	9.21E-03	1.91E-05	1.13E-05	1.81E-05	1.66E-05	1.64E-05	1.06E-04	6.26E-05	1.00E-04	9.16E-05	9.06E-05	4.74E-06	2.81E-06	4.51E-06	4.12E-06	4.07E-06	5.15E-08	3.06E-08	4.89E-08	4.47E-08	4.42E-08
R30	544728	6464112	9.20E-03	6.64E-03	1.05E-02	8.38E-03	8.63E-03	1.64E-05	1.18E-05	1.86E-05	1.49E-05	1.53E-05	9.05E-05	6.54E-05	1.03E-04	8.24E-05	8.49E-05	4.07E-06	2.94E-06	4.62E-06	3.70E-06	3.81E-06	4.41E-08	3.19E-08	5.02E-08	4.02E-08	4.14E-08
R31	544503	6464328	6.13E-03	3.36E-03	5.11E-03	4.68E-03	4.18E-03	1.09E-05	5.98E-06	9.09E-06	8.32E-06	7.43E-06	6.03E-05	3.31E-05	5.03E-05	4.61E-05	4.11E-05	2.71E-06	1.49E-06	2.26E-06	2.07E-06	1.85E-06	2.94E-08	1.61E-08	2.45E-08	2.25E-08	2.01E-08
R32	544637	6464415	4.60E-03	3.22E-03	4.86E-03	4.31E-03	3.92E-03	8.18E-06	5.73E-06	8.64E-06	7.66E-06	6.97E-06	4.52E-05	3.17E-05	4.78E-05	4.24E-05	3.86E-05	2.03E-06	1.42E-06	2.15E-06	1.91E-06	1.73E-06	2.21E-08	1.55E-08	2.33E-08	2.07E-08	1.88E-08
R33	545231	6464450	4.60E-03	3.98E-03	6.65E-03	5.17E-03	5.18E-03	8.18E-06	7.07E-06	1.18E-05	9.19E-06	9.21E-06	4.52E-05	3.92E-05	6.55E-05	5.08E-05	5.10E-05	2.03E-06	1.76E-06	2.94E-06	2.28E-06	2.29E-06	2.21E-08	1.91E-08	3.19E-08	2.48E-08	2.49E-08
R34	543572	6463746	6.13E-03	4.89E-03	6.57E-03	6.18E-03	4.97E-03	1.09E-05	8.69E-06	1.17E-05	1.10E-05	8.83E-06	6.03E-05	4.81E-05	6.46E-05	6.08E-05	4.89E-05	2.71E-06	2.16E-06	2.90E-06	2.73E-06	2.20E-06	2.94E-08	2.35E-08	3.15E-08	2.97E-08	2.38E-08
R35	543748	6463873	6.13E-03	4.35E-03	6.08E-03	5.94E-03	4.47E-03	1.09E-05	7.73E-06	1.08E-05	1.06E-05	7.95E-06	6.03E-05	4.28E-05	5.99E-05	5.84E-05	4.40E-05	2.71E-06	1.92E-06	2.69E-06	2.63E-06	1.98E-06	2.94E-08	2.09E-08	2.92E-08	2.85E-08	2.15E-08
R36	543934	6464002	6.13E-03	3.97E-03	5.73E-03	5.58E-03	4.31E-03	1.09E-05	7.06E-06	1.02E-05	9.92E-06	7.67E-06	6.03E-05	3.91E-05	5.64E-05	5.49E-05	4.24E-05	2.71E-06	1.76E-06	2.53E-06	2.47E-06	1.91E-06	2.94E-08	1.91E-08	2.75E-08	2.68E-08	2.07E-08
R37	544127	6464141	6.13E-03	3.60E-03	5.33E-03	5.17E-03	4.13E-03	1.09E-05	6.39E-06	9.47E-06	9.19E-06	7.34E-06	6.03E-05	3.54E-05	5.24E-05	5.09E-05	4.06E-05	2.71E-06	1.59E-06	2.35E-06	2.29E-06	1.83E-06	2.94E-08	1.73E-08	2.55E-08	2.48E-08	1.98E-08
R38	542459	6462467	1.53E-03	1.64E-03	2.63E-03	2.33E-03	1.88E-03	2.73E-06	2.92E-06	4.68E-06	4.13E-06	3.33E-06	1.51E-05	1.61E-05	2.59E-05	2.29E-05	1.84E-05	6.78E-07	7.25E-07	1.16E-06	1.03E-06	8.29E-07	7.36E-09	7.87E-09	1.26E-08	1.12E-08	9.00E-09
R39	542512	6462581	3.07E-03	1.76E-03	2.65E-03	2.37E-03	1.89E-03	5.45E-06	3.13E-06	4.72E-06	4.22E-06	3.36E-06	3.02E-05	1.73E-05	2.61E-05	2.34E-05	1.86E-05	1.36E-06	7.78E-07	1.17E-06	1.05E-06	8.34E-07	1.47E-08	8.45E-09	1.27E-08	1.14E-08	9.06E-09
R40	543099	6463321	4.60E-03	3.71E-03	5.15E-03	4.67E-03	4.04E-03	8.18E-06	6.60E-06	9.15E-06	8.30E-06	7.19E-06	4.52E-05	3.65E-05	5.07E-05	4.59E-05	3.98E-05	2.03E-06	1.64E-06	2.28E-06	2.06E-06	1.79E-06	2.21E-08	1.78E-08	2.47E-08	2.24E-08	1.94E-08
R41	543249	6463439	4.60E-03	4.54E-03	6.24E-03	5.72E-03	4.95E-03	8.18E-06	8.07E-06	1.11E-05	1.02E-05	8.80E-06	4.52E-05	4.47E-05	6.14E-05	5.63E-05	4.87E-05	2.03E-06	2.01E-06	2.76E-06	2.53E-06	2.19E-06	2.21E-08	2.18E-08	3.00E-08	2.75E-08	2.37E-08
R42	543394	6463551	6.13E-03	5.29E-03	7.06E-03	6.55E-03	5.51E-03	1.09E-05	9.40E-06	1.25E-05	1.16E-05	9.80E-06	6.03E-05	5.20E-05	6.94E-05	6.45E-05	5.42E-05	2.71E-06	2.34E-06	3.12E-06	2.90E-06	2.44E-06	2.94E-08	2.54E-08	3.39E-08	3.14E-08	2.65E-08
R43	544670	6464213	5.05E-03	1.54E-03	7.20E-03	6.24E-03	5.98E-03	8.98E-06	2.74E-06	1.28E-05	1.11E-05	1.06E-05	4.97E-05	1.52E-05	7.08E-05	6.13E-05	5.89E-05	2.23E-06	6.81E-07	3.18E-06	2.76E-06	2.64E-06	2.42E-08	7.39E-09	3.45E-08	2.99E-08	2.87E-08
R44	544186	6461103	2.57E-03	9.48E-04	1.47E-03	1.32E-03	1.08E-03	4.57E-06	1.69E-06	2.61E-06	2.35E-06	1.92E-06	2.53E-05	9.33E-06	1.44E-05	1.30E-05	1.06E-05	1.14E-06	4.19E-07	6.49E-07	5.85E-07	4.77E-07	1.23E-08	4.55E-09	7.04E-09	6.35E-09	5.18E-09
R45	543670	6461675	3.48E-03	2.11E-03	3.30E-03	2.97E-03	2.47E-03	6.18E-06	3.75E-06	5.86E-06	5.27E-06	4.39E-06	3.42E-05	2.08E-05	3.24E-05	2.92E-05	2.43E-05	1.54E-06	9.33E-07	1.46E-06	1.31E-06	1.09E-06	1.67E-08	1.01E-08	1.58E-08	1.42E-08	1.18E-08
R46	542637	6460861	1.00E-03	1.24E-03	1.87E-03	1.67E-03	1.36E-03	1.78E-06	2.20E-06	3.32E-06	2.96E-06	2.41E-06	9.84E-06	1.22E-05	1.84E-05	1.64E-05	1.33E-05	4.42E-07	5.46E-07	8.25E-07	7.36E-07	5.99E-07	4.80E-09	5.93E-09	8.96E-09	7.99E-09	6.50E-09
R47	543716	6464336	3.54E-03	2.33E-03	3.41E-03	3.17E-03	2.57E-03	6.29E-06	4.14E-06	6.06E-06	5.63E-06	4.56E-06	3.48E-05	2.29E-05	3.35E-05	3.12E-05	2.52E-05	1.56E-06	1.03E-06	1.51E-06	1.40E-06	1.13E-06	1.70E-08	1.12E-08	1.64E-08	1.52E-08	1.23E-08
R48	544457	6465505	1.73E-03	1.09E-03	1.64E-03	1.49E-03	1.25E-03	3.07E-06	1.93E-06	2.91E-06	2.64E-06	2.22E-06	1.70E-05	1.07E-05	1.61E-05	1.46E-05	1.23E-05	7.63E-07	4.80E-07	7.23E-07	6.56E-07	5.51E-07	8.29E-09	5.21E-09	7.85E-09	7.12E-09	5.99E-09
R49	544257	6466375	1.39E-03	6.16E-04	9.11E-04	8.40E-04	6.94E-04	2.47E-06	1.10E-06	1.62E-06	1.49E-06	1.23E-06	1.36E-05	6.06E-06	8.97E-06	8.27E-06	6.83E-06	6.13E-07	2.72E-07	4.03E-07	3.71E-07	3.07E-07	6.65E-09	2.96E-09	4.37E-09	4.03E-09	3.33E-09
R50	543782	6464178	4.48E-03	2.85E-03	4.19E-03	3.94E-03	3.12E-03	7.97E-06	5.07E-06	7.45E-06	7.00E-06	5.55E-06	4.41E-05	2.81E-05	4.12E-05	3.88E-05	3.07E-05	1.98E-06	1.26E-06	1.85E-06	1.74E-06	1.38E-06	2.15E-08	1.37E-08	2.01E-08	1.89E-08	1.50E-08
R51	542870	6463609	2.67E-03	2.07E-03	2.85E-03	2.57E-03	2.16E-03	4.75E-06	3.68E-06	5.07E-06	4.57E-06	3.84E-06	2.63E-05	2.04E-05	2.81E-05	2.53E-05	2.13E-05	1.18E-06	9.15E-07	1.26E-06	1.14E-06	9.55E-07	1.28E-08	9.93E-09	1.37E-08	1.23E-08	1.04E-08
R52	542900	6463529	2.93E-03	2.27E-03	3.16E-03	2.84E-03	2.39E-03	5.20E-06	4.03E-06	5.62E-06	5.05E-06	4.26E-06	2.88E-05	2.23E-05	3.11E-05	2.80E-05	2.36E-05	1.29E-06	1.00E-06	1.40E-06	1.26E-06	1.06E-06	1.40E-08	1.09E-08	1.52E-08	1.36E-08	1.15E-08
R53	542787	6461088	1.58E-03	1.47E-03	2.26E-03	2.01E-03	1.64E-03	2.81E-06	2.62E-06	4.01E-06	3.58E-06	2.91E-06	1.55E-05	1.45E-05	2.22E-05	1.98E-05	1.61E-05	6.98E-07	6.51E-07	9.97E-07	8.90E-07	7.24E-07	7.58E-09	7.07E-09	1.08E-08	9.66E-09	7.86E-09
R54	543282	6464626	1.56E-03	1.45E-03	1.98E-03	1.83E-03	1.56E-03	2.78E-06	2.58E-06	3.52E-06	3.26E-06	2.78E-06	1.54E-05	1.43E-05	1.95E-05	1.80E-05	1.54E-05	6.91E-07	6.41E-07	8.76E-07	8.10E-07	6.90E-07	7.51E-09	6.96E-09	9.51E-09	8.79E-09	7.50E-09
R55	541663	6462761	7.81E-04	6.74E-04	1.01E-03	9.12E-04	7.38E-04	1.39E-06	1.20E-06	1.79E-06	1.62E-06	1.31E-06	7.68E-06	6.63E-06	9.90E-06	8.97E-06	7.26E-06	3.45E-07	2.98E-07	4.45E-07	4.03E-07	3.26E-07	3.75E-09	3.23E-09	4.83E-09	4.37E-09	3.54E-09
R56	541956	6463856	8.60E-04	7.64E-04	1.12E-03	1.00E-03	8.17E-04	1.53E-06	1.36E-06	1.98E-06	1.78E-06	1.45E-06	8.46E-06	7.51E-06	1.10E-05	9.84E-06	8.04E-06	3.80E-07	3.37E-07	4.93E-07	4.42E-07	3.61E-07	4.13E-09	3.66E-09	5.36E-09	4.80E-09	3.92E-09
R57	542316	6463028	1.68E-03	1.27E-03	1.80E-03	1.66E-03	1.38E-03	2.99E-06	2.26E-06	3.19E-06	2.96E-06	2.45E-06	1.66E-05	1.25E-05	1.77E-05	1.64E-05	1.36E-05	7.44E-07	5.63E-07	7.94E-07	7.36E-07	6.09E-07	8.07E-09	6.11E-09	8.62E-09	7.98E-09	6.61E-09
R58	542418	6465095	7.83E-04	6.75E-04	9.57E-04	8.85E-04	7.37E-04	1.39E-06	1.20E-06	1.70E-06	1.57E-06	1.31E-06	7.70E-06	6.64E-06	9.41E-06	8.71E-06	7.26E-06	3.46E-07	2.98E-07	4.23E-07	3.91E-07	3.26E-07	3.76E-09	3.24E-09	4.59E-09	4.25E-09	3.54E-09
R59	544243	6459543	5.91E-04	3.64E-04	5.54E-04	5.01E-04	4.10E-04	1.05E-06	6.46E-07	9.84E-07	8.90E-07	7.29E-07	5.81E-06	3.58E-06	5.45E-06	4.93E-06	4.04E-06	2.61E-07	1.61E-07	2.45E-07	2.21E-07	1.81E-07	2.83E-09	1.74E-09	2.66E-09	2.40E-09	1.97E-09
R60	544409	6465165	2.18E-03	1.38E-03	2.07E-03	1.90E-03	1.58E-03	3.87E-06	2.45E-06	3.69E-06	3.37E-06	2.81E-06	2.14E-05	1.35E-05	2.04E-05	1.87E-05	1.56E-05	9.63E-07	6.08E-07	9.17E-07	8.39E-07	6.99E-07	1.05E-08	6.60E-09	9.95E-09	9.11E-09	7.59E-09
R61	541538	6461826	7.81E-04	6.79E-04	1.05E-03	9.40E-04	7.38E-04	1.39E-06	1.21E-06	1.86E-06	1.67E-06	1.31E-06	7.68E-06	6.68E-06	1.03E-05	9.25E-06	7.26E-06	3.45E-07	3.00E-07	4.63E-07	4.15E-07	3.26E-07	3.75E-09	3.26E-09	5.02E-09	4.51E-09	3.54E-09
R62	542174	6462135	2.53E-03	1.21E-03	1.94E-03	1.74E-03	1.36E-03	4.49E-06	2.15E-06	3.45E-06	3.09E-06	2.42E-06	2.49E-05	1.19E-05	1.91E-05	1.71E-05	1.34E-05	1.12E-06	5.35E-07	8.58E-07	7.68E-07	6.02E-07	1.21E-08	5.81E-09	9.32E-09	8.33E-09	6.54E-09
R63	542368	6464205	7.83E-04	9.97E-04	1.32E-03	1.22E-03	1.04E-03	1.39E-06	1.77E-06	2.34E-06	2.17E-06	1.84E-06	7.70E-06	9.81E-06	1.30E-05	1.20E-05	1.02E-05	3.46E-07	4.40E-07	5.82E-07	5.39E-07	4.58E-07	3.76E-09	4.78E-09	6.32E-09	5.85E-09	4.98E-09
R64	545067	6465474	2.18E-03	1.10E-03	1.64E-03	1.47E-03	1.25E-03	3.87E-06	1.96E-06	2.91E-06	2.61E-06	2.23E-06	2.14E-05	1.09E-05	1.61E-05	1.44E-05	1.23E-05	9.62E-07	4.88E-07	7.23E-07	6.48E-07	5.54E-07	1.04E-08	5.29E-09	7.85E-09	7.04E-09	6.02E-09
R65	544584	6464584	3.83E-03	2.52E-03	3.82E-03	3.40E-03	3.02E-03	6.81E-06	4.48E-06	6.78E-06	6.04E-06	5.37E-06	3.77E-05	2.48E-05	3.75E-05	3.34E-05	2.97E-05	1.69E-06	1.11E-06	1.69E-06	1.50E-06	1.34E-06	1.84E-08	1.21E-08	1.83E-08	1.63E-08	1.45E-08
R66	544241	6464857	2.80E-03	1.71E-03	2.61E-03	2.41E-03	1.99E-03	4.97E-06	3.05E-06	4.63E-06	4.28E-06	3.55E-06	2.75E-05	1.69E-05	2.56E-05	2.37E-05	1.96E-05	1.24E-06	7.57E-07	1.15E-06	1.06E-06	8.81E-07	1.34E-08	8.22E-09	1.25E-08	1.16E-08	9.57E-09
R67	544319	6464830	2.91E-03	1.81E-03	2.73E-03	2.54E-03	2.10E-03	5.18E-06	3.21E-06	4.86E-06	4.51E-06	3.73E-06	2.86E-05	1.78E-05	2.69E-05	2.49E-05	2.06E-05	1.29E-06	7.98E-07	1.21E-06	1.12E-06	9.26E-07	1.40E-08	8.67E-09	1.31E-08	1.22E-08	1.01E-08
R68	544485	6462026	4.68E-03	1.70E-03	2.49E-03	2.27E-03	1.91E-03	8.31E-06	3.02E-06	4.42E-06	4.03E-06	3.40E-06	4.60E-05	1.67E-05	2.45E-05	2.23E-05	1.88E-05	2.07E-06	7.50E-07	1.10E-06	1.00E-06	8.45E-07	2.24E-08	8.15E-09	1.19E-08	1.09E-08	9.18E-09
R69	544751	6462012	4.90E-03	1.33E-03	1.95E-03	1.78E-03	1.47E-03	8.71E-06	2.37E-06	3.46E-06	3.16E-06	2.61E-06	4.82E-05	1.31E-05	1.92E-05	1.75E-05	1.45E-05	2.16E-06	5.89E-07	8.60E-07	7.86E-07	6.49E-07	2.35E-08	6.39E-09	9.34E-09	8.54E-09	7.05E-09
R70	543879	6461328	2.65E-03	1.29E-03	2.02E-03	1.82E-03	1.51E-03	4.71E-06	2.30E-06	3.58E-06	3.23E-06	2.68E-06	2.60E-05	1.27E-05	1.98E-05	1.79E-05	1.49E-05	1.17E-06	5.72E-07	8.91E-07	8.04E-07	6.67E-07	1.27E-08	6.21E-09	9.67E-09	8.73E-09	7.25E-09

Mine Increment - Metals (PM10)

ID	x	y	Cadmium					Chromium				
			PPR Ann Avg Conc	MOD4+2016 Ann Avg Conc	Representative Operational year (BAU)	MOD 6 Construction Scenario	MOD 6 Operational Scenario	PPR Ann Avg Conc	MOD4+2016 Ann Avg Conc	Representative Operational year (BAU)	MOD 6 Construction Scenario	MOD 6 Operational Scenario
			µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
R1	544110	6462598	2.43E-05	2.04E-05	2.72E-05	2.49E-05	2.27E-05	2.15E-06	1.80E-06	2.41E-06	2.20E-06	2.00E-06
R2	543763	6462312	3.04E-05	2.08E-05	3.27E-05	2.97E-05	2.58E-05	2.69E-06	1.84E-06	2.89E-06	2.63E-06	2.28E-06
R3	543555	6462322	4.87E-05	3.30E-05	4.87E-05	4.78E-05	3.87E-05	4.30E-06	2.92E-06	4.30E-06	4.23E-06	3.43E-06
R4	543324	6462003	3.04E-05	1.96E-05	2.67E-05	2.45E-05	2.04E-05	2.69E-06	1.73E-06	2.36E-06	2.17E-06	1.81E-06
R5	543140	6461859	2.43E-05	1.58E-05	2.26E-05	2.05E-05	1.70E-05	2.15E-06	1.39E-06	2.00E-06	1.81E-06	1.51E-06
R6	542833	6462000	3.65E-05	1.58E-05	1.94E-05	1.78E-05	1.46E-05	3.23E-06	1.40E-06	1.71E-06	1.58E-06	1.29E-06
R7	542604	6462718	1.22E-05	8.30E-06	1.05E-05	9.79E-06	8.42E-06	1.08E-06	7.34E-07	9.30E-07	8.66E-07	7.45E-07
R8	542923	6462744	2.43E-05	1.66E-05	2.21E-05	2.04E-05	1.69E-05	2.15E-06	1.47E-06	1.96E-06	1.81E-06	1.49E-06
R9	542926	6463052	1.83E-05	1.31E-05	1.83E-05	1.68E-05	1.42E-05	1.61E-06	1.16E-06	1.62E-06	1.48E-06	1.26E-06
R10	543158	6463633	1.22E-05	1.25E-05	1.74E-05	1.59E-05	1.34E-05	1.08E-06	1.10E-06	1.54E-06	1.41E-06	1.18E-06
R11	543150	6461692	1.83E-05	1.08E-05	1.64E-05	1.48E-05	1.23E-05	1.61E-06	9.57E-07	1.45E-06	1.31E-06	1.09E-06
R12	543587	6461665	1.22E-05	8.55E-06	1.32E-05	1.19E-05	9.90E-06	1.08E-06	7.57E-07	1.17E-06	1.05E-06	8.75E-07
R13	543631	6461566	1.22E-05	7.33E-06	1.14E-05	1.02E-05	8.49E-06	1.08E-06	6.48E-07	1.00E-06	9.03E-07	7.50E-07
R14	543019	6463916	1.22E-05	8.07E-06	1.11E-05	1.02E-05	8.48E-06	1.08E-06	7.14E-07	9.84E-07	9.06E-07	7.50E-07
R15	543133	6465290	6.08E-06	3.41E-06	4.91E-06	4.43E-06	3.72E-06	5.38E-07	3.01E-07	4.34E-07	3.91E-07	3.29E-07
R16	544570	6465713	6.08E-06	3.82E-06	5.72E-06	5.14E-06	4.37E-06	5.38E-07	3.38E-07	5.06E-07	4.54E-07	3.87E-07
R17	543245	6464378	6.08E-06	6.77E-06	9.34E-06	8.78E-06	7.22E-06	5.38E-07	5.99E-07	8.26E-07	7.77E-07	6.39E-07
R18	542815	6461151	6.08E-06	6.18E-06	9.48E-06	8.46E-06	6.88E-06	5.38E-07	5.47E-07	8.39E-07	7.48E-07	6.09E-07
R19	544599	6466299	6.08E-06	2.73E-06	4.10E-06	3.69E-06	3.12E-06	5.38E-07	2.41E-07	3.63E-07	3.26E-07	2.76E-07
R20	543420	6465782	6.08E-06	2.92E-06	4.25E-06	3.84E-06	3.28E-06	5.38E-07	2.59E-07	3.76E-07	3.39E-07	2.90E-07
R21	544212	6462762	3.65E-05	2.28E-05	3.07E-05	2.83E-05	2.44E-05	3.23E-06	2.01E-06	2.71E-06	2.51E-06	2.16E-06
R22	544288	6462828	3.65E-05	2.30E-05	3.11E-05	2.89E-05	2.42E-05	3.23E-06	2.03E-06	2.75E-06	2.56E-06	2.14E-06
R23	544456	6462974	3.65E-05	2.29E-05	3.21E-05	3.04E-05	2.49E-05	3.23E-06	2.03E-06	2.84E-06	2.69E-06	2.20E-06
R24	544591	6463090	4.26E-05	2.21E-05	3.30E-05	3.23E-05	2.63E-05	3.77E-06	1.96E-06	2.92E-06	2.86E-06	2.33E-06
R25	544460	6462723	2.43E-05	1.57E-05	2.03E-05	1.92E-05	1.63E-05	2.15E-06	1.39E-06	1.80E-06	1.70E-06	1.44E-06
R26	544723	6463208	4.87E-05	2.33E-05	4.05E-05	3.84E-05	3.33E-05	4.30E-06	2.06E-06	3.58E-06	3.40E-06	2.94E-06
R27	544666	6463926	6.08E-05	4.01E-05	6.33E-05	5.38E-05	6.24E-05	5.38E-06	3.54E-06	5.60E-06	4.76E-06	5.52E-06
R28	544731	6463988	4.87E-05	3.95E-05	6.04E-05	4.77E-05	5.48E-05	4.30E-06	3.50E-06	5.34E-06	4.22E-06	4.85E-06
R29	544592	6464026	4.26E-05	2.53E-05	4.05E-05	3.70E-05	3.65E-05	3.77E-06	2.24E-06	3.58E-06	3.27E-06	3.23E-06
R30	544728	6464112	3.65E-05	2.64E-05	4.15E-05	3.32E-05	3.42E-05	3.23E-06	2.33E-06	3.67E-06	2.94E-06	3.03E-06
R31	544503	6464328	2.43E-05	1.34E-05	2.03E-05	1.86E-05	1.66E-05	2.15E-06	1.18E-06	1.79E-06	1.64E-06	1.47E-06
R32	544637	6464415	1.83E-05	1.28E-05	1.93E-05	1.71E-05	1.56E-05	1.61E-06	1.13E-06	1.71E-06	1.51E-06	1.38E-06
R33	545231	6464450	1.83E-05	1.58E-05	2.64E-05	2.05E-05	2.06E-05	1.61E-06	1.40E-06	2.34E-06	1.81E-06	1.82E-06
R34	543572	6463746	2.43E-05	1.94E-05	2.61E-05	2.45E-05	1.97E-05	2.15E-06	1.72E-06	2.30E-06	2.17E-06	1.74E-06
R35	543748	6463873	2.43E-05	1.73E-05	2.42E-05	2.36E-05	1.78E-05	2.15E-06	1.53E-06	2.14E-06	2.08E-06	1.57E-06
R36	543934	6464002	2.43E-05	1.58E-05	2.28E-05	2.21E-05	1.71E-05	2.15E-06	1.39E-06	2.01E-06	1.96E-06	1.51E-06
R37	544127	6464141	2.43E-05	1.43E-05	2.11E-05	2.05E-05	1.64E-05	2.15E-06	1.26E-06	1.87E-06	1.82E-06	1.45E-06
R38	542459	6462467	6.08E-06	6.51E-06	1.04E-05	9.23E-06	7.44E-06	5.38E-07	5.76E-07	9.24E-07	8.16E-07	6.58E-07
R39	542512	6462581	1.22E-05	6.99E-06	1.05E-05	9.42E-06	7.49E-06	1.08E-06	6.18E-07	9.31E-07	8.33E-07	6.63E-07
R40	543099	6463321	1.83E-05	1.47E-05	2.04E-05	1.85E-05	1.61E-05	1.61E-06	1.30E-06	1.81E-06	1.64E-06	1.42E-06
R41	543249	6463439	1.83E-05	1.80E-05	2.48E-05	2.27E-05	1.96E-05	1.61E-06	1.59E-06	2.19E-06	2.01E-06	1.74E-06
R42	543394	6463551	2.43E-05	2.10E-05	2.80E-05	2.60E-05	2.19E-05	2.15E-06	1.86E-06	2.48E-06	2.30E-06	1.94E-06
R43	544670	6464213	2.01E-05	6.12E-06	2.86E-05	2.47E-05	2.37E-05	1.77E-06	5.41E-07	2.53E-06	2.19E-06	2.10E-06
R44	544186	6461103	1.02E-05	3.76E-06	5.83E-06	5.26E-06	4.28E-06	9.02E-07	3.33E-07	5.15E-07	4.65E-07	3.79E-07
R45	543670	6461675	1.38E-05	8.38E-06	1.31E-05	1.18E-05	9.80E-06	1.22E-06	7.41E-07	1.16E-06	1.04E-06	8.67E-07
R46	542637	6460861	3.97E-06	4.90E-06	7.41E-06	6.61E-06	5.38E-06	3.51E-07	4.34E-07	6.55E-07	5.85E-07	4.76E-07
R47	543716	6464336	1.40E-05	9.25E-06	1.35E-05	1.26E-05	1.02E-05	1.24E-06	8.18E-07	1.20E-06	1.11E-06	9.01E-07
R48	544457	6465505	6.86E-06	4.31E-06	6.49E-06	5.89E-06	4.95E-06	6.06E-07	3.81E-07	5.74E-07	5.21E-07	4.38E-07
R49	544257	6466375	5.50E-06	2.45E-06	3.62E-06	3.33E-06	2.76E-06	4.87E-07	2.16E-07	3.20E-07	2.95E-07	2.44E-07
R50	543782	6464178	1.78E-05	1.13E-05	1.66E-05	1.56E-05	1.24E-05	1.57E-06	1.00E-06	1.47E-06	1.38E-06	1.10E-06
R51	542870	6463609	1.06E-05	8.22E-06	1.13E-05	1.02E-05	8.58E-06	9.38E-07	7.27E-07	1.00E-06	9.03E-07	7.58E-07
R52	542900	6463529	1.16E-05	9.00E-06	1.26E-05	1.13E-05	9.50E-06	1.03E-06	7.96E-07	1.11E-06	9.98E-07	8.41E-07
R53	542787	6461088	6.27E-06	5.85E-06	8.96E-06	7.99E-06	6.50E-06	5.55E-07	5.17E-07	7.92E-07	7.07E-07	5.75E-07
R54	543282	6464626	6.21E-06	5.75E-06	7.87E-06	7.27E-06	6.20E-06	5.49E-07	5.09E-07	6.96E-07	6.43E-07	5.48E-07
R55	541663	6462761	3.10E-06	2.68E-06	3.99E-06	3.62E-06	2.93E-06	2.74E-07	2.37E-07	3.53E-07	3.20E-07	2.59E-07
R56	541956	6463856	3.41E-06	3.03E-06	4.43E-06	3.97E-06	3.24E-06	3.02E-07	2.68E-07	3.92E-07	3.51E-07	2.87E-07
R57	542316	6463028	6.68E-06	5.05E-06	7.13E-06	6.61E-06	5.47E-06	5.91E-07	4.47E-07	6.31E-07	5.84E-07	4.84E-07
R58	542418	6465095	3.11E-06	2.68E-06	3.80E-06	3.51E-06	2.93E-06	2.75E-07	2.37E-07	3.36E-07	3.11E-07	2.59E-07
R59	544243	6459543	2.34E-06	1.44E-06	2.20E-06	1.99E-06	1.63E-06	2.07E-07	1.28E-07	1.94E-07	1.76E-07	1.44E-07
R60	544409	6465165	8.65E-06	5.46E-06	8.23E-06	7.53E-06	6.28E-06	7.65E-07	4.83E-07	7.28E-07	6.66E-07	5.55E-07
R61	541538	6461826	3.10E-06	2.69E-06	4.16E-06	3.73E-06	2.93E-06	2.74E-07	2.38E-07	3.67E-07	3.30E-07	2.59E-07
R62	542174	6462135	1.00E-05	4.81E-06	7.71E-06	6.89E-06	5.41E-06	8.87E-07	4.25E-07	6.82E-07	6.10E-07	4.78E-07
R63	542368	6464205	3.11E-06	3.96E-06	5.23E-06	4.84E-06	4.12E-06	2.75E-07	3.50E-07	4.63E-07	4.28E-07	3.64E-07
R64	545067	6465474	8.64E-06	4.38E-06	6.50E-06	5.82E-06	4.98E-06	7.64E-07	3.87E-07	5.75E-07	5.15E-07	4.40E-07
R65	544584	6464584	1.52E-05	1.00E-05	1.51E-05	1.35E-05	1.20E-05	1.34E-06	8.85E-07	1.34E-06	1.19E-06	1.06E-06
R66	544241	6464857	1.11E-05	6.80E-06	1.03E-05	9.56E-06	7.92E-06	9.82E-07	6.02E-07	9.15E-07	8.45E-07	7.00E-07
R67	544319	6464830	1.16E-05	7.17E-06	1.08E-05	1.01E-05	8.32E-06	1.02E-06	6.34E-07	9.59E-07	8.90E-07	7.36E-07
R68	544485	6462026	1.86E-05	6.74E-06	9.86E-06	8.99E-06	7.59E-06	1.64E-06	5.96E-07	8.72E-07	7.95E-07	6.71E-07
R69	544751	6462012	1.94E-05	5.29E-06	7.73E-06	7.06E-06	5.83E-06	1.72E-06	4.68E-07	6.83E-07	6.25E-07	5.16E-07
R70	543879	6461328	1.05E-05	5.14E-06	8.00E-06	7.22E-06	5.99E-06	9.29E-07	4.54E-07	7.08E-07	6.39E-07	5.30E-07

ID	Copper					Iron					Manganese				
	PPR Ann Avg Conc	MOD4+2016 Ann Avg Conc	Representative Operational year (BAU)	MOD 6 Construction Scenario	MOD 6 Operational Scenario	PPR Ann Avg Conc	MOD4+2016 Ann Avg Conc	Representative Operational year (BAU)	MOD 6 Construction Scenario	MOD 6 Operational Scenario	PPR Ann Avg Conc	MOD4+2016 Ann Avg Conc	Representative Operational year (BAU)	MOD 6 Construction Scenario	MOD 6 Operational Scenario
	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
R1	4.10E-04	3.43E-04	4.59E-04	4.19E-04	3.82E-04	3.78E-02	3.17E-02	4.23E-02	3.87E-02	3.52E-02	1.03E-04	8.64E-05	1.15E-04	1.05E-04	9.61E-05
R2	5.13E-04	3.50E-04	5.50E-04	5.00E-04	4.35E-04	4.73E-02	3.23E-02	5.08E-02	4.62E-02	4.02E-02	1.29E-04	8.80E-05	1.38E-04	1.26E-04	1.10E-04
R3	8.20E-04	5.56E-04	8.20E-04	8.05E-04	6.53E-04	7.57E-02	5.13E-02	7.57E-02	7.43E-02	6.03E-02	2.06E-04	1.40E-04	2.06E-04	2.03E-04	1.64E-04
R4	5.13E-04	3.30E-04	4.49E-04	4.13E-04	3.44E-04	4.73E-02	3.05E-02	4.15E-02	3.81E-02	3.17E-02	1.29E-04	8.31E-05	1.13E-04	1.04E-04	8.66E-05
R5	4.10E-04	2.66E-04	3.82E-04	3.45E-04	2.87E-04	3.78E-02	2.45E-02	3.52E-02	3.19E-02	2.65E-02	1.03E-04	6.68E-05	9.60E-05	8.69E-05	7.23E-05
R6	6.15E-04	2.67E-04	3.26E-04	3.01E-04	2.47E-04	5.68E-02	2.46E-02	3.01E-02	2.78E-02	2.28E-02	1.55E-04	6.72E-05	8.21E-05	7.57E-05	6.21E-05
R7	2.05E-04	1.40E-04	1.77E-04	1.65E-04	1.42E-04	1.89E-02	1.29E-02	1.64E-02	1.52E-02	1.31E-02	5.16E-05	3.52E-05	4.46E-05	4.15E-05	3.57E-05
R8	4.10E-04	2.80E-04	3.73E-04	3.44E-04	2.84E-04	3.78E-02	2.58E-02	3.44E-02	3.18E-02	2.62E-02	1.03E-04	7.04E-05	9.38E-05	8.66E-05	7.15E-05
R9	3.08E-04	2.21E-04	3.08E-04	2.82E-04	2.39E-04	2.84E-02	2.04E-02	2.84E-02	2.61E-02	2.21E-02	7.74E-05	5.57E-05	7.75E-05	7.11E-05	6.02E-05
R10	2.05E-04	2.10E-04	2.93E-04	2.68E-04	2.26E-04	1.89E-02	1.94E-02	2.70E-02	2.48E-02	2.08E-02	5.16E-05	5.29E-05	7.37E-05	6.75E-05	5.68E-05
R11	3.08E-04	1.82E-04	2.77E-04	2.49E-04	2.07E-04	2.84E-02	1.68E-02	2.55E-02	2.30E-02	1.91E-02	7.74E-05	4.59E-05	6.96E-05	6.27E-05	5.21E-05
R12	2.05E-04	1.44E-04	2.23E-04	2.01E-04	1.67E-04	1.89E-02	1.33E-02	2.06E-02	1.85E-02	1.54E-02	5.16E-05	3.63E-05	5.61E-05	5.05E-05	4.20E-05
R13	2.05E-04	1.23E-04	1.91E-04	1.72E-04	1.43E-04	1.89E-02	1.14E-02	1.77E-02	1.59E-02	1.32E-02	5.16E-05	3.11E-05	4.82E-05	4.33E-05	3.60E-05
R14	2.05E-04	1.36E-04	1.87E-04	1.73E-04	1.43E-04	1.89E-02	1.26E-02	1.73E-02	1.59E-02	1.32E-02	5.16E-05	3.42E-05	4.72E-05	4.34E-05	3.60E-05
R15	1.03E-04	5.74E-05	8.28E-05	7.46E-05	6.27E-05	9.46E-03	5.30E-03	7.64E-03	6.88E-03	5.79E-03	2.58E-05	1.44E-05	2.08E-05	1.88E-05	1.58E-05
R16	1.03E-04	6.45E-05	9.64E-05	8.66E-05	7.37E-05	9.46E-03	5.95E-03	8.90E-03	7.99E-03	6.80E-03	2.58E-05	1.62E-05	2.43E-05	2.18E-05	1.85E-05
R17	1.03E-04	1.14E-04	1.57E-04	1.48E-04	1.22E-04	9.46E-03	1.05E-02	1.45E-02	1.37E-02	1.12E-02	2.58E-05	2.87E-05	3.96E-05	3.72E-05	3.06E-05
R18	1.03E-04	1.04E-04	1.60E-04	1.43E-04	1.16E-04	9.46E-03	9.61E-03	1.47E-02	1.32E-02	1.07E-02	2.58E-05	2.62E-05	4.02E-05	3.59E-05	2.92E-05
R19	1.03E-04	4.60E-05	6.91E-05	6.22E-05	5.25E-05	9.46E-03	4.25E-03	6.38E-03	5.74E-03	4.85E-03	2.58E-05	1.16E-05	1.74E-05	1.56E-05	1.32E-05
R20	1.03E-04	4.93E-05	7.17E-05	6.47E-05	5.52E-05	9.46E-03	4.55E-03	6.62E-03	5.97E-03	5.10E-03	2.58E-05	1.24E-05	1.80E-05	1.63E-05	1.39E-05
R21	6.15E-04	3.84E-04	5.17E-04	4.78E-04	4.12E-04	5.68E-02	3.54E-02	4.77E-02	4.41E-02	3.80E-02	1.55E-04	9.65E-05	1.30E-04	1.20E-04	1.04E-04
R22	6.15E-04	3.87E-04	5.24E-04	4.88E-04	4.08E-04	5.68E-02	3.57E-02	4.83E-02	4.50E-02	3.76E-02	1.55E-04	9.73E-05	1.32E-04	1.23E-04	1.03E-04
R23	6.15E-04	3.87E-04	5.42E-04	5.12E-04	4.19E-04	5.68E-02	3.57E-02	5.00E-02	4.72E-02	3.87E-02	1.55E-04	9.73E-05	1.36E-04	1.29E-04	1.05E-04
R24	7.18E-04	3.73E-04	5.56E-04	5.45E-04	4.43E-04	6.62E-02	3.44E-02	5.13E-02	5.03E-02	4.09E-02	1.81E-04	9.38E-05	1.40E-04	1.37E-04	1.12E-04
R25	4.10E-04	2.65E-04	3.43E-04	3.23E-04	2.74E-04	3.78E-02	2.44E-02	3.16E-02	2.98E-02	2.53E-02	1.03E-04	6.67E-05	8.62E-05	8.13E-05	6.89E-05
R26	8.20E-04	3.92E-04	6.82E-04	6.47E-04	5.61E-04	7.57E-02	3.62E-02	6.29E-02	5.97E-02	5.17E-02	2.06E-04	9.87E-05	1.72E-04	1.63E-04	1.41E-04
R27	1.03E-03	6.75E-04	1.07E-03	9.06E-04	1.05E-03	9.46E-02	6.23E-02	9.84E-02	8.36E-02	9.70E-02	2.58E-04	1.70E-04	2.68E-04	2.28E-04	2.64E-04
R28	8.20E-04	6.66E-04	1.02E-03	8.05E-04	9.24E-04	7.57E-02	6.15E-02	9.40E-02	7.42E-02	8.53E-02	2.06E-04	1.68E-04	2.56E-04	2.02E-04	2.33E-04
R29	7.18E-04	4.26E-04	6.82E-04	6.23E-04	6.16E-04	6.62E-02	3.93E-02	6.29E-02	5.75E-02	5.68E-02	1.81E-04	1.07E-04	1.72E-04	1.57E-04	1.55E-04
R30	6.15E-04	4.44E-04	6.99E-04	5.60E-04	5.77E-04	5.68E-02	4.10E-02	6.45E-02	5.17E-02	5.32E-02	1.55E-04	1.12E-04	1.76E-04	1.41E-04	1.45E-04
R31	4.10E-04	2.25E-04	3.42E-04	3.13E-04	2.80E-04	3.78E-02	2.08E-02	3.16E-02	2.89E-02	2.58E-02	1.03E-04	5.66E-05	8.60E-05	7.88E-05	7.04E-05
R32	3.08E-04	2.16E-04	3.25E-04	2.88E-04	2.62E-04	2.84E-02	1.99E-02	3.00E-02	2.66E-02	2.42E-02	7.74E-05	5.42E-05	8.18E-05	7.25E-05	6.60E-05
R33	3.08E-04	2.66E-04	4.45E-04	3.46E-04	3.47E-04	2.84E-02	2.46E-02	4.11E-02	3.19E-02	3.20E-02	7.74E-05	6.70E-05	1.12E-04	8.70E-05	8.72E-05
R34	4.10E-04	3.27E-04	4.39E-04	4.14E-04	3.32E-04	3.78E-02	3.02E-02	4.05E-02	3.82E-02	3.07E-02	1.03E-04	8.23E-05	1.10E-04	1.04E-04	8.36E-05
R35	4.10E-04	2.91E-04	4.07E-04	3.97E-04	2.99E-04	3.78E-02	2.68E-02	3.76E-02	3.67E-02	2.76E-02	1.03E-04	7.32E-05	1.02E-04	1.00E-04	7.53E-05
R36	4.10E-04	2.66E-04	3.84E-04	3.73E-04	2.89E-04	3.78E-02	2.45E-02	3.54E-02	3.44E-02	2.66E-02	1.03E-04	6.68E-05	9.65E-05	9.39E-05	7.26E-05
R37	4.10E-04	2.41E-04	3.56E-04	3.46E-04	2.76E-04	3.78E-02	2.22E-02	3.29E-02	3.19E-02	2.55E-02	1.03E-04	6.05E-05	8.96E-05	8.70E-05	6.95E-05
R38	1.03E-04	1.10E-04	1.76E-04	1.56E-04	1.25E-04	9.46E-03	1.01E-02	1.62E-02	1.44E-02	1.16E-02	2.58E-05	2.76E-05	4.43E-05	3.91E-05	3.16E-05
R39	2.05E-04	1.18E-04	1.78E-04	1.59E-04	1.26E-04	1.89E-02	1.09E-02	1.64E-02	1.47E-02	1.17E-02	5.16E-05	2.96E-05	4.47E-05	4.00E-05	3.18E-05
R40	3.08E-04	2.48E-04	3.45E-04	3.12E-04	2.71E-04	2.84E-02	2.29E-02	3.18E-02	2.88E-02	2.50E-02	7.74E-05	6.24E-05	8.67E-05	7.85E-05	6.81E-05
R41	3.08E-04	3.04E-04	4.18E-04	3.83E-04	3.31E-04	2.84E-02	2.80E-02	3.85E-02	3.53E-02	3.05E-02	7.74E-05	7.64E-05	1.05E-04	9.63E-05	8.33E-05
R42	4.10E-04	3.54E-04	4.72E-04	4.38E-04	3.69E-04	3.78E-02	3.26E-02	4.36E-02	4.04E-02	3.40E-02	1.03E-04	8.90E-05	1.19E-04	1.10E-04	9.28E-05
R43	3.38E-04	1.03E-04	4.81E-04	4.17E-04	4.00E-04	3.12E-02	9.51E-03	4.44E-02	3.85E-02	3.69E-02	8.50E-05	2.59E-05	1.21E-04	1.05E-04	1.01E-04
R44	1.72E-04	6.34E-05	9.82E-05	8.86E-05	7.22E-05	1.59E-02	5.85E-03	9.06E-03	8.17E-03	6.66E-03	4.32E-05	1.60E-05	2.47E-05	2.23E-05	1.82E-05
R45	2.33E-04	1.41E-04	2.20E-04	1.98E-04	1.65E-04	2.15E-02	1.30E-02	2.03E-02	1.83E-02	1.52E-02	5.85E-05	3.55E-05	5.54E-05	4.99E-05	4.15E-05
R46	6.69E-05	8.26E-05	1.25E-04	1.11E-04	9.07E-05	6.17E-03	7.62E-03	1.15E-02	1.03E-02	8.36E-03	1.68E-05	2.08E-05	3.14E-05	2.80E-05	2.28E-05
R47	2.37E-04	1.56E-04	2.28E-04	2.12E-04	1.72E-04	2.18E-02	1.44E-02	2.10E-02	1.95E-02	1.58E-02	5.95E-05	3.92E-05	5.74E-05	5.33E-05	4.32E-05
R48	1.16E-04	7.26E-05	1.09E-04	9.93E-05	8.35E-05	1.07E-02	6.70E-03	1.01E-02	9.17E-03	7.70E-03	2.91E-05	1.83E-05	2.75E-05	2.50E-05	2.10E-05
R49	9.28E-05	4.12E-05	6.10E-05	5.62E-05	4.64E-05	8.56E-03	3.80E-03	5.62E-03	5.19E-03	4.29E-03	2.33E-05	1.04E-05	1.53E-05	1.41E-05	1.17E-05
R50	3.00E-04	1.91E-04	2.80E-04	2.64E-04	2.09E-04	2.77E-02	1.76E-02	2.59E-02	2.43E-02	1.93E-02	7.54E-05	4.80E-05	7.05E-05	6.63E-05	5.25E-05
R51	1.79E-04	1.38E-04	1.91E-04	1.72E-04	1.45E-04	1.65E-02	1.28E-02	1.76E-02	1.59E-02	1.33E-02	4.50E-05	3.48E-05	4.80E-05	4.33E-05	3.64E-05
R52	1.96E-04	1.52E-04	2.12E-04	1.90E-04	1.60E-04	1.81E-02	1.40E-02	1.95E-02	1.75E-02	1.48E-02	4.93E-05	3.82E-05	5.32E-05	4.78E-05	4.03E-05
R53	1.06E-04	9.86E-05	1.51E-04	1.35E-04	1.10E-04	9.75E-03	9.10E-03	1.39E-02	1.24E-02	1.01E-02	2.66E-05	2.48E-05	3.80E-05	3.39E-05	2.76E-05
R54	1.05E-04	9.70E-05	1.33E-04	1.23E-04	1.05E-04	9.65E-03	8.95E-03	1.22E-02	1.13E-02	9.64E-03	2.63E-05	2.44E-05	3.34E-05	3.08E-05	2.63E-05
R55	5.22E-05	4.51E-05	6.73E-05	6.10E-05	4.94E-05	4.82E-03	4.16E-03	6.21E-03	5.63E-03	4.55E-03	1.31E-05	1.13E-05	1.69E-05	1.53E-05	1.24E-05
R56	5.75E-05	5.11E-05	7.47E-05	6.69E-05	5.46E-05	5.31E-03	4.71E-03	6.89E-03	6.17E-03	5.04E-03	1.45E-05	1.29E-05	1.88E-05	1.68E-05	1.37E-05
R57	1.13E-04	8.52E-05	1.20E-04	1.11E-04	9.22E-05	1.04E-02	7.86E-03	1.11E-02	1.03E-02	8.51E-03	2.83E-05	2.14E-05	3.02E-05	2.80E-05	2.32E-05
R58	5.24E-05	4.51E-05	6.40E-05	5.92E-05	4.93E-05	4.83E-03	4.16E-03	5.91E-03	5.46E-03	4.55E-03	1.32E-05	1.14E-05	1.61E-05	1.49E-05	1.24E-05
R59	3.95E-05	2.43E-05	3.70E-05	3.35E-05	2.74E-05	3.64E-03	2.24E-03	3.42E-03	3.09E-03	2.53E-03	9.94E-06	6.12E-06	9.31E-06	8.43E-06	6.90E-06
R60	1.46E-04	9.20E-05	1.39E-04	1.27E-04	1.06E-04	1.34E-02	8.49E-03	1.28E-02	1.17E-02	9.76E-03	3.67E-05	2.32E-05	3.49E-05	3.19E-05	2.66E-05
R61	5.22E-05	4.54E-05	7.00E-05	6.29E-05	4.94E-05	4.82E-03	4.19E-03	6.46E-03	5.80E-03	4.55E-03	1.31E-05	1.14E-05	1.76E-05	1.58E-05	1.24E-05
R62	1.69E-04	8.10E-05	1.30E-04	1.16E-04	9.11E-05	1.56E-02	7.47E-03	1.20E-02	1.07E-02	8.41E-03	4.25E-05	2.04E-05	3.27E-05	2.92E-05	2.29E-05
R63	5.24E-05	6.67E-05	8.82E-05	8.15E-05	6.94E-05	4.83E-03	6.15E-03	8.13E-03	7.52E-03	6.40E-03	1.32E-05	1.68E-05	2.22E-05	2.05E-05	1.75E-05
R64	1.46E-04	7.38E-05	1.10E-04	9.82E-05	8.39E-05	1.34E-02	6.81E-03	1.01E-02	9.06E-03	7.74E-03	3.66E-05	1.86E-05	2.75E-05	2.47E-05	2.11E-05
R65	2.56E-04	1.69E-04	2.55E-04	2.27E-04	2.02E-04	2.36E-02	1.56E-02	2.36E-02	2.10E-02	1.87E-02	6.45E-05	4.24E-05	6.42E-05	5.71E-05	5.09E-05
R66	1.87E-04	1.15E-04	1.74E-04	1.61E-04	1.33E-04	1.73E-02	1.06E-02	1.61E-02	1.49E-02	1.23E-02	4.71E-05	2.88E-05	4.38E-05	4.05E-05	3.36E-05
R67	1.95E-04	1.21E-04	1.83E-04	1.70E-04	1.40E-04	1.80E-02	1.11E-02	1.69E-02	1.56E-02	1.29E-02	4.90E-05	3.04E-05	4.60E-05	4.27E-05	3.53E-05
R68	3.13E-04	1.14E-04	1.66E-04	1.52E-04	1.28E-04	2.89E-02	1.05E-02	1.53E-02	1.40E-02	1.18E-02	7.87E-05	2.86E-05	4.18E-05	3.81E-05	3.22E-05
R69	3.28E-04	8.91E-05	1.30E-04	1.19E-04	9.83E-05	3.02E-02	8.22E-03	1.20E-02	1.10E-02	9.07E-03	8.24E-05	2.24E-05	3.28E-05	2.99E-05	2.47E-05
R70	1.77E-04	8.66E-05	1.35E-04	1.22E-04	1.01E-04	1.63E-02	7.99E-03	1.24E-02	1.12E-02	9.32E-03	4.45E-05	2.18E-05	3.39E-05	3.06E-05	2.54E-05

Mine Increment - Metals (PM10)

ID	x	y	Mercury PPR Ann Avg Conc µg/m³	Mercury MOD4+2016 Ann Avg Conc µg/m³	Mercury Representative Operational year (BAU) µg/m³	Mercury MOD 6 Construction Scenario µg/m³	Mercury MOD 6 Operational Scenario µg/m³	Nickel PPR Ann Avg Conc µg/m³	Nickel MOD4+2016 Ann Avg Conc µg/m³	Nickel Representative Operational year (BAU) µg/m³	Nickel MOD 6 Construction Scenario µg/m³	Nickel MOD 6 Operational Scenario µg/m³	Silver PPR Ann Avg Conc µg/m³	Silver MOD4+2016 Ann Avg Conc µg/m³	Silver Representative Operational year (BAU) µg/m³	Silver MOD 6 Construction Scenario µg/m³	Silver MOD 6 Operational Scenario µg/m³	Zinc PPR Ann Avg Conc µg/m³	Zinc MOD4+2016 Ann Avg Conc µg/m³	Zinc Representative Operational year (BAU) µg/m³	Zinc MOD 6 Construction Scenario µg/m³	Zinc MOD 6 Operational Scenario µg/m³
R1	544110	6462598	5.87E-08	4.91E-08	6.56E-08	5.99E-08	5.46E-08	1.65E-06	1.38E-06	1.85E-06	1.69E-06	1.54E-06	1.25E-05	1.04E-05	1.39E-05	1.27E-05	1.16E-05	1.50E-02	1.26E-02	1.68E-02	1.53E-02	1.40E-02
R2	543763	6462312	7.33E-08	5.00E-08	7.87E-08	7.15E-08	6.23E-08	2.06E-06	1.41E-06	2.22E-06	2.01E-06	1.75E-06	1.56E-05	1.06E-05	1.67E-05	1.52E-05	1.32E-05	1.88E-02	1.28E-02	2.01E-02	1.83E-02	1.59E-02
R3	543555	6462322	1.17E-07	7.96E-08	1.17E-07	1.15E-07	9.34E-08	3.30E-06	2.24E-06	3.30E-06	3.24E-06	2.63E-06	2.49E-05	1.69E-05	2.49E-05	2.45E-05	1.98E-05	3.00E-02	2.04E-02	3.00E-02	2.95E-02	2.39E-02
R4	543324	6462003	7.33E-08	4.72E-08	6.43E-08	5.90E-08	4.92E-08	2.06E-06	1.33E-06	1.81E-06	1.66E-06	1.39E-06	1.56E-05	1.00E-05	1.37E-05	1.25E-05	1.05E-05	1.88E-02	1.21E-02	1.65E-02	1.51E-02	1.26E-02
R5	543140	6461859	5.87E-08	3.80E-08	5.46E-08	4.94E-08	4.11E-08	1.65E-06	1.07E-06	1.54E-06	1.39E-06	1.16E-06	1.25E-05	8.07E-06	1.16E-05	1.05E-05	8.73E-06	1.50E-02	9.72E-03	1.40E-02	1.26E-02	1.05E-02
R6	542833	6462000	8.80E-08	3.82E-08	4.67E-08	4.30E-08	3.53E-08	2.48E-06	1.08E-06	1.31E-06	1.21E-06	9.93E-07	1.87E-05	8.11E-06	9.92E-06	9.14E-06	7.49E-06	2.25E-02	9.77E-03	1.19E-02	1.10E-02	9.03E-03
R7	542604	6462718	2.93E-08	2.00E-08	2.54E-08	2.36E-08	2.03E-08	8.26E-07	5.63E-07	7.14E-07	6.64E-07	5.71E-07	6.23E-06	4.25E-06	5.39E-06	5.01E-06	4.31E-06	7.51E-03	5.12E-03	6.49E-03	6.04E-03	5.19E-03
R8	542923	6462744	5.87E-08	4.00E-08	5.33E-08	4.92E-08	4.06E-08	1.65E-06	1.13E-06	1.50E-06	1.39E-06	1.14E-06	1.25E-05	8.50E-06	1.13E-05	1.05E-05	8.63E-06	1.50E-02	1.02E-02	1.36E-02	1.26E-02	1.04E-02
R9	542926	6463052	4.40E-08	3.16E-08	4.40E-08	4.04E-08	3.42E-08	1.24E-06	8.91E-07	1.24E-06	1.14E-06	9.63E-07	9.35E-06	6.72E-06	9.36E-06	8.58E-06	7.27E-06	1.13E-02	8.10E-03	1.13E-02	1.03E-02	8.76E-03
R10	543158	6463633	2.93E-08	3.00E-08	4.19E-08	3.84E-08	3.23E-08	8.26E-07	8.46E-07	1.18E-06	1.08E-06	9.08E-07	6.23E-06	6.38E-06	8.91E-06	8.15E-06	6.85E-06	7.51E-03	7.69E-03	1.07E-02	9.82E-03	8.26E-03
R11	543150	6461692	4.40E-08	2.61E-08	3.96E-08	3.56E-08	2.96E-08	1.24E-06	7.34E-07	1.11E-06	1.00E-06	8.34E-07	9.35E-06	5.54E-06	8.41E-06	7.57E-06	6.30E-06	1.13E-02	6.68E-03	1.01E-02	9.12E-03	7.59E-03
R12	543587	6461665	2.93E-08	2.06E-08	3.19E-08	2.87E-08	2.39E-08	8.26E-07	5.80E-07	8.98E-07	8.08E-07	6.72E-07	6.23E-06	4.38E-06	6.78E-06	6.09E-06	5.07E-06	7.51E-03	5.28E-03	8.16E-03	7.34E-03	6.11E-03
R13	543631	6461566	2.93E-08	1.77E-08	2.74E-08	2.46E-08	2.05E-08	8.26E-07	4.97E-07	7.71E-07	6.93E-07	5.76E-07	6.23E-06	3.75E-06	5.82E-06	5.23E-06	4.35E-06	7.51E-03	4.52E-03	7.01E-03	6.30E-03	5.23E-03
R14	543019	6463916	2.93E-08	1.95E-08	2.68E-08	2.47E-08	2.04E-08	8.26E-07	5.48E-07	7.55E-07	6.95E-07	5.75E-07	6.23E-06	4.13E-06	5.69E-06	5.24E-06	4.34E-06	7.51E-03	4.98E-03	6.86E-03	6.32E-03	5.23E-03
R15	543133	6465290	1.47E-08	8.21E-09	1.18E-08	1.07E-08	8.97E-09	4.13E-07	2.31E-07	3.33E-07	3.00E-07	2.52E-07	3.12E-06	1.74E-06	2.51E-06	2.27E-06	1.91E-06	3.75E-03	2.10E-03	3.03E-03	2.73E-03	2.30E-03
R16	544570	6465713	1.47E-08	9.22E-09	1.38E-08	1.24E-08	1.05E-08	4.13E-07	2.60E-07	3.88E-07	3.49E-07	2.97E-07	3.12E-06	1.96E-06	2.93E-06	2.63E-06	2.24E-06	3.75E-03	2.36E-03	3.53E-03	3.17E-03	2.70E-03
R17	543245	6464378	1.47E-08	1.63E-08	2.25E-08	2.12E-08	1.74E-08	4.13E-07	4.60E-07	6.34E-07	5.96E-07	4.90E-07	3.12E-06	3.47E-06	4.78E-06	4.50E-06	3.70E-06	3.75E-03	4.18E-03	5.76E-03	5.42E-03	4.45E-03
R18	542815	6461151	1.47E-08	1.49E-08	2.29E-08	2.04E-08	1.66E-08	4.13E-07	4.19E-07	6.43E-07	5.74E-07	4.67E-07	3.12E-06	3.17E-06	4.85E-06	4.33E-06	3.52E-06	3.75E-03	3.81E-03	5.85E-03	5.22E-03	4.24E-03
R19	544599	6466299	1.47E-08	6.58E-09	9.88E-09	8.89E-09	7.51E-09	4.13E-07	1.85E-07	2.78E-07	2.50E-07	2.12E-07	3.12E-06	1.40E-06	2.10E-06	1.89E-06	1.60E-06	3.75E-03	1.68E-03	2.53E-03	2.28E-03	1.92E-03
R20	543420	6465782	1.47E-08	7.05E-09	1.03E-08	9.25E-09	7.90E-09	4.13E-07	1.98E-07	2.89E-07	2.60E-07	2.22E-07	3.12E-06	1.50E-06	2.18E-06	1.96E-06	1.68E-06	3.75E-03	1.80E-03	2.62E-03	2.37E-03	2.02E-03
R21	544212	6462762	8.80E-08	5.49E-08	7.39E-08	6.83E-08	5.89E-08	2.48E-06	1.54E-06	2.08E-06	1.92E-06	1.66E-06	1.87E-05	1.17E-05	1.57E-05	1.45E-05	1.25E-05	2.25E-02	1.40E-02	1.89E-02	1.75E-02	1.51E-02
R22	544288	6462828	8.80E-08	5.53E-08	7.49E-08	6.97E-08	5.83E-08	2.48E-06	1.56E-06	2.11E-06	1.96E-06	1.64E-06	1.87E-05	1.18E-05	1.59E-05	1.48E-05	1.24E-05	2.25E-02	1.42E-02	1.92E-02	1.79E-02	1.49E-02
R23	544456	6462974	8.80E-08	5.53E-08	7.75E-08	7.32E-08	5.99E-08	2.48E-06	1.56E-06	2.18E-06	2.06E-06	1.69E-06	1.87E-05	1.17E-05	1.65E-05	1.56E-05	1.27E-05	2.25E-02	1.42E-02	1.98E-02	1.87E-02	1.53E-02
R24	544591	6463090	1.03E-07	5.33E-08	7.95E-08	7.79E-08	6.34E-08	2.89E-06	1.50E-06	2.24E-06	2.19E-06	1.78E-06	2.18E-05	1.13E-05	1.69E-05	1.65E-05	1.35E-05	2.63E-02	1.37E-02	2.03E-02	1.99E-02	1.62E-02
R25	544460	6462723	5.87E-08	3.79E-08	4.90E-08	4.62E-08	3.92E-08	1.65E-06	1.07E-06	1.38E-06	1.30E-06	1.10E-06	1.25E-05	8.05E-06	1.04E-05	9.82E-06	8.33E-06	1.50E-02	9.70E-03	1.25E-02	1.18E-02	1.00E-02
R26	544723	6463208	1.17E-07	5.61E-08	9.75E-08	9.25E-08	8.02E-08	3.30E-06	1.58E-06	2.74E-06	2.60E-06	2.26E-06	2.49E-05	1.19E-05	2.07E-05	1.97E-05	1.70E-05	3.00E-02	1.44E-02	2.50E-02	2.37E-02	2.05E-02
R27	544666	6463926	1.47E-07	9.65E-08	1.53E-07	1.30E-07	1.50E-07	4.13E-06	2.72E-06	4.29E-06	3.65E-06	4.23E-06	3.12E-05	2.05E-05	3.24E-05	2.75E-05	3.19E-05	3.75E-02	2.47E-02	3.90E-02	3.32E-02	3.85E-02
R28	544731	6463988	1.17E-07	9.53E-08	1.46E-07	1.15E-07	1.32E-07	3.30E-06	2.68E-06	4.10E-06	3.24E-06	3.72E-06	2.49E-05	2.02E-05	3.09E-05	2.44E-05	2.81E-05	3.00E-02	2.44E-02	3.73E-02	2.95E-02	3.38E-02
R29	544592	6464026	1.03E-07	6.09E-08	9.75E-08	8.91E-08	8.81E-08	2.89E-06	1.71E-06	2.75E-06	2.51E-06	2.48E-06	2.18E-05	1.29E-05	2.07E-05	1.89E-05	1.87E-05	2.63E-02	1.56E-02	2.50E-02	2.28E-02	2.25E-02
R30	544728	6464112	8.80E-08	6.35E-08	1.00E-07	8.01E-08	8.25E-08	2.48E-06	1.79E-06	2.82E-06	2.26E-06	2.32E-06	1.87E-05	1.35E-05	2.12E-05	1.70E-05	1.75E-05	2.25E-02	1.63E-02	2.56E-02	2.05E-02	2.11E-02
R31	544503	6464328	5.87E-08	3.22E-08	4.89E-08	4.48E-08	4.00E-08	1.65E-06	9.06E-07	1.38E-06	1.26E-06	1.13E-06	1.25E-05	6.84E-06	1.04E-05	9.52E-06	8.50E-06	1.50E-02	8.24E-03	1.25E-02	1.15E-02	1.02E-02
R32	544637	6464415	4.40E-08	3.08E-08	4.65E-08	4.12E-08	3.75E-08	1.24E-06	8.68E-07	1.31E-06	1.16E-06	1.06E-06	9.35E-06	6.55E-06	9.88E-06	8.76E-06	7.97E-06	1.13E-02	7.89E-03	1.19E-02	1.06E-02	9.61E-03
R33	545231	6464450	4.40E-08	3.81E-08	6.36E-08	4.94E-08	4.96E-08	1.24E-06	1.07E-06	1.79E-06	1.39E-06	1.39E-06	9.35E-06	8.09E-06	1.35E-05	1.05E-05	1.05E-05	1.13E-02	9.74E-03	1.63E-02	1.27E-02	1.27E-02
R34	543572	6463746	5.87E-08	4.68E-08	6.28E-08	5.92E-08	4.75E-08	1.65E-06	1.32E-06	1.77E-06	1.67E-06	1.34E-06	1.25E-05	9.94E-06	1.33E-05	1.26E-05	1.01E-05	1.50E-02	1.20E-02	1.61E-02	1.51E-02	1.22E-02
R35	543748	6463873	5.87E-08	4.16E-08	5.82E-08	5.68E-08	4.28E-08	1.65E-06	1.17E-06	1.64E-06	1.60E-06	1.20E-06	1.25E-05	8.84E-06	1.24E-05	1.21E-05	9.09E-06	1.50E-02	1.06E-02	1.49E-02	1.45E-02	1.10E-02
R36	543934	6464002	5.87E-08	3.80E-08	5.48E-08	5.34E-08	4.13E-08	1.65E-06	1.07E-06	1.54E-06	1.50E-06	1.16E-06	1.25E-05	8.07E-06	1.17E-05	1.13E-05	8.77E-06	1.50E-02	9.72E-03	1.40E-02	1.37E-02	1.06E-02
R37	544127	6464141	5.87E-08	3.44E-08	5.09E-08	4.95E-08	3.95E-08	1.65E-06	9.69E-07	1.43E-06	1.39E-06	1.11E-06	1.25E-05	7.31E-06	1.08E-05	1.05E-05	8.40E-06	1.50E-02	8.81E-03	1.30E-02	1.27E-02	1.01E-02
R38	542459	6462467	1.47E-08	1.57E-08	2.52E-08	2.22E-08	1.79E-08	4.13E-07	4.42E-07	7.09E-07	6.26E-07	5.05E-07	3.12E-06	3.33E-06	5.35E-06	4.73E-06	3.81E-06	3.75E-03	4.02E-03	6.44E-03	5.69E-03	4.59E-03
R39	542512	6462581	2.93E-08	1.68E-08	2.54E-08	2.27E-08	1.81E-08	8.26E-07	4.74E-07	7.15E-07	6.39E-07	5.08E-07	6.23E-06	3.58E-06	5.39E-06	4.82E-06	3.84E-06	7.51E-03	4.31E-03	6.50E-03	5.81E-03	4.62E-03
R40	543099	6463321	4.40E-08	3.55E-08	4.93E-08	4.46E-08	3.87E-08	1.24E-06	9.99E-07	1.39E-06	1.26E-06	1.09E-06	9.35E-06	7.54E-06	1.05E-05	9.48E-06	8.22E-06	1.13E-02	9.09E-03	1.26E-02	1.14E-02	9.90E-03
R41	543249	6463439	4.40E-08	4.34E-08	5.97E-08	5.48E-08	4.73E-08	1.24E-06	1.22E-06	1.68E-06	1.54E-06	1.33E-06	9.35E-06	9.23E-06	1.27E-05	1.16E-05	1.01E-05	1.13E-02	1.11E-02	1.53E-02	1.40E-02	1.21E-02
R42	543394	6463551	5.87E-08	5.06E-08	6.75E-08	6.27E-08	5.27E-08	1.65E-06	1.42E-06	1.90E-06	1.76E-06	1.48E-06	1.25E-05	1.07E-05	1.43E-05	1.33E-05	1.12E-05	1.50E-02	1.29E-02	1.73E-02	1.60E-02	1.35E-02
R43	544670	6464213	4.83E-08	1.47E-08	6.88E-08	5.96E-08	5.72E-08	1.36E-06	4.15E-07	1.94E-06	1.68E-06	1.61E-06	1.03E-05	3.13E-06	1.46E-05	1.27E-05	1.22E-05	1.24E-02	3.77E-03	1.76E-02	1.53E-02	1.46E-02
R44	544186	6461103	2.46E-08	9.07E-09	1.40E-08	1.27E-08	1.03E-08	6.92E-07	2.55E-07	3.95E-07	3.57E-07	2.91E-07	5.22E-06	1.93E-06	2.98E-06	2.69E-06	2.19E-06	6.29E-03	2.32E-03	3.59E-03	3.24E-03	2.64E-03
R45	543670	6461675	3.33E-08	2.02E-08	3.15E-08	2.84E-08	2.36E-08	9.37E-07	5.69E-07	8.87E-07	7.99E-07	6.65E-07	7.07E-06	4.29E-06	6.70E-06	6.03E-06	5.02E-06	8.52E-03	5.17E-03	8.07E-03	7.27E-03	6.04E-03
R46	542637	6460861	9.57E-09	1.18E-08	1.79E-08	1.59E-08	1.30E-08	2.69E-07	3.33E-07	5.03E-07	4.49E-07	3.65E-07	2.03E-06	2.51E-06	3.79E-06	3.39E-06	2.75E-06	2.45E-03	3.02E-03	4.57E-03	4.08E-03	3.32E-03
R47	543716	6464336	3.38E-08	2.23E-08	3.26E-08	3.03E-08	2.45E-08	9.53E-07	6.28E-07	9.18E-07	8.53E-07	6.91E-07	7.19E-06	4.74E-06	6.93E-06	6.43E-06	5.21E-06	8.66E-03	5.71E-03	8.34E-03	7.75E-03	6.28E-03
R48	544457	6465505	1.65E-08	1.04E-08	1.56E-08	1.42E-08	1.19E-08	4.65E-07	2.92E-07	4.40E-07	4.00E-07	3.36E-07	3.51E-06	2.21E-06	3.32E-06	3.02E-06	2.54E-06	4.23E-03	2.66E-03	4.00E-03	3.64E-03	3.05E-03
R49	544257	6466375	1.33E-08	5.90E-09	8.72E-09	8.04E-09	6.64E-09	3.73E-07	1.66E-07	2.45E-07	2.26E-07	1.87E-07	2.82E-06	1.25E-06	1.85E-06	1.71E-06	1.41E-06	3.40E-03	1.51E-03	2.23E-03	2.06E-03	1.70E-03
R50	543782	6464178	4.29E-08	2.73E-08	4.01E-08	3.77E-08	2.99E-08	1.21E-06	7.69E-07	1.13E-06	1.06E-06	8.41E-07	9.11E-06	5.80E-06	8.51E-06	8.01E-06	6.34E-06	1.10E-02	6.99E-03	1.03E-02	9.64E-03	7.64E-03
R51	542870	6463609	2.56E-08	1.98E-08	2.73E-08	2.46E-08	2.07E-08	7.19E-07	5.57E-07	7.68E-07	6.92E-07	5.82E-07	5.43E-06	4.21E-06	5.80E-06	5.23E-06	4.39E-06	6.54E-03	5.07E-03	6.99E-03	6.30E-03	5.29E-03
R52	542900	6463529	2.80E-08	2.17E-08	3.02E-08	2.72E-08	2.29E-08	7.88E-07	6.11E-07	8.52E-07	7.65E-07	6.45E-07	5.95E-06	4.61E-06	6.43E-06	5.78E-06	4.87E-06	7.17E-03	5.55E-03	7.74E-03	6.96E-03	5.86E-03
R53	542787	6461088	1.51E-08	1.41E-08	2.16E-08	1.93E-08	1.57E-08	4.25E-07	3.97E-07	6.08E-07	5.42E-07	4.41E-07	3.21E-06	2.99E-06	4.59E-06	4.09E-06	3.33E-06	3.87E-03	3.61E-03	5.53E-03	4.93E-03	4.01E-03
R54	543282	6464626	1.50E-08	1.39E-08	1.90E-08	1.75E-08	1.49E-08	4.21E-07	3.90E-07	5.34E-07	4.93E-07	4.21E-07	3.18E-06	2.95E-06	4.03E-06	3.72E-06	3.17E-06	3.83E-03	3.55E-03	4.85E-03	4.48E-03	3.82E-03
R55	541663	6462761	7.47E-09	6.45E-09	9.62E-09	8.72E-09	7.06E-09	2.10E-07	1.82E-07	2.71E-07	2.46E-07	1.99E-07	1.59E-06	1.37E-06	2.04E-06	1.85E-06	1.50E-06	1.91E-03	1.65E-03	2.46E-03	2.23E-03	1.81E-03
R56	541956	6463856	8.23E-09	7.30E-09	1.07E-08	9.56E-09	7.81E-09	2.32E-07	2.06E-07	3.01E-07	2.69E-07	2.20E-07	1.75E-06	1.55E-06	2.27E-06	2.03E-06	1.66E-06	2.11E-03	1.87E-03	2.73E-03	2.45E-03	2.00E-03
R57	542316	6463028	1.61E-08	1.22E-08	1.72E-08	1.59E-08	1.32E-08	4.53E-07	3.43E-07	4.84E-07	4.48E-07	3.71E-07	3.42E-06	2.59E-06	3.65E-06	3.38E-06	2.80E-06	4.12E-03	3.12E-03	4.40E-03	4.07E-03	3.38E-03
R58	542418	6465095	7.49E-09	6.45E-09	9.15E-09	8.47E-09	7.05E-09	2.11E-07	1.82E-07	2.58E-07	2.38E-07	1.99E-07	1.59E-06	1.37E-06	1.94E-06	1.80E-06	1.50E-06	1.92E-03	1.65E-03	2.34E-03	2.17E-03	1.81E-03
R59	544243	6459543	5.65E-09	3.48E-09	5.29E-09	4.79E-09	3.93E-09	1.59E-07	9.79E-08	1.49E-07	1.35E-07	1.10E-07	1.20E-06	7.39E-07	1.12E-06	1.02E-06	8.34E-07	1.45E-03	8.90E-04	1.36E-03	1.23E-03	1.00E-03
R60	544409	6465165	2.08E-08	1.32E-08	1.98E-08	1.82E-08	1.51E-08	5.87E-07	3.70E-07	5.59E-07	5.11E-07	4.26E-07	4.43E-06	2.80E-06	4.22E-06	3.86E-06	3.21E-06	5.33E-03	3.37E-03	5.08E-03	4.65E-03	3.87E-03
R61	541538	6461826	7.47E-09	6.49E-09	1.00E-08	8.99E-09	7.06E-09	2.10E-07	1.83E-07	2.82E-07	2.53E-07	1.99E-07	1.59E-06	1.38E-06	2.13E-06	1.91E-06	1.50E-06	1.91E-03	1.66E-03	2.56E-03	2.30E-03	1.81E-03
R62	542174	6462135	2.42E-08	1.16E-08	1.86E-08	1.66E-08	1.30E-08	6.81E-07	3.26E-07	5.23E-07	4.68E-07	3.67E-07	5.14E-06	2.46E-06	3.95E-06	3.53E-06	2.77E-06	6.19E-03	2.96E-03	4.75E-03	4.25E-03	3.34E-03
R63	542368	6464205	7.49E-09	9.53E-09	1.26E-08	1.17E-08	9.92E-09	2.11E-07	2.68E-07	3.55E-07	3.28E-07	2.79E-07	1.59E-06	2.03E-06	2.68E-06	2.48E-06	2.11E-06	1.92E-03	2.44E-03	3.23E-03	2.98E-03	2.54E-03
R64	545067	6465474	2.08E-08	1.06E-08	1.57E-08	1.40E-08	1.20E-08	5.86E-07	2.97E-07	4.41E-07	3.95E-07	3.38E-07	4.42E-06	2.24E-06	3.33E-06	2.98E-06	2.55E-06	5.33E-03	2.70E-03	4.01E-03	3.59E-03	3.07E-03
R65	544584	6464584	3.67E-08	2.41E-08	3.65E-08	3.25E-08	2.89E-08	1.03E-06	6.79E-07	1.03E-06	9.15E-07	8.14E-07	7.79E-06	5.13E-06	7.76E-06	6.90E-06	6.14E-06	9.38E-03	6.18E-03	9.34E-03	8.31E-03	7.40E-03
R66	544241	6464857	2.68E-08	1.64E-08	2.49E-08	2.30E-08	1.91E-08	7.53E-07	4.61E-07	7.02E-07	6.48E-07	5.37E-07	5.68E-06	3.48E-06	5.29E-06	4.89E-06	4.05E-06	6.85E-03	4.20E-03	6.38E-03	5.90E-03	4.88E-03
R67	544319	6464830	2.79E-08	1.73E-08	2.61E-08	2.42E-08	2.01E-08	7.84E-07	4.86E-07	7.36E-07	6.83E-07	5.64E-07	5.92E-06	3.67E-06	5.55E-06	5.15E-06	4.26E-06	7.13E-03	4.42E-03	6.69E-03	6.21E-03	5.13E-03
R68	544485	6462026	4.47E-08	1.62E-08	2.38E-08	2.17E-08	1.83E-08	1.26E-06	4.57E-07	6.69E-07	6.10E-07	5.15E-07	9.50E-06	3.45E-06	5.05E-06	4.60E-06	3.89E-06	1.15E-02	4.16E-03	6.08E-03	5.55E-03	4.68E-03
R69	544751	6462012	4.69E-08	1.27E-08	1.86E-08	1.70E-08	1.41E-08	1.32E-06	3.59E-07	5.24E-07	4.79E-07	3.96E-07	9.96E-06	2.71E-06	3.96E-06	3.62E-06	2.99E-06	1.20E-02	3.26E-03	4.77E-03	4.36E-03	3.60E-03
R70	543879	6461328	2.53E-08	1.24E-08	1.93E-08	1.74E-08	1.44E-08	7.13E-07	3.49E-07	5.43E-07	4.90E-07	4.07E-07	5.38E-06	2.63E-06	4.10E-06	3.70E-06	3.07E-06	6.48E-03	3.17E-03	4.94E-03	4.45E-03	3.70E-03

Representative Ops Year Cumulative

Annual Average Lead Concentration (as TSP) (µg/m³)				
ID	Representative Operational year (BAU)	Background	Cumulative	Criteria
R1	0.0093	0.2232	0.2324	0.500
R2	0.0096	0.2212	0.2308	0.500
R3	0.0165	0.2141	0.2305	0.500
R4	0.0082	0.2211	0.2293	0.500
R5	0.0069	0.2226	0.2295	0.500
R6	0.0073	0.2218	0.2291	0.500
R7	0.0039	0.2265	0.2303	0.500
R8	0.0080	0.2224	0.2304	0.500
R9	0.0063	0.2241	0.2304	0.500
R10	0.0060	0.2244	0.2304	0.500
R11	0.0049	0.2250	0.2299	0.500
R12	0.0039	0.2263	0.2302	0.500
R13	0.0035	0.2268	0.2302	0.500
R14	0.0043	0.2263	0.2305	0.500
R15	0.0015	0.2287	0.2302	0.500
R16	0.0019	0.2285	0.2304	0.500
R17	0.0034	0.2271	0.2305	0.500
R18	0.0029	0.2271	0.2300	0.500
R19	0.0012	0.2290	0.2302	0.500
R20	0.0011	0.2290	0.2301	0.500
R21	0.0107	0.2231	0.2337	0.500
R22	0.0114	0.2230	0.2344	0.500
R23	0.0135	0.2225	0.2360	0.500
R24	0.0148	0.2219	0.2366	0.500
R25	0.0077	0.2251	0.2329	0.500
R26	0.0207	0.2196	0.2403	0.500
R27	0.0261	0.2169	0.2430	0.500
R28	0.0224	0.2195	0.2418	0.500
R29	0.0165	0.2208	0.2373	0.500
R30	0.0150	0.2225	0.2375	0.500
R31	0.0081	0.2249	0.2330	0.500
R32	0.0075	0.2254	0.2329	0.500
R33	0.0087	0.2260	0.2347	0.500
R34	0.0092	0.2224	0.2316	0.500
R35	0.0091	0.2229	0.2320	0.500
R36	0.0089	0.2234	0.2323	0.500
R37	0.0081	0.2243	0.2324	0.500
R38	0.0034	0.2269	0.2302	0.500
R39	0.0035	0.2267	0.2302	0.500
R40	0.0064	0.2239	0.2303	0.500
R41	0.0078	0.2224	0.2302	0.500
R42	0.0092	0.2217	0.2309	0.500
R43	0.0110	0.2239	0.2349	0.500
R44	0.0018	0.2283	0.2301	0.500
R45	0.0040	0.2261	0.2300	0.500
R46	0.0023	0.2276	0.2298	0.500

Annual Lead Total Deposition (as TSP) (g/m²/annum)				
ID	Representative Operational year (BAU)	Background	Cumulative	Criteria
R1	0.0228	0.0000	0.0228	NA
R2	0.0255	0.0000	0.0255	NA
R3	0.0459	0.0000	0.0459	NA
R4	0.0194	0.0000	0.0194	NA
R5	0.0153	0.0000	0.0153	NA
R6	0.0145	0.0000	0.0145	NA
R7	0.0073	0.0000	0.0073	NA
R8	0.0173	0.0000	0.0173	NA
R9	0.0136	0.0000	0.0136	NA
R10	0.0137	0.0000	0.0137	NA
R11	0.0106	0.0000	0.0106	NA
R12	0.0087	0.0000	0.0087	NA
R13	0.0074	0.0000	0.0074	NA
R14	0.0086	0.0000	0.0086	NA
R15	0.0034	0.0000	0.0034	NA
R16	0.0044	0.0000	0.0044	NA
R17	0.0074	0.0000	0.0074	NA
R18	0.0055	0.0000	0.0055	NA
R19	0.0029	0.0000	0.0029	NA
R20	0.0028	0.0000	0.0028	NA
R21	0.0259	0.0000	0.0259	NA
R22	0.0274	0.0000	0.0274	NA
R23	0.0324	0.0000	0.0324	NA
R24	0.0368	0.0000	0.0368	NA
R25	0.0185	0.0000	0.0185	NA
R26	0.0506	0.0000	0.0506	NA
R27	0.0687	0.0000	0.0687	NA
R28	0.0566	0.0000	0.0566	NA
R29	0.0442	0.0000	0.0442	NA
R30	0.0386	0.0000	0.0386	NA
R31	0.0202	0.0000	0.0202	NA
R32	0.0191	0.0000	0.0191	NA
R33	0.0233	0.0000	0.0233	NA
R34	0.0250	0.0000	0.0250	NA
R35	0.0220	0.0000	0.0220	NA
R36	0.0195	0.0000	0.0195	NA
R37	0.0184	0.0000	0.0184	NA
R38	0.0062	0.0000	0.0062	NA
R39	0.0066	0.0000	0.0066	NA
R40	0.0152	0.0000	0.0152	NA
R41	0.0196	0.0000	0.0196	NA
R42	0.0258	0.0000	0.0258	NA
R43	0.0290	0.0000	0.0290	NA
R44	0.0037	0.0000	0.0037	NA
R45	0.0087	0.0000	0.0087	NA
R46	0.0042	0.0000	0.0042	NA

Annual Average TSP Concentration (µg/m³)				
ID	Representative Operational year (BAU)	Background	Cumulative	Criteria
R1	0.6252	35.6046	36.2298	90.0
R2	0.7817	35.5395	36.3212	90.0
R3	1.3667	35.2719	36.6386	90.0
R4	0.6044	35.5517	36.1561	90.0
R5	0.4860	35.6100	36.0959	90.0
R6	0.4765	35.5850	36.0615	90.0
R7	0.2237	35.7651	35.9888	90.0
R8	0.5277	35.6045	36.1322	90.0
R9	0.4192	35.6720	36.0911	90.0
R10	0.3760	35.6841	36.0602	90.0
R11	0.3325	35.7043	36.0367	90.0
R12	0.2430	35.7558	35.9988	90.0
R13	0.2086	35.7748	35.9835	90.0
R14	0.2438	35.7578	36.0016	90.0
R15	0.0844	35.8504	35.9348	90.0
R16	0.1035	35.8427	35.9462	90.0
R17	0.1916	35.7891	35.9807	90.0
R18	0.1709	35.7892	35.9601	90.0
R19	0.0677	35.8609	35.9286	90.0
R20	0.0674	35.8613	35.9286	90.0
R21	0.6952	35.5919	36.2871	90.0
R22	0.7018	35.5908	36.2926	90.0
R23	0.7591	35.5756	36.3347	90.0
R24	0.7963	35.5576	36.3539	90.0
R25	0.4604	35.6939	36.1542	90.0
R26	1.0101	35.4808	36.4909	90.0
R27	1.5176	35.2714	36.7890	90.0
R28	1.4941	35.4028	36.8969	90.0
R29	0.9305	35.5092	36.4396	90.0
R30	0.9991	35.5624	36.5616	90.0
R31	0.4591	35.6933	36.1524	90.0
R32	0.4433	35.7129	36.1563	90.0
R33	0.6333	35.7247	36.3581	90.0
R34	0.5715	35.5962	36.1677	90.0
R35	0.5504	35.6152	36.1656	90.0
R36	0.5118	35.6369	36.1487	90.0
R37	0.4602	35.6705	36.1307	90.0
R38	0.2164	35.7802	35.9967	90.0
R39	0.2193	35.7752	35.9945	90.0
R40	0.4606	35.6578	36.1184	90.0
R41	0.5388	35.6015	36.1404	90.0
R42	0.6063	35.5725	36.1788	90.0
R43	0.6741	35.6429	36.3170	90.0
R44	0.1069	35.8330	35.9399	90.0
R45	0.2431	35.7464	35.9895	90.0
R46	0.1306	35.8075	35.9381	90.0

Annual Average Le	
ID	Representative Operational year (BAU)
R1	0.0069
R2	0.0082
R3	0.0123
R4	0.0067
R5	0.0057
R6	0.0049
R7	0.0027
R8	0.0056
R9	0.0046
R10	0.0044
R11	0.0041
R12	0.0033
R13	0.0029
R14	0.0028
R15	0.0012
R16	0.0014
R17	0.0024
R18	0.0024
R19	0.0010
R20	0.0011
R21	0.0077
R22	0.0078
R23	0.0081
R24	0.0083
R25	0.0051
R26	0.0102
R27	0.0159
R28	0.0152
R29	0.0102
R30	0.0105
R31	0.0051
R32	0.0049
R33	0.0067
R34	0.0066
R35	0.0061
R36	0.0057
R37	0.0053
R38	0.0026
R39	0.0027
R40	0.0052
R41	0.0062
R42	0.0071
R43	0.0072
R44	0.0015
R45	0.0033
R46	0.0019

Representative Ops Year Cumulative

Annual Average Lead Concentration (as TSP) (µg/m³)				
ID	Representative Operational year (BAU)	Background	Cumulative	Criteria
R47	0.0050	0.2259	0.2309	0.500
R48	0.0022	0.2282	0.2305	0.500
R49	0.0010	0.2291	0.2301	0.500
R50	0.0065	0.2243	0.2308	0.500
R51	0.0040	0.2243	0.2283	0.500
R52	0.0043	0.2243	0.2286	0.500
R53	0.0027	0.2243	0.2270	0.500
R54	0.0028	0.2243	0.2271	0.500
R55	0.0013	0.2243	0.2256	0.500
R56	0.0013	0.2243	0.2256	0.500
R57	0.0026	0.2243	0.2268	0.500
R58	0.0010	0.2243	0.2253	0.500
R59	0.0005	0.2243	0.2248	0.500
R60	0.0029	0.2243	0.2272	0.500
R61	0.0013	0.2243	0.2256	0.500
R62	0.0026	0.2243	0.2269	0.500
R63	0.0017	0.2243	0.2260	0.500
R64	0.0022	0.2243	0.2265	0.500
R65	0.0058	0.2243	0.2301	0.500
R66	0.0040	0.2243	0.2283	0.500
R67	0.0040	0.2243	0.2283	0.500
R68	0.0032	0.2243	0.2275	0.500
R69	0.0026	0.2243	0.2269	0.500
R70	0.0025	0.2243	0.2268	0.500

Annual Lead Total Deposition (as TSP) (g/m²/annum)				
ID	Representative Operational year (BAU)	Background	Cumulative	Criteria
R47	0.0117	0.0000	0.0117	NA
R48	0.0052	0.0000	0.0052	NA
R49	0.0026	0.0000	0.0026	NA
R50	0.0148	0.0000	0.0148	NA
R51	0.0081	0.0000	0.0081	NA
R52	0.0088	0.0000	0.0088	NA
R53	0.0052	0.0000	0.0052	NA
R54	0.0061	0.0000	0.0061	NA
R55	0.0021	0.0000	0.0021	NA
R56	0.0023	0.0000	0.0023	NA
R57	0.0043	0.0000	0.0043	NA
R58	0.0022	0.0000	0.0022	NA
R59	0.0011	0.0000	0.0011	NA
R60	0.0070	0.0000	0.0070	NA
R61	0.0023	0.0000	0.0023	NA
R62	0.0045	0.0000	0.0045	NA
R63	0.0032	0.0000	0.0032	NA
R64	0.0053	0.0000	0.0053	NA
R65	0.0143	0.0000	0.0143	NA
R66	0.0090	0.0000	0.0090	NA
R67	0.0095	0.0000	0.0095	NA
R68	0.0078	0.0000	0.0078	NA
R69	0.0063	0.0000	0.0063	NA
R70	0.0052	0.0000	0.0052	NA

Annual Average TSP Concentration (µg/m³)				
ID	Representative Operational year (BAU)	Background	Cumulative	Criteria
R47	0.2857	35.7387	36.0244	90.0
R48	0.1224	35.8324	35.9549	90.0
R49	0.0578	35.8669	35.9247	90.0
R50	0.3697	35.6656	36.0353	90.0
R51	0.2478	35.6656	35.9135	90.0
R52	0.2719	35.6656	35.9375	90.0
R53	0.1605	35.6656	35.8261	90.0
R54	0.1594	35.6656	35.8250	90.0
R55	0.0669	35.6656	35.7325	90.0
R56	0.0758	35.6656	35.7414	90.0
R57	0.1424	35.6656	35.8080	90.0
R58	0.0621	35.6656	35.7277	90.0
R59	0.0298	35.6656	35.6955	90.0
R60	0.1648	35.6656	35.8305	90.0
R61	0.0743	35.6656	35.7399	90.0
R62	0.1503	35.6656	35.8159	90.0
R63	0.0977	35.6656	35.7633	90.0
R64	0.1257	35.6656	35.7913	90.0
R65	0.3331	35.6656	35.9987	90.0
R66	0.2189	35.6656	35.8846	90.0
R67	0.2269	35.6656	35.8925	90.0
R68	0.1957	35.6656	35.8613	90.0
R69	0.1574	35.6656	35.8230	90.0
R70	0.1463	35.6656	35.8120	90.0

Annual Average Le	
ID	Representative Operational year (BAU)
R47	0.0034
R48	0.0016
R49	0.0009
R50	0.0042
R51	0.0029
R52	0.0032
R53	0.0023
R54	0.0020
R55	0.0010
R56	0.0011
R57	0.0018
R58	0.0010
R59	0.0006
R60	0.0021
R61	0.0010
R62	0.0019
R63	0.0013
R64	0.0016
R65	0.0038
R66	0.0026
R67	0.0027
R68	0.0025
R69	0.0019
R70	0.0020

ead Concentration (as PM_{10}) (µg/m³)			Annual Average PM10 Concentration (µg/m³)					Maximum 24-hour Average PM10 Concentration (µg/m³)				Annual Average PM2.5 Concentration (µg/m³)				
Background	Cumulative	Criteria	ID	Representative Operational year (BAU)	Background	Cumulative	Criteria	ID	Representative Operational year (BAU)	Cumulative	Criteria	ID	Representative Operational year (BAU)	Background	Cumulative	Criteria
0.0741	0.0809	0.500	R1	0.4481	12.6924	13.1405	25.0	R1	2.7106	36.2146	50.0	R1	0.1354	5.2334	5.3688	8.0
0.0740	0.0822	0.500	R2	0.5378	12.6952	13.2331	25.0	R2	5.0692	45.6505	50.0	R2	0.1424	5.2283	5.3707	8.0
0.0709	0.0831	0.500	R3	0.8014	12.5061	13.3074	25.0	R3	5.2081	37.6258	50.0	R3	0.2079	5.1808	5.3887	8.0
0.0743	0.0810	0.500	R4	0.4392	12.7077	13.1469	25.0	R4	3.5197	36.3044	50.0	R4	0.1199	5.2283	5.3483	8.0
0.0752	0.0809	0.500	R5	0.3729	12.7582	13.1311	25.0	R5	3.6748	36.1480	50.0	R5	0.1025	5.2401	5.3426	8.0
0.0752	0.0801	0.500	R6	0.3189	12.7558	13.0747	25.0	R6	2.6637	45.7240	50.0	R6	0.0877	5.2399	5.3276	8.0
0.0771	0.0797	0.500	R7	0.1733	12.9712	13.1444	25.0	R7	1.9978	45.9010	50.0	R7	0.0540	5.3172	5.3712	8.0
0.0750	0.0806	0.500	R8	0.3643	12.8430	13.2073	25.0	R8	2.5154	46.1348	50.0	R8	0.1009	5.2846	5.3856	8.0
0.0759	0.0805	0.500	R9	0.3010	12.8995	13.2005	25.0	R9	2.1332	46.1439	50.0	R9	0.0877	5.2982	5.3859	8.0
0.0760	0.0804	0.500	R10	0.2864	12.9103	13.1968	25.0	R10	2.0076	36.2523	50.0	R10	0.0878	5.3012	5.3890	8.0
0.0765	0.0806	0.500	R11	0.2705	12.8343	13.1047	25.0	R11	2.6181	45.9561	50.0	R11	0.0760	5.2592	5.3351	8.0
0.0770	0.0804	0.500	R12	0.2179	12.8699	13.0879	25.0	R12	1.5658	36.1196	50.0	R12	0.0648	5.2670	5.3317	8.0
0.0773	0.0802	0.500	R13	0.1871	12.8886	13.0757	25.0	R13	1.2738	45.9118	50.0	R13	0.0564	5.2715	5.3279	8.0
0.0772	0.0800	0.500	R14	0.1831	12.9753	13.1585	25.0	R14	1.5108	36.1577	50.0	R14	0.0598	5.3171	5.3770	8.0
0.0783	0.0796	0.500	R15	0.0809	13.0481	13.1289	25.0	R15	0.7405	36.1598	50.0	R15	0.0278	5.3361	5.3639	8.0
0.0782	0.0797	0.500	R16	0.0942	13.0433	13.1375	25.0	R16	0.8574	36.1873	50.0	R16	0.0308	5.3359	5.3667	8.0
0.0775	0.0798	0.500	R17	0.1538	12.9960	13.1498	25.0	R17	1.3584	36.2169	50.0	R17	0.0519	5.3224	5.3742	8.0
0.0776	0.0800	0.500	R18	0.1561	12.9048	13.0609	25.0	R18	1.6971	36.1254	50.0	R18	0.0456	5.2758	5.3214	8.0
0.0785	0.0795	0.500	R19	0.0675	13.0589	13.1265	25.0	R19	0.8543	36.1615	50.0	R19	0.0219	5.3396	5.3616	8.0
0.0784	0.0795	0.500	R20	0.0701	13.0558	13.1258	25.0	R20	0.7188	45.7114	50.0	R20	0.0244	5.3380	5.3624	8.0
0.0735	0.0812	0.500	R21	0.5051	12.6527	13.1578	25.0	R21	2.8286	45.8183	50.0	R21	0.1589	5.2264	5.3854	8.0
0.0734	0.0812	0.500	R22	0.5116	12.6481	13.1598	25.0	R22	2.9948	45.7326	50.0	R22	0.1652	5.2250	5.3902	8.0
0.0734	0.0815	0.500	R23	0.5294	12.6471	13.1765	25.0	R23	2.7555	36.1070	50.0	R23	0.1779	5.2241	5.4020	8.0
0.0736	0.0819	0.500	R24	0.5432	12.6607	13.2039	25.0	R24	2.8825	45.8712	50.0	R24	0.1897	5.2235	5.4131	8.0
0.0752	0.0804	0.500	R25	0.3350	12.7589	13.0939	25.0	R25	1.9529	45.8541	50.0	R25	0.1132	5.2463	5.3595	8.0
0.0733	0.0835	0.500	R26	0.6662	12.6436	13.3098	25.0	R26	3.8962	45.9221	50.0	R26	0.2463	5.2091	5.4553	8.0
0.0691	0.0851	0.500	R27	1.0421	12.5793	13.6214	25.0	R27	6.0472	46.7060	50.0	R27	0.3104	5.2331	5.5436	8.0
0.0692	0.0845	0.500	R28	0.9952	12.6431	13.6383	25.0	R28	6.6168	46.1547	50.0	R28	0.3061	5.2515	5.5576	8.0
0.0728	0.0830	0.500	R29	0.6664	12.7475	13.4139	25.0	R29	3.7467	46.2646	50.0	R29	0.2129	5.2683	5.4812	8.0
0.0726	0.0830	0.500	R30	0.6833	12.7756	13.4589	25.0	R30	4.4027	46.1655	50.0	R30	0.2228	5.2790	5.5018	8.0
0.0758	0.0809	0.500	R31	0.3342	12.9113	13.2455	25.0	R31	1.9338	46.0167	50.0	R31	0.1094	5.3063	5.4157	8.0
0.0760	0.0808	0.500	R32	0.3176	12.9226	13.2402	25.0	R32	1.7877	46.2021	50.0	R32	0.1039	5.3100	5.4140	8.0
0.0752	0.0819	0.500	R33	0.4349	12.8789	13.3137	25.0	R33	3.3741	46.0015	50.0	R33	0.1302	5.3120	5.4422	8.0
0.0743	0.0809	0.500	R34	0.4292	12.8064	13.2356	25.0	R34	3.5195	36.6988	50.0	R34	0.1358	5.2742	5.4100	8.0
0.0748	0.0809	0.500	R35	0.3977	12.8384	13.2361	25.0	R35	2.3080	45.9672	50.0	R35	0.1268	5.2859	5.4127	8.0
0.0752	0.0810	0.500	R36	0.3748	12.8622	13.2370	25.0	R36	2.8806	45.7813	50.0	R36	0.1217	5.2940	5.4156	8.0
0.0756	0.0809	0.500	R37	0.3481	12.8864	13.2344	25.0	R37	2.5176	45.5316	50.0	R37	0.1131	5.3003	5.4133	8.0
0.0775	0.0802	0.500	R38	0.1720	13.0012	13.1732	25.0	R38	1.3605	45.8523	50.0	R38	0.0477	5.3253	5.3730	8.0
0.0774	0.0801	0.500	R39	0.1735	12.9931	13.1665	25.0	R39	1.5304	36.1487	50.0	R39	0.0491	5.3233	5.3725	8.0
0.0755	0.0806	0.500	R40	0.3366	12.8752	13.2118	25.0	R40	3.4393	36.2346	50.0	R40	0.0995	5.2920	5.3914	8.0
0.0747	0.0809	0.500	R41	0.4081	12.8268	13.2348	25.0	R41	3.0409	36.3621	50.0	R41	0.1229	5.2797	5.4026	8.0
0.0739	0.0810	0.500	R42	0.4614	12.7836	13.2449	25.0	R42	3.8493	46.6449	50.0	R42	0.1390	5.2677	5.4068	8.0
0.0776	0.0848	0.500	R43	0.4704	12.8543	13.3247	25.0	R43	2.7302	46.2490	50.0	R43	0.1532	5.2950	5.4481	8.0
0.0782	0.0797	0.500	R44	0.0960	12.9419	13.0378	25.0	R44	0.6792	45.9382	50.0	R44	0.0299	5.2848	5.3147	8.0
0.0771	0.0804	0.500	R45	0.2154	12.8617	13.0771	25.0	R45	1.2936	36.1285	50.0	R45	0.0641	5.2648	5.3289	8.0
0.0780	0.0798	0.500	R46	0.1220	12.9202	13.0422	25.0	R46	1.2789	36.1159	50.0	R46	0.0362	5.2795	5.3157	8.0

ead Concentration (as PM_{10}) (µg/m³)			Annual Average PM10 Concentration (µg/m³)					Maximum 24-hour Average PM10 Concentration (µg/m³)				Annual Average PM2.5 Concentration (µg/m³)				
Background	Cumulative	Criteria	ID	Representative Operational year (BAU)	Background	Cumulative	Criteria	ID	Representative Operational year (BAU)	Cumulative	Criteria	ID	Representative Operational year (BAU)	Background	Cumulative	Criteria
0.0769	0.0803	0.500	R47	0.2228	12.9549	13.1777	25.0	R47	1.3093	46.0913	50.0	R47	0.0732	5.3130	5.3862	8.0
0.0781	0.0797	0.500	R48	0.1069	13.0370	13.1439	25.0	R48	0.8871	45.7048	50.0	R48	0.0350	5.3342	5.3692	8.0
0.0786	0.0795	0.500	R49	0.0596	13.0624	13.1219	25.0	R49	0.5119	45.7314	50.0	R49	0.0199	5.3403	5.3602	8.0
0.0763	0.0805	0.500	R50	0.2738	12.8835	13.1572	25.0	R50	1.6312	45.8963	50.0	R50	0.0887	5.2986	5.3874	8.0
0.0771	0.0800	0.500	R51	0.1865	12.8835	13.0699	25.0	R51	1.4825	45.9830	50.0	R51	0.0579	5.2986	5.3565	8.0
0.0769	0.0801	0.500	R52	0.2067	12.8835	13.0901	25.0	R52	1.6223	46.0005	50.0	R52	0.0633	5.2986	5.3620	8.0
0.0777	0.0800	0.500	R53	0.1475	12.7835	12.9310	25.0	R53	1.6022	36.1206	50.0	R53	0.0433	5.2486	5.2919	8.0
0.0777	0.0797	0.500	R54	0.1295	12.8835	13.0130	25.0	R54	1.1475	45.8539	50.0	R54	0.0448	5.2986	5.3435	8.0
0.0785	0.0795	0.500	R55	0.0658	12.7835	12.8492	25.0	R55	0.9168	36.1204	50.0	R55	0.0217	5.2486	5.2704	8.0
0.0784	0.0795	0.500	R56	0.0730	12.8835	12.9564	25.0	R56	0.8870	45.7094	50.0	R56	0.0240	5.2986	5.3227	8.0
0.0779	0.0797	0.500	R57	0.1175	12.7835	12.9009	25.0	R57	1.2655	36.1245	50.0	R57	0.0376	5.2486	5.2862	8.0
0.0785	0.0795	0.500	R58	0.0625	12.8835	12.9460	25.0	R58	0.5725	45.7799	50.0	R58	0.0218	5.2986	5.3205	8.0
0.0788	0.0794	0.500	R59	0.0362	12.7835	12.8196	25.0	R59	0.4148	36.1174	50.0	R59	0.0117	5.2486	5.2603	8.0
0.0778	0.0799	0.500	R60	0.1356	12.8835	13.0190	25.0	R60	1.0895	45.7971	50.0	R60	0.0441	5.2986	5.3428	8.0
0.0785	0.0796	0.500	R61	0.0684	12.7835	12.8519	25.0	R61	0.6026	36.1193	50.0	R61	0.0208	5.2486	5.2695	8.0
0.0780	0.0799	0.500	R62	0.1269	12.7835	12.9104	25.0	R62	1.0896	36.1227	50.0	R62	0.0365	5.2486	5.2851	8.0
0.0782	0.0795	0.500	R63	0.0861	12.8835	12.9696	25.0	R63	0.7406	45.8140	50.0	R63	0.0290	5.2986	5.3277	8.0
0.0781	0.0797	0.500	R64	0.1070	12.8835	12.9905	25.0	R64	0.8018	45.7086	50.0	R64	0.0345	5.2986	5.3332	8.0
0.0767	0.0805	0.500	R65	0.2495	12.8835	13.1329	25.0	R65	1.2733	45.8794	50.0	R65	0.0817	5.2986	5.3803	8.0
0.0775	0.0801	0.500	R66	0.1703	12.8835	13.0538	25.0	R66	1.3553	45.8237	50.0	R66	0.0554	5.2986	5.3541	8.0
0.0774	0.0801	0.500	R67	0.1786	12.8835	13.0621	25.0	R67	1.4600	45.8277	50.0	R67	0.0582	5.2986	5.3568	8.0
0.0775	0.0800	0.500	R68	0.1624	12.7835	12.9459	25.0	R68	1.0043	36.1269	50.0	R68	0.0516	5.2486	5.3002	8.0
0.0779	0.0798	0.500	R69	0.1273	12.7835	12.9107	25.0	R69	0.9792	36.1247	50.0	R69	0.0418	5.2486	5.2904	8.0
0.0680	0.0700	0.500	R70	0.1318	12.7835	12.9153	25.0	R70	0.8687	36.1232	50.0	R70	0.0407	5.2486	5.2893	8.0

Maximum 24-hour Average PM2.5 Concentration (µg/m³)				Monthly Dust Deposition (g/m²/month)					
ID	Representative Operational year (BAU)	Cumulative	Criteria	ID	Representative Operational year (BAU)	Criteria	Background	Cumulative	Criteria
R1	0.9747	14.7834	25.0	R1	0.1332	2.00	1.0534	1.1867	4.00
R2	1.1469	14.7837	25.0	R2	0.1638	2.00	1.0483	1.2121	4.00
R3	1.4889	14.8416	25.0	R3	0.2858	2.00	1.0008	1.2866	4.00
R4	0.9802	14.7811	25.0	R4	0.1165	2.00	1.0483	1.1649	4.00
R5	1.0855	14.7803	25.0	R5	0.0869	2.00	1.0601	1.1470	4.00
R6	0.7364	14.7788	25.0	R6	0.0808	2.00	1.0599	1.1407	4.00
R7	0.6351	18.7872	25.0	R7	0.0389	2.00	0.7872	0.8261	4.00
R8	0.7317	18.7741	25.0	R8	0.0958	2.00	0.7546	0.8504	4.00
R9	0.7152	18.8119	25.0	R9	0.0795	2.00	0.3882	0.4676	4.00
R10	0.6788	18.8350	25.0	R10	0.0776	2.00	0.3912	0.4688	4.00
R11	0.6735	14.7812	25.0	R11	0.0599	2.00	1.0792	1.1390	4.00
R12	0.4485	14.7819	25.0	R12	0.0463	2.00	0.8670	0.9133	4.00
R13	0.4105	14.7818	25.0	R13	0.0394	2.00	0.8715	0.9109	4.00
R14	0.5408	18.8231	25.0	R14	0.0467	2.00	0.4071	0.4538	4.00
R15	0.2475	18.8122	25.0	R15	0.0179	2.00	0.4261	0.4440	4.00
R16	0.2446	18.8111	25.0	R16	0.0221	2.00	0.4259	0.4480	4.00
R17	0.4520	18.8214	25.0	R17	0.0396	2.00	0.4124	0.4520	4.00
R18	0.5401	14.7815	25.0	R18	0.0295	2.00	0.8758	0.9053	4.00
R19	0.2090	18.8074	25.0	R19	0.0147	2.00	0.4296	0.4444	4.00
R20	0.2724	18.8086	25.0	R20	0.0151	2.00	0.4280	0.4430	4.00
R21	0.9784	14.7837	25.0	R21	0.1413	2.00	1.0464	1.1877	4.00
R22	1.0239	14.7838	25.0	R22	0.1413	2.00	1.0450	1.1862	4.00
R23	0.9734	14.7838	25.0	R23	0.1521	2.00	1.0441	1.1962	4.00
R24	1.1925	14.7843	25.0	R24	0.1644	2.00	1.0435	1.2079	4.00
R25	0.7573	14.7826	25.0	R25	0.0940	2.00	1.0663	1.1603	4.00
R26	1.8022	14.7918	25.0	R26	0.2054	2.00	1.0291	1.2345	4.00
R27	2.0047	18.8934	25.0	R27	0.3167	2.00	3.0831	3.3998	4.00
R28	2.2321	18.8859	25.0	R28	0.2939	2.00	3.1015	3.3954	4.00
R29	1.4099	18.8605	25.0	R29	0.1982	2.00	3.1183	3.3165	4.00
R30	1.5146	18.8653	25.0	R30	0.2028	2.00	3.1290	3.3318	4.00
R31	0.7202	18.8348	25.0	R31	0.0954	2.00	3.1563	3.2516	4.00
R32	0.6540	18.8441	25.0	R32	0.0939	2.00	3.1600	3.2539	4.00
R33	0.9595	18.8121	25.0	R33	0.1319	2.00	1.6220	1.7539	4.00
R34	1.1759	18.8434	25.0	R34	0.1344	2.00	0.3642	0.4986	4.00
R35	0.7058	18.8308	25.0	R35	0.1185	2.00	0.3759	0.4944	4.00
R36	0.9286	18.8150	25.0	R36	0.1011	2.00	0.3840	0.4850	4.00
R37	0.7635	18.8095	25.0	R37	0.0908	2.00	0.3903	0.4811	4.00
R38	0.3570	18.8006	25.0	R38	0.0345	2.00	0.7953	0.8298	4.00
R39	0.4420	18.7968	25.0	R39	0.0358	2.00	0.7933	0.8291	4.00
R40	1.2118	18.8453	25.0	R40	0.0967	2.00	0.3820	0.4787	4.00
R41	1.1044	18.8471	25.0	R41	0.1188	2.00	0.3697	0.4885	4.00
R42	1.2956	18.8448	25.0	R42	0.1436	2.00	0.3577	0.5013	4.00
R43	0.9495	18.8554	25.0	R43	0.1429	2.00	3.1450	3.2879	4.00
R44	0.2128	14.7816	25.0	R44	0.0200	2.00	0.8848	0.9048	4.00
R45	0.4365	14.7815	25.0	R45	0.0466	2.00	0.8648	0.9114	4.00
R46	0.4204	14.7814	25.0	R46	0.0222	2.00	0.8795	0.9016	4.00

Representative Ops Year Cumulative

Maximum 24-hour Average PM2.5 Concentration (µg/m³)				Monthly Dust Deposition (g/m²/month)					
ID	Representative Operational year (BAU)	Cumulative	Criteria	ID	Representative Operational year (BAU)	Criteria	Background	Cumulative	Criteria
R47	0.4182	18.8195	25.0	R47	0.0612	2.00	0.4030	0.4642	4.00
R48	0.2527	18.8138	25.0	R48	0.0258	2.00	0.4242	0.4500	4.00
R49	0.1484	18.8084	25.0	R49	0.0135	2.00	0.4303	0.4438	4.00
R50	0.4599	18.8596	25.0	R50	0.0770	2.00	3.1486	3.2257	4.00
R51	0.5349	18.8687	25.0	R51	0.0467	2.00	0.3886	0.4353	4.00
R52	0.5600	18.8728	25.0	R52	0.0520	2.00	0.3886	0.4406	4.00
R53	0.5117	14.7818	25.0	R53	0.0276	2.00	0.8486	0.8763	4.00
R54	0.3973	18.8464	25.0	R54	0.0327	2.00	3.1486	3.1814	4.00
R55	0.3109	14.7817	25.0	R55	0.0106	2.00	0.3886	0.3992	4.00
R56	0.2581	18.8047	25.0	R56	0.0123	2.00	0.3886	0.4009	4.00
R57	0.3403	14.7833	25.0	R57	0.0221	2.00	0.3886	0.4107	4.00
R58	0.1860	18.8259	25.0	R58	0.0119	2.00	0.3886	0.4005	4.00
R59	0.1321	14.7806	25.0	R59	0.0058	2.00	0.8486	0.8544	4.00
R60	0.3347	18.8272	25.0	R60	0.0345	2.00	3.1486	3.1832	4.00
R61	0.1556	14.7813	25.0	R61	0.0120	2.00	0.7686	0.7806	4.00
R62	0.2627	14.7826	25.0	R62	0.0240	2.00	0.7686	0.7927	4.00
R63	0.2743	18.8302	25.0	R63	0.0174	2.00	0.7686	0.7861	4.00
R64	0.2710	18.8014	25.0	R64	0.0265	2.00	1.6086	1.6352	4.00
R65	0.4981	18.8496	25.0	R65	0.0697	2.00	3.1486	3.2183	4.00
R66	0.4210	18.8369	25.0	R66	0.0444	2.00	3.1486	3.1931	4.00
R67	0.4408	18.8375	25.0	R67	0.0467	2.00	3.1486	3.1953	4.00
R68	0.3050	14.7958	25.0	R68	0.0422	2.00	0.8486	0.8908	4.00
R69	0.3240	14.7833	25.0	R69	0.0337	2.00	0.8486	0.8823	4.00
R70	0.2956	14.7826	25.0	R70	0.0275	2.00	0.8486	0.8762	4.00

Annual Average Lead Concentration (as TSP) (µg/m³)					Annual Lead Total Deposition (as TSP) (g/m²/annum)					Annual Average TSP Concentration (µg/m³)					Annual Average Lead Concentration (as PM_{10}) (µg/m³)					Annual Average PM10 Concentration (µg/m³)					Maximum 24-hour Average PM10 Concentration (µg/m³)				Annual Average PM2.5 Concentration (µg/m³)					Ma
ID	MOD 6 Construction Scenario	Background	Cumulative	Criteria	ID	MOD 6 Construction Scenario	Background	Cumulative	Criteria	ID	MOD 6 Construction Scenario	Background	Cumulative	Criteria	ID	MOD 6 Construction Scenario	Background	Cumulative	Criteria	ID	MOD 6 Construction Scenario	Background	Cumulative	Criteria	ID	MOD 6 Construction Scenario	Cumulative	Criteria	ID	MOD 6 Construction Scenario	Background	Cumulative	Criteria	ID
R1	0.0085	0.2232	0.2317	0.500	R1	0.0215	0.0000	0.0215	NA	R1	0.5251	35.6046	36.1296	90.0	R1	0.0063	0.0741	0.0803	0.500	R1	0.4096	12.6924	13.1019	25.0	R1	3.9714	36.2266	50.0	R1	0.1296	5.2334	5.3630	8.0	R1
R2	0.0084	0.2212	0.2296	0.500	R2	0.0236	0.0000	0.0236	NA	R2	0.5882	35.5395	36.1277	90.0	R2	0.0075	0.0740	0.0814	0.500	R2	0.4889	12.6952	13.1841	25.0	R2	5.0113	45.6532	50.0	R2	0.1448	5.2283	5.3731	8.0	R2
R3	0.0152	0.2141	0.2293	0.500	R3	0.0449	0.0000	0.0449	NA	R3	1.1459	35.2719	36.4178	90.0	R3	0.0120	0.0709	0.0829	0.500	R3	0.7870	12.5061	13.2931	25.0	R3	5.4761	37.7194	50.0	R3	0.2413	5.1808	5.4221	8.0	R3
R4	0.0073	0.2211	0.2285	0.500	R4	0.0182	0.0000	0.0182	NA	R4	0.4639	35.5517	36.0156	90.0	R4	0.0062	0.0743	0.0804	0.500	R4	0.4032	12.7077	13.1109	25.0	R4	3.5394	36.2878	50.0	R4	0.1232	5.2283	5.3516	8.0	R4
R5	0.0062	0.2226	0.2287	0.500	R5	0.0141	0.0000	0.0141	NA	R5	0.3594	35.6100	35.9694	90.0	R5	0.0052	0.0752	0.0804	0.500	R5	0.3374	12.7582	13.0956	25.0	R5	3.6790	36.1502	50.0	R5	0.1022	5.2401	5.3423	8.0	R5
R6	0.0065	0.2218	0.2284	0.500	R6	0.0131	0.0000	0.0131	NA	R6	0.3516	35.5850	35.9366	90.0	R6	0.0045	0.0752	0.0797	0.500	R6	0.2939	12.7558	13.0497	25.0	R6	3.6446	45.7244	50.0	R6	0.0872	5.2399	5.3271	8.0	R6
R7	0.0036	0.2265	0.2300	0.500	R7	0.0068	0.0000	0.0068	NA	R7	0.1794	35.7651	35.9444	90.0	R7	0.0025	0.0771	0.0796	0.500	R7	0.1612	12.9712	13.1323	25.0	R7	1.8872	45.9018	50.0	R7	0.0525	5.3172	5.3697	8.0	R7
R8	0.0072	0.2224	0.2296	0.500	R8	0.0157	0.0000	0.0157	NA	R8	0.3953	35.6045	35.9998	90.0	R8	0.0051	0.0750	0.0802	0.500	R8	0.3362	12.8430	13.1792	25.0	R8	2.9071	46.1378	50.0	R8	0.1015	5.2846	5.3861	8.0	R8
R9	0.0056	0.2241	0.2297	0.500	R9	0.0122	0.0000	0.0122	NA	R9	0.3111	35.6720	35.9831	90.0	R9	0.0042	0.0759	0.0801	0.500	R9	0.2760	12.8995	13.1755	25.0	R9	2.7487	46.1564	50.0	R9	0.0860	5.2982	5.3841	8.0	R9
R10	0.0055	0.2244	0.2299	0.500	R10	0.0125	0.0000	0.0125	NA	R10	0.2908	35.6841	35.9749	90.0	R10	0.0040	0.0760	0.0801	0.500	R10	0.2622	12.9103	13.1725	25.0	R10	2.5303	36.2577	50.0	R10	0.0852	5.3012	5.3864	8.0	R10
R11	0.0044	0.2250	0.2294	0.500	R11	0.0098	0.0000	0.0098	NA	R11	0.2513	35.7043	35.9555	90.0	R11	0.0037	0.0765	0.0802	0.500	R11	0.2434	12.8343	13.0777	25.0	R11	2.4258	45.9563	50.0	R11	0.0749	5.2592	5.3340	8.0	R11
R12	0.0036	0.2263	0.2299	0.500	R12	0.0081	0.0000	0.0081	NA	R12	0.1986	35.7558	35.9544	90.0	R12	0.0030	0.0770	0.0800	0.500	R12	0.1960	12.8699	13.0660	25.0	R12	1.9987	36.1214	50.0	R12	0.0634	5.2670	5.3303	8.0	R12
R13	0.0032	0.2268	0.2300	0.500	R13	0.0070	0.0000	0.0070	NA	R13	0.1717	35.7748	35.9466	90.0	R13	0.0026	0.0773	0.0799	0.500	R13	0.1682	12.8886	13.0568	25.0	R13	1.9909	45.9118	50.0	R13	0.0548	5.2715	5.3263	8.0	R13
R14	0.0039	0.2263	0.2302	0.500	R14	0.0079	0.0000	0.0079	NA	R14	0.1963	35.7578	35.9541	90.0	R14	0.0026	0.0772	0.0797	0.500	R14	0.1686	12.9753	13.1440	25.0	R14	2.2090	36.1626	50.0	R14	0.0578	5.3171	5.3749	8.0	R14
R15	0.0014	0.2287	0.2301	0.500	R15	0.0032	0.0000	0.0032	NA	R15	0.0718	35.8504	35.9222	90.0	R15	0.0011	0.0783	0.0794	0.500	R15	0.0729	13.0481	13.1210	25.0	R15	0.8416	36.1606	50.0	R15	0.0260	5.3361	5.3621	8.0	R15
R16	0.0017	0.2285	0.2302	0.500	R16	0.0041	0.0000	0.0041	NA	R16	0.0926	35.8427	35.9353	90.0	R16	0.0013	0.0782	0.0795	0.500	R16	0.0846	13.0433	13.1279	25.0	R16	1.2981	36.2271	50.0	R16	0.0282	5.3359	5.3640	8.0	R16
R17	0.0032	0.2271	0.2303	0.500	R17	0.0070	0.0000	0.0070	NA	R17	0.1647	35.7891	35.9538	90.0	R17	0.0022	0.0775	0.0797	0.500	R17	0.1446	12.9960	13.1406	25.0	R17	2.8473	36.2171	50.0	R17	0.0498	5.3224	5.3722	8.0	R17
R18	0.0026	0.2271	0.2297	0.500	R18	0.0051	0.0000	0.0051	NA	R18	0.1343	35.7892	35.9235	90.0	R18	0.0021	0.0776	0.0798	0.500	R18	0.1393	12.9048	13.0441	25.0	R18	1.6109	36.1260	50.0	R18	0.0438	5.2758	5.3196	8.0	R18
R19	0.0011	0.2290	0.2301	0.500	R19	0.0027	0.0000	0.0027	NA	R19	0.0601	35.8609	35.9210	90.0	R19	0.0009	0.0785	0.0794	0.500	R19	0.0608	13.0589	13.1197	25.0	R19	1.1648	36.1880	50.0	R19	0.0201	5.3396	5.3597	8.0	R19
R20	0.0011	0.2290	0.2301	0.500	R20	0.0026	0.0000	0.0026	NA	R20	0.0578	35.8613	35.9191	90.0	R20	0.0010	0.0784	0.0794	0.500	R20	0.0632	13.0558	13.1189	25.0	R20	0.6551	45.7429	50.0	R20	0.0228	5.3380	5.3608	8.0	R20
R21	0.0099	0.2231	0.2329	0.500	R21	0.0251	0.0000	0.0251	NA	R21	0.6124	35.5919	36.2043	90.0	R21	0.0071	0.0735	0.0806	0.500	R21	0.4669	12.6527	13.1196	25.0	R21	4.9930	45.8224	50.0	R21	0.1524	5.2264	5.3788	8.0	R21
R22	0.0106	0.2230	0.2336	0.500	R22	0.0267	0.0000	0.0267	NA	R22	0.6383	35.5908	36.2291	90.0	R22	0.0073	0.0734	0.0807	0.500	R22	0.4765	12.6481	13.1247	25.0	R22	4.6823	45.7377	50.0	R22	0.1585	5.2250	5.3835	8.0	R22
R23	0.0127	0.2225	0.2352	0.500	R23	0.0314	0.0000	0.0314	NA	R23	0.7351	35.5756	36.3107	90.0	R23	0.0077	0.0734	0.0811	0.500	R23	0.5003	12.6471	13.1474	25.0	R23	6.0248	36.1815	50.0	R23	0.1695	5.2241	5.3936	8.0	R23
R24	0.0140	0.2219	0.2359	0.500	R24	0.0357	0.0000	0.0357	NA	R24	0.8148	35.5576	36.3724	90.0	R24	0.0081	0.0736	0.0818	0.500	R24	0.5322	12.6607	13.1929	25.0	R24	6.9595	45.8799	50.0	R24	0.1811	5.2235	5.4046	8.0	R24
R25	0.0072	0.2251	0.2324	0.500	R25	0.0178	0.0000	0.0178	NA	R25	0.4228	35.6939	36.1166	90.0	R25	0.0048	0.0752	0.0801	0.500	R25	0.3158	12.7589	13.0747	25.0	R25	4.3057	45.8573	50.0	R25	0.1083	5.2463	5.3546	8.0	R25
R26	0.0193	0.2196	0.2388	0.500	R26	0.0474	0.0000	0.0474	NA	R26	0.9961	35.4808	36.4769	90.0	R26	0.0097	0.0733	0.0830	0.500	R26	0.6322	12.6436	13.2759	25.0	R26	13.0068	45.9275	50.0	R26	0.2322	5.2091	5.4412	8.0	R26
R27	0.0227	0.2169	0.2396	0.500	R27	0.0596	0.0000	0.0596	NA	R27	1.3177	35.2714	36.5891	90.0	R27	0.0136	0.0691	0.0827	0.500	R27	0.8857	12.5793	13.4650	25.0	R27	14.2086	46.5502	50.0	R27	0.2583	5.2331	5.4914	8.0	R27
R28	0.0192	0.2195	0.2387	0.500	R28	0.0483	0.0000	0.0483	NA	R28	1.1365	35.4028	36.5393	90.0	R28	0.0120	0.0692	0.0813	0.500	R28	0.7863	12.6431	13.4293	25.0	R28	11.4778	46.0329	50.0	R28	0.2308	5.2515	5.4823	8.0	R28
R29	0.0150	0.2208	0.2358	0.500	R29	0.0402	0.0000	0.0402	NA	R29	0.8926	35.5092	36.4017	90.0	R29	0.0093	0.0728	0.0821	0.500	R29	0.6087	12.7475	13.3563	25.0	R29	9.1361	46.1555	50.0	R29	0.1853	5.2683	5.4536	8.0	R29
R30	0.0131	0.2225	0.2355	0.500	R30	0.0335	0.0000	0.0335	NA	R30	0.7850	35.5624	36.3475	90.0	R30	0.0084	0.0726	0.0809	0.500	R30	0.5475	12.7756	13.3232	25.0	R30	8.6385	46.0763	50.0	R30	0.1653	5.2790	5.4443	8.0	R30
R31	0.0075	0.2249	0.2324	0.500	R31	0.0191	0.0000	0.0191	NA	R31	0.4419	35.6933	36.1352	90.0	R31	0.0047	0.0758	0.0805	0.500	R31	0.3061	12.9113	13.2174	25.0	R31	4.6659	45.9667	50.0	R31	0.0980	5.3063	5.4042	8.0	R31
R32	0.0068	0.2254	0.2322	0.500	R32	0.0174	0.0000	0.0174	NA	R32	0.3996	35.7129	36.1125	90.0	R32	0.0043	0.0760	0.0803	0.500	R32	0.2818	12.9226	13.2043	25.0	R32	4.0929	46.1438	50.0	R32	0.0896	5.3100	5.3996	8.0	R32
R33	0.0073	0.2260	0.2332	0.500	R33	0.0196	0.0000	0.0196	NA	R33	0.4782	35.7247	36.2029	90.0	R33	0.0052	0.0752	0.0804	0.500	R33	0.3378	12.8789	13.2166	25.0	R33	3.8528	45.9891	50.0	R33	0.1004	5.3120	5.4124	8.0	R33
R34	0.0086	0.2224	0.2310	0.500	R34	0.0238	0.0000	0.0238	NA	R34	0.4835	35.5962	36.0797	90.0	R34	0.0062	0.0743	0.0805	0.500	R34	0.4042	12.8064	13.2106	25.0	R34	4.8148	36.6896	50.0	R34	0.1331	5.2742	5.4073	8.0	R34
R35	0.0087	0.2229	0.2316	0.500	R35	0.0216	0.0000	0.0216	NA	R35	0.5043	35.6152	36.1196	90.0	R35	0.0059	0.0748	0.0808	0.500	R35	0.3882	12.8384	13.2266	25.0	R35	10.3788	45.9982	50.0	R35	0.1253	5.2859	5.4113	8.0	R35
R36	0.0086	0.2234	0.2320	0.500	R36	0.0197	0.0000	0.0197	NA	R36	0.4985	35.6369	36.1354	90.0	R36	0.0056	0.0752	0.0808	0.500	R36	0.3647	12.8622	13.2269	25.0	R36	3.3181	46.1091	50.0	R36	0.1196	5.2940	5.4136	8.0	R36
R37	0.0078	0.2243	0.2321	0.500	R37	0.0187	0.0000	0.0187	NA	R37	0.4687	35.6705	36.1392	90.0	R37	0.0052	0.0756	0.0808	0.500	R37	0.3381	12.8864	13.2244	25.0	R37	3.2595	45.9132	50.0	R37	0.1093	5.3003	5.4096	8.0	R37
R38	0.0030	0.2269	0.2299	0.500	R38	0.0057	0.0000	0.0057	NA	R38	0.1598	35.7802	35.9400	90.0	R38	0.0023	0.0775	0.0799	0.500	R38	0.1520	13.0012	13.1532	25.0	R38	1.4181	45.8523	50.0	R38	0.0457	5.3253	5.3710	8.0	R38
R39	0.0032	0.2267	0.2299	0.500	R39	0.0060	0.0000	0.0060	NA	R39	0.1657	35.7752	35.9410	90.0	R39	0.0024	0.0774	0.0798	0.500	R39	0.1552	12.9931	13.1483	25.0	R39	1.6130	36.1501	50.0	R39	0.0474	5.3233	5.3707	8.0	R39
R40	0.0056	0.2239	0.2295	0.500	R40	0.0134	0.0000	0.0134	NA	R40	0.3300	35.6578	35.9879	90.0	R40	0.0047	0.0755	0.0801	0.500	R40	0.3051	12.8752	13.1802	25.0	R40	3.8177	36.2426	50.0	R40	0.0956	5.2920	5.3876	8.0	R40
R41	0.0069	0.2224	0.2294	0.500	R41	0.0176	0.0000	0.0176	NA	R41	0.4006	35.6015	36.0022	90.0	R41	0.0057	0.0747	0.0804	0.500	R41	0.3742	12.8268	13.2009	25.0	R41	3.2661	36.3640	50.0	R41	0.1193	5.2797	5.3990	8.0	R41
R42	0.0084	0.2217	0.2301	0.500	R42	0.0238	0.0000	0.0238	NA	R42	0.4786	35.5725	36.0511	90.0	R42	0.0066	0.0739	0.0805	0.500	R42	0.4283	12.7836	13.2119	25.0	R42	3.6845	46.6449	50.0	R42	0.1372	5.2677	5.4049	8.0	R42
R43	0.0098	0.2239	0.2338	0.500	R43	0.0259	0.0000	0.0259	NA	R43	0.5870	35.6429	36.2299	90.0	R43	0.0062	0.0776	0.0839	0.500	R43	0.4075	12.8543	13.2618	25.0	R43	5.9558	46.1719	50.0	R43	0.1260	5.2950	5.4209	8.0	R43
R44	0.0017	0.2283	0.2299	0.500	R44	0.0034	0.0000	0.0034	NA	R44	0.0868	35.8330	35.9199	90.0	R44	0.0013	0.0782	0.0796	0.500	R44	0.0866	12.9419	13.0285	25.0	R44	1.1873	45.9381	50.0	R44	0.0289	5.2848	5.3137	8.0	R44
R45	0.0036	0.2261	0.2297	0.500	R45	0.0081	0.0000	0.0081	NA	R45	0.1990	35.7464	35.9454	90.0	R45	0.0030	0.0771	0.0800	0.500	R45	0.1940	12.8617	13.0556	25.0	R45	2.1515	36.1304	50.0	R45	0.0627	5.2648	5.3275	8.0	R45
R46	0.0021	0.2276	0.2296	0.500	R46	0.0039	0.0000	0.0039	NA	R46	0.1037	35.8075	35.9111	90.0	R46	0.0017	0.0780	0.0796	0.500	R46	0.1089	12.9202	13.0291	25.0	R46	1.1943	36.1164	50.0	R46	0.0346	5.2795	5.3141	8.0	R46
R47	0.0047	0.2259	0.2306	0.500	R47	0.0113	0.0000	0.0113	NA	R47	0.2583	35.7387	35.9971	90.0	R47	0.0032	0.0769	0.0800	0.500	R47	0.2070	12.9549	13.1619	25.0	R47	1.7729	46.2302	50.0	R47	0.0698	5.3130	5.3828	8.0	R47
R48	0.0021	0.2282	0.2303	0.500	R48	0.0049	0.0000	0.0049	NA	R48	0.1112	35.8324	35.9436	90.0	R48	0.0015	0.0781	0.0796	0.500	R48	0.0971	13.0370	13.1340	25.0	R48	1.9592	45.6906	50.0	R48	0.0320	5.3342	5.3662	8.0	R48
R49	0.0009	0.2291	0.2301	0.500	R49	0.0024	0.0000	0.0024	NA	R49	0.0522	35.8669	35.9191	90.0	R49	0.0008	0.0786	0.0794	0.500	R49	0.0549	13.0624	13.1173	25.0	R49	1.2717	45.7229	50.0	R49	0.0184	5.3403	5.3587	8.0	R49
R50	0.0062	0.2243	0.2305	0.500	R50	0.0145	0.0000	0.0145	NA	R50	0.3405	35.6656	36.0061	90.0	R50	0.0039	0.0763	0.0803	0.500	R50	0.2575	12.8835	13.1409	25.0	R50	2.1375	46.0605	50.0	R50	0.0856	5.2986	5.3842	8.0	R50
R51	0.0036	0.2243	0.2279	0.500	R51	0.0073	0.0000	0.0073	NA	R51	0.1884	35.6656	35.8541	90.0	R51	0.0026	0.0771	0.0797	0.500	R51	0.1681	12.8835	13.0515	25.0	R51	1.4123	45.9724	50.0	R51	0.0554	5.2986	5.3540	8.0	R51
R52	0.0038	0.2243	0.2281	0.500	R52	0.0079	0.0000	0.0079	NA	R52	0.2037	35.6656	35.8693	90.0	R52	0.0028	0.0769	0.0798	0.500	R52	0.1858	12.8835	13.0692	25.0	R52	1.5442	45.9908	50.0	R52	0.0607	5.2986	5.3593	8.0	R52
R53	0.0025	0.2243	0.2268	0.500	R53	0.0048	0.0000	0.0048	NA	R53	0.1266	35.6656	35.7922	90.0	R53	0.0020	0.0777	0.0797	0.500	R53	0.1316	12.7835	12.9150	25.0	R53	1.5187	36.1213	50.0	R53	0.0415	5.2486	5.2901	8.0	R53
R54	0.0026	0.2243	0.2269	0.500	R54	0.0058	0.0000	0.0058	NA	R54	0.1358	35.6656	35.8014	90.0	R54	0.0018	0.0777	0.0796	0.500	R54	0.1197	12.8835	13.0032	25.0	R54	1.3659	45.8791	50.0	R54	0.0426	5.2986	5.3412	8.0	R54
R55	0.0012	0.2243	0.2255	0.500	R55	0.0020	0.0000	0.0020	NA	R55	0.0571	35.6656	35.7227	90.0	R55	0.0009	0.0785	0.0794	0.500	R55	0.0596	12.7835	12.8431	25.0	R55	1.1782	36.1210	50.0	R55	0.0208	5.2486	5.2694	8.0	R55
R56	0.0012	0.2243	0.2255	0.500	R56	0.0021	0.0000	0.0021	NA	R56	0.0590	35.6656	35.7246	90.0	R56	0.0010	0.0784	0.0794	0.500	R56	0.0654	12.8835	12.9488	25.0	R56	0.7907	45.7086	50.0	R56	0.0229	5.2986	5.3215	8.0	R56
R57	0.0024	0.2243	0.2267	0.500	R57	0.0040	0.0000	0.0040	NA	R57	0.1175	35.6656	35.7831	90.0	R57	0.0017	0.0779	0.0796	0.500	R57	0.1088	12.7835	12.8922	25.0	R57	1.7776	36.1257	50.0	R57	0.0367	5.2486	5.2854	8.0	R57
R58	0.0010	0.2243	0.2252	0.500	R58	0.0020	0.0000	0.0020	NA	R58	0.0509	35.6656	35.7166	90.0	R58	0.0009	0.0785	0.0794	0.500	R58	0.0579	12.8835	12.9413	25.0	R58	1.1149	45.7823	50.0	R58	0.0208	5.2986	5.3194	8.0	R58
R59	0.0005	0.2243	0.2248	0.500	R59	0.0010	0.0000	0.0010	NA	R59	0.0245	35.6656	35.6901	90.0	R59	0.0005	0.0788	0.0793	0.500	R59	0.0327	12.7835	12.8162	25.0	R59	0.5262	36.1177	50.0	R59	0.0111	5.2486	5.2597	8.0	R59
R60	0.0027	0.2243	0.2270	0.500	R60	0.0066	0.0000	0.0066	NA	R60	0.1514	35.6656	35.8170	90.0	R60	0.0019	0.0778	0.0797	0.500	R60	0.1241	12.8835	13.0075	25.0	R60	2.5143	45.7781	50.0	R60	0.0405	5.2986	5.3392	8.0	R60
R61	0.0012	0.2243	0.2255	0.500	R61	0.0021	0.0000	0.0021	NA	R61	0.0598	35.6656	35.7254	90.0	R61	0.0009	0.0785	0.0794	0.500	R61	0.0614	12.7835	12.8449	25.0	R61	0.7752	36.1197	50.0	R61	0.0200	5.2486	5.2686	8.0	R61
R62	0.0024	0.2243	0.2267	0.500	R62	0.0042	0.0000	0.0042	NA	R62	0.1180	35.6656	35.7836	90.0	R62	0.0017	0.0780	0.0797	0.500	R62	0.1135	12.7835	12.8970	25.0	R62	1.3336	36.1235	50.0	R62	0.0353	5.2486	5.2839	8.0	R62
R63	0.0016	0.2243	0.2259	0.500	R63	0.0030	0.0000	0.0030	NA	R63	0.0790	35.6656	35.7446	90.0	R63	0.0012	0.0782	0.0794	0.500	R63	0.0797	12.8835	12.9631	25.0	R63	1.5517	45.8072	50.0	R63	0.0280	5.2986	5.3266	8.0	R63
R64	0.0020	0.2243	0.2263	0.500	R64	0.0048	0.0000	0.0048	NA	R64	0.1098	35.6656	35.7754	90.0	R64	0.0015	0.0781	0.0795	0.500	R64	0.0959	12.8835	12.9794	25.0	R64	1.4804	45.7003	50.0	R64	0.0311	5.2986	5.3297	8.0	R64
R65	0.0053	0.2243	0.2296	0.500	R65	0.0132	0.0000	0.0132	NA	R65	0.3045	35.6656	35.9701	90.0	R65	0.0034	0.0767	0.0801	0.500	R65	0.2220	12.8835	13.1054	25.0	R65	3.4302	45.8356	50.0	R65	0.0719	5.2986	5.3705	8.0	R65
R66	0.0037	0.2243	0.2280	0.500	R66	0.0086	0.0000	0.0086	NA	R66	0.2050	35.6656	35.8706	90.0	R66	0.0024	0.0775	0.0799	0.500	R66	0.1574	12.8835	13.0409	25.0	R66	2.6013	45.8200	50.0	R66	0.0513	5.2986	5.3499	8.0	R66
R67	0.0038	0.2243	0.2281	0.500	R67	0.0090	0.0000	0.0090	NA	R67	0.2134	35.6656	35.8790	90.0	R67	0.0025	0.0774	0.0799	0.500	R67	0.1657	12.8835	13.0491	25.0	R67	3.3467	45.8121	50.0	R67	0.0537	5.2986	5.3524	8.0	R67
R68	0.0029	0.2243	0.2272	0.500	R68	0.0073	0.0000	0.0073	NA	R68	0.1672	35.6656	35.8328	90.0	R68	0.0023	0.0775	0.0798	0.500	R68	0.1481	12.7835	12.9316	25.0	R68	1.7092	36.1294	50.0	R68	0.0496	5.2486	5.2983	8.0	R68
R69	0.0024	0.2243	0.2267	0.500	R69	0.0059	0.0000	0.0059	NA	R69	0.1375	35.6656	35.8032	90.0	R69	0.0018	0.0779	0.0796	0.500	R69	0.1163	12.7835	12.8998	25.0	R69	1.2352	36.1268	50.0	R69	0.0400	5.2486	5.2886	8.0	R69
R70	0.0023	0.2243	0.2266	0.500	R70	0.0049	0.0000	0.0049	NA	R70	0.1214	35.6656	35.7870	90.0	R70	0.0018	0.0680	0.0698	0.500	R70	0.1189	12.7835	12.9024	25.0	R70	1.4303	36.1242	50.0	R70	0.0394	5.2486	5.2881	8.0	R70

aximum 24-hour Average PM2.5 Concentration (µg/m³)			Monthly Dust Deposition (g/m²/month)					
MOD 6 Construction Scenario	Cumulative	Criteria	ID	MOD 6 Construction Scenario	Criteria	Background	Cumulative	Criteria
1.3135	14.8029	25.0	R1	0.1205	2.00	1.0534	1.1740	4.00
1.6863	15.0324	25.0	R2	0.1397	2.00	1.0483	1.1880	4.00
2.4932	14.9888	25.0	R3	0.2761	2.00	1.0008	1.2769	4.00
1.1525	14.7841	25.0	R4	0.0989	2.00	1.0483	1.1472	4.00
1.2268	14.7818	25.0	R5	0.0700	2.00	1.0601	1.1302	4.00
1.3916	14.7798	25.0	R6	0.0614	2.00	1.0599	1.1213	4.00
0.6183	18.7877	25.0	R7	0.0315	2.00	0.7872	0.8187	4.00
1.1864	18.7770	25.0	R8	0.0749	2.00	0.7546	0.8295	4.00
0.8257	18.8345	25.0	R9	0.0610	2.00	0.3882	0.4492	4.00
1.0400	18.8471	25.0	R10	0.0616	2.00	0.3912	0.4527	4.00
0.8486	14.7823	25.0	R11	0.0489	2.00	1.0792	1.1281	4.00
0.6407	14.7831	25.0	R12	0.0407	2.00	0.8670	0.9076	4.00
0.6389	14.7828	25.0	R13	0.0346	2.00	0.8715	0.9061	4.00
0.8343	18.8337	25.0	R14	0.0382	2.00	0.4071	0.4453	4.00
0.3652	18.8296	25.0	R15	0.0162	2.00	0.4261	0.4422	4.00
0.4158	18.8086	25.0	R16	0.0217	2.00	0.4259	0.4475	4.00
0.8792	18.8315	25.0	R17	0.0350	2.00	0.4124	0.4474	4.00
0.5640	14.7819	25.0	R18	0.0241	2.00	0.8758	0.8999	4.00
0.3430	18.8058	25.0	R19	0.0142	2.00	0.4296	0.4438	4.00
0.2847	18.8230	25.0	R20	0.0139	2.00	0.4280	0.4418	4.00
1.4299	14.8480	25.0	R21	0.1393	2.00	1.0464	1.1857	4.00
1.6070	14.8668	25.0	R22	0.1446	2.00	1.0450	1.1895	4.00
1.9412	15.0304	25.0	R23	0.1662	2.00	1.0441	1.2103	4.00
2.5429	15.2048	25.0	R24	0.1877	2.00	1.0435	1.2312	4.00
1.3013	14.8826	25.0	R25	0.0952	2.00	1.0663	1.1615	4.00
3.7679	14.9068	25.0	R26	0.2227	2.00	1.0291	1.2518	4.00
4.0044	18.8724	25.0	R27	0.2939	2.00	3.0831	3.3771	4.00
3.2632	18.8641	25.0	R28	0.2455	2.00	3.1015	3.3470	4.00
2.8169	18.8435	25.0	R29	0.2093	2.00	3.1183	3.3276	4.00
2.5114	18.8454	25.0	R30	0.1734	2.00	3.1290	3.3024	4.00
1.3411	18.8255	25.0	R31	0.1055	2.00	3.1563	3.2617	4.00
1.1986	18.8276	25.0	R32	0.0933	2.00	3.1600	3.2533	4.00
1.1846	18.8094	25.0	R33	0.1069	2.00	1.6220	1.7289	4.00
1.9079	18.8609	25.0	R34	0.1195	2.00	0.3642	0.4837	4.00
3.0729	18.8580	25.0	R35	0.1163	2.00	0.3759	0.4922	4.00
1.3594	18.9387	25.0	R36	0.1134	2.00	0.3840	0.4973	4.00
1.1631	18.9506	25.0	R37	0.1120	2.00	0.3903	0.5023	4.00
0.4458	18.8010	25.0	R38	0.0269	2.00	0.7953	0.8222	4.00
0.4974	18.7972	25.0	R39	0.0284	2.00	0.7933	0.8217	4.00
1.1972	18.8735	25.0	R40	0.0713	2.00	0.3820	0.4533	4.00
1.3210	18.8599	25.0	R41	0.0905	2.00	0.3697	0.4602	4.00
1.3323	18.8553	25.0	R42	0.1170	2.00	0.3577	0.4748	4.00
1.7223	18.8363	25.0	R43	0.1360	2.00	3.1450	3.2810	4.00
0.3821	14.7820	25.0	R44	0.0172	2.00	0.8848	0.9020	4.00
0.6854	14.7827	25.0	R45	0.0408	2.00	0.8648	0.9056	4.00
0.4556	14.7817	25.0	R46	0.0181	2.00	0.8795	0.8976	4.00
0.7454	18.8777	25.0	R47	0.0601	2.00	0.4030	0.4631	4.00
0.5966	18.8107	25.0	R48	0.0256	2.00	0.4242	0.4498	4.00
0.3730	18.8070	25.0	R49	0.0129	2.00	0.4303	0.4432	4.00
0.9153	18.9271	25.0	R50	0.0780	2.00	3.1486	3.2266	4.00
0.6611	18.8852	25.0	R51	0.0361	2.00	0.3886	0.4248	4.00
0.7144	18.8917	25.0	R52	0.0398	2.00	0.3886	0.4284	4.00
0.5335	14.7822	25.0	R53	0.0226	2.00	0.8486	0.8712	4.00
0.5802	18.8634	25.0	R54	0.0292	2.00	3.1486	3.1779	4.00
0.3618	14.7821	25.0	R55	0.0090	2.00	0.3886	0.3977	4.00
0.2922	18.8054	25.0	R56	0.0099	2.00	0.3886	0.3985	4.00
0.5149	14.7840	25.0	R57	0.0184	2.00	0.3886	0.4071	4.00
0.3301	18.8313	25.0	R58	0.0103	2.00	0.3886	0.3989	4.00
0.1916	14.7808	25.0	R59	0.0050	2.00	0.8486	0.8536	4.00
0.7637	18.8230	25.0	R60	0.0351	2.00	3.1486	3.1837	4.00
0.2585	14.7816	25.0	R61	0.0098	2.00	0.7686	0.7784	4.00
0.3897	14.7831	25.0	R62	0.0192	2.00	0.7686	0.7878	4.00
0.5568	18.8355	25.0	R63	0.0141	2.00	0.7686	0.7827	4.00
0.4319	18.7994	25.0	R64	0.0248	2.00	1.6086	1.6334	4.00
1.0312	18.8378	25.0	R65	0.0713	2.00	3.1486	3.2200	4.00
0.8005	18.8388	25.0	R66	0.0465	2.00	3.1486	3.1951	4.00
1.0128	18.8353	25.0	R67	0.0492	2.00	3.1486	3.1978	4.00
0.4998	14.8689	25.0	R68	0.0383	2.00	0.8486	0.8870	4.00
0.4654	14.8819	25.0	R69	0.0315	2.00	0.8486	0.8802	4.00
0.4095	14.7833	25.0	R70	0.0241	2.00	0.8486	0.8727	4.00

Annual Average Lead Concentration (as TSP) (µg/m³)				
ID	MOD 6 Operational Scenario	Background	Cumulative	Criteria
R1	0.0085	0.2232	0.2317	0.500
R2	0.0087	0.2212	0.2299	0.500
R3	0.0150	0.2141	0.2291	0.500
R4	0.0074	0.2211	0.2285	0.500
R5	0.0062	0.2226	0.2287	0.500
R6	0.0065	0.2218	0.2283	0.500
R7	0.0036	0.2265	0.2300	0.500
R8	0.0071	0.2224	0.2295	0.500
R9	0.0056	0.2241	0.2297	0.500
R10	0.0054	0.2244	0.2299	0.500
R11	0.0044	0.2250	0.2294	0.500
R12	0.0036	0.2263	0.2299	0.500
R13	0.0032	0.2268	0.2299	0.500
R14	0.0039	0.2263	0.2302	0.500
R15	0.0013	0.2287	0.2301	0.500
R16	0.0017	0.2285	0.2302	0.500
R17	0.0031	0.2271	0.2302	0.500
R18	0.0026	0.2271	0.2297	0.500
R19	0.0011	0.2290	0.2301	0.500
R20	0.0010	0.2290	0.2300	0.500
R21	0.0096	0.2231	0.2326	0.500
R22	0.0101	0.2230	0.2332	0.500
R23	0.0120	0.2225	0.2345	0.500
R24	0.0131	0.2219	0.2350	0.500
R25	0.0070	0.2251	0.2321	0.500
R26	0.0186	0.2196	0.2381	0.500
R27	0.0242	0.2169	0.2412	0.500
R28	0.0207	0.2195	0.2402	0.500
R29	0.0151	0.2208	0.2360	0.500
R30	0.0137	0.2225	0.2362	0.500
R31	0.0073	0.2249	0.2322	0.500
R32	0.0068	0.2254	0.2322	0.500
R33	0.0078	0.2260	0.2338	0.500
R34	0.0083	0.2224	0.2307	0.500
R35	0.0082	0.2229	0.2311	0.500
R36	0.0080	0.2234	0.2315	0.500
R37	0.0073	0.2243	0.2316	0.500
R38	0.0030	0.2269	0.2299	0.500
R39	0.0031	0.2267	0.2299	0.500
R40	0.0057	0.2239	0.2296	0.500
R41	0.0070	0.2224	0.2294	0.500
R42	0.0083	0.2217	0.2300	0.500
R43	0.0100	0.2239	0.2339	0.500
R44	0.0016	0.2283	0.2299	0.500
R45	0.0036	0.2261	0.2297	0.500
R46	0.0020	0.2276	0.2296	0.500
R47	0.0045	0.2259	0.2304	0.500
R48	0.0020	0.2282	0.2302	0.500
R49	0.0009	0.2291	0.2301	0.500
R50	0.0059	0.2243	0.2302	0.500
R51	0.0036	0.2243	0.2279	0.500
R52	0.0039	0.2243	0.2281	0.500
R53	0.0025	0.2243	0.2267	0.500
R54	0.0026	0.2243	0.2268	0.500
R55	0.0012	0.2243	0.2255	0.500
R56	0.0012	0.2243	0.2255	0.500
R57	0.0024	0.2243	0.2266	0.500
R58	0.0009	0.2243	0.2252	0.500
R59	0.0005	0.2243	0.2247	0.500
R60	0.0027	0.2243	0.2269	0.500
R61	0.0012	0.2243	0.2255	0.500
R62	0.0023	0.2243	0.2266	0.500
R63	0.0016	0.2243	0.2259	0.500
R64	0.0020	0.2243	0.2262	0.500
R65	0.0052	0.2243	0.2295	0.500
R66	0.0036	0.2243	0.2279	0.500
R67	0.0037	0.2243	0.2279	0.500
R68	0.0029	0.2243	0.2272	0.500
R69	0.0024	0.2243	0.2267	0.500
R70	0.0023	0.2243	0.2266	0.500

Annual Lead Total Deposition (as TSP) (g/m²/annum)				
ID	MOD 6 Operational Scenario	Background	Cumulative	Criteria
R1	0.0223	0.0000	0.0223	NA
R2	0.0249	0.0000	0.0249	NA
R3	0.0451	0.0000	0.0451	NA
R4	0.0185	0.0000	0.0185	NA
R5	0.0143	0.0000	0.0143	NA
R6	0.0132	0.0000	0.0132	NA
R7	0.0068	0.0000	0.0068	NA
R8	0.0160	0.0000	0.0160	NA
R9	0.0126	0.0000	0.0126	NA
R10	0.0129	0.0000	0.0129	NA
R11	0.0099	0.0000	0.0099	NA
R12	0.0082	0.0000	0.0082	NA
R13	0.0070	0.0000	0.0070	NA
R14	0.0081	0.0000	0.0081	NA
R15	0.0031	0.0000	0.0031	NA
R16	0.0041	0.0000	0.0041	NA
R17	0.0069	0.0000	0.0069	NA
R18	0.0051	0.0000	0.0051	NA
R19	0.0027	0.0000	0.0027	NA
R20	0.0026	0.0000	0.0026	NA
R21	0.0250	0.0000	0.0250	NA
R22	0.0260	0.0000	0.0260	NA
R23	0.0298	0.0000	0.0298	NA
R24	0.0336	0.0000	0.0336	NA
R25	0.0175	0.0000	0.0175	NA
R26	0.0460	0.0000	0.0460	NA
R27	0.0672	0.0000	0.0672	NA
R28	0.0550	0.0000	0.0550	NA
R29	0.0422	0.0000	0.0422	NA
R30	0.0365	0.0000	0.0365	NA
R31	0.0188	0.0000	0.0188	NA
R32	0.0178	0.0000	0.0178	NA
R33	0.0207	0.0000	0.0207	NA
R34	0.0236	0.0000	0.0236	NA
R35	0.0206	0.0000	0.0206	NA
R36	0.0181	0.0000	0.0181	NA
R37	0.0170	0.0000	0.0170	NA
R38	0.0057	0.0000	0.0057	NA
R39	0.0060	0.0000	0.0060	NA
R40	0.0142	0.0000	0.0142	NA
R41	0.0185	0.0000	0.0185	NA
R42	0.0245	0.0000	0.0245	NA
R43	0.0272	0.0000	0.0272	NA
R44	0.0035	0.0000	0.0035	NA
R45	0.0082	0.0000	0.0082	NA
R46	0.0039	0.0000	0.0039	NA
R47	0.0109	0.0000	0.0109	NA
R48	0.0048	0.0000	0.0048	NA
R49	0.0024	0.0000	0.0024	NA
R50	0.0138	0.0000	0.0138	NA
R51	0.0075	0.0000	0.0075	NA
R52	0.0082	0.0000	0.0082	NA
R53	0.0048	0.0000	0.0048	NA
R54	0.0057	0.0000	0.0057	NA
R55	0.0020	0.0000	0.0020	NA
R56	0.0021	0.0000	0.0021	NA
R57	0.0040	0.0000	0.0040	NA
R58	0.0020	0.0000	0.0020	NA
R59	0.0010	0.0000	0.0010	NA
R60	0.0064	0.0000	0.0064	NA
R61	0.0021	0.0000	0.0021	NA
R62	0.0042	0.0000	0.0042	NA
R63	0.0030	0.0000	0.0030	NA
R64	0.0048	0.0000	0.0048	NA
R65	0.0132	0.0000	0.0132	NA
R66	0.0083	0.0000	0.0083	NA
R67	0.0087	0.0000	0.0087	NA
R68	0.0074	0.0000	0.0074	NA
R69	0.0059	0.0000	0.0059	NA
R70	0.0049	0.0000	0.0049	NA

Annual Average TSP Concentration (µg/m³)				
ID	MOD 6 Operational Scenario	Background	Cumulative	Criteria
R1	0.5769	35.6046	36.1814	90.0
R2	0.6711	35.5395	36.2106	90.0
R3	1.1396	35.2719	36.4115	90.0
R4	0.4789	35.5517	36.0306	90.0
R5	0.3738	35.6100	35.9838	90.0
R6	0.3494	35.5850	35.9343	90.0
R7	0.1796	35.7651	35.9447	90.0
R8	0.3951	35.6045	35.9996	90.0
R9	0.3241	35.6720	35.9960	90.0
R10	0.2960	35.6841	35.9801	90.0
R11	0.2603	35.7043	35.9646	90.0
R12	0.2013	35.7558	35.9571	90.0
R13	0.1733	35.7748	35.9481	90.0
R14	0.1941	35.7578	35.9519	90.0
R15	0.0696	35.8504	35.9200	90.0
R16	0.0883	35.8427	35.9310	90.0
R17	0.1569	35.7891	35.9460	90.0
R18	0.1335	35.7892	35.9227	90.0
R19	0.0573	35.8609	35.9182	90.0
R20	0.0562	35.8613	35.9175	90.0
R21	0.6109	35.5919	36.2028	90.0
R22	0.6045	35.5908	36.1953	90.0
R23	0.6507	35.5756	36.2263	90.0
R24	0.7014	35.5576	36.2590	90.0
R25	0.3994	35.6939	36.0933	90.0
R26	0.9077	35.4808	36.3885	90.0
R27	1.7633	35.2714	37.0347	90.0
R28	1.4945	35.4028	36.8973	90.0
R29	0.9934	35.5092	36.5025	90.0
R30	0.9164	35.5624	36.4788	90.0
R31	0.4328	35.6933	36.1262	90.0
R32	0.4066	35.7129	36.1195	90.0
R33	0.5079	35.7247	36.2326	90.0
R34	0.4507	35.5962	36.0469	90.0
R35	0.4338	35.6152	36.0490	90.0
R36	0.4207	35.6369	36.0576	90.0
R37	0.4011	35.6705	36.0716	90.0
R38	0.1607	35.7802	35.9409	90.0
R39	0.1616	35.7752	35.9369	90.0
R40	0.3570	35.6578	36.0148	90.0
R41	0.4228	35.6015	36.0243	90.0
R42	0.4793	35.5725	36.0518	90.0
R43	0.6386	35.6429	36.2816	90.0
R44	0.0864	35.8330	35.9194	90.0
R45	0.2012	35.7464	35.9476	90.0
R46	0.1020	35.8075	35.9095	90.0
R47	0.2366	35.7387	35.9753	90.0
R48	0.1047	35.8324	35.9372	90.0
R49	0.0490	35.8669	35.9158	90.0
R50	0.3044	35.6656	35.9700	90.0
R51	0.1952	35.6656	35.8608	90.0
R52	0.2126	35.6656	35.8782	90.0
R53	0.1256	35.6656	35.7912	90.0
R54	0.1314	35.6656	35.7970	90.0
R55	0.0554	35.6656	35.7210	90.0
R56	0.0597	35.6656	35.7253	90.0
R57	0.1140	35.6656	35.7796	90.0
R58	0.0496	35.6656	35.7152	90.0
R59	0.0246	35.6656	35.6902	90.0
R60	0.1410	35.6656	35.8066	90.0
R61	0.0574	35.6656	35.7230	90.0
R62	0.1144	35.6656	35.7800	90.0
R63	0.0789	35.6656	35.7445	90.0
R64	0.1072	35.6656	35.7728	90.0
R65	0.2999	35.6656	35.9655	90.0
R66	0.1884	35.6656	35.8540	90.0
R67	0.1953	35.6656	35.8610	90.0
R68	0.1701	35.6656	35.8357	90.0
R69	0.1352	35.6656	35.8008	90.0
R70	0.1218	35.6656	35.7874	90.0

Annual Average Lead Concentration (as PM_{10}) (µg/m³)				
ID	MOD 6 Operational Scenario	Background	Cumulative	Criteria
R1	0.0057	0.0741	0.0798	0.500
R2	0.0065	0.0740	0.0805	0.500
R3	0.0098	0.0709	0.0806	0.500
R4	0.0051	0.0743	0.0794	0.500
R5	0.0043	0.0752	0.0795	0.500
R6	0.0037	0.0752	0.0789	0.500
R7	0.0021	0.0771	0.0792	0.500
R8	0.0042	0.0750	0.0793	0.500
R9	0.0036	0.0759	0.0795	0.500
R10	0.0034	0.0760	0.0794	0.500
R11	0.0031	0.0765	0.0796	0.500
R12	0.0025	0.0770	0.0795	0.500
R13	0.0021	0.0773	0.0795	0.500
R14	0.0021	0.0772	0.0793	0.500
R15	0.0009	0.0783	0.0793	0.500
R16	0.0011	0.0782	0.0793	0.500
R17	0.0018	0.0775	0.0793	0.500
R18	0.0017	0.0776	0.0794	0.500
R19	0.0008	0.0785	0.0793	0.500
R20	0.0008	0.0784	0.0793	0.500
R21	0.0062	0.0735	0.0796	0.500
R22	0.0061	0.0734	0.0795	0.500
R23	0.0063	0.0734	0.0797	0.500
R24	0.0066	0.0736	0.0802	0.500
R25	0.0041	0.0752	0.0793	0.500
R26	0.0084	0.0733	0.0817	0.500
R27	0.0157	0.0691	0.0848	0.500
R28	0.0138	0.0692	0.0831	0.500
R29	0.0092	0.0728	0.0820	0.500
R30	0.0086	0.0726	0.0812	0.500
R31	0.0042	0.0758	0.0800	0.500
R32	0.0039	0.0760	0.0799	0.500
R33	0.0052	0.0752	0.0804	0.500
R34	0.0050	0.0743	0.0793	0.500
R35	0.0045	0.0748	0.0793	0.500
R36	0.0043	0.0752	0.0795	0.500
R37	0.0041	0.0756	0.0797	0.500
R38	0.0019	0.0775	0.0794	0.500
R39	0.0019	0.0774	0.0793	0.500
R40	0.0040	0.0755	0.0795	0.500
R41	0.0049	0.0747	0.0796	0.500
R42	0.0055	0.0739	0.0794	0.500
R43	0.0060	0.0776	0.0836	0.500
R44	0.0011	0.0782	0.0793	0.500
R45	0.0025	0.0771	0.0795	0.500
R46	0.0014	0.0780	0.0793	0.500
R47	0.0026	0.0769	0.0794	0.500
R48	0.0012	0.0781	0.0793	0.500
R49	0.0007	0.0786	0.0793	0.500
R50	0.0031	0.0763	0.0795	0.500
R51	0.0022	0.0771	0.0793	0.500
R52	0.0024	0.0769	0.0793	0.500
R53	0.0016	0.0777	0.0794	0.500
R54	0.0016	0.0777	0.0793	0.500
R55	0.0007	0.0785	0.0792	0.500
R56	0.0008	0.0784	0.0792	0.500
R57	0.0014	0.0779	0.0793	0.500
R58	0.0007	0.0785	0.0792	0.500
R59	0.0004	0.0788	0.0792	0.500
R60	0.0016	0.0778	0.0794	0.500
R61	0.0007	0.0785	0.0792	0.500
R62	0.0014	0.0780	0.0793	0.500
R63	0.0010	0.0782	0.0792	0.500
R64	0.0013	0.0781	0.0793	0.500
R65	0.0030	0.0767	0.0797	0.500
R66	0.0020	0.0775	0.0795	0.500
R67	0.0021	0.0774	0.0795	0.500
R68	0.0019	0.0775	0.0794	0.500
R69	0.0015	0.0779	0.0793	0.500
R70	0.0015	0.0680	0.0695	0.500

Annual Average PM10 Concentration (µg/m³)				
ID	MOD 6 Operational Scenario	Background	Cumulative	Criteria
R1	0.3731	12.6924	13.0655	25.0
R2	0.4254	12.6952	13.1206	25.0
R3	0.6381	12.5061	13.1442	25.0
R4	0.3362	12.7077	13.0439	25.0
R5	0.2807	12.7582	13.0389	25.0
R6	0.2410	12.7558	12.9968	25.0
R7	0.1387	12.9712	13.1098	25.0
R8	0.2777	12.8430	13.1207	25.0
R9	0.2337	12.8995	13.1333	25.0
R10	0.2204	12.9103	13.1308	25.0
R11	0.2025	12.8343	13.0368	25.0
R12	0.1630	12.8699	13.0329	25.0
R13	0.1398	12.8886	13.0284	25.0
R14	0.1397	12.9753	13.1150	25.0
R15	0.0613	13.0481	13.1094	25.0
R16	0.0720	13.0433	13.1153	25.0
R17	0.1189	12.9960	13.1149	25.0
R18	0.1133	12.9048	13.0181	25.0
R19	0.0513	13.0589	13.1103	25.0
R20	0.0540	13.0558	13.1097	25.0
R21	0.4021	12.6527	13.0549	25.0
R22	0.3982	12.6481	13.0463	25.0
R23	0.4096	12.6471	13.0567	25.0
R24	0.4332	12.6607	13.0939	25.0
R25	0.2678	12.7589	13.0267	25.0
R26	0.5478	12.6436	13.1914	25.0
R27	1.0271	12.5793	13.6064	25.0
R28	0.9032	12.6431	13.5463	25.0
R29	0.6019	12.7475	13.3494	25.0
R30	0.5639	12.7756	13.3395	25.0
R31	0.2733	12.9113	13.1846	25.0
R32	0.2564	12.9226	13.1790	25.0
R33	0.3386	12.8789	13.2174	25.0
R34	0.3248	12.8064	13.1311	25.0
R35	0.2924	12.8384	13.1308	25.0
R36	0.2819	12.8622	13.1441	25.0
R37	0.2700	12.8864	13.1564	25.0
R38	0.1226	13.0012	13.1237	25.0
R39	0.1234	12.9931	13.1165	25.0
R40	0.2644	12.8752	13.1396	25.0
R41	0.3235	12.8268	13.1503	25.0
R42	0.3604	12.7836	13.1440	25.0
R43	0.3910	12.8543	13.2453	25.0
R44	0.0705	12.9419	13.0124	25.0
R45	0.1614	12.8617	13.0231	25.0
R46	0.0886	12.9202	13.0088	25.0
R47	0.1677	12.9549	13.1226	25.0
R48	0.0815	13.0370	13.1185	25.0
R49	0.0454	13.0624	13.1078	25.0
R50	0.2041	12.8835	13.0875	25.0
R51	0.1412	12.8835	13.0247	25.0
R52	0.1565	12.8835	13.0400	25.0
R53	0.1071	12.7835	12.8905	25.0
R54	0.1021	12.8835	12.9856	25.0
R55	0.0482	12.7835	12.8317	25.0
R56	0.0534	12.8835	12.9368	25.0
R57	0.0901	12.7835	12.8736	25.0
R58	0.0482	12.8835	12.9317	25.0
R59	0.0268	12.7835	12.8103	25.0
R60	0.1034	12.8835	12.9868	25.0
R61	0.0482	12.7835	12.8317	25.0
R62	0.0890	12.7835	12.8725	25.0
R63	0.0678	12.8835	12.9513	25.0
R64	0.0820	12.8835	12.9654	25.0
R65	0.1976	12.8835	13.0811	25.0
R66	0.1304	12.8835	13.0138	25.0
R67	0.1370	12.8835	13.0205	25.0
R68	0.1250	12.7835	12.9085	25.0
R69	0.0960	12.7835	12.8795	25.0
R70	0.0987	12.7835	12.8822	25.0

Maximum 24-hour Average PM10 Concent		
ID	MOD 6 Operational Scenario	Cumulative
R1	2.3858	36.1458
R2	4.5000	45.6469
R3	4.6228	37.6999
R4	2.6820	36.2127
R5	3.0438	36.1475
R6	2.0070	45.7226
R7	1.7502	45.8941
R8	1.9911	46.1274
R9	1.9076	46.0849
R10	1.7981	36.2555
R11	1.8822	45.9545
R12	1.1306	36.1189
R13	0.9423	45.9099
R14	1.2702	36.1623
R15	0.5959	36.1552
R16	0.9298	36.1840
R17	1.1059	36.2059
R18	1.3058	36.1249
R19	0.8603	36.1573
R20	0.5641	45.7044
R21	3.0228	45.8152
R22	2.6007	45.7285
R23	2.3419	36.1084
R24	2.5759	45.8639
R25	1.6580	45.8515
R26	3.6704	45.9132
R27	6.4369	46.9197
R28	6.3830	46.3039
R29	4.0163	46.3435
R30	3.9679	46.2185
R31	1.9922	46.0418
R32	1.7952	46.1955
R33	2.4848	45.9897
R34	3.0751	36.6305
R35	1.8500	45.9013
R36	2.4337	45.7434
R37	1.9967	45.5141
R38	1.5421	45.8505
R39	1.2523	36.1482
R40	3.2959	36.2425
R41	2.7391	36.3563
R42	3.4527	46.6059
R43	2.4865	46.2735
R44	0.5258	45.9370
R45	1.0300	36.1278
R46	0.9713	36.1155
R47	1.0627	46.0399
R48	0.8840	45.6923
R49	0.3927	45.7184
R50	1.4928	45.8446
R51	1.2440	45.9234
R52	1.3630	45.9368
R53	1.2265	36.1202
R54	1.0310	45.8177
R55	0.7584	36.1199
R56	0.6579	45.7033
R57	0.9288	36.1241
R58	0.5083	45.7719
R59	0.2730	36.1172
R60	0.8160	45.7859
R61	0.3868	36.1188
R62	0.6813	36.1222
R63	0.6651	45.7800
R64	0.6311	45.7000
R65	1.5787	45.8684
R66	1.0363	45.8262
R67	1.1279	45.8284
R68	0.8035	36.1261
R69	0.7089	36.1240
R70	0.6782	36.1225

ration (µg/m³)	Annual Average PM2.5 Concentration (µg/m³)					Maximum 24-hour Average PM2.5 Concentration (µg/m³)				Monthly Dust Deposition (g/m²/month)					
Criteria	ID	MOD 6 Operational Scenario	Background	Cumulative	Criteria	ID	MOD 6 Operational Scenario	Cumulative	Criteria	ID	MOD 6 Operational Scenario	Criteria	Background	Cumulative	Criteria
50.0	R1	0.1306	5.2334	5.3641	8.0	R1	0.9061	14.7842	25.0	R1	0.1401	2.00	1.0534	1.1935	4.00
50.0	R2	0.1351	5.2283	5.3634	8.0	R2	1.0622	14.7844	25.0	R2	0.1640	2.00	1.0483	1.2123	4.00
50.0	R3	0.2011	5.1808	5.3819	8.0	R3	1.4767	14.8762	25.0	R3	0.2804	2.00	1.0008	1.2812	4.00
50.0	R4	0.1111	5.2283	5.3394	8.0	R4	0.8611	14.7812	25.0	R4	0.1038	2.00	1.0483	1.1521	4.00
50.0	R5	0.0931	5.2401	5.3333	8.0	R5	1.0225	14.7803	25.0	R5	0.0751	2.00	1.0601	1.1352	4.00
50.0	R6	0.0777	5.2399	5.3176	8.0	R6	0.6683	14.7787	25.0	R6	0.0639	2.00	1.0599	1.1238	4.00
50.0	R7	0.0480	5.3172	5.3652	8.0	R7	0.6073	18.7857	25.0	R7	0.0336	2.00	0.7872	0.8208	4.00
50.0	R8	0.0894	5.2846	5.3740	8.0	R8	0.6983	18.7730	25.0	R8	0.0809	2.00	0.7546	0.8356	4.00
50.0	R9	0.0769	5.2982	5.3751	8.0	R9	0.6736	18.8073	25.0	R9	0.0692	2.00	0.3882	0.4573	4.00
50.0	R10	0.0748	5.3012	5.3760	8.0	R10	0.6686	18.8377	25.0	R10	0.0697	2.00	0.3912	0.4609	4.00
50.0	R11	0.0686	5.2592	5.3277	8.0	R11	0.6090	14.7812	25.0	R11	0.0526	2.00	1.0792	1.1317	4.00
50.0	R12	0.0579	5.2670	5.3249	8.0	R12	0.3990	14.7818	25.0	R12	0.0432	2.00	0.8670	0.9102	4.00
50.0	R13	0.0501	5.2715	5.3216	8.0	R13	0.3697	14.7818	25.0	R13	0.0367	2.00	0.8715	0.9082	4.00
50.0	R14	0.0508	5.3171	5.3679	8.0	R14	0.5089	18.8248	25.0	R14	0.0415	2.00	0.4071	0.4486	4.00
50.0	R15	0.0233	5.3361	5.3594	8.0	R15	0.2286	18.8080	25.0	R15	0.0162	2.00	0.4261	0.4422	4.00
50.0	R16	0.0255	5.3359	5.3613	8.0	R16	0.2478	18.8082	25.0	R16	0.0213	2.00	0.4259	0.4471	4.00
50.0	R17	0.0440	5.3224	5.3664	8.0	R17	0.4166	18.8146	25.0	R17	0.0352	2.00	0.4124	0.4476	4.00
50.0	R18	0.0399	5.2758	5.3156	8.0	R18	0.4873	14.7814	25.0	R18	0.0250	2.00	0.8758	0.9007	4.00
50.0	R19	0.0182	5.3396	5.3578	8.0	R19	0.2099	18.8053	25.0	R19	0.0140	2.00	0.4296	0.4436	4.00
50.0	R20	0.0206	5.3380	5.3585	8.0	R20	0.2478	18.8072	25.0	R20	0.0138	2.00	0.4280	0.4418	4.00
50.0	R21	0.1442	5.2264	5.3706	8.0	R21	0.8719	14.7845	25.0	R21	0.1454	2.00	1.0464	1.1919	4.00
50.0	R22	0.1441	5.2250	5.3691	8.0	R22	0.8879	14.7842	25.0	R22	0.1420	2.00	1.0450	1.1870	4.00
50.0	R23	0.1522	5.2241	5.3763	8.0	R23	0.8885	14.7840	25.0	R23	0.1489	2.00	1.0441	1.1929	4.00
50.0	R24	0.1639	5.2235	5.3874	8.0	R24	1.0350	14.7843	25.0	R24	0.1635	2.00	1.0435	1.2070	4.00
50.0	R25	0.0982	5.2463	5.3445	8.0	R25	0.6953	14.7826	25.0	R25	0.0943	2.00	1.0663	1.1606	4.00
50.0	R26	0.2169	5.2091	5.4260	8.0	R26	1.6030	14.7862	25.0	R26	0.2064	2.00	1.0291	1.2355	4.00
50.0	R27	0.2799	5.2331	5.5131	8.0	R27	1.7737	18.9368	25.0	R27	0.4744	2.00	3.0831	3.5576	4.00
50.0	R28	0.2488	5.2515	5.5003	8.0	R28	1.9437	18.9105	25.0	R28	0.3895	2.00	3.1015	3.4909	4.00
50.0	R29	0.1833	5.2683	5.4516	8.0	R29	1.3841	18.8757	25.0	R29	0.2654	2.00	3.1183	3.3837	4.00
50.0	R30	0.1680	5.2790	5.4470	8.0	R30	1.1927	18.8710	25.0	R30	0.2354	2.00	3.1290	3.3644	4.00
50.0	R31	0.0901	5.3063	5.3964	8.0	R31	0.6670	18.8374	25.0	R31	0.1086	2.00	3.1563	3.2649	4.00
50.0	R32	0.0837	5.3100	5.3937	8.0	R32	0.5888	18.8366	25.0	R32	0.1033	2.00	3.1600	3.2633	4.00
50.0	R33	0.1015	5.3120	5.4135	8.0	R33	0.7245	18.8095	25.0	R33	0.1165	2.00	1.6220	1.7385	4.00
50.0	R34	0.1118	5.2742	5.3860	8.0	R34	1.1032	18.8235	25.0	R34	0.1205	2.00	0.3642	0.4847	4.00
50.0	R35	0.1011	5.2859	5.3870	8.0	R35	0.6860	18.8129	25.0	R35	0.1058	2.00	0.3759	0.4818	4.00
50.0	R36	0.0980	5.2940	5.3920	8.0	R36	0.8653	18.8055	25.0	R36	0.0934	2.00	0.3840	0.4774	4.00
50.0	R37	0.0927	5.3003	5.3929	8.0	R37	0.6915	18.8068	25.0	R37	0.0916	2.00	0.3903	0.4819	4.00
50.0	R38	0.0410	5.3253	5.3663	8.0	R38	0.3406	18.8004	25.0	R38	0.0284	2.00	0.7953	0.8237	4.00
50.0	R39	0.0419	5.3233	5.3652	8.0	R39	0.4237	18.7964	25.0	R39	0.0298	2.00	0.7933	0.8231	4.00
50.0	R40	0.0882	5.2920	5.3802	8.0	R40	1.1759	18.8427	25.0	R40	0.0862	2.00	0.3820	0.4681	4.00
50.0	R41	0.1071	5.2797	5.3867	8.0	R41	1.0605	18.8515	25.0	R41	0.1075	2.00	0.3697	0.4772	4.00
50.0	R42	0.1176	5.2677	5.3853	8.0	R42	1.2652	18.8445	25.0	R42	0.1298	2.00	0.3577	0.4875	4.00
50.0	R43	0.1223	5.2950	5.4173	8.0	R43	0.8318	18.8537	25.0	R43	0.1673	2.00	3.1450	3.3123	4.00
50.0	R44	0.0261	5.2848	5.3109	8.0	R44	0.2160	14.7815	25.0	R44	0.0182	2.00	0.8848	0.9030	4.00
50.0	R45	0.0573	5.2648	5.3221	8.0	R45	0.3934	14.7815	25.0	R45	0.0435	2.00	0.8648	0.9083	4.00
50.0	R46	0.0315	5.2795	5.3110	8.0	R46	0.3775	14.7814	25.0	R46	0.0185	2.00	0.8795	0.8980	4.00
50.0	R47	0.0603	5.3130	5.3733	8.0	R47	0.3829	18.8101	25.0	R47	0.0563	2.00	0.4030	0.4593	4.00
50.0	R48	0.0288	5.3342	5.3631	8.0	R48	0.2477	18.8106	25.0	R48	0.0249	2.00	0.4242	0.4491	4.00
50.0	R49	0.0165	5.3403	5.3568	8.0	R49	0.1325	18.8060	25.0	R49	0.0127	2.00	0.4303	0.4430	4.00
50.0	R50	0.0726	5.2986	5.3712	8.0	R50	0.4418	18.8491	25.0	R50	0.0707	2.00	3.1486	3.2193	4.00
50.0	R51	0.0492	5.2986	5.3478	8.0	R51	0.4947	18.8658	25.0	R51	0.0410	2.00	0.3886	0.4297	4.00
50.0	R52	0.0539	5.2986	5.3525	8.0	R52	0.5247	18.8697	25.0	R52	0.0457	2.00	0.3886	0.4343	4.00
50.0	R53	0.0378	5.2486	5.2864	8.0	R53	0.4607	14.7818	25.0	R53	0.0233	2.00	0.8486	0.8720	4.00
50.0	R54	0.0384	5.2986	5.3370	8.0	R54	0.3903	18.8402	25.0	R54	0.0293	2.00	3.1486	3.1780	4.00
50.0	R55	0.0184	5.2486	5.2670	8.0	R55	0.2795	14.7816	25.0	R55	0.0091	2.00	0.3886	0.3978	4.00
50.0	R56	0.0202	5.2986	5.3189	8.0	R56	0.2340	18.8040	25.0	R56	0.0105	2.00	0.3886	0.3991	4.00
50.0	R57	0.0322	5.2486	5.2808	8.0	R57	0.3179	14.7832	25.0	R57	0.0189	2.00	0.3886	0.4075	4.00
50.0	R58	0.0186	5.2986	5.3173	8.0	R58	0.1691	18.8245	25.0	R58	0.0106	2.00	0.3886	0.3992	4.00
50.0	R59	0.0100	5.2486	5.2587	8.0	R59	0.1126	14.7806	25.0	R59	0.0053	2.00	0.8486	0.8539	4.00
50.0	R60	0.0363	5.2986	5.3349	8.0	R60	0.2892	18.8237	25.0	R60	0.0338	2.00	3.1486	3.1824	4.00
50.0	R61	0.0177	5.2486	5.2663	8.0	R61	0.1409	14.7812	25.0	R61	0.0098	2.00	0.7686	0.7785	4.00
50.0	R62	0.0311	5.2486	5.2798	8.0	R62	0.2558	14.7825	25.0	R62	0.0196	2.00	0.7686	0.7883	4.00
50.0	R63	0.0253	5.2986	5.3240	8.0	R63	0.2672	18.8276	25.0	R63	0.0151	2.00	0.7686	0.7837	4.00
50.0	R64	0.0283	5.2986	5.3269	8.0	R64	0.2216	18.7992	25.0	R64	0.0256	2.00	1.6086	1.6343	4.00
50.0	R65	0.0663	5.2986	5.3649	8.0	R65	0.4652	18.8434	25.0	R65	0.0739	2.00	3.1486	3.2225	4.00
50.0	R66	0.0457	5.2986	5.3443	8.0	R66	0.3793	18.8359	25.0	R66	0.0438	2.00	3.1486	3.1924	4.00
50.0	R67	0.0478	5.2986	5.3464	8.0	R67	0.3957	18.8357	25.0	R67	0.0465	2.00	3.1486	3.1951	4.00
50.0	R68	0.0458	5.2486	5.2945	8.0	R68	0.3063	14.7952	25.0	R68	0.0412	2.00	0.8486	0.8898	4.00
50.0	R69	0.0364	5.2486	5.2850	8.0	R69	0.3071	14.7829	25.0	R69	0.0325	2.00	0.8486	0.8811	4.00
50.0	R70	0.0359	5.2486	5.2845	8.0	R70	0.2670	14.7826	25.0	R70	0.0255	2.00	0.8486	0.8742	4.00

APPENDIX E

Significance of home-grown produce exposure pathway for Pb

Plant uptake of Pb from home-grown produce was not considered a complete exposure pathway because:

- According to IARC (2006), of all the heavy metals, Pb is the least available to plants. Water soluble and exchangeable Pb that is readily available for uptake by plants constitutes only about 0.1% of total Pb in most soils. In addition, Pb is very poorly transported from roots to shoots.
- The Handbook on the Toxicology of Metals (Nordberg et al. 2007) indicates the uptake pathway of Pb by roots of vegetables to be a relatively unimportant human exposure pathway. Pb is present in vegetables mainly as the result of deposition from air, rather than uptake from soil, and careful washing of dust from plants will minimise exposure.
- A literature search also indicated Pb is not readily translocated from soil to the edible part of most vegetables (Davies 1978, Hong et al. 2008, Kumar et al. 2009, Peralta-Videa et al. 2009, Ciesli'nski and Mercik 1993, Mbila and Thompson 2004)[52]. Pb uptake from soil by plants varies with plant type, different soil conditions and the species of Pb in soil. Data indicate accumulation becomes important when levels of water-soluble Pb are around 500 mg/kg [53] (Judel and Stelte 1977). Experiments by Sterrett et al. (1996) showed that, when maintaining soil pH > 6.5, application of adequate NPK fertilisers and organic composite minimised plant (lettuce) uptake of Pb from contaminated urban soils; the form of Pb was not provided by the authors.
- Regarding plant uptake of Pb in air, Lagerwerff (1971) published a study of metal uptake by radish from soil and air (grown in a heavily trafficked area) and concluded there was no significant translocation of Pb from leaves contaminated by aerial deposition to the roots, and large changes in soil Pb caused only small changes in washed radish root Pb. Nevertheless, it is apparent that plants can absorb and accumulate some forms of Pb through their leaves from atmospheric fallout. For example, tetraethyl Pb near road sides (Nasralla and Ali 1985) or Pb from smelters (Kachenko and Singh 2004) can be taken up by leaves of herbs and leafy vegetables. In these studies, care was taken to wash and remove deposited Pb on the surface of leaves. Thus in field studies conducted near atmospheric emitters of Pb, and where deposition is occurring, it is difficult to separate the relative contribution of soil and air Pb to concentrations of Pb in leaves.
- Pb associated with the Rasp Mine MOD6 Proposal is mineralised and unlikely to be water soluble.
- For the derivation of soil health investigation levels (HILs), the Australian soil National Environment Protection Measure (NEPM 2013) assumed the small amount of Pb that may be taken up into home-grown produce from contaminated residential soil is essentially accounted for in the consideration of background dietary intake, which is included in this HHRA.
- Home grown produce only makes up a small percentage of total vegetable intake by the general population. In the ABS survey of 1994 (ABS 1994), 4.3% of total fruit and 5.6% of total vegetables produced in Australia were home-grown. Broken Hill is a relatively dry region. Mean annual rainfall (Broken Hill airport) for 1947-2020 was 248 mm/year (BoM 2020). Thus the likelihood of vegetables and fruits being grown at home is lower than other parts of Australia, where rainfall is higher[54].

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[52] Plants investigated in these studies include strawberries, pakchoi, celery, hot pepper, anthem, beat, gourd, cauliflower, chilli, coriander, garlic, lufa, lady's finger, mint, tomato, aniseroot, and black snakeroot.

[53] Judel and Stelte (1977) showed at 20 mg Pb acetate/kg soil, there was a slight increase (0.1-1.6 mg Pb/kg plant) in Pb content of radish root, carrots and spinach relative to the control. This increased further at 100 mg/kg soil (0.8 – 3.7 mg Pb/kg plant) and at 500 mg/kg (9.5 – 16.3 mg Pb/kg plant).

[54] For comparison, Sydney (Observatory Hill) had an average rainfall of around 1213 mm/year between 1858 and 2020.

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APPENDIX F

Background BPb concentrations in Australia

The table below contains background BPb concentrations in Australian and international children. The information was collated in a previous risk assessment (ToxConsult 2017). An updated literature search to find additional contemporary information was conducted for this HHRA.

Background BPb concentrations in Australian and international children

Date of Study	Location	Age [n=]	Blood Pb (µg/dL)			Method of blood collection	Method of blood Pb analysis	Reference
			AM [SD]	GM	% ≥ 10µg/dL			
Australia								
2010-2013	Barwon, Victoria	0-4 yrs [523]	-	0.97	0	-	ICP-MS	Symeonides et al. (2020)
2007	Port Esperance	<6 yrs, [45] (1)	-	2.3	-	Not applicable		Gulson et al. 2009
2005	Fremantle, WA	0-5 yrs, [100]	-	1.8	0	Venous	Furnace atomic absorption spec	Guttinger et al. 2008
2004(?)	Sydney	0.29-2.4 yr, [113]	3.1 [2.45]	2.6	5	Venous	High resolution ICP-MS	Gulson et al. 2006
1997-1999	Derby, WA	<6 yrs, [95] (1997), [100] (1998), [79] (1999)	-	4.5 (1997), 5.0 (1998), 5.1 (1999)	-	Finger prick	Furnace AAS	Mak et al. 2003
1997	Queenstown	1-4 yr, [127]	7.04	5.9	14.8	Venous	Electro-thermal AAS	Menzies 1999
1997	Strahan	1-4 yr, [28]	5.59	5.15	3	Venous	Electro-thermal AAS	Menzies 1999
1996	Sydney	0.75-5 yrs [718]	-	7	16.1	Venous	AAS	Mira et al. 1996
1995	Fremantle, WA	0-5 years [164]	6.9 [4.1]	6.8	25.6	Venous	Furnace atomic absorption spec	Willis et al. 1995
1995	Australia	1-4 yr, [1575]	5.72 [3.13]	5.05	7.3	Venous	Graphite furnace AAS	Donovan et al. 1995
1991	Balmain, Sydney	9-48mths, [153]	11	-	50.6	Venous	Electro-thermal AAS	Menzies 1993

Date of Study	Location	Age [n=]	Blood Pb (μg/dL)			Method of blood collection	Method of blood Pb analysis	Reference
			AM [SD]	GM	% ≥ 10μg/dL			
1984	NW Adelaide	0-4 yr, [513]	-	16.3	-	Venous	Electro-thermal AAS	Menzies 1993
1980	Sydney	4-5 yr [400]	14	-	73	Venous	Electro-thermal AAS	Menzies 1993
1979	Melbourne	<6 yrs [62]	13.3	-	-	Venous	Electro-thermal AAS	Menzies 1993
Overseas								
2015-2016	USA	1-5 yrs [713]	-	0.758		Venous	ICP-MS or Graphite furnace AAS	CDC 2019
2013-2014	USA	1-5 yrs [818]	-	0.782	0.51[2]	Venous	ICP-MS or Graphite furnace AAS	CDC 2019
2011-2012	USA	1-5 yrs [790]	-	0.97	0.55[2]	Venous	ICP-MS or Graphite furnace AAS	CDC 2019
2012-2014	South Korea	3-5 yrs [571]	-	1.34	0	Venous	Graphite furnace AAS	Burm et al. 2016
2008	South Africa	8-10 yrs	5.6	-	4.1	Venous	ICP-MS	Bazzi et al. 2008
2007-2008	USA	1-5 yrs, [817]	-	1.5	0.9	Venous	-	CDC 2009
2007	Trelleborg, Sweden	7-11 yrs [1407]	-	1.3	0	Venous	ICP-MS	Strömberg et al. 2008
2005-2006	USA	1-5 yrs, [968]	-	1.5	-	Venous	-	CDC 2009
2003-2006	Germany	3-14 yrs [1560]	1.82	1.63	0	Venous	Electro-thermal AAS	Becker et al. 2008
2003-2004	USA	1-5 yrs, [911]	-	1.77	1.4	Venous	-	CDC 2009
2001	Czech Republic	8-10 yrs [333]	-	3.1	-	-	Electro-thermal AAS	Batáriová et al. 2006

Date of Study	Location	Age [n=]	Blood Pb (µg/dL)			Method of blood collection	Method of blood Pb analysis	Reference
			AM [SD]	GM	% ≥ 10µg/dL			
1999-2000	USA	1-5 yrs, [723]	-	2.23	1.6	Venous	-	CDC 2009
1991-1994	USA	1-5 yrs [2,392]	-	2.7	4.4	Venous	-	CDC 2009
1984-1985	Birmingham, UK	2 yrs, [97]	-	11.7	-	Venous	AAS	Davies et al 1990

- not reported; AM = arithmetic mean; SD = standard deviation; GM = geometric mean

[1] Expected background blood Pb levels for young children living in Port Esperance were estimated from Pb isotope ratio data by subtracting the mean contribution from Magellan ore from the total. Four children, whose Pb isotope ratios indicate the majority of Pb stemming from a non-Magellan metal source, were excluded from this analysis.

[2] NHANES data analysed in McClure et al (2016),

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APPENDIX G

Metal soil concentrations used in HHRA

Lead (Pb)													Annual metal deposition		Additional soil metal concentration after 5 yrs				Total soil metal concentration after 5 years remaining mine life		Total indoor dust Pb concentration after 5 years	
		Curve Number	Potential max retention after runoff begins	Annual rainfall	Avg annual surface runoff from pervious areas	Soil volumetric water content	Soil/water partition coefficient	Bulk density of soil	Soil mixing zone depth	Metal loss constant due to surface runoff	Metal soil loss constant due to all processes	Time period over which deposition occurs	S1: Current Operations (BAU)	S2: Mod6 Operations	S1: Current Operations (BAU)	S2: Mod6 Operations	Existing soil metal concentration	Existing soil metal concentration incorporating loss over 5 yrs	S1: Current Operations (BAU)	S2: Mod6 Operations	S1: Current Operations (BAU)	S2: Mod6 Operations
District	ID	CN (inches)	S (inches)	P (inch/yr)	RO (cm/yr)	θ_{SW} (mL water/cm³ soil)	Kd_s (mL water/g soil)	BD (g/cm³)	D (cm)	ksr (year⁻¹)	ks (year⁻¹)	tD (years)	$M_{ann\ dep}$ (g/m²/yr)		C_s (mg/kg)		$C_{s\_existing}$ (mg/kg)	$C_{s\_existing(end)}$ (mg/kg)	C_s (mg/kg)		Dust Pb (mg/kg)	
D1	R6	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.01447	0.01316	2.4	2.2	370	362	364.0	363.8	546.0	545.7
D1	R11	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.01063	0.00993	1.8	1.6	370	362	363.4	363.3	545.1	544.9
D1	R18	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00554	0.0051	0.9	0.8	370	362	362.5	362.5	543.8	543.7
D1	R46	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.0042	0.00385	0.7	0.6	2450	2395	2395.2	2395.2	3592.8	3592.8
D1	R53	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.0052	0.00478	0.9	0.8	370	362	362.5	362.4	543.7	543.6
D2	R43	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.02896	0.02721	4.8	4.5	735	718	723.1	722.8	1084.7	1084.3
D2	R44	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00373	0.00347	0.6	0.6	700	684	684.8	684.7	1027.2	1027.1
D2	R68	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00775	0.00736	1.3	1.2	735	718	719.6	719.6	1079.5	1079.4
D2	R69	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00627	0.0059	1.0	1.0	735	718	719.4	719.3	1079.1	1079.0
D2	R70	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00524	0.00492	0.9	0.8	735	718	719.2	719.2	1078.8	1078.8
Other (D2)	R59	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00109	0.00101	0.2	0.2	735	718	718.5	718.5	1077.8	1077.8
D3	R3	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.04588	0.04505	7.6	7.4	370	362	369.2	369.0	553.8	553.6
D3	R4	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.01942	0.01851	3.2	3.0	370	362	364.8	364.7	547.2	547.0
D3	R5	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.0153	0.0143	2.5	2.4	370	362	364.1	364.0	546.2	546.0
D3	R12	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00866	0.00819	1.4	1.3	370	362	363.1	363.0	544.6	544.5
D3	R13	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00743	0.00701	1.2	1.2	370	362	362.8	362.8	544.3	544.2
D3	R45	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00868	0.00821	1.4	1.4	700	684	685.6	685.5	1028.4	1028.3
D4	R1	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.02278	0.02231	3.8	3.7	370	362	365.4	365.3	548.1	548.0
D4	R2	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.0255	0.02491	4.2	4.1	370	362	365.8	365.7	548.7	548.6
Other (D4)	R21	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.02591	0.02497	4.3	4.1	370	362	365.9	365.7	548.8	548.6
Other (D4)	R22	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.02743	0.02598	4.5	4.3	370	362	366.1	365.9	549.2	548.9
Other (D4)	R23	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.03239	0.02981	5.3	4.9	370	362	367.0	366.5	550.4	549.8
Other (D4)	R24	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.03684	0.03358	6.1	5.5	370	362	367.7	367.2	551.5	550.7
Other (D4)	R25	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.01849	0.01748	3.0	2.9	370	362	364.7	364.5	547.0	546.8
Other (D4)	R26	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.0506	0.04598	8.3	7.6	370	362	370.0	369.2	554.9	553.8
D5	R31	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.02016	0.01881	3.3	3.1	604	590	593.6	593.4	890.5	890.1
D5	R32	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.01913	0.01775	3.2	2.9	604	590	593.5	593.3	890.2	889.9
D5	R33	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.02333	0.02067	3.8	3.4	604	590	594.2	593.7	891.3	890.6
D5	R64	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.0053	0.00483	0.9	0.8	604	590	591.2	591.1	886.8	886.7
D5	R65	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.0143	0.01319	2.4	2.2	604	590	592.7	592.5	889.0	888.8
D5	R66	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00901	0.00832	1.5	1.4	604	590	591.8	591.7	887.7	887.5
D5	R67	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00947	0.00873	1.6	1.4	604	590	591.9	591.8	887.8	887.6
D6	R10	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.01367	0.01289	2.3	2.1	1125	1100	1101.8	1101.7	1652.7	1652.5
D6	R34	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.02498	0.02358	4.1	3.9	1125	1100	1103.6	1103.4	1655.5	1655.1
D6	R35	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.02203	0.02058	3.6	3.4	1125	1100	1103.2	1102.9	1654.7	1654.4
D6	R36	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.01947	0.01805	3.2	3.0	1125	1100	1102.7	1102.5	1654.1	1653.8
D6	R37	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.01835	0.01703	3.0	2.8	1125	1100	1102.6	1102.3	1653.8	1653.5
D6	R41	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.01959	0.01852	3.2	3.1	1125	1100	1102.8	1102.6	1654.1	1653.9
D6	R42	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.02575	0.02445	4.2	4.0	1125	1100	1103.8	1103.6	1655.7	1655.3
D6	R47	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.0117	0.01091	1.9	1.8	300	293	295.1	295.0	442.7	442.5
D6	R50	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.01481	0.01382	2.4	2.3	1125	1100	1102.0	1101.8	1653.0	1652.7
Other (D6)	R27	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.06869	0.06722	11.3	11.1	1125	1100	1110.9	1110.6	1666.3	1665.9
Other (D6)	R28	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.05656	0.055	9.3	9.1	1125	1100	1108.9	1108.6	1663.3	1662.9
Other (D6)	R29	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.04417	0.04217	7.3	6.9	1125	1100	1106.8	1106.5	1660.2	1659.7
Other (D6)	R30	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.03857	0.03653	6.4	6.0	1125	1100	1105.9	1105.6	1658.8	1658.3
D7	R7	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00733	0.00683	1.2	1.1	1125	1100	1100.7	1100.7	1651.1	1651.0
D7	R9	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.01356	0.01264	2.2	2.1	1125	1100	1101.8	1101.6	1652.7	1652.4
D7	R38	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00624	0.00571	1.0	0.9	1125	1100	1100.6	1100.5	1650.8	1650.7
D7	R39	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00657	0.00604	1.1	1.0	1125	1100	1100.6	1100.5	1650.9	1650.8
D7	R40	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.01521	0.01424	2.5	2.3	1125	1100	1102.0	1101.9	1653.1	1652.8
D7	R51	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00808	0.00754	1.3	1.2	1125	1100	1100.9	1100.8	1651.3	1651.2
D7	R52	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00882	0.00821	1.5	1.4	1125	1100	1101.0	1100.9	1651.5	1651.3
D7	R57	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00432	0.00401	0.7	0.7	1125	1100	1100.2	1100.2	1650.4	1650.3
D7	R62	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00454	0.00415	0.7	0.7	1125	1100	1100.3	1100.2	1650.4	1650.3
Other (D7)	R8	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.01725	0.01599	2.8	2.6	1125	1100	1102.4	1102.2	1653.6	1653.3
D8	R55	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00211	0.00195	0.3	0.3	251	245	245.7	245.6	368.5	368.5
D8	R56	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00228	0.0021	0.4	0.3	251	245	245.7	245.7	368.5	368.5
D8	R61	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.0023	0.0021	0.4	0.3	251	245	245.7	245.7	368.5	368.5
D9	R16	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00444	0.00407	0.7	0.7	275	269	269.5	269.4	404.3	404.2
D9	R19	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00293	0.00269	0.5	0.4	275	269	269.3	269.2	403.9	403.8
D9	R20	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00281	0.0026	0.5	0.4	275	269	269.2	269.2	403.9	403.8
D9	R48	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00519	0.00477	0.9	0.8	250	244	245.2	245.1	367.8	367.7
D9	R49	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00261	0.0024	0.4	0.4	80	78	78.6	78.6	117.9	117.9
D9	R60	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00697	0.0064	1.1	1.1	275	269	269.9	269.8	404.9	404.7
D10	R14	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00861	0.00808	1.4	1.3	343	335	336.7	336.6	505.0	504.9
D10	R15	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00337	0.00312	0.6	0.5	343	335	335.8	335.7	503.7	503.6
D10	R17	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00741	0.00691	1.2	1.1	343	335	336.5	336.4	504.7	504.6
D10	R54	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00614	0.00571	1.0	0.9	343	335	336.2	336.2	504.4	504.3
D10	R58	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.0022	0.00204	0.4	0.3	343	335	335.6	335.6	503.4	503.4
D10	R63	61	6.39	9.8	12.4	0.2	900	1.5	2	0.0046	0.0046	5	0.00323	0.00299	0.5	0.5	343	335	335.8	335.7	503.7	503.6

Arsenic (As)		Curve Number	Potential max retention after runoff begins	Annual rainfall	Avg annual surface runoff from pervious areas	Soil volumetric water content	Soil/water partition coefficient	Bulk density of soil	Soil mixing zone depth	Metal loss constant due to surface runoff	Metal soil loss constant due to all processes	Time period over which deposition occurs	Annual metal deposition: S1: Current Operations (BAU)	Annual metal deposition: S2: Mod6 Operations	Additional soil metal concentration after 5 yrs: S1: Current Operations (BAU)	Additional soil metal concentration after 5 yrs: S2: Mod6 Operations	Existing soil metal concentration	Existing soil metal concentration incorporating loss over 5 yrs
District	ID	CN (inches)	S (inches)	P (inch/yr)	RO (cm/yr)	θ_{SW} (mL water/cm³ soil)	Kd_s (mL water/g soil)	BD (g/cm³)	D (cm)	ksr (year⁻¹)	ks (year⁻¹)	tD (years)	$M_{ann\ dep}$ (g/m²/yr)		C_s (mg/kg)		$C_{s\_existing}$ (mg/kg)	$C_{s\_existing(end)}$ (mg/kg)
D1	R6	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000142	0.000129	0.017	0.015	7	3
D1	R11	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000105	0.000098	0.012	0.012	7	3
D1	R18	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000055	0.000050	0.007	0.006	7	3
D1	R46	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000041	0.000038	0.005	0.005	7	3
D1	R53	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000051	0.000047	0.006	0.006	7	3
D2	R43	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000285	0.000268	0.034	0.032	12	6
D2	R44	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000037	0.000034	0.004	0.004	12	6
D2	R68	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000076	0.000072	0.009	0.009	12	6
D2	R69	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000062	0.000058	0.007	0.007	12	6
D2	R70	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000052	0.000048	0.006	0.006	12	6
Other (D2)	R59	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000011	0.000010	0.001	0.001	12	6
D3	R3	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000451	0.000443	0.054	0.053	12	6
D3	R4	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000191	0.000182	0.023	0.022	12	6
D3	R5	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000151	0.000141	0.018	0.017	12	6
D3	R12	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000085	0.000081	0.010	0.010	12	6
D3	R13	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000073	0.000069	0.009	0.008	12	6
D3	R45	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000085	0.000081	0.010	0.010	12	6
D4	R1	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000224	0.000219	0.027	0.026	12	6
D4	R2	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000251	0.000245	0.030	0.029	12	6
Other (D4)	R21	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000255	0.000246	0.030	0.029	12	6
Other (D4)	R22	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000270	0.000256	0.032	0.031	12	6
Other (D4)	R23	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000319	0.000293	0.038	0.035	12	6
Other (D4)	R24	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000362	0.000330	0.043	0.039	12	6
Other (D4)	R25	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000182	0.000172	0.022	0.021	12	6
Other (D4)	R26	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000498	0.000452	0.059	0.054	12	6
D5	R31	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000198	0.000185	0.024	0.022	11	5
D5	R32	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000188	0.000175	0.022	0.021	11	5
D5	R33	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000230	0.000203	0.027	0.024	11	5
D5	R64	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000052	0.000048	0.006	0.006	11	5
D5	R65	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000141	0.000130	0.017	0.016	11	5
D5	R66	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000089	0.000082	0.011	0.010	11	5
D5	R67	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000093	0.000086	0.011	0.010	11	5
D6	R10	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000134	0.000127	0.016	0.015	35	17
D6	R34	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000246	0.000232	0.029	0.028	35	17
D6	R35	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000217	0.000202	0.026	0.024	35	17
D6	R36	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000192	0.000178	0.023	0.021	35	17
D6	R37	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000181	0.000168	0.022	0.020	35	17
D6	R41	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000193	0.000182	0.023	0.022	35	17
D6	R42	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000253	0.000241	0.030	0.029	35	17
D6	R47	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000115	0.000107	0.014	0.013	35	17
D6	R50	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000146	0.000136	0.017	0.016	35	17
Other (D6)	R27	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000676	0.000661	0.081	0.079	35	17
Other (D6)	R28	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000556	0.000541	0.066	0.065	35	17
Other (D6)	R29	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000435	0.000415	0.052	0.050	35	17
Other (D6)	R30	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000379	0.000359	0.045	0.043	35	17
D7	R7	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000072	0.000067	0.009	0.008	35	17
D7	R9	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000133	0.000124	0.016	0.015	35	17
D7	R38	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000061	0.000056	0.007	0.007	35	17
D7	R39	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000065	0.000059	0.008	0.007	35	17
D7	R40	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000150	0.000140	0.018	0.017	35	17
D7	R51	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000079	0.000074	0.009	0.009	35	17
D7	R52	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000087	0.000081	0.010	0.010	35	17
D7	R57	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000043	0.000039	0.005	0.005	35	17
D7	R62	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000045	0.000041	0.005	0.005	35	17
Other (D7)	R8	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000170	0.000157	0.020	0.019	35	17
D8	R55	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000021	0.000019	0.002	0.002	12	6
D8	R56	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000022	0.000021	0.003	0.002	12	6
D8	R61	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000023	0.000021	0.003	0.002	12	6
D9	R16	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000044	0.000040	0.005	0.005	12	6
D9	R19	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000029	0.000026	0.003	0.003	12	6
D9	R20	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000028	0.000026	0.003	0.003	12	6
D9	R48	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000051	0.000047	0.006	0.006	12	6
D9	R49	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000026	0.000024	0.003	0.003	12	6
D9	R60	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000069	0.000063	0.008	0.008	12	6
D10	R14	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000085	0.000079	0.010	0.009	12	6
D10	R15	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000033	0.000031	0.004	0.004	12	6
D10	R17	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000073	0.000068	0.009	0.008	12	6
D10	R54	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000060	0.000056	0.007	0.007	12	6
D10	R58	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000022	0.000020	0.003	0.002	12	6
D10	R63	61	6.39	9.8	12.4	0.2	29	1.5	2	0.1415	0.1415	5	0.000032	0.000029	0.004	0.004	12	6

Cadmium (Cd)													Annual metal deposition		Additional soil metal concentration after 5 yrs			
		Curve Number	Potential max retention after runoff begins	Annual rainfall	Avg annual surface runoff from pervious areas	Soil volumetric water content	Soil/water partition coefficient	Bulk density of soil	Soil mixing zone depth	Metal loss constant due to surface runoff	Metal soil loss constant due to all processes	Time period over which deposition occurs	S1: Current Operations (BAU)	S2: Mod6 Operations	S1: Current Operations (BAU)	S2: Mod6 Operations	Existing soil metal concentration	Existing soil metal concentration incorporating loss over 5 yrs
District	ID	CN (inches)	S (inches)	P (inch/yr)	RO (cm/yr)	θ_{SW} (mL water/cm^3 soil)	Kd_s (mL water/g soil)	BD (g/cm^3)	D (cm)	ksr (year^{-1})	ks (year^{-1})	tD (years)	$M_{ann\ dep}$ (g/m^2/yr)		C_s (mg/kg)		$C_{s\_existing}$ (mg/kg)	$C_{s\_existing(end)}$ (mg/kg)
D1	R6	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000057	0.000052	0.0084	0.0076	0.9	0.68
D1	R11	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000042	0.000039	0.0061	0.0057	0.9	0.68
D1	R18	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000022	0.000020	0.0032	0.0030	0.9	0.68
D1	R46	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000017	0.000015	0.0024	0.0022	0.9	0.68
D1	R53	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000021	0.000019	0.0030	0.0028	0.9	0.68
D2	R43	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000115	0.000108	0.0168	0.0157	1.3	0.99
D2	R44	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000015	0.000014	0.0022	0.0020	1.3	0.99
D2	R68	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000031	0.000029	0.0045	0.0043	1.3	0.99
D2	R69	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000025	0.000023	0.0036	0.0034	1.3	0.99
D2	R70	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000021	0.000020	0.0030	0.0028	1.3	0.99
Other (D2)	R59	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000004	0.000004	0.0006	0.0006	1.3	0.99
D3	R3	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000182	0.000179	0.0265	0.0261	1	0.76
D3	R4	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000077	0.000073	0.0112	0.0107	1	0.76
D3	R5	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000061	0.000057	0.0089	0.0083	1	0.76
D3	R12	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000034	0.000033	0.0050	0.0047	1	0.76
D3	R13	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000029	0.000028	0.0043	0.0041	1	0.76
D3	R45	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000034	0.000033	0.0050	0.0047	1	0.76
D4	R1	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000090	0.000089	0.0132	0.0129	2	1.52
D4	R2	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000101	0.000099	0.0148	0.0144	2	1.52
Other (D4)	R21	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000103	0.000099	0.0150	0.0144	2	1.52
Other (D4)	R22	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000109	0.000103	0.0159	0.0150	2	1.52
Other (D4)	R23	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000129	0.000118	0.0187	0.0172	2	1.52
Other (D4)	R24	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000146	0.000133	0.0213	0.0194	2	1.52
Other (D4)	R25	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000073	0.000069	0.0107	0.0101	2	1.52
Other (D4)	R26	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000201	0.000182	0.0293	0.0266	2	1.52
D5	R31	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000080	0.000075	0.0117	0.0109	4.7	3.57
D5	R32	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000076	0.000070	0.0111	0.0103	4.7	3.57
D5	R33	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000093	0.000082	0.0135	0.0120	4.7	3.57
D5	R64	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000021	0.000019	0.0031	0.0028	4.7	3.57
D5	R65	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000057	0.000052	0.0083	0.0076	4.7	3.57
D5	R66	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000036	0.000033	0.0052	0.0048	4.7	3.57
D5	R67	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000038	0.000035	0.0055	0.0051	4.7	3.57
D6	R10	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000054	0.000051	0.0079	0.0075	5	3.80
D6	R34	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000099	0.000094	0.0145	0.0136	5	3.80
D6	R35	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000087	0.000082	0.0127	0.0119	5	3.80
D6	R36	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000077	0.000072	0.0113	0.0104	5	3.80
D6	R37	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000073	0.000068	0.0106	0.0099	5	3.80
D6	R41	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000078	0.000074	0.0113	0.0107	5	3.80
D6	R42	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000102	0.000097	0.0149	0.0141	5	3.80
D6	R47	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000046	0.000043	0.0068	0.0063	5	3.80
D6	R50	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000059	0.000055	0.0086	0.0080	5	3.80
Other (D6)	R27	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000273	0.000267	0.0397	0.0389	5	3.80
Other (D6)	R28	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000224	0.000218	0.0327	0.0318	5	3.80
Other (D6)	R29	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000175	0.000167	0.0256	0.0244	5	3.80
Other (D6)	R30	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000153	0.000145	0.0223	0.0211	5	3.80
D7	R7	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000029	0.000027	0.0042	0.0040	5	3.80
D7	R9	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000054	0.000050	0.0078	0.0073	5	3.80
D7	R38	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000025	0.000023	0.0036	0.0033	5	3.80
D7	R39	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000026	0.000024	0.0038	0.0035	5	3.80
D7	R40	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000060	0.000057	0.0088	0.0082	5	3.80
D7	R51	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000032	0.000030	0.0047	0.0044	5	3.80
D7	R52	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000035	0.000033	0.0051	0.0047	5	3.80
D7	R57	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000017	0.000016	0.0025	0.0023	5	3.80
D7	R62	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000018	0.000016	0.0026	0.0024	5	3.80
Other (D7)	R8	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000068	0.000063	0.0100	0.0093	5	3.80
D8	R55	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000008	0.000008	0.0012	0.0011	1.6	1.22
D8	R56	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000009	0.000008	0.0013	0.0012	1.6	1.22
D8	R61	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000009	0.000008	0.0013	0.0012	1.6	1.22
D9	R16	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000018	0.000016	0.0026	0.0024	1.6	1.22
D9	R19	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000012	0.000011	0.0017	0.0016	1.6	1.22
D9	R20	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000011	0.000010	0.0016	0.0015	1.6	1.22
D9	R48	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000021	0.000019	0.0030	0.0028	1.6	1.22
D9	R49	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000010	0.000010	0.0015	0.0014	1.6	1.22
D9	R60	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000028	0.000025	0.0040	0.0037	1.6	1.22
D10	R14	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000034	0.000032	0.0050	0.0047	1.3	0.99
D10	R15	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000013	0.000012	0.0019	0.0018	1.3	0.99
D10	R17	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000029	0.000027	0.0043	0.0040	1.3	0.99
D10	R54	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000024	0.000023	0.0036	0.0033	1.3	0.99
D10	R58	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000009	0.000008	0.0013	0.0012	1.3	0.99
D10	R63	61	6.39	9.8	12.4	0.2	75	1.5	2	0.0549	0.0549	5	0.000013	0.000012	0.0019	0.0017	1.3	0.99

Chromium (Cr)													Annual metal deposition		Additional soil metal concentration after 5 yrs			
		Curve Number	Potential max retention after runoff begins	Annual rainfall	Avg annual surface runoff from pervious areas	Soil volumetric water content	Soil/water partition coefficient	Bulk density of soil	Soil mixing zone depth	Metal loss constant due to surface runoff	Metal soil loss constant due to all processes	Time period over which deposition occurs	S1: Current Operations (BAU)	S2: Mod6 Operations	S1: Current Operations (BAU)	S2: Mod6 Operations	Existing soil metal concentration	Existing soil metal concentration incorporating loss over 5 yrs
District	ID	CN (inches)	S (inches)	P (inch/yr)	RO (cm/yr)	θ_{sw} (mL water/cm^3 soil)	Kd$_s$ (mL water/g soil)	BD (g/cm^3)	D (cm)	ksr (year^{-1})	ks (year^{-1})	tD (years)	$M_{ann\ dep}$ (g/m^2/yr)		C_s (mg/kg)		$C_{s\_existing}$ (mg/kg)	$C_{s\_existing(end)}$ (mg/kg)
D1	R6	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000051	0.0000046	0.0008	0.00077	23	23
D1	R11	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000037	0.0000035	0.0006	0.00058	23	23
D1	R18	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000019	0.0000018	0.0003	0.00030	23	23
D1	R46	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000015	0.0000014	0.0002	0.00023	23	23
D1	R53	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000018	0.0000017	0.0003	0.00028	23	23
D2	R43	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000102	0.0000096	0.0017	0.00159	27	27
D2	R44	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000013	0.0000012	0.0002	0.00020	27	27
D2	R68	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000027	0.0000026	0.0005	0.00043	27	27
D2	R69	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000022	0.0000021	0.0004	0.00035	27	27
D2	R70	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000018	0.0000017	0.0003	0.00029	27	27
Other (D2)	R59	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000004	0.0000004	0.0001	0.00006	27	27
D3	R3	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000161	0.0000158	0.0027	0.00264	24	24
D3	R4	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000068	0.0000065	0.0011	0.00108	24	24
D3	R5	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000054	0.0000050	0.0009	0.00084	24	24
D3	R12	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000030	0.0000029	0.0005	0.00048	24	24
D3	R13	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000026	0.0000025	0.0004	0.00041	24	24
D3	R45	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000030	0.0000029	0.0005	0.00048	24	24
D4	R1	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000080	0.0000078	0.0013	0.00131	19	19
D4	R2	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000090	0.0000087	0.0015	0.00146	19	19
Other (D4)	R21	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000091	0.0000088	0.0015	0.00146	19	19
Other (D4)	R22	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000096	0.0000091	0.0016	0.00152	19	19
Other (D4)	R23	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000114	0.0000105	0.0019	0.00174	19	19
Other (D4)	R24	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000129	0.0000118	0.0022	0.00196	19	19
Other (D4)	R25	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000065	0.0000061	0.0011	0.00102	19	19
Other (D4)	R26	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000178	0.0000161	0.0030	0.00269	19	19
D5	R31	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000071	0.0000066	0.0012	0.00110	24	24
D5	R32	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000067	0.0000062	0.0011	0.00104	24	24
D5	R33	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000082	0.0000073	0.0014	0.00121	24	24
D5	R64	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000019	0.0000017	0.0003	0.00028	24	24
D5	R65	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000050	0.0000046	0.0008	0.00077	24	24
D5	R66	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000032	0.0000029	0.0005	0.00049	24	24
D5	R67	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000033	0.0000031	0.0006	0.00051	24	24
D6	R10	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000048	0.0000045	0.0008	0.00075	24	24
D6	R34	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000088	0.0000083	0.0015	0.00138	24	24
D6	R35	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000077	0.0000072	0.0013	0.00120	24	24
D6	R36	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000068	0.0000063	0.0011	0.00106	24	24
D6	R37	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000064	0.0000060	0.0011	0.00100	24	24
D6	R41	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000069	0.0000065	0.0011	0.00108	24	24
D6	R42	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000090	0.0000086	0.0015	0.00143	24	24
D6	R47	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000041	0.0000038	0.0007	0.00064	24	24
D6	R50	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000052	0.0000049	0.0009	0.00081	24	24
Other (D6)	R27	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000241	0.0000236	0.0040	0.00393	24	24
Other (D6)	R28	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000199	0.0000193	0.0033	0.00322	24	24
Other (D6)	R29	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000155	0.0000148	0.0026	0.00247	24	24
Other (D6)	R30	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000135	0.0000128	0.0023	0.00214	24	24
D7	R7	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000026	0.0000024	0.0004	0.00040	24	24
D7	R9	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000048	0.0000044	0.0008	0.00074	24	24
D7	R38	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000022	0.0000020	0.0004	0.00033	24	24
D7	R39	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000023	0.0000021	0.0004	0.00035	24	24
D7	R40	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000053	0.0000050	0.0009	0.00083	24	24
D7	R51	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000028	0.0000026	0.0005	0.00044	24	24
D7	R52	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000031	0.0000029	0.0005	0.00048	24	24
D7	R57	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000015	0.0000014	0.0003	0.00023	24	24
D7	R62	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000016	0.0000015	0.0003	0.00024	24	24
Other (D7)	R8	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000061	0.0000056	0.0010	0.00094	24	24
D8	R55	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000007	0.0000007	0.0001	0.00011	24	24
D8	R56	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000008	0.0000007	0.0001	0.00012	24	24
D8	R61	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000008	0.0000007	0.0001	0.00012	24	24
D9	R16	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000016	0.0000014	0.0003	0.00024	24	24
D9	R19	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000010	0.0000009	0.0002	0.00016	24	24
D9	R20	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000010	0.0000009	0.0002	0.00015	24	24
D9	R48	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000018	0.0000017	0.0003	0.00028	24	24
D9	R49	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000009	0.0000008	0.0002	0.00014	24	24
D9	R60	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000024	0.0000022	0.0004	0.00037	24	24
D10	R14	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000030	0.0000028	0.0005	0.00047	27	27
D10	R15	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000012	0.0000011	0.0002	0.00018	27	27
D10	R17	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000026	0.0000024	0.0004	0.00040	27	27
D10	R54	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000022	0.0000020	0.0004	0.00033	27	27
D10	R58	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000008	0.0000007	0.0001	0.00012	27	27
D10	R63	61	6.39	9.8	12.4	0.2	1800000	1.5	2	0	0	5	0.0000011	0.0000010	0.0002	0.00017	27	27

Iron (Fe)													Annual metal deposition		Additional soil metal concentration after 5 yrs			
		Curve Number	Potential max retention after runoff begins	Annual rainfall	Avg annual surface runoff from pervious areas	Soil volumetric water content	Soil/water partition coefficient	Bulk density of soil	Soil mixing zone depth	Metal loss constant due to surface runoff	Metal soil loss constant due to all processes	Time period over which deposition occurs	S1: Current Operations (BAU)	S2: Mod6 Operations	S1: Current Operations (BAU)	S2: Mod6 Operations	Existing soil metal concentration	Existing soil metal concentration incorporating loss over 5 yrs
District	ID	CN (inches)	S (inches)	P (inch/yr)	RO (cm/yr)	θ_{sw} (mL water/cm^3 soil)	Kd$_s$ (mL water/g soil)	BD (g/cm^3)	D (cm)	ksr (year^{-1})	ks (year^{-1})	tD (years)	$M_{ann\ dep}$ (g/m^2/yr)		C_s (mg/kg)		$C_{s\_existing}$ (mg/kg)	$C_{s\_existing(end)}$ (mg/kg)
D1	R6	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.089	0.081	10	9	27500	12112
D1	R11	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.066	0.061	7	7	27500	12112
D1	R18	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.034	0.031	4	4	27500	12112
D1	R46	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.026	0.024	3	3	27500	12112
D1	R53	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.032	0.030	4	3	27500	12112
D2	R43	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.179	0.168	20	19	28317	12471
D2	R44	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.023	0.021	3	2	28317	12471
D2	R68	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.048	0.045	5	5	28317	12471
D2	R69	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.039	0.036	4	4	28317	12471
D2	R70	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.032	0.030	4	3	28317	12471
Other (D2)	R59	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.007	0.006	1	1	28317	12471
D3	R3	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.283	0.278	32	32	26550	11693
D3	R4	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.120	0.114	14	13	26550	11693
D3	R5	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.094	0.088	11	10	26550	11693
D3	R12	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.053	0.051	6	6	26550	11693
D3	R13	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.046	0.043	5	5	26550	11693
D3	R45	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.054	0.051	6	6	26550	11693
D4	R1	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.141	0.138	16	16	21700	9557
D4	R2	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.157	0.154	18	17	21700	9557
Other (D4)	R21	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.160	0.154	18	18	21700	9557
Other (D4)	R22	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.169	0.160	19	18	21700	9557
Other (D4)	R23	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.200	0.184	23	21	21700	9557
Other (D4)	R24	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.227	0.207	26	24	21700	9557
Other (D4)	R25	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.114	0.108	13	12	21700	9557
Other (D4)	R26	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.312	0.284	36	32	21700	9557
D5	R31	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.124	0.116	14	13	26983	11884
D5	R32	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.118	0.110	13	12	26983	11884
D5	R33	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.144	0.128	16	15	26983	11884
D5	R64	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.033	0.030	4	3	26983	11884
D5	R65	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.088	0.081	10	9	26983	11884
D5	R66	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.056	0.051	6	6	26983	11884
D5	R67	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.058	0.054	7	6	26983	11884
D6	R10	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.084	0.080	10	9	31650	13939
D6	R34	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.154	0.146	18	17	31650	13939
D6	R35	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.136	0.127	15	14	31650	13939
D6	R36	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.120	0.111	14	13	31650	13939
D6	R37	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.113	0.105	13	12	31650	13939
D6	R41	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.121	0.114	14	13	31650	13939
D6	R42	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.159	0.151	18	17	31650	13939
D6	R47	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.072	0.067	8	8	31650	13939
D6	R50	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.091	0.085	10	10	31650	13939
Other (D6)	R27	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.424	0.415	48	47	31650	13939
Other (D6)	R28	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.349	0.339	40	39	31650	13939
Other (D6)	R29	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.273	0.260	31	30	31650	13939
Other (D6)	R30	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.238	0.225	27	26	31650	13939
D7	R7	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.045	0.042	5	5	31650	13939
D7	R9	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.084	0.078	10	9	31650	13939
D7	R38	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.039	0.035	4	4	31650	13939
D7	R39	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.041	0.037	5	4	31650	13939
D7	R40	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.094	0.088	11	10	31650	13939
D7	R51	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.050	0.047	6	5	31650	13939
D7	R52	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.054	0.051	6	6	31650	13939
D7	R57	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.027	0.025	3	3	31650	13939
D7	R62	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.028	0.026	3	3	31650	13939
Other (D7)	R8	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.106	0.099	12	11	31650	13939
D8	R55	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.013	0.012	1	1	27350	12045
D8	R56	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.014	0.013	2	1	27350	12045
D8	R61	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.014	0.013	2	1	27350	12045
D9	R16	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.027	0.025	3	3	27350	12045
D9	R19	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.018	0.017	2	2	27350	12045
D9	R20	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.017	0.016	2	2	27350	12045
D9	R48	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.032	0.029	4	3	27350	12045
D9	R49	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.016	0.015	2	2	27350	12045
D9	R60	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.043	0.040	5	4	27350	12045
D10	R14	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.053	0.050	6	6	28317	12471
D10	R15	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.021	0.019	2	2	28317	12471
D10	R17	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.046	0.043	5	5	28317	12471
D10	R54	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.038	0.035	4	4	28317	12471
D10	R58	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.014	0.013	2	1	28317	12471
D10	R63	61	6.39	9.8	12.4	0.2	25	1.5	2	0.16	0.16	5	0.020	0.018	2	2	28317	12471

Manganese (Mn)													Annual metal deposition		Additional soil metal concentration after 5 yrs			
		Curve Number	Potential max retention after runoff begins	Annual rainfall	Avg annual surface runoff from pervious areas	Soil volumetric water content	Soil/water partition coefficient	Bulk density of soil	Soil mixing zone depth	Metal loss constant due to surface runoff	Metal soil loss constant due to all processes	Time period over which deposition occurs	S1: Current Operations (BAU)	S2: Mod6 Operations	S1: Current Operations (BAU)	S2: Mod6 Operations	Existing soil metal concentration	Existing soil metal concentration incorporating loss over 5 yrs
District	ID	CN (inches)	S (inches)	P (inch/yr)	RO (cm/yr)	θ_{SW} (mL water/cm³ soil)	Kd_s (mL water/g soil)	BD (g/cm³)	D (cm)	ksr (year⁻¹)	ks (year⁻¹)	tD (years)	$M_{ann\ dep}$ (g/m²/yr)		C_s (mg/kg)		$C_{s\_existing}$ (mg/kg)	$C_{s\_existing(end)}$ (mg/kg)
D1	R6	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00024	0.00022	0.035	0.032	431	314
D1	R11	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00018	0.00017	0.026	0.024	431	314
D1	R18	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00009	0.00009	0.013	0.012	431	314
D1	R46	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00007	0.00006	0.010	0.009	431	314
D1	R53	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00009	0.00008	0.013	0.011	431	314
D2	R43	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00049	0.00046	0.070	0.065	409	298
D2	R44	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00006	0.00006	0.009	0.008	409	298
D2	R68	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00013	0.00012	0.019	0.018	409	298
D2	R69	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00011	0.00010	0.015	0.014	409	298
D2	R70	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00009	0.00008	0.013	0.012	409	298
Other (D2)	R59	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00002	0.00002	0.003	0.002	409	298
D3	R3	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00077	0.00076	0.110	0.108	450	328
D3	R4	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00033	0.00031	0.047	0.045	450	328
D3	R5	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00026	0.00024	0.037	0.034	450	328
D3	R12	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00015	0.00014	0.021	0.020	450	328
D3	R13	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00013	0.00012	0.018	0.017	450	328
D3	R45	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00015	0.00014	0.021	0.020	450	328
D4	R1	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00038	0.00038	0.055	0.054	640	466
D4	R2	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00043	0.00042	0.061	0.060	640	466
Other (D4)	R21	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00044	0.00042	0.062	0.060	640	466
Other (D4)	R22	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00046	0.00044	0.066	0.062	640	466
Other (D4)	R23	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00055	0.00050	0.078	0.072	640	466
Other (D4)	R24	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00062	0.00057	0.089	0.081	640	466
Other (D4)	R25	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00031	0.00029	0.044	0.042	640	466
Other (D4)	R26	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00085	0.00077	0.122	0.111	640	466
D5	R31	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00034	0.00032	0.048	0.045	573	418
D5	R32	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00032	0.00030	0.046	0.043	573	418
D5	R33	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00039	0.00035	0.056	0.050	573	418
D5	R64	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00009	0.00008	0.013	0.012	573	418
D5	R65	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00024	0.00022	0.034	0.032	573	418
D5	R66	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00015	0.00014	0.022	0.020	573	418
D5	R67	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00016	0.00015	0.023	0.021	573	418
D6	R10	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00023	0.00022	0.033	0.031	1490	1086
D6	R34	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00042	0.00040	0.060	0.057	1490	1086
D6	R35	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00037	0.00035	0.053	0.049	1490	1086
D6	R36	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00033	0.00030	0.047	0.043	1490	1086
D6	R37	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00031	0.00029	0.044	0.041	1490	1086
D6	R41	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00033	0.00031	0.047	0.045	1490	1086
D6	R42	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00043	0.00041	0.062	0.059	1490	1086
D6	R47	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00020	0.00018	0.028	0.026	1490	1086
D6	R50	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00025	0.00023	0.036	0.033	1490	1086
Other (D6)	R27	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00116	0.00113	0.165	0.162	1490	1086
Other (D6)	R28	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00095	0.00093	0.136	0.132	1490	1086
Other (D6)	R29	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00074	0.00071	0.106	0.101	1490	1086
Other (D6)	R30	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00065	0.00061	0.093	0.088	1490	1086
D7	R7	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00012	0.00011	0.018	0.016	1490	1086
D7	R9	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00023	0.00021	0.033	0.030	1490	1086
D7	R38	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00011	0.00010	0.015	0.014	1490	1086
D7	R39	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00011	0.00010	0.016	0.015	1490	1086
D7	R40	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00026	0.00024	0.037	0.034	1490	1086
D7	R51	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00014	0.00013	0.019	0.018	1490	1086
D7	R52	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00015	0.00014	0.021	0.020	1490	1086
D7	R57	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00007	0.00007	0.010	0.010	1490	1086
D7	R62	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00008	0.00007	0.011	0.010	1490	1086
Other (D7)	R8	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00029	0.00027	0.041	0.038	1490	1086
D8	R55	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00004	0.00003	0.005	0.005	390	284
D8	R56	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00004	0.00004	0.005	0.005	390	284
D8	R61	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00004	0.00004	0.006	0.005	390	284
D9	R16	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00007	0.00007	0.011	0.010	390	284
D9	R19	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00005	0.00005	0.007	0.006	390	284
D9	R20	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00005	0.00004	0.007	0.006	390	284
D9	R48	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00009	0.00008	0.012	0.011	390	284
D9	R49	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00004	0.00004	0.006	0.006	390	284
D9	R60	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00012	0.00011	0.017	0.015	390	284
D10	R14	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00014	0.00014	0.021	0.019	409	298
D10	R15	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00006	0.00005	0.008	0.008	409	298
D10	R17	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00012	0.00012	0.018	0.017	409	298
D10	R54	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00010	0.00010	0.015	0.014	409	298
D10	R58	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00004	0.00003	0.005	0.005	409	298
D10	R63	61	6.39	9.8	12.4	0.2	65	1.5	2	0.06	0.06	5	0.00005	0.00005	0.008	0.007	409	298

Antimony (Sb)													Annual metal deposition		Additional soil metal concentration after 5 yrs			
		Curve Number	Potential max retention after runoff begins	Annual rainfall	Avg annual surface runoff from pervious areas	Soil volumetric water content	Soil/water partition coefficient	Bulk density of soil	Soil mixing zone depth	Metal loss constant due to surface runoff	Metal soil loss constant due to all processes	Time period over which deposition occurs	S1: Current Operations (BAU)	S2: Mod6 Operations	S1: Current Operations (BAU)	S2: Mod6 Operations	Existing soil metal concentration	Existing soil metal concentration incorporating loss over 5 yrs
District	ID	CN (inches)	S (inches)	P (inch/yr)	RO (cm/yr)	θ_{SW} (mL water/cm^3 soil)	Kd_s (mL water/g soil)	BD (g/cm^3)	D (cm)	ksr (year^{-1})	ks (year^{-1})	tD (years)	$M_{ann\ dep}$ (g/m^2/yr)		C_s (mg/kg)		$C_{s\_existing}$ (mg/kg)	$C_{s\_existing(end)}$ (mg/kg)
D1	R6	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00003	0.000023	0.003	0.0031	Not Av	Not Av
D1	R11	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00002	0.000018	0.003	0.0024	Not Av	Not Av
D1	R18	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00001	0.000009	0.001	0.0012	Not Av	Not Av
D1	R46	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00001	0.000007	0.001	0.0009	Not Av	Not Av
D1	R53	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00001	0.000008	0.001	0.0011	Not Av	Not Av
D2	R43	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00005	0.000048	0.007	0.0065	Not Av	Not Av
D2	R44	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00001	0.000006	0.001	0.0008	Not Av	Not Av
D2	R68	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00001	0.000013	0.002	0.0018	Not Av	Not Av
D2	R69	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00001	0.000010	0.001	0.0014	Not Av	Not Av
D2	R70	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00001	0.000009	0.001	0.0012	Not Av	Not Av
Other (D2)	R59	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00000	0.000002	0.000	0.0002	Not Av	Not Av
D3	R3	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00008	0.000080	0.011	0.0107	Not Av	Not Av
D3	R4	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00003	0.000033	0.005	0.0044	Not Av	Not Av
D3	R5	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00003	0.000025	0.004	0.0034	Not Av	Not Av
D3	R12	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00002	0.000015	0.002	0.0019	Not Av	Not Av
D3	R13	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00001	0.000012	0.002	0.0017	Not Av	Not Av
D3	R45	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00002	0.000015	0.002	0.0020	Not Av	Not Av
D4	R1	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00004	0.000040	0.005	0.0053	Not Av	Not Av
D4	R2	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00005	0.000044	0.006	0.0059	Not Av	Not Av
Other (D4)	R21	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00005	0.000044	0.006	0.0059	Not Av	Not Av
Other (D4)	R22	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00005	0.000046	0.007	0.0062	Not Av	Not Av
Other (D4)	R23	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00006	0.000053	0.008	0.0071	Not Av	Not Av
Other (D4)	R24	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00007	0.000060	0.009	0.0080	Not Av	Not Av
Other (D4)	R25	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00003	0.000031	0.004	0.0042	Not Av	Not Av
Other (D4)	R26	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00009	0.000082	0.012	0.0109	Not Av	Not Av
D5	R31	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00004	0.000033	0.005	0.0045	Not Av	Not Av
D5	R32	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00003	0.000032	0.005	0.0042	Not Av	Not Av
D5	R33	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00004	0.000037	0.006	0.0049	Not Av	Not Av
D5	R64	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00001	0.000009	0.001	0.0011	Not Av	Not Av
D5	R65	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00003	0.000023	0.003	0.0031	Not Av	Not Av
D5	R66	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00002	0.000015	0.002	0.0020	Not Av	Not Av
D5	R67	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00002	0.000016	0.002	0.0021	Not Av	Not Av
D6	R10	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00002	0.000023	0.003	0.0031	Not Av	Not Av
D6	R34	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00004	0.000042	0.006	0.0056	Not Av	Not Av
D6	R35	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00004	0.000037	0.005	0.0049	Not Av	Not Av
D6	R36	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00003	0.000032	0.005	0.0043	Not Av	Not Av
D6	R37	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00003	0.000030	0.004	0.0041	Not Av	Not Av
D6	R41	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00003	0.000033	0.005	0.0044	Not Av	Not Av
D6	R42	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00005	0.000043	0.006	0.0058	Not Av	Not Av
D6	R47	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00002	0.000019	0.003	0.0026	Not Av	Not Av
D6	R50	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00003	0.000025	0.004	0.0033	Not Av	Not Av
Other (D6)	R27	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00012	0.000119	0.016	0.0160	Not Av	Not Av
Other (D6)	R28	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00010	0.000098	0.013	0.0131	Not Av	Not Av
Other (D6)	R29	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00008	0.000075	0.011	0.0100	Not Av	Not Av
Other (D6)	R30	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00007	0.000065	0.009	0.0087	Not Av	Not Av
D7	R7	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00001	0.000012	0.002	0.0016	Not Av	Not Av
D7	R9	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00002	0.000022	0.003	0.0030	Not Av	Not Av
D7	R38	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00001	0.000010	0.001	0.0014	Not Av	Not Av
D7	R39	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00001	0.000011	0.002	0.0014	Not Av	Not Av
D7	R40	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00003	0.000025	0.004	0.0034	Not Av	Not Av
D7	R51	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00001	0.000013	0.002	0.0018	Not Av	Not Av
D7	R52	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00002	0.000015	0.002	0.0020	Not Av	Not Av
D7	R57	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00001	0.000007	0.001	0.0010	Not Av	Not Av
D7	R62	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00001	0.000007	0.001	0.0010	Not Av	Not Av
Other (D7)	R8	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00003	0.000028	0.004	0.0038	Not Av	Not Av
D8	R55	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00000	0.000003	0.001	0.0005	Not Av	Not Av
D8	R56	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00000	0.000004	0.001	0.0005	Not Av	Not Av
D8	R61	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00000	0.000004	0.001	0.0005	Not Av	Not Av
D9	R16	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00001	0.000007	0.001	0.0010	Not Av	Not Av
D9	R19	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00001	0.000005	0.001	0.0006	Not Av	Not Av
D9	R20	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00000	0.000005	0.001	0.0006	Not Av	Not Av
D9	R48	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00001	0.000008	0.001	0.0011	Not Av	Not Av
D9	R49	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00000	0.000004	0.001	0.0006	Not Av	Not Av
D9	R60	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00001	0.000011	0.002	0.0015	Not Av	Not Av
D10	R14	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00002	0.000014	0.002	0.0019	Not Av	Not Av
D10	R15	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00001	0.000006	0.001	0.0007	Not Av	Not Av
D10	R17	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00001	0.000012	0.002	0.0016	Not Av	Not Av
D10	R54	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00001	0.000010	0.001	0.0014	Not Av	Not Av
D10	R58	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00000	0.000004	0.001	0.0005	Not Av	Not Av
D10	R63	61	6.39	9.8	12.4	0.2	45	1.5	2	0.0913	0.0913	5	0.00001	0.000005	0.001	0.0007	Not Av	Not Av

Barium (Ba)													Annual metal deposition		Additional soil metal concentration after 5 yrs			
		Curve Number	Potential max retention after runoff begins	Annual rainfall	Avg annual surface runoff from pervious areas	Soil volumetric water content	Soil/water partition coefficient	Bulk density of soil	Soil mixing zone depth	Metal loss constant due to surface runoff	Metal soil loss constant due to all processes	Time period over which deposition occurs	S1: Current Operations (BAU)	S2: Mod6 Operations	S1: Current Operations (BAU)	S2: Mod6 Operations	Existing soil metal concentration	Existing soil metal concentration incorporating loss over 5 yrs
District	ID	CN (inches)	S (inches)	P (inch/yr)	RO (cm/yr)	θ_{SW} (mL water/cm^3 soil)	Kd$_s$ (mL water/g soil)	BD (g/cm^3)	D (cm)	ksr (year^{-1})	ks (year^{-1})	tD (years)	$M_{ann\ dep}$ (g/m^2/yr)		C_s (mg/kg)		$C_{s\_existing}$ (mg/kg)	$C_{s\_existing(end)}$ (mg/kg)
D1	R6	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000064	0.0000058	0.00084	0.00076	Not Av	Not Av
D1	R11	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000047	0.0000044	0.00062	0.00058	Not Av	Not Av
D1	R18	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000024	0.0000023	0.00032	0.00030	Not Av	Not Av
D1	R46	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000019	0.0000017	0.00024	0.00022	Not Av	Not Av
D1	R53	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000023	0.0000021	0.00030	0.00028	Not Av	Not Av
D2	R43	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000128	0.0000120	0.00168	0.00158	Not Av	Not Av
D2	R44	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000016	0.0000015	0.00022	0.00020	Not Av	Not Av
D2	R68	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000034	0.0000033	0.00045	0.00043	Not Av	Not Av
D2	R69	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000028	0.0000026	0.00036	0.00034	Not Av	Not Av
D2	R70	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000023	0.0000022	0.00030	0.00029	Not Av	Not Av
Other (D2)	R59	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000005	0.0000004	0.00006	0.00006	Not Av	Not Av
D3	R3	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000203	0.0000199	0.00266	0.00261	Not Av	Not Av
D3	R4	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000086	0.0000082	0.00113	0.00107	Not Av	Not Av
D3	R5	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000068	0.0000063	0.00089	0.00083	Not Av	Not Av
D3	R12	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000038	0.0000036	0.00050	0.00047	Not Av	Not Av
D3	R13	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000033	0.0000031	0.00043	0.00041	Not Av	Not Av
D3	R45	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000038	0.0000036	0.00050	0.00048	Not Av	Not Av
D4	R1	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000101	0.0000099	0.00132	0.00129	Not Av	Not Av
D4	R2	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000113	0.0000110	0.00148	0.00144	Not Av	Not Av
Other (D4)	R21	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000115	0.0000110	0.00150	0.00145	Not Av	Not Av
Other (D4)	R22	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000121	0.0000115	0.00159	0.00151	Not Av	Not Av
Other (D4)	R23	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000143	0.0000132	0.00188	0.00173	Not Av	Not Av
Other (D4)	R24	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000163	0.0000148	0.00213	0.00195	Not Av	Not Av
Other (D4)	R25	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000082	0.0000077	0.00107	0.00101	Not Av	Not Av
Other (D4)	R26	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000224	0.0000203	0.00293	0.00266	Not Av	Not Av
D5	R31	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000089	0.0000083	0.00117	0.00109	Not Av	Not Av
D5	R32	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000085	0.0000078	0.00111	0.00103	Not Av	Not Av
D5	R33	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000103	0.0000091	0.00135	0.00120	Not Av	Not Av
D5	R64	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000023	0.0000021	0.00031	0.00028	Not Av	Not Av
D5	R65	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000063	0.0000058	0.00083	0.00076	Not Av	Not Av
D5	R66	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000040	0.0000037	0.00052	0.00048	Not Av	Not Av
D5	R67	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000042	0.0000039	0.00055	0.00051	Not Av	Not Av
D6	R10	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000060	0.0000057	0.00079	0.00075	Not Av	Not Av
D6	R34	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000110	0.0000104	0.00145	0.00137	Not Av	Not Av
D6	R35	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000097	0.0000091	0.00128	0.00119	Not Av	Not Av
D6	R36	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000086	0.0000080	0.00113	0.00105	Not Av	Not Av
D6	R37	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000081	0.0000075	0.00106	0.00099	Not Av	Not Av
D6	R41	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000087	0.0000082	0.00113	0.00107	Not Av	Not Av
D6	R42	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000114	0.0000108	0.00149	0.00142	Not Av	Not Av
D6	R47	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000052	0.0000048	0.00068	0.00063	Not Av	Not Av
D6	R50	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000065	0.0000061	0.00086	0.00080	Not Av	Not Av
Other (D6)	R27	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000304	0.0000297	0.00398	0.00389	Not Av	Not Av
Other (D6)	R28	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000250	0.0000243	0.00328	0.00319	Not Av	Not Av
Other (D6)	R29	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000195	0.0000186	0.00256	0.00244	Not Av	Not Av
Other (D6)	R30	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000170	0.0000161	0.00223	0.00212	Not Av	Not Av
D7	R7	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000032	0.0000030	0.00042	0.00040	Not Av	Not Av
D7	R9	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000060	0.0000056	0.00079	0.00073	Not Av	Not Av
D7	R38	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000028	0.0000025	0.00036	0.00033	Not Av	Not Av
D7	R39	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000029	0.0000027	0.00038	0.00035	Not Av	Not Av
D7	R40	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000067	0.0000063	0.00088	0.00082	Not Av	Not Av
D7	R51	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000036	0.0000033	0.00047	0.00044	Not Av	Not Av
D7	R52	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000039	0.0000036	0.00051	0.00048	Not Av	Not Av
D7	R57	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000019	0.0000018	0.00025	0.00023	Not Av	Not Av
D7	R62	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000020	0.0000018	0.00026	0.00024	Not Av	Not Av
Other (D7)	R8	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000076	0.0000071	0.00100	0.00093	Not Av	Not Av
D8	R55	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000009	0.0000009	0.00012	0.00011	Not Av	Not Av
D8	R56	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000010	0.0000009	0.00013	0.00012	Not Av	Not Av
D8	R61	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000010	0.0000009	0.00013	0.00012	Not Av	Not Av
D9	R16	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000020	0.0000018	0.00026	0.00024	Not Av	Not Av
D9	R19	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000013	0.0000012	0.00017	0.00016	Not Av	Not Av
D9	R20	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000012	0.0000011	0.00016	0.00015	Not Av	Not Av
D9	R48	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000023	0.0000021	0.00030	0.00028	Not Av	Not Av
D9	R49	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000012	0.0000011	0.00015	0.00014	Not Av	Not Av
D9	R60	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000031	0.0000028	0.00040	0.00037	Not Av	Not Av
D10	R14	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000038	0.0000036	0.00050	0.00047	Not Av	Not Av
D10	R15	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000015	0.0000014	0.00020	0.00018	Not Av	Not Av
D10	R17	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000033	0.0000031	0.00043	0.00040	Not Av	Not Av
D10	R54	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000027	0.0000025	0.00036	0.00033	Not Av	Not Av
D10	R58	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000010	0.0000009	0.00013	0.00012	Not Av	Not Av
D10	R63	61	6.39	9.8	12.4	0.2	41	1.5	2	0.1002	0.1002	5	0.0000014	0.0000013	0.00019	0.00017	Not Av	Not Av

Beryllium (Be)													Annual metal deposition		Additional soil metal concentration after 5 yrs			
		Curve Number	Potential max retention after runoff begins	Annual rainfall	Avg annual surface runoff from pervious areas	Soil volumetric water content	Soil/water partition coefficient	Bulk density of soil	Soil mixing zone depth	Metal loss constant due to surface runoff	Metal soil loss constant due to all processes	Time period over which deposition occurs	S1: Current Operations (BAU)	S2: Mod6 Operations	S1: Current Operations (BAU)	S2: Mod6 Operations	Existing soil metal concentration	Existing soil metal concentration incorporating loss over 5 yrs
District	ID	CN (inches)	S (inches)	P (inch/yr)	RO (cm/yr)	θ_{sw} (mL water/cm^3 soil)	Kd_s (mL water/g soil)	BD (g/cm^3)	D (cm)	ksr (year^{-1})	ks (year^{-1})	tD (years)	$M_{ann\ dep}$ (g/m^2/yr)		C_s (mg/kg)		$C_{s\_existing}$ (mg/kg)	$C_{s\_existing(end)}$ (mg/kg)
D1	R6	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000069	0.000000063	0.0000114	0.0000104	Not Av	Not Av
D1	R11	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000051	0.000000048	0.0000084	0.0000078	Not Av	Not Av
D1	R18	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000027	0.000000024	0.0000044	0.0000040	Not Av	Not Av
D1	R46	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000020	0.000000018	0.0000033	0.0000030	Not Av	Not Av
D1	R53	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000025	0.000000023	0.0000041	0.0000038	Not Av	Not Av
D2	R43	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000139	0.000000131	0.0000229	0.0000215	Not Av	Not Av
D2	R44	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000018	0.000000017	0.0000029	0.0000027	Not Av	Not Av
D2	R68	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000037	0.000000035	0.0000061	0.0000058	Not Av	Not Av
D2	R69	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000030	0.000000028	0.0000049	0.0000047	Not Av	Not Av
D2	R70	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000025	0.000000024	0.0000041	0.0000039	Not Av	Not Av
Other (D2)	R59	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000005	0.000000005	0.0000009	0.0000008	Not Av	Not Av
D3	R3	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000220	0.000000216	0.0000362	0.0000356	Not Av	Not Av
D3	R4	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000093	0.000000089	0.0000153	0.0000146	Not Av	Not Av
D3	R5	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000073	0.000000069	0.0000121	0.0000113	Not Av	Not Av
D3	R12	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000042	0.000000039	0.0000068	0.0000065	Not Av	Not Av
D3	R13	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000036	0.000000034	0.0000059	0.0000055	Not Av	Not Av
D3	R45	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000042	0.000000039	0.0000069	0.0000065	Not Av	Not Av
D4	R1	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000109	0.000000107	0.0000180	0.0000176	Not Av	Not Av
D4	R2	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000122	0.000000120	0.0000201	0.0000197	Not Av	Not Av
Other (D4)	R21	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000124	0.000000120	0.0000204	0.0000197	Not Av	Not Av
Other (D4)	R22	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000132	0.000000125	0.0000216	0.0000205	Not Av	Not Av
Other (D4)	R23	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000155	0.000000143	0.0000256	0.0000235	Not Av	Not Av
Other (D4)	R24	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000177	0.000000161	0.0000291	0.0000265	Not Av	Not Av
Other (D4)	R25	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000089	0.000000084	0.0000146	0.0000138	Not Av	Not Av
Other (D4)	R26	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000243	0.000000221	0.0000399	0.0000363	Not Av	Not Av
D5	R31	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000097	0.000000090	0.0000159	0.0000148	Not Av	Not Av
D5	R32	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000092	0.000000085	0.0000151	0.0000140	Not Av	Not Av
D5	R33	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000112	0.000000099	0.0000184	0.0000163	Not Av	Not Av
D5	R64	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000025	0.000000023	0.0000042	0.0000038	Not Av	Not Av
D5	R65	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000069	0.000000063	0.0000113	0.0000104	Not Av	Not Av
D5	R66	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000043	0.000000040	0.0000071	0.0000066	Not Av	Not Av
D5	R67	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000045	0.000000042	0.0000075	0.0000069	Not Av	Not Av
D6	R10	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000066	0.000000062	0.0000108	0.0000102	Not Av	Not Av
D6	R34	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000120	0.000000113	0.0000197	0.0000186	Not Av	Not Av
D6	R35	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000106	0.000000099	0.0000174	0.0000162	Not Av	Not Av
D6	R36	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000093	0.000000087	0.0000154	0.0000142	Not Av	Not Av
D6	R37	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000088	0.000000082	0.0000145	0.0000134	Not Av	Not Av
D6	R41	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000094	0.000000089	0.0000155	0.0000146	Not Av	Not Av
D6	R42	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000124	0.000000117	0.0000203	0.0000193	Not Av	Not Av
D6	R47	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000056	0.000000052	0.0000092	0.0000086	Not Av	Not Av
D6	R50	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000071	0.000000066	0.0000117	0.0000109	Not Av	Not Av
Other (D6)	R27	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000330	0.000000322	0.0000542	0.0000531	Not Av	Not Av
Other (D6)	R28	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000271	0.000000264	0.0000446	0.0000434	Not Av	Not Av
Other (D6)	R29	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000212	0.000000202	0.0000349	0.0000333	Not Av	Not Av
Other (D6)	R30	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000185	0.000000175	0.0000304	0.0000288	Not Av	Not Av
D7	R7	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000035	0.000000033	0.0000058	0.0000054	Not Av	Not Av
D7	R9	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000065	0.000000061	0.0000107	0.0000100	Not Av	Not Av
D7	R38	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000030	0.000000027	0.0000049	0.0000045	Not Av	Not Av
D7	R39	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000032	0.000000029	0.0000052	0.0000048	Not Av	Not Av
D7	R40	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000073	0.000000068	0.0000120	0.0000112	Not Av	Not Av
D7	R51	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000039	0.000000036	0.0000064	0.0000060	Not Av	Not Av
D7	R52	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000042	0.000000039	0.0000070	0.0000065	Not Av	Not Av
D7	R57	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000021	0.000000019	0.0000034	0.0000032	Not Av	Not Av
D7	R62	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000022	0.000000020	0.0000036	0.0000033	Not Av	Not Av
Other (D7)	R8	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000083	0.000000077	0.0000136	0.0000126	Not Av	Not Av
D8	R55	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000010	0.000000009	0.0000017	0.0000015	Not Av	Not Av
D8	R56	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000011	0.000000010	0.0000018	0.0000017	Not Av	Not Av
D8	R61	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000011	0.000000010	0.0000018	0.0000017	Not Av	Not Av
D9	R16	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000021	0.000000020	0.0000035	0.0000032	Not Av	Not Av
D9	R19	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000014	0.000000013	0.0000023	0.0000021	Not Av	Not Av
D9	R20	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000013	0.000000012	0.0000022	0.0000021	Not Av	Not Av
D9	R48	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000025	0.000000023	0.0000041	0.0000038	Not Av	Not Av
D9	R49	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000013	0.000000012	0.0000021	0.0000019	Not Av	Not Av
D9	R60	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000033	0.000000031	0.0000055	0.0000051	Not Av	Not Av
D10	R14	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000041	0.000000039	0.0000068	0.0000064	Not Av	Not Av
D10	R15	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000016	0.000000015	0.0000027	0.0000025	Not Av	Not Av
D10	R17	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000036	0.000000033	0.0000058	0.0000055	Not Av	Not Av
D10	R54	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000029	0.000000027	0.0000048	0.0000045	Not Av	Not Av
D10	R58	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000011	0.000000010	0.0000017	0.0000016	Not Av	Not Av
D10	R63	61	6.39	9.8	12.4	0.2	790	1.5	2	0.0052	0.0052	5	0.000000015	0.000000014	0.0000025	0.0000024	Not Av	Not Av

Copper (Cu)													Annual metal deposition		Additional soil metal concentration after 5 yrs			
		Curve Number	Potential max retention after runoff begins	Annual rainfall	Avg annual surface runoff from pervious areas	Soil volumetric water content	Soil/water partition coefficient	Bulk density of soil	Soil mixing zone depth	Metal loss constant due to surface runoff	Metal soil loss constant due to all processes	Time period over which deposition occurs	S1: Current Operations (BAU)	S2: Mod6 Operations	S1: Current Operations (BAU)	S2: Mod6 Operations	Existing soil metal concentration	Existing soil metal concentration incorporating loss over 5 yrs
District	ID	CN (inches)	S (inches)	P (inch/yr)	RO (cm/yr)	θ_{sw} (mL water/cm^3 soil)	Kd$_s$ (mL water/g soil)	BD (g/cm^3)	D (cm)	ksr (year^{-1})	ks (year^{-1})	tD (years)	$M_{ann\ dep}$ (g/m^2/yr)		C_s (mg/kg)		$C_{s\_existing}$ (mg/kg)	$C_{s\_existing(end)}$ (mg/kg)
D1	R6	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00097	0.00088	0.122	0.111	Not Av	Not Av
D1	R11	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00071	0.00066	0.090	0.084	Not Av	Not Av
D1	R18	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00037	0.00034	0.047	0.043	Not Av	Not Av
D1	R46	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00028	0.00026	0.035	0.032	Not Av	Not Av
D1	R53	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00035	0.00032	0.044	0.040	Not Av	Not Av
D2	R43	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00194	0.00182	0.244	0.229	Not Av	Not Av
D2	R44	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00025	0.00023	0.031	0.029	Not Av	Not Av
D2	R68	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00052	0.00049	0.065	0.062	Not Av	Not Av
D2	R69	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00042	0.00039	0.053	0.050	Not Av	Not Av
D2	R70	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00035	0.00033	0.044	0.041	Not Av	Not Av
Other (D2)	R59	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00007	0.00007	0.009	0.009	Not Av	Not Av
D3	R3	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00307	0.00301	0.387	0.380	Not Av	Not Av
D3	R4	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00130	0.00124	0.164	0.156	Not Av	Not Av
D3	R5	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00102	0.00096	0.129	0.121	Not Av	Not Av
D3	R12	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00058	0.00055	0.073	0.069	Not Av	Not Av
D3	R13	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00050	0.00047	0.063	0.059	Not Av	Not Av
D3	R45	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00058	0.00055	0.073	0.069	Not Av	Not Av
D4	R1	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00152	0.00149	0.192	0.188	Not Av	Not Av
D4	R2	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00171	0.00167	0.215	0.210	Not Av	Not Av
Other (D4)	R21	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00173	0.00167	0.219	0.211	Not Av	Not Av
Other (D4)	R22	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00183	0.00174	0.231	0.219	Not Av	Not Av
Other (D4)	R23	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00217	0.00199	0.273	0.251	Not Av	Not Av
Other (D4)	R24	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00246	0.00225	0.311	0.283	Not Av	Not Av
Other (D4)	R25	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00124	0.00117	0.156	0.147	Not Av	Not Av
Other (D4)	R26	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00338	0.00308	0.427	0.388	Not Av	Not Av
D5	R31	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00135	0.00126	0.170	0.159	Not Av	Not Av
D5	R32	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00128	0.00119	0.161	0.150	Not Av	Not Av
D5	R33	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00156	0.00138	0.197	0.174	Not Av	Not Av
D5	R64	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00035	0.00032	0.045	0.041	Not Av	Not Av
D5	R65	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00096	0.00088	0.121	0.111	Not Av	Not Av
D5	R66	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00060	0.00056	0.076	0.070	Not Av	Not Av
D5	R67	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00063	0.00058	0.080	0.074	Not Av	Not Av
D6	R10	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00091	0.00086	0.115	0.109	Not Av	Not Av
D6	R34	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00167	0.00158	0.211	0.199	Not Av	Not Av
D6	R35	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00147	0.00138	0.186	0.174	Not Av	Not Av
D6	R36	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00130	0.00121	0.164	0.152	Not Av	Not Av
D6	R37	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00123	0.00114	0.155	0.144	Not Av	Not Av
D6	R41	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00131	0.00124	0.165	0.156	Not Av	Not Av
D6	R42	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00172	0.00164	0.217	0.206	Not Av	Not Av
D6	R47	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00078	0.00073	0.099	0.092	Not Av	Not Av
D6	R50	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00099	0.00092	0.125	0.117	Not Av	Not Av
Other (D6)	R27	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00459	0.00450	0.579	0.567	Not Av	Not Av
Other (D6)	R28	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00378	0.00368	0.477	0.464	Not Av	Not Av
Other (D6)	R29	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00295	0.00282	0.373	0.356	Not Av	Not Av
Other (D6)	R30	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00258	0.00244	0.325	0.308	Not Av	Not Av
D7	R7	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00049	0.00046	0.062	0.058	Not Av	Not Av
D7	R9	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00091	0.00085	0.114	0.107	Not Av	Not Av
D7	R38	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00042	0.00038	0.053	0.048	Not Av	Not Av
D7	R39	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00044	0.00040	0.055	0.051	Not Av	Not Av
D7	R40	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00102	0.00095	0.128	0.120	Not Av	Not Av
D7	R51	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00054	0.00050	0.068	0.064	Not Av	Not Av
D7	R52	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00059	0.00055	0.074	0.069	Not Av	Not Av
D7	R57	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00029	0.00027	0.036	0.034	Not Av	Not Av
D7	R62	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00030	0.00028	0.038	0.035	Not Av	Not Av
Other (D7)	R8	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00115	0.00107	0.145	0.135	Not Av	Not Av
D8	R55	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00014	0.00013	0.018	0.016	Not Av	Not Av
D8	R56	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00015	0.00014	0.019	0.018	Not Av	Not Av
D8	R61	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00015	0.00014	0.019	0.018	Not Av	Not Av
D9	R16	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00030	0.00027	0.037	0.034	Not Av	Not Av
D9	R19	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00020	0.00018	0.025	0.023	Not Av	Not Av
D9	R20	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00019	0.00017	0.024	0.022	Not Av	Not Av
D9	R48	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00035	0.00032	0.044	0.040	Not Av	Not Av
D9	R49	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00017	0.00016	0.022	0.020	Not Av	Not Av
D9	R60	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00047	0.00043	0.059	0.054	Not Av	Not Av
D10	R14	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00058	0.00054	0.073	0.068	Not Av	Not Av
D10	R15	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00023	0.00021	0.028	0.026	Not Av	Not Av
D10	R17	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00050	0.00046	0.062	0.058	Not Av	Not Av
D10	R54	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00041	0.00038	0.052	0.048	Not Av	Not Av
D10	R58	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00015	0.00014	0.019	0.017	Not Av	Not Av
D10	R63	61	6.39	9.8	12.4	0.2	35	1.5	2	0.1173	0.1173	5	0.00022	0.00020	0.027	0.025	Not Av	Not Av

Mercury (Hg)													Annual metal deposition		Additional soil metal concentration after 5 yrs			
		Curve Number	Potential max retention after runoff begins	Annual rainfall	Avg annual surface runoff from pervious areas	Soil volumetric water content	Soil/water partition coefficient	Bulk density of soil	Soil mixing zone depth	Metal loss constant due to surface runoff	Metal soil loss constant due to all processes	Time period over which deposition occurs	S1: Current Operations (BAU)	S2: Mod6 Operations	S1: Current Operations (BAU)	S2: Mod6 Operations	Existing soil metal concentration	Existing soil metal concentration incorporating loss over 5 yrs
District	ID	CN (inches)	S (inches)	P (inch/yr)	RO (cm/yr)	θ_{sw} (mL water/cm^3 soil)	Kd_s (mL water/g soil)	BD (g/cm^3)	D (cm)	ksr (year^{-1})	ks (year^{-1})	tD (years)	$M_{ann\ dep}$ (g/m^2/yr)		C_s (mg/kg)		$C_{s\_existing}$ (mg/kg)	$C_{s\_existing(end)}$ (mg/kg)
D1	R6	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000138	0.000000126	0.0000191	0.0000173	Not Av	Not Av
D1	R11	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000102	0.000000095	0.0000140	0.0000131	Not Av	Not Av
D1	R18	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000053	0.000000049	0.0000073	0.0000067	Not Av	Not Av
D1	R46	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000040	0.000000037	0.0000055	0.0000051	Not Av	Not Av
D1	R53	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000050	0.000000046	0.0000068	0.0000063	Not Av	Not Av
D2	R43	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000277	0.000000260	0.0000381	0.0000358	Not Av	Not Av
D2	R44	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000036	0.000000033	0.0000049	0.0000046	Not Av	Not Av
D2	R68	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000074	0.000000070	0.0000102	0.0000097	Not Av	Not Av
D2	R69	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000060	0.000000056	0.0000083	0.0000078	Not Av	Not Av
D2	R70	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000050	0.000000047	0.0000069	0.0000065	Not Av	Not Av
Other (D2)	R59	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000010	0.000000010	0.0000014	0.0000013	Not Av	Not Av
D3	R3	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000439	0.000000431	0.0000604	0.0000593	Not Av	Not Av
D3	R4	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000186	0.000000177	0.0000256	0.0000244	Not Av	Not Av
D3	R5	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000146	0.000000137	0.0000201	0.0000188	Not Av	Not Av
D3	R12	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000083	0.000000078	0.0000114	0.0000108	Not Av	Not Av
D3	R13	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000071	0.000000067	0.0000098	0.0000092	Not Av	Not Av
D3	R45	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000083	0.000000079	0.0000114	0.0000108	Not Av	Not Av
D4	R1	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000218	0.000000213	0.0000300	0.0000294	Not Av	Not Av
D4	R2	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000244	0.000000238	0.0000336	0.0000328	Not Av	Not Av
Other (D4)	R21	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000248	0.000000239	0.0000341	0.0000329	Not Av	Not Av
Other (D4)	R22	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000262	0.000000249	0.0000361	0.0000342	Not Av	Not Av
Other (D4)	R23	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000310	0.000000285	0.0000427	0.0000393	Not Av	Not Av
Other (D4)	R24	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000352	0.000000321	0.0000485	0.0000442	Not Av	Not Av
Other (D4)	R25	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000177	0.000000167	0.0000243	0.0000230	Not Av	Not Av
Other (D4)	R26	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000484	0.000000440	0.0000666	0.0000605	Not Av	Not Av
D5	R31	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000193	0.000000180	0.0000265	0.0000248	Not Av	Not Av
D5	R32	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000183	0.000000170	0.0000252	0.0000234	Not Av	Not Av
D5	R33	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000223	0.000000198	0.0000307	0.0000272	Not Av	Not Av
D5	R64	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000051	0.000000046	0.0000070	0.0000064	Not Av	Not Av
D5	R65	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000137	0.000000126	0.0000188	0.0000174	Not Av	Not Av
D5	R66	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000086	0.000000080	0.0000119	0.0000110	Not Av	Not Av
D5	R67	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000091	0.000000084	0.0000125	0.0000115	Not Av	Not Av
D6	R10	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000131	0.000000123	0.0000180	0.0000170	Not Av	Not Av
D6	R34	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000239	0.000000226	0.0000329	0.0000311	Not Av	Not Av
D6	R35	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000211	0.000000197	0.0000290	0.0000271	Not Av	Not Av
D6	R36	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000186	0.000000173	0.0000256	0.0000238	Not Av	Not Av
D6	R37	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000176	0.000000163	0.0000242	0.0000224	Not Av	Not Av
D6	R41	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000187	0.000000177	0.0000258	0.0000244	Not Av	Not Av
D6	R42	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000246	0.000000234	0.0000339	0.0000322	Not Av	Not Av
D6	R47	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000112	0.000000104	0.0000154	0.0000144	Not Av	Not Av
D6	R50	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000142	0.000000132	0.0000195	0.0000182	Not Av	Not Av
Other (D6)	R27	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000657	0.000000643	0.0000905	0.0000885	Not Av	Not Av
Other (D6)	R28	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000541	0.000000526	0.0000745	0.0000724	Not Av	Not Av
Other (D6)	R29	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000423	0.000000403	0.0000582	0.0000555	Not Av	Not Av
Other (D6)	R30	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000369	0.000000349	0.0000508	0.0000481	Not Av	Not Av
D7	R7	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000070	0.000000065	0.0000097	0.0000090	Not Av	Not Av
D7	R9	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000130	0.000000121	0.0000179	0.0000166	Not Av	Not Av
D7	R38	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000060	0.000000055	0.0000082	0.0000075	Not Av	Not Av
D7	R39	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000063	0.000000058	0.0000087	0.0000080	Not Av	Not Av
D7	R40	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000145	0.000000136	0.0000200	0.0000188	Not Av	Not Av
D7	R51	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000077	0.000000072	0.0000106	0.0000099	Not Av	Not Av
D7	R52	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000084	0.000000079	0.0000116	0.0000108	Not Av	Not Av
D7	R57	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000041	0.000000038	0.0000057	0.0000053	Not Av	Not Av
D7	R62	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000043	0.000000040	0.0000060	0.0000055	Not Av	Not Av
Other (D7)	R8	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000165	0.000000153	0.0000227	0.0000211	Not Av	Not Av
D8	R55	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000020	0.000000019	0.0000028	0.0000026	Not Av	Not Av
D8	R56	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000022	0.000000020	0.0000030	0.0000028	Not Av	Not Av
D8	R61	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000022	0.000000020	0.0000030	0.0000028	Not Av	Not Av
D9	R16	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000042	0.000000039	0.0000058	0.0000054	Not Av	Not Av
D9	R19	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000028	0.000000026	0.0000039	0.0000035	Not Av	Not Av
D9	R20	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000027	0.000000025	0.0000037	0.0000034	Not Av	Not Av
D9	R48	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000050	0.000000046	0.0000068	0.0000063	Not Av	Not Av
D9	R49	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000025	0.000000023	0.0000034	0.0000032	Not Av	Not Av
D9	R60	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000067	0.000000061	0.0000092	0.0000084	Not Av	Not Av
D10	R14	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000082	0.000000077	0.0000113	0.0000106	Not Av	Not Av
D10	R15	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000032	0.000000030	0.0000044	0.0000041	Not Av	Not Av
D10	R17	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000071	0.000000066	0.0000098	0.0000091	Not Av	Not Av
D10	R54	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000059	0.000000055	0.0000081	0.0000075	Not Av	Not Av
D10	R58	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000021	0.000000020	0.0000029	0.0000027	Not Av	Not Av
D10	R63	61	6.39	9.8	12.4	0.2	52	1.5	2	0.0791	0.0791	5	0.000000031	0.000000029	0.0000043	0.0000039	Not Av	Not Av

Nickel (Ni)													Annual metal deposition		Additional soil metal concentration after 5 yrs			
		Curve Number	Potential max retention after runoff begins	Annual rainfall	Avg annual surface runoff from pervious areas	Soil volumetric water content	Soil/water partition coefficient	Bulk density of soil	Soil mixing zone depth	Metal loss constant due to surface runoff	Metal soil loss constant due to all processes	Time period over which deposition occurs	S1: Current Operations (BAU)	S2: Mod6 Operations	S1: Current Operations (BAU)	S2: Mod6 Operations	Existing soil metal concentration	Existing soil metal concentration incorporating loss over 5 yrs
District	ID	CN (inches)	S (inches)	P (inch/yr)	RO (cm/yr)	θ_{sw} (mL water/cm^3 soil)	Kd_s (mL water/g soil)	BD (g/cm^3)	D (cm)	ksr (year^{-1})	ks (year^{-1})	tD (years)	$M_{ann\ dep}$ (g/m^2/yr)		C_s (mg/kg)		$C_{s\_existing}$ (mg/kg)	$C_{s\_existing(end)}$ (mg/kg)
D1	R6	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000039	0.0000035	0.00065	0.00059	Not Av	Not Av
D1	R11	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000029	0.0000027	0.00047	0.00044	Not Av	Not Av
D1	R18	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000015	0.0000014	0.00025	0.00023	Not Av	Not Av
D1	R46	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000011	0.0000010	0.00019	0.00017	Not Av	Not Av
D1	R53	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000014	0.0000013	0.00023	0.00021	Not Av	Not Av
D2	R43	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000078	0.0000073	0.00129	0.00121	Not Av	Not Av
D2	R44	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000010	0.0000009	0.00017	0.00015	Not Av	Not Av
D2	R68	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000021	0.0000020	0.00035	0.00033	Not Av	Not Av
D2	R69	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000017	0.0000016	0.00028	0.00026	Not Av	Not Av
D2	R70	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000014	0.0000013	0.00023	0.00022	Not Av	Not Av
Other (D2)	R59	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000003	0.0000003	0.00005	0.00005	Not Av	Not Av
D3	R3	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000124	0.0000121	0.00205	0.00201	Not Av	Not Av
D3	R4	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000052	0.0000050	0.00087	0.00083	Not Av	Not Av
D3	R5	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000041	0.0000039	0.00068	0.00064	Not Av	Not Av
D3	R12	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000023	0.0000022	0.00039	0.00037	Not Av	Not Av
D3	R13	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000020	0.0000019	0.00033	0.00031	Not Av	Not Av
D3	R45	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000023	0.0000022	0.00039	0.00037	Not Av	Not Av
D4	R1	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000061	0.0000060	0.00102	0.00100	Not Av	Not Av
D4	R2	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000069	0.0000067	0.00114	0.00111	Not Av	Not Av
Other (D4)	R21	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000070	0.0000067	0.00116	0.00111	Not Av	Not Av
Other (D4)	R22	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000074	0.0000070	0.00122	0.00116	Not Av	Not Av
Other (D4)	R23	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000087	0.0000080	0.00145	0.00133	Not Av	Not Av
Other (D4)	R24	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000099	0.0000090	0.00164	0.00150	Not Av	Not Av
Other (D4)	R25	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000050	0.0000047	0.00083	0.00078	Not Av	Not Av
Other (D4)	R26	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000136	0.0000124	0.00226	0.00205	Not Av	Not Av
D5	R31	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000054	0.0000051	0.00090	0.00084	Not Av	Not Av
D5	R32	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000052	0.0000048	0.00085	0.00079	Not Av	Not Av
D5	R33	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000063	0.0000056	0.00104	0.00092	Not Av	Not Av
D5	R64	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000014	0.0000013	0.00024	0.00022	Not Av	Not Av
D5	R65	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000039	0.0000036	0.00064	0.00059	Not Av	Not Av
D5	R66	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000024	0.0000022	0.00040	0.00037	Not Av	Not Av
D5	R67	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000026	0.0000024	0.00042	0.00039	Not Av	Not Av
D6	R10	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000037	0.0000035	0.00061	0.00058	Not Av	Not Av
D6	R34	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000067	0.0000063	0.00112	0.00105	Not Av	Not Av
D6	R35	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000059	0.0000055	0.00098	0.00092	Not Av	Not Av
D6	R36	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000052	0.0000049	0.00087	0.00081	Not Av	Not Av
D6	R37	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000049	0.0000046	0.00082	0.00076	Not Av	Not Av
D6	R41	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000053	0.0000050	0.00087	0.00083	Not Av	Not Av
D6	R42	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000069	0.0000066	0.00115	0.00109	Not Av	Not Av
D6	R47	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000032	0.0000029	0.00052	0.00049	Not Av	Not Av
D6	R50	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000040	0.0000037	0.00066	0.00062	Not Av	Not Av
Other (D6)	R27	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000185	0.0000181	0.00307	0.00300	Not Av	Not Av
Other (D6)	R28	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000152	0.0000148	0.00252	0.00246	Not Av	Not Av
Other (D6)	R29	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000119	0.0000114	0.00197	0.00188	Not Av	Not Av
Other (D6)	R30	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000104	0.0000098	0.00172	0.00163	Not Av	Not Av
D7	R7	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000020	0.0000018	0.00033	0.00030	Not Av	Not Av
D7	R9	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000037	0.0000034	0.00061	0.00056	Not Av	Not Av
D7	R38	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000017	0.0000015	0.00028	0.00025	Not Av	Not Av
D7	R39	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000018	0.0000016	0.00029	0.00027	Not Av	Not Av
D7	R40	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000041	0.0000038	0.00068	0.00064	Not Av	Not Av
D7	R51	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000022	0.0000020	0.00036	0.00034	Not Av	Not Av
D7	R52	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000024	0.0000022	0.00039	0.00037	Not Av	Not Av
D7	R57	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000012	0.0000011	0.00019	0.00018	Not Av	Not Av
D7	R62	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000012	0.0000011	0.00020	0.00019	Not Av	Not Av
Other (D7)	R8	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000046	0.0000043	0.00077	0.00071	Not Av	Not Av
D8	R55	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000006	0.0000005	0.00009	0.00009	Not Av	Not Av
D8	R56	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000006	0.0000006	0.00010	0.00009	Not Av	Not Av
D8	R61	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000006	0.0000006	0.00010	0.00009	Not Av	Not Av
D9	R16	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000012	0.0000011	0.00020	0.00018	Not Av	Not Av
D9	R19	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000008	0.0000007	0.00013	0.00012	Not Av	Not Av
D9	R20	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000008	0.0000007	0.00013	0.00012	Not Av	Not Av
D9	R48	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000014	0.0000013	0.00023	0.00021	Not Av	Not Av
D9	R49	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000007	0.0000006	0.00012	0.00011	Not Av	Not Av
D9	R60	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000019	0.0000017	0.00031	0.00029	Not Av	Not Av
D10	R14	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000023	0.0000022	0.00038	0.00036	Not Av	Not Av
D10	R15	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000009	0.0000008	0.00015	0.00014	Not Av	Not Av
D10	R17	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000020	0.0000019	0.00033	0.00031	Not Av	Not Av
D10	R54	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000017	0.0000015	0.00027	0.00025	Not Av	Not Av
D10	R58	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000006	0.0000005	0.00010	0.00009	Not Av	Not Av
D10	R63	61	6.39	9.8	12.4	0.2	1900	1.5	2	0.0022	0.0022	5	0.0000009	0.0000008	0.00014	0.00013	Not Av	Not Av

Silver (Ag)													Annual metal deposition		Additional soil metal concentration after 5 yrs			
		Curve Number	Potential max retention after runoff begins	Annual rainfall	Avg annual surface runoff from pervious areas	Soil volumetric water content	Soil/water partition coefficient	Bulk density of soil	Soil mixing zone depth	Metal loss constant due to surface runoff	Metal soil loss constant due to all processes	Time period over which deposition occurs	S1: Current Operations (BAU)	S2: Mod6 Operations	S1: Current Operations (BAU)	S2: Mod6 Operations	Existing soil metal concentration	Existing soil metal concentration incorporating loss over 5 yrs
District	ID	CN (inches)	S (inches)	P (inch/yr)	RO (cm/yr)	θ_{SW} (mL water/cm^3 soil)	Kd_s (mL water/g soil)	BD (g/cm^3)	D (cm)	ksr (year^{-1})	ks (year^{-1})	tD (years)	$M_{ann\ dep}$ (g/m^2/yr)		C_s (mg/kg)		$C_{s\_existing}$ (mg/kg)	$C_{s\_existing(end)}$ (mg/kg)
D1	R6	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000029	0.000027	0.0043	0.0039	Not Av	Not Av
D1	R11	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000022	0.000020	0.0032	0.0030	Not Av	Not Av
D1	R18	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000011	0.000010	0.0017	0.0015	Not Av	Not Av
D1	R46	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000009	0.000008	0.0013	0.0012	Not Av	Not Av
D1	R53	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000011	0.000010	0.0016	0.0014	Not Av	Not Av
D2	R43	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000059	0.000055	0.0087	0.0082	Not Av	Not Av
D2	R44	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000008	0.000007	0.0011	0.0010	Not Av	Not Av
D2	R68	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000016	0.000015	0.0023	0.0022	Not Av	Not Av
D2	R69	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000013	0.000012	0.0019	0.0018	Not Av	Not Av
D2	R70	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000011	0.000010	0.0016	0.0015	Not Av	Not Av
Other (D2)	R59	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000002	0.000002	0.0003	0.0003	Not Av	Not Av
D3	R3	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000093	0.000092	0.0138	0.0135	Not Av	Not Av
D3	R4	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000039	0.000038	0.0058	0.0056	Not Av	Not Av
D3	R5	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000031	0.000029	0.0046	0.0043	Not Av	Not Av
D3	R12	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000018	0.000017	0.0026	0.0025	Not Av	Not Av
D3	R13	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000015	0.000014	0.0022	0.0021	Not Av	Not Av
D3	R45	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000018	0.000017	0.0026	0.0025	Not Av	Not Av
D4	R1	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000046	0.000045	0.0068	0.0067	Not Av	Not Av
D4	R2	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000052	0.000051	0.0076	0.0075	Not Av	Not Av
Other (D4)	R21	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000053	0.000051	0.0078	0.0075	Not Av	Not Av
Other (D4)	R22	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000056	0.000053	0.0082	0.0078	Not Av	Not Av
Other (D4)	R23	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000066	0.000061	0.0097	0.0089	Not Av	Not Av
Other (D4)	R24	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000075	0.000068	0.0111	0.0101	Not Av	Not Av
Other (D4)	R25	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000038	0.000036	0.0055	0.0052	Not Av	Not Av
Other (D4)	R26	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000103	0.000093	0.0152	0.0138	Not Av	Not Av
D5	R31	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000041	0.000038	0.0060	0.0056	Not Av	Not Av
D5	R32	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000039	0.000036	0.0057	0.0053	Not Av	Not Av
D5	R33	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000047	0.000042	0.0070	0.0062	Not Av	Not Av
D5	R64	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000011	0.000010	0.0016	0.0014	Not Av	Not Av
D5	R65	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000029	0.000027	0.0043	0.0040	Not Av	Not Av
D5	R66	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000018	0.000017	0.0027	0.0025	Not Av	Not Av
D5	R67	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000019	0.000018	0.0028	0.0026	Not Av	Not Av
D6	R10	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000028	0.000026	0.0041	0.0039	Not Av	Not Av
D6	R34	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000051	0.000048	0.0075	0.0071	Not Av	Not Av
D6	R35	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000045	0.000042	0.0066	0.0062	Not Av	Not Av
D6	R36	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000040	0.000037	0.0058	0.0054	Not Av	Not Av
D6	R37	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000037	0.000035	0.0055	0.0051	Not Av	Not Av
D6	R41	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000040	0.000038	0.0059	0.0056	Not Av	Not Av
D6	R42	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000052	0.000050	0.0077	0.0073	Not Av	Not Av
D6	R47	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000024	0.000022	0.0035	0.0033	Not Av	Not Av
D6	R50	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000030	0.000028	0.0044	0.0041	Not Av	Not Av
Other (D6)	R27	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000140	0.000137	0.0206	0.0202	Not Av	Not Av
Other (D6)	R28	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000115	0.000112	0.0170	0.0165	Not Av	Not Av
Other (D6)	R29	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000090	0.000086	0.0132	0.0126	Not Av	Not Av
Other (D6)	R30	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000078	0.000074	0.0116	0.0110	Not Av	Not Av
D7	R7	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000015	0.000014	0.0022	0.0020	Not Av	Not Av
D7	R9	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000028	0.000026	0.0041	0.0038	Not Av	Not Av
D7	R38	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000013	0.000012	0.0019	0.0017	Not Av	Not Av
D7	R39	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000013	0.000012	0.0020	0.0018	Not Av	Not Av
D7	R40	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000031	0.000029	0.0046	0.0043	Not Av	Not Av
D7	R51	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000016	0.000015	0.0024	0.0023	Not Av	Not Av
D7	R52	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000018	0.000017	0.0026	0.0025	Not Av	Not Av
D7	R57	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000009	0.000008	0.0013	0.0012	Not Av	Not Av
D7	R62	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000009	0.000008	0.0014	0.0012	Not Av	Not Av
Other (D7)	R8	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000035	0.000032	0.0052	0.0048	Not Av	Not Av
D8	R55	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000004	0.000004	0.0006	0.0006	Not Av	Not Av
D8	R56	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000005	0.000004	0.0007	0.0006	Not Av	Not Av
D8	R61	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000005	0.000004	0.0007	0.0006	Not Av	Not Av
D9	R16	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000009	0.000008	0.0013	0.0012	Not Av	Not Av
D9	R19	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000006	0.000005	0.0009	0.0008	Not Av	Not Av
D9	R20	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000006	0.000005	0.0008	0.0008	Not Av	Not Av
D9	R48	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000011	0.000010	0.0016	0.0014	Not Av	Not Av
D9	R49	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000005	0.000005	0.0008	0.0007	Not Av	Not Av
D9	R60	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000014	0.000013	0.0021	0.0019	Not Av	Not Av
D10	R14	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000017	0.000016	0.0026	0.0024	Not Av	Not Av
D10	R15	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000007	0.000006	0.0010	0.0009	Not Av	Not Av
D10	R17	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000015	0.000014	0.0022	0.0021	Not Av	Not Av
D10	R54	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000012	0.000012	0.0018	0.0017	Not Av	Not Av
D10	R58	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000004	0.000004	0.0007	0.0006	Not Av	Not Av
D10	R63	61	6.39	9.8	12.4	0.2	83	1.5	2	0.0496	0.0496	5	0.000007	0.000006	0.0010	0.0009	Not Av	Not Av

Zinc (Zn)													Annual metal deposition		Additional soil metal concentration after 5 yrs			
		Curve Number	Potential max retention after runoff begins	Annual rainfall	Avg annual surface runoff from pervious areas	Soil volumetric water content	Soil/water partition coefficient	Bulk density of soil	Soil mixing zone depth	Metal loss constant due to surface runoff	Metal soil loss constant due to all processes	Time period over which deposition occurs	S1: Current Operations (BAU)	S2: Mod6 Operations	S1: Current Operations (BAU)	S2: Mod6 Operations	Existing soil metal concentration	Existing soil metal concentration incorporating loss over 5 yrs
District	ID	CN (inches)	S (inches)	P (inch/yr)	RO (cm/yr)	θ_{sw} (mL water/cm^3 soil)	Kd$_s$ (mL water/g soil)	BD (g/cm^3)	D (cm)	ksr (year^{-1})	ks (year^{-1})	tD (years)	$M_{ann\ dep}$ (g/m^2/yr)		C_s (mg/kg)		$C_{s\_existing}$ (mg/kg)	$C_{s\_existing(end)}$ (mg/kg)
D1	R6	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.035	0.032	5.0	4.6	Not Av	Not Av
D1	R11	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.026	0.024	3.7	3.4	Not Av	Not Av
D1	R18	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.014	0.012	1.9	1.8	Not Av	Not Av
D1	R46	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.010	0.009	1.5	1.3	Not Av	Not Av
D1	R53	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.013	0.012	1.8	1.7	Not Av	Not Av
D2	R43	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.071	0.067	10.1	9.4	Not Av	Not Av
D2	R44	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.009	0.008	1.3	1.2	Not Av	Not Av
D2	R68	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.019	0.018	2.7	2.6	Not Av	Not Av
D2	R69	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.015	0.014	2.2	2.0	Not Av	Not Av
D2	R70	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.013	0.012	1.8	1.7	Not Av	Not Av
Other (D2)	R59	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.003	0.002	0.4	0.4	Not Av	Not Av
D3	R3	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.112	0.110	15.9	15.6	Not Av	Not Av
D3	R4	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.048	0.045	6.7	6.4	Not Av	Not Av
D3	R5	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.037	0.035	5.3	5.0	Not Av	Not Av
D3	R12	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.021	0.020	3.0	2.8	Not Av	Not Av
D3	R13	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.018	0.017	2.6	2.4	Not Av	Not Av
D3	R45	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.021	0.020	3.0	2.9	Not Av	Not Av
D4	R1	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.056	0.055	7.9	7.7	Not Av	Not Av
D4	R2	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.062	0.061	8.9	8.7	Not Av	Not Av
Other (D4)	R21	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.063	0.061	9.0	8.7	Not Av	Not Av
Other (D4)	R22	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.067	0.064	9.5	9.0	Not Av	Not Av
Other (D4)	R23	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.079	0.073	11.2	10.4	Not Av	Not Av
Other (D4)	R24	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.090	0.082	12.8	11.7	Not Av	Not Av
Other (D4)	R25	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.045	0.043	6.4	6.1	Not Av	Not Av
Other (D4)	R26	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.124	0.113	17.6	16.0	Not Av	Not Av
D5	R31	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.049	0.046	7.0	6.5	Not Av	Not Av
D5	R32	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.047	0.043	6.6	6.2	Not Av	Not Av
D5	R33	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.057	0.051	8.1	7.2	Not Av	Not Av
D5	R64	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.013	0.012	1.8	1.7	Not Av	Not Av
D5	R65	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.035	0.032	5.0	4.6	Not Av	Not Av
D5	R66	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.022	0.020	3.1	2.9	Not Av	Not Av
D5	R67	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.023	0.021	3.3	3.0	Not Av	Not Av
D6	R10	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.033	0.032	4.7	4.5	Not Av	Not Av
D6	R34	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.061	0.058	8.7	8.2	Not Av	Not Av
D6	R35	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.054	0.050	7.7	7.1	Not Av	Not Av
D6	R36	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.048	0.044	6.8	6.3	Not Av	Not Av
D6	R37	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.045	0.042	6.4	5.9	Not Av	Not Av
D6	R41	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.048	0.045	6.8	6.4	Not Av	Not Av
D6	R42	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.063	0.060	8.9	8.5	Not Av	Not Av
D6	R47	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.029	0.027	4.1	3.8	Not Av	Not Av
D6	R50	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.036	0.034	5.1	4.8	Not Av	Not Av
Other (D6)	R27	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.168	0.165	23.9	23.3	Not Av	Not Av
Other (D6)	R28	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.138	0.135	19.6	19.1	Not Av	Not Av
Other (D6)	R29	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.108	0.103	15.3	14.6	Not Av	Not Av
Other (D6)	R30	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.094	0.089	13.4	12.7	Not Av	Not Av
D7	R7	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.018	0.017	2.5	2.4	Not Av	Not Av
D7	R9	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.033	0.031	4.7	4.4	Not Av	Not Av
D7	R38	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.015	0.014	2.2	2.0	Not Av	Not Av
D7	R39	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.016	0.015	2.3	2.1	Not Av	Not Av
D7	R40	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.037	0.035	5.3	4.9	Not Av	Not Av
D7	R51	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.020	0.018	2.8	2.6	Not Av	Not Av
D7	R52	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.022	0.020	3.1	2.9	Not Av	Not Av
D7	R57	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.011	0.010	1.5	1.4	Not Av	Not Av
D7	R62	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.011	0.010	1.6	1.4	Not Av	Not Av
Other (D7)	R8	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.042	0.039	6.0	5.6	Not Av	Not Av
D8	R55	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.005	0.005	0.7	0.7	Not Av	Not Av
D8	R56	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.006	0.005	0.8	0.7	Not Av	Not Av
D8	R61	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.006	0.005	0.8	0.7	Not Av	Not Av
D9	R16	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.011	0.010	1.5	1.4	Not Av	Not Av
D9	R19	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.007	0.007	1.0	0.9	Not Av	Not Av
D9	R20	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.007	0.006	1.0	0.9	Not Av	Not Av
D9	R48	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.013	0.012	1.8	1.7	Not Av	Not Av
D9	R49	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.006	0.006	0.9	0.8	Not Av	Not Av
D9	R60	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.017	0.016	2.4	2.2	Not Av	Not Av
D10	R14	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.021	0.020	3.0	2.8	Not Av	Not Av
D10	R15	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.008	0.008	1.2	1.1	Not Av	Not Av
D10	R17	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.018	0.017	2.6	2.4	Not Av	Not Av
D10	R54	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.015	0.014	2.1	2.0	Not Av	Not Av
D10	R58	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.005	0.005	0.8	0.7	Not Av	Not Av
D10	R63	61	6.39	9.8	12.4	0.2	62	1.5	2	0.0663	0.0663	5	0.008	0.007	1.1	1.0	Not Av	Not Av

APPENDIX H

Air Metal (in PM_{10}) concentrations used in HHRA

Pb

Lead (Pb)		Annual avg metal in PM_{10} (mine-only)			Annual avg metal in PM_{10} (mine+background)	
		S1: Current Operations (BAU)	S2: Mod6 Operations	Background	S1: Current Operations (BAU)	S2: Mod6 Operations
District	ID	µg/m^3		µg/m^3	M_{air} (µg/m^3)	
D1	R6	0.0049	0.0037	0.0752	0.0801	0.0789
D1	R11	0.0041	0.0031	0.0765	0.0806	0.0796
D1	R18	0.0024	0.0017	0.0776	0.0800	0.0794
D1	R46	0.0019	0.0014	0.0780	0.0798	0.0793
D1	R53	0.0023	0.0016	0.0777	0.0800	0.0794
D2	R43	0.0072	0.0060	0.0776	0.0848	0.0836
D2	R44	0.0015	0.0011	0.0782	0.0797	0.0793
D2	R68	0.0025	0.0019	0.0775	0.0800	0.0794
D2	R69	0.0019	0.0015	0.0779	0.0798	0.0793
D2	R70	0.0020	0.0015	0.0680	0.0700	0.0695
Other (D2)	R59	0.0006	0.0004	0.0788	0.0794	0.0792
D3	R3	0.0123	0.0098	0.0709	0.0831	0.0806
D3	R4	0.0067	0.0051	0.0743	0.0810	0.0794
D3	R5	0.0057	0.0043	0.0752	0.0809	0.0795
D3	R12	0.0033	0.0025	0.0770	0.0804	0.0795
D3	R13	0.0029	0.0021	0.0773	0.0802	0.0795
D3	R45	0.0033	0.0025	0.0771	0.0804	0.0795
D4	R1	0.0069	0.0057	0.0741	0.0809	0.0798
D4	R2	0.0082	0.0065	0.0740	0.0822	0.0805
Other (D4)	R21	0.0077	0.0062	0.0735	0.0812	0.0796
Other (D4)	R22	0.0078	0.0061	0.0734	0.0812	0.0795
Other (D4)	R23	0.0081	0.0063	0.0734	0.0815	0.0797
Other (D4)	R24	0.0083	0.0066	0.0736	0.0819	0.0802
Other (D4)	R25	0.0051	0.0041	0.0752	0.0804	0.0793
Other (D4)	R26	0.0102	0.0084	0.0733	0.0835	0.0817
D5	R31	0.0051	0.0042	0.0758	0.0809	0.0800
D5	R32	0.0049	0.0039	0.0760	0.0808	0.0799
D5	R33	0.0067	0.0052	0.0752	0.0819	0.0804
D5	R64	0.0016	0.0013	0.0781	0.0797	0.0793
D5	R65	0.0038	0.0030	0.0767	0.0805	0.0797
D5	R66	0.0026	0.0020	0.0775	0.0801	0.0795
D5	R67	0.0027	0.0021	0.0774	0.0801	0.0795
D6	R10	0.0044	0.0034	0.0760	0.0804	0.0794
D6	R34	0.0066	0.0050	0.0743	0.0809	0.0793
D6	R35	0.0061	0.0045	0.0748	0.0809	0.0793
D6	R36	0.0057	0.0043	0.0752	0.0810	0.0795
D6	R37	0.0053	0.0041	0.0756	0.0809	0.0797
D6	R41	0.0062	0.0049	0.0747	0.0809	0.0796
D6	R42	0.0071	0.0055	0.0739	0.0810	0.0794
D6	R47	0.0034	0.0026	0.0769	0.0803	0.0794
D6	R50	0.0042	0.0031	0.0763	0.0805	0.0795
Other (D6)	R27	0.0159	0.0157	0.0691	0.0851	0.0848
Other (D6)	R28	0.0152	0.0138	0.0692	0.0845	0.0831
Other (D6)	R29	0.0102	0.0092	0.0728	0.0830	0.0820
Other (D6)	R30	0.0105	0.0086	0.0726	0.0830	0.0812
D7	R7	0.0027	0.0021	0.0771	0.0797	0.0792
D7	R9	0.0046	0.0036	0.0759	0.0805	0.0795
D7	R38	0.0026	0.0019	0.0775	0.0802	0.0794
D7	R39	0.0027	0.0019	0.0774	0.0801	0.0793
D7	R40	0.0052	0.0040	0.0755	0.0806	0.0795
D7	R51	0.0029	0.0022	0.0771	0.0800	0.0793
D7	R52	0.0032	0.0024	0.0769	0.0801	0.0793
D7	R57	0.0018	0.0014	0.0779	0.0797	0.0793
D7	R62	0.0019	0.0014	0.0780	0.0799	0.0793
Other (D7)	R8	0.0056	0.0042	0.0750	0.0806	0.0793
D8	R55	0.0010	0.0007	0.0785	0.0795	0.0792
D8	R56	0.0011	0.0008	0.0784	0.0795	0.0792
D8	R61	0.0010	0.0007	0.0785	0.0796	0.0792
D9	R16	0.0014	0.0011	0.0782	0.0797	0.0793
D9	R19	0.0010	0.0008	0.0785	0.0795	0.0793
D9	R20	0.0011	0.0008	0.0784	0.0795	0.0793
D9	R48	0.0016	0.0012	0.0781	0.0797	0.0793
D9	R49	0.0009	0.0007	0.0786	0.0795	0.0793
D9	R60	0.0021	0.0016	0.0778	0.0799	0.0794
D10	R14	0.0028	0.0021	0.0772	0.0800	0.0793
D10	R15	0.0012	0.0009	0.0783	0.0796	0.0793
D10	R17	0.0024	0.0018	0.0775	0.0798	0.0793
D10	R54	0.0020	0.0016	0.0777	0.0797	0.0793
D10	R58	0.0010	0.0007	0.0785	0.0795	0.0792
D10	R63	0.0013	0.0010	0.0782	0.0795	0.0792

Antimony (Sb)		Annual avg metal in PM_{10} (mine-only)					Annual avg metal in PM_{10} (mine+background)	
		S1: Current Operations (BAU)	S2: Mod6 Operations	Background Pb	Ratio of metal to Pb	Estimated background for metal of interest	S1: Current Operations (BAU)	S2: Mod6 Operations
District	ID	µg/m^3		µg/m^3	unitless	µg/m^3	M_{air} (µg/m^3)	
D1	R6	0.000009	0.000007	0.0752	0.0018	0.00013	0.00014	0.00014
D1	R11	0.000007	0.000006	0.0765	0.0018	0.00014	0.00014	0.00014
D1	R18	0.000004	0.000003	0.0776	0.0018	0.00014	0.00014	0.00014
D1	R46	0.000003	0.000002	0.0780	0.0018	0.00014	0.00014	0.00014
D1	R53	0.000004	0.000003	0.0777	0.0018	0.00014	0.00014	0.00014
D2	R43	0.000013	0.000011	0.0776	0.0018	0.00014	0.00015	0.00015
D2	R44	0.000003	0.000002	0.0782	0.0018	0.00014	0.00014	0.00014
D2	R68	0.000004	0.000003	0.0775	0.0018	0.00014	0.00014	0.00014
D2	R69	0.000003	0.000003	0.0779	0.0018	0.00014	0.00014	0.00014
D2	R70	0.000004	0.000003	0.0680	0.0018	0.00012	0.00012	0.00012
Other (D2)	R59	0.000001	0.000001	0.0788	0.0018	0.00014	0.00014	0.00014
D3	R3	0.000022	0.000017	0.0709	0.0018	0.00013	0.00015	0.00014
D3	R4	0.000012	0.000009	0.0743	0.0018	0.00013	0.00014	0.00014
D3	R5	0.000010	0.000008	0.0752	0.0018	0.00013	0.00014	0.00014
D3	R12	0.000006	0.000004	0.0770	0.0018	0.00014	0.00014	0.00014
D3	R13	0.000005	0.000004	0.0773	0.0018	0.00014	0.00014	0.00014
D3	R45	0.000006	0.000004	0.0771	0.0018	0.00014	0.00014	0.00014
D4	R1	0.000012	0.000010	0.0741	0.0018	0.00013	0.00014	0.00014
D4	R2	0.000015	0.000012	0.0740	0.0018	0.00013	0.00015	0.00014
Other (D4)	R21	0.000014	0.000011	0.0735	0.0018	0.00013	0.00014	0.00014
Other (D4)	R22	0.000014	0.000011	0.0734	0.0018	0.00013	0.00014	0.00014
Other (D4)	R23	0.000014	0.000011	0.0734	0.0018	0.00013	0.00014	0.00014
Other (D4)	R24	0.000015	0.000012	0.0736	0.0018	0.00013	0.00015	0.00014
Other (D4)	R25	0.000009	0.000007	0.0752	0.0018	0.00013	0.00014	0.00014
Other (D4)	R26	0.000018	0.000015	0.0733	0.0018	0.00013	0.00015	0.00015
D5	R31	0.000009	0.000007	0.0758	0.0018	0.00013	0.00014	0.00014
D5	R32	0.000009	0.000007	0.0760	0.0018	0.00014	0.00014	0.00014
D5	R33	0.000012	0.000009	0.0752	0.0018	0.00013	0.00015	0.00014
D5	R64	0.000003	0.000002	0.0781	0.0018	0.00014	0.00014	0.00014
D5	R65	0.000007	0.000005	0.0767	0.0018	0.00014	0.00014	0.00014
D5	R66	0.000005	0.000004	0.0775	0.0018	0.00014	0.00014	0.00014
D5	R67	0.000005	0.000004	0.0774	0.0018	0.00014	0.00014	0.00014
D6	R10	0.000008	0.000006	0.0760	0.0018	0.00014	0.00014	0.00014
D6	R34	0.000012	0.000009	0.0743	0.0018	0.00013	0.00014	0.00014
D6	R35	0.000011	0.000008	0.0748	0.0018	0.00013	0.00014	0.00014
D6	R36	0.000010	0.000008	0.0752	0.0018	0.00013	0.00014	0.00014
D6	R37	0.000009	0.000007	0.0756	0.0018	0.00013	0.00014	0.00014
D6	R41	0.000011	0.000009	0.0747	0.0018	0.00013	0.00014	0.00014
D6	R42	0.000013	0.000010	0.0739	0.0018	0.00013	0.00014	0.00014
D6	R47	0.000006	0.000005	0.0769	0.0018	0.00014	0.00014	0.00014
D6	R50	0.000007	0.000006	0.0763	0.0018	0.00014	0.00014	0.00014
Other (D6)	R27	0.000028	0.000028	0.0691	0.0018	0.00012	0.00015	0.00015
Other (D6)	R28	0.000027	0.000025	0.0692	0.0018	0.00012	0.00015	0.00015
Other (D6)	R29	0.000018	0.000016	0.0728	0.0018	0.00013	0.00015	0.00015
Other (D6)	R30	0.000019	0.000015	0.0726	0.0018	0.00013	0.00015	0.00014
D7	R7	0.000005	0.000004	0.0771	0.0018	0.00014	0.00014	0.00014
D7	R9	0.000008	0.000006	0.0759	0.0018	0.00013	0.00014	0.00014
D7	R38	0.000005	0.000003	0.0775	0.0018	0.00014	0.00014	0.00014
D7	R39	0.000005	0.000003	0.0774	0.0018	0.00014	0.00014	0.00014
D7	R40	0.000009	0.000007	0.0755	0.0018	0.00013	0.00014	0.00014
D7	R51	0.000005	0.000004	0.0771	0.0018	0.00014	0.00014	0.00014
D7	R52	0.000006	0.000004	0.0769	0.0018	0.00014	0.00014	0.00014
D7	R57	0.000003	0.000002	0.0779	0.0018	0.00014	0.00014	0.00014
D7	R62	0.000003	0.000002	0.0780	0.0018	0.00014	0.00014	0.00014
Other (D7)	R8	0.000010	0.000008	0.0750	0.0018	0.00013	0.00014	0.00014
D8	R55	0.000002	0.000001	0.0785	0.0018	0.00014	0.00014	0.00014
D8	R56	0.000002	0.000001	0.0784	0.0018	0.00014	0.00014	0.00014
D8	R61	0.000002	0.000001	0.0785	0.0018	0.00014	0.00014	0.00014
D9	R16	0.000003	0.000002	0.0782	0.0018	0.00014	0.00014	0.00014
D9	R19	0.000002	0.000001	0.0785	0.0018	0.00014	0.00014	0.00014
D9	R20	0.000002	0.000001	0.0784	0.0018	0.00014	0.00014	0.00014
D9	R48	0.000003	0.000002	0.0781	0.0018	0.00014	0.00014	0.00014
D9	R49	0.000002	0.000001	0.0786	0.0018	0.00014	0.00014	0.00014
D9	R60	0.000004	0.000003	0.0778	0.0018	0.00014	0.00014	0.00014
D10	R14	0.000005	0.000004	0.0772	0.0018	0.00014	0.00014	0.00014
D10	R15	0.000002	0.000002	0.0783	0.0018	0.00014	0.00014	0.00014
D10	R17	0.000004	0.000003	0.0775	0.0018	0.00014	0.00014	0.00014
D10	R54	0.000004	0.000003	0.0777	0.0018	0.00014	0.00014	0.00014
D10	R58	0.000002	0.000001	0.0785	0.0018	0.00014	0.00014	0.00014
D10	R63	0.000002	0.000002	0.0782	0.0018	0.00014	0.00014	0.00014

As

Arsenic (As)		Annual avg metal in PM_{10} (mine-only)					Annual avg metal in PM_{10} (mine+background)	
		S1: Current Operations (BAU)	S2: Mod6 Operations	Background Pb	Ratio of metal to Pb	Estimated background for metal of interest	S1: Current Operations (BAU)	S2: Mod6 Operations
District	ID	$\mu g/m^3$		$\mu g/m^3$	unitless	$\mu g/m^3$	M_{air} ($\mu g/m^3$)	
D1	R6	0.000048	0.000036	0.0752	0.0098	0.00074	0.00079	0.00078
D1	R11	0.000041	0.000030	0.0765	0.0098	0.00075	0.00079	0.00078
D1	R18	0.000024	0.000017	0.0776	0.0098	0.00076	0.00079	0.00078
D1	R46	0.000018	0.000013	0.0780	0.0098	0.00077	0.00079	0.00078
D1	R53	0.000022	0.000016	0.0777	0.0098	0.00076	0.00079	0.00078
D2	R43	0.000071	0.000059	0.0776	0.0098	0.00076	0.00083	0.00082
D2	R44	0.000014	0.000011	0.0782	0.0098	0.00077	0.00078	0.00078
D2	R68	0.000024	0.000019	0.0775	0.0098	0.00076	0.00079	0.00078
D2	R69	0.000019	0.000014	0.0779	0.0098	0.00077	0.00079	0.00078
D2	R70	0.000020	0.000015	0.0680	0.0098	0.00067	0.00069	0.00068
Other (D2)	R59	0.000005	0.000004	0.0788	0.0098	0.00078	0.00078	0.00078
D3	R3	0.000121	0.000096	0.0709	0.0098	0.00070	0.00082	0.00079
D3	R4	0.000066	0.000051	0.0743	0.0098	0.00073	0.00080	0.00078
D3	R5	0.000056	0.000042	0.0752	0.0098	0.00074	0.00080	0.00078
D3	R12	0.000033	0.000025	0.0770	0.0098	0.00076	0.00079	0.00078
D3	R13	0.000028	0.000021	0.0773	0.0098	0.00076	0.00079	0.00078
D3	R45	0.000032	0.000024	0.0771	0.0098	0.00076	0.00079	0.00078
D4	R1	0.000067	0.000056	0.0741	0.0098	0.00073	0.00080	0.00078
D4	R2	0.000081	0.000064	0.0740	0.0098	0.00073	0.00081	0.00079
Other (D4)	R21	0.000076	0.000061	0.0735	0.0098	0.00072	0.00080	0.00078
Other (D4)	R22	0.000077	0.000060	0.0734	0.0098	0.00072	0.00080	0.00078
Other (D4)	R23	0.000080	0.000062	0.0734	0.0098	0.00072	0.00080	0.00078
Other (D4)	R24	0.000082	0.000065	0.0736	0.0098	0.00072	0.00081	0.00079
Other (D4)	R25	0.000050	0.000040	0.0752	0.0098	0.00074	0.00079	0.00078
Other (D4)	R26	0.000100	0.000082	0.0733	0.0098	0.00072	0.00082	0.00080
D5	R31	0.000050	0.000041	0.0758	0.0098	0.00075	0.00080	0.00079
D5	R32	0.000048	0.000039	0.0760	0.0098	0.00075	0.00080	0.00079
D5	R33	0.000065	0.000051	0.0752	0.0098	0.00074	0.00081	0.00079
D5	R64	0.000016	0.000012	0.0781	0.0098	0.00077	0.00078	0.00078
D5	R65	0.000038	0.000030	0.0767	0.0098	0.00075	0.00079	0.00078
D5	R66	0.000026	0.000020	0.0775	0.0098	0.00076	0.00079	0.00078
D5	R67	0.000027	0.000021	0.0774	0.0098	0.00076	0.00079	0.00078
D6	R10	0.000043	0.000033	0.0760	0.0098	0.00075	0.00079	0.00078
D6	R34	0.000065	0.000049	0.0743	0.0098	0.00073	0.00080	0.00078
D6	R35	0.000060	0.000044	0.0748	0.0098	0.00074	0.00080	0.00078
D6	R36	0.000056	0.000042	0.0752	0.0098	0.00074	0.00080	0.00078
D6	R37	0.000052	0.000041	0.0756	0.0098	0.00074	0.00080	0.00078
D6	R41	0.000061	0.000049	0.0747	0.0098	0.00073	0.00080	0.00078
D6	R42	0.000069	0.000054	0.0739	0.0098	0.00073	0.00080	0.00078
D6	R47	0.000034	0.000025	0.0769	0.0098	0.00076	0.00079	0.00078
D6	R50	0.000041	0.000031	0.0763	0.0098	0.00075	0.00079	0.00078
Other (D6)	R27	0.000157	0.000155	0.0691	0.0098	0.00068	0.00084	0.00083
Other (D6)	R28	0.000150	0.000136	0.0692	0.0098	0.00068	0.00083	0.00082
Other (D6)	R29	0.000100	0.000091	0.0728	0.0098	0.00072	0.00082	0.00081
Other (D6)	R30	0.000103	0.000085	0.0726	0.0098	0.00071	0.00082	0.00080
D7	R7	0.000026	0.000021	0.0771	0.0098	0.00076	0.00078	0.00078
D7	R9	0.000045	0.000035	0.0759	0.0098	0.00075	0.00079	0.00078
D7	R38	0.000026	0.000018	0.0775	0.0098	0.00076	0.00079	0.00078
D7	R39	0.000026	0.000019	0.0774	0.0098	0.00076	0.00079	0.00078
D7	R40	0.000051	0.000040	0.0755	0.0098	0.00074	0.00079	0.00078
D7	R51	0.000028	0.000021	0.0771	0.0098	0.00076	0.00079	0.00078
D7	R52	0.000031	0.000024	0.0769	0.0098	0.00076	0.00079	0.00078
D7	R57	0.000018	0.000014	0.0779	0.0098	0.00077	0.00078	0.00078
D7	R62	0.000019	0.000013	0.0780	0.0098	0.00077	0.00079	0.00078
Other (D7)	R8	0.000055	0.000042	0.0750	0.0098	0.00074	0.00079	0.00078
D8	R55	0.000010	0.000007	0.0785	0.0098	0.00077	0.00078	0.00078
D8	R56	0.000011	0.000008	0.0784	0.0098	0.00077	0.00078	0.00078
D8	R61	0.000010	0.000007	0.0785	0.0098	0.00077	0.00078	0.00078
D9	R16	0.000014	0.000011	0.0782	0.0098	0.00077	0.00078	0.00078
D9	R19	0.000010	0.000008	0.0785	0.0098	0.00077	0.00078	0.00078
D9	R20	0.000011	0.000008	0.0784	0.0098	0.00077	0.00078	0.00078
D9	R48	0.000016	0.000012	0.0781	0.0098	0.00077	0.00078	0.00078
D9	R49	0.000009	0.000007	0.0786	0.0098	0.00077	0.00078	0.00078
D9	R60	0.000020	0.000016	0.0778	0.0098	0.00077	0.00079	0.00078
D10	R14	0.000028	0.000021	0.0772	0.0098	0.00076	0.00079	0.00078
D10	R15	0.000012	0.000009	0.0783	0.0098	0.00077	0.00078	0.00078
D10	R17	0.000023	0.000018	0.0775	0.0098	0.00076	0.00079	0.00078
D10	R54	0.000019	0.000015	0.0777	0.0098	0.00076	0.00078	0.00078
D10	R58	0.000009	0.000007	0.0785	0.0098	0.00077	0.00078	0.00078
D10	R63	0.000013	0.000010	0.0782	0.0098	0.00077	0.00078	0.00078

Barium (Ba)		Annual avg metal in PM_{10} (mine-only)					Annual avg metal in PM_{10} (mine+background)	
		S1: Current Operations (BAU)	S2: Mod6 Operations	Background Pb	Ratio of metal to Pb	Estimated background for metal of interest	S1: Current Operations (BAU)	S2: Mod6 Operations
District	ID	µg/m^3		µg/m^3	unitless	µg/m^3	M_{air} (µg/m^3)	
D1	R6	0.0000022	0.0000016	0.0752	0.0004	0.00003	0.00004	0.00003
D1	R11	0.0000018	0.0000014	0.0765	0.0004	0.00003	0.00004	0.00004
D1	R18	0.0000011	0.0000008	0.0776	0.0004	0.00003	0.00004	0.00004
D1	R46	0.0000008	0.0000006	0.0780	0.0004	0.00003	0.00004	0.00004
D1	R53	0.0000010	0.0000007	0.0777	0.0004	0.00003	0.00004	0.00004
D2	R43	0.0000032	0.0000026	0.0776	0.0004	0.00003	0.00004	0.00004
D2	R44	0.0000006	0.0000005	0.0782	0.0004	0.00003	0.00004	0.00004
D2	R68	0.0000011	0.0000008	0.0775	0.0004	0.00003	0.00004	0.00004
D2	R69	0.0000009	0.0000006	0.0779	0.0004	0.00003	0.00004	0.00004
D2	R70	0.0000009	0.0000007	0.0680	0.0004	0.00003	0.00003	0.00003
Other (D2)	R59	0.0000002	0.0000002	0.0788	0.0004	0.00003	0.00004	0.00004
D3	R3	0.0000054	0.0000043	0.0709	0.0004	0.00003	0.00004	0.00004
D3	R4	0.0000030	0.0000023	0.0743	0.0004	0.00003	0.00004	0.00004
D3	R5	0.0000025	0.0000019	0.0752	0.0004	0.00003	0.00004	0.00004
D3	R12	0.0000015	0.0000011	0.0770	0.0004	0.00003	0.00004	0.00004
D3	R13	0.0000013	0.0000009	0.0773	0.0004	0.00003	0.00004	0.00004
D3	R45	0.0000015	0.0000011	0.0771	0.0004	0.00003	0.00004	0.00004
D4	R1	0.0000030	0.0000025	0.0741	0.0004	0.00003	0.00004	0.00004
D4	R2	0.0000036	0.0000029	0.0740	0.0004	0.00003	0.00004	0.00004
Other (D4)	R21	0.0000034	0.0000027	0.0735	0.0004	0.00003	0.00004	0.00004
Other (D4)	R22	0.0000035	0.0000027	0.0734	0.0004	0.00003	0.00004	0.00004
Other (D4)	R23	0.0000036	0.0000028	0.0734	0.0004	0.00003	0.00004	0.00004
Other (D4)	R24	0.0000037	0.0000029	0.0736	0.0004	0.00003	0.00004	0.00004
Other (D4)	R25	0.0000023	0.0000018	0.0752	0.0004	0.00003	0.00004	0.00004
Other (D4)	R26	0.0000045	0.0000037	0.0733	0.0004	0.00003	0.00004	0.00004
D5	R31	0.0000023	0.0000018	0.0758	0.0004	0.00003	0.00004	0.00004
D5	R32	0.0000021	0.0000017	0.0760	0.0004	0.00003	0.00004	0.00004
D5	R33	0.0000029	0.0000023	0.0752	0.0004	0.00003	0.00004	0.00004
D5	R64	0.0000007	0.0000006	0.0781	0.0004	0.00003	0.00004	0.00004
D5	R65	0.0000017	0.0000013	0.0767	0.0004	0.00003	0.00004	0.00004
D5	R66	0.0000012	0.0000009	0.0775	0.0004	0.00003	0.00004	0.00004
D5	R67	0.0000012	0.0000009	0.0774	0.0004	0.00003	0.00004	0.00004
D6	R10	0.0000019	0.0000015	0.0760	0.0004	0.00003	0.00004	0.00004
D6	R34	0.0000029	0.0000022	0.0743	0.0004	0.00003	0.00004	0.00004
D6	R35	0.0000027	0.0000020	0.0748	0.0004	0.00003	0.00004	0.00004
D6	R36	0.0000025	0.0000019	0.0752	0.0004	0.00003	0.00004	0.00004
D6	R37	0.0000024	0.0000018	0.0756	0.0004	0.00003	0.00004	0.00004
D6	R41	0.0000028	0.0000022	0.0747	0.0004	0.00003	0.00004	0.00004
D6	R42	0.0000031	0.0000024	0.0739	0.0004	0.00003	0.00004	0.00004
D6	R47	0.0000015	0.0000011	0.0769	0.0004	0.00003	0.00004	0.00004
D6	R50	0.0000019	0.0000014	0.0763	0.0004	0.00003	0.00004	0.00004
Other (D6)	R27	0.0000070	0.0000069	0.0691	0.0004	0.00003	0.00004	0.00004
Other (D6)	R28	0.0000067	0.0000061	0.0692	0.0004	0.00003	0.00004	0.00004
Other (D6)	R29	0.0000045	0.0000041	0.0728	0.0004	0.00003	0.00004	0.00004
Other (D6)	R30	0.0000046	0.0000038	0.0726	0.0004	0.00003	0.00004	0.00004
D7	R7	0.0000012	0.0000009	0.0771	0.0004	0.00003	0.00004	0.00004
D7	R9	0.0000020	0.0000016	0.0759	0.0004	0.00003	0.00004	0.00004
D7	R38	0.0000012	0.0000008	0.0775	0.0004	0.00003	0.00004	0.00004
D7	R39	0.0000012	0.0000008	0.0774	0.0004	0.00003	0.00004	0.00004
D7	R40	0.0000023	0.0000018	0.0755	0.0004	0.00003	0.00004	0.00004
D7	R51	0.0000013	0.0000010	0.0771	0.0004	0.00003	0.00004	0.00004
D7	R52	0.0000014	0.0000011	0.0769	0.0004	0.00003	0.00004	0.00004
D7	R57	0.0000008	0.0000006	0.0779	0.0004	0.00003	0.00004	0.00004
D7	R62	0.0000009	0.0000006	0.0780	0.0004	0.00003	0.00004	0.00004
Other (D7)	R8	0.0000025	0.0000019	0.0750	0.0004	0.00003	0.00004	0.00004
D8	R55	0.0000004	0.0000003	0.0785	0.0004	0.00003	0.00004	0.00004
D8	R56	0.0000005	0.0000004	0.0784	0.0004	0.00003	0.00004	0.00004
D8	R61	0.0000005	0.0000003	0.0785	0.0004	0.00003	0.00004	0.00004
D9	R16	0.0000006	0.0000005	0.0782	0.0004	0.00003	0.00004	0.00004
D9	R19	0.0000005	0.0000003	0.0785	0.0004	0.00003	0.00004	0.00004
D9	R20	0.0000005	0.0000004	0.0784	0.0004	0.00003	0.00004	0.00004
D9	R48	0.0000007	0.0000006	0.0781	0.0004	0.00003	0.00004	0.00004
D9	R49	0.0000004	0.0000003	0.0786	0.0004	0.00003	0.00004	0.00004
D9	R60	0.0000009	0.0000007	0.0778	0.0004	0.00003	0.00004	0.00004
D10	R14	0.0000012	0.0000009	0.0772	0.0004	0.00003	0.00004	0.00004
D10	R15	0.0000005	0.0000004	0.0783	0.0004	0.00003	0.00004	0.00004
D10	R17	0.0000010	0.0000008	0.0775	0.0004	0.00003	0.00004	0.00004
D10	R54	0.0000009	0.0000007	0.0777	0.0004	0.00003	0.00004	0.00004
D10	R58	0.0000004	0.0000003	0.0785	0.0004	0.00003	0.00004	0.00004
D10	R63	0.0000006	0.0000005	0.0782	0.0004	0.00003	0.00004	0.00004

Beryllium (Be)		Annual avg metal in PM_{10} (mine-only)					Annual avg metal in PM_{10} (mine+background)	
		S1: Current Operations (BAU)	S2: Mod6 Operations	Background Pb	Ratio of metal to Pb	Estimated background for metal of interest	S1: Current Operations (BAU)	S2: Mod6 Operations
District	ID	µg/m^3		µg/m^3	unitless	µg/m^3	M_{air} (µg/m^3)	
D1	R6	0.000000023	0.000000018	0.0752	0.000005	0.0000004	0.00000038	0.00000038
D1	R11	0.000000020	0.000000015	0.0765	0.000005	0.0000004	0.00000039	0.00000038
D1	R18	0.000000011	0.000000008	0.0776	0.000005	0.0000004	0.00000038	0.00000038
D1	R46	0.000000009	0.000000007	0.0780	0.000005	0.0000004	0.00000038	0.00000038
D1	R53	0.000000011	0.000000008	0.0777	0.000005	0.0000004	0.00000038	0.00000038
D2	R43	0.000000035	0.000000029	0.0776	0.000005	0.0000004	0.00000041	0.00000040
D2	R44	0.000000007	0.000000005	0.0782	0.000005	0.0000004	0.00000038	0.00000038
D2	R68	0.000000012	0.000000009	0.0775	0.000005	0.0000004	0.00000038	0.00000038
D2	R69	0.000000009	0.000000007	0.0779	0.000005	0.0000004	0.00000038	0.00000038
D2	R70	0.000000010	0.000000007	0.0680	0.000005	0.0000003	0.00000034	0.00000033
Other (D2)	R59	0.000000003	0.000000002	0.0788	0.000005	0.0000004	0.00000038	0.00000038
D3	R3	0.000000059	0.000000047	0.0709	0.000005	0.0000003	0.00000040	0.00000039
D3	R4	0.000000032	0.000000025	0.0743	0.000005	0.0000004	0.00000039	0.00000038
D3	R5	0.000000027	0.000000021	0.0752	0.000005	0.0000004	0.00000039	0.00000038
D3	R12	0.000000016	0.000000012	0.0770	0.000005	0.0000004	0.00000039	0.00000038
D3	R13	0.000000014	0.000000010	0.0773	0.000005	0.0000004	0.00000038	0.00000038
D3	R45	0.000000016	0.000000012	0.0771	0.000005	0.0000004	0.00000039	0.00000038
D4	R1	0.000000033	0.000000027	0.0741	0.000005	0.0000004	0.00000039	0.00000038
D4	R2	0.000000039	0.000000031	0.0740	0.000005	0.0000004	0.00000039	0.00000039
Other (D4)	R21	0.000000037	0.000000030	0.0735	0.000005	0.0000004	0.00000039	0.00000038
Other (D4)	R22	0.000000038	0.000000029	0.0734	0.000005	0.0000004	0.00000039	0.00000038
Other (D4)	R23	0.000000039	0.000000030	0.0734	0.000005	0.0000004	0.00000039	0.00000038
Other (D4)	R24	0.000000040	0.000000032	0.0736	0.000005	0.0000004	0.00000039	0.00000038
Other (D4)	R25	0.000000025	0.000000020	0.0752	0.000005	0.0000004	0.00000039	0.00000038
Other (D4)	R26	0.000000049	0.000000040	0.0733	0.000005	0.0000004	0.00000040	0.00000039
D5	R31	0.000000025	0.000000020	0.0758	0.000005	0.0000004	0.00000039	0.00000038
D5	R32	0.000000023	0.000000019	0.0760	0.000005	0.0000004	0.00000039	0.00000038
D5	R33	0.000000032	0.000000025	0.0752	0.000005	0.0000004	0.00000039	0.00000039
D5	R64	0.000000008	0.000000006	0.0781	0.000005	0.0000004	0.00000038	0.00000038
D5	R65	0.000000018	0.000000015	0.0767	0.000005	0.0000004	0.00000039	0.00000038
D5	R66	0.000000013	0.000000010	0.0775	0.000005	0.0000004	0.00000038	0.00000038
D5	R67	0.000000013	0.000000010	0.0774	0.000005	0.0000004	0.00000038	0.00000038
D6	R10	0.000000021	0.000000016	0.0760	0.000005	0.0000004	0.00000039	0.00000038
D6	R34	0.000000032	0.000000024	0.0743	0.000005	0.0000004	0.00000039	0.00000038
D6	R35	0.000000029	0.000000021	0.0748	0.000005	0.0000004	0.00000039	0.00000038
D6	R36	0.000000028	0.000000021	0.0752	0.000005	0.0000004	0.00000039	0.00000038
D6	R37	0.000000026	0.000000020	0.0756	0.000005	0.0000004	0.00000039	0.00000038
D6	R41	0.000000030	0.000000024	0.0747	0.000005	0.0000004	0.00000039	0.00000038
D6	R42	0.000000034	0.000000026	0.0739	0.000005	0.0000004	0.00000039	0.00000038
D6	R47	0.000000016	0.000000012	0.0769	0.000005	0.0000004	0.00000039	0.00000038
D6	R50	0.000000020	0.000000015	0.0763	0.000005	0.0000004	0.00000039	0.00000038
Other (D6)	R27	0.000000076	0.000000075	0.0691	0.000005	0.0000003	0.00000041	0.00000041
Other (D6)	R28	0.000000073	0.000000066	0.0692	0.000005	0.0000003	0.00000041	0.00000040
Other (D6)	R29	0.000000049	0.000000044	0.0728	0.000005	0.0000003	0.00000040	0.00000039
Other (D6)	R30	0.000000050	0.000000041	0.0726	0.000005	0.0000003	0.00000040	0.00000039
D7	R7	0.000000013	0.000000010	0.0771	0.000005	0.0000004	0.00000038	0.00000038
D7	R9	0.000000022	0.000000017	0.0759	0.000005	0.0000004	0.00000039	0.00000038
D7	R38	0.000000013	0.000000009	0.0775	0.000005	0.0000004	0.00000038	0.00000038
D7	R39	0.000000013	0.000000009	0.0774	0.000005	0.0000004	0.00000038	0.00000038
D7	R40	0.000000025	0.000000019	0.0755	0.000005	0.0000004	0.00000039	0.00000038
D7	R51	0.000000014	0.000000010	0.0771	0.000005	0.0000004	0.00000038	0.00000038
D7	R52	0.000000015	0.000000011	0.0769	0.000005	0.0000004	0.00000038	0.00000038
D7	R57	0.000000009	0.000000007	0.0779	0.000005	0.0000004	0.00000038	0.00000038
D7	R62	0.000000009	0.000000007	0.0780	0.000005	0.0000004	0.00000038	0.00000038
Other (D7)	R8	0.000000027	0.000000020	0.0750	0.000005	0.0000004	0.00000039	0.00000038
D8	R55	0.000000005	0.000000004	0.0785	0.000005	0.0000004	0.00000038	0.00000038
D8	R56	0.000000005	0.000000004	0.0784	0.000005	0.0000004	0.00000038	0.00000038
D8	R61	0.000000005	0.000000004	0.0785	0.000005	0.0000004	0.00000038	0.00000038
D9	R16	0.000000007	0.000000005	0.0782	0.000005	0.0000004	0.00000038	0.00000038
D9	R19	0.000000005	0.000000004	0.0785	0.000005	0.0000004	0.00000038	0.00000038
D9	R20	0.000000005	0.000000004	0.0784	0.000005	0.0000004	0.00000038	0.00000038
D9	R48	0.000000008	0.000000006	0.0781	0.000005	0.0000004	0.00000038	0.00000038
D9	R49	0.000000004	0.000000003	0.0786	0.000005	0.0000004	0.00000038	0.00000038
D9	R60	0.000000010	0.000000008	0.0778	0.000005	0.0000004	0.00000038	0.00000038
D10	R14	0.000000013	0.000000010	0.0772	0.000005	0.0000004	0.00000038	0.00000038
D10	R15	0.000000006	0.000000004	0.0783	0.000005	0.0000004	0.00000038	0.00000038
D10	R17	0.000000011	0.000000009	0.0775	0.000005	0.0000004	0.00000038	0.00000038
D10	R54	0.000000010	0.000000007	0.0777	0.000005	0.0000004	0.00000038	0.00000038
D10	R58	0.000000005	0.000000004	0.0785	0.000005	0.0000004	0.00000038	0.00000038
D10	R63	0.000000006	0.000000005	0.0782	0.000005	0.0000004	0.00000038	0.00000038

Cadmium (Cd)		Annual avg metal in PM_{10} (mine-only)					Annual avg metal in PM_{10} (mine+background)	
		S1: Current Operations (BAU)	S2: Mod6 Operations	Background Pb	Ratio of metal to Pb	Estimated background for metal of interest	S1: Current Operations (BAU)	S2: Mod6 Operations
District	ID	$\mu g/m^3$		$\mu g/m^3$	unitless	$\mu g/m^3$	M_{air} ($\mu g/m^3$)	
D1	R6	0.000019	0.000015	0.0752	0.004	0.00030	0.00032	0.00031
D1	R11	0.000016	0.000012	0.0765	0.004	0.00030	0.00032	0.00032
D1	R18	0.000009	0.000007	0.0776	0.004	0.00031	0.00032	0.00031
D1	R46	0.000007	0.000005	0.0780	0.004	0.00031	0.00032	0.00031
D1	R53	0.000009	0.000007	0.0777	0.004	0.00031	0.00032	0.00031
D2	R43	0.000029	0.000024	0.0776	0.004	0.00031	0.00034	0.00033
D2	R44	0.000006	0.000004	0.0782	0.004	0.00031	0.00032	0.00031
D2	R68	0.000010	0.000008	0.0775	0.004	0.00031	0.00032	0.00032
D2	R69	0.000008	0.000006	0.0779	0.004	0.00031	0.00032	0.00031
D2	R70	0.000008	0.000006	0.0680	0.004	0.00027	0.00028	0.00028
Other (D2)	R59	0.000002	0.000002	0.0788	0.004	0.00031	0.00032	0.00031
D3	R3	0.000049	0.000039	0.0709	0.004	0.00028	0.00033	0.00032
D3	R4	0.000027	0.000020	0.0743	0.004	0.00029	0.00032	0.00032
D3	R5	0.000023	0.000017	0.0752	0.004	0.00030	0.00032	0.00032
D3	R12	0.000013	0.000010	0.0770	0.004	0.00031	0.00032	0.00032
D3	R13	0.000011	0.000008	0.0773	0.004	0.00031	0.00032	0.00032
D3	R45	0.000013	0.000010	0.0771	0.004	0.00031	0.00032	0.00032
D4	R1	0.000027	0.000023	0.0741	0.004	0.00029	0.00032	0.00032
D4	R2	0.000033	0.000026	0.0740	0.004	0.00029	0.00033	0.00032
Other (D4)	R21	0.000031	0.000024	0.0735	0.004	0.00029	0.00032	0.00032
Other (D4)	R22	0.000031	0.000024	0.0734	0.004	0.00029	0.00032	0.00032
Other (D4)	R23	0.000032	0.000025	0.0734	0.004	0.00029	0.00032	0.00032
Other (D4)	R24	0.000033	0.000026	0.0736	0.004	0.00029	0.00033	0.00032
Other (D4)	R25	0.000020	0.000016	0.0752	0.004	0.00030	0.00032	0.00031
Other (D4)	R26	0.000040	0.000033	0.0733	0.004	0.00029	0.00033	0.00032
D5	R31	0.000020	0.000017	0.0758	0.004	0.00030	0.00032	0.00032
D5	R32	0.000019	0.000016	0.0760	0.004	0.00030	0.00032	0.00032
D5	R33	0.000026	0.000021	0.0752	0.004	0.00030	0.00032	0.00032
D5	R64	0.000006	0.000005	0.0781	0.004	0.00031	0.00032	0.00031
D5	R65	0.000015	0.000012	0.0767	0.004	0.00030	0.00032	0.00032
D5	R66	0.000010	0.000008	0.0775	0.004	0.00031	0.00032	0.00032
D5	R67	0.000011	0.000008	0.0774	0.004	0.00031	0.00032	0.00032
D6	R10	0.000017	0.000013	0.0760	0.004	0.00030	0.00032	0.00032
D6	R34	0.000026	0.000020	0.0743	0.004	0.00029	0.00032	0.00031
D6	R35	0.000024	0.000018	0.0748	0.004	0.00030	0.00032	0.00031
D6	R36	0.000023	0.000017	0.0752	0.004	0.00030	0.00032	0.00032
D6	R37	0.000021	0.000016	0.0756	0.004	0.00030	0.00032	0.00032
D6	R41	0.000025	0.000020	0.0747	0.004	0.00030	0.00032	0.00032
D6	R42	0.000028	0.000022	0.0739	0.004	0.00029	0.00032	0.00032
D6	R47	0.000014	0.000010	0.0769	0.004	0.00031	0.00032	0.00032
D6	R50	0.000017	0.000012	0.0763	0.004	0.00030	0.00032	0.00032
Other (D6)	R27	0.000063	0.000062	0.0691	0.004	0.00027	0.00034	0.00034
Other (D6)	R28	0.000060	0.000055	0.0692	0.004	0.00027	0.00034	0.00033
Other (D6)	R29	0.000040	0.000037	0.0728	0.004	0.00029	0.00033	0.00033
Other (D6)	R30	0.000041	0.000034	0.0726	0.004	0.00029	0.00033	0.00032
D7	R7	0.000011	0.000008	0.0771	0.004	0.00031	0.00032	0.00031
D7	R9	0.000018	0.000014	0.0759	0.004	0.00030	0.00032	0.00032
D7	R38	0.000010	0.000007	0.0775	0.004	0.00031	0.00032	0.00032
D7	R39	0.000011	0.000007	0.0774	0.004	0.00031	0.00032	0.00031
D7	R40	0.000020	0.000016	0.0755	0.004	0.00030	0.00032	0.00032
D7	R51	0.000011	0.000009	0.0771	0.004	0.00031	0.00032	0.00031
D7	R52	0.000013	0.000010	0.0769	0.004	0.00031	0.00032	0.00031
D7	R57	0.000007	0.000005	0.0779	0.004	0.00031	0.00032	0.00031
D7	R62	0.000008	0.000005	0.0780	0.004	0.00031	0.00032	0.00031
Other (D7)	R8	0.000022	0.000017	0.0750	0.004	0.00030	0.00032	0.00031
D8	R55	0.000004	0.000003	0.0785	0.004	0.00031	0.00032	0.00031
D8	R56	0.000004	0.000003	0.0784	0.004	0.00031	0.00032	0.00031
D8	R61	0.000004	0.000003	0.0785	0.004	0.00031	0.00032	0.00031
D9	R16	0.000006	0.000004	0.0782	0.004	0.00031	0.00032	0.00031
D9	R19	0.000004	0.000003	0.0785	0.004	0.00031	0.00032	0.00031
D9	R20	0.000004	0.000003	0.0784	0.004	0.00031	0.00032	0.00031
D9	R48	0.000006	0.000005	0.0781	0.004	0.00031	0.00032	0.00031
D9	R49	0.000004	0.000003	0.0786	0.004	0.00031	0.00032	0.00031
D9	R60	0.000008	0.000006	0.0778	0.004	0.00031	0.00032	0.00032
D10	R14	0.000011	0.000008	0.0772	0.004	0.00031	0.00032	0.00031
D10	R15	0.000005	0.000004	0.0783	0.004	0.00031	0.00032	0.00031
D10	R17	0.000009	0.000007	0.0775	0.004	0.00031	0.00032	0.00031
D10	R54	0.000008	0.000006	0.0777	0.004	0.00031	0.00032	0.00031
D10	R58	0.000004	0.000003	0.0785	0.004	0.00031	0.00032	0.00031
D10	R63	0.000005	0.000004	0.0782	0.004	0.00031	0.00032	0.00031

Cr

Chromium (Cr)		Annual avg metal in PM_{10} (mine-only)					Annual avg metal in PM_{10} (mine+background)	
		S1: Current Operations (BAU)	S2: Mod6 Operations	Background Pb	Ratio of metal to Pb	Estimated background for metal of interest	S1: Current Operations (BAU)	S2: Mod6 Operations
District	ID	µg/m^3		µg/m^3	unitless	µg/m^3	M_{air} (µg/m^3)	
D1	R6	0.0000017	0.0000013	0.0752	0.0004	0.00003	0.000028	0.000028
D1	R11	0.0000015	0.0000011	0.0765	0.0004	0.00003	0.000028	0.000028
D1	R18	0.0000008	0.0000006	0.0776	0.0004	0.00003	0.000028	0.000028
D1	R46	0.0000007	0.0000005	0.0780	0.0004	0.00003	0.000028	0.000028
D1	R53	0.0000008	0.0000006	0.0777	0.0004	0.00003	0.000028	0.000028
D2	R43	0.0000025	0.0000021	0.0776	0.0004	0.00003	0.000030	0.000029
D2	R44	0.0000005	0.0000004	0.0782	0.0004	0.00003	0.000028	0.000028
D2	R68	0.0000009	0.0000007	0.0775	0.0004	0.00003	0.000028	0.000028
D2	R69	0.0000007	0.0000005	0.0779	0.0004	0.00003	0.000028	0.000028
D2	R70	0.0000007	0.0000005	0.0680	0.0004	0.00002	0.000025	0.000024
Other (D2)	R59	0.0000002	0.0000001	0.0788	0.0004	0.00003	0.000028	0.000028
D3	R3	0.0000043	0.0000034	0.0709	0.0004	0.00002	0.000029	0.000028
D3	R4	0.0000024	0.0000018	0.0743	0.0004	0.00003	0.000028	0.000028
D3	R5	0.0000020	0.0000015	0.0752	0.0004	0.00003	0.000028	0.000028
D3	R12	0.0000012	0.0000009	0.0770	0.0004	0.00003	0.000028	0.000028
D3	R13	0.0000010	0.0000008	0.0773	0.0004	0.00003	0.000028	0.000028
D3	R45	0.0000012	0.0000009	0.0771	0.0004	0.00003	0.000028	0.000028
D4	R1	0.0000024	0.0000020	0.0741	0.0004	0.00003	0.000028	0.000028
D4	R2	0.0000029	0.0000023	0.0740	0.0004	0.00003	0.000029	0.000028
Other (D4)	R21	0.0000027	0.0000022	0.0735	0.0004	0.00003	0.000028	0.000028
Other (D4)	R22	0.0000027	0.0000021	0.0734	0.0004	0.00003	0.000029	0.000028
Other (D4)	R23	0.0000028	0.0000022	0.0734	0.0004	0.00003	0.000029	0.000028
Other (D4)	R24	0.0000029	0.0000023	0.0736	0.0004	0.00003	0.000029	0.000028
Other (D4)	R25	0.0000018	0.0000014	0.0752	0.0004	0.00003	0.000028	0.000028
Other (D4)	R26	0.0000036	0.0000029	0.0733	0.0004	0.00003	0.000029	0.000029
D5	R31	0.0000018	0.0000015	0.0758	0.0004	0.00003	0.000028	0.000028
D5	R32	0.0000017	0.0000014	0.0760	0.0004	0.00003	0.000028	0.000028
D5	R33	0.0000023	0.0000018	0.0752	0.0004	0.00003	0.000029	0.000028
D5	R64	0.0000006	0.0000004	0.0781	0.0004	0.00003	0.000028	0.000028
D5	R65	0.0000013	0.0000011	0.0767	0.0004	0.00003	0.000028	0.000028
D5	R66	0.0000009	0.0000007	0.0775	0.0004	0.00003	0.000028	0.000028
D5	R67	0.0000010	0.0000007	0.0774	0.0004	0.00003	0.000028	0.000028
D6	R10	0.0000015	0.0000012	0.0760	0.0004	0.00003	0.000028	0.000028
D6	R34	0.0000023	0.0000017	0.0743	0.0004	0.00003	0.000028	0.000028
D6	R35	0.0000021	0.0000016	0.0748	0.0004	0.00003	0.000028	0.000028
D6	R36	0.0000020	0.0000015	0.0752	0.0004	0.00003	0.000028	0.000028
D6	R37	0.0000019	0.0000015	0.0756	0.0004	0.00003	0.000028	0.000028
D6	R41	0.0000022	0.0000017	0.0747	0.0004	0.00003	0.000028	0.000028
D6	R42	0.0000025	0.0000019	0.0739	0.0004	0.00003	0.000028	0.000028
D6	R47	0.0000012	0.0000009	0.0769	0.0004	0.00003	0.000028	0.000028
D6	R50	0.0000015	0.0000011	0.0763	0.0004	0.00003	0.000028	0.000028
Other (D6)	R27	0.0000056	0.0000055	0.0691	0.0004	0.00002	0.000030	0.000030
Other (D6)	R28	0.0000053	0.0000049	0.0692	0.0004	0.00002	0.000030	0.000029
Other (D6)	R29	0.0000036	0.0000032	0.0728	0.0004	0.00003	0.000029	0.000029
Other (D6)	R30	0.0000037	0.0000030	0.0726	0.0004	0.00003	0.000029	0.000028
D7	R7	0.0000009	0.0000007	0.0771	0.0004	0.00003	0.000028	0.000028
D7	R9	0.0000016	0.0000013	0.0759	0.0004	0.00003	0.000028	0.000028
D7	R38	0.0000009	0.0000007	0.0775	0.0004	0.00003	0.000028	0.000028
D7	R39	0.0000009	0.0000007	0.0774	0.0004	0.00003	0.000028	0.000028
D7	R40	0.0000018	0.0000014	0.0755	0.0004	0.00003	0.000028	0.000028
D7	R51	0.0000010	0.0000008	0.0771	0.0004	0.00003	0.000028	0.000028
D7	R52	0.0000011	0.0000008	0.0769	0.0004	0.00003	0.000028	0.000028
D7	R57	0.0000006	0.0000005	0.0779	0.0004	0.00003	0.000028	0.000028
D7	R62	0.0000007	0.0000005	0.0780	0.0004	0.00003	0.000028	0.000028
Other (D7)	R8	0.0000020	0.0000015	0.0750	0.0004	0.00003	0.000028	0.000028
D8	R55	0.0000004	0.0000003	0.0785	0.0004	0.00003	0.000028	0.000028
D8	R56	0.0000004	0.0000003	0.0784	0.0004	0.00003	0.000028	0.000028
D8	R61	0.0000004	0.0000003	0.0785	0.0004	0.00003	0.000028	0.000028
D9	R16	0.0000005	0.0000004	0.0782	0.0004	0.00003	0.000028	0.000028
D9	R19	0.0000004	0.0000003	0.0785	0.0004	0.00003	0.000028	0.000028
D9	R20	0.0000004	0.0000003	0.0784	0.0004	0.00003	0.000028	0.000028
D9	R48	0.0000006	0.0000004	0.0781	0.0004	0.00003	0.000028	0.000028
D9	R49	0.0000003	0.0000002	0.0786	0.0004	0.00003	0.000028	0.000028
D9	R60	0.0000007	0.0000006	0.0778	0.0004	0.00003	0.000028	0.000028
D10	R14	0.0000010	0.0000008	0.0772	0.0004	0.00003	0.000028	0.000028
D10	R15	0.0000004	0.0000003	0.0783	0.0004	0.00003	0.000028	0.000028
D10	R17	0.0000008	0.0000006	0.0775	0.0004	0.00003	0.000028	0.000028
D10	R54	0.0000007	0.0000005	0.0777	0.0004	0.00003	0.000028	0.000028
D10	R58	0.0000003	0.0000003	0.0785	0.0004	0.00003	0.000028	0.000028
D10	R63	0.0000005	0.0000004	0.0782	0.0004	0.00003	0.000028	0.000028

Copper (Cu)		Annual avg metal in PM_{10} (mine-only)					Annual avg metal in PM_{10} (mine+background)	
		S1: Current Operations (BAU)	S2: Mod6 Operations	Background Pb	Ratio of metal to Pb	Estimated background for metal of interest	S1: Current Operations (BAU)	S2: Mod6 Operations
District	ID	µg/m^3		µg/m^3	unitless	µg/m^3	M_{air} (µg/m^3)	
D1	R6	0.00033	0.00025	0.0752	0.0669	0.0050	0.0054	0.0053
D1	R11	0.00028	0.00021	0.0765	0.0669	0.0051	0.0054	0.0053
D1	R18	0.00016	0.00012	0.0776	0.0669	0.0052	0.0054	0.0053
D1	R46	0.00012	0.00009	0.0780	0.0669	0.0052	0.0053	0.0053
D1	R53	0.00015	0.00011	0.0777	0.0669	0.0052	0.0053	0.0053
D2	R43	0.00048	0.00040	0.0776	0.0669	0.0052	0.0057	0.0056
D2	R44	0.00010	0.00007	0.0782	0.0669	0.0052	0.0053	0.0053
D2	R68	0.00017	0.00013	0.0775	0.0669	0.0052	0.0053	0.0053
D2	R69	0.00013	0.00010	0.0779	0.0669	0.0052	0.0053	0.0053
D2	R70	0.00013	0.00010	0.0680	0.0669	0.0045	0.0047	0.0046
Other (D2)	R59	0.00004	0.00003	0.0788	0.0669	0.0053	0.0053	0.0053
D3	R3	0.00082	0.00065	0.0709	0.0669	0.0047	0.0056	0.0054
D3	R4	0.00045	0.00034	0.0743	0.0669	0.0050	0.0054	0.0053
D3	R5	0.00038	0.00029	0.0752	0.0669	0.0050	0.0054	0.0053
D3	R12	0.00022	0.00017	0.0770	0.0669	0.0052	0.0054	0.0053
D3	R13	0.00019	0.00014	0.0773	0.0669	0.0052	0.0054	0.0053
D3	R45	0.00022	0.00017	0.0771	0.0669	0.0052	0.0054	0.0053
D4	R1	0.00046	0.00038	0.0741	0.0669	0.0050	0.0054	0.0053
D4	R2	0.00055	0.00044	0.0740	0.0669	0.0049	0.0055	0.0054
Other (D4)	R21	0.00052	0.00041	0.0735	0.0669	0.0049	0.0054	0.0053
Other (D4)	R22	0.00052	0.00041	0.0734	0.0669	0.0049	0.0054	0.0053
Other (D4)	R23	0.00054	0.00042	0.0734	0.0669	0.0049	0.0055	0.0053
Other (D4)	R24	0.00056	0.00044	0.0736	0.0669	0.0049	0.0055	0.0054
Other (D4)	R25	0.00034	0.00027	0.0752	0.0669	0.0050	0.0054	0.0053
Other (D4)	R26	0.00068	0.00056	0.0733	0.0669	0.0049	0.0056	0.0055
D5	R31	0.00034	0.00028	0.0758	0.0669	0.0051	0.0054	0.0054
D5	R32	0.00033	0.00026	0.0760	0.0669	0.0051	0.0054	0.0053
D5	R33	0.00045	0.00035	0.0752	0.0669	0.0050	0.0055	0.0054
D5	R64	0.00011	0.00008	0.0781	0.0669	0.0052	0.0053	0.0053
D5	R65	0.00026	0.00020	0.0767	0.0669	0.0051	0.0054	0.0053
D5	R66	0.00017	0.00013	0.0775	0.0669	0.0052	0.0054	0.0053
D5	R67	0.00018	0.00014	0.0774	0.0669	0.0052	0.0054	0.0053
D6	R10	0.00029	0.00023	0.0760	0.0669	0.0051	0.0054	0.0053
D6	R34	0.00044	0.00033	0.0743	0.0669	0.0050	0.0054	0.0053
D6	R35	0.00041	0.00030	0.0748	0.0669	0.0050	0.0054	0.0053
D6	R36	0.00038	0.00029	0.0752	0.0669	0.0050	0.0054	0.0053
D6	R37	0.00036	0.00028	0.0756	0.0669	0.0051	0.0054	0.0053
D6	R41	0.00042	0.00033	0.0747	0.0669	0.0050	0.0054	0.0053
D6	R42	0.00047	0.00037	0.0739	0.0669	0.0049	0.0054	0.0053
D6	R47	0.00023	0.00017	0.0769	0.0669	0.0051	0.0054	0.0053
D6	R50	0.00028	0.00021	0.0763	0.0669	0.0051	0.0054	0.0053
Other (D6)	R27	0.00107	0.00105	0.0691	0.0669	0.0046	0.0057	0.0057
Other (D6)	R28	0.00102	0.00092	0.0692	0.0669	0.0046	0.0057	0.0056
Other (D6)	R29	0.00068	0.00062	0.0728	0.0669	0.0049	0.0056	0.0055
Other (D6)	R30	0.00070	0.00058	0.0726	0.0669	0.0049	0.0056	0.0054
D7	R7	0.00018	0.00014	0.0771	0.0669	0.0052	0.0053	0.0053
D7	R9	0.00031	0.00024	0.0759	0.0669	0.0051	0.0054	0.0053
D7	R38	0.00018	0.00013	0.0775	0.0669	0.0052	0.0054	0.0053
D7	R39	0.00018	0.00013	0.0774	0.0669	0.0052	0.0054	0.0053
D7	R40	0.00034	0.00027	0.0755	0.0669	0.0050	0.0054	0.0053
D7	R51	0.00019	0.00014	0.0771	0.0669	0.0052	0.0053	0.0053
D7	R52	0.00021	0.00016	0.0769	0.0669	0.0051	0.0054	0.0053
D7	R57	0.00012	0.00009	0.0779	0.0669	0.0052	0.0053	0.0053
D7	R62	0.00013	0.00009	0.0780	0.0669	0.0052	0.0053	0.0053
Other (D7)	R8	0.00037	0.00028	0.0750	0.0669	0.0050	0.0054	0.0053
D8	R55	0.00007	0.00005	0.0785	0.0669	0.0053	0.0053	0.0053
D8	R56	0.00007	0.00005	0.0784	0.0669	0.0052	0.0053	0.0053
D8	R61	0.00007	0.00005	0.0785	0.0669	0.0053	0.0053	0.0053
D9	R16	0.00010	0.00007	0.0782	0.0669	0.0052	0.0053	0.0053
D9	R19	0.00007	0.00005	0.0785	0.0669	0.0053	0.0053	0.0053
D9	R20	0.00007	0.00006	0.0784	0.0669	0.0052	0.0053	0.0053
D9	R48	0.00011	0.00008	0.0781	0.0669	0.0052	0.0053	0.0053
D9	R49	0.00006	0.00005	0.0786	0.0669	0.0053	0.0053	0.0053
D9	R60	0.00014	0.00011	0.0778	0.0669	0.0052	0.0053	0.0053
D10	R14	0.00019	0.00014	0.0772	0.0669	0.0052	0.0053	0.0053
D10	R15	0.00008	0.00006	0.0783	0.0669	0.0052	0.0053	0.0053
D10	R17	0.00016	0.00012	0.0775	0.0669	0.0052	0.0053	0.0053
D10	R54	0.00013	0.00010	0.0777	0.0669	0.0052	0.0053	0.0053
D10	R58	0.00006	0.00005	0.0785	0.0669	0.0053	0.0053	0.0053
D10	R63	0.00009	0.00007	0.0782	0.0669	0.0052	0.0053	0.0053

Iron (Fe)		Annual avg metal in PM_{10} (mine-only)					Annual avg metal in PM_{10} (mine+background)	
		S1: Current Operations (BAU)	S2: Mod6 Operations	Background Pb	Ratio of metal to Pb	Estimated background for metal of interest	S1: Current Operations (BAU)	S2: Mod6 Operations
District	ID	µg/m^3		µg/m^3	unitless	µg/m^3	M_{air} (µg/m^3)	
D1	R6	0.0301	0.0228	0.0752	6.1719	0.4641	0.4942	0.4869
D1	R11	0.0255	0.0191	0.0765	6.1719	0.4719	0.4975	0.4910
D1	R18	0.0147	0.0107	0.0776	6.1719	0.4791	0.4939	0.4898
D1	R46	0.0115	0.0084	0.0780	6.1719	0.4811	0.4926	0.4895
D1	R53	0.0139	0.0101	0.0777	6.1719	0.4796	0.4936	0.4897
D2	R43	0.0444	0.0369	0.0776	6.1719	0.4792	0.5236	0.5161
D2	R44	0.0091	0.0067	0.0782	6.1719	0.4829	0.4919	0.4895
D2	R68	0.0153	0.0118	0.0775	6.1719	0.4783	0.4936	0.4901
D2	R69	0.0120	0.0091	0.0779	6.1719	0.4805	0.4925	0.4896
D2	R70	0.0124	0.0093	0.0680	6.1719	0.4197	0.4321	0.4290
Other (D2)	R59	0.0034	0.0025	0.0788	6.1719	0.4865	0.4899	0.4890
D3	R3	0.0757	0.0603	0.0709	6.1719	0.4375	0.5132	0.4977
D3	R4	0.0415	0.0317	0.0743	6.1719	0.4583	0.4998	0.4900
D3	R5	0.0352	0.0265	0.0752	6.1719	0.4643	0.4995	0.4908
D3	R12	0.0206	0.0154	0.0770	6.1719	0.4754	0.4960	0.4908
D3	R13	0.0177	0.0132	0.0773	6.1719	0.4773	0.4950	0.4905
D3	R45	0.0203	0.0152	0.0771	6.1719	0.4757	0.4960	0.4909
D4	R1	0.0423	0.0352	0.0741	6.1719	0.4571	0.4994	0.4923
D4	R2	0.0508	0.0402	0.0740	6.1719	0.4565	0.5073	0.4967
Other (D4)	R21	0.0477	0.0380	0.0735	6.1719	0.4534	0.5011	0.4914
Other (D4)	R22	0.0483	0.0376	0.0734	6.1719	0.4531	0.5014	0.4907
Other (D4)	R23	0.0500	0.0387	0.0734	6.1719	0.4531	0.5031	0.4918
Other (D4)	R24	0.0513	0.0409	0.0736	6.1719	0.4544	0.5057	0.4953
Other (D4)	R25	0.0316	0.0253	0.0752	6.1719	0.4643	0.4960	0.4896
Other (D4)	R26	0.0629	0.0517	0.0733	6.1719	0.4526	0.5155	0.5043
D5	R31	0.0316	0.0258	0.0758	6.1719	0.4680	0.4996	0.4938
D5	R32	0.0300	0.0242	0.0760	6.1719	0.4689	0.4989	0.4931
D5	R33	0.0411	0.0320	0.0752	6.1719	0.4642	0.5053	0.4962
D5	R64	0.0101	0.0077	0.0781	6.1719	0.4819	0.4920	0.4897
D5	R65	0.0236	0.0187	0.0767	6.1719	0.4732	0.4967	0.4918
D5	R66	0.0161	0.0123	0.0775	6.1719	0.4782	0.4942	0.4905
D5	R67	0.0169	0.0129	0.0774	6.1719	0.4776	0.4945	0.4905
D6	R10	0.0270	0.0208	0.0760	6.1719	0.4694	0.4964	0.4902
D6	R34	0.0405	0.0307	0.0743	6.1719	0.4586	0.4991	0.4893
D6	R35	0.0376	0.0276	0.0748	6.1719	0.4619	0.4995	0.4895
D6	R36	0.0354	0.0266	0.0752	6.1719	0.4643	0.4996	0.4909
D6	R37	0.0329	0.0255	0.0756	6.1719	0.4666	0.4994	0.4921
D6	R41	0.0385	0.0305	0.0747	6.1719	0.4607	0.4993	0.4913
D6	R42	0.0436	0.0340	0.0739	6.1719	0.4561	0.4997	0.4902
D6	R47	0.0210	0.0158	0.0769	6.1719	0.4744	0.4954	0.4902
D6	R50	0.0259	0.0193	0.0763	6.1719	0.4711	0.4970	0.4904
Other (D6)	R27	0.0984	0.0970	0.0691	6.1719	0.4265	0.5250	0.5235
Other (D6)	R28	0.0940	0.0853	0.0692	6.1719	0.4274	0.5214	0.5127
Other (D6)	R29	0.0629	0.0568	0.0728	6.1719	0.4495	0.5124	0.5063
Other (D6)	R30	0.0645	0.0532	0.0726	6.1719	0.4478	0.5123	0.5010
D7	R7	0.0164	0.0131	0.0771	6.1719	0.4758	0.4922	0.4889
D7	R9	0.0284	0.0221	0.0759	6.1719	0.4683	0.4968	0.4904
D7	R38	0.0162	0.0116	0.0775	6.1719	0.4786	0.4949	0.4902
D7	R39	0.0164	0.0117	0.0774	6.1719	0.4779	0.4943	0.4895
D7	R40	0.0318	0.0250	0.0755	6.1719	0.4659	0.4976	0.4908
D7	R51	0.0176	0.0133	0.0771	6.1719	0.4760	0.4936	0.4893
D7	R52	0.0195	0.0148	0.0769	6.1719	0.4747	0.4943	0.4895
D7	R57	0.0111	0.0085	0.0779	6.1719	0.4809	0.4920	0.4894
D7	R62	0.0120	0.0084	0.0780	6.1719	0.4813	0.4932	0.4897
Other (D7)	R8	0.0344	0.0262	0.0750	6.1719	0.4629	0.4973	0.4892
D8	R55	0.0062	0.0046	0.0785	6.1719	0.4846	0.4908	0.4891
D8	R56	0.0069	0.0050	0.0784	6.1719	0.4840	0.4909	0.4891
D8	R61	0.0065	0.0046	0.0785	6.1719	0.4845	0.4910	0.4891
D9	R16	0.0089	0.0068	0.0782	6.1719	0.4828	0.4917	0.4896
D9	R19	0.0064	0.0048	0.0785	6.1719	0.4845	0.4909	0.4893
D9	R20	0.0066	0.0051	0.0784	6.1719	0.4842	0.4908	0.4893
D9	R48	0.0101	0.0077	0.0781	6.1719	0.4820	0.4921	0.4897
D9	R49	0.0056	0.0043	0.0786	6.1719	0.4849	0.4905	0.4892
D9	R60	0.0128	0.0098	0.0778	6.1719	0.4802	0.4930	0.4900
D10	R14	0.0173	0.0132	0.0772	6.1719	0.4762	0.4935	0.4894
D10	R15	0.0076	0.0058	0.0783	6.1719	0.4834	0.4911	0.4892
D10	R17	0.0145	0.0112	0.0775	6.1719	0.4782	0.4927	0.4894
D10	R54	0.0122	0.0096	0.0777	6.1719	0.4798	0.4920	0.4894
D10	R58	0.0059	0.0046	0.0785	6.1719	0.4846	0.4905	0.4891
D10	R63	0.0081	0.0064	0.0782	6.1719	0.4826	0.4907	0.4890

Mn

Manganese (Mn)		Annual avg metal in PM_{10} (mine-only)					Annual avg metal in PM_{10} (mine+background)	
		S1: Current Operations (BAU)	S2: Mod6 Operations	Background Pb	Ratio of metal to Pb	Estimated background for metal of interest	S1: Current Operations (BAU)	S2: Mod6 Operations
District	ID	µg/m³		µg/m³	unitless	µg/m³	M_{air} (µg/m³)	
D1	R6	0.00008	0.00006	0.0752	0.017	0.0013	0.0013	0.0013
D1	R11	0.00007	0.00005	0.0765	0.017	0.0013	0.0014	0.0013
D1	R18	0.00004	0.00003	0.0776	0.017	0.0013	0.0013	0.0013
D1	R46	0.00003	0.00002	0.0780	0.017	0.0013	0.0013	0.0013
D1	R53	0.00004	0.00003	0.0777	0.017	0.0013	0.0013	0.0013
D2	R43	0.00012	0.00010	0.0776	0.017	0.0013	0.0014	0.0014
D2	R44	0.00002	0.00002	0.0782	0.017	0.0013	0.0013	0.0013
D2	R68	0.00004	0.00003	0.0775	0.017	0.0013	0.0013	0.0013
D2	R69	0.00003	0.00002	0.0779	0.017	0.0013	0.0013	0.0013
D2	R70	0.00003	0.00003	0.0680	0.017	0.0011	0.0012	0.0012
Other (D2)	R59	0.00001	0.00001	0.0788	0.017	0.0013	0.0013	0.0013
D3	R3	0.00021	0.00016	0.0709	0.017	0.0012	0.0014	0.0014
D3	R4	0.00011	0.00009	0.0743	0.017	0.0012	0.0014	0.0013
D3	R5	0.00010	0.00007	0.0752	0.017	0.0013	0.0014	0.0013
D3	R12	0.00006	0.00004	0.0770	0.017	0.0013	0.0014	0.0013
D3	R13	0.00005	0.00004	0.0773	0.017	0.0013	0.0013	0.0013
D3	R45	0.00006	0.00004	0.0771	0.017	0.0013	0.0014	0.0013
D4	R1	0.00012	0.00010	0.0741	0.017	0.0012	0.0014	0.0013
D4	R2	0.00014	0.00011	0.0740	0.017	0.0012	0.0014	0.0014
Other (D4)	R21	0.00013	0.00010	0.0735	0.017	0.0012	0.0014	0.0013
Other (D4)	R22	0.00013	0.00010	0.0734	0.017	0.0012	0.0014	0.0013
Other (D4)	R23	0.00014	0.00011	0.0734	0.017	0.0012	0.0014	0.0013
Other (D4)	R24	0.00014	0.00011	0.0736	0.017	0.0012	0.0014	0.0014
Other (D4)	R25	0.00009	0.00007	0.0752	0.017	0.0013	0.0014	0.0013
Other (D4)	R26	0.00017	0.00014	0.0733	0.017	0.0012	0.0014	0.0014
D5	R31	0.00009	0.00007	0.0758	0.017	0.0013	0.0014	0.0013
D5	R32	0.00008	0.00007	0.0760	0.017	0.0013	0.0014	0.0013
D5	R33	0.00011	0.00009	0.0752	0.017	0.0013	0.0014	0.0014
D5	R64	0.00003	0.00002	0.0781	0.017	0.0013	0.0013	0.0013
D5	R65	0.00006	0.00005	0.0767	0.017	0.0013	0.0014	0.0013
D5	R66	0.00004	0.00003	0.0775	0.017	0.0013	0.0013	0.0013
D5	R67	0.00005	0.00004	0.0774	0.017	0.0013	0.0013	0.0013
D6	R10	0.00007	0.00006	0.0760	0.017	0.0013	0.0014	0.0013
D6	R34	0.00011	0.00008	0.0743	0.017	0.0013	0.0014	0.0013
D6	R35	0.00010	0.00008	0.0748	0.017	0.0013	0.0014	0.0013
D6	R36	0.00010	0.00007	0.0752	0.017	0.0013	0.0014	0.0013
D6	R37	0.00009	0.00007	0.0756	0.017	0.0013	0.0014	0.0013
D6	R41	0.00011	0.00008	0.0747	0.017	0.0013	0.0014	0.0013
D6	R42	0.00012	0.00009	0.0739	0.017	0.0012	0.0014	0.0013
D6	R47	0.00006	0.00004	0.0769	0.017	0.0013	0.0014	0.0013
D6	R50	0.00007	0.00005	0.0763	0.017	0.0013	0.0014	0.0013
Other (D6)	R27	0.00027	0.00026	0.0691	0.017	0.0012	0.0014	0.0014
Other (D6)	R28	0.00026	0.00023	0.0692	0.017	0.0012	0.0014	0.0014
Other (D6)	R29	0.00017	0.00015	0.0728	0.017	0.0012	0.0014	0.0014
Other (D6)	R30	0.00018	0.00015	0.0726	0.017	0.0012	0.0014	0.0014
D7	R7	0.00004	0.00004	0.0771	0.017	0.0013	0.0013	0.0013
D7	R9	0.00008	0.00006	0.0759	0.017	0.0013	0.0014	0.0013
D7	R38	0.00004	0.00003	0.0775	0.017	0.0013	0.0013	0.0013
D7	R39	0.00004	0.00003	0.0774	0.017	0.0013	0.0013	0.0013
D7	R40	0.00009	0.00007	0.0755	0.017	0.0013	0.0014	0.0013
D7	R51	0.00005	0.00004	0.0771	0.017	0.0013	0.0013	0.0013
D7	R52	0.00005	0.00004	0.0769	0.017	0.0013	0.0013	0.0013
D7	R57	0.00003	0.00002	0.0779	0.017	0.0013	0.0013	0.0013
D7	R62	0.00003	0.00002	0.0780	0.017	0.0013	0.0013	0.0013
Other (D7)	R8	0.00009	0.00007	0.0750	0.017	0.0013	0.0014	0.0013
D8	R55	0.00002	0.00001	0.0785	0.017	0.0013	0.0013	0.0013
D8	R56	0.00002	0.00001	0.0784	0.017	0.0013	0.0013	0.0013
D8	R61	0.00002	0.00001	0.0785	0.017	0.0013	0.0013	0.0013
D9	R16	0.00002	0.00002	0.0782	0.017	0.0013	0.0013	0.0013
D9	R19	0.00002	0.00001	0.0785	0.017	0.0013	0.0013	0.0013
D9	R20	0.00002	0.00001	0.0784	0.017	0.0013	0.0013	0.0013
D9	R48	0.00003	0.00002	0.0781	0.017	0.0013	0.0013	0.0013
D9	R49	0.00002	0.00001	0.0786	0.017	0.0013	0.0013	0.0013
D9	R60	0.00003	0.00003	0.0778	0.017	0.0013	0.0013	0.0013
D10	R14	0.00005	0.00004	0.0772	0.017	0.0013	0.0013	0.0013
D10	R15	0.00002	0.00002	0.0783	0.017	0.0013	0.0013	0.0013
D10	R17	0.00004	0.00003	0.0775	0.017	0.0013	0.0013	0.0013
D10	R54	0.00003	0.00003	0.0777	0.017	0.0013	0.0013	0.0013
D10	R58	0.00002	0.00001	0.0785	0.017	0.0013	0.0013	0.0013
D10	R63	0.00002	0.00002	0.0782	0.017	0.0013	0.0013	0.0013

Mercury (Hg)		Annual avg metal in PM_{10} (mine-only)					Annual avg metal in PM_{10} (mine+background)	
		S1: Current Operations (BAU)	S2: Mod6 Operations	Background Pb	Ratio of metal to Pb	Estimated background for metal of interest	S1: Current Operations (BAU)	S2: Mod6 Operations
District	ID	μg/m^3		μg/m^3	unitless	μg/m^3	M_{air} (μg/m^3)	
D1	R6	0.00000005	0.00000004	0.0752	0.00001	0.0000007	0.00000077	0.00000075
D1	R11	0.00000004	0.00000003	0.0765	0.00001	0.0000007	0.00000077	0.00000076
D1	R18	0.00000002	0.00000002	0.0776	0.00001	0.0000007	0.00000077	0.00000076
D1	R46	0.00000002	0.00000001	0.0780	0.00001	0.0000007	0.00000076	0.00000076
D1	R53	0.00000002	0.00000002	0.0777	0.00001	0.0000007	0.00000076	0.00000076
D2	R43	0.00000007	0.00000006	0.0776	0.00001	0.0000007	0.00000081	0.00000080
D2	R44	0.00000001	0.00000001	0.0782	0.00001	0.0000007	0.00000076	0.00000076
D2	R68	0.00000002	0.00000002	0.0775	0.00001	0.0000007	0.00000076	0.00000076
D2	R69	0.00000002	0.00000001	0.0779	0.00001	0.0000007	0.00000076	0.00000076
D2	R70	0.00000002	0.00000001	0.0680	0.00001	0.0000007	0.00000067	0.00000066
Other (D2)	R59	0.00000001	0.00000000	0.0788	0.00001	0.0000008	0.00000076	0.00000076
D3	R3	0.00000012	0.00000009	0.0709	0.00001	0.0000007	0.00000080	0.00000077
D3	R4	0.00000006	0.00000005	0.0743	0.00001	0.0000007	0.00000077	0.00000076
D3	R5	0.00000005	0.00000004	0.0752	0.00001	0.0000007	0.00000077	0.00000076
D3	R12	0.00000003	0.00000002	0.0770	0.00001	0.0000007	0.00000077	0.00000076
D3	R13	0.00000003	0.00000002	0.0773	0.00001	0.0000007	0.00000077	0.00000076
D3	R45	0.00000003	0.00000002	0.0771	0.00001	0.0000007	0.00000077	0.00000076
D4	R1	0.00000007	0.00000005	0.0741	0.00001	0.0000007	0.00000077	0.00000076
D4	R2	0.00000008	0.00000006	0.0740	0.00001	0.0000007	0.00000079	0.00000077
Other (D4)	R21	0.00000007	0.00000006	0.0735	0.00001	0.0000007	0.00000078	0.00000076
Other (D4)	R22	0.00000007	0.00000006	0.0734	0.00001	0.0000007	0.00000078	0.00000076
Other (D4)	R23	0.00000008	0.00000006	0.0734	0.00001	0.0000007	0.00000078	0.00000076
Other (D4)	R24	0.00000008	0.00000006	0.0736	0.00001	0.0000007	0.00000078	0.00000077
Other (D4)	R25	0.00000005	0.00000004	0.0752	0.00001	0.0000007	0.00000077	0.00000076
Other (D4)	R26	0.00000010	0.00000008	0.0733	0.00001	0.0000007	0.00000080	0.00000078
D5	R31	0.00000005	0.00000004	0.0758	0.00001	0.0000007	0.00000077	0.00000077
D5	R32	0.00000005	0.00000004	0.0760	0.00001	0.0000007	0.00000077	0.00000076
D5	R33	0.00000006	0.00000005	0.0752	0.00001	0.0000007	0.00000078	0.00000077
D5	R64	0.00000002	0.00000001	0.0781	0.00001	0.0000007	0.00000076	0.00000076
D5	R65	0.00000004	0.00000003	0.0767	0.00001	0.0000007	0.00000077	0.00000076
D5	R66	0.00000002	0.00000002	0.0775	0.00001	0.0000007	0.00000077	0.00000076
D5	R67	0.00000003	0.00000002	0.0774	0.00001	0.0000007	0.00000077	0.00000076
D6	R10	0.00000004	0.00000003	0.0760	0.00001	0.0000007	0.00000077	0.00000076
D6	R34	0.00000006	0.00000005	0.0743	0.00001	0.0000007	0.00000077	0.00000076
D6	R35	0.00000006	0.00000004	0.0748	0.00001	0.0000007	0.00000077	0.00000076
D6	R36	0.00000005	0.00000004	0.0752	0.00001	0.0000007	0.00000077	0.00000076
D6	R37	0.00000005	0.00000004	0.0756	0.00001	0.0000007	0.00000077	0.00000076
D6	R41	0.00000006	0.00000005	0.0747	0.00001	0.0000007	0.00000077	0.00000076
D6	R42	0.00000007	0.00000005	0.0739	0.00001	0.0000007	0.00000077	0.00000076
D6	R47	0.00000003	0.00000002	0.0769	0.00001	0.0000007	0.00000077	0.00000076
D6	R50	0.00000004	0.00000003	0.0763	0.00001	0.0000007	0.00000077	0.00000076
Other (D6)	R27	0.00000015	0.00000015	0.0691	0.00001	0.0000007	0.00000081	0.00000081
Other (D6)	R28	0.00000015	0.00000013	0.0692	0.00001	0.0000007	0.00000081	0.00000079
Other (D6)	R29	0.00000010	0.00000009	0.0728	0.00001	0.0000007	0.00000079	0.00000078
Other (D6)	R30	0.00000010	0.00000008	0.0726	0.00001	0.0000007	0.00000079	0.00000078
D7	R7	0.00000003	0.00000002	0.0771	0.00001	0.0000007	0.00000076	0.00000076
D7	R9	0.00000004	0.00000003	0.0759	0.00001	0.0000007	0.00000077	0.00000076
D7	R38	0.00000003	0.00000002	0.0775	0.00001	0.0000007	0.00000077	0.00000076
D7	R39	0.00000003	0.00000002	0.0774	0.00001	0.0000007	0.00000077	0.00000076
D7	R40	0.00000005	0.00000004	0.0755	0.00001	0.0000007	0.00000077	0.00000076
D7	R51	0.00000003	0.00000002	0.0771	0.00001	0.0000007	0.00000076	0.00000076
D7	R52	0.00000003	0.00000002	0.0769	0.00001	0.0000007	0.00000077	0.00000076
D7	R57	0.00000002	0.00000001	0.0779	0.00001	0.0000007	0.00000076	0.00000076
D7	R62	0.00000002	0.00000001	0.0780	0.00001	0.0000007	0.00000076	0.00000076
Other (D7)	R8	0.00000005	0.00000004	0.0750	0.00001	0.0000007	0.00000077	0.00000076
D8	R55	0.00000001	0.000000007	0.0785	0.00001	0.0000008	0.00000076	0.00000076
D8	R56	0.00000001	0.000000008	0.0784	0.00001	0.0000008	0.00000076	0.00000076
D8	R61	0.00000001	0.000000007	0.0785	0.00001	0.0000008	0.00000076	0.00000076
D9	R16	0.00000001	0.00000001	0.0782	0.00001	0.0000007	0.00000076	0.00000076
D9	R19	0.00000001	0.000000008	0.0785	0.00001	0.0000008	0.00000076	0.00000076
D9	R20	0.00000001	0.000000008	0.0784	0.00001	0.0000008	0.00000076	0.00000076
D9	R48	0.00000002	0.00000001	0.0781	0.00001	0.0000007	0.00000076	0.00000076
D9	R49	0.00000001	0.000000007	0.0786	0.00001	0.0000008	0.00000076	0.00000076
D9	R60	0.00000002	0.00000002	0.0778	0.00001	0.0000007	0.00000076	0.00000076
D10	R14	0.00000003	0.00000002	0.0772	0.00001	0.0000007	0.00000076	0.00000076
D10	R15	0.00000001	0.000000009	0.0783	0.00001	0.0000007	0.00000076	0.00000076
D10	R17	0.00000002	0.00000002	0.0775	0.00001	0.0000007	0.00000076	0.00000076
D10	R54	0.00000002	0.00000001	0.0777	0.00001	0.0000007	0.00000076	0.00000076
D10	R58	0.00000001	0.000000007	0.0785	0.00001	0.0000008	0.00000076	0.00000076
D10	R63	0.00000001	0.000000010	0.0782	0.00001	0.0000007	0.00000076	0.00000076

Nickel (Ni)		Annual avg metal in PM_{10} (mine-only)					Annual avg metal in PM_{10} (mine+background)	
		S1: Current Operations (BAU)	S2: Mod6 Operations	Background Pb	Ratio of metal to Pb	Estimated background for metal of interest	S1: Current Operations (BAU)	S2: Mod6 Operations
District	ID	µg/m^3		µg/m^3	unitless	µg/m^3	M_{air} (µg/m^3)	
D1	R6	0.0000013	0.0000010	0.0752	0.0003	0.00002	0.0000216	0.0000212
D1	R11	0.0000011	0.0000008	0.0765	0.0003	0.00002	0.0000217	0.0000214
D1	R18	0.0000006	0.0000005	0.0776	0.0003	0.00002	0.0000215	0.0000214
D1	R46	0.0000005	0.0000004	0.0780	0.0003	0.00002	0.0000215	0.0000214
D1	R53	0.0000006	0.0000004	0.0777	0.0003	0.00002	0.0000215	0.0000214
D2	R43	0.0000019	0.0000016	0.0776	0.0003	0.00002	0.0000228	0.0000225
D2	R44	0.0000004	0.0000003	0.0782	0.0003	0.00002	0.0000215	0.0000214
D2	R68	0.0000007	0.0000005	0.0775	0.0003	0.00002	0.0000215	0.0000214
D2	R69	0.0000005	0.0000004	0.0779	0.0003	0.00002	0.0000215	0.0000214
D2	R70	0.0000005	0.0000004	0.0680	0.0003	0.00002	0.0000189	0.0000187
Other (D2)	R59	0.0000001	0.0000001	0.0788	0.0003	0.00002	0.0000214	0.0000213
D3	R3	0.0000033	0.0000026	0.0709	0.0003	0.00002	0.0000224	0.0000217
D3	R4	0.0000018	0.0000014	0.0743	0.0003	0.00002	0.0000218	0.0000214
D3	R5	0.0000015	0.0000012	0.0752	0.0003	0.00002	0.0000218	0.0000214
D3	R12	0.0000009	0.0000007	0.0770	0.0003	0.00002	0.0000216	0.0000214
D3	R13	0.0000008	0.0000006	0.0773	0.0003	0.00002	0.0000216	0.0000214
D3	R45	0.0000009	0.0000007	0.0771	0.0003	0.00002	0.0000216	0.0000214
D4	R1	0.0000018	0.0000015	0.0741	0.0003	0.00002	0.0000218	0.0000215
D4	R2	0.0000022	0.0000018	0.0740	0.0003	0.00002	0.0000221	0.0000217
Other (D4)	R21	0.0000021	0.0000017	0.0735	0.0003	0.00002	0.0000219	0.0000214
Other (D4)	R22	0.0000021	0.0000016	0.0734	0.0003	0.00002	0.0000219	0.0000214
Other (D4)	R23	0.0000022	0.0000017	0.0734	0.0003	0.00002	0.0000220	0.0000215
Other (D4)	R24	0.0000022	0.0000018	0.0736	0.0003	0.00002	0.0000221	0.0000216
Other (D4)	R25	0.0000014	0.0000011	0.0752	0.0003	0.00002	0.0000216	0.0000214
Other (D4)	R26	0.0000027	0.0000023	0.0733	0.0003	0.00002	0.0000225	0.0000220
D5	R31	0.0000014	0.0000011	0.0758	0.0003	0.00002	0.0000218	0.0000215
D5	R32	0.0000013	0.0000011	0.0760	0.0003	0.00002	0.0000218	0.0000215
D5	R33	0.0000018	0.0000014	0.0752	0.0003	0.00002	0.0000220	0.0000216
D5	R64	0.0000004	0.0000003	0.0781	0.0003	0.00002	0.0000215	0.0000214
D5	R65	0.0000010	0.0000008	0.0767	0.0003	0.00002	0.0000217	0.0000215
D5	R66	0.0000007	0.0000005	0.0775	0.0003	0.00002	0.0000216	0.0000214
D5	R67	0.0000007	0.0000006	0.0774	0.0003	0.00002	0.0000216	0.0000214
D6	R10	0.0000012	0.0000009	0.0760	0.0003	0.00002	0.0000217	0.0000214
D6	R34	0.0000018	0.0000013	0.0743	0.0003	0.00002	0.0000218	0.0000213
D6	R35	0.0000016	0.0000012	0.0748	0.0003	0.00002	0.0000218	0.0000214
D6	R36	0.0000015	0.0000012	0.0752	0.0003	0.00002	0.0000218	0.0000214
D6	R37	0.0000014	0.0000011	0.0756	0.0003	0.00002	0.0000218	0.0000215
D6	R41	0.0000017	0.0000013	0.0747	0.0003	0.00002	0.0000218	0.0000214
D6	R42	0.0000019	0.0000015	0.0739	0.0003	0.00002	0.0000218	0.0000214
D6	R47	0.0000009	0.0000007	0.0769	0.0003	0.00002	0.0000216	0.0000214
D6	R50	0.0000011	0.0000008	0.0763	0.0003	0.00002	0.0000217	0.0000214
Other (D6)	R27	0.0000043	0.0000042	0.0691	0.0003	0.00002	0.0000229	0.0000228
Other (D6)	R28	0.0000041	0.0000037	0.0692	0.0003	0.00002	0.0000227	0.0000224
Other (D6)	R29	0.0000027	0.0000025	0.0728	0.0003	0.00002	0.0000224	0.0000221
Other (D6)	R30	0.0000028	0.0000023	0.0726	0.0003	0.00002	0.0000224	0.0000219
D7	R7	0.0000007	0.0000006	0.0771	0.0003	0.00002	0.0000215	0.0000213
D7	R9	0.0000012	0.0000010	0.0759	0.0003	0.00002	0.0000217	0.0000214
D7	R38	0.0000007	0.0000005	0.0775	0.0003	0.00002	0.0000216	0.0000214
D7	R39	0.0000007	0.0000005	0.0774	0.0003	0.00002	0.0000216	0.0000214
D7	R40	0.0000014	0.0000011	0.0755	0.0003	0.00002	0.0000217	0.0000214
D7	R51	0.0000008	0.0000006	0.0771	0.0003	0.00002	0.0000215	0.0000213
D7	R52	0.0000009	0.0000006	0.0769	0.0003	0.00002	0.0000216	0.0000214
D7	R57	0.0000005	0.0000004	0.0779	0.0003	0.00002	0.0000215	0.0000214
D7	R62	0.0000005	0.0000004	0.0780	0.0003	0.00002	0.0000215	0.0000214
Other (D7)	R8	0.0000015	0.0000011	0.0750	0.0003	0.00002	0.0000217	0.0000213
D8	R55	0.0000003	0.0000002	0.0785	0.0003	0.00002	0.0000214	0.0000213
D8	R56	0.0000003	0.0000002	0.0784	0.0003	0.00002	0.0000214	0.0000213
D8	R61	0.0000003	0.0000002	0.0785	0.0003	0.00002	0.0000214	0.0000213
D9	R16	0.0000004	0.0000003	0.0782	0.0003	0.00002	0.0000215	0.0000214
D9	R19	0.0000003	0.0000002	0.0785	0.0003	0.00002	0.0000214	0.0000213
D9	R20	0.0000003	0.0000002	0.0784	0.0003	0.00002	0.0000214	0.0000213
D9	R48	0.0000004	0.0000003	0.0781	0.0003	0.00002	0.0000215	0.0000214
D9	R49	0.0000002	0.0000002	0.0786	0.0003	0.00002	0.0000214	0.0000213
D9	R60	0.0000006	0.0000004	0.0778	0.0003	0.00002	0.0000215	0.0000214
D10	R14	0.0000008	0.0000006	0.0772	0.0003	0.00002	0.0000215	0.0000214
D10	R15	0.0000003	0.0000003	0.0783	0.0003	0.00002	0.0000214	0.0000213
D10	R17	0.0000006	0.0000005	0.0775	0.0003	0.00002	0.0000215	0.0000214
D10	R54	0.0000005	0.0000004	0.0777	0.0003	0.00002	0.0000215	0.0000214
D10	R58	0.0000003	0.0000002	0.0785	0.0003	0.00002	0.0000214	0.0000213
D10	R63	0.0000004	0.0000003	0.0782	0.0003	0.00002	0.0000214	0.0000213

Silver (Ag)		Annual avg metal in PM_{10} (mine-only)					Annual avg metal in PM_{10} (mine+background)	
		S1: Current Operations (BAU)	S2: Mod6 Operations	Background Pb	Ratio of metal to Pb	Estimated background for metal of interest	S1: Current Operations (BAU)	S2: Mod6 Operations
District	ID	µg/m³		µg/m³	unitless	µg/m³	M_{air} (µg/m³)	
D1	R6	0.000010	0.0000075	0.0752	0.002	0.00015	0.000163	0.000160
D1	R11	0.000008	0.0000063	0.0765	0.002	0.00016	0.000164	0.000162
D1	R18	0.000005	0.0000035	0.0776	0.002	0.00016	0.000163	0.000161
D1	R46	0.000004	0.0000028	0.0780	0.002	0.00016	0.000162	0.000161
D1	R53	0.000005	0.0000033	0.0777	0.002	0.00016	0.000163	0.000161
D2	R43	0.000015	0.0000122	0.0776	0.002	0.00016	0.000172	0.000170
D2	R44	0.000003	0.0000022	0.0782	0.002	0.00016	0.000162	0.000161
D2	R68	0.000005	0.0000039	0.0775	0.002	0.00016	0.000163	0.000161
D2	R69	0.000004	0.0000030	0.0779	0.002	0.00016	0.000162	0.000161
D2	R70	0.000004	0.0000031	0.0680	0.002	0.00014	0.000142	0.000141
Other (D2)	R59	0.000001	0.0000008	0.0788	0.002	0.00016	0.000161	0.000161
D3	R3	0.000025	0.0000198	0.0709	0.002	0.00014	0.000169	0.000164
D3	R4	0.000014	0.0000105	0.0743	0.002	0.00015	0.000165	0.000161
D3	R5	0.000012	0.0000087	0.0752	0.002	0.00015	0.000164	0.000162
D3	R12	0.000007	0.0000051	0.0770	0.002	0.00016	0.000163	0.000162
D3	R13	0.000006	0.0000043	0.0773	0.002	0.00016	0.000163	0.000162
D3	R45	0.000007	0.0000050	0.0771	0.002	0.00016	0.000163	0.000162
D4	R1	0.000014	0.0000116	0.0741	0.002	0.00015	0.000164	0.000162
D4	R2	0.000017	0.0000132	0.0740	0.002	0.00015	0.000167	0.000164
Other (D4)	R21	0.000016	0.0000125	0.0735	0.002	0.00015	0.000165	0.000162
Other (D4)	R22	0.000016	0.0000124	0.0734	0.002	0.00015	0.000165	0.000162
Other (D4)	R23	0.000016	0.0000127	0.0734	0.002	0.00015	0.000166	0.000162
Other (D4)	R24	0.000017	0.0000135	0.0736	0.002	0.00015	0.000166	0.000163
Other (D4)	R25	0.000010	0.0000083	0.0752	0.002	0.00015	0.000163	0.000161
Other (D4)	R26	0.000021	0.0000170	0.0733	0.002	0.00015	0.000170	0.000166
D5	R31	0.000010	0.0000085	0.0758	0.002	0.00015	0.000164	0.000163
D5	R32	0.000010	0.0000080	0.0760	0.002	0.00015	0.000164	0.000162
D5	R33	0.000014	0.0000105	0.0752	0.002	0.00015	0.000166	0.000163
D5	R64	0.000003	0.0000025	0.0781	0.002	0.00016	0.000162	0.000161
D5	R65	0.000008	0.0000061	0.0767	0.002	0.00016	0.000164	0.000162
D5	R66	0.000005	0.0000041	0.0775	0.002	0.00016	0.000163	0.000161
D5	R67	0.000006	0.0000043	0.0774	0.002	0.00016	0.000163	0.000162
D6	R10	0.000009	0.0000069	0.0760	0.002	0.00015	0.000163	0.000161
D6	R34	0.000013	0.0000101	0.0743	0.002	0.00015	0.000164	0.000161
D6	R35	0.000012	0.0000091	0.0748	0.002	0.00015	0.000164	0.000161
D6	R36	0.000012	0.0000088	0.0752	0.002	0.00015	0.000165	0.000162
D6	R37	0.000011	0.0000084	0.0756	0.002	0.00015	0.000164	0.000162
D6	R41	0.000013	0.0000101	0.0747	0.002	0.00015	0.000164	0.000162
D6	R42	0.000014	0.0000112	0.0739	0.002	0.00015	0.000165	0.000161
D6	R47	0.000007	0.0000052	0.0769	0.002	0.00016	0.000163	0.000161
D6	R50	0.000009	0.0000063	0.0763	0.002	0.00015	0.000164	0.000161
Other (D6)	R27	0.000032	0.0000319	0.0691	0.002	0.00014	0.000173	0.000172
Other (D6)	R28	0.000031	0.0000281	0.0692	0.002	0.00014	0.000172	0.000169
Other (D6)	R29	0.000021	0.0000187	0.0728	0.002	0.00015	0.000169	0.000167
Other (D6)	R30	0.000021	0.0000175	0.0726	0.002	0.00015	0.000169	0.000165
D7	R7	0.000005	0.0000043	0.0771	0.002	0.00016	0.000162	0.000161
D7	R9	0.000009	0.0000073	0.0759	0.002	0.00015	0.000164	0.000161
D7	R38	0.000005	0.0000038	0.0775	0.002	0.00016	0.000163	0.000161
D7	R39	0.000005	0.0000038	0.0774	0.002	0.00016	0.000163	0.000161
D7	R40	0.000010	0.0000082	0.0755	0.002	0.00015	0.000164	0.000162
D7	R51	0.000006	0.0000044	0.0771	0.002	0.00016	0.000163	0.000161
D7	R52	0.000006	0.0000049	0.0769	0.002	0.00016	0.000163	0.000161
D7	R57	0.000004	0.0000028	0.0779	0.002	0.00016	0.000162	0.000161
D7	R62	0.000004	0.0000028	0.0780	0.002	0.00016	0.000162	0.000161
Other (D7)	R8	0.000011	0.0000086	0.0750	0.002	0.00015	0.000164	0.000161
D8	R55	0.000002	0.0000015	0.0785	0.002	0.00016	0.000162	0.000161
D8	R56	0.000002	0.0000017	0.0784	0.002	0.00016	0.000162	0.000161
D8	R61	0.000002	0.0000015	0.0785	0.002	0.00016	0.000162	0.000161
D9	R16	0.000003	0.0000022	0.0782	0.002	0.00016	0.000162	0.000161
D9	R19	0.000002	0.0000016	0.0785	0.002	0.00016	0.000162	0.000161
D9	R20	0.000002	0.0000017	0.0784	0.002	0.00016	0.000162	0.000161
D9	R48	0.000003	0.0000025	0.0781	0.002	0.00016	0.000162	0.000161
D9	R49	0.000002	0.0000014	0.0786	0.002	0.00016	0.000162	0.000161
D9	R60	0.000004	0.0000032	0.0778	0.002	0.00016	0.000162	0.000161
D10	R14	0.000006	0.0000043	0.0772	0.002	0.00016	0.000162	0.000161
D10	R15	0.000003	0.0000019	0.0783	0.002	0.00016	0.000162	0.000161
D10	R17	0.000005	0.0000037	0.0775	0.002	0.00016	0.000162	0.000161
D10	R54	0.000004	0.0000032	0.0777	0.002	0.00016	0.000162	0.000161
D10	R58	0.000002	0.0000015	0.0785	0.002	0.00016	0.000161	0.000161
D10	R63	0.000003	0.0000021	0.0782	0.002	0.00016	0.000162	0.000161

Zinc (Zn)		Annual avg metal in PM_{10} (mine-only)					Annual avg metal in PM_{10} (mine+background)	
		S1: Current Operations (BAU)	S2: Mod6 Operations	Background Pb	Ratio of metal to Pb	Estimated background for metal of interest	S1: Current Operations (BAU)	S2: Mod6 Operations
District	ID	µg/m³		µg/m³	unitless	µg/m³	M_{air} (µg/m³)	
D1	R6	0.0119	0.0090	0.0752	2.45	0.18	0.196	0.193
D1	R11	0.0101	0.0076	0.0765	2.45	0.19	0.197	0.195
D1	R18	0.0058	0.0042	0.0776	2.45	0.19	0.196	0.194
D1	R46	0.0046	0.0033	0.0780	2.45	0.19	0.195	0.194
D1	R53	0.0055	0.0040	0.0777	2.45	0.19	0.196	0.194
D2	R43	0.0176	0.0146	0.0776	2.45	0.19	0.208	0.205
D2	R44	0.0036	0.0026	0.0782	2.45	0.19	0.195	0.194
D2	R68	0.0061	0.0047	0.0775	2.45	0.19	0.196	0.194
D2	R69	0.0048	0.0036	0.0779	2.45	0.19	0.195	0.194
D2	R70	0.0049	0.0037	0.0680	2.45	0.17	0.171	0.170
Other (D2)	R59	0.0014	0.0010	0.0788	2.45	0.19	0.194	0.194
D3	R3	0.0300	0.0239	0.0709	2.45	0.17	0.204	0.197
D3	R4	0.0165	0.0126	0.0743	2.45	0.18	0.198	0.194
D3	R5	0.0140	0.0105	0.0752	2.45	0.18	0.198	0.195
D3	R12	0.0082	0.0061	0.0770	2.45	0.19	0.197	0.195
D3	R13	0.0070	0.0052	0.0773	2.45	0.19	0.196	0.195
D3	R45	0.0081	0.0060	0.0771	2.45	0.19	0.197	0.195
D4	R1	0.0168	0.0140	0.0741	2.45	0.18	0.198	0.195
D4	R2	0.0201	0.0159	0.0740	2.45	0.18	0.201	0.197
Other (D4)	R21	0.0189	0.0151	0.0735	2.45	0.18	0.199	0.195
Other (D4)	R22	0.0192	0.0149	0.0734	2.45	0.18	0.199	0.195
Other (D4)	R23	0.0198	0.0153	0.0734	2.45	0.18	0.200	0.195
Other (D4)	R24	0.0203	0.0162	0.0736	2.45	0.18	0.201	0.196
Other (D4)	R25	0.0125	0.0100	0.0752	2.45	0.18	0.197	0.194
Other (D4)	R26	0.0250	0.0205	0.0733	2.45	0.18	0.204	0.200
D5	R31	0.0125	0.0102	0.0758	2.45	0.19	0.198	0.196
D5	R32	0.0119	0.0096	0.0760	2.45	0.19	0.198	0.196
D5	R33	0.0163	0.0127	0.0752	2.45	0.18	0.200	0.197
D5	R64	0.0040	0.0031	0.0781	2.45	0.19	0.195	0.194
D5	R65	0.0093	0.0074	0.0767	2.45	0.19	0.197	0.195
D5	R66	0.0064	0.0049	0.0775	2.45	0.19	0.196	0.195
D5	R67	0.0067	0.0051	0.0774	2.45	0.19	0.196	0.195
D6	R10	0.0107	0.0083	0.0760	2.45	0.19	0.197	0.194
D6	R34	0.0161	0.0122	0.0743	2.45	0.18	0.198	0.194
D6	R35	0.0149	0.0110	0.0748	2.45	0.18	0.198	0.194
D6	R36	0.0140	0.0106	0.0752	2.45	0.18	0.198	0.195
D6	R37	0.0130	0.0101	0.0756	2.45	0.19	0.198	0.195
D6	R41	0.0153	0.0121	0.0747	2.45	0.18	0.198	0.195
D6	R42	0.0173	0.0135	0.0739	2.45	0.18	0.198	0.194
D6	R47	0.0083	0.0063	0.0769	2.45	0.19	0.197	0.194
D6	R50	0.0103	0.0076	0.0763	2.45	0.19	0.197	0.195
Other (D6)	R27	0.0390	0.0385	0.0691	2.45	0.17	0.208	0.208
Other (D6)	R28	0.0373	0.0338	0.0692	2.45	0.17	0.207	0.203
Other (D6)	R29	0.0250	0.0225	0.0728	2.45	0.18	0.203	0.201
Other (D6)	R30	0.0256	0.0211	0.0726	2.45	0.18	0.203	0.199
D7	R7	0.0065	0.0052	0.0771	2.45	0.19	0.195	0.194
D7	R9	0.0113	0.0088	0.0759	2.45	0.19	0.197	0.195
D7	R38	0.0064	0.0046	0.0775	2.45	0.19	0.196	0.194
D7	R39	0.0065	0.0046	0.0774	2.45	0.19	0.196	0.194
D7	R40	0.0126	0.0099	0.0755	2.45	0.18	0.197	0.195
D7	R51	0.0070	0.0053	0.0771	2.45	0.19	0.196	0.194
D7	R52	0.0077	0.0059	0.0769	2.45	0.19	0.196	0.194
D7	R57	0.0044	0.0034	0.0779	2.45	0.19	0.195	0.194
D7	R62	0.0048	0.0033	0.0780	2.45	0.19	0.196	0.194
Other (D7)	R8	0.0136	0.0104	0.0750	2.45	0.18	0.197	0.194
D8	R55	0.0025	0.0018	0.0785	2.45	0.19	0.195	0.194
D8	R56	0.0027	0.0020	0.0784	2.45	0.19	0.195	0.194
D8	R61	0.0026	0.0018	0.0785	2.45	0.19	0.195	0.194
D9	R16	0.0035	0.0027	0.0782	2.45	0.19	0.195	0.194
D9	R19	0.0025	0.0019	0.0785	2.45	0.19	0.195	0.194
D9	R20	0.0026	0.0020	0.0784	2.45	0.19	0.195	0.194
D9	R48	0.0040	0.0031	0.0781	2.45	0.19	0.195	0.194
D9	R49	0.0022	0.0017	0.0786	2.45	0.19	0.195	0.194
D9	R60	0.0051	0.0039	0.0778	2.45	0.19	0.196	0.194
D10	R14	0.0069	0.0052	0.0772	2.45	0.19	0.196	0.194
D10	R15	0.0030	0.0023	0.0783	2.45	0.19	0.195	0.194
D10	R17	0.0058	0.0045	0.0775	2.45	0.19	0.195	0.194
D10	R54	0.0049	0.0038	0.0777	2.45	0.19	0.195	0.194
D10	R58	0.0023	0.0018	0.0785	2.45	0.19	0.195	0.194
D10	R63	0.0032	0.0025	0.0782	2.45	0.19	0.195	0.194

APPENDIX I

IEUBK modelling outputs

Lead (Pb)		Modelled BPb 1-2 yr old child (µg/dL)			Difference in modelled BPb	
		S1: Current Operations (BAU)	S2: Mod6 Operations	S3: PPR	S2 vs. S1	S2 vs, PPR
District	ID	µg/dL			µg/dL	
D1	R6	5.202	5.200	5.240	-0.0020	-0.040
D1	R11	5.198	5.196	5.210	-0.0020	-0.014
D1	R18	5.189	5.189	5.195	0.0000	-0.006
D1	R46	17.973	17.972		-0.0010	
D1	R53	5.189	5.188		-0.0010	
D2	R43	8.094	8.092		-0.0020	
D2	R44	7.802	7.801		-0.0010	
D2	R68	8.066	8.066		0.0000	
D2	R69	8.064	8.064		0.0000	
D2	R70	8.059	8.059		0.0000	
Other (D2)	R59	8.058	8.058		0.0000	
D3	R3	5.248	5.246	5.244	-0.0020	0.002
D3	R4	5.209	5.208	5.270	-0.0010	-0.062
D3	R5	5.203	5.202	5.241	-0.0010	-0.039
D3	R12	5.194	5.193	5.210	-0.0010	-0.017
D3	R13	5.192	5.192	5.196	0.0000	-0.004
D3	R45	7.808	7.808		0.0000	
D4	R1	5.215	5.213	5.237	-0.0020	-0.024
D4	R2	5.218	5.217	5.252	-0.0010	-0.035
Other (D4)	R21	5.219	5.217	5.252	-0.0020	-0.035
Other (D4)	R22	5.221	5.219	5.267	-0.0020	-0.048
Other (D4)	R23	5.228	5.224	5.296	-0.0040	-0.072
Other (D4)	R24	5.234	5.229	5.341	-0.0050	-0.112
Other (D4)	R25	5.208	5.206	5.238	-0.0020	-0.032
Other (D4)	R26	5.255	5.248	5.399	-0.0070	-0.151
D5	R31	7.096	7.094	7.147	-0.0020	-0.053
D5	R32	7.094	7.093	7.134	-0.0010	-0.041
D5	R33	7.101	7.096	7.134	-0.0050	-0.038
D5	R64	7.076	7.075		-0.0010	
D5	R65	7.088	7.086		-0.0020	
D5	R66	7.081	7.080		-0.0010	
D5	R67	7.082	7.080		-0.0020	
D6	R10	10.764	10.762	10.769	-0.0020	-0.007
D6	R34	10.776	10.774	10.791	-0.0020	-0.017
D6	R35	10.773	10.771	10.791	-0.0020	-0.020
D6	R36	10.770	10.768	10.792	-0.0020	-0.024
D6	R37	10.769	10.767	10.803	-0.0020	-0.036
D6	R41	10.770	10.769	10.780	-0.0010	-0.011
D6	R42	10.777	10.775	10.791	-0.0020	-0.016
D6	R47	4.600	4.598		-0.0020	
D6	R50	10.765	10.763		-0.0020	
Other (D6)	R27	10.825	10.823	10.969	-0.0020	-0.146
Other (D6)	R28	10.812	10.810	10.912	-0.0020	-0.102
Other (D6)	R29	10.798	10.795	10.902	-0.0030	-0.107
Other (D6)	R30	10.792	10.789	10.857	-0.0030	-0.068
D7	R7	10.765	10.756	10.759	-0.0090	-0.003
D7	R9	10.764	10.762	10.770	-0.0020	-0.008
D7	R38	10.755	10.755	10.759	0.0000	-0.004
D7	R39	10.756	10.755	10.759	-0.0010	-0.004
D7	R40	10.765	10.764	10.781	-0.0010	-0.017
D7	R51	10.757	10.757		0.0000	
D7	R52	10.758	10.757		-0.0010	
D7	R57	10.753	10.753		0.0000	
D7	R62	10.753	10.753		0.0000	
Other (D7)	R8	10.768	10.766	10.781	-0.0020	-0.015
D8	R55	4.156	4.156		0.0000	
D8	R56	4.156	4.156		0.0000	
D8	R61	4.156	4.156		0.0000	
D9	R16	4.371	4.370	4.379	-0.0010	-0.009
D9	R19	4.369	4.368	4.379	-0.0010	-0.011
D9	R20	4.368	4.368	4.379	0.0000	-0.011
D9	R48	4.152	4.151		-0.0010	
D9	R49	2.586	2.586		0.0000	
D9	R60	4.375	4.373		-0.0020	
D10	R14	4.965	4.964	4.966	-0.0010	-0.002
D10	R15	4.957	4.957	4.967	0.0000	-0.010
D10	R17	4.963	4.962	4.967	-0.0010	-0.005
D10	R54	4.961	4.961		0.0000	
D10	R58	4.956	4.955		-0.0010	
D10	R63	4.957	4.957		0.0000	

R6-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	364.000	546.000
1-2	364.000	546.000
2-3	364.000	546.000
3-4	364.000	546.000

4-5	364.000	546.000
5-6	364.000	546.000
6-7	364.000	546.000

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

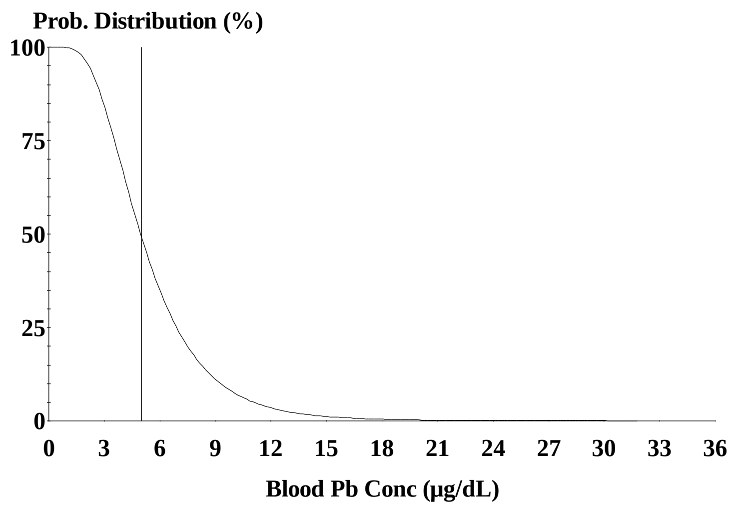
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	4.398	0.000	0.267
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.493	5.537	3.0
1-2	8.660	13.395	5.2
2-3	9.106	9.193	3.8
3-4	9.193	9.293	3.3
4-5	9.263	9.364	3.1
5-6	9.315	9.415	2.9
6-7	9.348	9.462	2.7

R6-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.202
GSD = 1.600
% Above = 53.360

Age Range = 12 to 24 months

Run Mode = Research

R6-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	363.800	545.700
1-2	363.800	545.700
2-3	363.800	545.700
3-4	363.800	545.700

4-5	363.800	545.700
5-6	363.800	545.700
6-7	363.800	545.700

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

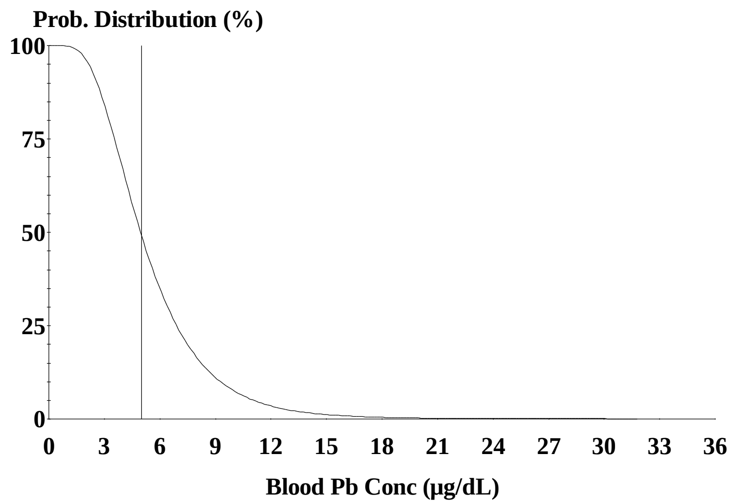
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.399	0.000	0.267
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.112	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.490	5.533	3.0
1-2	8.656	13.390	5.2
2-3	9.101	9.187	3.8
3-4	9.188	9.286	3.3
4-5	9.259	9.357	3.1
5-6	9.310	9.408	2.9
6-7	9.343	9.456	2.7

R6-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.200
GSD = 1.600
% Above = 53.325

Age Range = 12 to 24 months

Run Mode = Research

PPR - R6

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.084
1-2	1.400	8.000	32.000	0.084
2-3	2.000	9.500	32.000	0.084
3-4	2.000	10.900	32.000	0.084
4-5	2.000	10.900	32.000	0.084
5-6	2.000	10.900	32.000	0.084
6-7	2.000	12.400	32.000	0.084

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	368.200	552.300
1-2	368.200	552.300
2-3	368.200	552.300
3-4	368.200	552.300

4-5	368.200	552.300
5-6	368.200	552.300
6-7	368.200	552.300

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

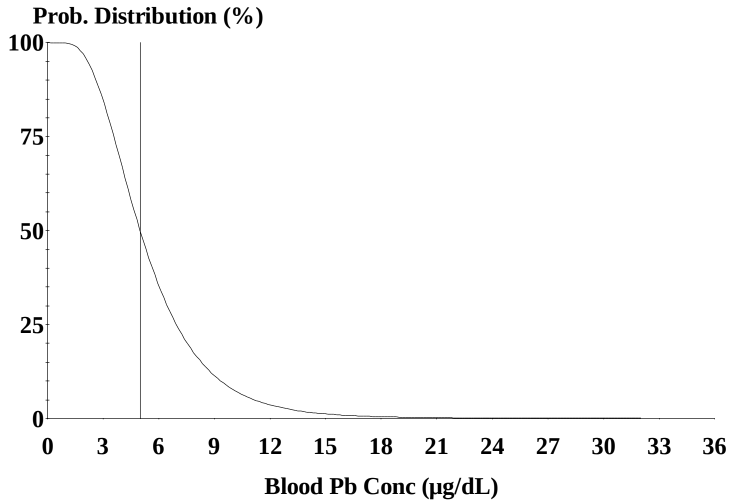
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.046	0.000	0.000	0.000
1-2	0.074	4.395	0.000	0.266
2-3	0.092	0.000	0.000	0.000
3-4	0.105	0.000	0.000	0.000
4-5	0.105	0.000	0.000	0.000
5-6	0.105	0.000	0.000	0.000
6-7	0.120	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.553	5.598	3.0
1-2	8.753	13.488	5.2
2-3	9.204	9.296	3.8
3-4	9.293	9.398	3.3
4-5	9.365	9.470	3.1
5-6	9.417	9.523	2.9
6-7	9.452	9.572	2.7

PPR-R6

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.240
GSD = 1.600
% Above = 53.970

Age Range = 12 to 24 months

Run Mode = Research

R11-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.081
1-2	1.400	8.000	32.000	0.081
2-3	2.000	9.500	32.000	0.081
3-4	2.000	10.900	32.000	0.081
4-5	2.000	10.900	32.000	0.081
5-6	2.000	10.900	32.000	0.081
6-7	2.000	12.400	32.000	0.081

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	363.400	545.100
1-2	363.400	545.100
2-3	363.400	545.100
3-4	363.400	545.100

4-5	363.400	545.100
5-6	363.400	545.100
6-7	363.400	545.100

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

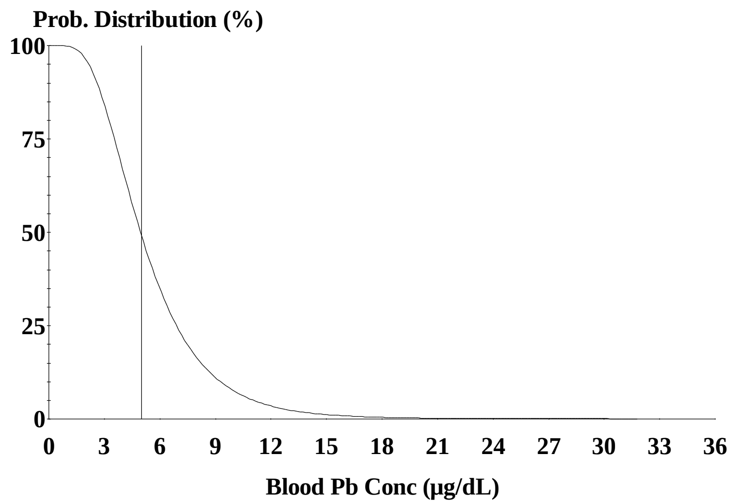
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	4.399	0.000	0.267
2-3	0.088	0.000	0.000	0.000
3-4	0.101	0.000	0.000	0.000
4-5	0.101	0.000	0.000	0.000
5-6	0.101	0.000	0.000	0.000
6-7	0.115	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.484	5.528	3.0
1-2	8.647	13.383	5.2
2-3	9.092	9.180	3.8
3-4	9.178	9.279	3.3
4-5	9.249	9.350	3.1
5-6	9.300	9.401	2.9
6-7	9.334	9.448	2.7

R11-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.197
GSD = 1.600
% Above = 53.279

Age Range = 12 to 24 months

Run Mode = Research

R11-S2

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	363.300	544.900
1-2	363.300	544.900
2-3	363.300	544.900
3-4	363.300	544.900

4-5	363.300	544.900
5-6	363.300	544.900
6-7	363.300	544.900

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

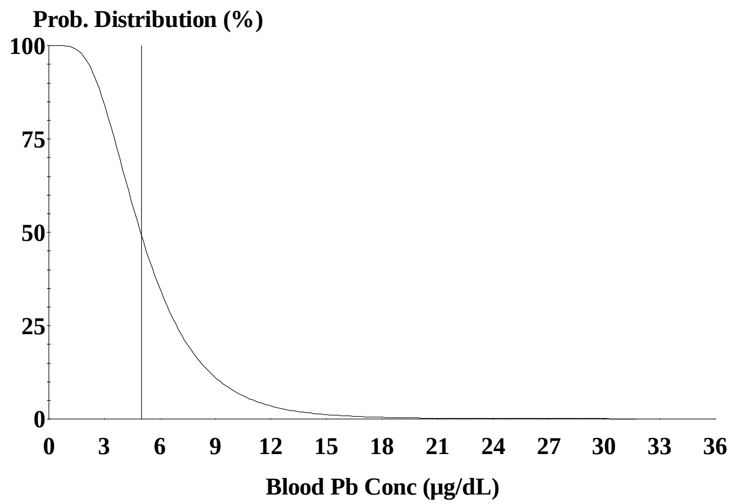
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.399	0.000	0.267
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.483	5.526	3.0
1-2	8.644	13.379	5.2
2-3	9.089	9.176	3.8
3-4	9.175	9.275	3.3
4-5	9.246	9.345	3.1
5-6	9.297	9.397	2.9
6-7	9.331	9.444	2.7

R11-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.196
GSD = 1.600
% Above = 53.256

Age Range = 12 to 24 months

Run Mode = Research

PPR-R11

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	364.900	547.400
1-2	364.900	547.400
2-3	364.900	547.400
3-4	364.900	547.400

4-5	364.900	547.400
5-6	364.900	547.400
6-7	364.900	547.400

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

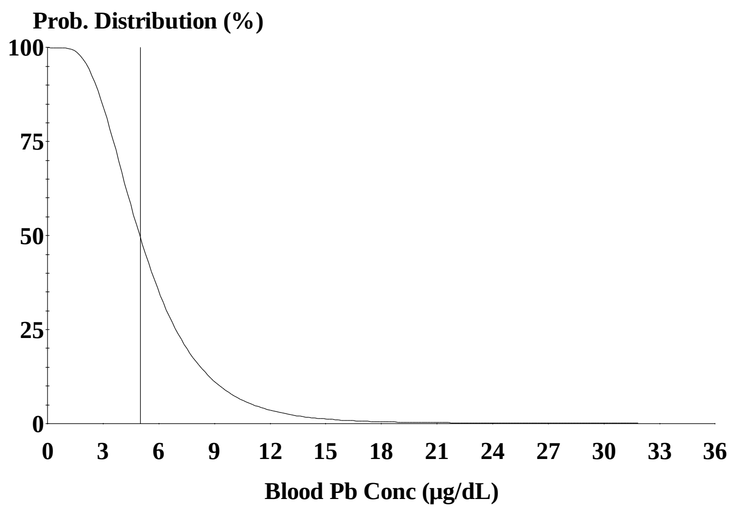
****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.398	0.000	0.267
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.506	5.549	3.0
1-2	8.681	13.414	5.2
2-3	9.128	9.214	3.8
3-4	9.214	9.314	3.3
4-5	9.286	9.385	3.1
5-6	9.337	9.436	2.9
6-7	9.371	9.484	2.7



Cutoff = 5.000 µg/dl
Geo Mean = 5.210
GSD = 1.600
% Above = 53.485

Age Range = 12 to 24 months

Run Mode = Research

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	362.500	543.800
1-2	362.500	543.800
2-3	362.500	543.800
3-4	362.500	543.800

4-5	362.500	543.800
5-6	362.500	543.800
6-7	362.500	543.800

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

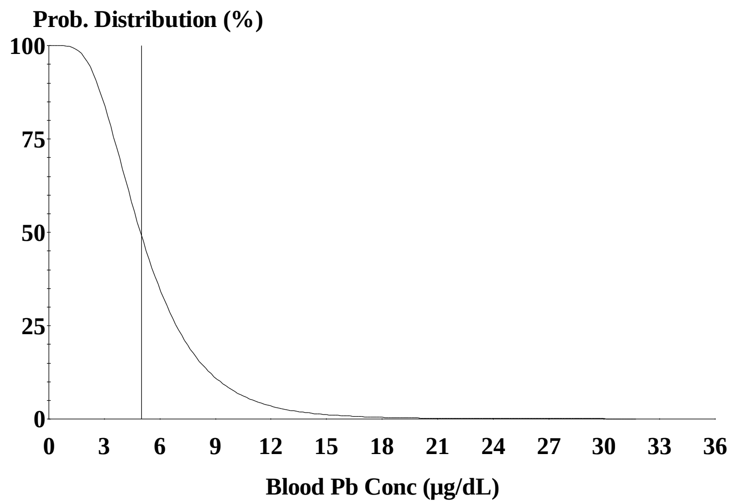
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.070	4.400	0.000	0.267
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.472	5.515	3.0
1-2	8.627	13.364	5.2
2-3	9.071	9.159	3.8
3-4	9.157	9.257	3.3
4-5	9.228	9.328	3.1
5-6	9.278	9.378	2.9
6-7	9.312	9.426	2.7

R18-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.189
GSD = 1.600
% Above = 53.152

Age Range = 12 to 24 months

Run Mode = Research

R18-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	362.500	543.700
1-2	362.500	543.700
2-3	362.500	543.700
3-4	362.500	543.700

4-5	362.500	543.700
5-6	362.500	543.700
6-7	362.500	543.700

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

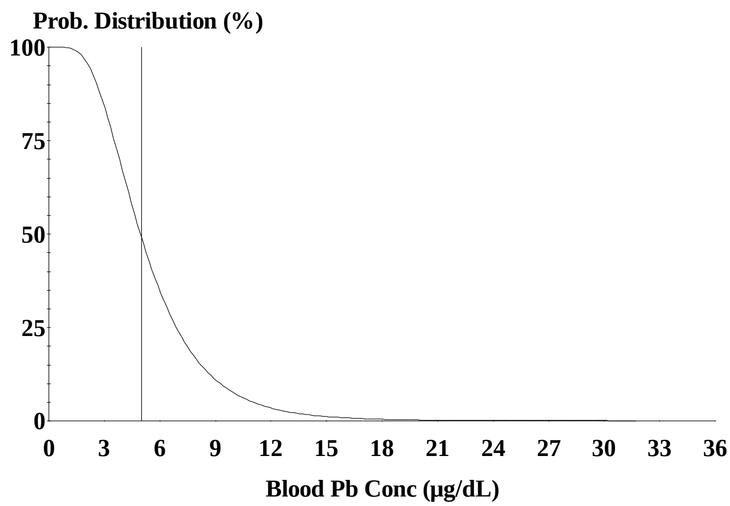
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.400	0.000	0.267
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.471	5.515	3.0
1-2	8.626	13.362	5.2
2-3	9.070	9.157	3.8
3-4	9.156	9.255	3.3
4-5	9.227	9.326	3.1
5-6	9.277	9.377	2.9
6-7	9.311	9.424	2.7

R18-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.189
GSD = 1.600
% Above = 53.142

Age Range = 12 to 24 months

Run Mode = Research

PPR-R18

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.078
1-2	1.400	8.000	32.000	0.078
2-3	2.000	9.500	32.000	0.078
3-4	2.000	10.900	32.000	0.078
4-5	2.000	10.900	32.000	0.078
5-6	2.000	10.900	32.000	0.078
6-7	2.000	12.400	32.000	0.078

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	363.300	544.900
1-2	363.300	544.900
2-3	363.300	544.900
3-4	363.300	544.900

4-5	363.300	544.900
5-6	363.300	544.900
6-7	363.300	544.900

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

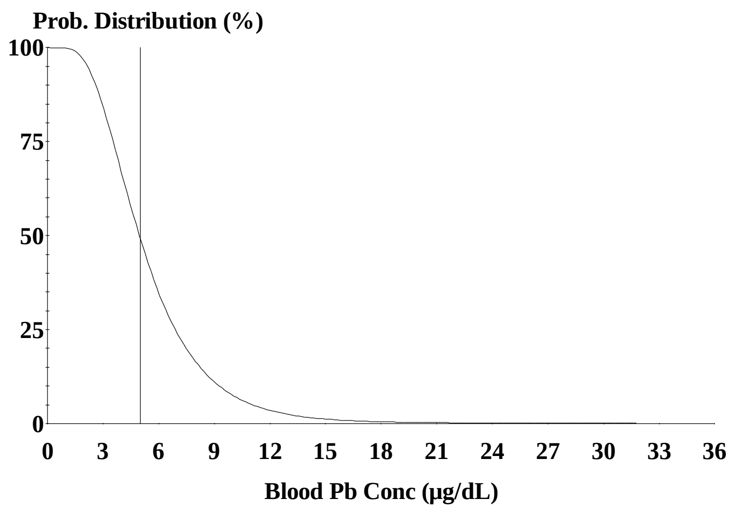
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.068	4.399	0.000	0.267
2-3	0.085	0.000	0.000	0.000
3-4	0.098	0.000	0.000	0.000
4-5	0.098	0.000	0.000	0.000
5-6	0.098	0.000	0.000	0.000
6-7	0.111	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.483	5.525	3.0
1-2	8.644	13.378	5.2
2-3	9.089	9.174	3.8
3-4	9.175	9.273	3.3
4-5	9.246	9.344	3.1
5-6	9.297	9.395	2.9
6-7	9.331	9.442	2.7

PPR-R18

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.195
GSD = 1.600
% Above = 53.248

Age Range = 12 to 24 months

Run Mode = Research

R46-S1

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	2395.200	3592.800
1-2	2395.200	3592.800
2-3	2395.200	3592.800
3-4	2395.200	3592.800

4-5	2395.200	3592.800
5-6	2395.200	3592.800
6-7	2395.200	3592.800

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

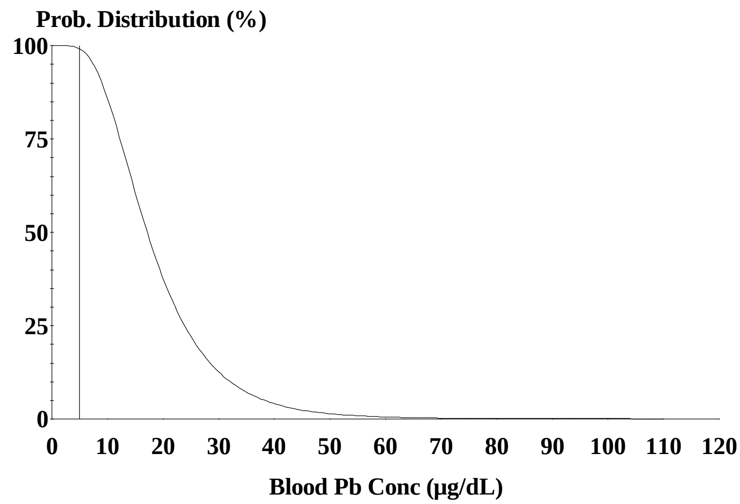
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.070	3.255	0.000	0.197
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	27.709	27.752	14.3
1-2	42.176	45.699	18.0
2-3	45.133	45.219	16.5
3-4	46.970	47.069	15.9
4-5	48.601	48.701	15.6
5-6	49.860	49.960	14.9
6-7	50.727	50.841	14.0

R46-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 17.973
GSD = 1.600
% Above = 99.676

Age Range = 12 to 24 months

Run Mode = Research

R46-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	2395.200	3592.800
1-2	2395.200	3592.800
2-3	2395.200	3592.800
3-4	2395.200	3592.800

4-5	2395.200	3592.800
5-6	2395.200	3592.800
6-7	2395.200	3592.800

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

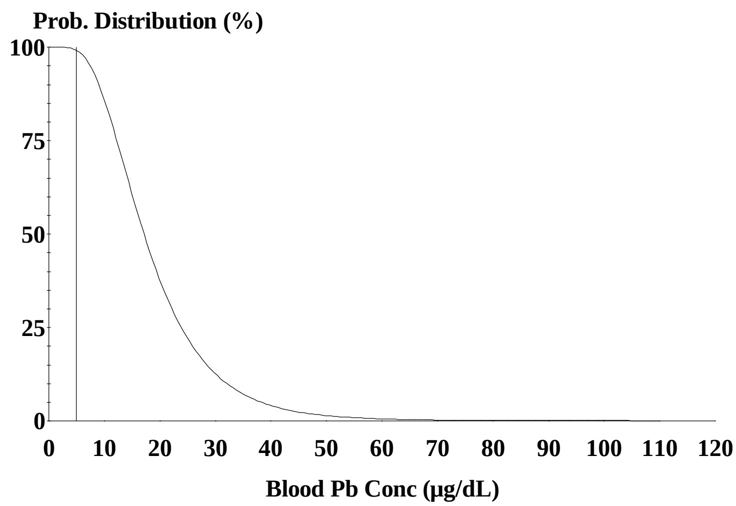
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	3.255	0.000	0.197
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	27.709	27.752	14.3
1-2	42.176	45.698	18.0
2-3	45.133	45.219	16.5
3-4	46.970	47.069	15.9
4-5	48.601	48.701	15.6
5-6	49.860	49.960	14.9
6-7	50.727	50.840	14.0

R46-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 17.972
GSD = 1.600
% Above = 99.676

Age Range = 12 to 24 months

Run Mode = Research

R53-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	362.500	543.700
1-2	362.500	543.700
2-3	362.500	543.700
3-4	362.500	543.700

4-5	362.500	543.700
5-6	362.500	543.700
6-7	362.500	543.700

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

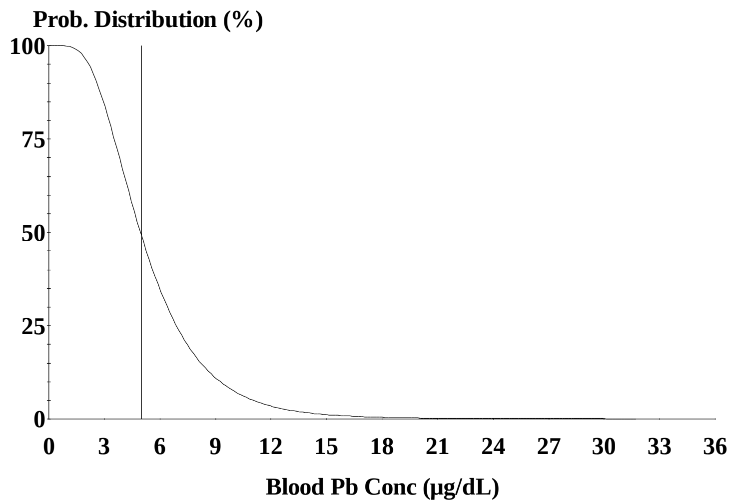
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.070	4.400	0.000	0.267
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.471	5.515	3.0
1-2	8.626	13.363	5.2
2-3	9.070	9.158	3.8
3-4	9.156	9.256	3.3
4-5	9.227	9.327	3.1
5-6	9.277	9.377	2.9
6-7	9.311	9.425	2.7

R53-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.189
GSD = 1.600
% Above = 53.146

Age Range = 12 to 24 months

Run Mode = Research

R53-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	362.400	543.600
1-2	362.400	543.600
2-3	362.400	543.600
3-4	362.400	543.600

4-5	362.400	543.600
5-6	362.400	543.600
6-7	362.400	543.600

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

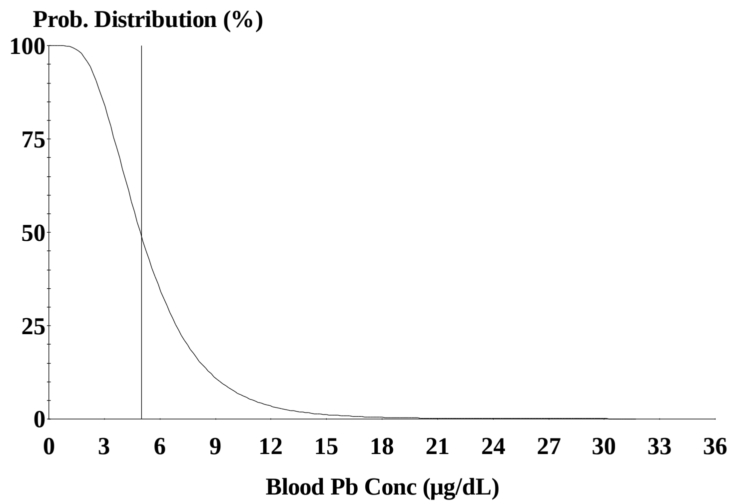
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.400	0.000	0.267
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.470	5.513	3.0
1-2	8.625	13.361	5.2
2-3	9.069	9.155	3.8
3-4	9.154	9.254	3.3
4-5	9.225	9.324	3.1
5-6	9.276	9.375	2.9
6-7	9.309	9.422	2.7

R53-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.188
GSD = 1.600
% Above = 53.131

Age Range = 12 to 24 months

Run Mode = Research

R43-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (μg Pb/m^3)
.5-1	0.500	5.400	32.000	0.085
1-2	1.400	8.000	32.000	0.085
2-3	2.000	9.500	32.000	0.085
3-4	2.000	10.900	32.000	0.085
4-5	2.000	10.900	32.000	0.085
5-6	2.000	10.900	32.000	0.085
6-7	2.000	12.400	32.000	0.085

****** Diet ******

Age	Diet Intake(μg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 μg Pb/L

****** Soil & Dust ******

Age	Soil (μg Pb/g)	House Dust (μg Pb/g)
.5-1	723.100	1084.700
1-2	723.100	1084.700
2-3	723.100	1084.700
3-4	723.100	1084.700

4-5	723.100	1084.700
5-6	723.100	1084.700
6-7	723.100	1084.700

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

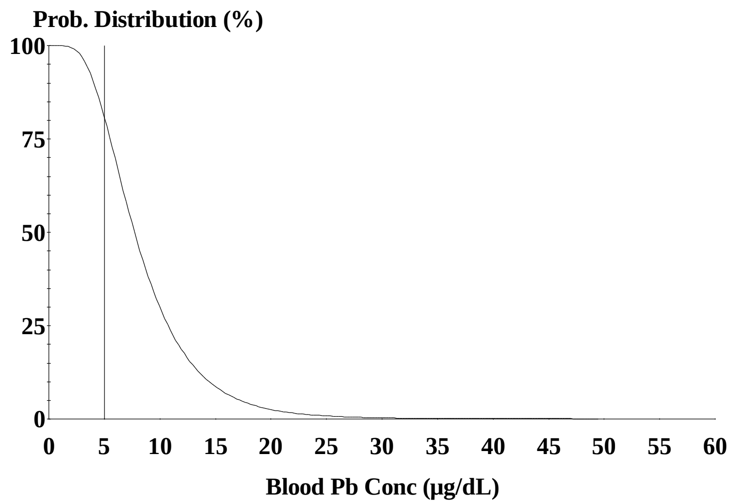
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.046	0.000	0.000	0.000
1-2	0.074	4.119	0.000	0.250
2-3	0.092	0.000	0.000	0.000
3-4	0.106	0.000	0.000	0.000
4-5	0.106	0.000	0.000	0.000
5-6	0.106	0.000	0.000	0.000
6-7	0.121	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	10.315	10.362	5.6
1-2	16.112	20.555	8.1
2-3	17.025	17.118	6.7
3-4	17.320	17.426	6.1
4-5	17.566	17.672	5.8
5-6	17.747	17.853	5.5
6-7	17.867	17.988	5.1

R43-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 8.094
GSD = 1.600
% Above = 84.729

Age Range = 12 to 24 months

Run Mode = Research

R43-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.084
1-2	1.400	8.000	32.000	0.084
2-3	2.000	9.500	32.000	0.084
3-4	2.000	10.900	32.000	0.084
4-5	2.000	10.900	32.000	0.084
5-6	2.000	10.900	32.000	0.084
6-7	2.000	12.400	32.000	0.084

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	722.800	1084.300
1-2	722.800	1084.300
2-3	722.800	1084.300
3-4	722.800	1084.300

4-5	722.800	1084.300
5-6	722.800	1084.300
6-7	722.800	1084.300

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

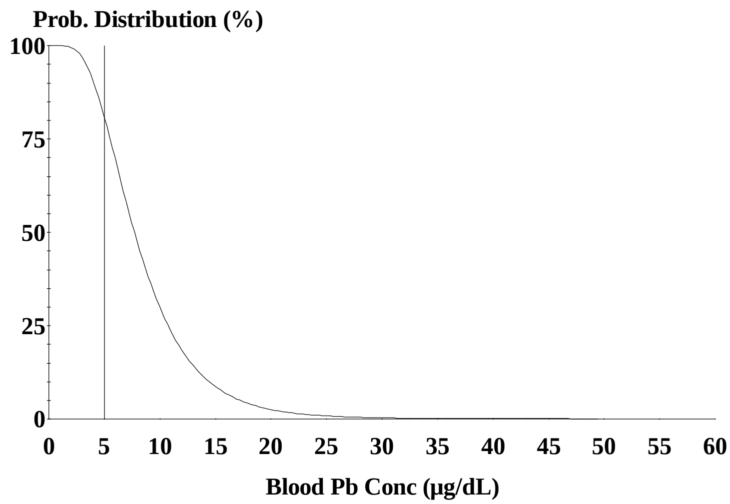
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.045	0.000	0.000	0.000
1-2	0.073	4.119	0.000	0.250
2-3	0.091	0.000	0.000	0.000
3-4	0.104	0.000	0.000	0.000
4-5	0.104	0.000	0.000	0.000
5-6	0.104	0.000	0.000	0.000
6-7	0.119	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	10.312	10.357	5.6
1-2	16.106	20.548	8.1
2-3	17.019	17.111	6.7
3-4	17.314	17.419	6.1
4-5	17.560	17.665	5.8
5-6	17.741	17.845	5.5
6-7	17.861	17.980	5.1

R43-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 8.092
GSD = 1.600
% Above = 84.714

Age Range = 12 to 24 months

Run Mode = Research

R44-S1 .EAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	684.800	1027.200
1-2	684.800	1027.200
2-3	684.800	1027.200
3-4	684.800	1027.200

4-5	684.800	1027.200
5-6	684.800	1027.200
6-7	684.800	1027.200

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

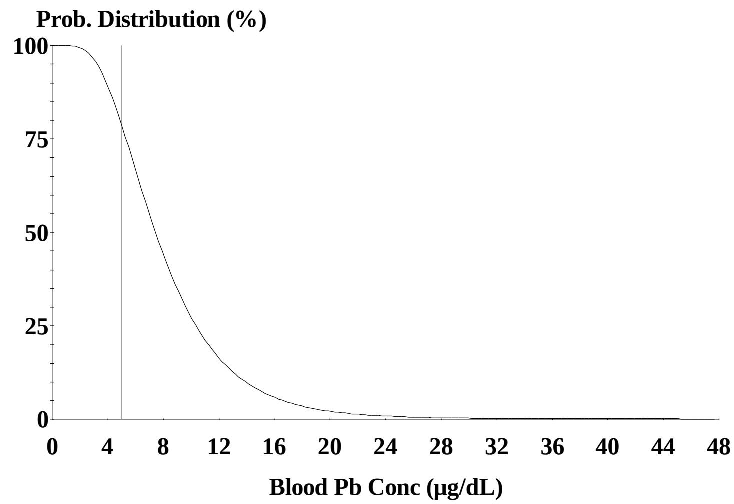
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.070	4.147	0.000	0.251
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	9.825	9.869	5.3
1-2	15.360	19.828	7.8
2-3	16.223	16.310	6.4
3-4	16.492	16.591	5.8
4-5	16.716	16.815	5.5
5-6	16.880	16.979	5.2
6-7	16.988	17.102	4.8

R44-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 7.802
GSD = 1.600
% Above = 82.811

Age Range = 12 to 24 months

Run Mode = Research

R44-S2

.EAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	684.700	1027.100
1-2	684.700	1027.100
2-3	684.700	1027.100
3-4	684.700	1027.100

4-5	684.700	1027.100
5-6	684.700	1027.100
6-7	684.700	1027.100

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

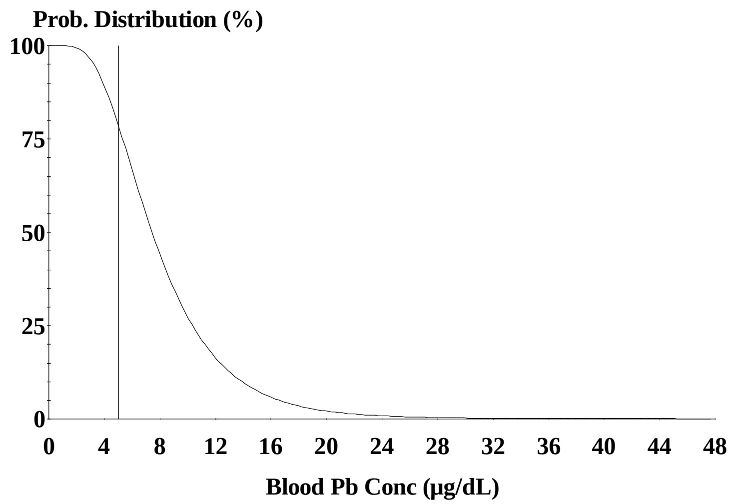
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.147	0.000	0.251
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	9.824	9.867	5.3
1-2	15.359	19.826	7.8
2-3	16.222	16.308	6.4
3-4	16.490	16.589	5.8
4-5	16.714	16.813	5.5
5-6	16.878	16.977	5.2
6-7	16.987	17.099	4.8

R44-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 7.801
GSD = 1.600
% Above = 82.806

Age Range = 12 to 24 months

Run Mode = Research

R59-S1

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	718.500	1077.800
1-2	718.500	1077.800
2-3	718.500	1077.800
3-4	718.500	1077.800

4-5	718.500	1077.800
5-6	718.500	1077.800
6-7	718.500	1077.800

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

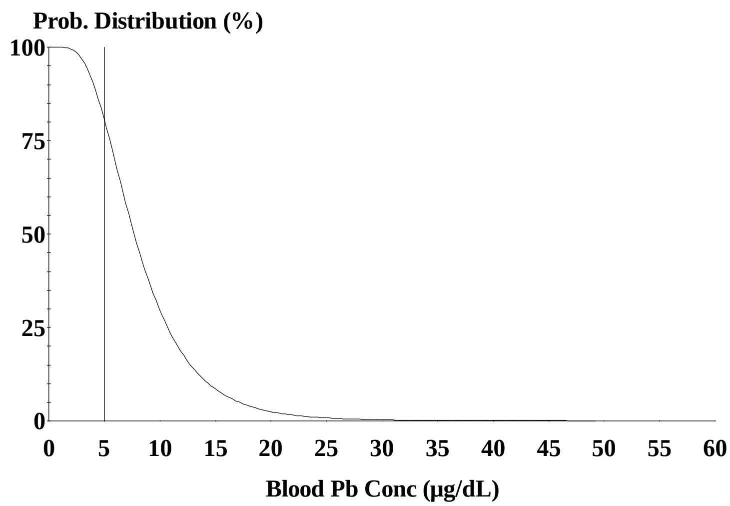
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.122	0.000	0.250
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	10.257	10.300	5.5
1-2	16.022	20.464	8.1
2-3	16.930	17.016	6.6
3-4	17.221	17.320	6.0
4-5	17.465	17.564	5.8
5-6	17.643	17.743	5.5
6-7	17.762	17.875	5.1

R59-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 8.058
GSD = 1.600
% Above = 84.501

Age Range = 12 to 24 months

Run Mode = Research

R59-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	718.500	1077.800
1-2	718.500	1077.800
2-3	718.500	1077.800
3-4	718.500	1077.800

4-5	718.500	1077.800
5-6	718.500	1077.800
6-7	718.500	1077.800

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

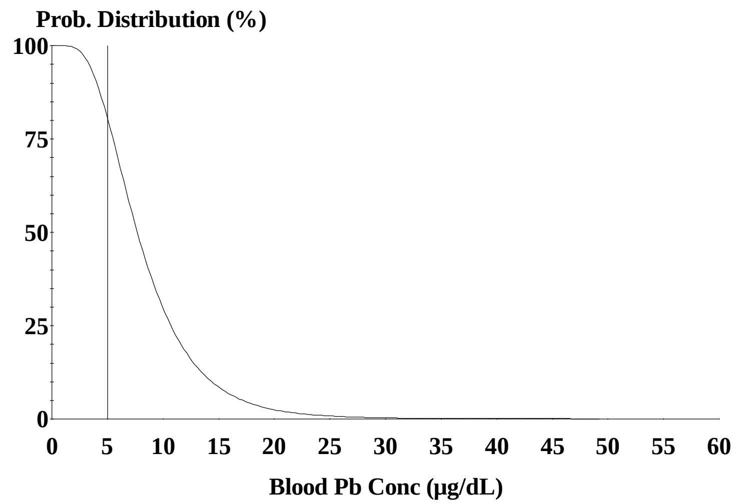
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.122	0.000	0.250
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	10.257	10.300	5.5
1-2	16.022	20.463	8.1
2-3	16.930	17.016	6.6
3-4	17.221	17.320	6.0
4-5	17.465	17.564	5.8
5-6	17.643	17.742	5.5
6-7	17.762	17.875	5.1

R59-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 8.058
GSD = 1.600
% Above = 84.501

Age Range = 12 to 24 months

Run Mode = Research

R68-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	719.600	1079.500
1-2	719.600	1079.500
2-3	719.600	1079.500
3-4	719.600	1079.500

4-5	719.600	1079.500
5-6	719.600	1079.500
6-7	719.600	1079.500

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

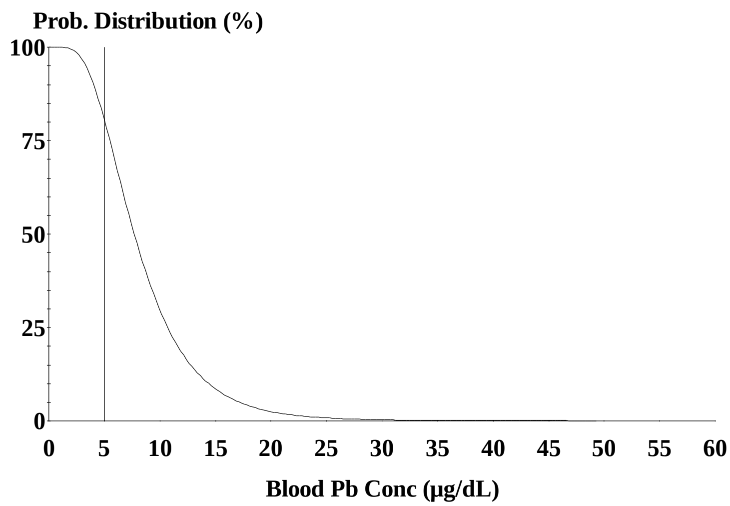
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.070	4.122	0.000	0.250
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	10.271	10.315	5.5
1-2	16.044	20.485	8.1
2-3	16.953	17.040	6.6
3-4	17.245	17.345	6.0
4-5	17.489	17.589	5.8
5-6	17.669	17.769	5.5
6-7	17.788	17.901	5.1

R68-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 8.066
GSD = 1.600
% Above = 84.556

Age Range = 12 to 24 months

Run Mode = Research

R68-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	719.600	1079.400
1-2	719.600	1079.400
2-3	719.600	1079.400
3-4	719.600	1079.400

4-5	719.600	1079.400
5-6	719.600	1079.400
6-7	719.600	1079.400

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

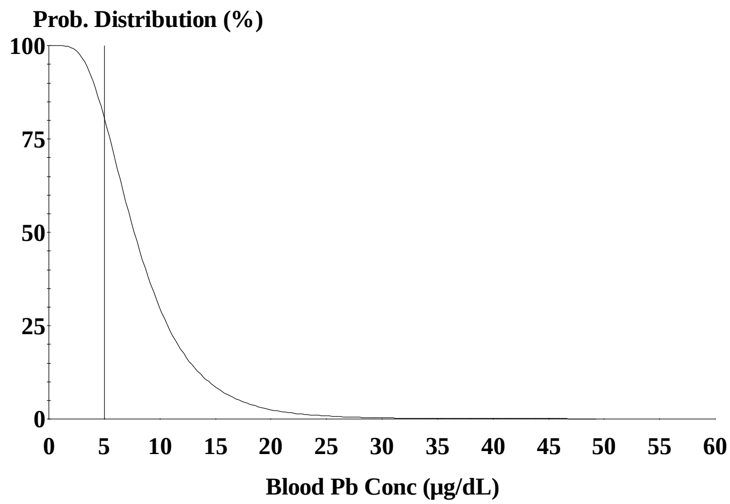
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.122	0.000	0.250
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	10.271	10.314	5.5
1-2	16.043	20.484	8.1
2-3	16.952	17.038	6.6
3-4	17.244	17.344	6.0
4-5	17.489	17.588	5.8
5-6	17.668	17.767	5.5
6-7	17.787	17.900	5.1

R68-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 8.066
GSD = 1.600
% Above = 84.552

Age Range = 12 to 24 months

Run Mode = Research

R69-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	719.400	1079.100
1-2	719.400	1079.100
2-3	719.400	1079.100
3-4	719.400	1079.100

4-5	719.400	1079.100
5-6	719.400	1079.100
6-7	719.400	1079.100

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

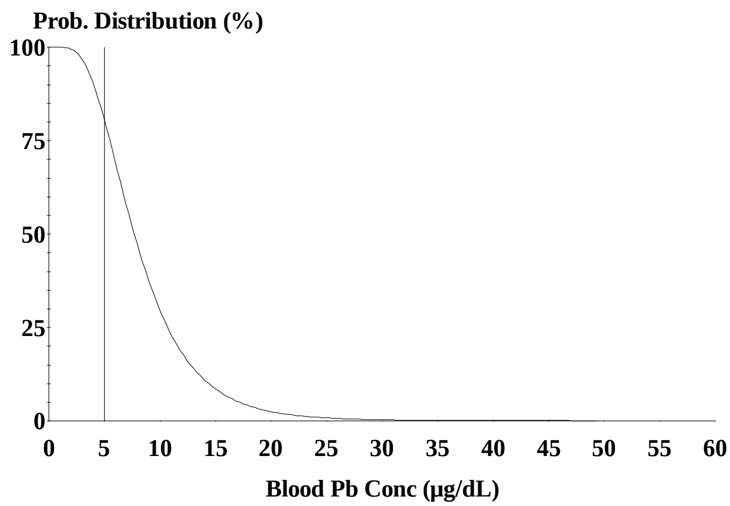
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.070	4.122	0.000	0.250
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	10.268	10.311	5.5
1-2	16.039	20.480	8.1
2-3	16.948	17.035	6.6
3-4	17.240	17.340	6.0
4-5	17.484	17.584	5.8
5-6	17.663	17.763	5.5
6-7	17.782	17.896	5.1

R69-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 8.064
GSD = 1.600
% Above = 84.544

Age Range = 12 to 24 months

Run Mode = Research

R69-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	719.300	1079.000
1-2	719.300	1079.000
2-3	719.300	1079.000
3-4	719.300	1079.000

4-5	719.300	1079.000
5-6	719.300	1079.000
6-7	719.300	1079.000

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

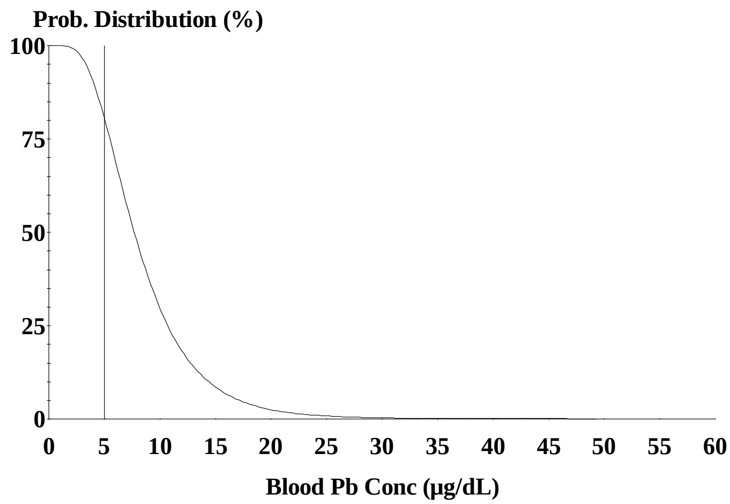
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.122	0.000	0.250
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	10.267	10.310	5.5
1-2	16.038	20.479	8.1
2-3	16.946	17.033	6.6
3-4	17.238	17.337	6.0
4-5	17.482	17.581	5.8
5-6	17.661	17.761	5.5
6-7	17.780	17.893	5.1

R69-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 8.064
GSD = 1.600
% Above = 84.539

Age Range = 12 to 24 months

Run Mode = Research

R70-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (μg Pb/m^3)
.5-1	0.500	5.400	32.000	0.070
1-2	1.400	8.000	32.000	0.070
2-3	2.000	9.500	32.000	0.070
3-4	2.000	10.900	32.000	0.070
4-5	2.000	10.900	32.000	0.070
5-6	2.000	10.900	32.000	0.070
6-7	2.000	12.400	32.000	0.070

****** Diet ******

Age	Diet Intake(μg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 μg Pb/L

****** Soil & Dust ******

Age	Soil (μg Pb/g)	House Dust (μg Pb/g)
.5-1	719.200	1078.800
1-2	719.200	1078.800
2-3	719.200	1078.800
3-4	719.200	1078.800

4-5	719.200	1078.800
5-6	719.200	1078.800
6-7	719.200	1078.800

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

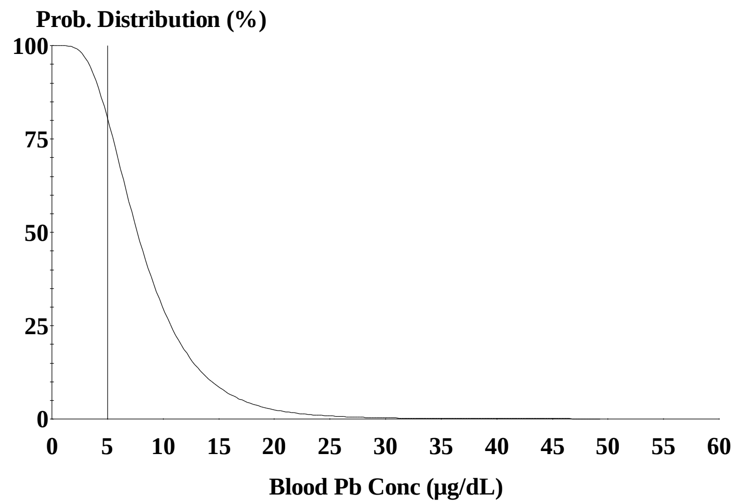
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.038	0.000	0.000	0.000
1-2	0.061	4.122	0.000	0.250
2-3	0.076	0.000	0.000	0.000
3-4	0.087	0.000	0.000	0.000
4-5	0.087	0.000	0.000	0.000
5-6	0.087	0.000	0.000	0.000
6-7	0.100	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	10.266	10.304	5.5
1-2	16.035	20.468	8.1
2-3	16.944	17.020	6.6
3-4	17.236	17.323	6.0
4-5	17.480	17.567	5.8
5-6	17.659	17.746	5.5
6-7	17.778	17.877	5.1

R70-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 8.059
GSD = 1.600
% Above = 84.513

Age Range = 12 to 24 months

Run Mode = Research

R70-S2

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.069
1-2	1.400	8.000	32.000	0.069
2-3	2.000	9.500	32.000	0.069
3-4	2.000	10.900	32.000	0.069
4-5	2.000	10.900	32.000	0.069
5-6	2.000	10.900	32.000	0.069
6-7	2.000	12.400	32.000	0.069

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	719.200	1078.800
1-2	719.200	1078.800
2-3	719.200	1078.800
3-4	719.200	1078.800

4-5	719.200	1078.800
5-6	719.200	1078.800
6-7	719.200	1078.800

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

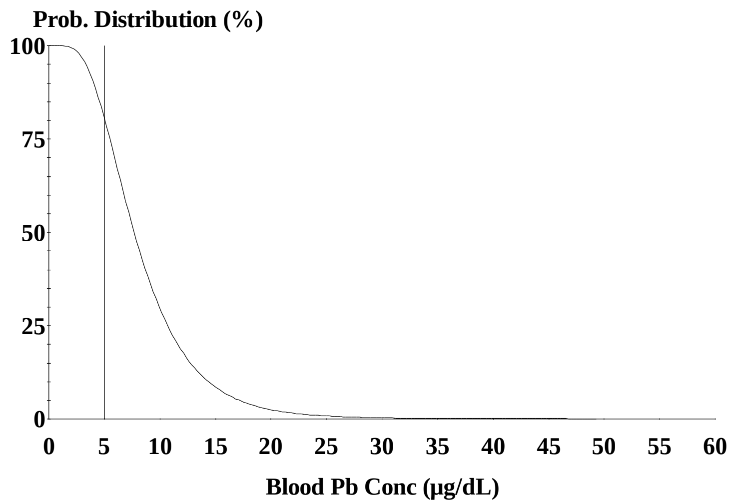
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.038	0.000	0.000	0.000
1-2	0.061	4.122	0.000	0.250
2-3	0.076	0.000	0.000	0.000
3-4	0.087	0.000	0.000	0.000
4-5	0.087	0.000	0.000	0.000
5-6	0.087	0.000	0.000	0.000
6-7	0.099	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	10.266	10.303	5.5
1-2	16.035	20.468	8.1
2-3	16.944	17.019	6.6
3-4	17.236	17.323	6.0
4-5	17.480	17.567	5.8
5-6	17.659	17.746	5.5
6-7	17.778	17.876	5.1

R70-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 8.059
GSD = 1.600
% Above = 84.512

Age Range = 12 to 24 months

Run Mode = Research

R3-S1

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.083
1-2	1.400	8.000	32.000	0.083
2-3	2.000	9.500	32.000	0.083
3-4	2.000	10.900	32.000	0.083
4-5	2.000	10.900	32.000	0.083
5-6	2.000	10.900	32.000	0.083
6-7	2.000	12.400	32.000	0.083

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	369.200	553.800
1-2	369.200	553.800
2-3	369.200	553.800
3-4	369.200	553.800

4-5	369.200	553.800
5-6	369.200	553.800
6-7	369.200	553.800

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

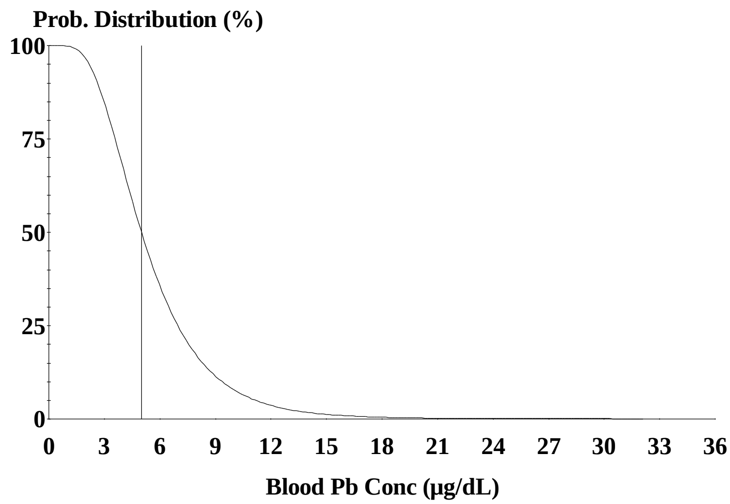
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.045	0.000	0.000	0.000
1-2	0.073	4.394	0.000	0.266
2-3	0.091	0.000	0.000	0.000
3-4	0.104	0.000	0.000	0.000
4-5	0.104	0.000	0.000	0.000
5-6	0.104	0.000	0.000	0.000
6-7	0.118	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.567	5.612	3.0
1-2	8.775	13.508	5.2
2-3	9.228	9.318	3.9
3-4	9.316	9.420	3.3
4-5	9.389	9.493	3.1
5-6	9.442	9.546	3.0
6-7	9.476	9.595	2.7

R3-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.248
GSD = 1.600
% Above = 54.102

Age Range = 12 to 24 months

Run Mode = Research

R3-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m³/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m³)
.5-1	0.500	5.400	32.000	0.081
1-2	1.400	8.000	32.000	0.081
2-3	2.000	9.500	32.000	0.081
3-4	2.000	10.900	32.000	0.081
4-5	2.000	10.900	32.000	0.081
5-6	2.000	10.900	32.000	0.081
6-7	2.000	12.400	32.000	0.081

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	369.000	553.600
1-2	369.000	553.600
2-3	369.000	553.600
3-4	369.000	553.600

4-5	369.000	553.600
5-6	369.000	553.600
6-7	369.000	553.600

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

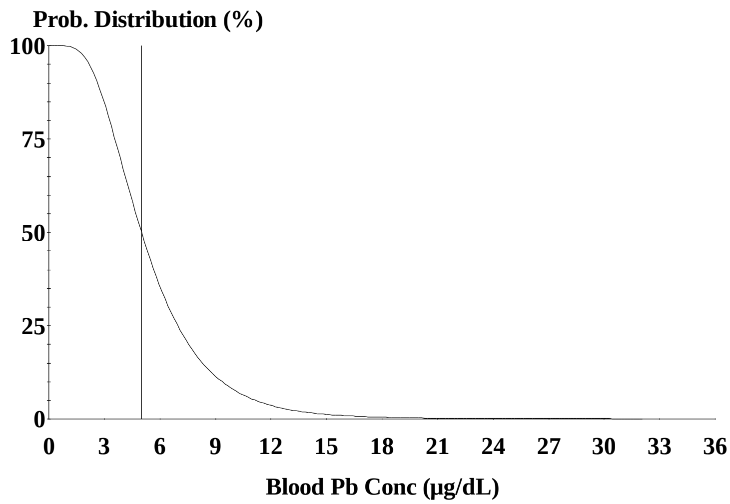
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	4.394	0.000	0.266
2-3	0.088	0.000	0.000	0.000
3-4	0.101	0.000	0.000	0.000
4-5	0.101	0.000	0.000	0.000
5-6	0.101	0.000	0.000	0.000
6-7	0.115	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.564	5.608	3.0
1-2	8.772	13.502	5.2
2-3	9.224	9.312	3.9
3-4	9.313	9.413	3.3
4-5	9.385	9.486	3.1
5-6	9.438	9.539	3.0
6-7	9.473	9.587	2.7

R3-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.246
GSD = 1.600
% Above = 54.066

Age Range = 12 to 24 months

Run Mode = Research

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.085
1-2	1.400	8.000	32.000	0.085
2-3	2.000	9.500	32.000	0.085
3-4	2.000	10.900	32.000	0.085
4-5	2.000	10.900	32.000	0.085
5-6	2.000	10.900	32.000	0.085
6-7	2.000	12.400	32.000	0.085

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	376.500	546.700
1-2	376.500	546.700
2-3	376.500	546.700
3-4	376.500	546.700

4-5	376.500	546.700
5-6	376.500	546.700
6-7	376.500	546.700

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

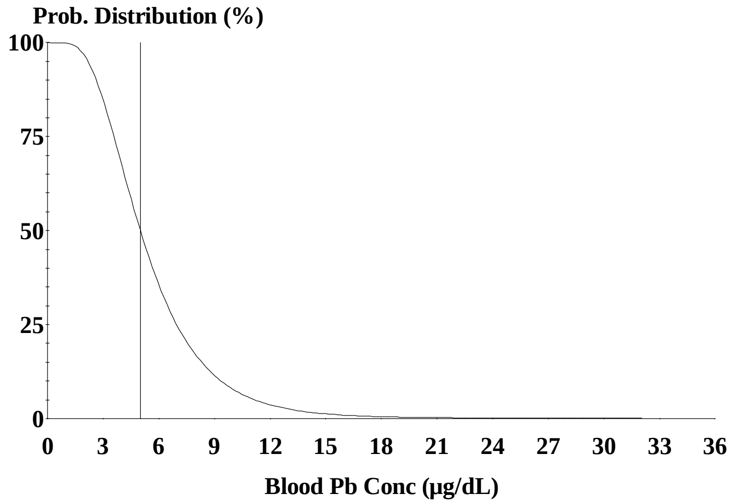
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.046	0.000	0.000	0.000
1-2	0.074	4.394	0.000	0.266
2-3	0.092	0.000	0.000	0.000
3-4	0.106	0.000	0.000	0.000
4-5	0.106	0.000	0.000	0.000
5-6	0.106	0.000	0.000	0.000
6-7	0.120	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.560	5.606	3.0
1-2	8.764	13.499	5.2
2-3	9.216	9.308	3.9
3-4	9.305	9.411	3.3
4-5	9.377	9.483	3.1
5-6	9.430	9.536	3.0
6-7	9.465	9.585	2.7

IEUBK Distribution Probability Percent

PPR-R3



Cutoff = 5.000 µg/dl
Geo Mean = 5.244
GSD = 1.600
% Above = 54.043

Age Range = 12 to 24 months

Run Mode = Research

R4-S1

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (μg Pb/m^3)
.5-1	0.500	5.400	32.000	0.081
1-2	1.400	8.000	32.000	0.081
2-3	2.000	9.500	32.000	0.081
3-4	2.000	10.900	32.000	0.081
4-5	2.000	10.900	32.000	0.081
5-6	2.000	10.900	32.000	0.081
6-7	2.000	12.400	32.000	0.081

******** Diet ********

Age	Diet Intake(μg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 μg Pb/L

******** Soil & Dust ********

Age	Soil (μg Pb/g)	House Dust (μg Pb/g)
.5-1	364.800	547.200
1-2	364.800	547.200
2-3	364.800	547.200
3-4	364.800	547.200

4-5	364.800	547.200
5-6	364.800	547.200
6-7	364.800	547.200

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

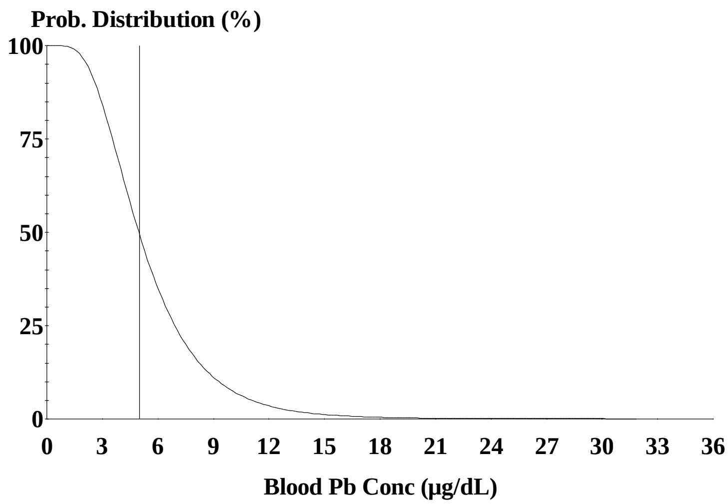
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.071	4.398	0.000	0.267
2-3	0.088	0.000	0.000	0.000
3-4	0.101	0.000	0.000	0.000
4-5	0.101	0.000	0.000	0.000
5-6	0.101	0.000	0.000	0.000
6-7	0.115	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.504	5.548	3.0
1-2	8.678	13.413	5.2
2-3	9.125	9.213	3.8
3-4	9.212	9.313	3.3
4-5	9.283	9.384	3.1
5-6	9.334	9.435	2.9
6-7	9.368	9.483	2.7

R4-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.209
GSD = 1.600
% Above = 53.477

Age Range = 12 to 24 months

Run Mode = Research

R4-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	364.700	547.000
1-2	364.700	547.000
2-3	364.700	547.000
3-4	364.700	547.000

4-5	364.700	547.000
5-6	364.700	547.000
6-7	364.700	547.000

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

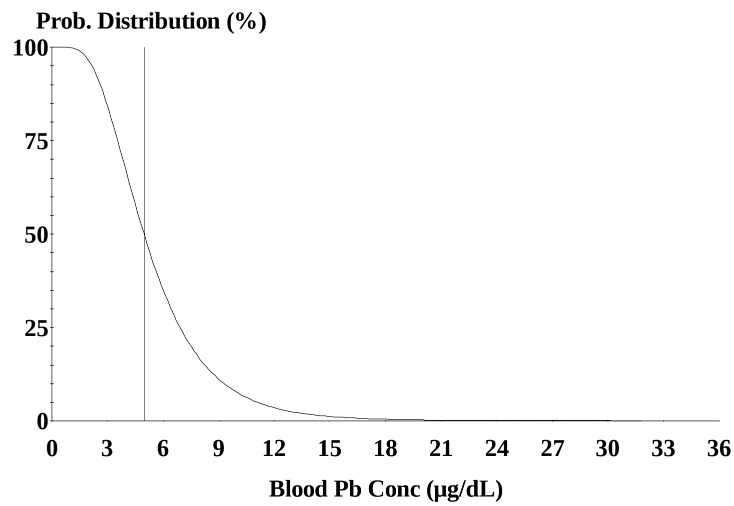
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.398	0.000	0.267
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.503	5.546	3.0
1-2	8.675	13.409	5.2
2-3	9.122	9.208	3.8
3-4	9.209	9.308	3.3
4-5	9.280	9.379	3.1
5-6	9.331	9.431	2.9
6-7	9.365	9.478	2.7

R4-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.208
GSD = 1.600
% Above = 53.451

Age Range = 12 to 24 months

Run Mode = Research

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.087
1-2	1.400	8.000	32.000	0.087
2-3	2.000	9.500	32.000	0.087
3-4	2.000	10.900	32.000	0.087
4-5	2.000	10.900	32.000	0.087
5-6	2.000	10.900	32.000	0.087
6-7	2.000	12.400	32.000	0.087

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	371.500	557.300
1-2	371.500	557.300
2-3	371.500	557.300
3-4	371.500	557.300

4-5	371.500	557.300
5-6	371.500	557.300
6-7	371.500	557.300

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

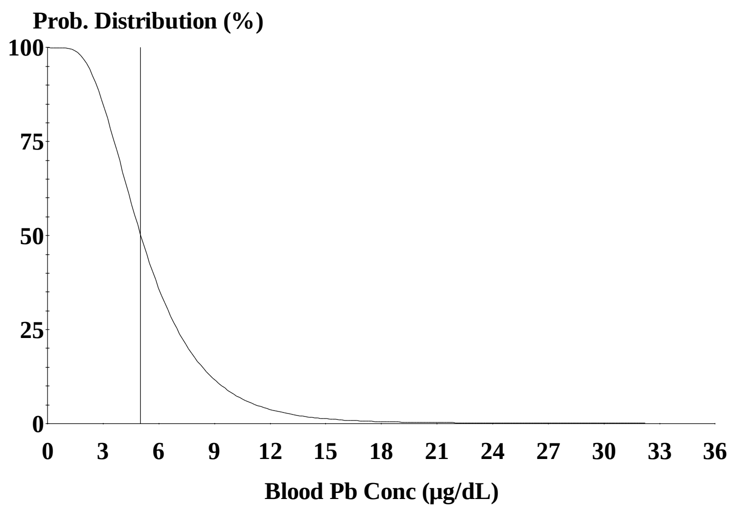
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.048	0.000	0.000	0.000
1-2	0.076	4.392	0.000	0.266
2-3	0.095	0.000	0.000	0.000
3-4	0.109	0.000	0.000	0.000
4-5	0.109	0.000	0.000	0.000
5-6	0.109	0.000	0.000	0.000
6-7	0.124	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.600	5.647	3.1
1-2	8.826	13.561	5.3
2-3	9.282	9.377	3.9
3-4	9.372	9.481	3.3
4-5	9.445	9.555	3.2
5-6	9.499	9.608	3.0
6-7	9.534	9.658	2.8

PPR-R4

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.270
GSD = 1.600
% Above = 54.447

Age Range = 12 to 24 months

Run Mode = Research

R5-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.081
1-2	1.400	8.000	32.000	0.081
2-3	2.000	9.500	32.000	0.081
3-4	2.000	10.900	32.000	0.081
4-5	2.000	10.900	32.000	0.081
5-6	2.000	10.900	32.000	0.081
6-7	2.000	12.400	32.000	0.081

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	364.100	546.200
1-2	364.100	546.200
2-3	364.100	546.200
3-4	364.100	546.200

4-5	364.100	546.200
5-6	364.100	546.200
6-7	364.100	546.200

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

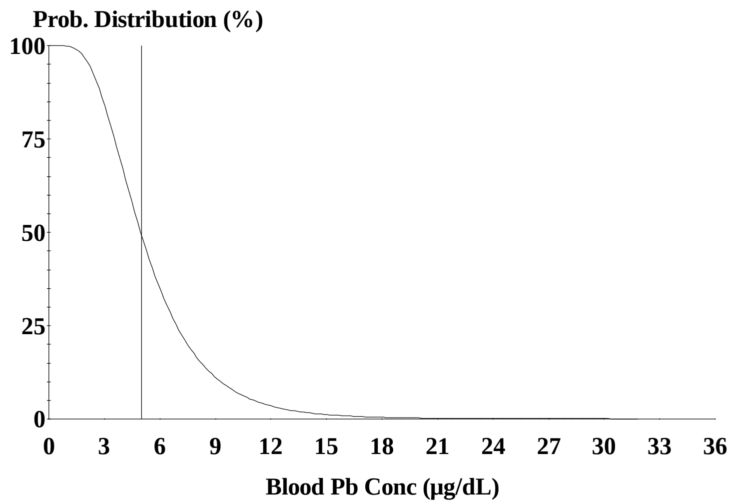
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.071	4.398	0.000	0.267
2-3	0.088	0.000	0.000	0.000
3-4	0.101	0.000	0.000	0.000
4-5	0.101	0.000	0.000	0.000
5-6	0.101	0.000	0.000	0.000
6-7	0.115	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.495	5.539	3.0
1-2	8.663	13.398	5.2
2-3	9.109	9.197	3.8
3-4	9.195	9.297	3.3
4-5	9.266	9.367	3.1
5-6	9.318	9.419	2.9
6-7	9.351	9.466	2.7

R5-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.203
GSD = 1.600
% Above = 53.382

Age Range = 12 to 24 months

Run Mode = Research

R5-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (μg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(μg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 μg Pb/L

******** Soil & Dust ********

Age	Soil (μg Pb/g)	House Dust (μg Pb/g)
.5-1	364.000	546.000
1-2	364.000	546.000
2-3	364.000	546.000
3-4	364.000	546.000

4-5	364.000	546.000
5-6	364.000	546.000
6-7	364.000	546.000

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

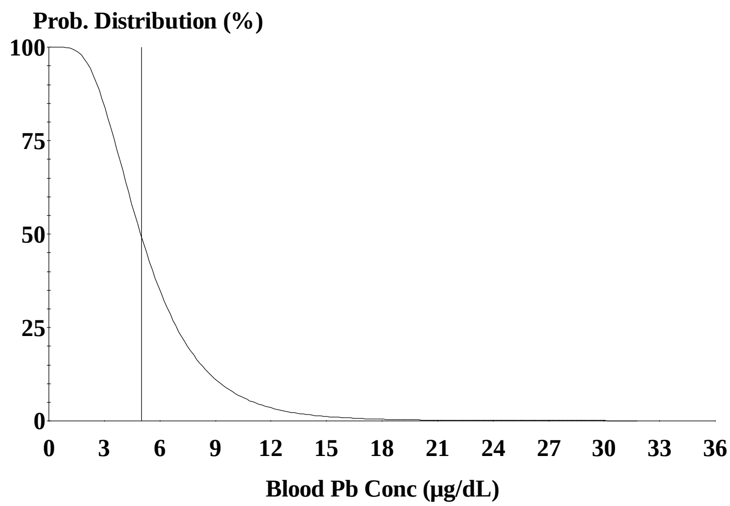
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.398	0.000	0.267
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.493	5.536	3.0
1-2	8.660	13.395	5.2
2-3	9.106	9.193	3.8
3-4	9.193	9.292	3.3
4-5	9.263	9.363	3.1
5-6	9.315	9.414	2.9
6-7	9.348	9.461	2.7

R5-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.202
GSD = 1.600
% Above = 53.357

Age Range = 12 to 24 months

Run Mode = Research

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.087
1-2	1.400	8.000	32.000	0.087
2-3	2.000	9.500	32.000	0.087
3-4	2.000	10.900	32.000	0.087
4-5	2.000	10.900	32.000	0.087
5-6	2.000	10.900	32.000	0.087
6-7	2.000	12.400	32.000	0.087

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	368.200	552.300
1-2	368.200	552.300
2-3	368.200	552.300
3-4	368.200	552.300

4-5	368.200	552.300
5-6	368.200	552.300
6-7	368.200	552.300

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

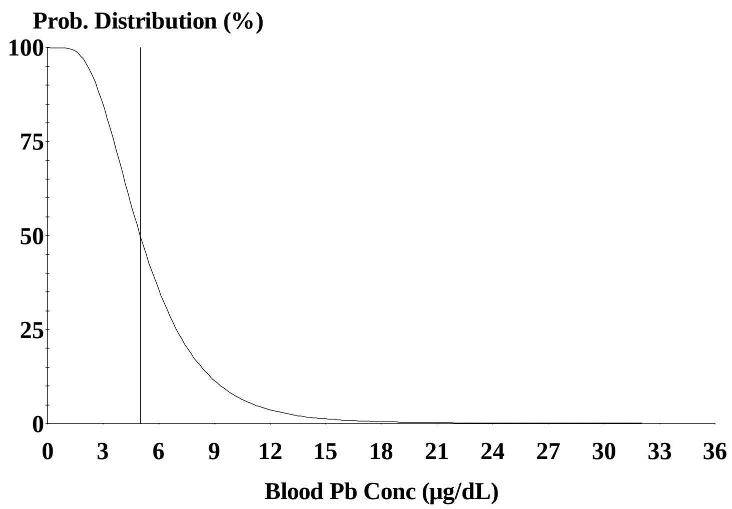
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.048	0.000	0.000	0.000
1-2	0.076	4.395	0.000	0.266
2-3	0.095	0.000	0.000	0.000
3-4	0.109	0.000	0.000	0.000
4-5	0.109	0.000	0.000	0.000
5-6	0.109	0.000	0.000	0.000
6-7	0.124	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.553	5.600	3.0
1-2	8.753	13.491	5.2
2-3	9.204	9.300	3.8
3-4	9.293	9.402	3.3
4-5	9.365	9.474	3.1
5-6	9.417	9.527	2.9
6-7	9.452	9.576	2.7

IEUBK Distribution Probability Percent

PPR-R5



Cutoff = 5.000 μg/dl
Geo Mean = 5.241
GSD = 1.600
% Above = 53.988

Age Range = 12 to 24 months

Run Mode = Research

R12-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	363.100	544.600
1-2	363.100	544.600
2-3	363.100	544.600
3-4	363.100	544.600

4-5	363.100	544.600
5-6	363.100	544.600
6-7	363.100	544.600

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

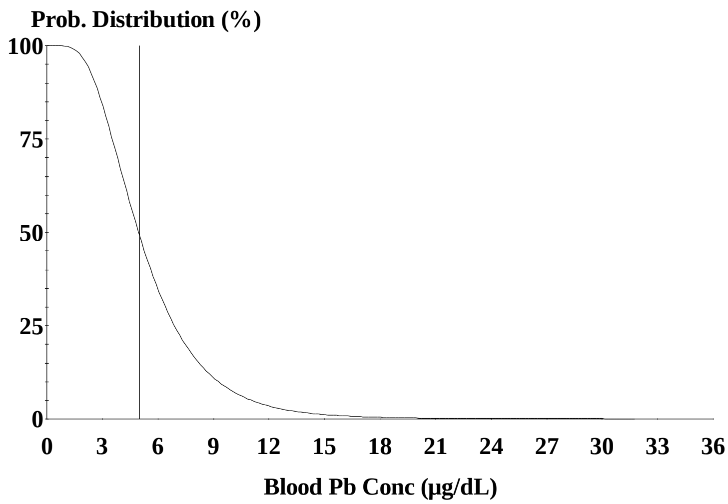
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	4.399	0.000	0.267
2-3	0.088	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.480	5.524	3.0
1-2	8.640	13.376	5.2
2-3	9.085	9.172	3.8
3-4	9.171	9.271	3.3
4-5	9.241	9.342	3.1
5-6	9.292	9.393	2.9
6-7	9.326	9.440	2.7

R12-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.194
GSD = 1.600
% Above = 53.233

Age Range = 12 to 24 months

Run Mode = Research

R12-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	363.000	544.500
1-2	363.000	544.500
2-3	363.000	544.500
3-4	363.000	544.500

4-5	363.000	544.500
5-6	363.000	544.500
6-7	363.000	544.500

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

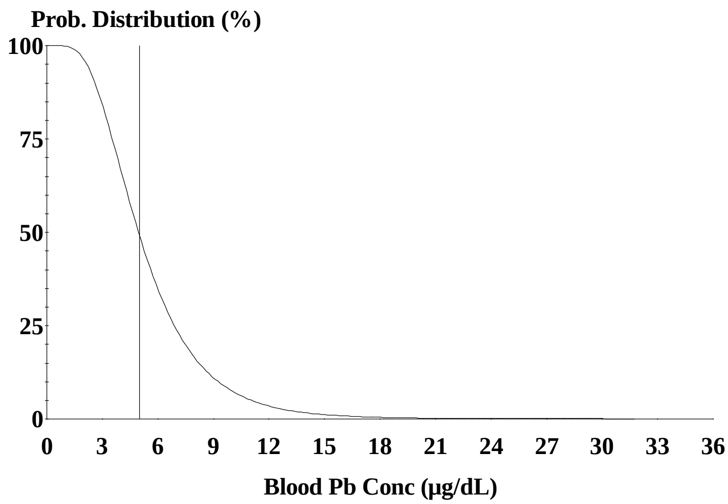
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.399	0.000	0.267
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.479	5.522	3.0
1-2	8.638	13.373	5.2
2-3	9.083	9.169	3.8
3-4	9.169	9.268	3.3
4-5	9.239	9.339	3.1
5-6	9.290	9.390	2.9
6-7	9.324	9.437	2.7

R12-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.193
GSD = 1.600
% Above = 53.216

Age Range = 12 to 24 months

Run Mode = Research

PPR-R12

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	364.900	547.400
1-2	364.900	547.400
2-3	364.900	547.400
3-4	364.900	547.400

4-5	364.900	547.400
5-6	364.900	547.400
6-7	364.900	547.400

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

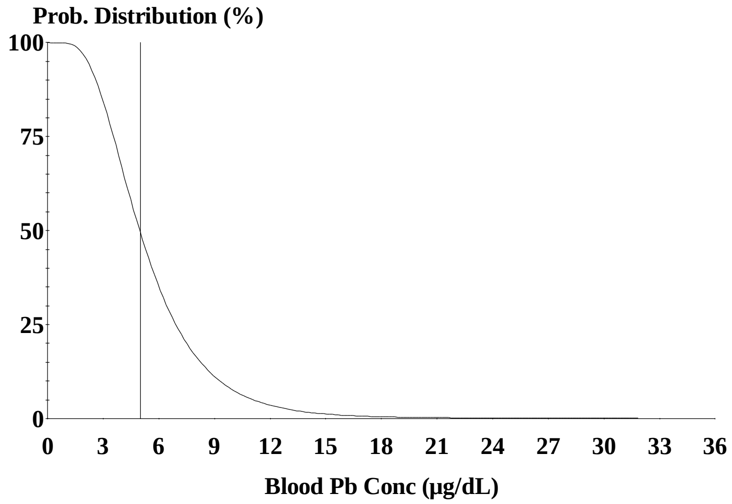
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.398	0.000	0.267
2-3	0.086	0.000	0.000	0.000
3-4	0.098	0.000	0.000	0.000
4-5	0.098	0.000	0.000	0.000
5-6	0.098	0.000	0.000	0.000
6-7	0.112	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.506	5.549	3.0
1-2	8.681	13.413	5.2
2-3	9.128	9.213	3.8
3-4	9.214	9.313	3.3
4-5	9.286	9.384	3.1
5-6	9.337	9.436	2.9
6-7	9.371	9.483	2.7

IEUBK Distribution Probability Percent

PPR-R12



Cutoff = 5.000 µg/dl
Geo Mean = 5.210
GSD = 1.600
% Above = 53.481

Age Range = 12 to 24 months

Run Mode = Research

R13-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	362.800	544.300
1-2	362.800	544.300
2-3	362.800	544.300
3-4	362.800	544.300

4-5	362.800	544.300
5-6	362.800	544.300
6-7	362.800	544.300

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

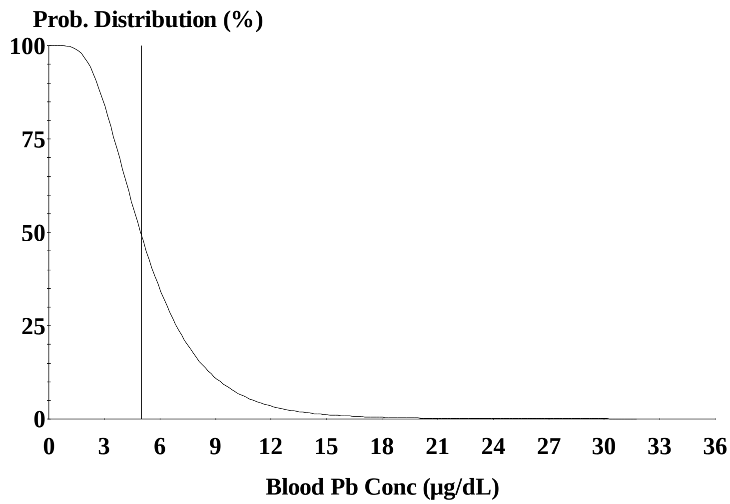
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	4.399	0.000	0.267
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.477	5.520	3.0
1-2	8.635	13.371	5.2
2-3	9.079	9.166	3.8
3-4	9.165	9.265	3.3
4-5	9.235	9.336	3.1
5-6	9.286	9.387	2.9
6-7	9.320	9.434	2.7

R13-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.192
GSD = 1.600
% Above = 53.198

Age Range = 12 to 24 months

Run Mode = Research

R13-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	362.800	544.200
1-2	362.800	544.200
2-3	362.800	544.200
3-4	362.800	544.200

4-5	362.800	544.200
5-6	362.800	544.200
6-7	362.800	544.200

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

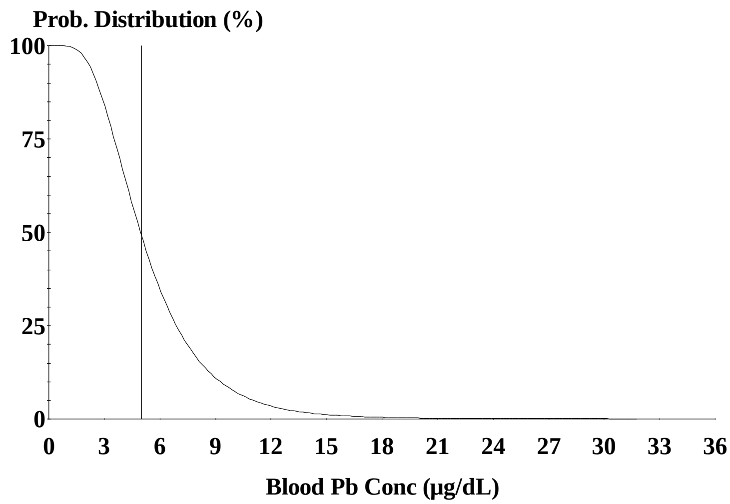
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.399	0.000	0.267
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.476	5.519	3.0
1-2	8.634	13.369	5.2
2-3	9.078	9.165	3.8
3-4	9.164	9.263	3.3
4-5	9.234	9.334	3.1
5-6	9.285	9.385	2.9
6-7	9.319	9.432	2.7

R13-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.192
GSD = 1.600
% Above = 53.188

Age Range = 12 to 24 months

Run Mode = Research

PPR-R13

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	363.300	544.900
1-2	363.300	544.900
2-3	363.300	544.900
3-4	363.300	544.900

4-5	363.300	544.900
5-6	363.300	544.900
6-7	363.300	544.900

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

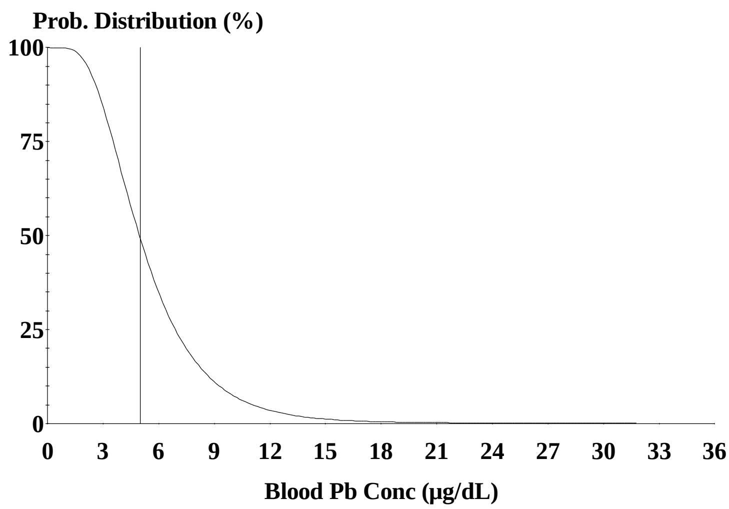
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.399	0.000	0.267
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.483	5.526	3.0
1-2	8.644	13.379	5.2
2-3	9.089	9.176	3.8
3-4	9.175	9.275	3.3
4-5	9.246	9.345	3.1
5-6	9.297	9.396	2.9
6-7	9.331	9.444	2.7

PPR-R13

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.196
GSD = 1.600
% Above = 53.256

Age Range = 12 to 24 months

Run Mode = Research

R45-S1

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	685.600	1028.400
1-2	685.600	1028.400
2-3	685.600	1028.400
3-4	685.600	1028.400

4-5	685.600	1028.400
5-6	685.600	1028.400
6-7	685.600	1028.400

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

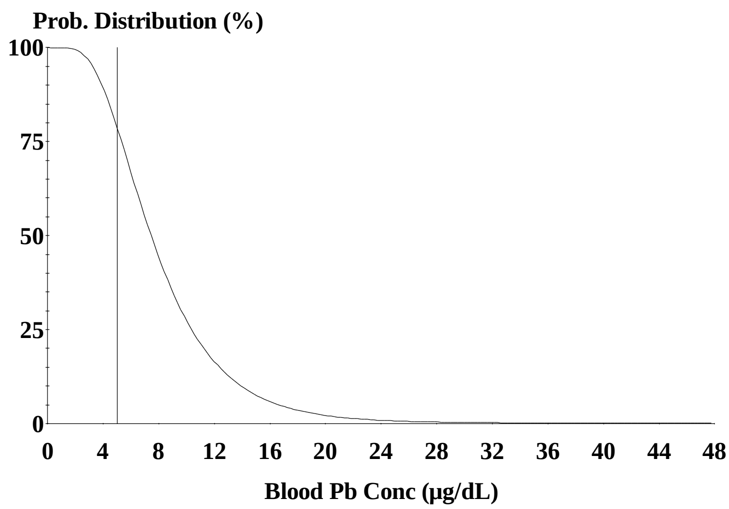
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	4.146	0.000	0.251
2-3	0.088	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	9.836	9.879	5.3
1-2	15.376	19.844	7.8
2-3	16.240	16.328	6.4
3-4	16.509	16.610	5.8
4-5	16.733	16.834	5.5
5-6	16.898	16.998	5.2
6-7	17.007	17.121	4.9

R45-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 7.808
GSD = 1.600
% Above = 82.855

Age Range = 12 to 24 months

Run Mode = Research

R45-S2

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	685.500	1028.300
1-2	685.500	1028.300
2-3	685.500	1028.300
3-4	685.500	1028.300

4-5	685.500	1028.300
5-6	685.500	1028.300
6-7	685.500	1028.300

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

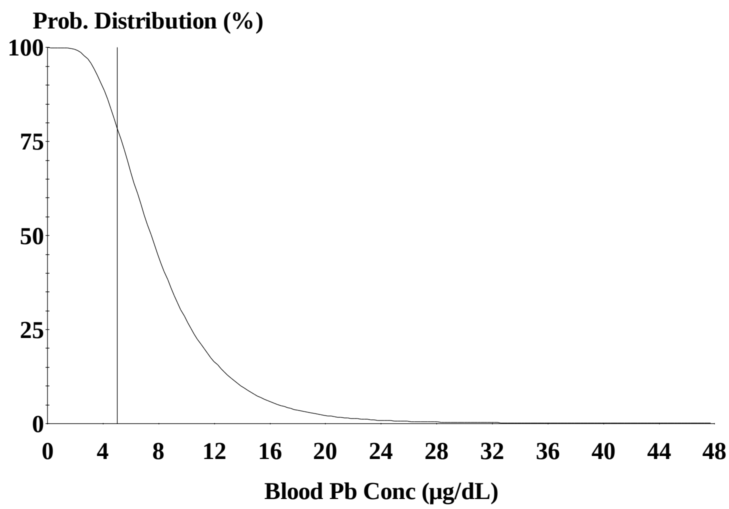
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.146	0.000	0.251
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	9.835	9.878	5.3
1-2	15.374	19.841	7.8
2-3	16.239	16.325	6.4
3-4	16.507	16.607	5.8
4-5	16.732	16.831	5.5
5-6	16.896	16.995	5.2
6-7	17.005	17.118	4.9

R45-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 7.808
GSD = 1.600
% Above = 82.849

Age Range = 12 to 24 months

Run Mode = Research

R1-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.081
1-2	1.400	8.000	32.000	0.081
2-3	2.000	9.500	32.000	0.081
3-4	2.000	10.900	32.000	0.081
4-5	2.000	10.900	32.000	0.081
5-6	2.000	10.900	32.000	0.081
6-7	2.000	12.400	32.000	0.081

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	365.400	548.100
1-2	365.400	548.100
2-3	365.400	548.100
3-4	365.400	548.100

4-5	365.400	548.100
5-6	365.400	548.100
6-7	365.400	548.100

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

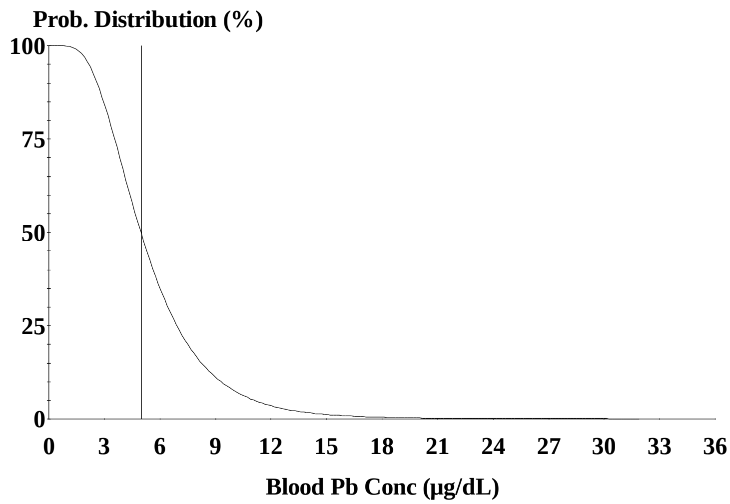
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.071	4.397	0.000	0.267
2-3	0.088	0.000	0.000	0.000
3-4	0.101	0.000	0.000	0.000
4-5	0.101	0.000	0.000	0.000
5-6	0.101	0.000	0.000	0.000
6-7	0.115	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.513	5.557	3.0
1-2	8.691	13.425	5.2
2-3	9.139	9.227	3.8
3-4	9.226	9.327	3.3
4-5	9.297	9.398	3.1
5-6	9.349	9.450	2.9
6-7	9.383	9.498	2.7

R1-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.215
GSD = 1.600
% Above = 53.561

Age Range = 12 to 24 months

Run Mode = Research

R1-S2

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	365.300	548.000
1-2	365.300	548.000
2-3	365.300	548.000
3-4	365.300	548.000

4-5	365.300	548.000
5-6	365.300	548.000
6-7	365.300	548.000

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

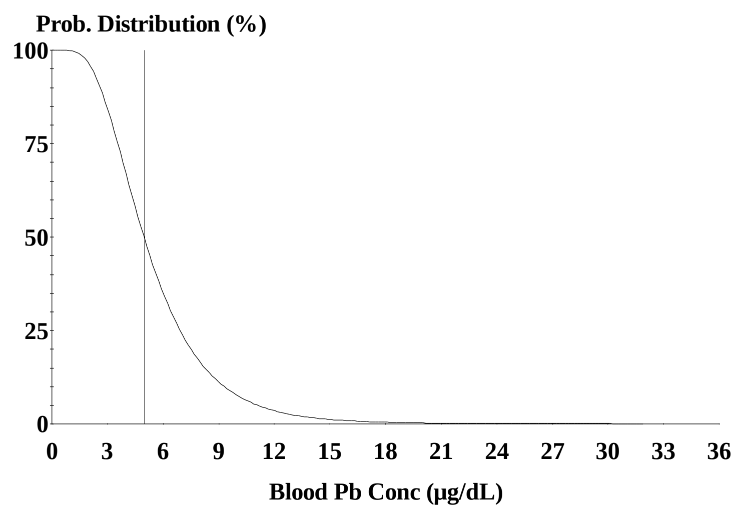
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.070	4.397	0.000	0.267
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.512	5.555	3.0
1-2	8.689	13.423	5.2
2-3	9.137	9.224	3.8
3-4	9.224	9.324	3.3
4-5	9.295	9.395	3.1
5-6	9.347	9.447	2.9
6-7	9.381	9.494	2.7

R1-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.213
GSD = 1.600
% Above = 53.543

Age Range = 12 to 24 months

Run Mode = Research

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.077
1-2	1.400	8.000	32.000	0.077
2-3	2.000	9.500	32.000	0.077
3-4	2.000	10.900	32.000	0.077
4-5	2.000	10.900	32.000	0.077
5-6	2.000	10.900	32.000	0.077
6-7	2.000	12.400	32.000	0.077

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	368.200	552.300
1-2	368.200	552.300
2-3	368.200	552.300
3-4	368.200	552.300

4-5	368.200	552.300
5-6	368.200	552.300
6-7	368.200	552.300

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

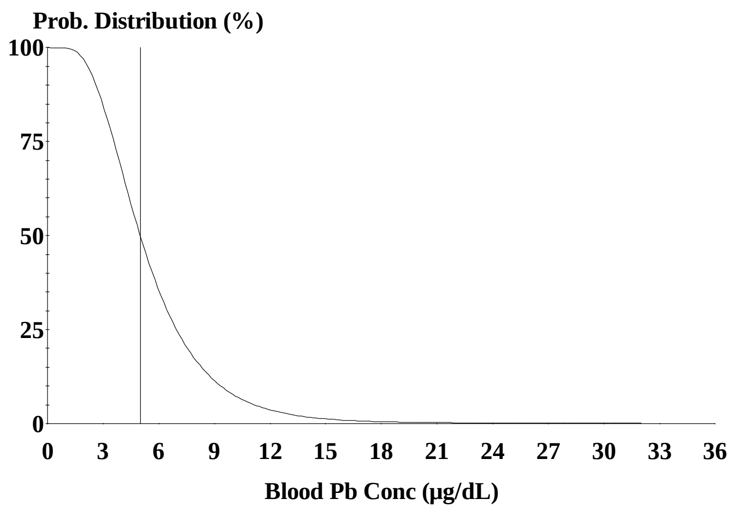
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.042	0.000	0.000	0.000
1-2	0.067	4.395	0.000	0.266
2-3	0.084	0.000	0.000	0.000
3-4	0.096	0.000	0.000	0.000
4-5	0.096	0.000	0.000	0.000
5-6	0.096	0.000	0.000	0.000
6-7	0.110	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.553	5.595	3.0
1-2	8.753	13.482	5.2
2-3	9.204	9.288	3.8
3-4	9.293	9.389	3.3
4-5	9.365	9.461	3.1
5-6	9.417	9.514	2.9
6-7	9.452	9.562	2.7

PPR-R1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.237
GSD = 1.600
% Above = 53.930

Age Range = 12 to 24 months

Run Mode = Research

R2-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (μg Pb/m^3)
.5-1	0.500	5.400	32.000	0.082
1-2	1.400	8.000	32.000	0.082
2-3	2.000	9.500	32.000	0.082
3-4	2.000	10.900	32.000	0.082
4-5	2.000	10.900	32.000	0.082
5-6	2.000	10.900	32.000	0.082
6-7	2.000	12.400	32.000	0.082

******** Diet ********

Age	Diet Intake(μg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 μg Pb/L

******** Soil & Dust ********

Age	Soil (μg Pb/g)	House Dust (μg Pb/g)
.5-1	365.800	548.700
1-2	365.800	548.700
2-3	365.800	548.700
3-4	365.800	548.700

4-5	365.800	548.700
5-6	365.800	548.700
6-7	365.800	548.700

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

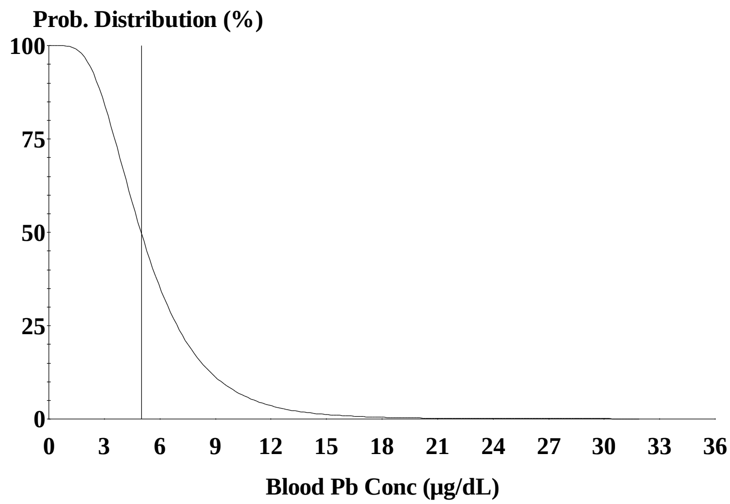
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.045	0.000	0.000	0.000
1-2	0.072	4.397	0.000	0.266
2-3	0.090	0.000	0.000	0.000
3-4	0.103	0.000	0.000	0.000
4-5	0.103	0.000	0.000	0.000
5-6	0.103	0.000	0.000	0.000
6-7	0.117	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.519	5.563	3.0
1-2	8.700	13.435	5.2
2-3	9.148	9.238	3.8
3-4	9.235	9.338	3.3
4-5	9.307	9.410	3.1
5-6	9.359	9.461	2.9
6-7	9.393	9.510	2.7

R2-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.218
GSD = 1.600
% Above = 53.624

Age Range = 12 to 24 months

Run Mode = Research

R2-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	365.700	548.600
1-2	365.700	548.600
2-3	365.700	548.600
3-4	365.700	548.600

4-5	365.700	548.600
5-6	365.700	548.600
6-7	365.700	548.600

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

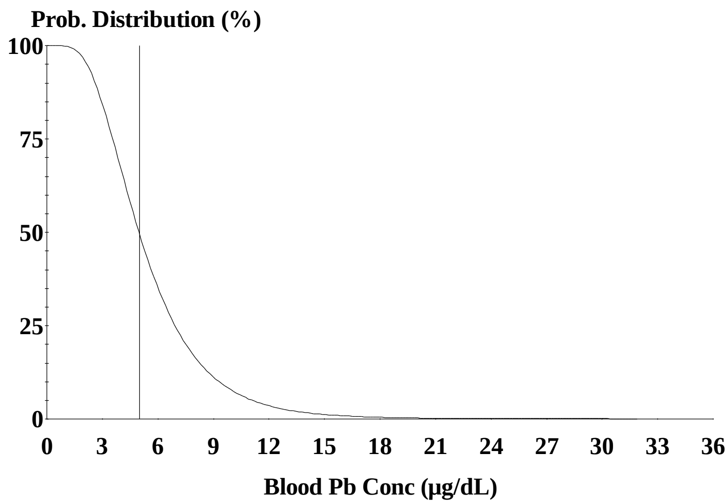
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	4.397	0.000	0.266
2-3	0.088	0.000	0.000	0.000
3-4	0.101	0.000	0.000	0.000
4-5	0.101	0.000	0.000	0.000
5-6	0.101	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.517	5.561	3.0
1-2	8.698	13.432	5.2
2-3	9.146	9.234	3.8
3-4	9.234	9.334	3.3
4-5	9.305	9.406	3.1
5-6	9.357	9.457	2.9
6-7	9.391	9.505	2.7

R2-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.217
GSD = 1.600
% Above = 53.603

Age Range = 12 to 24 months

Run Mode = Research

PPR-R2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.078
1-2	1.400	8.000	32.000	0.078
2-3	2.000	9.500	32.000	0.078
3-4	2.000	10.900	32.000	0.078
4-5	2.000	10.900	32.000	0.078
5-6	2.000	10.900	32.000	0.078
6-7	2.000	12.400	32.000	0.078

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	369.900	554.800
1-2	369.900	554.800
2-3	369.900	554.800
3-4	369.900	554.800

4-5	369.900	554.800
5-6	369.900	554.800
6-7	369.900	554.800

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

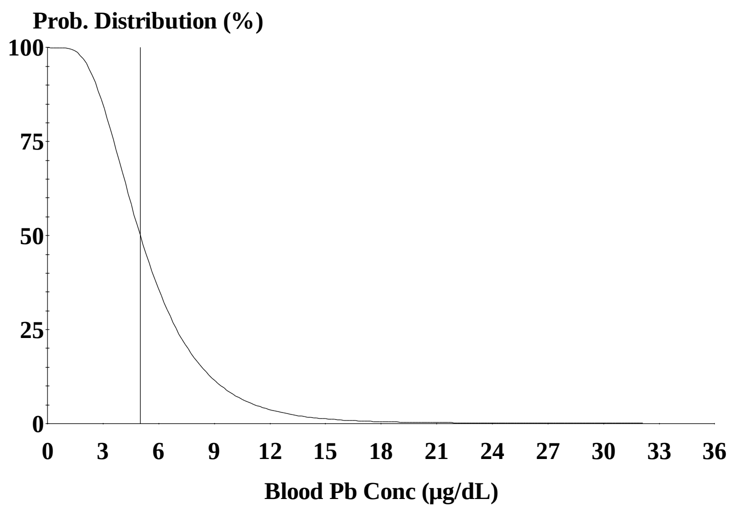
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.042	0.000	0.000	0.000
1-2	0.068	4.393	0.000	0.266
2-3	0.085	0.000	0.000	0.000
3-4	0.097	0.000	0.000	0.000
4-5	0.097	0.000	0.000	0.000
5-6	0.097	0.000	0.000	0.000
6-7	0.110	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.576	5.619	3.1
1-2	8.790	13.518	5.3
2-3	9.244	9.328	3.9
3-4	9.333	9.430	3.3
4-5	9.406	9.503	3.2
5-6	9.458	9.556	3.0
6-7	9.493	9.604	2.7

PPR-R2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.252
GSD = 1.600
% Above = 54.165

Age Range = 12 to 24 months

Run Mode = Research

R21-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.081
1-2	1.400	8.000	32.000	0.081
2-3	2.000	9.500	32.000	0.081
3-4	2.000	10.900	32.000	0.081
4-5	2.000	10.900	32.000	0.081
5-6	2.000	10.900	32.000	0.081
6-7	2.000	12.400	32.000	0.081

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	365.900	548.800
1-2	365.900	548.800
2-3	365.900	548.800
3-4	365.900	548.800

4-5	365.900	548.800
5-6	365.900	548.800
6-7	365.900	548.800

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

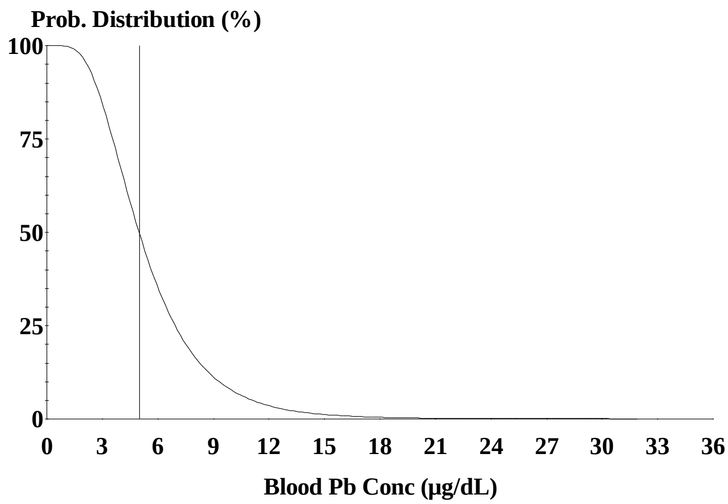
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.071	4.397	0.000	0.266
2-3	0.088	0.000	0.000	0.000
3-4	0.101	0.000	0.000	0.000
4-5	0.101	0.000	0.000	0.000
5-6	0.101	0.000	0.000	0.000
6-7	0.115	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.520	5.564	3.0
1-2	8.702	13.436	5.2
2-3	9.150	9.239	3.8
3-4	9.237	9.339	3.3
4-5	9.309	9.410	3.1
5-6	9.361	9.462	2.9
6-7	9.395	9.510	2.7

R21-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.219
GSD = 1.600
% Above = 53.629

Age Range = 12 to 24 months

Run Mode = Research

R21-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	365.700	548.600
1-2	365.700	548.600
2-3	365.700	548.600
3-4	365.700	548.600

4-5	365.700	548.600
5-6	365.700	548.600
6-7	365.700	548.600

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

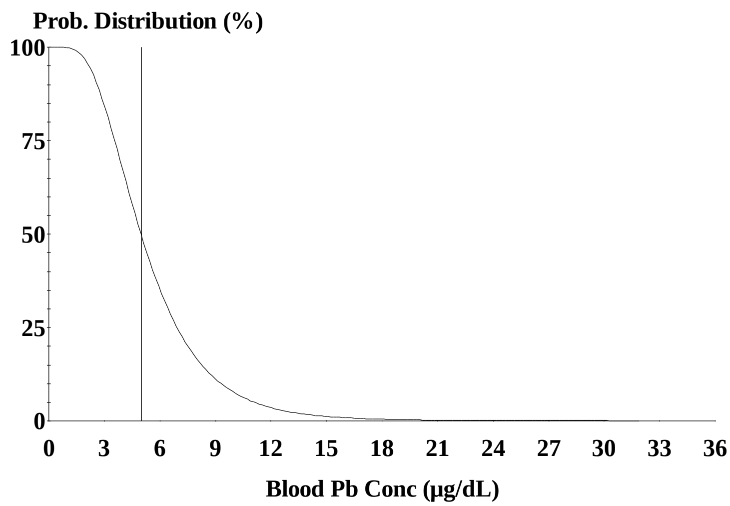
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.397	0.000	0.266
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.517	5.561	3.0
1-2	8.698	13.431	5.2
2-3	9.146	9.233	3.8
3-4	9.234	9.333	3.3
4-5	9.305	9.405	3.1
5-6	9.357	9.456	2.9
6-7	9.391	9.504	2.7

R21-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.217
GSD = 1.600
% Above = 53.598

Age Range = 12 to 24 months

Run Mode = Research

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m³/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m³)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	369.900	554.800
1-2	369.900	554.800
2-3	369.900	554.800
3-4	369.900	554.800

4-5	369.900	554.800
5-6	369.900	554.800
6-7	369.900	554.800

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

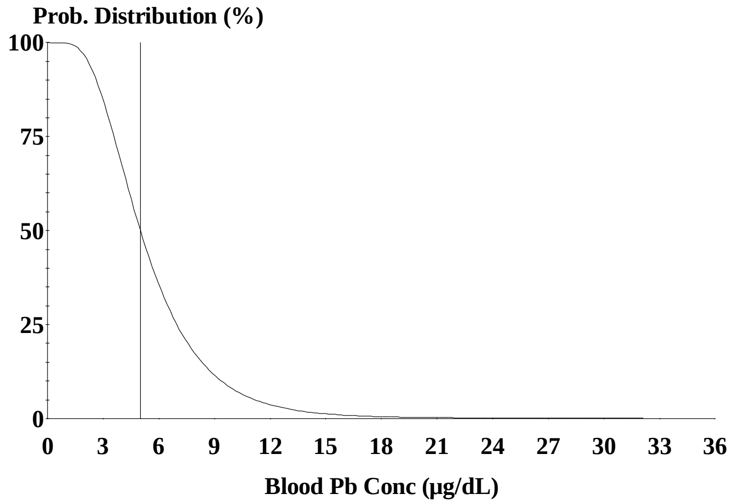
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.393	0.000	0.266
2-3	0.086	0.000	0.000	0.000
3-4	0.098	0.000	0.000	0.000
4-5	0.098	0.000	0.000	0.000
5-6	0.098	0.000	0.000	0.000
6-7	0.112	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.576	5.619	3.1
1-2	8.790	13.519	5.3
2-3	9.244	9.329	3.9
3-4	9.333	9.431	3.3
4-5	9.406	9.504	3.2
5-6	9.458	9.557	3.0
6-7	9.493	9.605	2.7

PPR-R21

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.252
GSD = 1.600
% Above = 54.171

Age Range = 12 to 24 months

Run Mode = Research

R22-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.081
1-2	1.400	8.000	32.000	0.081
2-3	2.000	9.500	32.000	0.081
3-4	2.000	10.900	32.000	0.081
4-5	2.000	10.900	32.000	0.081
5-6	2.000	10.900	32.000	0.081
6-7	2.000	12.400	32.000	0.081

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	366.100	549.200
1-2	366.100	549.200
2-3	366.100	549.200
3-4	366.100	549.200

4-5	366.100	549.200
5-6	366.100	549.200
6-7	366.100	549.200

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

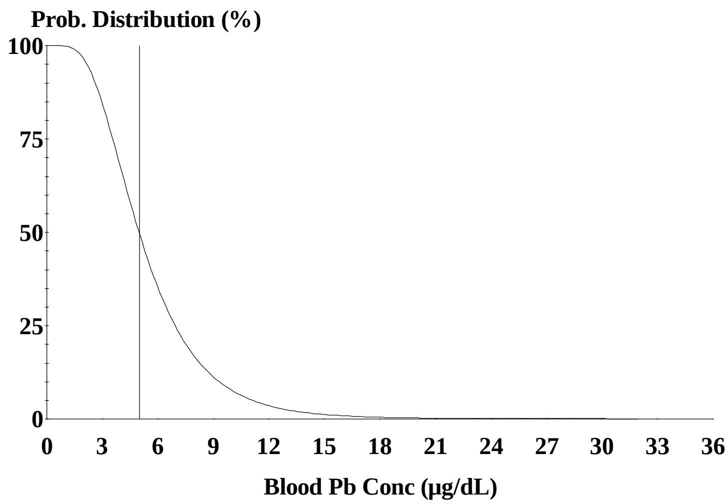
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.071	4.397	0.000	0.266
2-3	0.088	0.000	0.000	0.000
3-4	0.101	0.000	0.000	0.000
4-5	0.101	0.000	0.000	0.000
5-6	0.101	0.000	0.000	0.000
6-7	0.115	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.523	5.567	3.0
1-2	8.707	13.441	5.2
2-3	9.156	9.244	3.8
3-4	9.243	9.345	3.3
4-5	9.315	9.416	3.1
5-6	9.367	9.468	2.9
6-7	9.401	9.516	2.7

R22-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.221
GSD = 1.600
% Above = 53.663

Age Range = 12 to 24 months

Run Mode = Research

R22-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	365.900	548.900
1-2	365.900	548.900
2-3	365.900	548.900
3-4	365.900	548.900

4-5	365.900	548.900
5-6	365.900	548.900
6-7	365.900	548.900

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

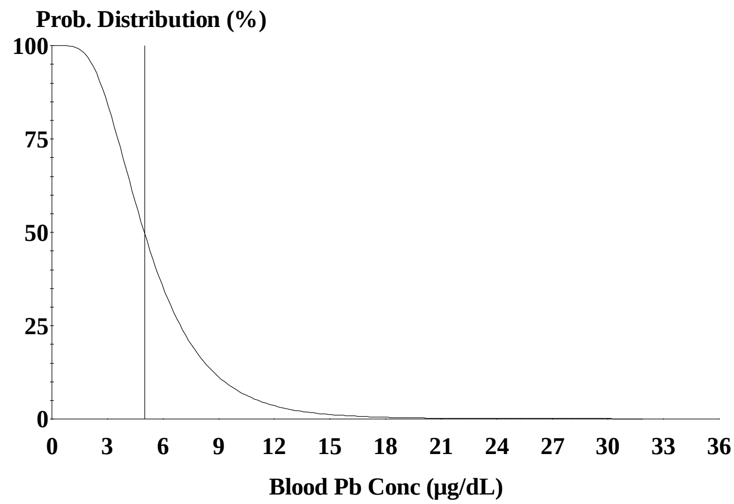
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.397	0.000	0.266
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.520	5.563	3.0
1-2	8.703	13.435	5.2
2-3	9.151	9.238	3.8
3-4	9.238	9.338	3.3
4-5	9.310	9.409	3.1
5-6	9.362	9.461	2.9
6-7	9.396	9.509	2.7

R22-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.219
GSD = 1.600
% Above = 53.626

Age Range = 12 to 24 months

Run Mode = Research

PPR-R22

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	371.500	557.300
1-2	371.500	557.300
2-3	371.500	557.300
3-4	371.500	557.300

4-5	371.500	557.300
5-6	371.500	557.300
6-7	371.500	557.300

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

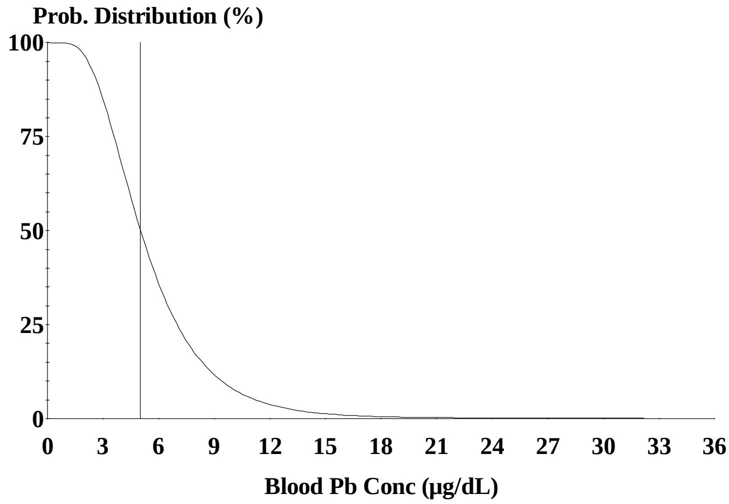
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.392	0.000	0.266
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.600	5.643	3.1
1-2	8.826	13.554	5.3
2-3	9.282	9.369	3.9
3-4	9.372	9.471	3.3
4-5	9.445	9.545	3.2
5-6	9.499	9.598	3.0
6-7	9.534	9.647	2.7

PPR-R22

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.267
GSD = 1.600
% Above = 54.403

Age Range = 12 to 24 months

Run Mode = Research

R23-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.082
1-2	1.400	8.000	32.000	0.082
2-3	2.000	9.500	32.000	0.082
3-4	2.000	10.900	32.000	0.082
4-5	2.000	10.900	32.000	0.082
5-6	2.000	10.900	32.000	0.082
6-7	2.000	12.400	32.000	0.082

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	367.000	550.400
1-2	367.000	550.400
2-3	367.000	550.400
3-4	367.000	550.400

4-5	367.000	550.400
5-6	367.000	550.400
6-7	367.000	550.400

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

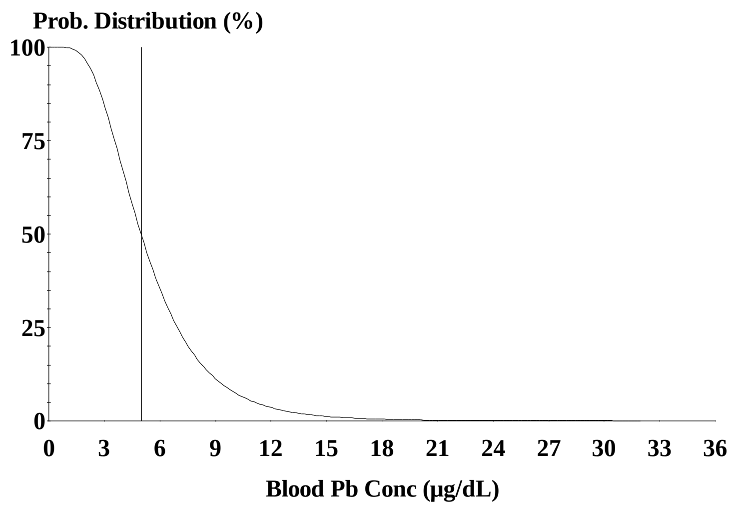
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.071	4.396	0.000	0.266
2-3	0.089	0.000	0.000	0.000
3-4	0.102	0.000	0.000	0.000
4-5	0.102	0.000	0.000	0.000
5-6	0.102	0.000	0.000	0.000
6-7	0.116	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.535	5.579	3.0
1-2	8.726	13.459	5.2
2-3	9.175	9.264	3.8
3-4	9.263	9.365	3.3
4-5	9.335	9.437	3.1
5-6	9.387	9.489	2.9
6-7	9.421	9.537	2.7

R23-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.228
GSD = 1.600
% Above = 53.781

Age Range = 12 to 24 months

Run Mode = Research

R23-S2

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	366.500	549.800
1-2	366.500	549.800
2-3	366.500	549.800
3-4	366.500	549.800

4-5	366.500	549.800
5-6	366.500	549.800
6-7	366.500	549.800

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

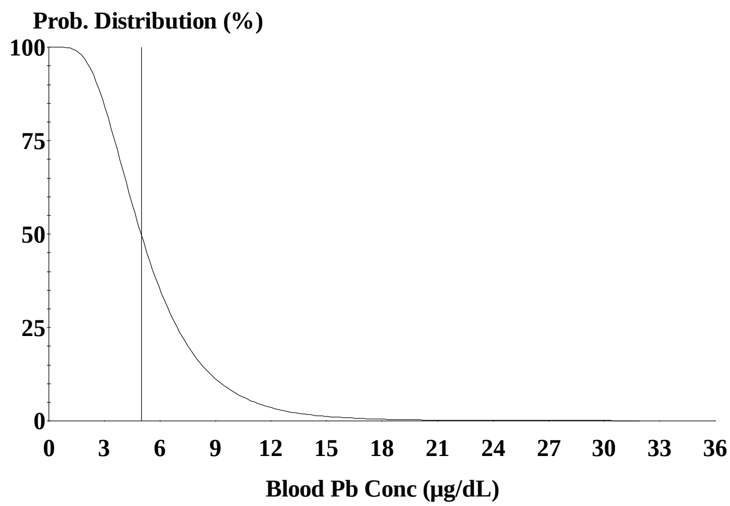
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.070	4.396	0.000	0.266
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.529	5.572	3.0
1-2	8.716	13.448	5.2
2-3	9.165	9.252	3.8
3-4	9.253	9.352	3.3
4-5	9.324	9.424	3.1
5-6	9.376	9.476	2.9
6-7	9.411	9.524	2.7

R23-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.224
GSD = 1.600
% Above = 53.710

Age Range = 12 to 24 months

Run Mode = Research

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.082
1-2	1.400	8.000	32.000	0.082
2-3	2.000	9.500	32.000	0.082
3-4	2.000	10.900	32.000	0.082
4-5	2.000	10.900	32.000	0.082
5-6	2.000	10.900	32.000	0.082
6-7	2.000	12.400	32.000	0.082

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	374.800	562.200
1-2	374.800	562.200
2-3	374.800	562.200
3-4	374.800	562.200

4-5	374.800	562.200
5-6	374.800	562.200
6-7	374.800	562.200

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

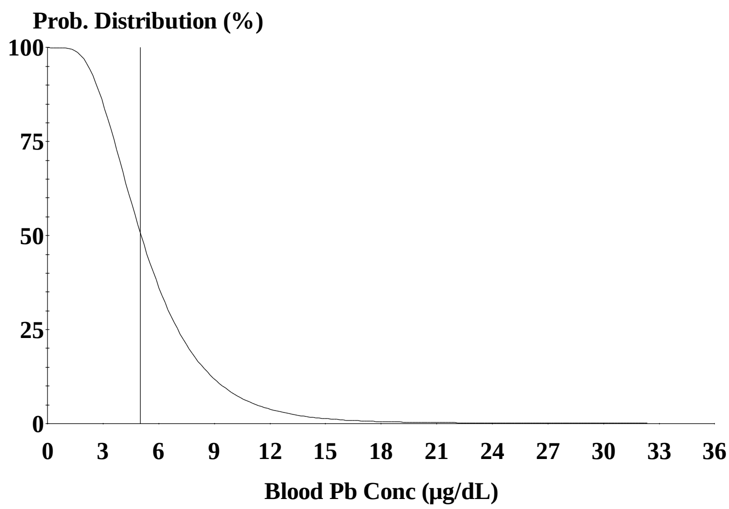
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.045	0.000	0.000	0.000
1-2	0.072	4.389	0.000	0.266
2-3	0.090	0.000	0.000	0.000
3-4	0.103	0.000	0.000	0.000
4-5	0.103	0.000	0.000	0.000
5-6	0.103	0.000	0.000	0.000
6-7	0.117	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.646	5.691	3.1
1-2	8.899	13.626	5.3
2-3	9.358	9.448	3.9
3-4	9.450	9.552	3.4
4-5	9.524	9.627	3.2
5-6	9.579	9.681	3.0
6-7	9.614	9.731	2.8

PPR-R23

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.296
GSD = 1.600
% Above = 54.868

Age Range = 12 to 24 months

Run Mode = Research

R24-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.082
1-2	1.400	8.000	32.000	0.082
2-3	2.000	9.500	32.000	0.082
3-4	2.000	10.900	32.000	0.082
4-5	2.000	10.900	32.000	0.082
5-6	2.000	10.900	32.000	0.082
6-7	2.000	12.400	32.000	0.082

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	367.700	551.500
1-2	367.700	551.500
2-3	367.700	551.500
3-4	367.700	551.500

4-5	367.700	551.500
5-6	367.700	551.500
6-7	367.700	551.500

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

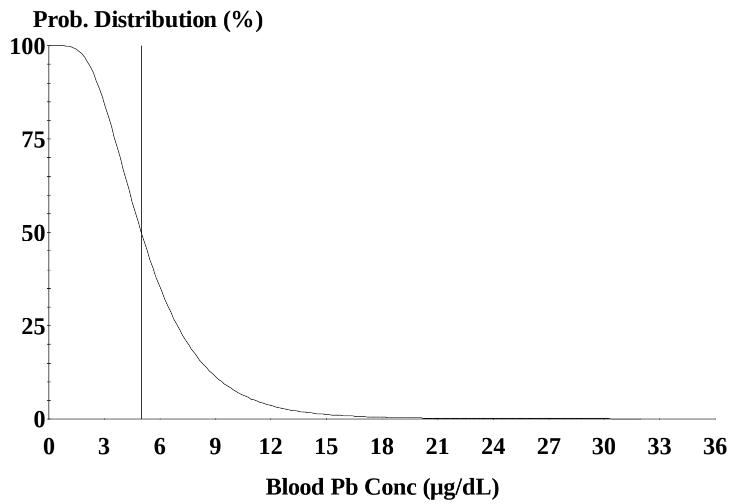
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.045	0.000	0.000	0.000
1-2	0.071	4.395	0.000	0.266
2-3	0.089	0.000	0.000	0.000
3-4	0.102	0.000	0.000	0.000
4-5	0.102	0.000	0.000	0.000
5-6	0.102	0.000	0.000	0.000
6-7	0.116	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.545	5.590	3.0
1-2	8.741	13.475	5.2
2-3	9.192	9.281	3.8
3-4	9.280	9.383	3.3
4-5	9.352	9.455	3.1
5-6	9.405	9.507	2.9
6-7	9.439	9.555	2.7

R24-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.234
GSD = 1.600
% Above = 53.884

Age Range = 12 to 24 months

Run Mode = Research

R24-S2

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	367.200	550.700
1-2	367.200	550.700
2-3	367.200	550.700
3-4	367.200	550.700

4-5	367.200	550.700
5-6	367.200	550.700
6-7	367.200	550.700

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

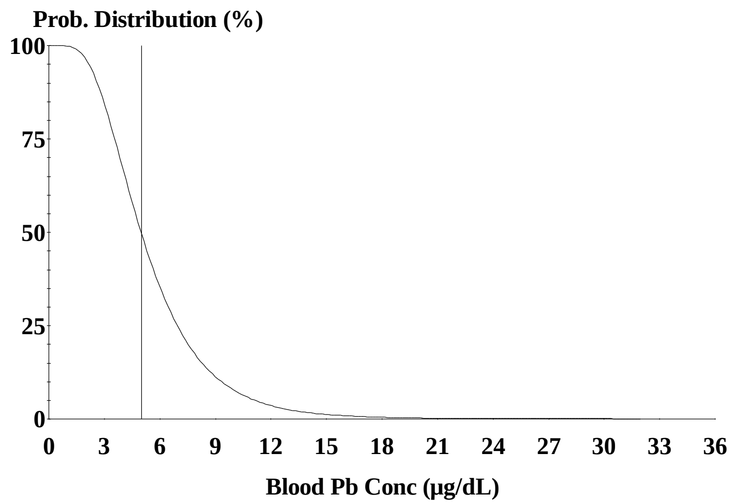
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	4.396	0.000	0.266
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.538	5.581	3.0
1-2	8.730	13.462	5.2
2-3	9.180	9.267	3.8
3-4	9.268	9.368	3.3
4-5	9.340	9.440	3.1
5-6	9.392	9.492	2.9
6-7	9.426	9.540	2.7

R24-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.229
GSD = 1.600
% Above = 53.802

Age Range = 12 to 24 months

Run Mode = Research

PPR-R4

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.089
1-2	1.400	8.000	32.000	0.089
2-3	2.000	9.500	32.000	0.089
3-4	2.000	10.900	32.000	0.089
4-5	2.000	10.900	32.000	0.089
5-6	2.000	10.900	32.000	0.089
6-7	2.000	12.400	32.000	0.089

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	379.700	569.600
1-2	379.700	569.600
2-3	379.700	569.600
3-4	379.700	569.600

4-5	379.700	569.600
5-6	379.700	569.600
6-7	379.700	569.600

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

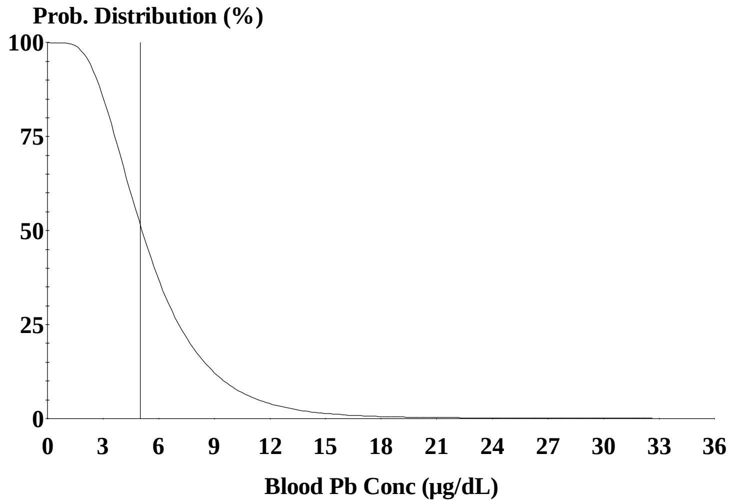
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.049	0.000	0.000	0.000
1-2	0.078	4.385	0.000	0.266
2-3	0.097	0.000	0.000	0.000
3-4	0.112	0.000	0.000	0.000
4-5	0.112	0.000	0.000	0.000
5-6	0.112	0.000	0.000	0.000
6-7	0.127	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.716	5.764	3.1
1-2	9.007	13.736	5.3
2-3	9.473	9.570	3.9
3-4	9.566	9.678	3.4
4-5	9.643	9.755	3.2
5-6	9.699	9.810	3.0
6-7	9.735	9.862	2.8

PPR-R24

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.341
GSD = 1.600
% Above = 55.575

Age Range = 12 to 24 months

Run Mode = Research

R25-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (μg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

******** Diet ********

Age	Diet Intake(μg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 μg Pb/L

******** Soil & Dust ********

Age	Soil (μg Pb/g)	House Dust (μg Pb/g)
.5-1	364.700	547.000
1-2	364.700	547.000
2-3	364.700	547.000
3-4	364.700	547.000

4-5	364.700	547.000
5-6	364.700	547.000
6-7	364.700	547.000

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

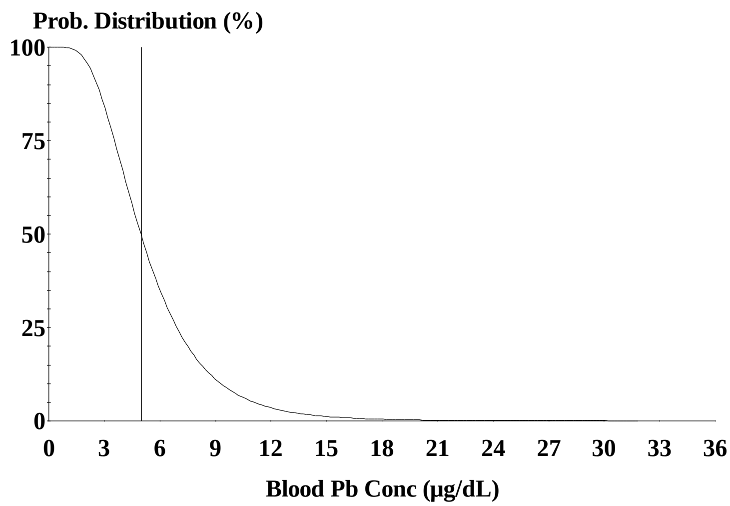
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	4.398	0.000	0.267
2-3	0.088	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.503	5.546	3.0
1-2	8.675	13.410	5.2
2-3	9.122	9.210	3.8
3-4	9.209	9.309	3.3
4-5	9.280	9.380	3.1
5-6	9.331	9.432	2.9
6-7	9.365	9.479	2.7

R25-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.208
GSD = 1.600
% Above = 53.457

Age Range = 12 to 24 months

Run Mode = Research

R25-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	364.500	546.800
1-2	364.500	546.800
2-3	364.500	546.800
3-4	364.500	546.800

4-5	364.500	546.800
5-6	364.500	546.800
6-7	364.500	546.800

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

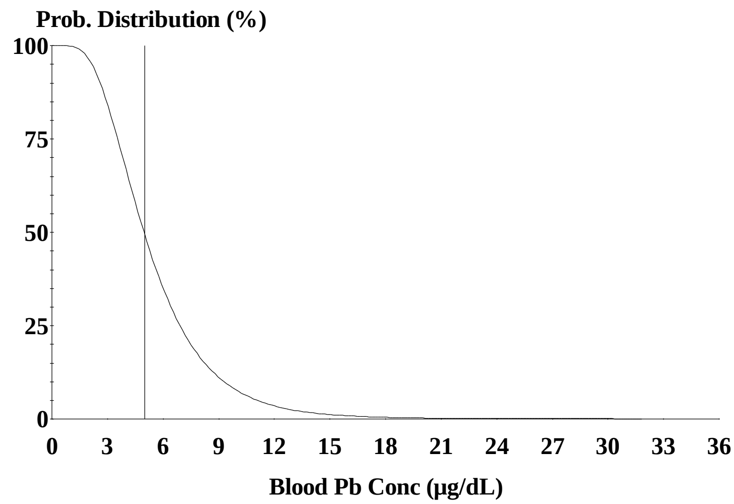
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.398	0.000	0.267
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.500	5.543	3.0
1-2	8.672	13.405	5.2
2-3	9.118	9.205	3.8
3-4	9.205	9.304	3.3
4-5	9.276	9.375	3.1
5-6	9.327	9.427	2.9
6-7	9.361	9.474	2.7

R25-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.206
GSD = 1.600
% Above = 53.429

Age Range = 12 to 24 months

Run Mode = Research

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	368.200	552.300
1-2	368.200	552.300
2-3	368.200	552.300
3-4	368.200	552.300

4-5	368.200	552.300
5-6	368.200	552.300
6-7	368.200	552.300

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

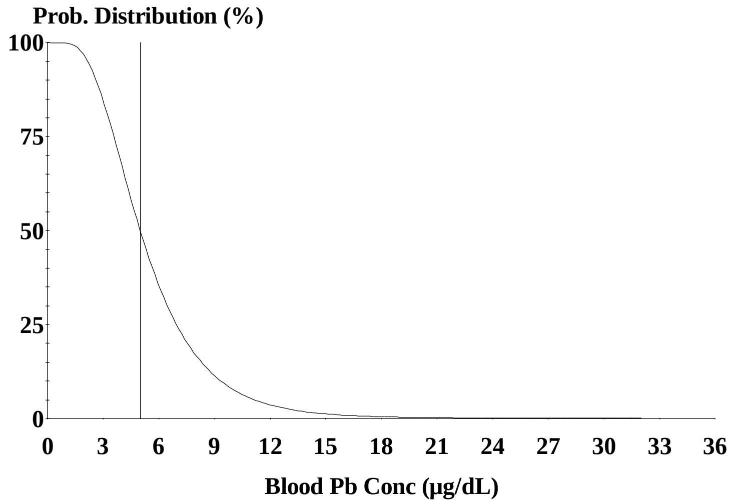
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.395	0.000	0.266
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.112	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.553	5.596	3.0
1-2	8.753	13.483	5.2
2-3	9.204	9.290	3.8
3-4	9.293	9.391	3.3
4-5	9.365	9.464	3.1
5-6	9.417	9.516	2.9
6-7	9.452	9.564	2.7

PPR-R25

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.238
GSD = 1.600
% Above = 53.941

Age Range = 12 to 24 months

Run Mode = Research

R26-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.083
1-2	1.400	8.000	32.000	0.083
2-3	2.000	9.500	32.000	0.083
3-4	2.000	10.900	32.000	0.083
4-5	2.000	10.900	32.000	0.083
5-6	2.000	10.900	32.000	0.083
6-7	2.000	12.400	32.000	0.083

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	370.000	554.900
1-2	370.000	554.900
2-3	370.000	554.900
3-4	370.000	554.900

4-5	370.000	554.900
5-6	370.000	554.900
6-7	370.000	554.900

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

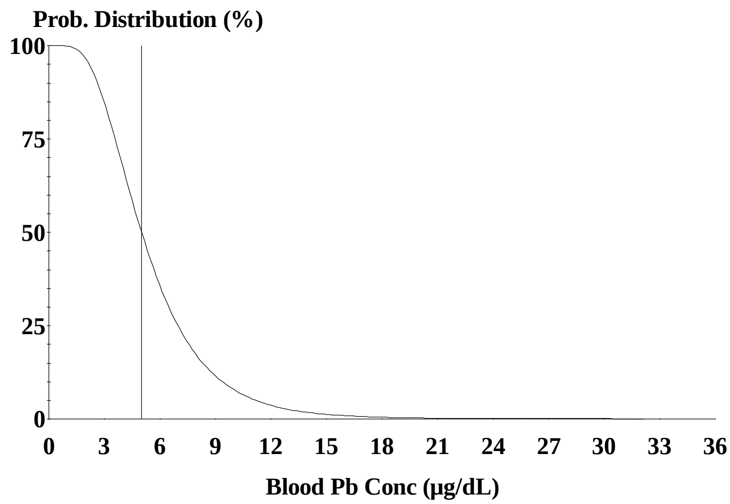
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.045	0.000	0.000	0.000
1-2	0.073	4.393	0.000	0.266
2-3	0.091	0.000	0.000	0.000
3-4	0.104	0.000	0.000	0.000
4-5	0.104	0.000	0.000	0.000
5-6	0.104	0.000	0.000	0.000
6-7	0.119	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.577	5.623	3.1
1-2	8.792	13.524	5.3
2-3	9.245	9.336	3.9
3-4	9.334	9.439	3.3
4-5	9.407	9.512	3.2
5-6	9.460	9.565	3.0
6-7	9.495	9.614	2.7

R26-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.255
GSD = 1.600
% Above = 54.209

Age Range = 12 to 24 months

Run Mode = Research

R26-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.082
1-2	1.400	8.000	32.000	0.082
2-3	2.000	9.500	32.000	0.082
3-4	2.000	10.900	32.000	0.082
4-5	2.000	10.900	32.000	0.082
5-6	2.000	10.900	32.000	0.082
6-7	2.000	12.400	32.000	0.082

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	369.200	553.800
1-2	369.200	553.800
2-3	369.200	553.800
3-4	369.200	553.800

4-5	369.200	553.800
5-6	369.200	553.800
6-7	369.200	553.800

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

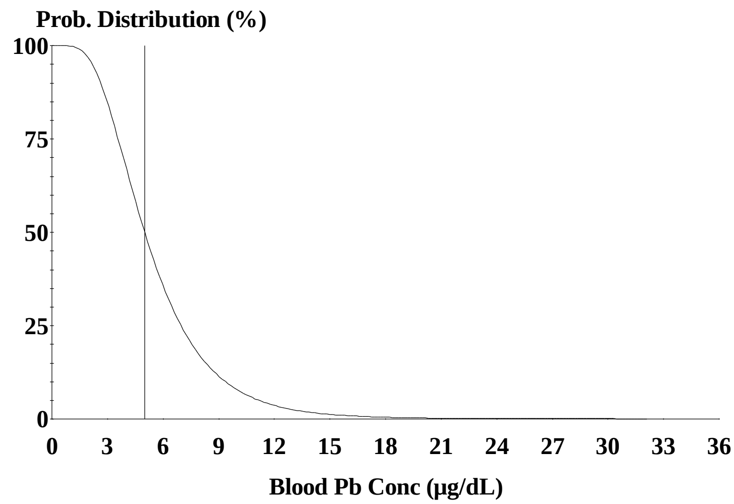
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.071	4.394	0.000	0.266
2-3	0.089	0.000	0.000	0.000
3-4	0.102	0.000	0.000	0.000
4-5	0.102	0.000	0.000	0.000
5-6	0.102	0.000	0.000	0.000
6-7	0.116	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.567	5.611	3.0
1-2	8.775	13.507	5.2
2-3	9.228	9.317	3.9
3-4	9.316	9.419	3.3
4-5	9.389	9.491	3.1
5-6	9.442	9.544	3.0
6-7	9.476	9.593	2.7

R26-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.248
GSD = 1.600
% Above = 54.094

Age Range = 12 to 24 months

Run Mode = Research

PPR-R26

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.096
1-2	1.400	8.000	32.000	0.096
2-3	2.000	9.500	32.000	0.096
3-4	2.000	10.900	32.000	0.096
4-5	2.000	10.900	32.000	0.096
5-6	2.000	10.900	32.000	0.096
6-7	2.000	12.400	32.000	0.096

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	386.300	579.500
1-2	386.300	579.500
2-3	386.300	579.500
3-4	386.300	579.500

4-5	386.300	579.500
5-6	386.300	579.500
6-7	386.300	579.500

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

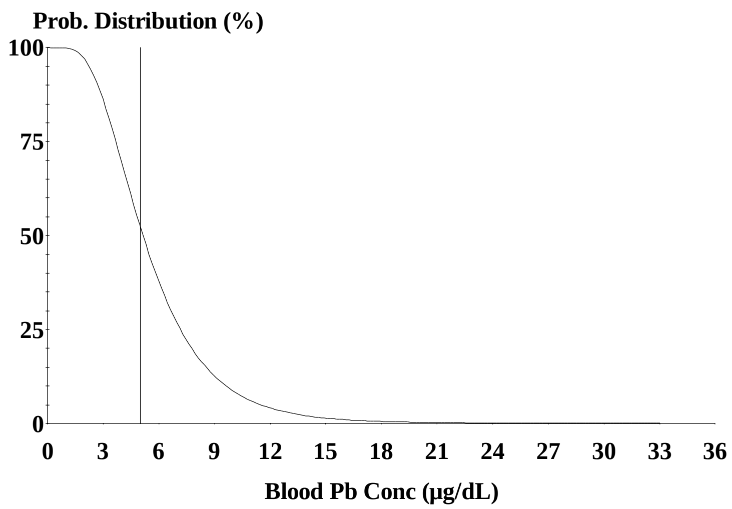
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.052	0.000	0.000	0.000
1-2	0.084	4.380	0.000	0.265
2-3	0.105	0.000	0.000	0.000
3-4	0.120	0.000	0.000	0.000
4-5	0.120	0.000	0.000	0.000
5-6	0.120	0.000	0.000	0.000
6-7	0.137	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.809	5.861	3.2
1-2	9.152	13.881	5.4
2-3	9.626	9.731	4.0
3-4	9.723	9.843	3.5
4-5	9.802	9.922	3.3
5-6	9.859	9.980	3.1
6-7	9.897	10.034	2.9

PPR-R26

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 5.399
GSD = 1.600
% Above = 56.495

Age Range = 12 to 24 months

Run Mode = Research

R31-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.081
1-2	1.400	8.000	32.000	0.081
2-3	2.000	9.500	32.000	0.081
3-4	2.000	10.900	32.000	0.081
4-5	2.000	10.900	32.000	0.081
5-6	2.000	10.900	32.000	0.081
6-7	2.000	12.400	32.000	0.081

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	593.600	890.500
1-2	593.600	890.500
2-3	593.600	890.500
3-4	593.600	890.500

4-5	593.600	890.500
5-6	593.600	890.500
6-7	593.600	890.500

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

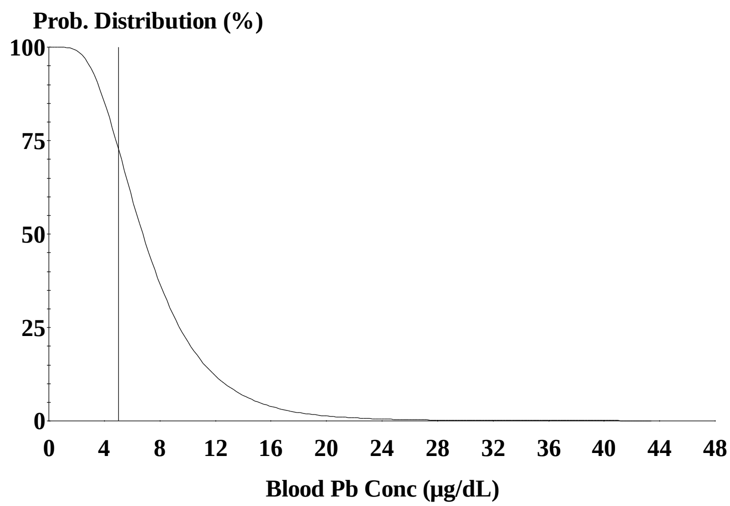
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.071	4.214	0.000	0.255
2-3	0.088	0.000	0.000	0.000
3-4	0.101	0.000	0.000	0.000
4-5	0.101	0.000	0.000	0.000
5-6	0.101	0.000	0.000	0.000
6-7	0.115	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	8.637	8.681	4.7
1-2	13.533	18.073	7.1
2-3	14.276	14.365	5.7
3-4	14.486	14.587	5.1
4-5	14.659	14.760	4.9
5-6	14.786	14.887	4.6
6-7	14.870	14.985	4.3

R31-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 7.096
GSD = 1.600
% Above = 77.180

Age Range = 12 to 24 months

Run Mode = Research

R31-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	593.400	890.100
1-2	593.400	890.100
2-3	593.400	890.100
3-4	593.400	890.100

4-5	593.400	890.100
5-6	593.400	890.100
6-7	593.400	890.100

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

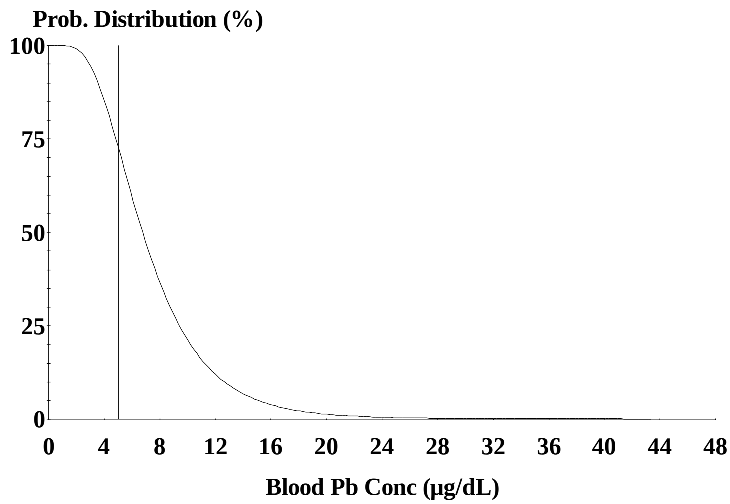
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.070	4.215	0.000	0.255
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	8.634	8.677	4.7
1-2	13.528	18.068	7.1
2-3	14.271	14.358	5.7
3-4	14.480	14.580	5.1
4-5	14.654	14.754	4.9
5-6	14.780	14.880	4.6
6-7	14.864	14.978	4.3

R31-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 7.094
GSD = 1.600
% Above = 77.160

Age Range = 12 to 24 months

Run Mode = Research

PPR-R31

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.081
1-2	1.400	8.000	32.000	0.081
2-3	2.000	9.500	32.000	0.081
3-4	2.000	10.900	32.000	0.081
4-5	2.000	10.900	32.000	0.081
5-6	2.000	10.900	32.000	0.081
6-7	2.000	12.400	32.000	0.081

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	600.200	900.300
1-2	600.200	900.300
2-3	600.200	900.300
3-4	600.200	900.300

4-5	600.200	900.300
5-6	600.200	900.300
6-7	600.200	900.300

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

****

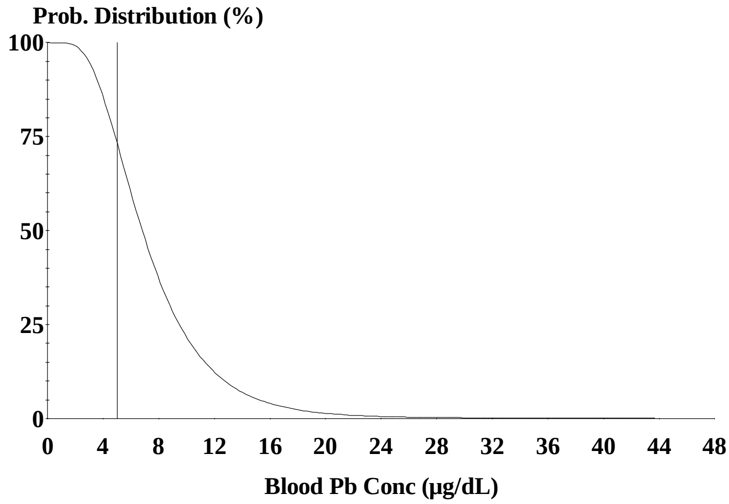
CALCULATED BLOOD LEAD AND LEAD UPTAKES:

****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	4.209	0.000	0.255
2-3	0.088	0.000	0.000	0.000
3-4	0.101	0.000	0.000	0.000
4-5	0.101	0.000	0.000	0.000
5-6	0.101	0.000	0.000	0.000
6-7	0.115	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	8.724	8.767	4.7
1-2	13.666	18.201	7.1
2-3	14.418	14.506	5.7
3-4	14.632	14.733	5.1
4-5	14.809	14.910	4.9
5-6	14.938	15.039	4.6
6-7	15.024	15.138	4.3

PPR-R31 IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 7.147
GSD = 1.600
% Above = 77.644

Age Range = 12 to 24 months

Run Mode = Research

R32-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.081
1-2	1.400	8.000	32.000	0.081
2-3	2.000	9.500	32.000	0.081
3-4	2.000	10.900	32.000	0.081
4-5	2.000	10.900	32.000	0.081
5-6	2.000	10.900	32.000	0.081
6-7	2.000	12.400	32.000	0.081

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	593.500	890.200
1-2	593.500	890.200
2-3	593.500	890.200
3-4	593.500	890.200

4-5	593.500	890.200
5-6	593.500	890.200
6-7	593.500	890.200

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

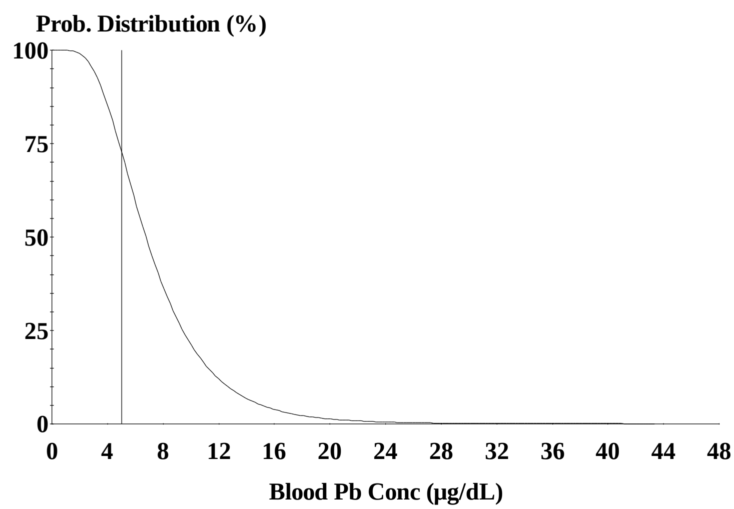
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.071	4.215	0.000	0.255
2-3	0.088	0.000	0.000	0.000
3-4	0.101	0.000	0.000	0.000
4-5	0.101	0.000	0.000	0.000
5-6	0.101	0.000	0.000	0.000
6-7	0.115	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	8.635	8.679	4.7
1-2	13.529	18.070	7.1
2-3	14.273	14.361	5.7
3-4	14.482	14.583	5.1
4-5	14.655	14.756	4.9
5-6	14.782	14.883	4.6
6-7	14.866	14.981	4.3

R32-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 7.094
GSD = 1.600
% Above = 77.168

Age Range = 12 to 24 months

Run Mode = Research

R32-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (μg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(μg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 μg Pb/L

****** Soil & Dust ******

Age	Soil (μg Pb/g)	House Dust (μg Pb/g)
.5-1	593.300	889.900
1-2	593.300	889.900
2-3	593.300	889.900
3-4	593.300	889.900

4-5	593.300	889.900
5-6	593.300	889.900
6-7	593.300	889.900

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

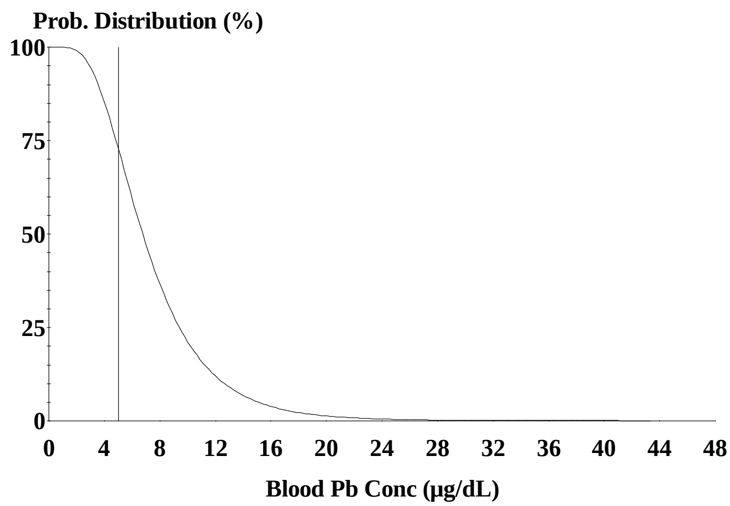
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.070	4.215	0.000	0.255
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	8.632	8.676	4.7
1-2	13.525	18.065	7.1
2-3	14.269	14.356	5.7
3-4	14.477	14.577	5.1
4-5	14.651	14.751	4.9
5-6	14.778	14.877	4.6
6-7	14.861	14.975	4.3

R32-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 7.093
GSD = 1.600
% Above = 77.151

Age Range = 12 to 24 months

Run Mode = Research

PPR-R32

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	598.600	897.800
1-2	598.600	897.800
2-3	598.600	897.800
3-4	598.600	897.800

4-5	598.600	897.800
5-6	598.600	897.800
6-7	598.600	897.800

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

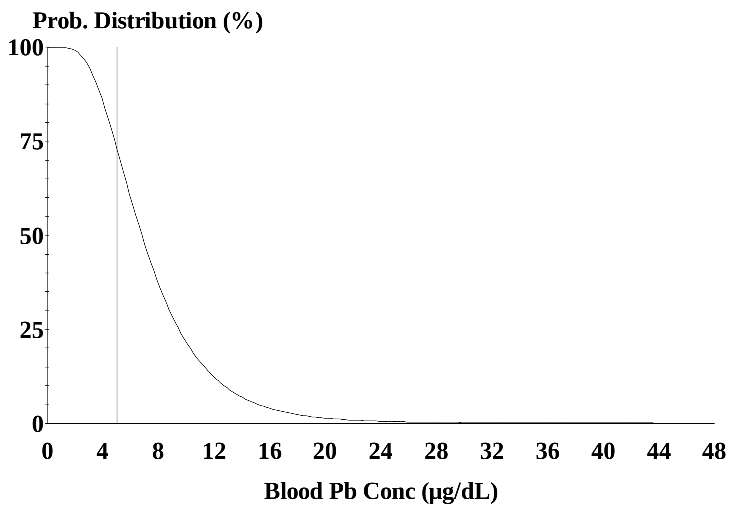
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	4.211	0.000	0.255
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	8.702	8.745	4.7
1-2	13.633	18.169	7.1
2-3	14.383	14.470	5.7
3-4	14.595	14.695	5.1
4-5	14.771	14.871	4.9
5-6	14.900	15.000	4.6
6-7	14.985	15.099	4.3

PPR-R32

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 7.134
GSD = 1.600
% Above = 77.526

Age Range = 12 to 24 months

Run Mode = Research

R33-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.082
1-2	1.400	8.000	32.000	0.082
2-3	2.000	9.500	32.000	0.082
3-4	2.000	10.900	32.000	0.082
4-5	2.000	10.900	32.000	0.082
5-6	2.000	10.900	32.000	0.082
6-7	2.000	12.400	32.000	0.082

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	594.200	891.300
1-2	594.200	891.300
2-3	594.200	891.300
3-4	594.200	891.300

4-5	594.200	891.300
5-6	594.200	891.300
6-7	594.200	891.300

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

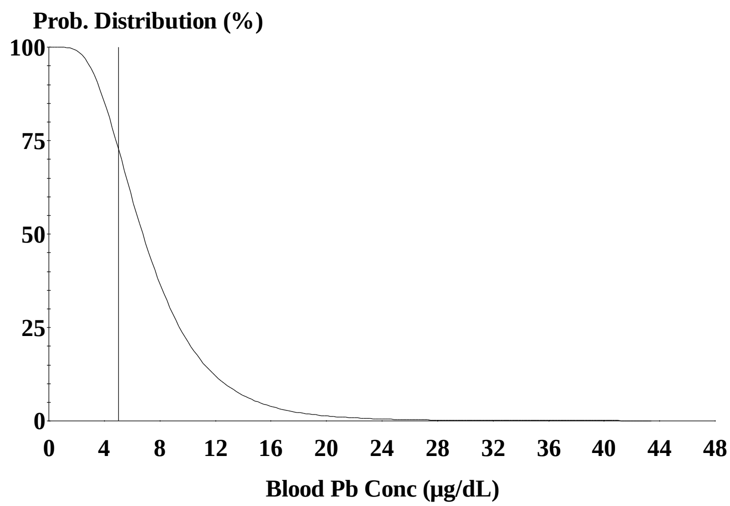
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.045	0.000	0.000	0.000
1-2	0.071	4.214	0.000	0.255
2-3	0.089	0.000	0.000	0.000
3-4	0.102	0.000	0.000	0.000
4-5	0.102	0.000	0.000	0.000
5-6	0.102	0.000	0.000	0.000
6-7	0.116	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	8.644	8.689	4.7
1-2	13.544	18.085	7.1
2-3	14.289	14.378	5.7
3-4	14.498	14.600	5.1
4-5	14.672	14.774	4.9
5-6	14.799	14.901	4.6
6-7	14.883	14.999	4.3

R33-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 7.101
GSD = 1.600
% Above = 77.223

Age Range = 12 to 24 months

Run Mode = Research

R33-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (μg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(μg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 μg Pb/L

****** Soil & Dust ******

Age	Soil (μg Pb/g)	House Dust (μg Pb/g)
.5-1	593.700	890.600
1-2	593.700	890.600
2-3	593.700	890.600
3-4	593.700	890.600

4-5	593.700	890.600
5-6	593.700	890.600
6-7	593.700	890.600

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

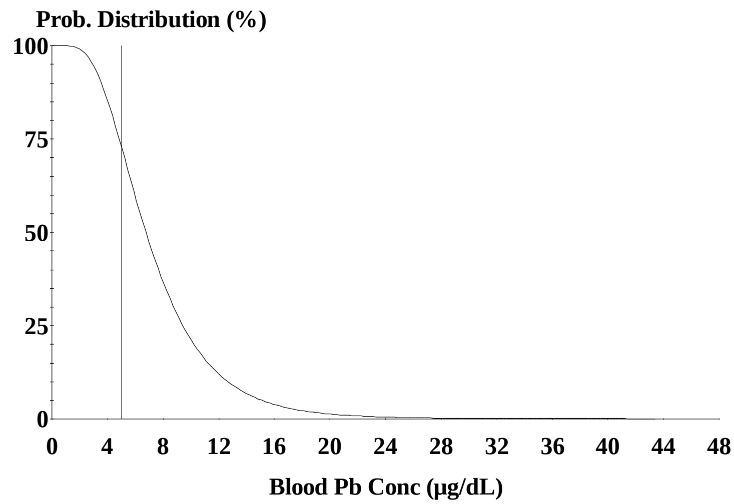
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	4.214	0.000	0.255
2-3	0.088	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	8.638	8.682	4.7
1-2	13.534	18.074	7.1
2-3	14.278	14.366	5.7
3-4	14.487	14.588	5.1
4-5	14.661	14.762	4.9
5-6	14.788	14.888	4.6
6-7	14.872	14.986	4.3

R33-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 7.096
GSD = 1.600
% Above = 77.184

Age Range = 12 to 24 months

Run Mode = Research

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	598.600	897.800
1-2	598.600	897.800
2-3	598.600	897.800
3-4	598.600	897.800

4-5	598.600	897.800
5-6	598.600	897.800
6-7	598.600	897.800

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

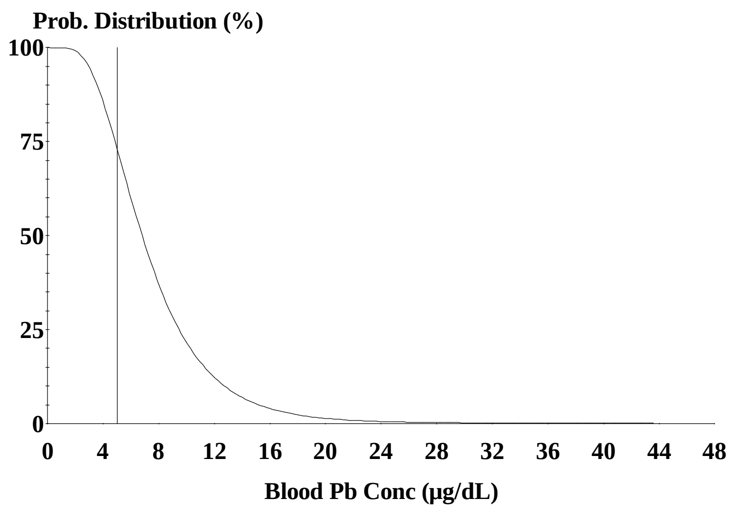
Maternal Blood Concentration: 0.800 µg Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.211	0.000	0.255
2-3	0.086	0.000	0.000	0.000
3-4	0.098	0.000	0.000	0.000
4-5	0.098	0.000	0.000	0.000
5-6	0.098	0.000	0.000	0.000
6-7	0.112	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	8.702	8.745	4.7
1-2	13.633	18.167	7.1
2-3	14.383	14.468	5.7
3-4	14.595	14.693	5.1
4-5	14.771	14.870	4.9
5-6	14.900	14.998	4.6
6-7	14.985	15.097	4.3

PPR-R33 IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 7.134
GSD = 1.600
% Above = 77.522

Age Range = 12 to 24 months

Run Mode = Research

R64-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	591.200	886.800
1-2	591.200	886.800
2-3	591.200	886.800
3-4	591.200	886.800

4-5	591.200	886.800
5-6	591.200	886.800
6-7	591.200	886.800

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

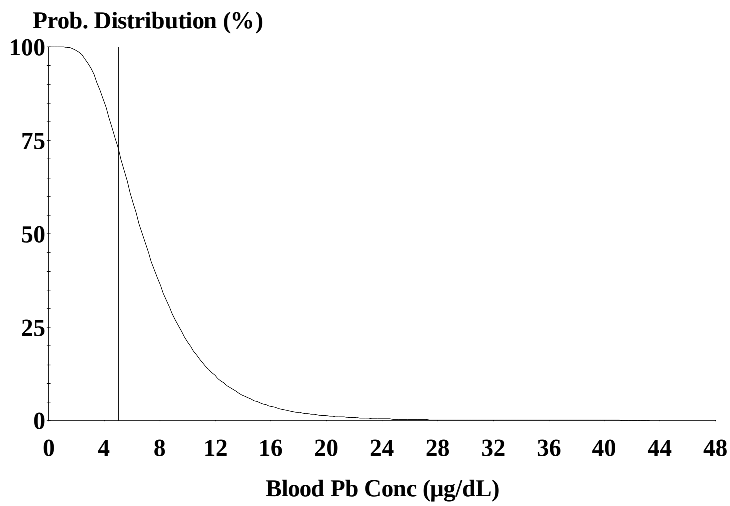
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.070	4.216	0.000	0.256
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	8.605	8.648	4.7
1-2	13.483	18.024	7.1
2-3	14.224	14.310	5.7
3-4	14.431	14.531	5.1
4-5	14.603	14.703	4.9
5-6	14.729	14.829	4.6
6-7	14.813	14.926	4.2

R64-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 7.076
GSD = 1.600
% Above = 77.001

Age Range = 12 to 24 months

Run Mode = Research

R64-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	591.100	886.700
1-2	591.100	886.700
2-3	591.100	886.700
3-4	591.100	886.700

4-5	591.100	886.700
5-6	591.100	886.700
6-7	591.100	886.700

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

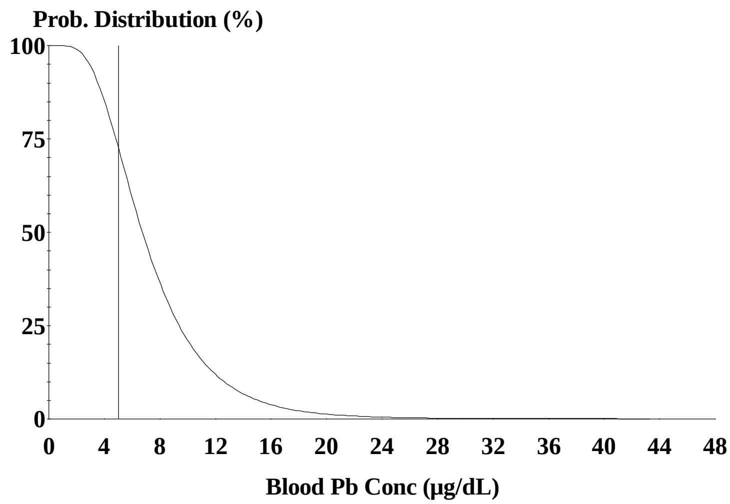
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.216	0.000	0.256
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	8.604	8.647	4.7
1-2	13.481	18.022	7.1
2-3	14.222	14.308	5.7
3-4	14.429	14.529	5.1
4-5	14.602	14.701	4.8
5-6	14.728	14.827	4.6
6-7	14.811	14.924	4.2

R64-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 7.075
GSD = 1.600
% Above = 76.994

Age Range = 12 to 24 months

Run Mode = Research

R65-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	592.700	889.000
1-2	592.700	889.000
2-3	592.700	889.000
3-4	592.700	889.000

4-5	592.700	889.000
5-6	592.700	889.000
6-7	592.700	889.000

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

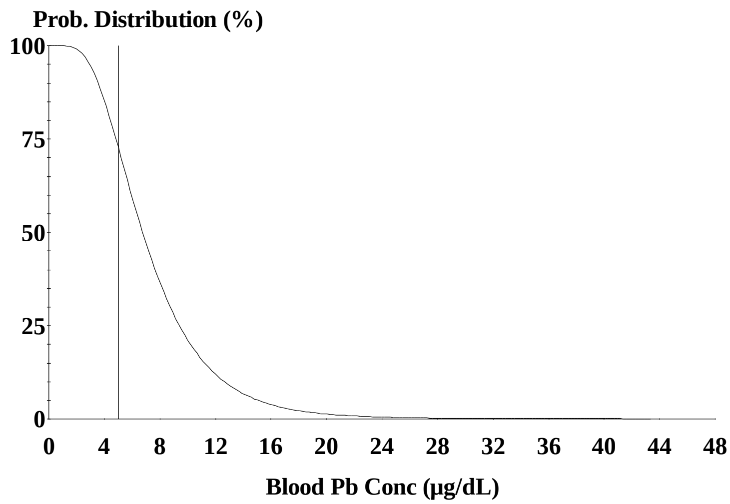
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	4.215	0.000	0.255
2-3	0.088	0.000	0.000	0.000
3-4	0.101	0.000	0.000	0.000
4-5	0.101	0.000	0.000	0.000
5-6	0.101	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	8.624	8.668	4.7
1-2	13.513	18.054	7.1
2-3	14.256	14.343	5.7
3-4	14.464	14.565	5.1
4-5	14.637	14.738	4.9
5-6	14.764	14.864	4.6
6-7	14.847	14.962	4.2

R65-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 7.088
GSD = 1.600
% Above = 77.110

Age Range = 12 to 24 months

Run Mode = Research

R65-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	592.500	888.800
1-2	592.500	888.800
2-3	592.500	888.800
3-4	592.500	888.800

4-5	592.500	888.800
5-6	592.500	888.800
6-7	592.500	888.800

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

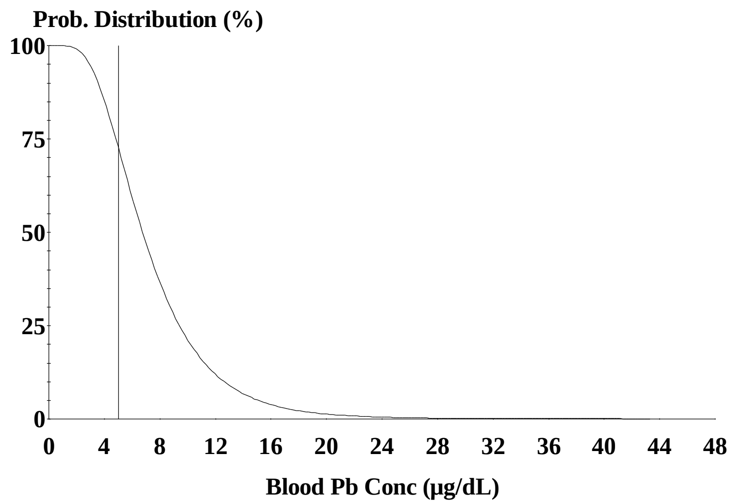
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.070	4.215	0.000	0.255
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	8.622	8.665	4.7
1-2	13.510	18.050	7.1
2-3	14.252	14.339	5.7
3-4	14.461	14.560	5.1
4-5	14.634	14.733	4.9
5-6	14.760	14.860	4.6
6-7	14.844	14.957	4.2

R65-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 7.086
GSD = 1.600
% Above = 77.096

Age Range = 12 to 24 months

Run Mode = Research

R66-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	591.800	887.700
1-2	591.800	887.700
2-3	591.800	887.700
3-4	591.800	887.700

4-5	591.800	887.700
5-6	591.800	887.700
6-7	591.800	887.700

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

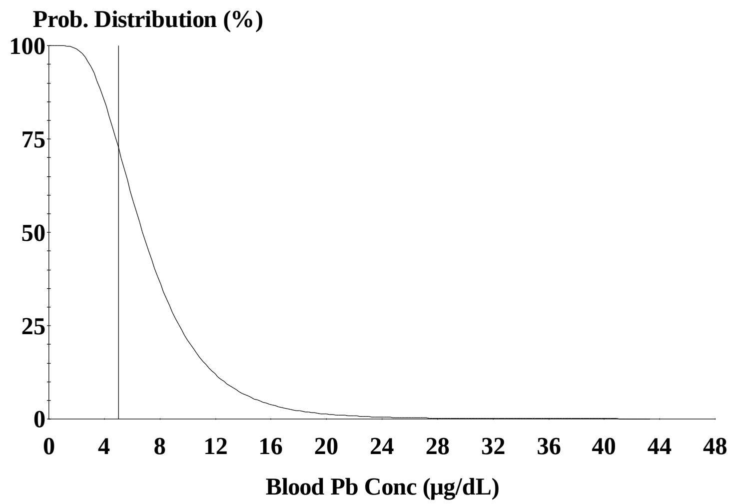
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	4.216	0.000	0.256
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	8.613	8.656	4.7
1-2	13.495	18.036	7.1
2-3	14.237	14.324	5.7
3-4	14.445	14.545	5.1
4-5	14.617	14.717	4.9
5-6	14.743	14.843	4.6
6-7	14.827	14.941	4.2

R66-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 7.081
GSD = 1.600
% Above = 77.046

Age Range = 12 to 24 months

Run Mode = Research

R66-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	591.700	887.500
1-2	591.700	887.500
2-3	591.700	887.500
3-4	591.700	887.500

4-5	591.700	887.500
5-6	591.700	887.500
6-7	591.700	887.500

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

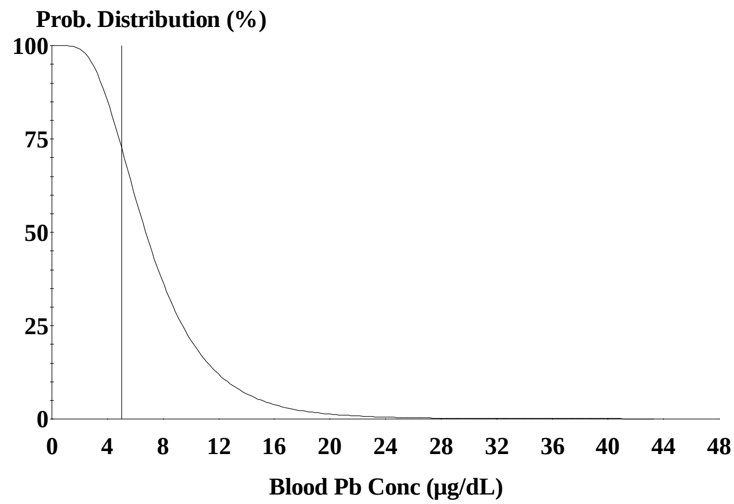
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.216	0.000	0.256
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	8.611	8.654	4.7
1-2	13.493	18.034	7.1
2-3	14.234	14.320	5.7
3-4	14.442	14.541	5.1
4-5	14.614	14.714	4.9
5-6	14.740	14.840	4.6
6-7	14.824	14.937	4.2

R66-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 7.080
GSD = 1.600
% Above = 77.035

Age Range = 12 to 24 months

Run Mode = Research

R67-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (μg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(μg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 μg Pb/L

****** Soil & Dust ******

Age	Soil (μg Pb/g)	House Dust (μg Pb/g)
.5-1	591.900	887.800
1-2	591.900	887.800
2-3	591.900	887.800
3-4	591.900	887.800

4-5	591.900	887.800
5-6	591.900	887.800
6-7	591.900	887.800

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

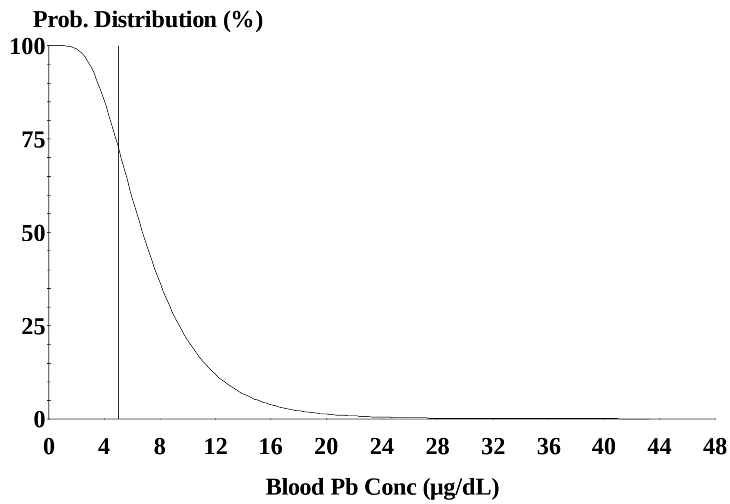
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	4.216	0.000	0.255
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	8.614	8.657	4.7
1-2	13.497	18.038	7.1
2-3	14.238	14.325	5.7
3-4	14.446	14.546	5.1
4-5	14.619	14.719	4.9
5-6	14.745	14.845	4.6
6-7	14.829	14.942	4.2

R67-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 7.082
GSD = 1.600
% Above = 77.051

Age Range = 12 to 24 months

Run Mode = Research

R67-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	591.800	887.600
1-2	591.800	887.600
2-3	591.800	887.600
3-4	591.800	887.600

4-5	591.800	887.600
5-6	591.800	887.600
6-7	591.800	887.600

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

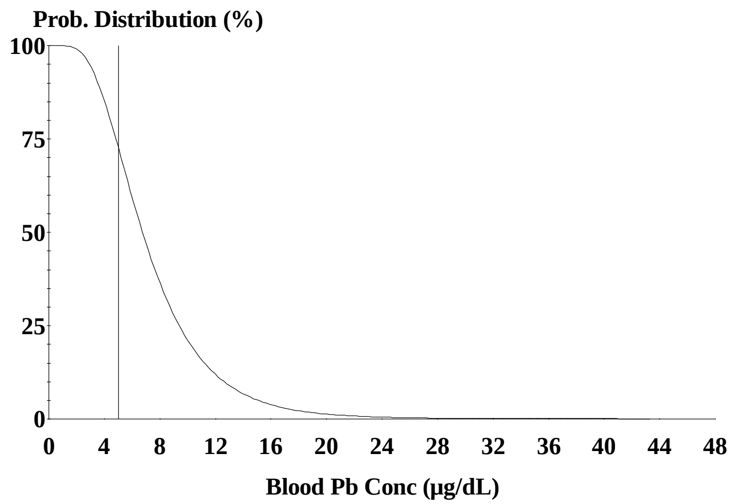
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.216	0.000	0.256
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	8.612	8.655	4.7
1-2	13.494	18.035	7.1
2-3	14.236	14.322	5.7
3-4	14.444	14.543	5.1
4-5	14.616	14.716	4.9
5-6	14.742	14.842	4.6
6-7	14.826	14.939	4.2

R67-S2

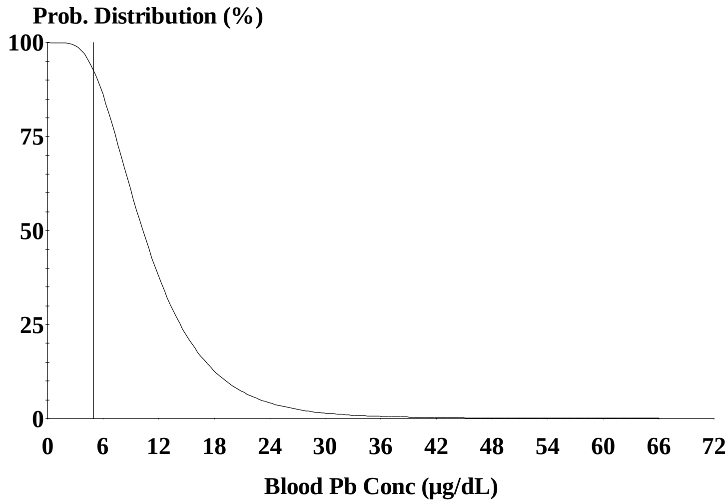
IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 7.080
GSD = 1.600
% Above = 77.041

Age Range = 12 to 24 months

Run Mode = Research



Cutoff = 5.000 µg/dl
Geo Mean = 10.803
GSD = 1.600
% Above = 94.941

Age Range = 12 to 24 months

Run Mode = Research

R10-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1101.800	1652.700
1-2	1101.800	1652.700
2-3	1101.800	1652.700
3-4	1101.800	1652.700

4-5	1101.800	1652.700
5-6	1101.800	1652.700
6-7	1101.800	1652.700

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

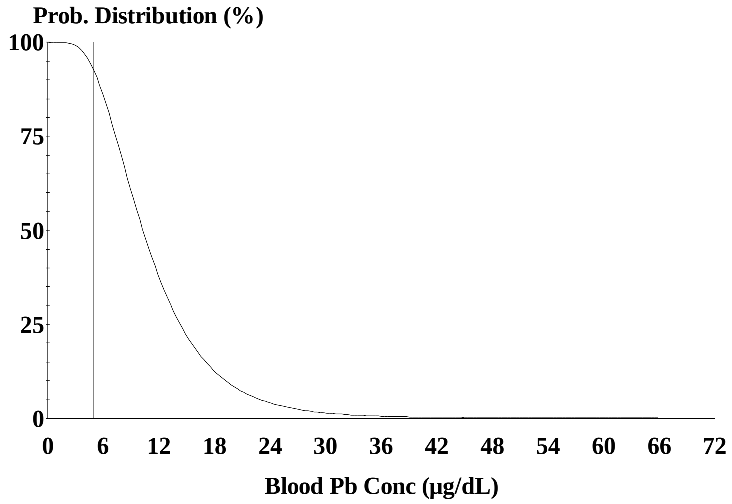
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	3.870	0.000	0.235
2-3	0.088	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.887	14.931	7.9
1-2	23.066	27.241	10.8
2-3	24.474	24.562	9.3
3-4	25.068	25.168	8.7
4-5	25.572	25.672	8.4
5-6	25.947	26.047	7.9
6-7	26.198	26.313	7.4

R10-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.764
GSD = 1.600
% Above = 94.859

Age Range = 12 to 24 months

Run Mode = Research

R10-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1101.700	1652.500
1-2	1101.700	1652.500
2-3	1101.700	1652.500
3-4	1101.700	1652.500

4-5	1101.700	1652.500
5-6	1101.700	1652.500
6-7	1101.700	1652.500

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

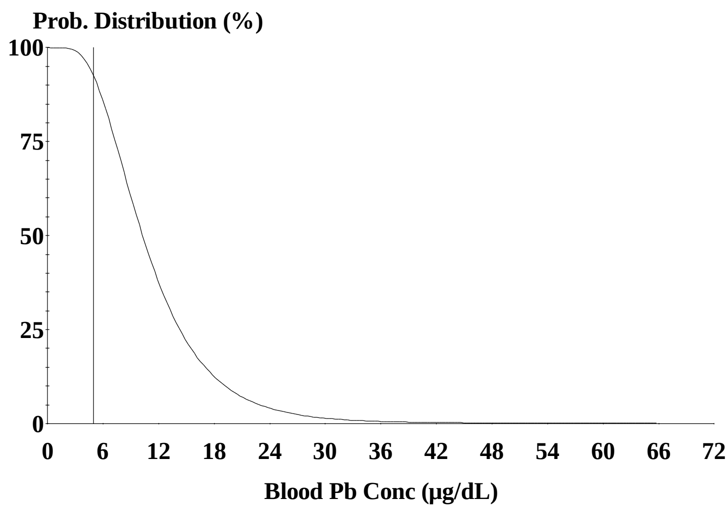
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	3.870	0.000	0.235
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.885	14.929	7.9
1-2	23.064	27.238	10.8
2-3	24.472	24.559	9.3
3-4	25.065	25.164	8.7
4-5	25.569	25.668	8.4
5-6	25.944	26.043	7.9
6-7	26.196	26.309	7.4

R10-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.762
GSD = 1.600
% Above = 94.857

Age Range = 12 to 24 months

Run Mode = Research

R10-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1102.800	1654.200
1-2	1102.800	1654.200
2-3	1102.800	1654.200
3-4	1102.800	1654.200

4-5	1102.800	1654.200
5-6	1102.800	1654.200
6-7	1102.800	1654.200

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

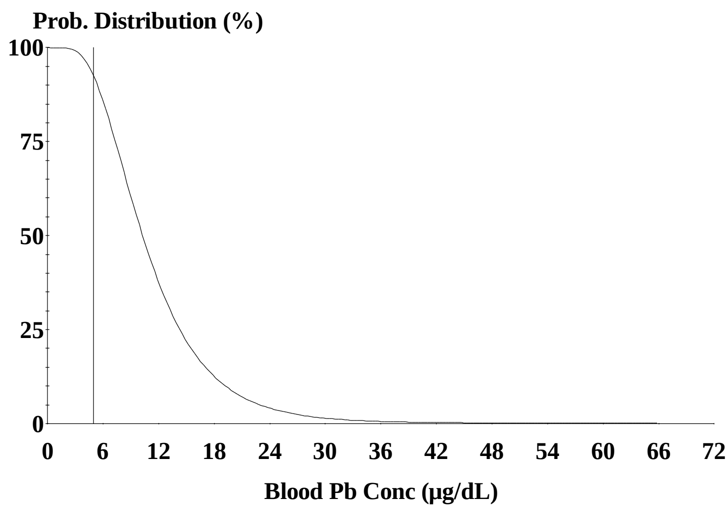
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	3.870	0.000	0.235
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.112	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.898	14.941	7.9
1-2	23.084	27.257	10.8
2-3	24.493	24.579	9.3
3-4	25.087	25.186	8.7
4-5	25.592	25.691	8.4
5-6	25.968	26.066	8.0
6-7	26.220	26.332	7.4

R10-S3

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.770
GSD = 1.600
% Above = 94.872

Age Range = 12 to 24 months

Run Mode = Research

R27-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (μg Pb/m^3)
.5-1	0.500	5.400	32.000	0.085
1-2	1.400	8.000	32.000	0.085
2-3	2.000	9.500	32.000	0.085
3-4	2.000	10.900	32.000	0.085
4-5	2.000	10.900	32.000	0.085
5-6	2.000	10.900	32.000	0.085
6-7	2.000	12.400	32.000	0.085

****** Diet ******

Age	Diet Intake(μg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 μg Pb/L

****** Soil & Dust ******

Age	Soil (μg Pb/g)	House Dust (μg Pb/g)
.5-1	1110.900	1666.300
1-2	1110.900	1666.300
2-3	1110.900	1666.300
3-4	1110.900	1666.300

4-5	1110.900	1666.300
5-6	1110.900	1666.300
6-7	1110.900	1666.300

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

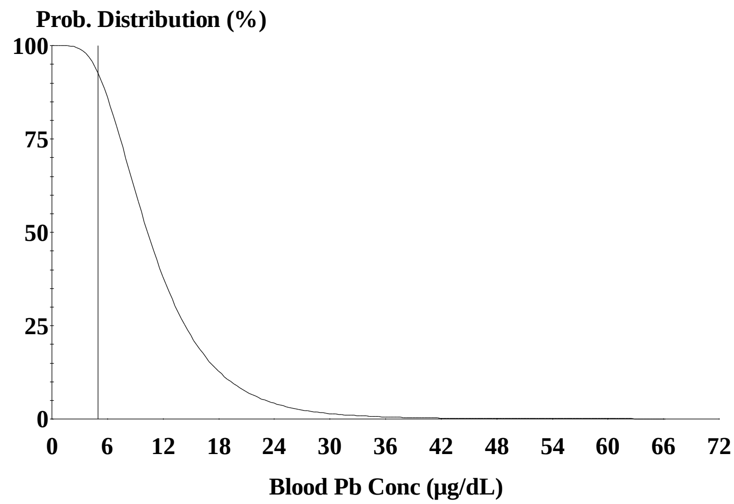
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.046	0.000	0.000	0.000
1-2	0.074	3.865	0.000	0.234
2-3	0.093	0.000	0.000	0.000
3-4	0.106	0.000	0.000	0.000
4-5	0.106	0.000	0.000	0.000
5-6	0.106	0.000	0.000	0.000
6-7	0.121	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.991	15.037	8.0
1-2	23.223	27.397	10.8
2-3	24.643	24.736	9.4
3-4	25.244	25.351	8.8
4-5	25.755	25.862	8.4
5-6	26.136	26.242	8.0
6-7	26.391	26.512	7.5

R27-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.825
GSD = 1.600
% Above = 94.986

Age Range = 12 to 24 months

Run Mode = Research

R27-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.085
1-2	1.400	8.000	32.000	0.085
2-3	2.000	9.500	32.000	0.085
3-4	2.000	10.900	32.000	0.085
4-5	2.000	10.900	32.000	0.085
5-6	2.000	10.900	32.000	0.085
6-7	2.000	12.400	32.000	0.085

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1110.600	1665.900
1-2	1110.600	1665.900
2-3	1110.600	1665.900
3-4	1110.600	1665.900

4-5	1110.600	1665.900
5-6	1110.600	1665.900
6-7	1110.600	1665.900

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

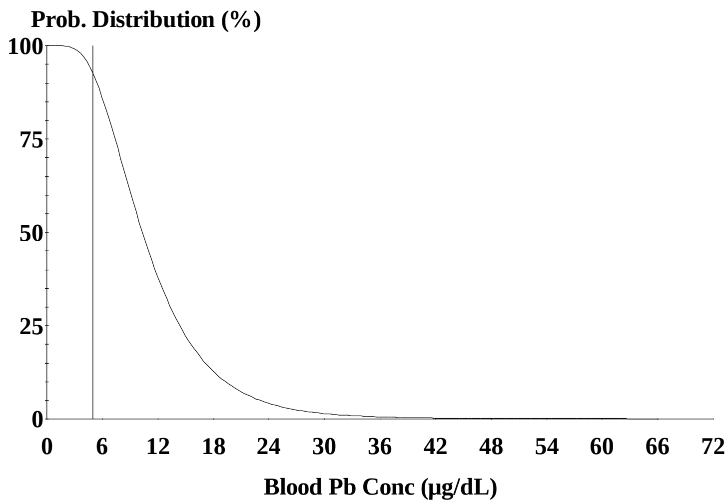
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.046	0.000	0.000	0.000
1-2	0.074	3.865	0.000	0.234
2-3	0.092	0.000	0.000	0.000
3-4	0.106	0.000	0.000	0.000
4-5	0.106	0.000	0.000	0.000
5-6	0.106	0.000	0.000	0.000
6-7	0.121	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.988	15.034	8.0
1-2	23.219	27.392	10.8
2-3	24.638	24.730	9.4
3-4	25.239	25.345	8.7
4-5	25.750	25.856	8.4
5-6	26.130	26.236	8.0
6-7	26.385	26.505	7.5

R27-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.823
GSD = 1.600
% Above = 94.982

Age Range = 12 to 24 months

Run Mode = Research

PPR-R27

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.089
1-2	1.400	8.000	32.000	0.089
2-3	2.000	9.500	32.000	0.089
3-4	2.000	10.900	32.000	0.089
4-5	2.000	10.900	32.000	0.089
5-6	2.000	10.900	32.000	0.089
6-7	2.000	12.400	32.000	0.089

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1132.500	1698.700
1-2	1132.500	1698.700
2-3	1132.500	1698.700
3-4	1132.500	1698.700

4-5	1132.500	1698.700
5-6	1132.500	1698.700
6-7	1132.500	1698.700

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

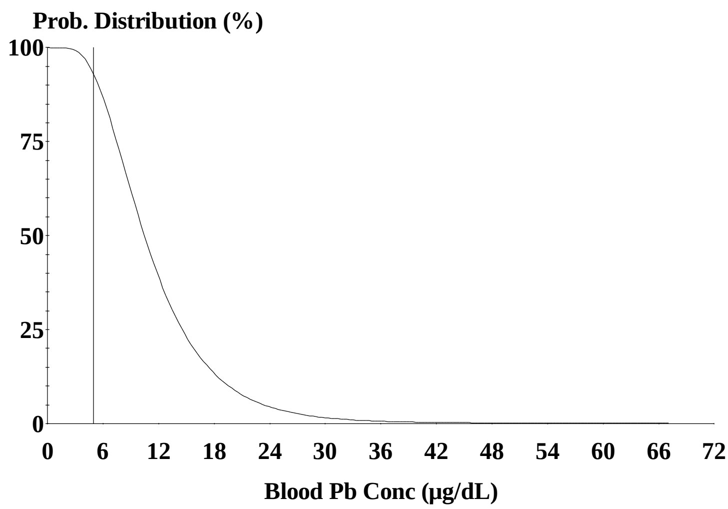
Maternal Blood Concentration: 0.800 µg Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.048	0.000	0.000	0.000
1-2	0.078	3.852	0.000	0.233
2-3	0.097	0.000	0.000	0.000
3-4	0.111	0.000	0.000	0.000
4-5	0.111	0.000	0.000	0.000
5-6	0.111	0.000	0.000	0.000
6-7	0.127	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	15.237	15.286	8.1
1-2	23.596	27.759	11.0
2-3	25.043	25.140	9.5
3-4	25.663	25.775	8.9
4-5	26.190	26.302	8.6
5-6	26.583	26.695	8.1
6-7	26.847	26.974	7.6

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.969
GSD = 1.600
% Above = 95.269

Age Range = 12 to 24 months

Run Mode = Research

R28-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.084
1-2	1.400	8.000	32.000	0.084
2-3	2.000	9.500	32.000	0.084
3-4	2.000	10.900	32.000	0.084
4-5	2.000	10.900	32.000	0.084
5-6	2.000	10.900	32.000	0.084
6-7	2.000	12.400	32.000	0.084

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1108.900	1663.300
1-2	1108.900	1663.300
2-3	1108.900	1663.300
3-4	1108.900	1663.300

4-5	1108.900	1663.300
5-6	1108.900	1663.300
6-7	1108.900	1663.300

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

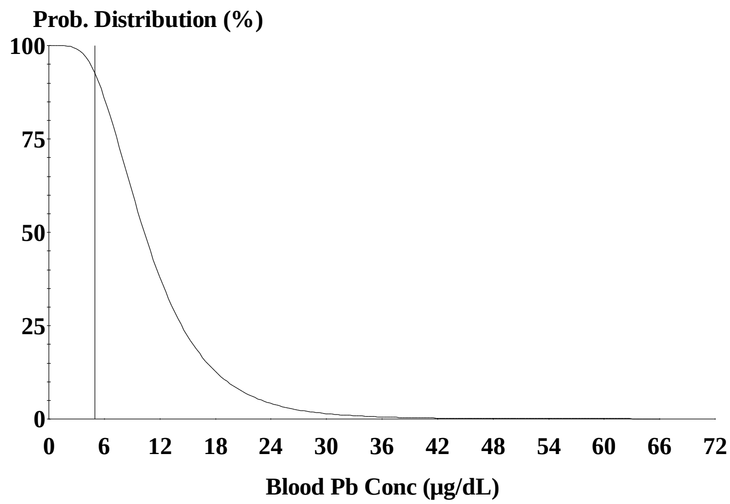
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.046	0.000	0.000	0.000
1-2	0.074	3.866	0.000	0.234
2-3	0.092	0.000	0.000	0.000
3-4	0.106	0.000	0.000	0.000
4-5	0.106	0.000	0.000	0.000
5-6	0.106	0.000	0.000	0.000
6-7	0.120	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.968	15.014	8.0
1-2	23.189	27.363	10.8
2-3	24.606	24.698	9.4
3-4	25.205	25.311	8.7
4-5	25.715	25.820	8.4
5-6	26.094	26.200	8.0
6-7	26.348	26.468	7.4

R28-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.812
GSD = 1.600
% Above = 94.959

Age Range = 12 to 24 months

Run Mode = Research

R28-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.083
1-2	1.400	8.000	32.000	0.083
2-3	2.000	9.500	32.000	0.083
3-4	2.000	10.900	32.000	0.083
4-5	2.000	10.900	32.000	0.083
5-6	2.000	10.900	32.000	0.083
6-7	2.000	12.400	32.000	0.083

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1108.600	1662.900
1-2	1108.600	1662.900
2-3	1108.600	1662.900
3-4	1108.600	1662.900

4-5	1108.600	1662.900
5-6	1108.600	1662.900
6-7	1108.600	1662.900

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

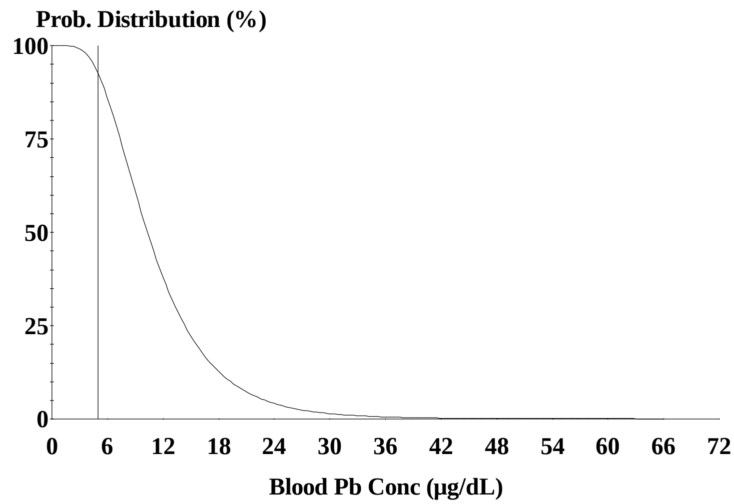
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.045	0.000	0.000	0.000
1-2	0.073	3.866	0.000	0.234
2-3	0.091	0.000	0.000	0.000
3-4	0.104	0.000	0.000	0.000
4-5	0.104	0.000	0.000	0.000
5-6	0.104	0.000	0.000	0.000
6-7	0.118	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.965	15.010	8.0
1-2	23.184	27.357	10.8
2-3	24.601	24.691	9.4
3-4	25.200	25.304	8.7
4-5	25.709	25.813	8.4
5-6	26.088	26.192	8.0
6-7	26.342	26.461	7.4

R28-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.810
GSD = 1.600
% Above = 94.954

Age Range = 12 to 24 months

Run Mode = Research

PPR-R28

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1124.200	1686.400
1-2	1124.200	1686.400
2-3	1124.200	1686.400
3-4	1124.200	1686.400

4-5	1124.200	1686.400
5-6	1124.200	1686.400
6-7	1124.200	1686.400

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

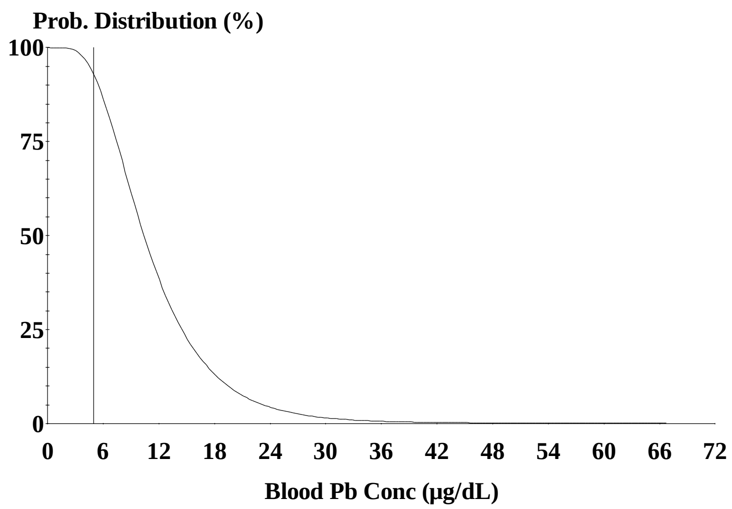
Maternal Blood Concentration: 0.800 µg Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.070	3.857	0.000	0.234
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	15.143	15.187	8.0
1-2	23.454	27.614	10.9
2-3	24.891	24.978	9.5
3-4	25.504	25.604	8.8
4-5	26.025	26.125	8.5
5-6	26.413	26.513	8.1
6-7	26.673	26.787	7.5

PPR-R28 IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.912
GSD = 1.600
% Above = 95.158

Age Range = 12 to 24 months

Run Mode = Research

R29-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.083
1-2	1.400	8.000	32.000	0.083
2-3	2.000	9.500	32.000	0.083
3-4	2.000	10.900	32.000	0.083
4-5	2.000	10.900	32.000	0.083
5-6	2.000	10.900	32.000	0.083
6-7	2.000	12.400	32.000	0.083

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1106.800	1660.200
1-2	1106.800	1660.200
2-3	1106.800	1660.200
3-4	1106.800	1660.200

4-5	1106.800	1660.200
5-6	1106.800	1660.200
6-7	1106.800	1660.200

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

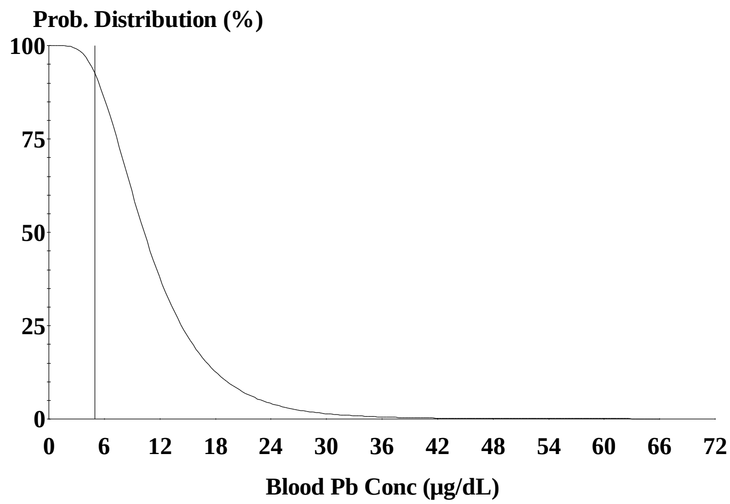
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.045	0.000	0.000	0.000
1-2	0.072	3.867	0.000	0.234
2-3	0.090	0.000	0.000	0.000
3-4	0.104	0.000	0.000	0.000
4-5	0.104	0.000	0.000	0.000
5-6	0.104	0.000	0.000	0.000
6-7	0.118	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.944	14.989	7.9
1-2	23.153	27.327	10.8
2-3	24.567	24.658	9.4
3-4	25.165	25.269	8.7
4-5	25.673	25.777	8.4
5-6	26.051	26.155	8.0
6-7	26.304	26.422	7.4

R29-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.798
GSD = 1.600
% Above = 94.929

Age Range = 12 to 24 months

Run Mode = Research

R29-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.082
1-2	1.400	8.000	32.000	0.082
2-3	2.000	9.500	32.000	0.082
3-4	2.000	10.900	32.000	0.082
4-5	2.000	10.900	32.000	0.082
5-6	2.000	10.900	32.000	0.082
6-7	2.000	12.400	32.000	0.082

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1106.500	1659.700
1-2	1106.500	1659.700
2-3	1106.500	1659.700
3-4	1106.500	1659.700

4-5	1106.500	1659.700
5-6	1106.500	1659.700
6-7	1106.500	1659.700

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

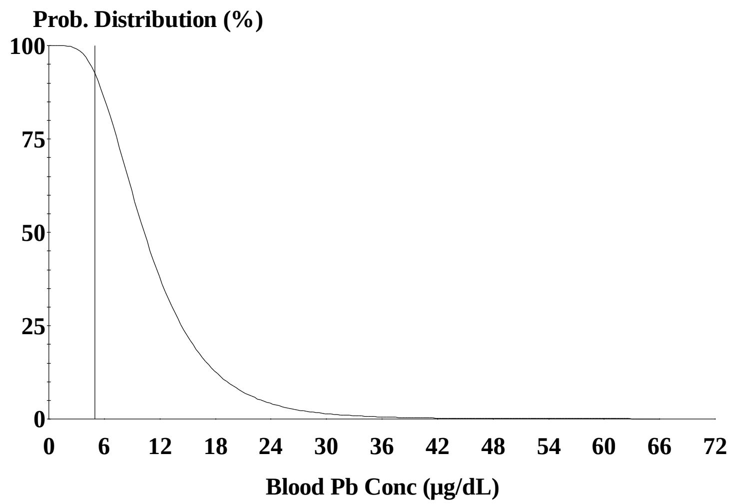
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.045	0.000	0.000	0.000
1-2	0.072	3.868	0.000	0.234
2-3	0.089	0.000	0.000	0.000
3-4	0.102	0.000	0.000	0.000
4-5	0.102	0.000	0.000	0.000
5-6	0.102	0.000	0.000	0.000
6-7	0.117	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.940	14.985	7.9
1-2	23.147	27.321	10.8
2-3	24.561	24.651	9.4
3-4	25.159	25.261	8.7
4-5	25.666	25.769	8.4
5-6	26.044	26.147	8.0
6-7	26.297	26.414	7.4

R29-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.795
GSD = 1.600
% Above = 94.924

Age Range = 12 to 24 months

Run Mode = Research

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.085
1-2	1.400	8.000	32.000	0.085
2-3	2.000	9.500	32.000	0.085
3-4	2.000	10.900	32.000	0.085
4-5	2.000	10.900	32.000	0.085
5-6	2.000	10.900	32.000	0.085
6-7	2.000	12.400	32.000	0.085

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1122.600	1683.900
1-2	1122.600	1683.900
2-3	1122.600	1683.900
3-4	1122.600	1683.900

4-5	1122.600	1683.900
5-6	1122.600	1683.900
6-7	1122.600	1683.900

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

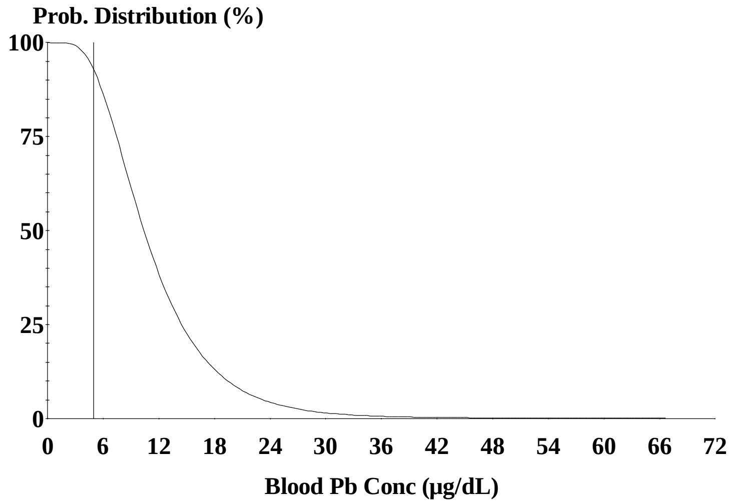
Maternal Blood Concentration: 0.800 µg Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.046	0.000	0.000	0.000
1-2	0.074	3.858	0.000	0.234
2-3	0.092	0.000	0.000	0.000
3-4	0.106	0.000	0.000	0.000
4-5	0.106	0.000	0.000	0.000
5-6	0.106	0.000	0.000	0.000
6-7	0.120	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	15.125	15.171	8.0
1-2	23.426	27.591	10.9
2-3	24.861	24.953	9.5
3-4	25.472	25.578	8.8
4-5	25.992	26.097	8.5
5-6	26.379	26.484	8.1
6-7	26.638	26.759	7.5

PPR-R29 IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.902
GSD = 1.600
% Above = 95.140

Age Range = 12 to 24 months

Run Mode = Research

R30-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.083
1-2	1.400	8.000	32.000	0.083
2-3	2.000	9.500	32.000	0.083
3-4	2.000	10.900	32.000	0.083
4-5	2.000	10.900	32.000	0.083
5-6	2.000	10.900	32.000	0.083
6-7	2.000	12.400	32.000	0.083

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1105.900	1658.800
1-2	1105.900	1658.800
2-3	1105.900	1658.800
3-4	1105.900	1658.800

4-5	1105.900	1658.800
5-6	1105.900	1658.800
6-7	1105.900	1658.800

****** Alternate Intake ******

Age	Alternate (μg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 μg Pb/dL

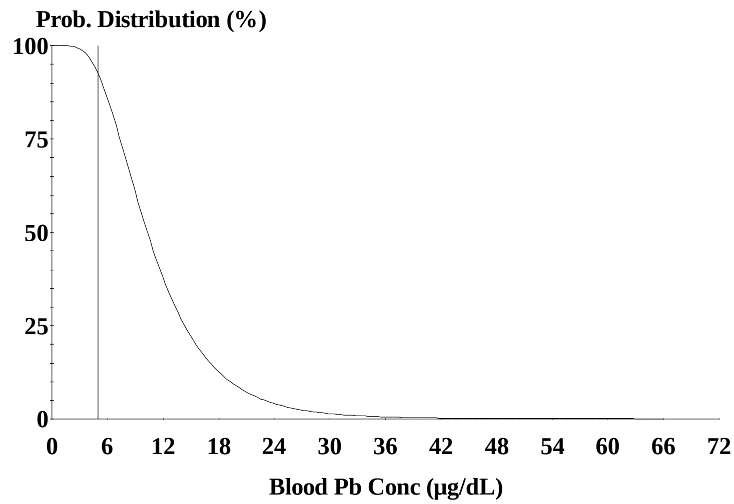
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (μg/day)	Diet (μg/day)	Alternate (μg/day)	Water (μg/day)
.5-1	0.045	0.000	0.000	0.000
1-2	0.072	3.868	0.000	0.234
2-3	0.090	0.000	0.000	0.000
3-4	0.104	0.000	0.000	0.000
4-5	0.104	0.000	0.000	0.000
5-6	0.104	0.000	0.000	0.000
6-7	0.118	0.000	0.000	0.000

Year	Soil+Dust (μg/day)	Total (μg/day)	Blood (μg/dL)
.5-1	14.934	14.979	7.9
1-2	23.137	27.312	10.8
2-3	24.550	24.641	9.4
3-4	25.147	25.251	8.7
4-5	25.654	25.758	8.4
5-6	26.032	26.135	8.0
6-7	26.285	26.403	7.4

R30-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.792
GSD = 1.600
% Above = 94.917

Age Range = 12 to 24 months

Run Mode = Research

R30-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.081
1-2	1.400	8.000	32.000	0.081
2-3	2.000	9.500	32.000	0.081
3-4	2.000	10.900	32.000	0.081
4-5	2.000	10.900	32.000	0.081
5-6	2.000	10.900	32.000	0.081
6-7	2.000	12.400	32.000	0.081

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1105.600	1658.300
1-2	1105.600	1658.300
2-3	1105.600	1658.300
3-4	1105.600	1658.300

4-5	1105.600	1658.300
5-6	1105.600	1658.300
6-7	1105.600	1658.300

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

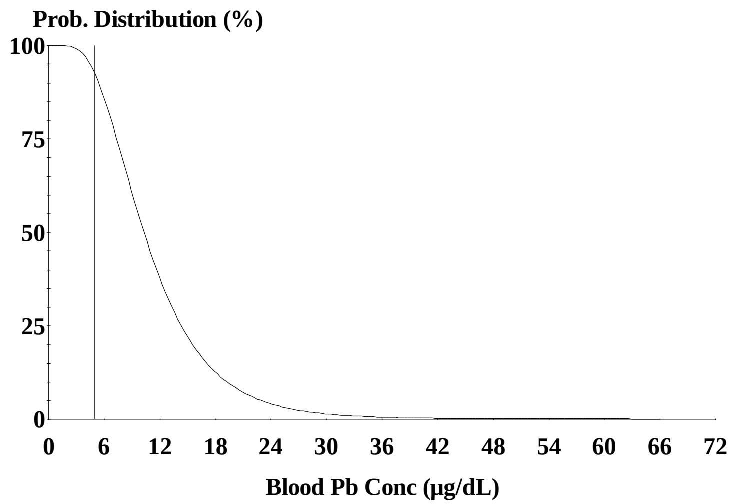
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.071	3.868	0.000	0.234
2-3	0.088	0.000	0.000	0.000
3-4	0.101	0.000	0.000	0.000
4-5	0.101	0.000	0.000	0.000
5-6	0.101	0.000	0.000	0.000
6-7	0.115	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.930	14.974	7.9
1-2	23.131	27.305	10.8
2-3	24.544	24.633	9.4
3-4	25.141	25.242	8.7
4-5	25.648	25.749	8.4
5-6	26.025	26.126	8.0
6-7	26.278	26.393	7.4

R30-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.789
GSD = 1.600
% Above = 94.911

Age Range = 12 to 24 months

Run Mode = Research

PPR-R30

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1116.000	1674.000
1-2	1116.000	1674.000
2-3	1116.000	1674.000
3-4	1116.000	1674.000

4-5	1116.000	1674.000
5-6	1116.000	1674.000
6-7	1116.000	1674.000

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

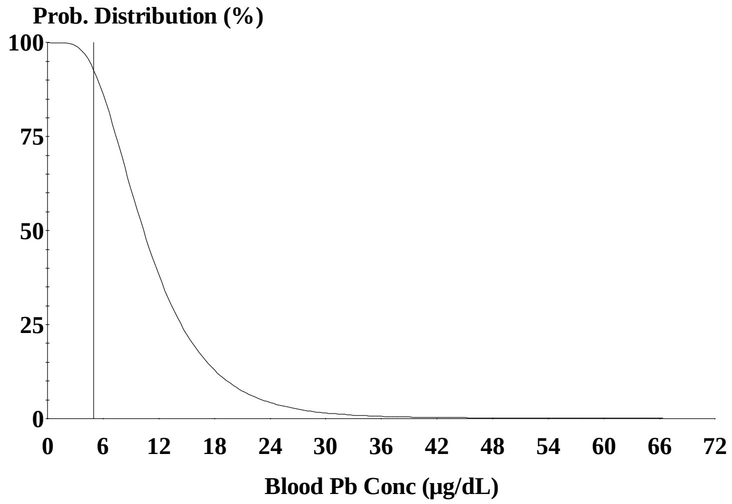
Maternal Blood Concentration: 0.800 µg Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	3.862	0.000	0.234
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.112	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	15.049	15.092	8.0
1-2	23.312	27.477	10.9
2-3	24.738	24.824	9.4
3-4	25.344	25.443	8.8
4-5	25.859	25.957	8.5
5-6	26.242	26.341	8.0
6-7	26.499	26.611	7.5

PPR-R30 IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.857
GSD = 1.600
% Above = 95.050

Age Range = 12 to 24 months

Run Mode = Research

R34-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.081
1-2	1.400	8.000	32.000	0.081
2-3	2.000	9.500	32.000	0.081
3-4	2.000	10.900	32.000	0.081
4-5	2.000	10.900	32.000	0.081
5-6	2.000	10.900	32.000	0.081
6-7	2.000	12.400	32.000	0.081

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1103.600	1655.500
1-2	1103.600	1655.500
2-3	1103.600	1655.500
3-4	1103.600	1655.500

4-5	1103.600	1655.500
5-6	1103.600	1655.500
6-7	1103.600	1655.500

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

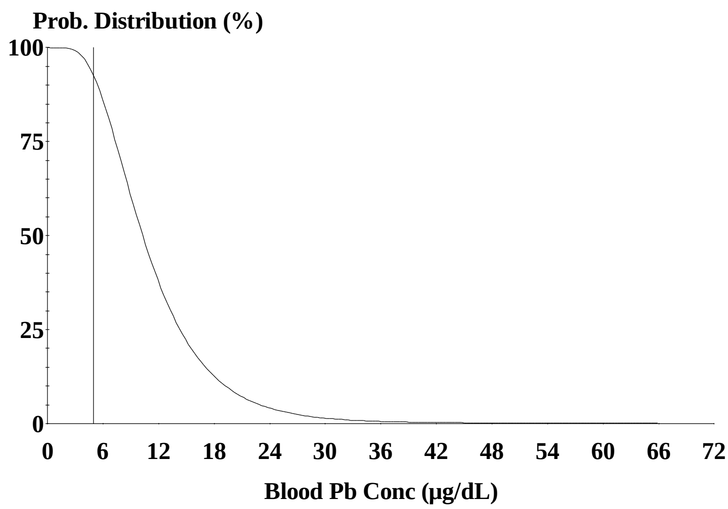
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.071	3.869	0.000	0.234
2-3	0.088	0.000	0.000	0.000
3-4	0.101	0.000	0.000	0.000
4-5	0.101	0.000	0.000	0.000
5-6	0.101	0.000	0.000	0.000
6-7	0.115	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.908	14.952	7.9
1-2	23.098	27.273	10.8
2-3	24.509	24.597	9.3
3-4	25.104	25.205	8.7
4-5	25.609	25.710	8.4
5-6	25.985	26.086	8.0
6-7	26.237	26.352	7.4

R34-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.776
GSD = 1.600
% Above = 94.885

Age Range = 12 to 24 months

Run Mode = Research

R34-S2

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1103.400	1655.100
1-2	1103.400	1655.100
2-3	1103.400	1655.100
3-4	1103.400	1655.100

4-5	1103.400	1655.100
5-6	1103.400	1655.100
6-7	1103.400	1655.100

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

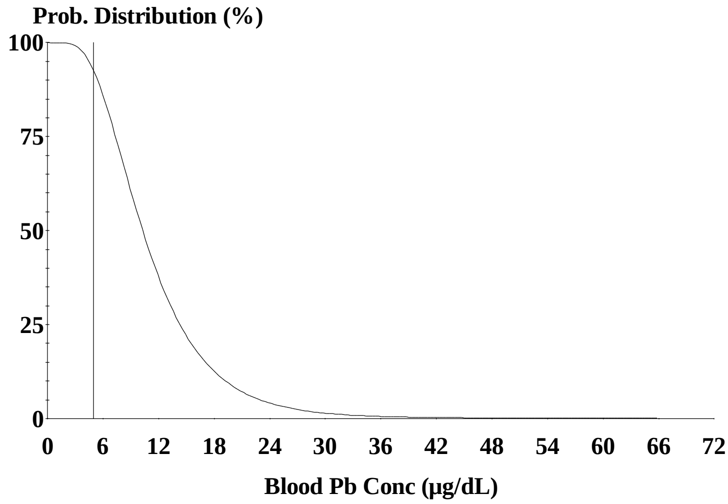
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	3.869	0.000	0.235
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.905	14.948	7.9
1-2	23.094	27.267	10.8
2-3	24.504	24.591	9.3
3-4	25.099	25.198	8.7
4-5	25.604	25.703	8.4
5-6	25.980	26.079	8.0
6-7	26.232	26.345	7.4

R34-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.774
GSD = 1.600
% Above = 94.880

Age Range = 12 to 24 months

Run Mode = Research

PPR-R34

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.077
1-2	1.400	8.000	32.000	0.077
2-3	2.000	9.500	32.000	0.077
3-4	2.000	10.900	32.000	0.077
4-5	2.000	10.900	32.000	0.077
5-6	2.000	10.900	32.000	0.077
6-7	2.000	12.400	32.000	0.077

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1106.100	1659.200
1-2	1106.100	1659.200
2-3	1106.100	1659.200
3-4	1106.100	1659.200

4-5	1106.100	1659.200
5-6	1106.100	1659.200
6-7	1106.100	1659.200

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

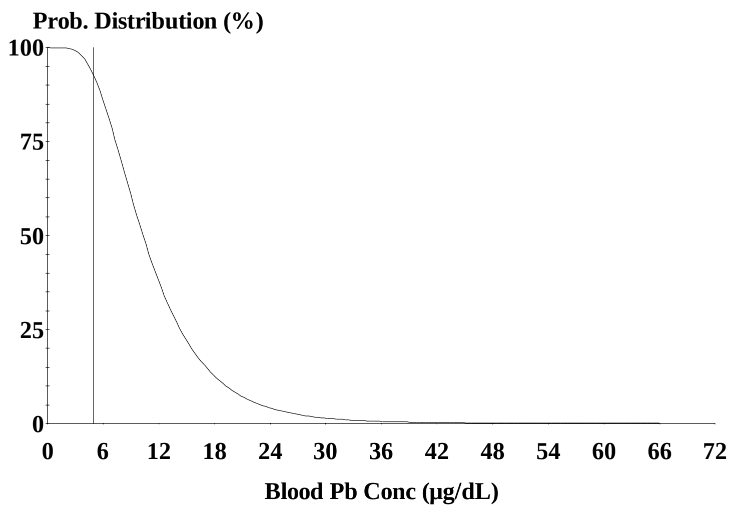
Maternal Blood Concentration: 0.800 µg Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.042	0.000	0.000	0.000
1-2	0.067	3.868	0.000	0.234
2-3	0.084	0.000	0.000	0.000
3-4	0.096	0.000	0.000	0.000
4-5	0.096	0.000	0.000	0.000
5-6	0.096	0.000	0.000	0.000
6-7	0.109	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.936	14.978	7.9
1-2	23.141	27.310	10.8
2-3	24.555	24.638	9.4
3-4	25.152	25.248	8.7
4-5	25.659	25.755	8.4
5-6	26.037	26.133	8.0
6-7	26.290	26.399	7.4

PPR-R34 IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.791
GSD = 1.600
% Above = 94.916

Age Range = 12 to 24 months

Run Mode = Research

R35-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.081
1-2	1.400	8.000	32.000	0.081
2-3	2.000	9.500	32.000	0.081
3-4	2.000	10.900	32.000	0.081
4-5	2.000	10.900	32.000	0.081
5-6	2.000	10.900	32.000	0.081
6-7	2.000	12.400	32.000	0.081

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1103.200	1654.700
1-2	1103.200	1654.700
2-3	1103.200	1654.700
3-4	1103.200	1654.700

4-5	1103.200	1654.700
5-6	1103.200	1654.700
6-7	1103.200	1654.700

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

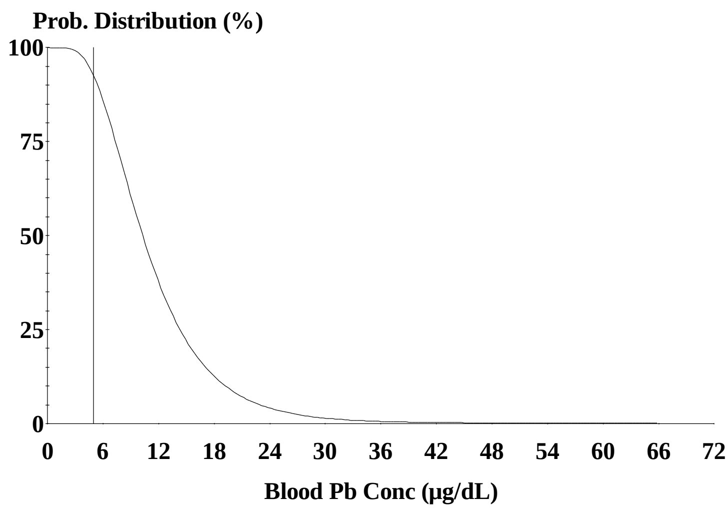
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.071	3.870	0.000	0.235
2-3	0.088	0.000	0.000	0.000
3-4	0.101	0.000	0.000	0.000
4-5	0.101	0.000	0.000	0.000
5-6	0.101	0.000	0.000	0.000
6-7	0.115	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.902	14.946	7.9
1-2	23.090	27.264	10.8
2-3	24.500	24.588	9.3
3-4	25.094	25.195	8.7
4-5	25.599	25.700	8.4
5-6	25.975	26.076	8.0
6-7	26.227	26.342	7.4

R35-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.773
GSD = 1.600
% Above = 94.878

Age Range = 12 to 24 months

Run Mode = Research

R35-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1102.900	1654.400
1-2	1102.900	1654.400
2-3	1102.900	1654.400
3-4	1102.900	1654.400

4-5	1102.900	1654.400
5-6	1102.900	1654.400
6-7	1102.900	1654.400

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

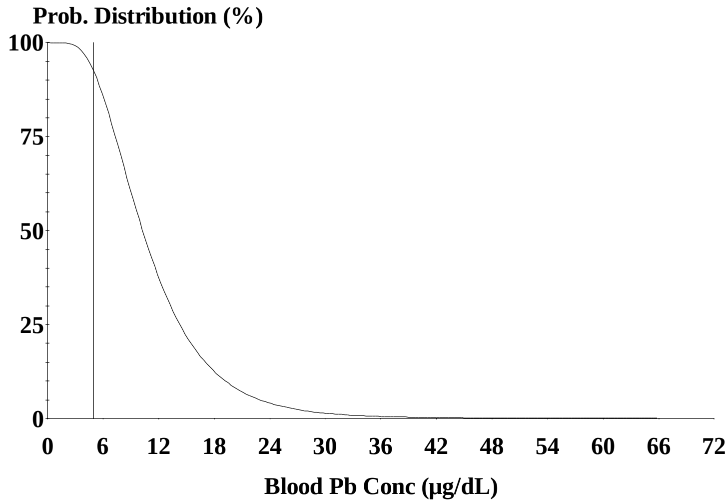
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	3.870	0.000	0.235
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.900	14.943	7.9
1-2	23.086	27.259	10.8
2-3	24.495	24.582	9.3
3-4	25.089	25.189	8.7
4-5	25.594	25.694	8.4
5-6	25.970	26.069	8.0
6-7	26.222	26.335	7.4

R35-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.771
GSD = 1.600
% Above = 94.874

Age Range = 12 to 24 months

Run Mode = Research

PPR-R35

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.078
1-2	1.400	8.000	32.000	0.078
2-3	2.000	9.500	32.000	0.078
3-4	2.000	10.900	32.000	0.078
4-5	2.000	10.900	32.000	0.078
5-6	2.000	10.900	32.000	0.078
6-7	2.000	12.400	32.000	0.078

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1106.100	1659.200
1-2	1106.100	1659.200
2-3	1106.100	1659.200
3-4	1106.100	1659.200

4-5	1106.100	1659.200
5-6	1106.100	1659.200
6-7	1106.100	1659.200

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

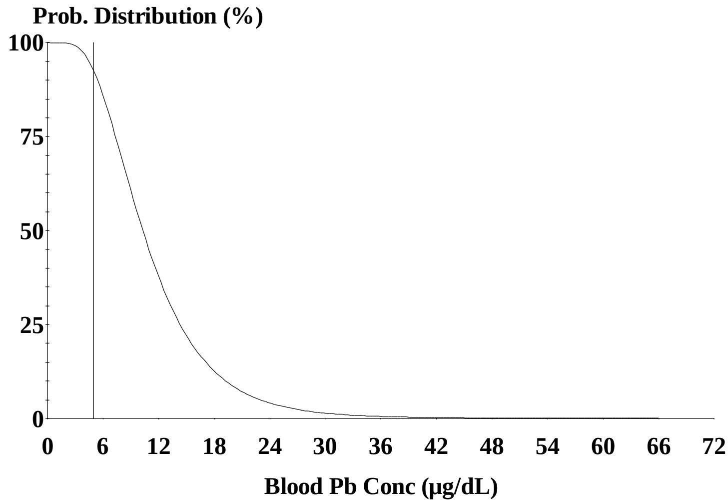
Maternal Blood Concentration: 0.800 µg Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.042	0.000	0.000	0.000
1-2	0.068	3.868	0.000	0.234
2-3	0.085	0.000	0.000	0.000
3-4	0.097	0.000	0.000	0.000
4-5	0.097	0.000	0.000	0.000
5-6	0.097	0.000	0.000	0.000
6-7	0.111	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.936	14.979	7.9
1-2	23.141	27.311	10.8
2-3	24.555	24.640	9.4
3-4	25.152	25.249	8.7
4-5	25.659	25.756	8.4
5-6	26.037	26.134	8.0
6-7	26.290	26.401	7.4

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.791
GSD = 1.600
% Above = 94.917

Age Range = 12 to 24 months

Run Mode = Research

R36-S1

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.081
1-2	1.400	8.000	32.000	0.081
2-3	2.000	9.500	32.000	0.081
3-4	2.000	10.900	32.000	0.081
4-5	2.000	10.900	32.000	0.081
5-6	2.000	10.900	32.000	0.081
6-7	2.000	12.400	32.000	0.081

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1102.700	1654.100
1-2	1102.700	1654.100
2-3	1102.700	1654.100
3-4	1102.700	1654.100

4-5	1102.700	1654.100
5-6	1102.700	1654.100
6-7	1102.700	1654.100

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

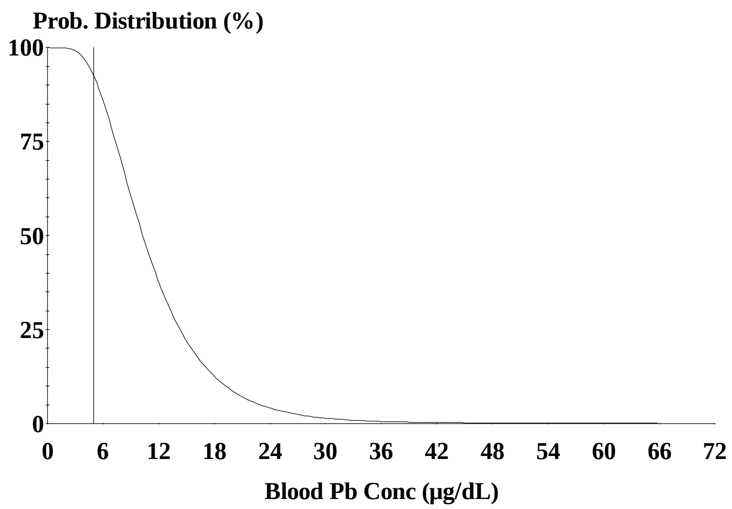
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.071	3.870	0.000	0.235
2-3	0.088	0.000	0.000	0.000
3-4	0.101	0.000	0.000	0.000
4-5	0.101	0.000	0.000	0.000
5-6	0.101	0.000	0.000	0.000
6-7	0.115	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.897	14.941	7.9
1-2	23.082	27.257	10.8
2-3	24.492	24.580	9.3
3-4	25.086	25.187	8.7
4-5	25.590	25.692	8.4
5-6	25.966	26.067	8.0
6-7	26.218	26.333	7.4

R36-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.770
GSD = 1.600
% Above = 94.872

Age Range = 12 to 24 months

Run Mode = Research

R36-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1102.500	1653.800
1-2	1102.500	1653.800
2-3	1102.500	1653.800
3-4	1102.500	1653.800

4-5	1102.500	1653.800
5-6	1102.500	1653.800
6-7	1102.500	1653.800

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

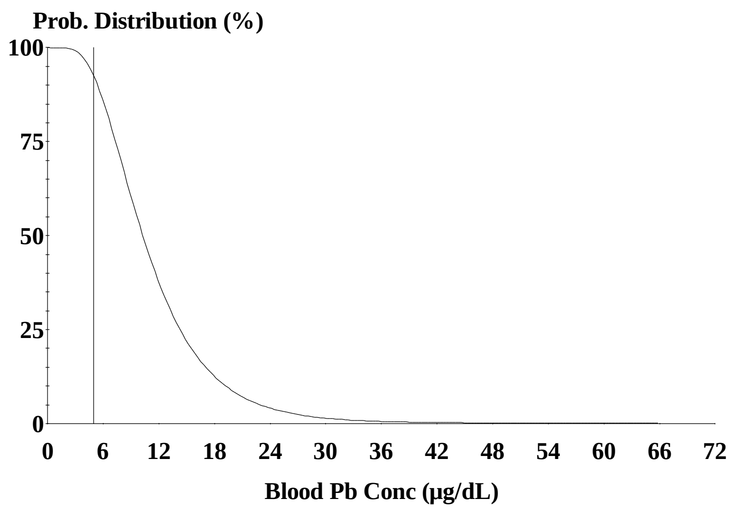
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	3.870	0.000	0.235
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.895	14.938	7.9
1-2	23.079	27.253	10.8
2-3	24.488	24.574	9.3
3-4	25.082	25.181	8.7
4-5	25.586	25.686	8.4
5-6	25.962	26.061	8.0
6-7	26.214	26.327	7.4

R36-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.768
GSD = 1.600
% Above = 94.868

Age Range = 12 to 24 months

Run Mode = Research

PPR-R36

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1106.100	1659.200
1-2	1106.100	1659.200
2-3	1106.100	1659.200
3-4	1106.100	1659.200

4-5	1106.100	1659.200
5-6	1106.100	1659.200
6-7	1106.100	1659.200

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

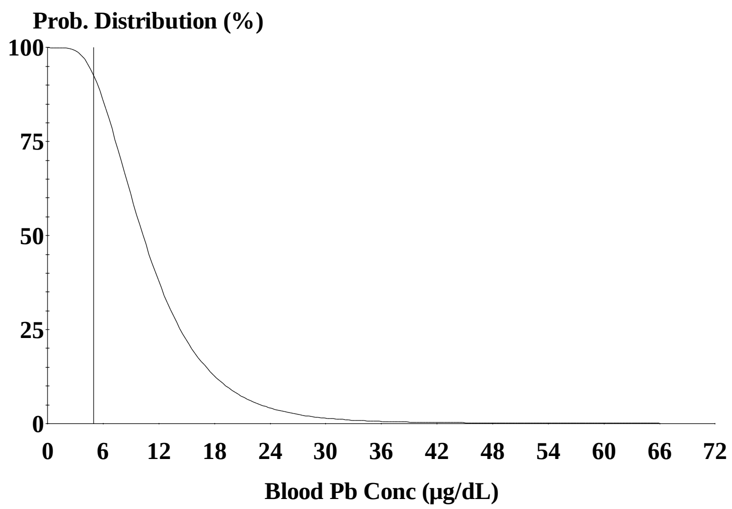
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	3.868	0.000	0.234
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.936	14.980	7.9
1-2	23.141	27.313	10.8
2-3	24.555	24.641	9.4
3-4	25.152	25.251	8.7
4-5	25.659	25.758	8.4
5-6	26.037	26.136	8.0
6-7	26.290	26.403	7.4

PPR-R36

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.792
GSD = 1.600
% Above = 94.918

Age Range = 12 to 24 months

Run Mode = Research

R37-S1

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.081
1-2	1.400	8.000	32.000	0.081
2-3	2.000	9.500	32.000	0.081
3-4	2.000	10.900	32.000	0.081
4-5	2.000	10.900	32.000	0.081
5-6	2.000	10.900	32.000	0.081
6-7	2.000	12.400	32.000	0.081

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1102.600	1653.800
1-2	1102.600	1653.800
2-3	1102.600	1653.800
3-4	1102.600	1653.800

4-5	1102.600	1653.800
5-6	1102.600	1653.800
6-7	1102.600	1653.800

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

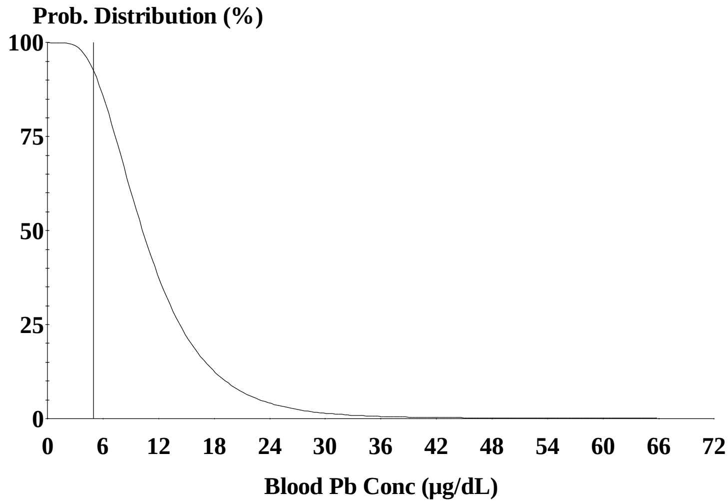
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.071	3.870	0.000	0.235
2-3	0.088	0.000	0.000	0.000
3-4	0.101	0.000	0.000	0.000
4-5	0.101	0.000	0.000	0.000
5-6	0.101	0.000	0.000	0.000
6-7	0.115	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.895	14.939	7.9
1-2	23.079	27.254	10.8
2-3	24.488	24.577	9.3
3-4	25.082	25.183	8.7
4-5	25.587	25.688	8.4
5-6	25.963	26.064	8.0
6-7	26.214	26.329	7.4

R37-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 μg/dl
Geo Mean = 10.769
GSD = 1.600
% Above = 94.870

Age Range = 12 to 24 months

Run Mode = Research

R37-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1102.300	1653.500
1-2	1102.300	1653.500
2-3	1102.300	1653.500
3-4	1102.300	1653.500

4-5	1102.300	1653.500
5-6	1102.300	1653.500
6-7	1102.300	1653.500

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

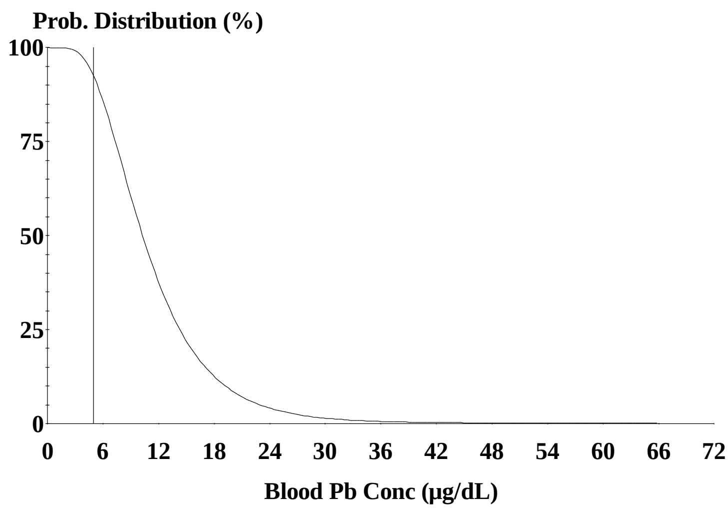
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.070	3.870	0.000	0.235
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.893	14.936	7.9
1-2	23.075	27.249	10.8
2-3	24.484	24.571	9.3
3-4	25.078	25.177	8.7
4-5	25.582	25.682	8.4
5-6	25.958	26.057	7.9
6-7	26.209	26.323	7.4

R37-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.767
GSD = 1.600
% Above = 94.866

Age Range = 12 to 24 months

Run Mode = Research

PPR-R37

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1107.800	1661.700
1-2	1107.800	1661.700
2-3	1107.800	1661.700
3-4	1107.800	1661.700

4-5	1107.800	1661.700
5-6	1107.800	1661.700
6-7	1107.800	1661.700

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

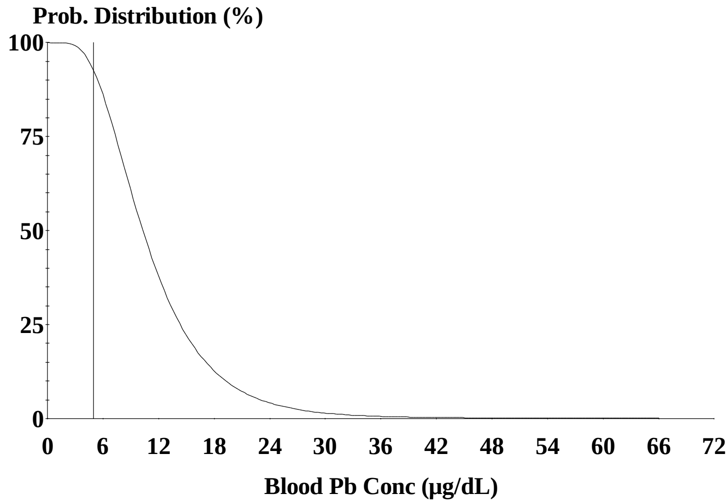
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	3.867	0.000	0.234
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.956	14.999	8.0
1-2	23.170	27.341	10.8
2-3	24.586	24.673	9.4
3-4	25.184	25.285	8.7
4-5	25.693	25.793	8.4
5-6	26.072	26.172	8.0
6-7	26.325	26.440	7.4

PPR-R37

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.803
GSD = 1.600
% Above = 94.941

Age Range = 12 to 24 months

Run Mode = Research

R41-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.081
1-2	1.400	8.000	32.000	0.081
2-3	2.000	9.500	32.000	0.081
3-4	2.000	10.900	32.000	0.081
4-5	2.000	10.900	32.000	0.081
5-6	2.000	10.900	32.000	0.081
6-7	2.000	12.400	32.000	0.081

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1102.800	1654.100
1-2	1102.800	1654.100
2-3	1102.800	1654.100
3-4	1102.800	1654.100

4-5	1102.800	1654.100
5-6	1102.800	1654.100
6-7	1102.800	1654.100

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

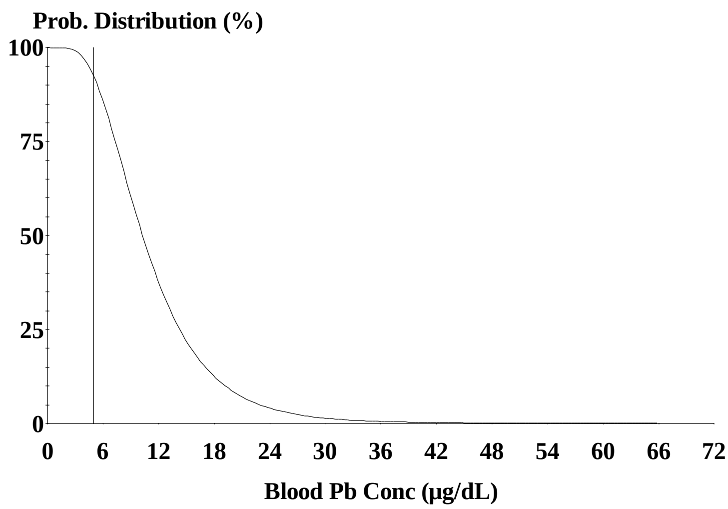
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.071	3.870	0.000	0.235
2-3	0.088	0.000	0.000	0.000
3-4	0.101	0.000	0.000	0.000
4-5	0.101	0.000	0.000	0.000
5-6	0.101	0.000	0.000	0.000
6-7	0.115	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.898	14.942	7.9
1-2	23.083	27.258	10.8
2-3	24.492	24.580	9.3
3-4	25.086	25.187	8.7
4-5	25.591	25.692	8.4
5-6	25.967	26.068	8.0
6-7	26.219	26.334	7.4

R41-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.770
GSD = 1.600
% Above = 94.873

Age Range = 12 to 24 months

Run Mode = Research

R41-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1102.600	1653.900
1-2	1102.600	1653.900
2-3	1102.600	1653.900
3-4	1102.600	1653.900

4-5	1102.600	1653.900
5-6	1102.600	1653.900
6-7	1102.600	1653.900

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

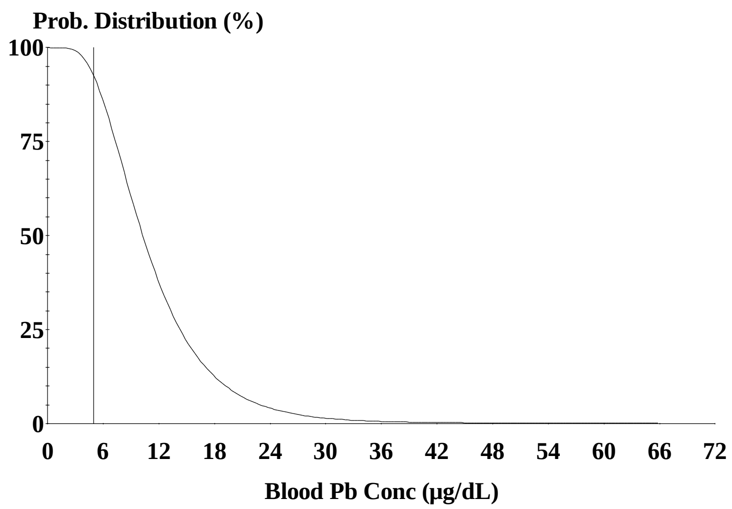
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	3.870	0.000	0.235
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.896	14.939	7.9
1-2	23.080	27.254	10.8
2-3	24.489	24.576	9.3
3-4	25.083	25.183	8.7
4-5	25.588	25.687	8.4
5-6	25.963	26.063	8.0
6-7	26.215	26.328	7.4

R41-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.769
GSD = 1.600
% Above = 94.870

Age Range = 12 to 24 months

Run Mode = Research

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.076
1-2	1.400	8.000	32.000	0.076
2-3	2.000	9.500	32.000	0.076
3-4	2.000	10.900	32.000	0.076
4-5	2.000	10.900	32.000	0.076
5-6	2.000	10.900	32.000	0.076
6-7	2.000	12.400	32.000	0.076

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1104.500	1656.700
1-2	1104.500	1656.700
2-3	1104.500	1656.700
3-4	1104.500	1656.700

4-5	1104.500	1656.700
5-6	1104.500	1656.700
6-7	1104.500	1656.700

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

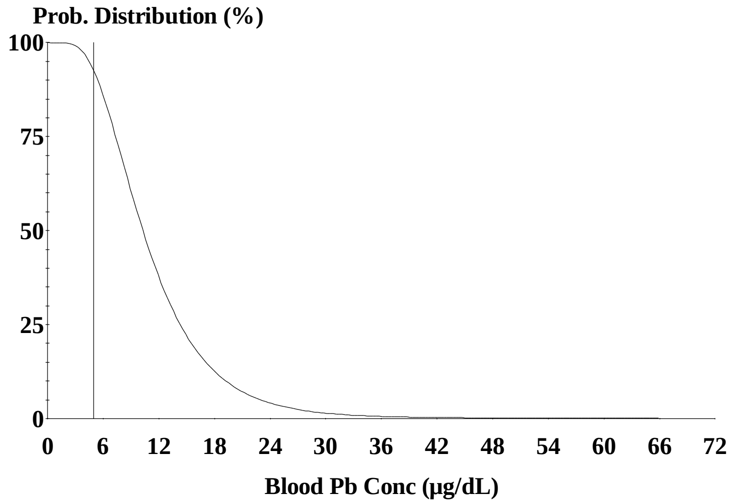
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.042	0.000	0.000	0.000
1-2	0.067	3.869	0.000	0.234
2-3	0.083	0.000	0.000	0.000
3-4	0.095	0.000	0.000	0.000
4-5	0.095	0.000	0.000	0.000
5-6	0.095	0.000	0.000	0.000
6-7	0.109	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.918	14.959	7.9
1-2	23.113	27.283	10.8
2-3	24.524	24.607	9.3
3-4	25.120	25.215	8.7
4-5	25.626	25.721	8.4
5-6	26.003	26.098	8.0
6-7	26.255	26.364	7.4

PPR-R41

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.780
GSD = 1.600
% Above = 94.893

Age Range = 12 to 24 months

Run Mode = Research

R42-S1

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.081
1-2	1.400	8.000	32.000	0.081
2-3	2.000	9.500	32.000	0.081
3-4	2.000	10.900	32.000	0.081
4-5	2.000	10.900	32.000	0.081
5-6	2.000	10.900	32.000	0.081
6-7	2.000	12.400	32.000	0.081

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1103.800	1655.700
1-2	1103.800	1655.700
2-3	1103.800	1655.700
3-4	1103.800	1655.700

4-5	1103.800	1655.700
5-6	1103.800	1655.700
6-7	1103.800	1655.700

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

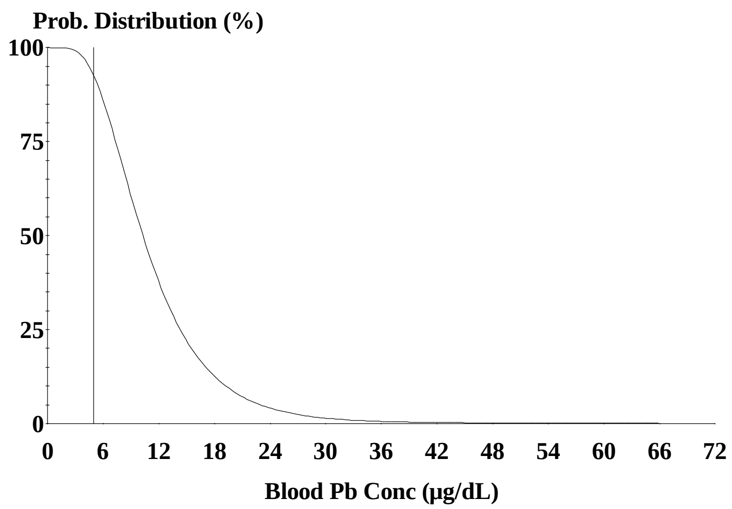
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.071	3.869	0.000	0.234
2-3	0.088	0.000	0.000	0.000
3-4	0.101	0.000	0.000	0.000
4-5	0.101	0.000	0.000	0.000
5-6	0.101	0.000	0.000	0.000
6-7	0.115	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.910	14.954	7.9
1-2	23.101	27.275	10.8
2-3	24.512	24.600	9.3
3-4	25.107	25.208	8.7
4-5	25.612	25.713	8.4
5-6	25.988	26.090	8.0
6-7	26.241	26.356	7.4

R42-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.777
GSD = 1.600
% Above = 94.887

Age Range = 12 to 24 months

Run Mode = Research

R42-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1103.600	1655.300
1-2	1103.600	1655.300
2-3	1103.600	1655.300
3-4	1103.600	1655.300

4-5	1103.600	1655.300
5-6	1103.600	1655.300
6-7	1103.600	1655.300

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

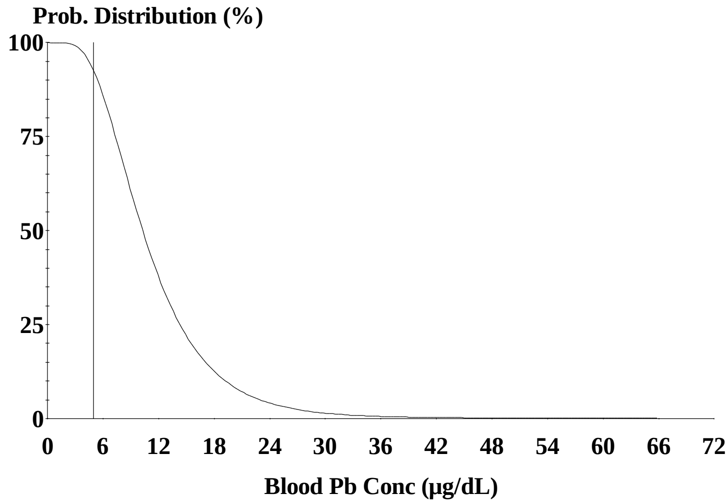
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	3.869	0.000	0.235
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.907	14.950	7.9
1-2	23.097	27.270	10.8
2-3	24.507	24.594	9.3
3-4	25.102	25.201	8.7
4-5	25.607	25.706	8.4
5-6	25.983	26.083	8.0
6-7	26.236	26.348	7.4

R42-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.775
GSD = 1.600
% Above = 94.882

Age Range = 12 to 24 months

Run Mode = Research

PPR-R42

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.076
1-2	1.400	8.000	32.000	0.076
2-3	2.000	9.500	32.000	0.076
3-4	2.000	10.900	32.000	0.076
4-5	2.000	10.900	32.000	0.076
5-6	2.000	10.900	32.000	0.076
6-7	2.000	12.400	32.000	0.076

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1106.100	1659.200
1-2	1106.100	1659.200
2-3	1106.100	1659.200
3-4	1106.100	1659.200

4-5	1106.100	1659.200
5-6	1106.100	1659.200
6-7	1106.100	1659.200

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

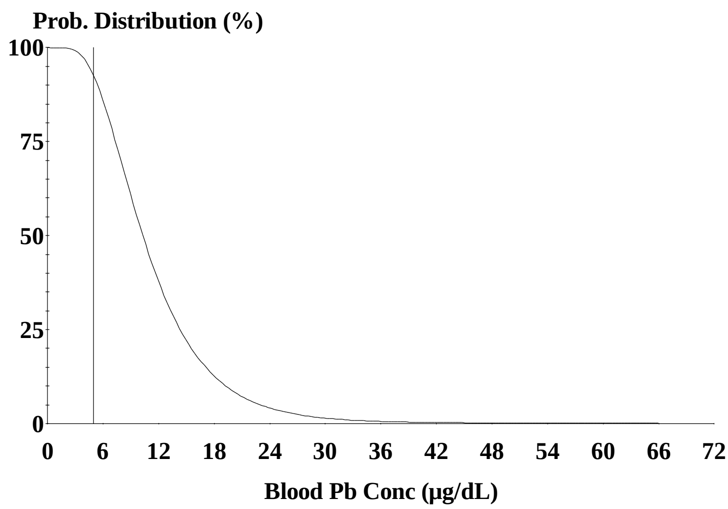
Maternal Blood Concentration: 0.800 µg Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.041	0.000	0.000	0.000
1-2	0.066	3.868	0.000	0.234
2-3	0.083	0.000	0.000	0.000
3-4	0.095	0.000	0.000	0.000
4-5	0.095	0.000	0.000	0.000
5-6	0.095	0.000	0.000	0.000
6-7	0.108	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.936	14.978	7.9
1-2	23.141	27.309	10.8
2-3	24.555	24.637	9.4
3-4	25.152	25.247	8.7
4-5	25.659	25.754	8.4
5-6	26.037	26.131	8.0
6-7	26.290	26.398	7.4

PPR-R42 IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.791
GSD = 1.600
% Above = 94.915

Age Range = 12 to 24 months

Run Mode = Research

R47-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	295.100	442.700
1-2	295.100	442.700
2-3	295.100	442.700
3-4	295.100	442.700

4-5	295.100	442.700
5-6	295.100	442.700
6-7	295.100	442.700

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

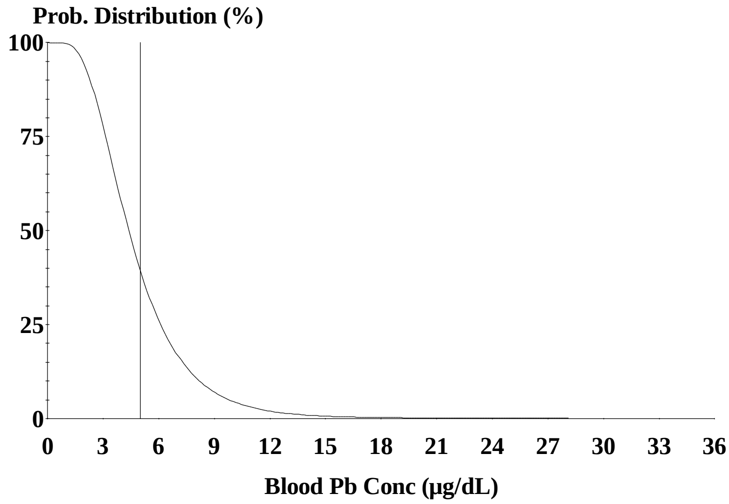
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	4.458	0.000	0.270
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	4.505	4.548	2.5
1-2	7.116	11.914	4.6
2-3	7.475	7.562	3.2
3-4	7.533	7.633	2.7
4-5	7.581	7.681	2.6
5-6	7.615	7.716	2.4
6-7	7.638	7.752	2.2

R47-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.600
GSD = 1.600
% Above = 42.953

Age Range = 12 to 24 months

Run Mode = Research

R47-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	295.000	442.500
1-2	295.000	442.500
2-3	295.000	442.500
3-4	295.000	442.500

4-5	295.000	442.500
5-6	295.000	442.500
6-7	295.000	442.500

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

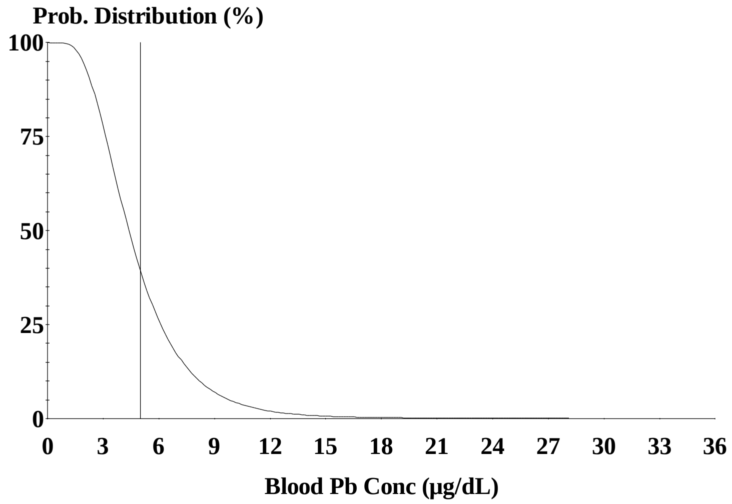
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.458	0.000	0.270
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	4.503	4.546	2.5
1-2	7.113	11.911	4.6
2-3	7.472	7.558	3.2
3-4	7.530	7.629	2.7
4-5	7.578	7.677	2.6
5-6	7.612	7.711	2.4
6-7	7.635	7.748	2.2

R47-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.598
GSD = 1.600
% Above = 42.928

Age Range = 12 to 24 months

Run Mode = Research

R50-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1102.000	1653.000
1-2	1102.000	1653.000
2-3	1102.000	1653.000
3-4	1102.000	1653.000

4-5	1102.000	1653.000
5-6	1102.000	1653.000
6-7	1102.000	1653.000

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

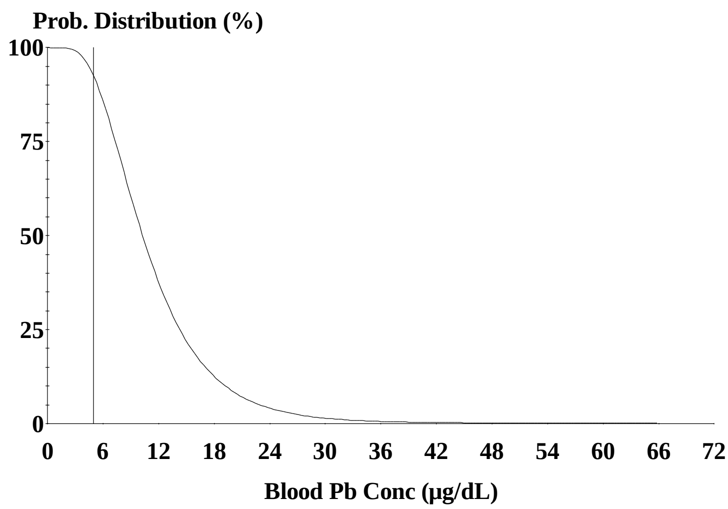
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	3.870	0.000	0.235
2-3	0.088	0.000	0.000	0.000
3-4	0.101	0.000	0.000	0.000
4-5	0.101	0.000	0.000	0.000
5-6	0.101	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.889	14.933	7.9
1-2	23.070	27.245	10.8
2-3	24.478	24.566	9.3
3-4	25.072	25.172	8.7
4-5	25.576	25.676	8.4
5-6	25.951	26.052	7.9
6-7	26.203	26.317	7.4

R50-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.765
GSD = 1.600
% Above = 94.862

Age Range = 12 to 24 months

Run Mode = Research

R50-S2

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1101.800	1652.700
1-2	1101.800	1652.700
2-3	1101.800	1652.700
3-4	1101.800	1652.700

4-5	1101.800	1652.700
5-6	1101.800	1652.700
6-7	1101.800	1652.700

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

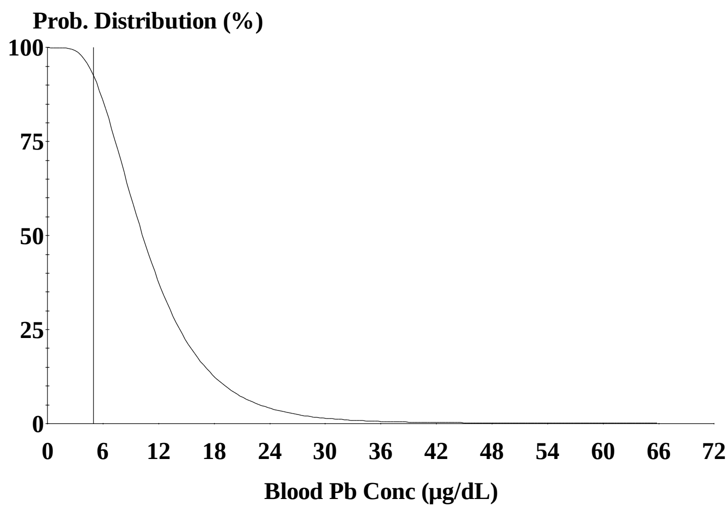
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	3.870	0.000	0.235
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.887	14.930	7.9
1-2	23.066	27.241	10.8
2-3	24.474	24.561	9.3
3-4	25.068	25.167	8.7
4-5	25.572	25.671	8.4
5-6	25.947	26.046	7.9
6-7	26.198	26.311	7.4

R50-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.763
GSD = 1.600
% Above = 94.858

Age Range = 12 to 24 months

Run Mode = Research

R7-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1100.700	1651.100
1-2	1100.700	1651.100
2-3	1100.700	1651.100
3-4	1100.700	1651.100

4-5	1100.700	1651.100
5-6	1100.700	1651.100
6-7	1100.700	1651.100

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

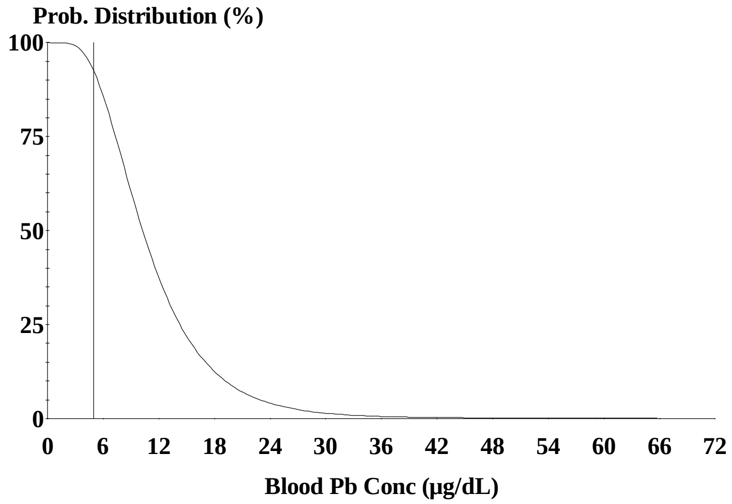
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.070	3.871	0.000	0.235
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.874	14.918	7.9
1-2	23.048	27.223	10.8
2-3	24.454	24.541	9.3
3-4	25.047	25.146	8.7
4-5	25.550	25.649	8.4
5-6	25.924	26.024	7.9
6-7	26.175	26.289	7.4

R7-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.756
GSD = 1.600
% Above = 94.844

Age Range = 12 to 24 months

Run Mode = Research

R7-S2

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1100.700	1651.000
1-2	1100.700	1651.000
2-3	1100.700	1651.000
3-4	1100.700	1651.000

4-5	1100.700	1651.000
5-6	1100.700	1651.000
6-7	1100.700	1651.000

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

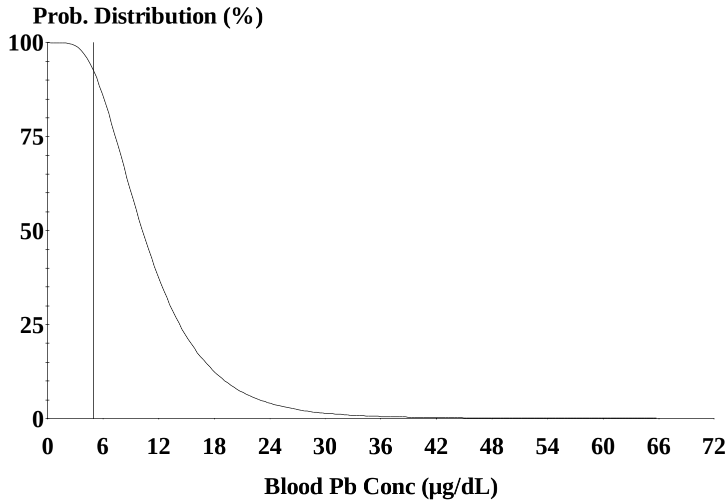
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	3.871	0.000	0.235
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.874	14.917	7.9
1-2	23.047	27.222	10.8
2-3	24.453	24.540	9.3
3-4	25.046	25.145	8.7
4-5	25.549	25.648	8.4
5-6	25.923	26.022	7.9
6-7	26.175	26.287	7.4

R7-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.756
GSD = 1.600
% Above = 94.843

Age Range = 12 to 24 months

Run Mode = Research

PPR-R7

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.078
1-2	1.400	8.000	32.000	0.078
2-3	2.000	9.500	32.000	0.078
3-4	2.000	10.900	32.000	0.078
4-5	2.000	10.900	32.000	0.078
5-6	2.000	10.900	32.000	0.078
6-7	2.000	12.400	32.000	0.078

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1101.200	1651.800
1-2	1101.200	1651.800
2-3	1101.200	1651.800
3-4	1101.200	1651.800

4-5	1101.200	1651.800
5-6	1101.200	1651.800
6-7	1101.200	1651.800

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

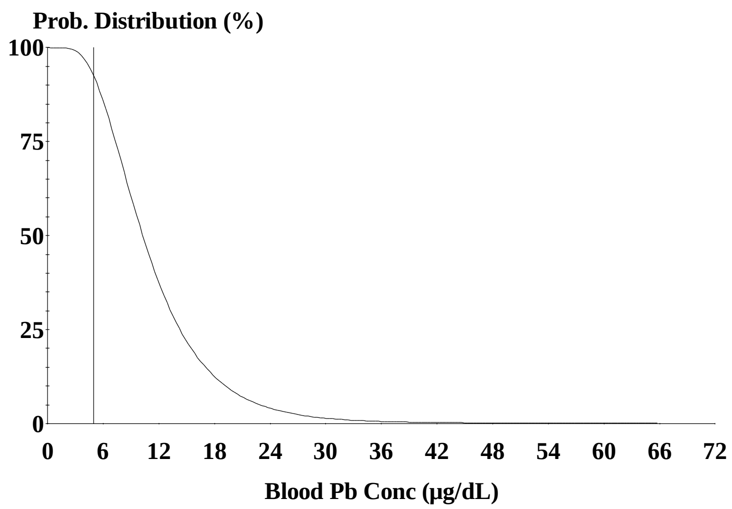
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.068	3.871	0.000	0.235
2-3	0.085	0.000	0.000	0.000
3-4	0.098	0.000	0.000	0.000
4-5	0.098	0.000	0.000	0.000
5-6	0.098	0.000	0.000	0.000
6-7	0.111	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.880	14.923	7.9
1-2	23.056	27.230	10.8
2-3	24.463	24.549	9.3
3-4	25.056	25.154	8.7
4-5	25.560	25.658	8.4
5-6	25.934	26.032	7.9
6-7	26.186	26.297	7.4

PPR-R7

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.759
GSD = 1.600
% Above = 94.849

Age Range = 12 to 24 months

Run Mode = Research

R8-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.081
1-2	1.400	8.000	32.000	0.081
2-3	2.000	9.500	32.000	0.081
3-4	2.000	10.900	32.000	0.081
4-5	2.000	10.900	32.000	0.081
5-6	2.000	10.900	32.000	0.081
6-7	2.000	12.400	32.000	0.081

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1102.400	1653.600
1-2	1102.400	1653.600
2-3	1102.400	1653.600
3-4	1102.400	1653.600

4-5	1102.400	1653.600
5-6	1102.400	1653.600
6-7	1102.400	1653.600

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

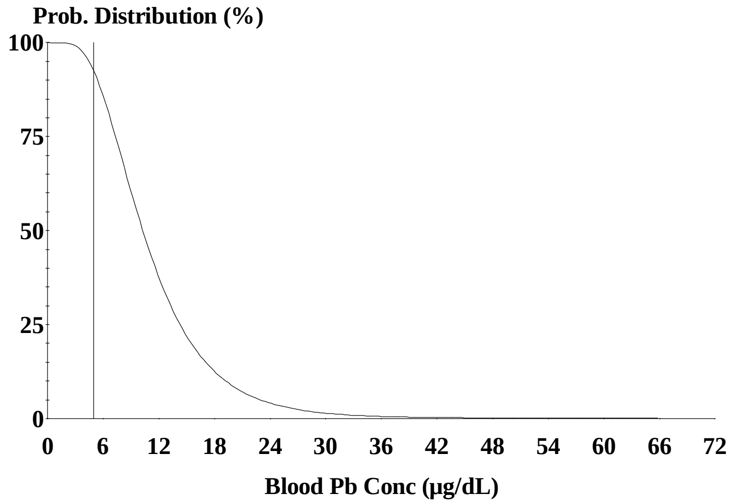
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	3.870	0.000	0.235
2-3	0.088	0.000	0.000	0.000
3-4	0.101	0.000	0.000	0.000
4-5	0.101	0.000	0.000	0.000
5-6	0.101	0.000	0.000	0.000
6-7	0.115	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.894	14.937	7.9
1-2	23.077	27.252	10.8
2-3	24.486	24.573	9.3
3-4	25.079	25.180	8.7
4-5	25.584	25.685	8.4
5-6	25.959	26.060	7.9
6-7	26.211	26.326	7.4

R8-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.768
GSD = 1.600
% Above = 94.868

Age Range = 12 to 24 months

Run Mode = Research

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1102.200	1653.300
1-2	1102.200	1653.300
2-3	1102.200	1653.300
3-4	1102.200	1653.300

4-5	1102.200	1653.300
5-6	1102.200	1653.300
6-7	1102.200	1653.300

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

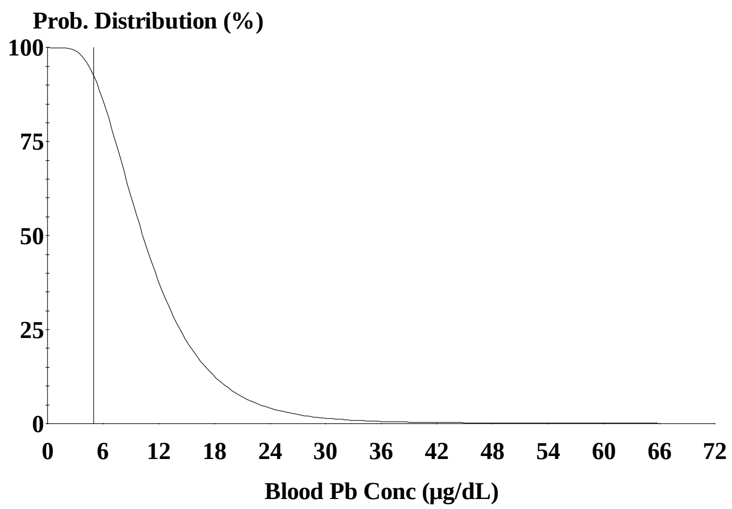
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	3.870	0.000	0.235
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.891	14.934	7.9
1-2	23.073	27.247	10.8
2-3	24.482	24.568	9.3
3-4	25.075	25.175	8.7
4-5	25.580	25.679	8.4
5-6	25.955	26.054	7.9
6-7	26.207	26.320	7.4

R8-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.766
GSD = 1.600
% Above = 94.864

Age Range = 12 to 24 months

Run Mode = Research

PPR-R8

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.078
1-2	1.400	8.000	32.000	0.078
2-3	2.000	9.500	32.000	0.078
3-4	2.000	10.900	32.000	0.078
4-5	2.000	10.900	32.000	0.078
5-6	2.000	10.900	32.000	0.078
6-7	2.000	12.400	32.000	0.078

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1104.500	1656.700
1-2	1104.500	1656.700
2-3	1104.500	1656.700
3-4	1104.500	1656.700

4-5	1104.500	1656.700
5-6	1104.500	1656.700
6-7	1104.500	1656.700

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

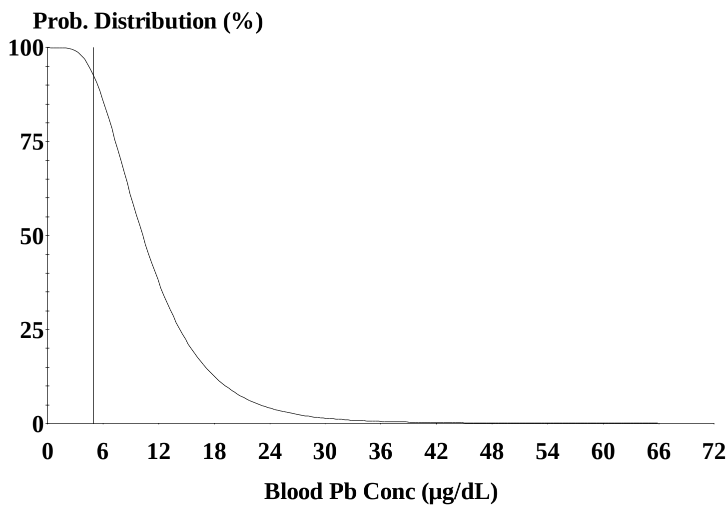
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.068	3.869	0.000	0.234
2-3	0.085	0.000	0.000	0.000
3-4	0.098	0.000	0.000	0.000
4-5	0.098	0.000	0.000	0.000
5-6	0.098	0.000	0.000	0.000
6-7	0.111	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.918	14.960	7.9
1-2	23.113	27.284	10.8
2-3	24.524	24.610	9.3
3-4	25.120	25.218	8.7
4-5	25.626	25.724	8.4
5-6	26.003	26.101	8.0
6-7	26.255	26.367	7.4

PPR-R8

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.781
GSD = 1.600
% Above = 94.895

Age Range = 12 to 24 months

Run Mode = Research

R9-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1101.800	1652.700
1-2	1101.800	1652.700
2-3	1101.800	1652.700
3-4	1101.800	1652.700

4-5	1101.800	1652.700
5-6	1101.800	1652.700
6-7	1101.800	1652.700

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

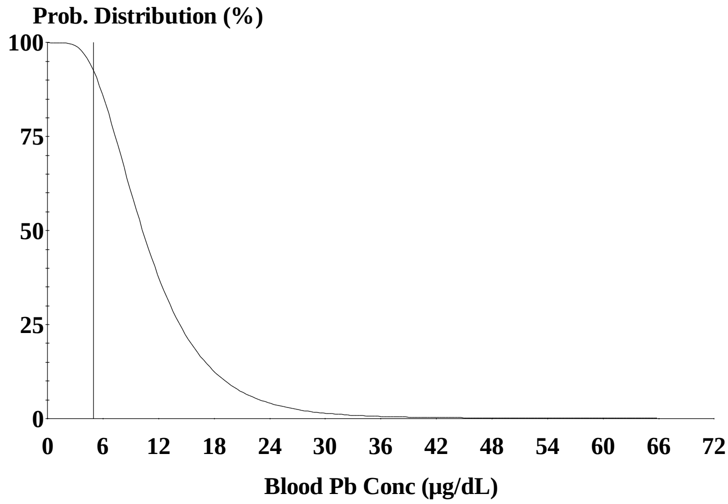
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	3.870	0.000	0.235
2-3	0.088	0.000	0.000	0.000
3-4	0.101	0.000	0.000	0.000
4-5	0.101	0.000	0.000	0.000
5-6	0.101	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.887	14.931	7.9
1-2	23.066	27.241	10.8
2-3	24.474	24.562	9.3
3-4	25.068	25.168	8.7
4-5	25.572	25.672	8.4
5-6	25.947	26.047	7.9
6-7	26.198	26.313	7.4

R9-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.764
GSD = 1.600
% Above = 94.859

Age Range = 12 to 24 months

Run Mode = Research

R9-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1101.600	1652.400
1-2	1101.600	1652.400
2-3	1101.600	1652.400
3-4	1101.600	1652.400

4-5	1101.600	1652.400
5-6	1101.600	1652.400
6-7	1101.600	1652.400

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

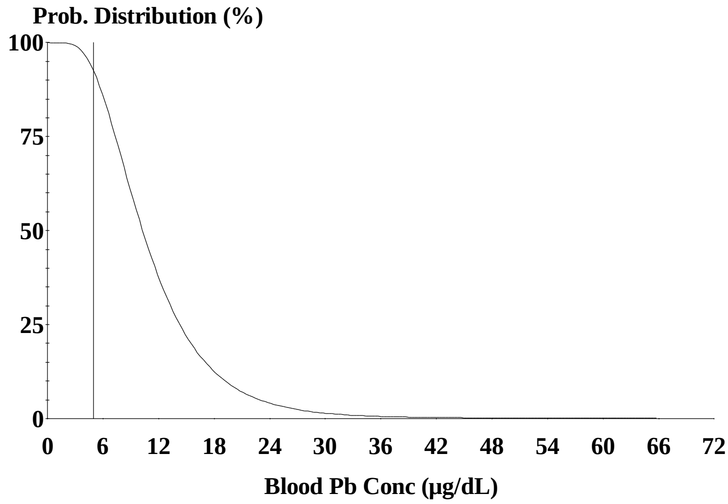
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	3.870	0.000	0.235
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.885	14.928	7.9
1-2	23.063	27.237	10.8
2-3	24.471	24.557	9.3
3-4	25.064	25.163	8.7
4-5	25.568	25.667	8.4
5-6	25.943	26.042	7.9
6-7	26.194	26.307	7.4

R9-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.762
GSD = 1.600
% Above = 94.856

Age Range = 12 to 24 months

Run Mode = Research

PPR-R9

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1102.800	1654.200
1-2	1102.800	1654.200
2-3	1102.800	1654.200
3-4	1102.800	1654.200

4-5	1102.800	1654.200
5-6	1102.800	1654.200
6-7	1102.800	1654.200

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

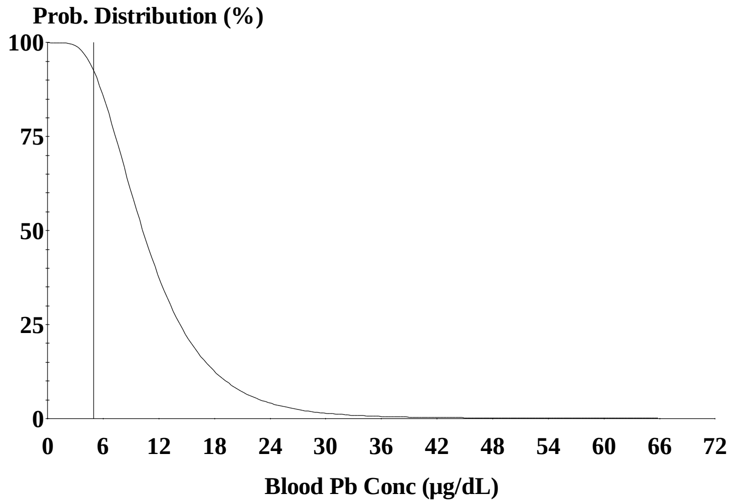
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	3.870	0.000	0.235
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.898	14.941	7.9
1-2	23.084	27.257	10.8
2-3	24.493	24.579	9.3
3-4	25.087	25.186	8.7
4-5	25.592	25.691	8.4
5-6	25.968	26.067	8.0
6-7	26.220	26.332	7.4

PPR-R9

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.770
GSD = 1.600
% Above = 94.872

Age Range = 12 to 24 months

Run Mode = Research

R38-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1100.600	1650.800
1-2	1100.600	1650.800
2-3	1100.600	1650.800
3-4	1100.600	1650.800

4-5	1100.600	1650.800
5-6	1100.600	1650.800
6-7	1100.600	1650.800

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

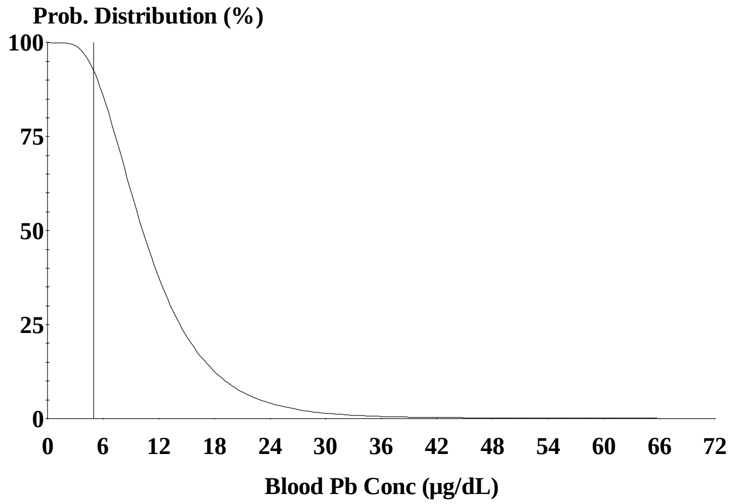
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	3.871	0.000	0.235
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.873	14.916	7.9
1-2	23.045	27.220	10.8
2-3	24.451	24.539	9.3
3-4	25.043	25.144	8.7
4-5	25.547	25.647	8.4
5-6	25.921	26.021	7.9
6-7	26.172	26.286	7.4

R38-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.755
GSD = 1.600
% Above = 94.842

Age Range = 12 to 24 months

Run Mode = Research

R38-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1100.500	1650.700
1-2	1100.500	1650.700
2-3	1100.500	1650.700
3-4	1100.500	1650.700

4-5	1100.500	1650.700
5-6	1100.500	1650.700
6-7	1100.500	1650.700

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

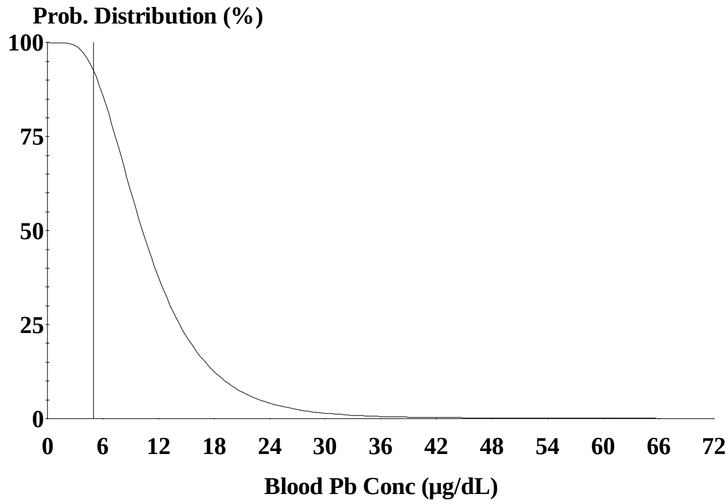
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	3.871	0.000	0.235
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.872	14.915	7.9
1-2	23.043	27.218	10.8
2-3	24.450	24.536	9.3
3-4	25.042	25.141	8.7
4-5	25.545	25.644	8.4
5-6	25.919	26.019	7.9
6-7	26.170	26.283	7.4

R38-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.755
GSD = 1.600
% Above = 94.840

Age Range = 12 to 24 months

Run Mode = Research

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1101.200	1651.800
1-2	1101.200	1651.800
2-3	1101.200	1651.800
3-4	1101.200	1651.800

4-5	1101.200	1651.800
5-6	1101.200	1651.800
6-7	1101.200	1651.800

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

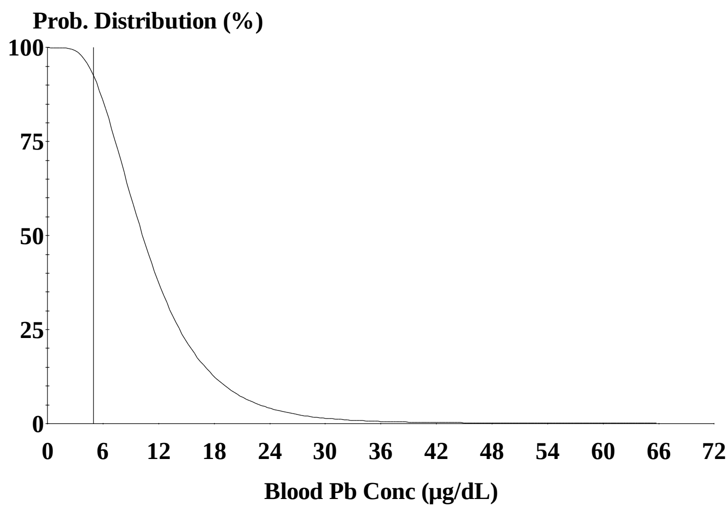
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	3.871	0.000	0.235
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.112	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.880	14.923	7.9
1-2	23.056	27.230	10.8
2-3	24.463	24.549	9.3
3-4	25.056	25.155	8.7
4-5	25.560	25.658	8.4
5-6	25.934	26.033	7.9
6-7	26.186	26.298	7.4

PPR-R38

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.759
GSD = 1.600
% Above = 94.850

Age Range = 12 to 24 months

Run Mode = Research

R39-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1100.600	1650.900
1-2	1100.600	1650.900
2-3	1100.600	1650.900
3-4	1100.600	1650.900

4-5	**1100.600**	**1650.900**
5-6	**1100.600**	**1650.900**
6-7	**1100.600**	**1650.900**

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

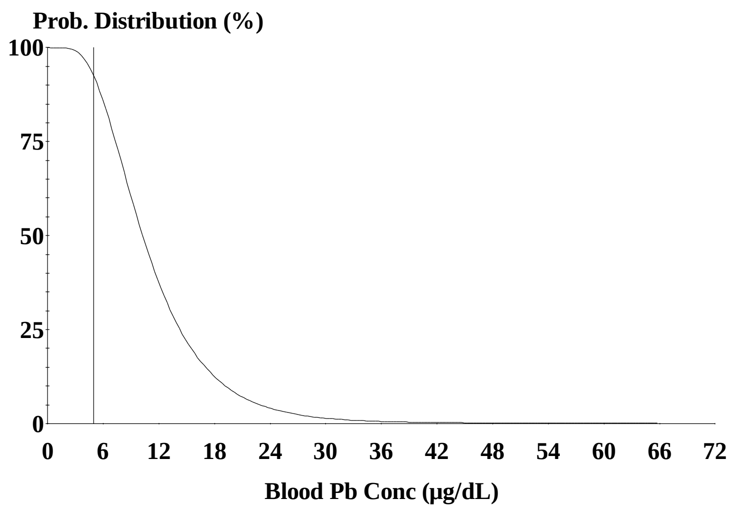
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	3.871	0.000	0.235
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.873	14.917	7.9
1-2	23.045	27.221	10.8
2-3	24.452	24.539	9.3
3-4	25.044	25.144	8.7
4-5	25.547	25.648	8.4
5-6	25.922	26.022	7.9
6-7	26.173	26.287	7.4

R39-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.756
GSD = 1.600
% Above = 94.842

Age Range = 12 to 24 months

Run Mode = Research

R39-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1100.500	1650.800
1-2	1100.500	1650.800
2-3	1100.500	1650.800
3-4	1100.500	1650.800

4-5	1100.500	1650.800
5-6	1100.500	1650.800
6-7	1100.500	1650.800

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

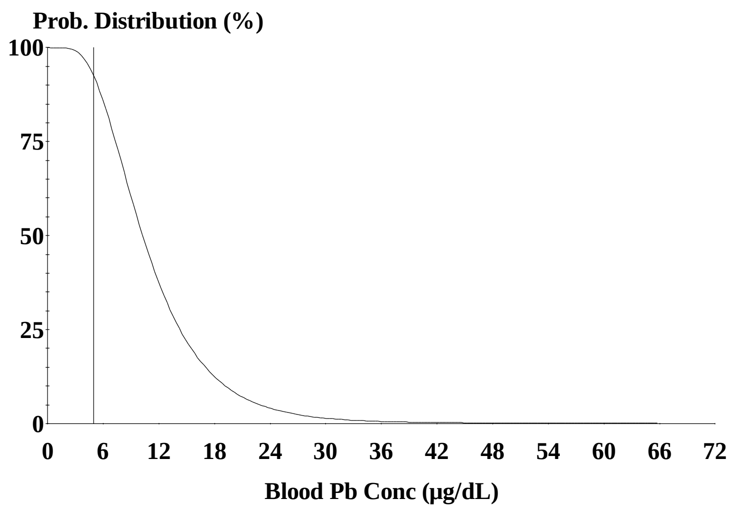
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	3.871	0.000	0.235
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.872	14.915	7.9
1-2	23.044	27.219	10.8
2-3	24.451	24.537	9.3
3-4	25.043	25.142	8.7
4-5	25.546	25.645	8.4
5-6	25.920	26.019	7.9
6-7	26.171	26.284	7.4

R39-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.755
GSD = 1.600
% Above = 94.841

Age Range = 12 to 24 months

Run Mode = Research

PPR-R39

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1101.200	1651.800
1-2	1101.200	1651.800
2-3	1101.200	1651.800
3-4	1101.200	1651.800

4-5	1101.200	1651.800
5-6	1101.200	1651.800
6-7	1101.200	1651.800

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

****

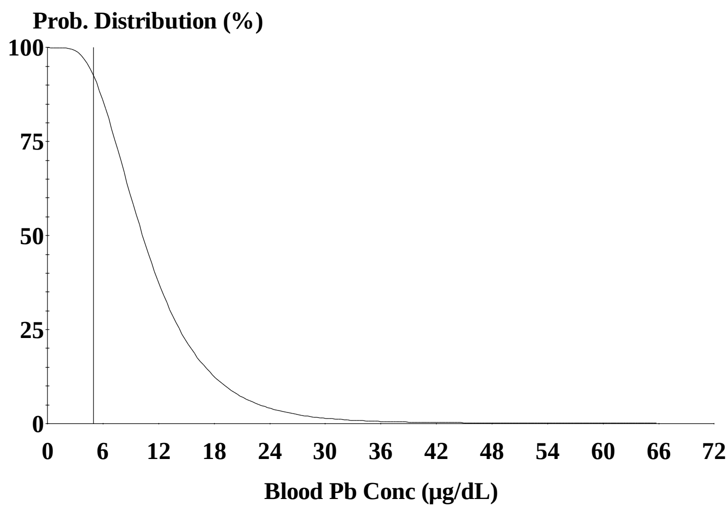
CALCULATED BLOOD LEAD AND LEAD UPTAKES:

****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	3.871	0.000	0.235
2-3	0.086	0.000	0.000	0.000
3-4	0.098	0.000	0.000	0.000
4-5	0.098	0.000	0.000	0.000
5-6	0.098	0.000	0.000	0.000
6-7	0.112	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.880	14.923	7.9
1-2	23.056	27.230	10.8
2-3	24.463	24.549	9.3
3-4	25.056	25.154	8.7
4-5	25.560	25.658	8.4
5-6	25.934	26.033	7.9
6-7	26.186	26.298	7.4

PPR-R39 IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.759
GSD = 1.600
% Above = 94.850

Age Range = 12 to 24 months

Run Mode = Research

R40-S1

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.081
1-2	1.400	8.000	32.000	0.081
2-3	2.000	9.500	32.000	0.081
3-4	2.000	10.900	32.000	0.081
4-5	2.000	10.900	32.000	0.081
5-6	2.000	10.900	32.000	0.081
6-7	2.000	12.400	32.000	0.081

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1102.000	1653.100
1-2	1102.000	1653.100
2-3	1102.000	1653.100
3-4	1102.000	1653.100

4-5	1102.000	1653.100
5-6	1102.000	1653.100
6-7	1102.000	1653.100

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

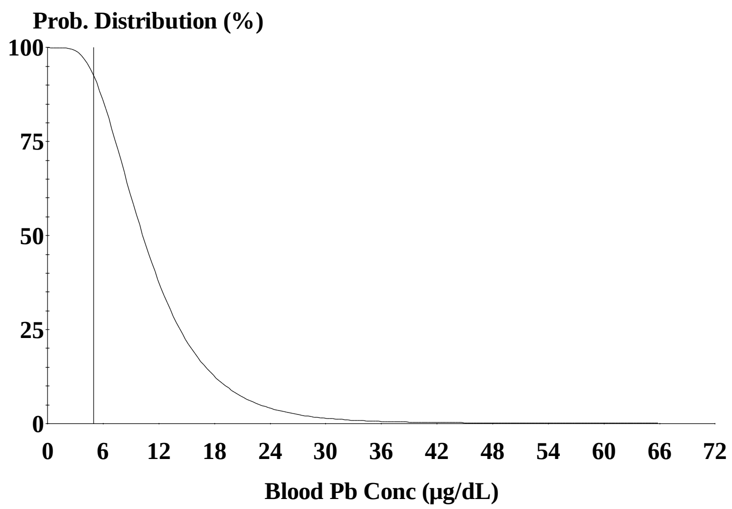
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	3.870	0.000	0.235
2-3	0.088	0.000	0.000	0.000
3-4	0.101	0.000	0.000	0.000
4-5	0.101	0.000	0.000	0.000
5-6	0.101	0.000	0.000	0.000
6-7	0.115	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.890	14.933	7.9
1-2	23.070	27.246	10.8
2-3	24.479	24.567	9.3
3-4	25.072	25.173	8.7
4-5	25.577	25.677	8.4
5-6	25.952	26.053	7.9
6-7	26.203	26.318	7.4

R40-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.765
GSD = 1.600
% Above = 94.863

Age Range = 12 to 24 months

Run Mode = Research

R40-S2

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1101.900	1652.800
1-2	1101.900	1652.800
2-3	1101.900	1652.800
3-4	1101.900	1652.800

4-5	1101.900	1652.800
5-6	1101.900	1652.800
6-7	1101.900	1652.800

******** Alternate Intake ********

Age	Alternate (μg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 μg Pb/dL

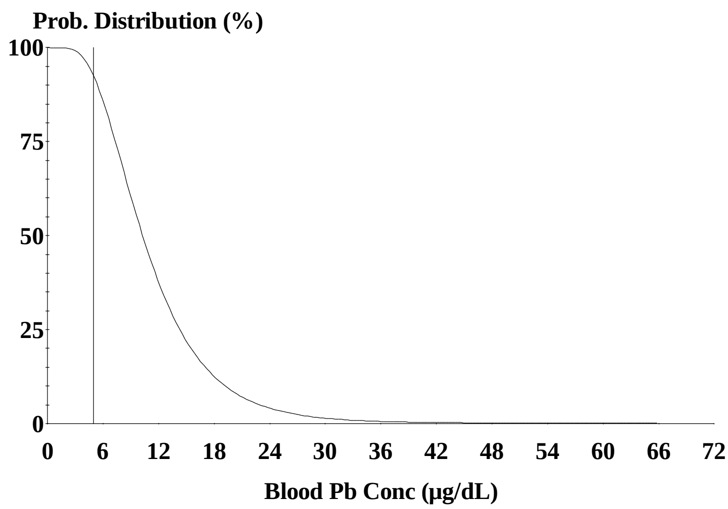
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (μg/day)	Diet (μg/day)	Alternate (μg/day)	Water (μg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	3.870	0.000	0.235
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (μg/day)	Total (μg/day)	Blood (μg/dL)
.5-1	14.888	14.931	7.9
1-2	23.068	27.242	10.8
2-3	24.476	24.562	9.3
3-4	25.069	25.168	8.7
4-5	25.573	25.673	8.4
5-6	25.948	26.048	7.9
6-7	26.200	26.313	7.4

R40-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.764
GSD = 1.600
% Above = 94.859

Age Range = 12 to 24 months

Run Mode = Research

PPR-R40

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.078
1-2	1.400	8.000	32.000	0.078
2-3	2.000	9.500	32.000	0.078
3-4	2.000	10.900	32.000	0.078
4-5	2.000	10.900	32.000	0.078
5-6	2.000	10.900	32.000	0.078
6-7	2.000	12.400	32.000	0.078

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1104.500	1656.700
1-2	1104.500	1656.700
2-3	1104.500	1656.700
3-4	1104.500	1656.700

4-5	1104.500	1656.700
5-6	1104.500	1656.700
6-7	1104.500	1656.700

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

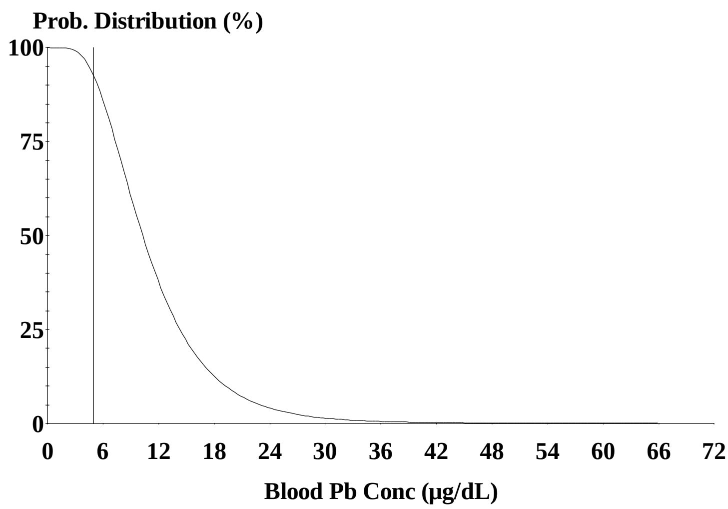
Maternal Blood Concentration: 0.800 µg Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.068	3.869	0.000	0.234
2-3	0.085	0.000	0.000	0.000
3-4	0.098	0.000	0.000	0.000
4-5	0.098	0.000	0.000	0.000
5-6	0.098	0.000	0.000	0.000
6-7	0.111	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.918	14.960	7.9
1-2	23.113	27.284	10.8
2-3	24.524	24.610	9.3
3-4	25.120	25.218	8.7
4-5	25.626	25.724	8.4
5-6	26.003	26.100	8.0
6-7	26.255	26.366	7.4

PPR-R40 IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.781
GSD = 1.600
% Above = 94.895

Age Range = 12 to 24 months

Run Mode = Research

R51-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1100.900	1651.300
1-2	1100.900	1651.300
2-3	1100.900	1651.300
3-4	1100.900	1651.300

4-5	1100.900	1651.300
5-6	1100.900	1651.300
6-7	1100.900	1651.300

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

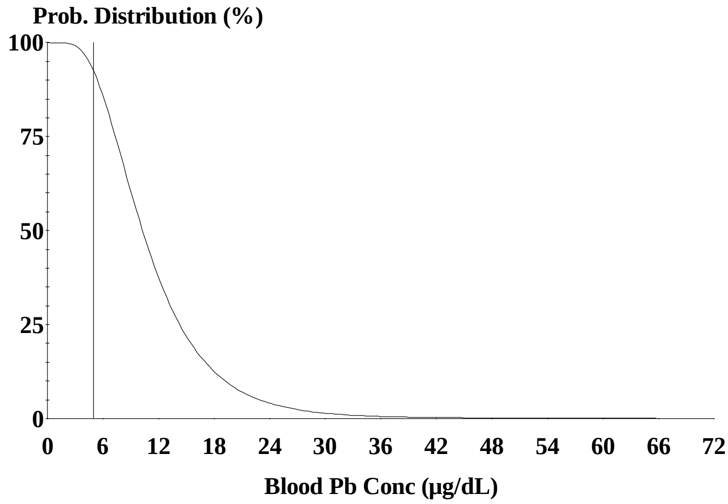
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.070	3.871	0.000	0.235
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.876	14.920	7.9
1-2	23.050	27.226	10.8
2-3	24.457	24.544	9.3
3-4	25.050	25.150	8.7
4-5	25.553	25.653	8.4
5-6	25.928	26.028	7.9
6-7	26.179	26.293	7.4

R51-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.757
GSD = 1.600
% Above = 94.846

Age Range = 12 to 24 months

Run Mode = Research

R51-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1100.800	1651.200
1-2	1100.800	1651.200
2-3	1100.800	1651.200
3-4	1100.800	1651.200

4-5	1100.800	1651.200
5-6	1100.800	1651.200
6-7	1100.800	1651.200

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

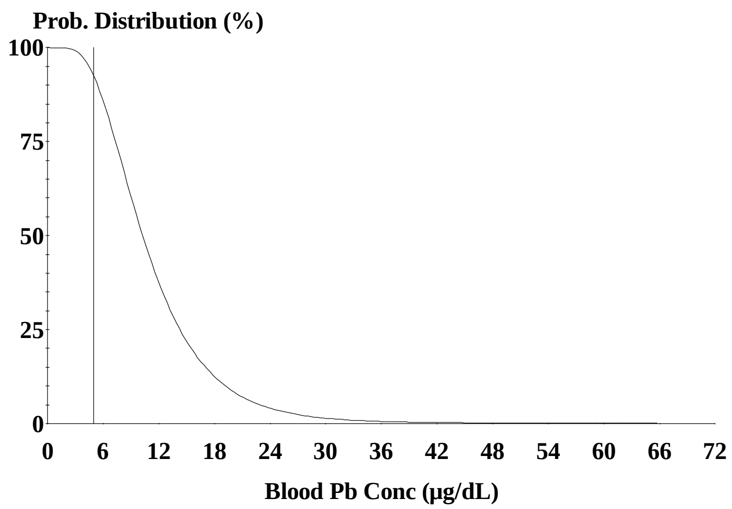
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	3.871	0.000	0.235
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.875	14.918	7.9
1-2	23.049	27.224	10.8
2-3	24.456	24.542	9.3
3-4	25.048	25.147	8.7
4-5	25.551	25.651	8.4
5-6	25.926	26.025	7.9
6-7	26.177	26.290	7.4

R51-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.757
GSD = 1.600
% Above = 94.844

Age Range = 12 to 24 months

Run Mode = Research

R52-S1

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1101.000	1651.500
1-2	1101.000	1651.500
2-3	1101.000	1651.500
3-4	1101.000	1651.500

4-5	1101.000	1651.500
5-6	1101.000	1651.500
6-7	1101.000	1651.500

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

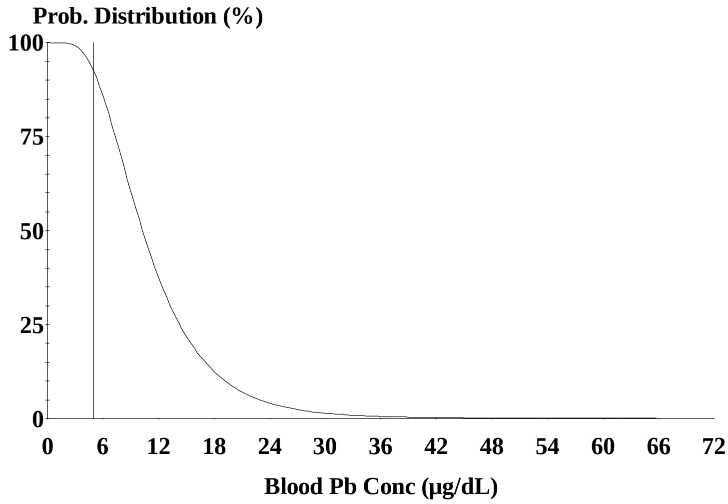
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.044	0.000	0.000	0.000
1-2	0.070	3.871	0.000	0.235
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.878	14.921	7.9
1-2	23.052	27.228	10.8
2-3	24.459	24.547	9.3
3-4	25.052	25.152	8.7
4-5	25.556	25.656	8.4
5-6	25.930	26.030	7.9
6-7	26.181	26.295	7.4

R52-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.758
GSD = 1.600
% Above = 94.848

Age Range = 12 to 24 months

Run Mode = Research

R52-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1100.900	1651.300
1-2	1100.900	1651.300
2-3	1100.900	1651.300
3-4	1100.900	1651.300

4-5	1100.900	1651.300
5-6	1100.900	1651.300
6-7	1100.900	1651.300

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

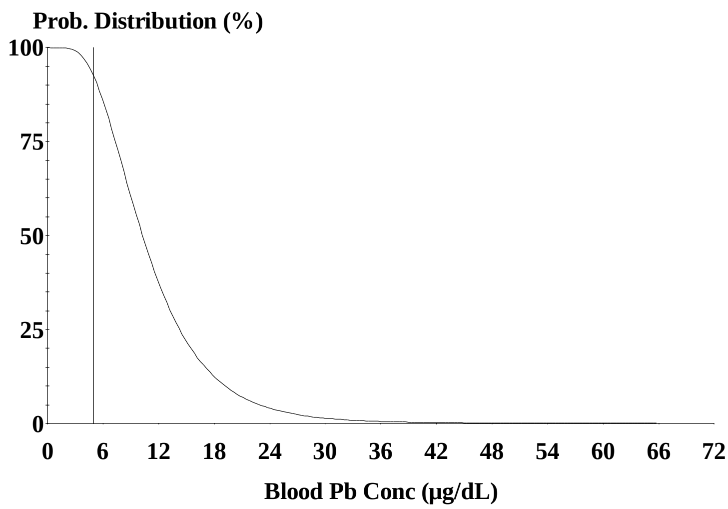
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	3.871	0.000	0.235
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.876	14.919	7.9
1-2	23.050	27.225	10.8
2-3	24.457	24.544	9.3
3-4	25.050	25.149	8.7
4-5	25.553	25.652	8.4
5-6	25.928	26.027	7.9
6-7	26.179	26.292	7.4

R52-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.757
GSD = 1.600
% Above = 94.846

Age Range = 12 to 24 months

Run Mode = Research

R57-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1100.200	1650.400
1-2	1100.200	1650.400
2-3	1100.200	1650.400
3-4	1100.200	1650.400

4-5	1100.200	1650.400
5-6	1100.200	1650.400
6-7	1100.200	1650.400

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

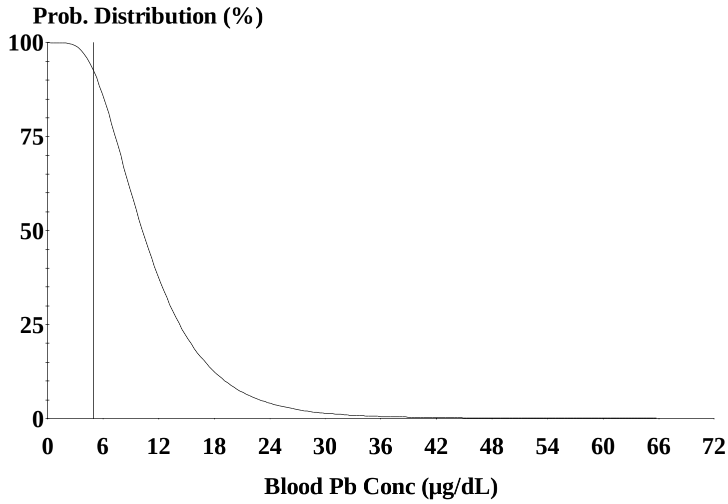
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.070	3.871	0.000	0.235
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.869	14.912	7.9
1-2	23.039	27.215	10.8
2-3	24.445	24.532	9.3
3-4	25.037	25.137	8.7
4-5	25.540	25.640	8.4
5-6	25.914	26.014	7.9
6-7	26.165	26.279	7.4

R57-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.753
GSD = 1.600
% Above = 94.837

Age Range = 12 to 24 months

Run Mode = Research

R57-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1100.200	1650.300
1-2	1100.200	1650.300
2-3	1100.200	1650.300
3-4	1100.200	1650.300

4-5	1100.200	1650.300
5-6	1100.200	1650.300
6-7	1100.200	1650.300

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

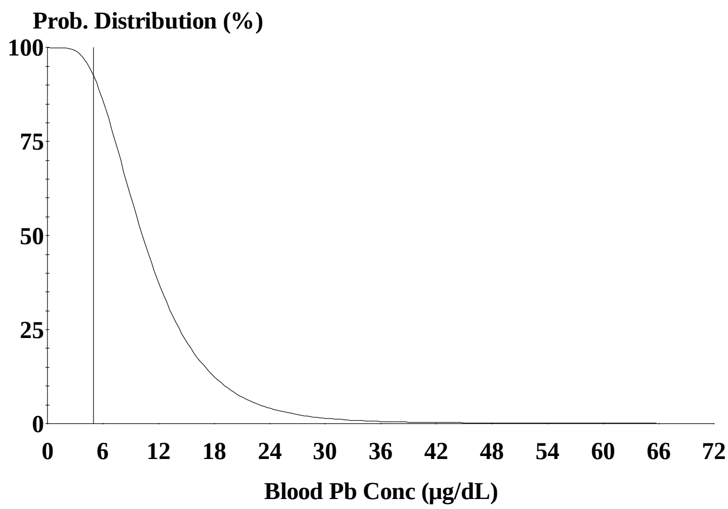
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	3.871	0.000	0.235
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.868	14.912	7.9
1-2	23.039	27.214	10.8
2-3	24.445	24.531	9.3
3-4	25.036	25.136	8.7
4-5	25.539	25.638	8.4
5-6	25.913	26.013	7.9
6-7	26.164	26.277	7.4

R57-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.753
GSD = 1.600
% Above = 94.836

Age Range = 12 to 24 months

Run Mode = Research

R62-S1

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1100.300	1650.400
1-2	1100.300	1650.400
2-3	1100.300	1650.400
3-4	1100.300	1650.400

4-5	1100.300	1650.400
5-6	1100.300	1650.400
6-7	1100.300	1650.400

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

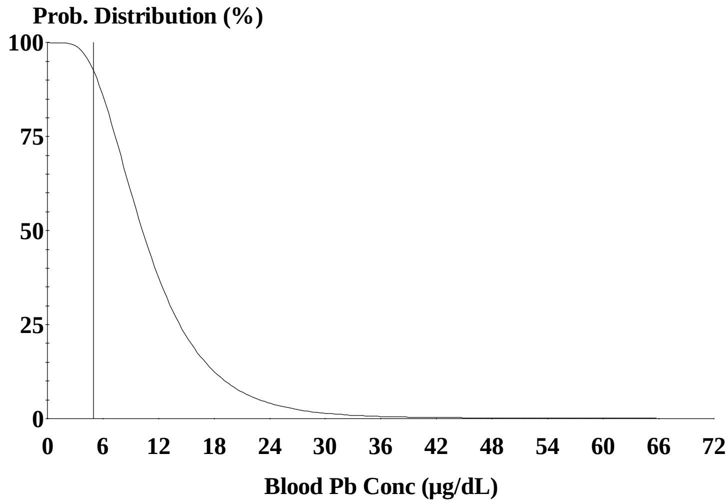
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.070	3.871	0.000	0.235
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.869	14.913	7.9
1-2	23.040	27.216	10.8
2-3	24.446	24.533	9.3
3-4	25.038	25.138	8.7
4-5	25.541	25.641	8.4
5-6	25.915	26.015	7.9
6-7	26.166	26.280	7.4

R62-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.753
GSD = 1.600
% Above = 94.838

Age Range = 12 to 24 months

Run Mode = Research

R62-S2

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1100.200	1650.300
1-2	1100.200	1650.300
2-3	1100.200	1650.300
3-4	1100.200	1650.300

4-5	1100.200	1650.300
5-6	1100.200	1650.300
6-7	1100.200	1650.300

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

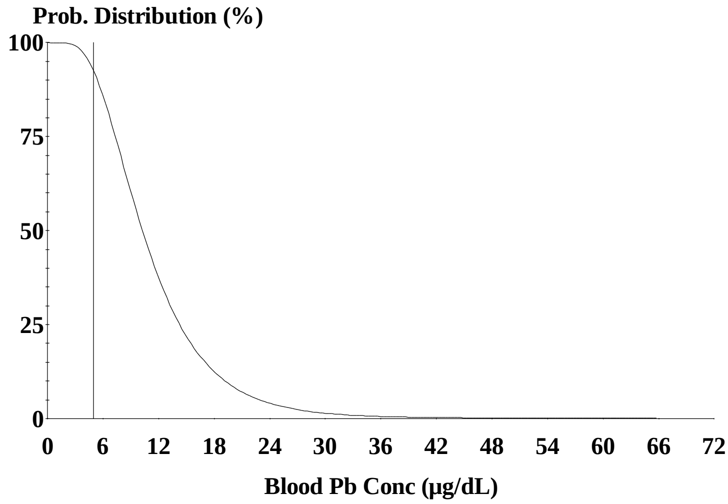
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	3.871	0.000	0.235
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	14.868	14.912	7.9
1-2	23.039	27.214	10.8
2-3	24.445	24.531	9.3
3-4	25.036	25.136	8.7
4-5	25.539	25.638	8.4
5-6	25.913	26.013	7.9
6-7	26.164	26.277	7.4

R62-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 10.753
GSD = 1.600
% Above = 94.836

Age Range = 12 to 24 months

Run Mode = Research

R55-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	245.700	368.500
1-2	245.700	368.500
2-3	245.700	368.500
3-4	245.700	368.500

4-5	245.700	368.500
5-6	245.700	368.500
6-7	245.700	368.500

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

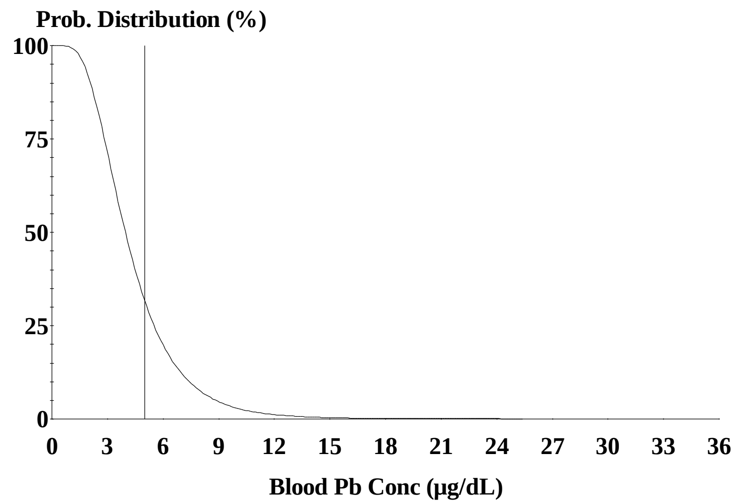
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.502	0.000	0.273
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	3.781	3.824	2.1
1-2	5.982	10.826	4.2
2-3	6.278	6.365	2.8
3-4	6.320	6.419	2.3
4-5	6.354	6.453	2.1
5-6	6.378	6.477	2.0
6-7	6.394	6.507	1.9

R55-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.156
GSD = 1.600
% Above = 34.703

Age Range = 12 to 24 months

Run Mode = Research

R55-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	245.600	368.500
1-2	245.600	368.500
2-3	245.600	368.500
3-4	245.600	368.500

4-5	245.600	368.500
5-6	245.600	368.500
6-7	245.600	368.500

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

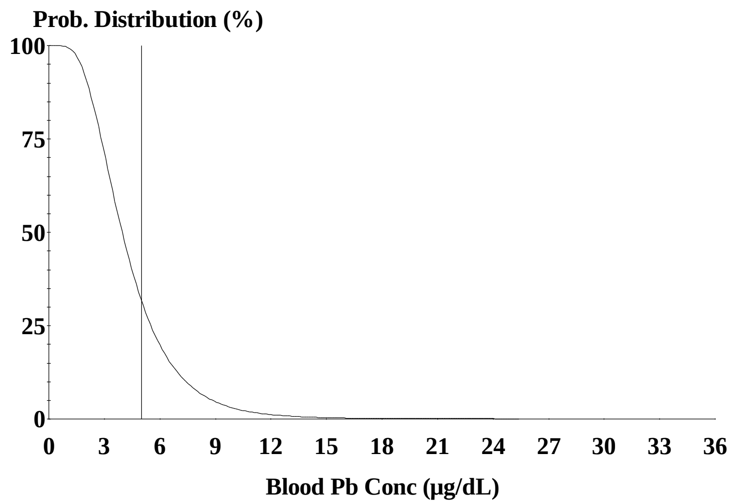
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.502	0.000	0.273
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	3.781	3.824	2.1
1-2	5.982	10.825	4.2
2-3	6.278	6.364	2.8
3-4	6.319	6.418	2.3
4-5	6.353	6.452	2.1
5-6	6.377	6.476	2.0
6-7	6.393	6.506	1.9

R55-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.156
GSD = 1.600
% Above = 34.695

Age Range = 12 to 24 months

Run Mode = Research

R56-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	245.700	368.500
1-2	245.700	368.500
2-3	245.700	368.500
3-4	245.700	368.500

4-5	245.700	368.500
5-6	245.700	368.500
6-7	245.700	368.500

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

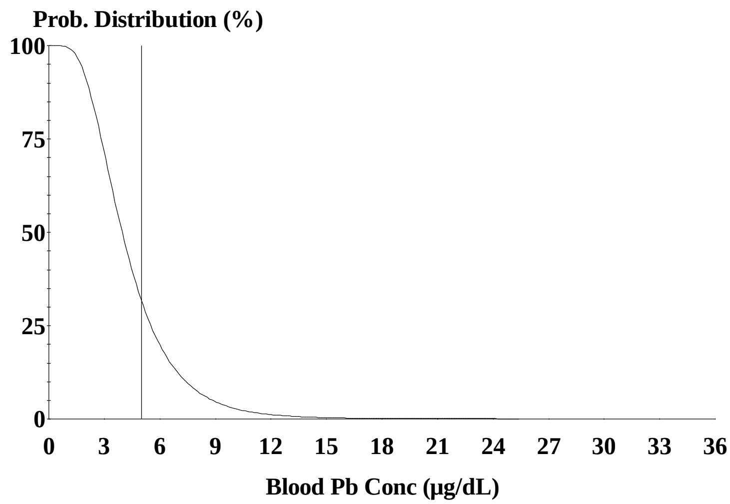
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.502	0.000	0.273
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	3.781	3.824	2.1
1-2	5.982	10.826	4.2
2-3	6.278	6.365	2.8
3-4	6.320	6.419	2.3
4-5	6.354	6.453	2.1
5-6	6.378	6.477	2.0
6-7	6.394	6.507	1.9

R56-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.156
GSD = 1.600
% Above = 34.703

Age Range = 12 to 24 months

Run Mode = Research

R56-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	245.700	368.500
1-2	245.700	368.500
2-3	245.700	368.500
3-4	245.700	368.500

4-5	245.700	368.500
5-6	245.700	368.500
6-7	245.700	368.500

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

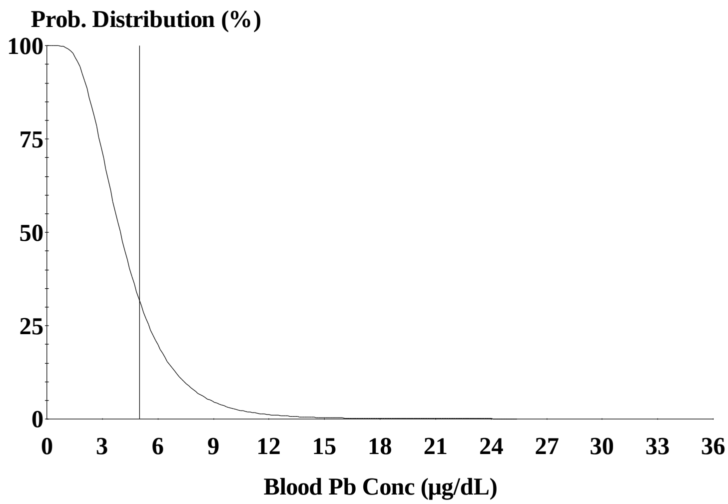
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.502	0.000	0.273
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	3.781	3.824	2.1
1-2	5.982	10.826	4.2
2-3	6.278	6.365	2.8
3-4	6.320	6.419	2.3
4-5	6.354	6.453	2.1
5-6	6.378	6.477	2.0
6-7	6.394	6.506	1.9

R56-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.156
GSD = 1.600
% Above = 34.701

Age Range = 12 to 24 months

Run Mode = Research

R61-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	245.700	368.500
1-2	245.700	368.500
2-3	245.700	368.500
3-4	245.700	368.500

4-5	245.700	368.500
5-6	245.700	368.500
6-7	245.700	368.500

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

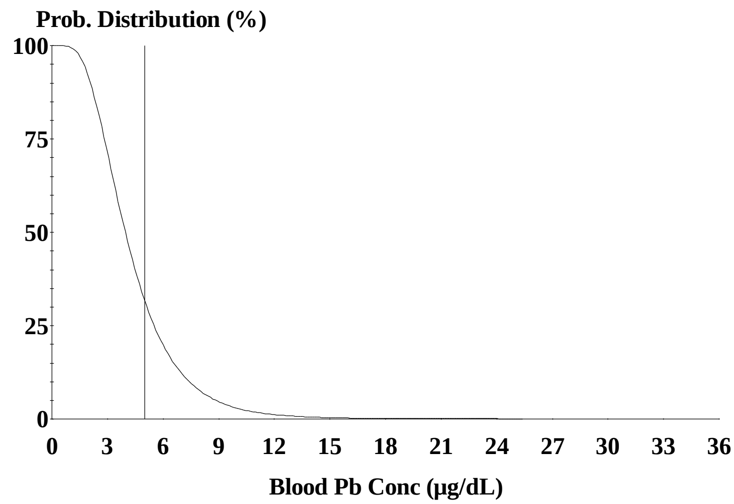
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.502	0.000	0.273
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	3.781	3.824	2.1
1-2	5.982	10.826	4.2
2-3	6.278	6.365	2.8
3-4	6.320	6.419	2.3
4-5	6.354	6.453	2.1
5-6	6.378	6.477	2.0
6-7	6.394	6.507	1.9

R61-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.156
GSD = 1.600
% Above = 34.703

Age Range = 12 to 24 months

Run Mode = Research

R61-S2

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	245.700	368.500
1-2	245.700	368.500
2-3	245.700	368.500
3-4	245.700	368.500

4-5	245.700	368.500
5-6	245.700	368.500
6-7	245.700	368.500

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

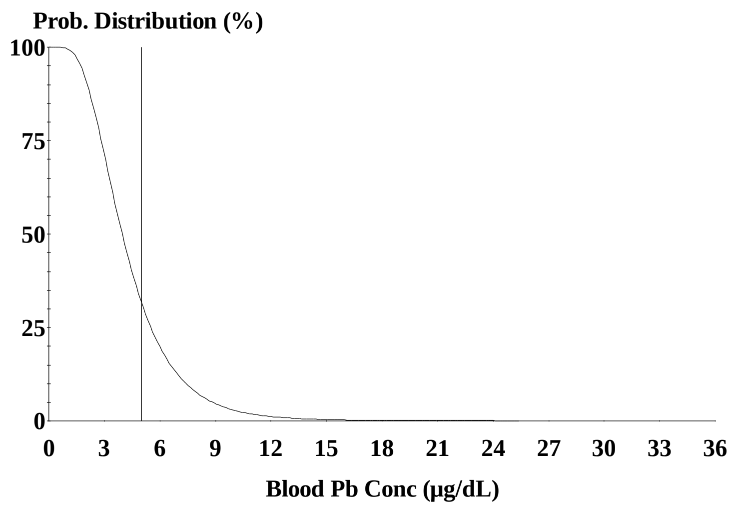
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.502	0.000	0.273
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	3.781	3.824	2.1
1-2	5.982	10.826	4.2
2-3	6.278	6.365	2.8
3-4	6.320	6.419	2.3
4-5	6.354	6.453	2.1
5-6	6.378	6.477	2.0
6-7	6.394	6.506	1.9

R61-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.156
GSD = 1.600
% Above = 34.701

Age Range = 12 to 24 months

Run Mode = Research

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	269.500	404.300
1-2	269.500	404.300
2-3	269.500	404.300
3-4	269.500	404.300

4-5	269.500	404.300
5-6	269.500	404.300
6-7	269.500	404.300

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

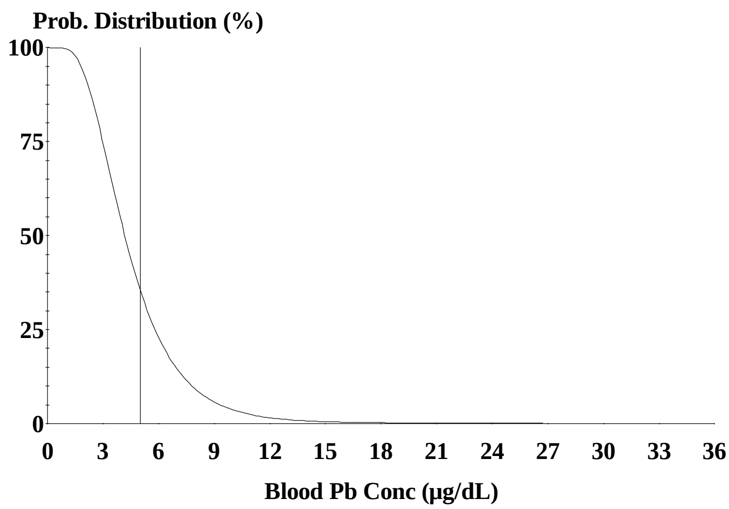
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.070	4.480	0.000	0.272
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	4.131	4.175	2.3
1-2	6.532	11.353	4.4
2-3	6.858	6.945	3.0
3-4	6.907	7.007	2.5
4-5	6.947	7.047	2.3
5-6	6.976	7.076	2.2
6-7	6.995	7.109	2.0

R16-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.371
GSD = 1.600
% Above = 38.743

Age Range = 12 to 24 months

Run Mode = Research

R16-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	269.400	404.200
1-2	269.400	404.200
2-3	269.400	404.200
3-4	269.400	404.200

4-5	269.400	404.200
5-6	269.400	404.200
6-7	269.400	404.200

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

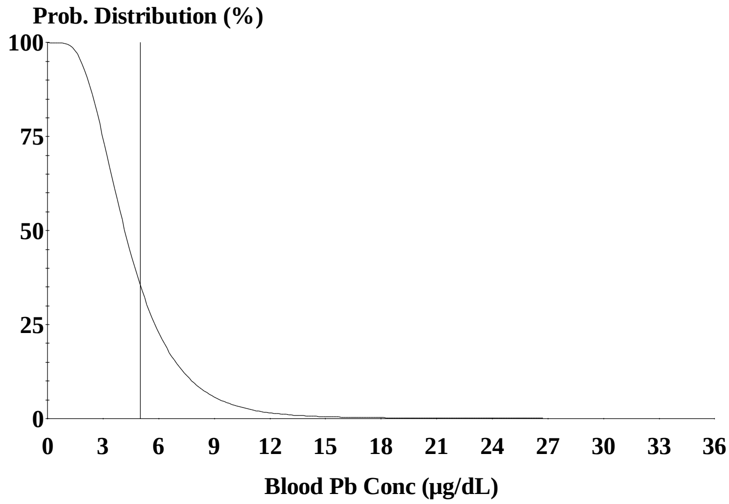
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.481	0.000	0.272
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	4.130	4.173	2.3
1-2	6.530	11.351	4.4
2-3	6.856	6.942	3.0
3-4	6.905	7.004	2.5
4-5	6.946	7.045	2.3
5-6	6.974	7.074	2.2
6-7	6.993	7.106	2.0

R16-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.370
GSD = 1.600
% Above = 38.727

Age Range = 12 to 24 months

Run Mode = Research

PPR-R16

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	270.400	405.600
1-2	270.400	405.600
2-3	270.400	405.600
3-4	270.400	405.600

4-5	270.400	405.600
5-6	270.400	405.600
6-7	270.400	405.600

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

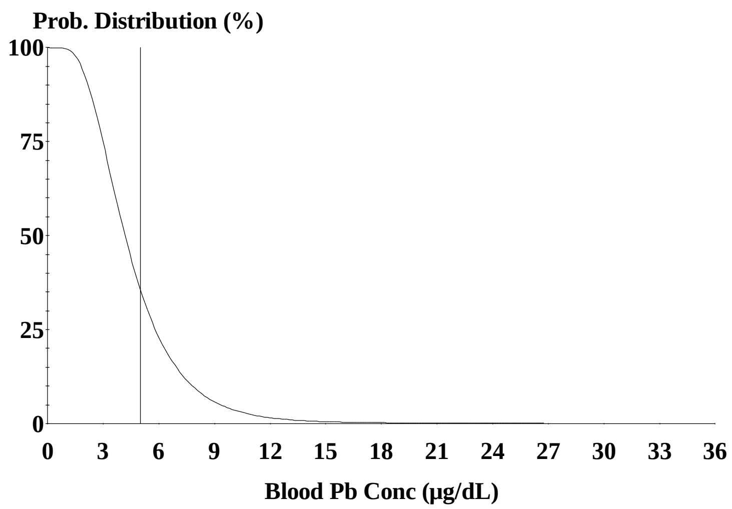
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.480	0.000	0.271
2-3	0.086	0.000	0.000	0.000
3-4	0.098	0.000	0.000	0.000
4-5	0.098	0.000	0.000	0.000
5-6	0.098	0.000	0.000	0.000
6-7	0.112	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	4.144	4.187	2.3
1-2	6.552	11.372	4.4
2-3	6.879	6.965	3.0
3-4	6.929	7.027	2.5
4-5	6.969	7.068	2.3
5-6	6.998	7.097	2.2
6-7	7.018	7.130	2.0

PPR-R16

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.379
GSD = 1.600
% Above = 38.883

Age Range = 12 to 24 months

Run Mode = Research

R19-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	269.300	403.900
1-2	269.300	403.900
2-3	269.300	403.900
3-4	269.300	403.900

4-5	269.300	403.900
5-6	269.300	403.900
6-7	269.300	403.900

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

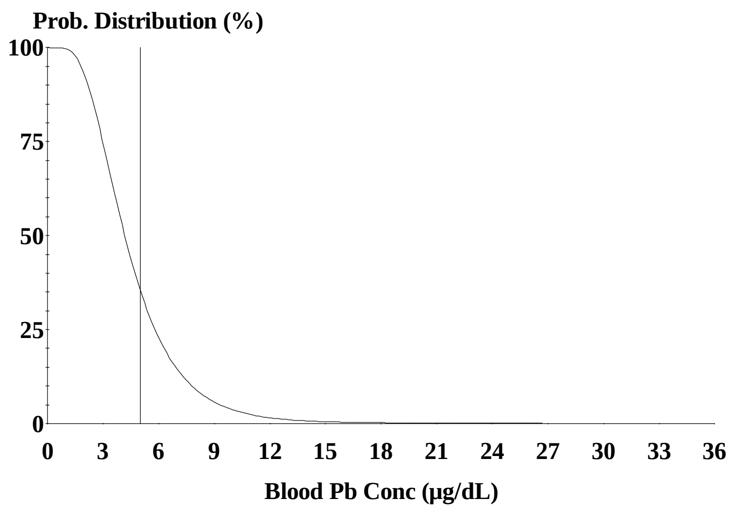
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.481	0.000	0.272
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	4.128	4.171	2.3
1-2	6.526	11.348	4.4
2-3	6.852	6.939	3.0
3-4	6.901	7.001	2.5
4-5	6.941	7.041	2.3
5-6	6.970	7.070	2.2
6-7	6.989	7.102	2.0

R19-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.369
GSD = 1.600
% Above = 38.701

Age Range = 12 to 24 months

Run Mode = Research

R19-S2

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	269.200	403.800
1-2	269.200	403.800
2-3	269.200	403.800
3-4	269.200	403.800

4-5	269.200	403.800
5-6	269.200	403.800
6-7	269.200	403.800

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

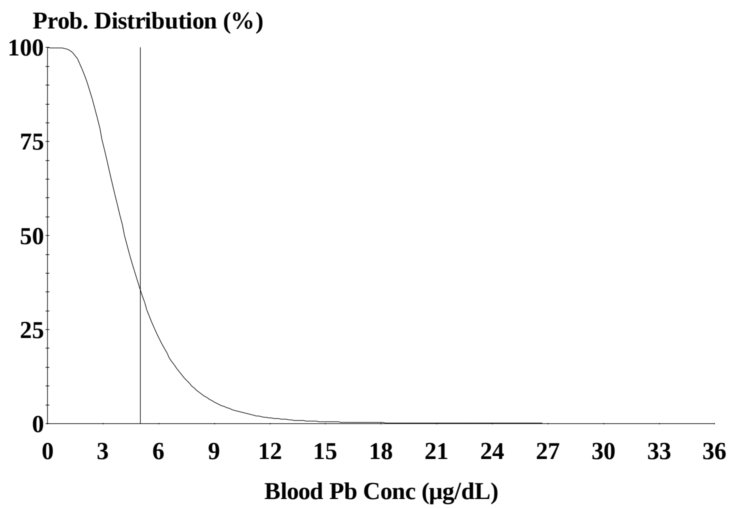
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.481	0.000	0.272
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	4.127	4.170	2.3
1-2	6.525	11.346	4.4
2-3	6.850	6.937	3.0
3-4	6.899	6.998	2.5
4-5	6.939	7.039	2.3
5-6	6.968	7.068	2.2
6-7	6.987	7.100	2.0

R19-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.368
GSD = 1.600
% Above = 38.686

Age Range = 12 to 24 months

Run Mode = Research

PPR-R19

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	270.400	405.600
1-2	270.400	405.600
2-3	270.400	405.600
3-4	270.400	405.600

4-5	270.400	405.600
5-6	270.400	405.600
6-7	270.400	405.600

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

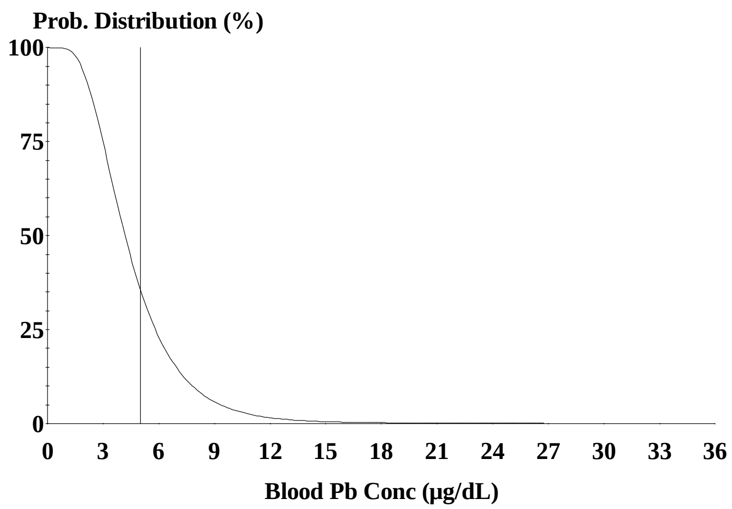
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.480	0.000	0.271
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	4.144	4.188	2.3
1-2	6.552	11.373	4.4
2-3	6.879	6.966	3.0
3-4	6.929	7.028	2.5
4-5	6.969	7.069	2.4
5-6	6.998	7.098	2.2
6-7	7.018	7.131	2.0

PPR-R19

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.379
GSD = 1.600
% Above = 38.888

Age Range = 12 to 24 months

Run Mode = Research

R20-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	269.200	403.900
1-2	269.200	403.900
2-3	269.200	403.900
3-4	269.200	403.900

4-5	269.200	403.900
5-6	269.200	403.900
6-7	269.200	403.900

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

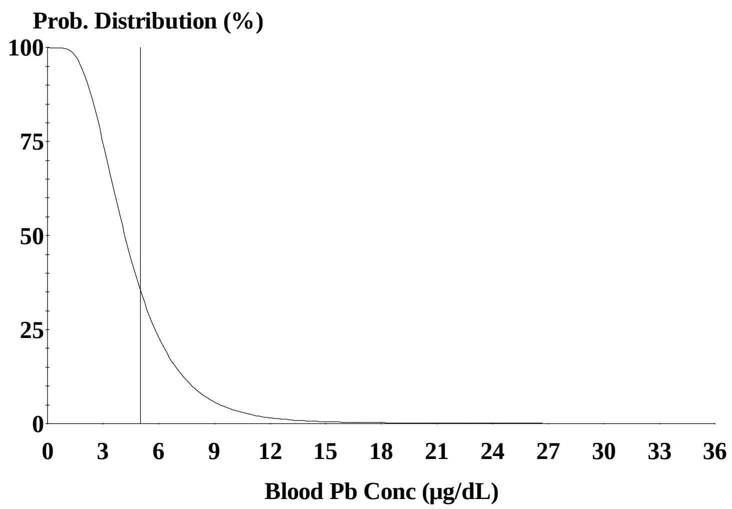
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.481	0.000	0.272
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	4.127	4.171	2.3
1-2	6.526	11.347	4.4
2-3	6.851	6.938	3.0
3-4	6.900	7.000	2.5
4-5	6.941	7.040	2.3
5-6	6.969	7.069	2.2
6-7	6.988	7.101	2.0

R20-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.368
GSD = 1.600
% Above = 38.695

Age Range = 12 to 24 months

Run Mode = Research

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	269.200	403.800
1-2	269.200	403.800
2-3	269.200	403.800
3-4	269.200	403.800

4-5	269.200	403.800
5-6	269.200	403.800
6-7	269.200	403.800

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

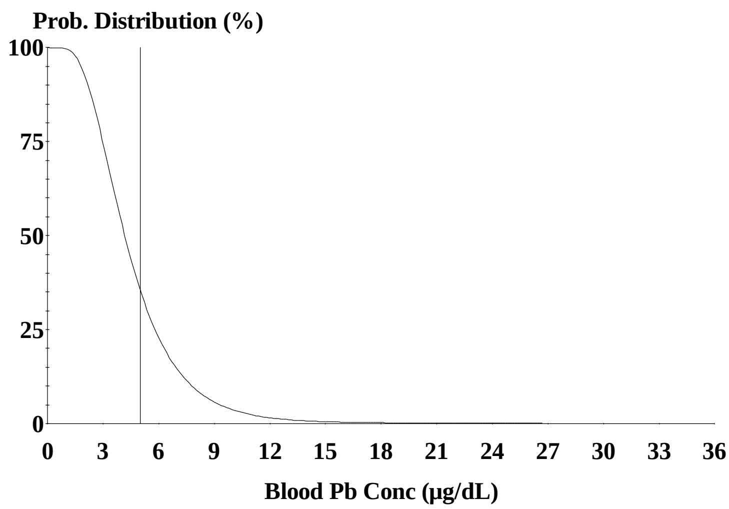
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.481	0.000	0.272
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	4.127	4.170	2.3
1-2	6.525	11.346	4.4
2-3	6.850	6.937	3.0
3-4	6.899	6.998	2.5
4-5	6.939	7.039	2.3
5-6	6.968	7.068	2.2
6-7	6.987	7.100	2.0

R20-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.368
GSD = 1.600
% Above = 38.686

Age Range = 12 to 24 months

Run Mode = Research

PPR-R20

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	270.400	405.600
1-2	270.400	405.600
2-3	270.400	405.600
3-4	270.400	405.600

4-5	270.400	405.600
5-6	270.400	405.600
6-7	270.400	405.600

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

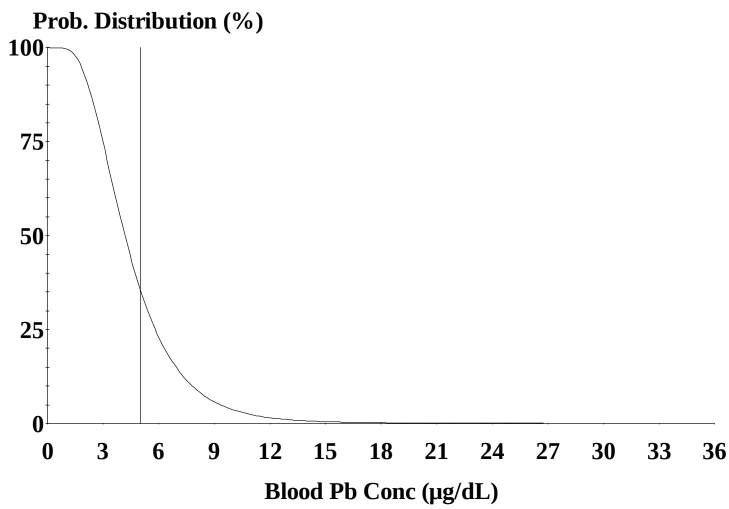
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.480	0.000	0.271
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	4.144	4.187	2.3
1-2	6.552	11.372	4.4
2-3	6.879	6.966	3.0
3-4	6.929	7.028	2.5
4-5	6.969	7.069	2.4
5-6	6.998	7.098	2.2
6-7	7.018	7.130	2.0

PPR-R20

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.379
GSD = 1.600
% Above = 38.888

Age Range = 12 to 24 months

Run Mode = Research

R48-S1

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	245.200	367.800
1-2	245.200	367.800
2-3	245.200	367.800
3-4	245.200	367.800

4-5	245.200	367.800
5-6	245.200	367.800
6-7	245.200	367.800

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

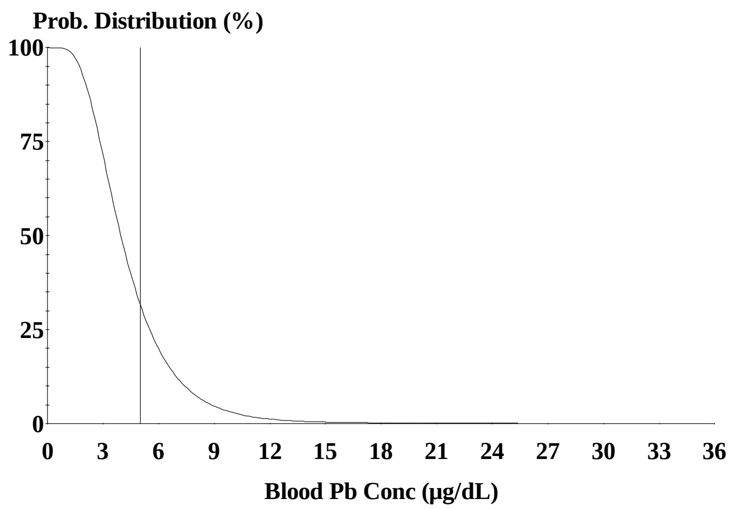
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.070	4.502	0.000	0.273
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	3.774	3.817	2.1
1-2	5.971	10.816	4.2
2-3	6.267	6.354	2.8
3-4	6.308	6.408	2.3
4-5	6.342	6.441	2.1
5-6	6.366	6.465	2.0
6-7	6.382	6.495	1.9

R48-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.152
GSD = 1.600
% Above = 34.622

Age Range = 12 to 24 months

Run Mode = Research

R48-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	245.100	367.700
1-2	245.100	367.700
2-3	245.100	367.700
3-4	245.100	367.700

4-5	245.100	367.700
5-6	245.100	367.700
6-7	245.100	367.700

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

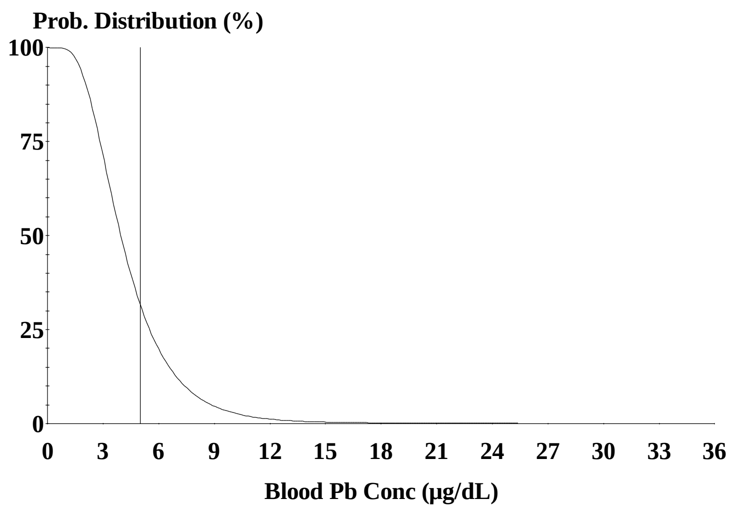
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.502	0.000	0.273
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	3.773	3.816	2.1
1-2	5.969	10.814	4.2
2-3	6.265	6.351	2.8
3-4	6.306	6.405	2.3
4-5	6.340	6.439	2.1
5-6	6.364	6.463	2.0
6-7	6.380	6.492	1.9

R48-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.151
GSD = 1.600
% Above = 34.606

Age Range = 12 to 24 months

Run Mode = Research

R49-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	78.600	117.900
1-2	78.600	117.900
2-3	78.600	117.900
3-4	78.600	117.900

4-5	78.600	117.900
5-6	78.600	117.900
6-7	78.600	117.900

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

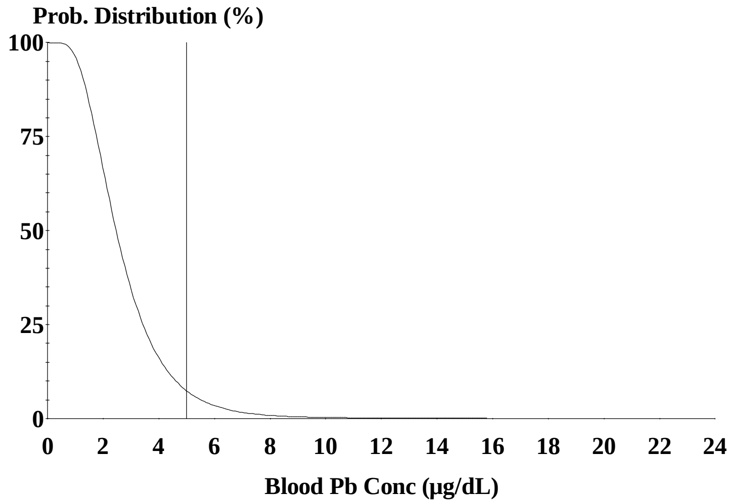
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.659	0.000	0.282
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	1.245	1.288	0.7
1-2	1.981	6.991	2.6
2-3	2.073	2.159	1.2
3-4	2.077	2.177	0.8
4-5	2.081	2.180	0.7
5-6	2.083	2.183	0.7
6-7	2.085	2.198	0.6

R49-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 2.586
GSD = 1.600
% Above = 8.031

Age Range = 12 to 24 months

Run Mode = Research

R49-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	78.600	117.900
1-2	78.600	117.900
2-3	78.600	117.900
3-4	78.600	117.900

4-5	78.600	117.900
5-6	78.600	117.900
6-7	78.600	117.900

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

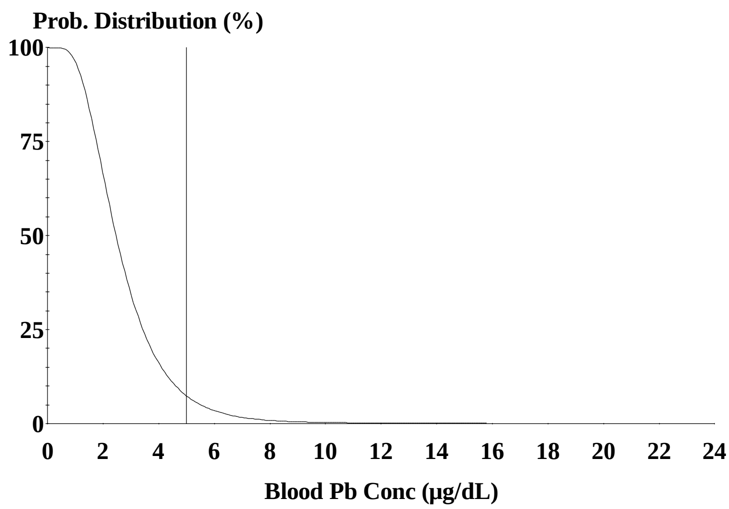
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.659	0.000	0.282
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	1.245	1.288	0.7
1-2	1.981	6.991	2.6
2-3	2.073	2.159	1.2
3-4	2.077	2.176	0.8
4-5	2.081	2.180	0.7
5-6	2.083	2.183	0.7
6-7	2.085	2.198	0.6

R49-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 2.586
GSD = 1.600
% Above = 8.030

Age Range = 12 to 24 months

Run Mode = Research

R60-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	269.900	404.900
1-2	269.900	404.900
2-3	269.900	404.900
3-4	269.900	404.900

4-5	269.900	404.900
5-6	269.900	404.900
6-7	269.900	404.900

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

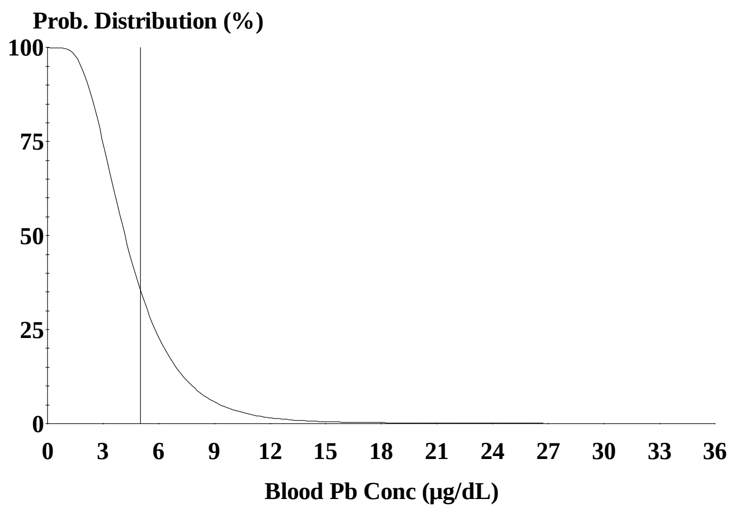
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.070	4.480	0.000	0.272
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	4.137	4.181	2.3
1-2	6.541	11.362	4.4
2-3	6.868	6.955	3.0
3-4	6.917	7.017	2.5
4-5	6.957	7.057	2.3
5-6	6.986	7.086	2.2
6-7	7.006	7.119	2.0

R60-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.375
GSD = 1.600
% Above = 38.811

Age Range = 12 to 24 months

Run Mode = Research

R60-S2

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	269.800	404.700
1-2	269.800	404.700
2-3	269.800	404.700
3-4	269.800	404.700

4-5	269.800	404.700
5-6	269.800	404.700
6-7	269.800	404.700

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

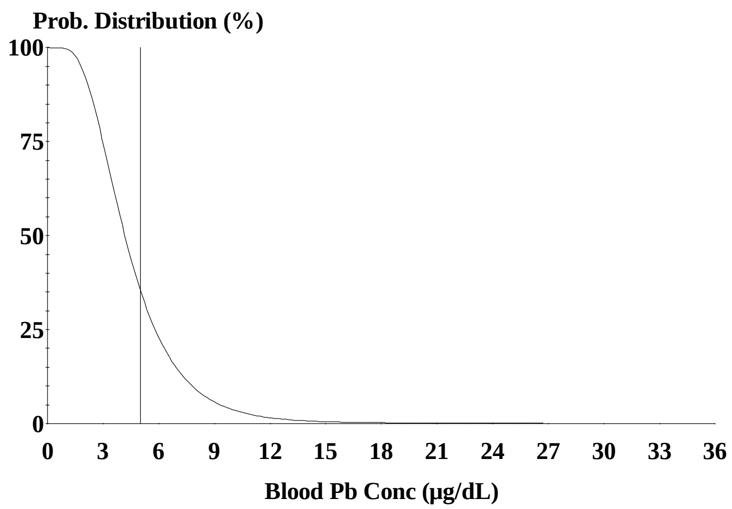
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.480	0.000	0.272
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	4.136	4.179	2.3
1-2	6.538	11.359	4.4
2-3	6.865	6.951	3.0
3-4	6.914	7.013	2.5
4-5	6.954	7.054	2.3
5-6	6.983	7.083	2.2
6-7	7.002	7.115	2.0

R60-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.373
GSD = 1.600
% Above = 38.787

Age Range = 12 to 24 months

Run Mode = Research

R14-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	336.700	505.000
1-2	336.700	505.000
2-3	336.700	505.000
3-4	336.700	505.000

4-5	336.700	505.000
5-6	336.700	505.000
6-7	336.700	505.000

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

****

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

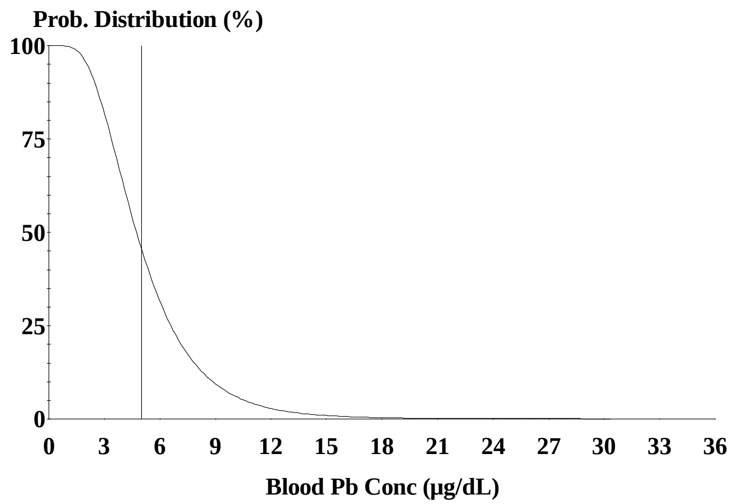
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.070	4.422	0.000	0.268
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.114	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.104	5.147	2.8
1-2	8.053	12.812	5.0
2-3	8.464	8.551	3.6
3-4	8.538	8.638	3.0
4-5	8.600	8.700	2.9
5-6	8.644	8.744	2.7
6-7	8.673	8.787	2.5

R14-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.965
GSD = 1.600
% Above = 49.406

Age Range = 12 to 24 months

Run Mode = Research

R14-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	336.600	504.900
1-2	336.600	504.900
2-3	336.600	504.900
3-4	336.600	504.900

4-5	336.600	504.900
5-6	336.600	504.900
6-7	336.600	504.900

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

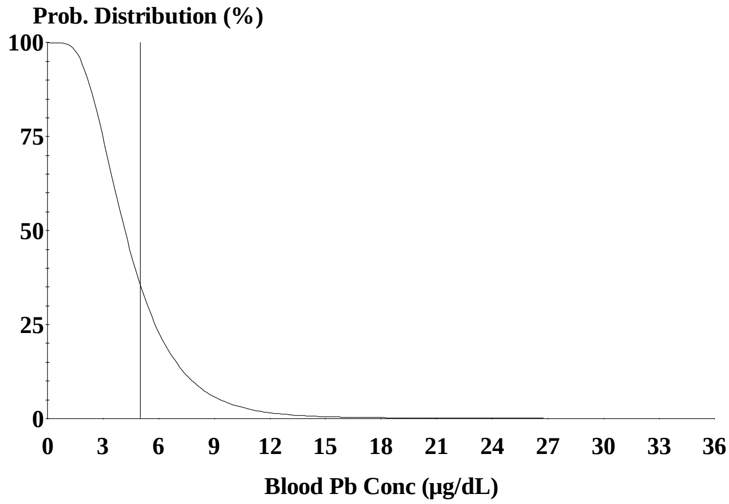
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.422	0.000	0.268
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.102	5.146	2.8
1-2	8.051	12.810	5.0
2-3	8.462	8.548	3.6
3-4	8.537	8.636	3.0
4-5	8.598	8.697	2.9
5-6	8.642	8.741	2.7
6-7	8.671	8.784	2.5

R14-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.378
GSD = 1.600
% Above = 38.871

Age Range = 12 to 24 months

Run Mode = Research

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.078
1-2	1.400	8.000	32.000	0.078
2-3	2.000	9.500	32.000	0.078
3-4	2.000	10.900	32.000	0.078
4-5	2.000	10.900	32.000	0.078
5-6	2.000	10.900	32.000	0.078
6-7	2.000	12.400	32.000	0.078

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	336.900	505.300
1-2	336.900	505.300
2-3	336.900	505.300
3-4	336.900	505.300

4-5	336.900	505.300
5-6	336.900	505.300
6-7	336.900	505.300

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

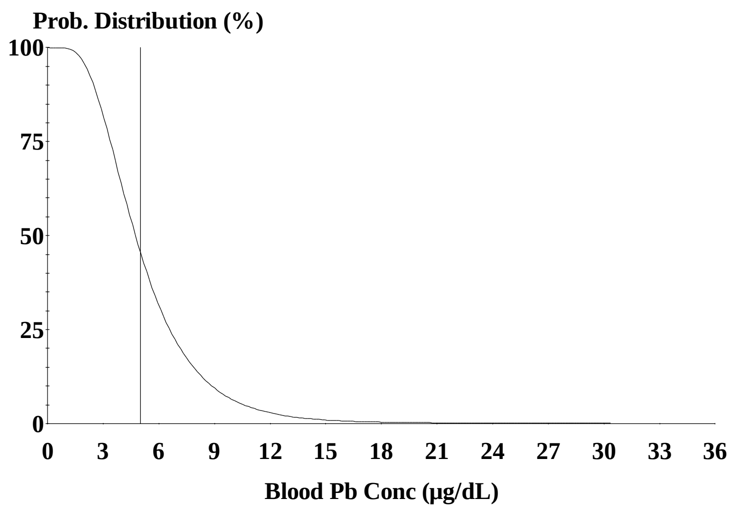
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.068	4.422	0.000	0.268
2-3	0.085	0.000	0.000	0.000
3-4	0.098	0.000	0.000	0.000
4-5	0.098	0.000	0.000	0.000
5-6	0.098	0.000	0.000	0.000
6-7	0.111	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.106	5.149	2.8
1-2	8.057	12.815	5.0
2-3	8.468	8.554	3.6
3-4	8.543	8.641	3.0
4-5	8.605	8.703	2.9
5-6	8.649	8.747	2.7
6-7	8.678	8.789	2.5

PPR-R14

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.966
GSD = 1.600
% Above = 49.426

Age Range = 12 to 24 months

Run Mode = Research

R15-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	335.800	503.700
1-2	335.800	503.700
2-3	335.800	503.700
3-4	335.800	503.700

4-5	335.800	503.700
5-6	335.800	503.700
6-7	335.800	503.700

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

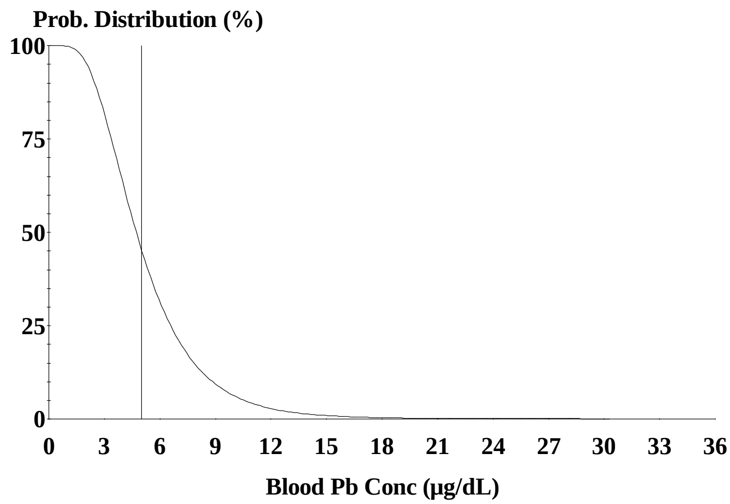
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.423	0.000	0.268
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.091	5.134	2.8
1-2	8.033	12.793	5.0
2-3	8.443	8.530	3.6
3-4	8.517	8.617	3.0
4-5	8.578	8.678	2.9
5-6	8.622	8.722	2.7
6-7	8.651	8.764	2.5

R15-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.957
GSD = 1.600
% Above = 49.273

Age Range = 12 to 24 months

Run Mode = Research

R15-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	335.700	503.600
1-2	335.700	503.600
2-3	335.700	503.600
3-4	335.700	503.600

4-5	335.700	503.600
5-6	335.700	503.600
6-7	335.700	503.600

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

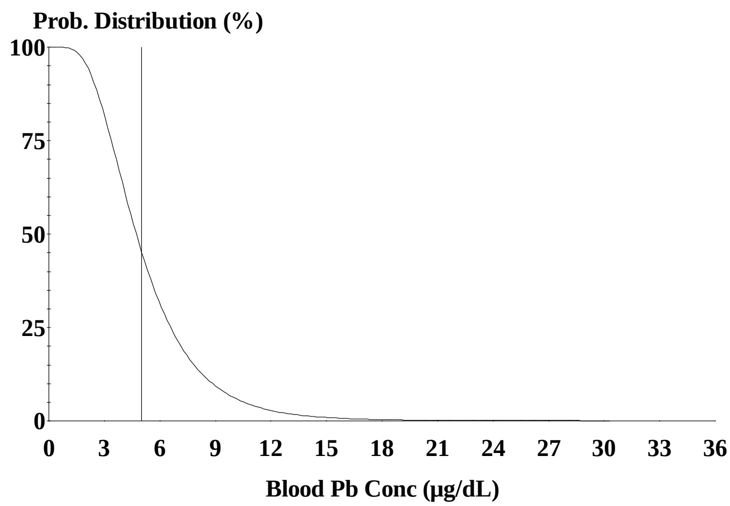
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.423	0.000	0.268
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.090	5.133	2.8
1-2	8.031	12.791	5.0
2-3	8.441	8.527	3.6
3-4	8.515	8.615	3.0
4-5	8.576	8.675	2.9
5-6	8.620	8.719	2.7
6-7	8.649	8.762	2.5

R15-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.957
GSD = 1.600
% Above = 49.259

Age Range = 12 to 24 months

Run Mode = Research

PPR-R15

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	336.900	505.300
1-2	336.900	505.300
2-3	336.900	505.300
3-4	336.900	505.300

4-5	336.900	505.300
5-6	336.900	505.300
6-7	336.900	505.300

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

Maternal Blood Concentration: 0.800 µg Pb/dL

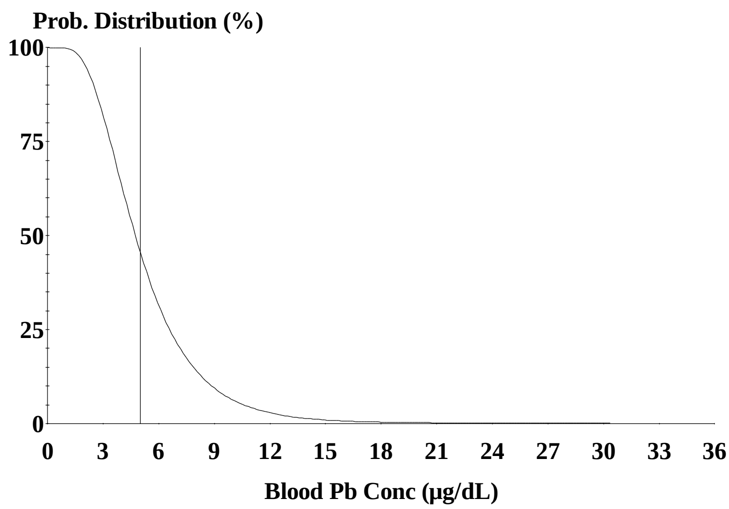
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.422	0.000	0.268
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.112	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.106	5.149	2.8
1-2	8.057	12.816	5.0
2-3	8.468	8.555	3.6
3-4	8.543	8.642	3.0
4-5	8.605	8.703	2.9
5-6	8.649	8.748	2.7
6-7	8.678	8.790	2.5

PPR-R15

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.967
GSD = 1.600
% Above = 49.431

Age Range = 12 to 24 months

Run Mode = Research

R17-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	336.500	504.700
1-2	336.500	504.700
2-3	336.500	504.700
3-4	336.500	504.700

4-5	336.500	504.700
5-6	336.500	504.700
6-7	336.500	504.700

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

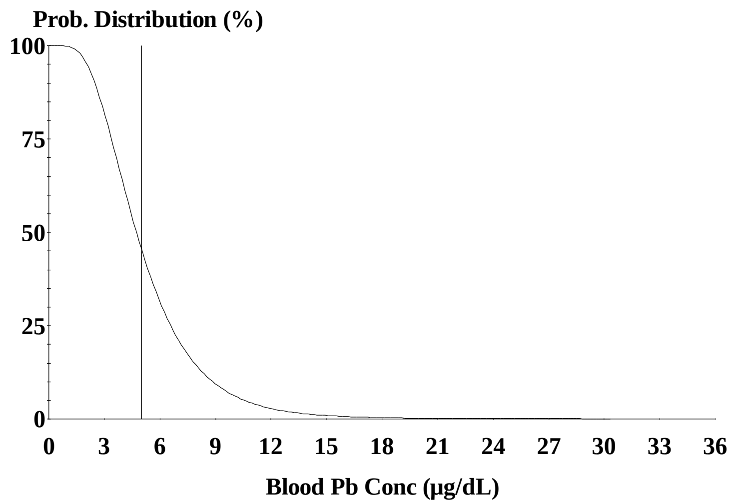
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.070	4.422	0.000	0.268
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.101	5.144	2.8
1-2	8.048	12.808	5.0
2-3	8.459	8.546	3.6
3-4	8.534	8.633	3.0
4-5	8.595	8.695	2.9
5-6	8.639	8.739	2.7
6-7	8.668	8.782	2.5

R17-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.963
GSD = 1.600
% Above = 49.375

Age Range = 12 to 24 months

Run Mode = Research

R17-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	336.400	504.600
1-2	336.400	504.600
2-3	336.400	504.600
3-4	336.400	504.600

4-5	336.400	504.600
5-6	336.400	504.600
6-7	336.400	504.600

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

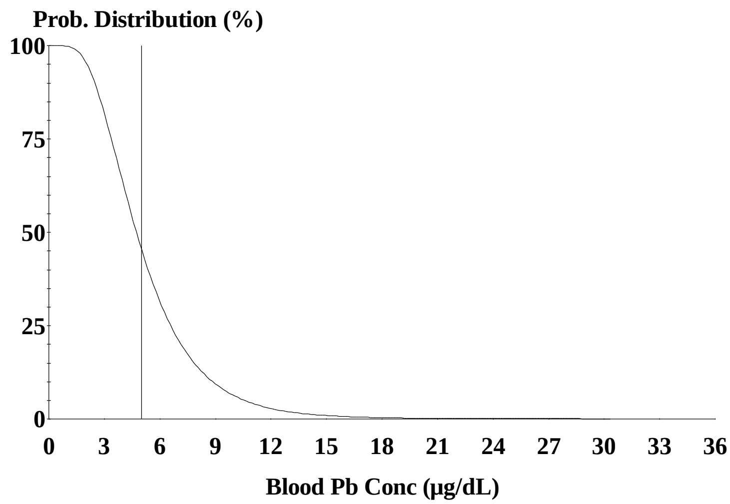
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.422	0.000	0.268
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.100	5.143	2.8
1-2	8.046	12.806	5.0
2-3	8.457	8.543	3.6
3-4	8.532	8.631	3.0
4-5	8.593	8.692	2.9
5-6	8.637	8.736	2.7
6-7	8.666	8.779	2.5

R17-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.962
GSD = 1.600
% Above = 49.361

Age Range = 12 to 24 months

Run Mode = Research

PPR-R17

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	336.900	505.300
1-2	336.900	505.300
2-3	336.900	505.300
3-4	336.900	505.300

4-5	336.900	505.300
5-6	336.900	505.300
6-7	336.900	505.300

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

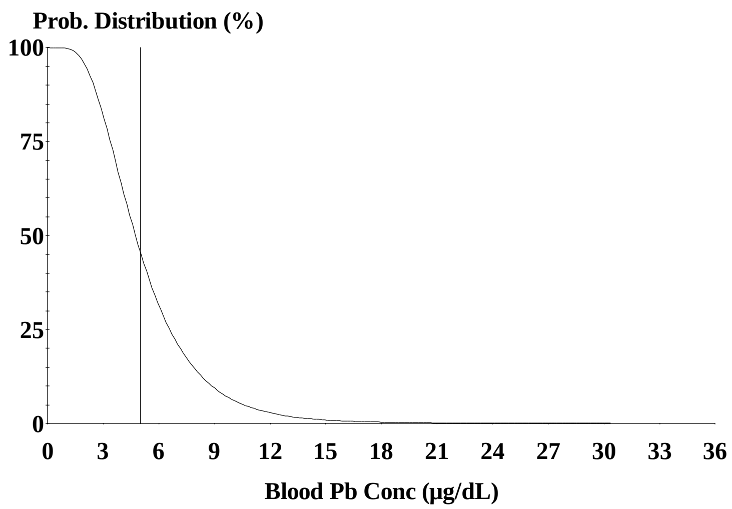
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.422	0.000	0.268
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.112	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.106	5.149	2.8
1-2	8.057	12.816	5.0
2-3	8.468	8.555	3.6
3-4	8.543	8.642	3.0
4-5	8.605	8.703	2.9
5-6	8.649	8.748	2.7
6-7	8.678	8.790	2.5

PPR-R17

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.967
GSD = 1.600
% Above = 49.431

Age Range = 12 to 24 months

Run Mode = Research

R54-S1

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.080
1-2	1.400	8.000	32.000	0.080
2-3	2.000	9.500	32.000	0.080
3-4	2.000	10.900	32.000	0.080
4-5	2.000	10.900	32.000	0.080
5-6	2.000	10.900	32.000	0.080
6-7	2.000	12.400	32.000	0.080

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	336.200	504.400
1-2	336.200	504.400
2-3	336.200	504.400
3-4	336.200	504.400

4-5	336.200	504.400
5-6	336.200	504.400
6-7	336.200	504.400

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

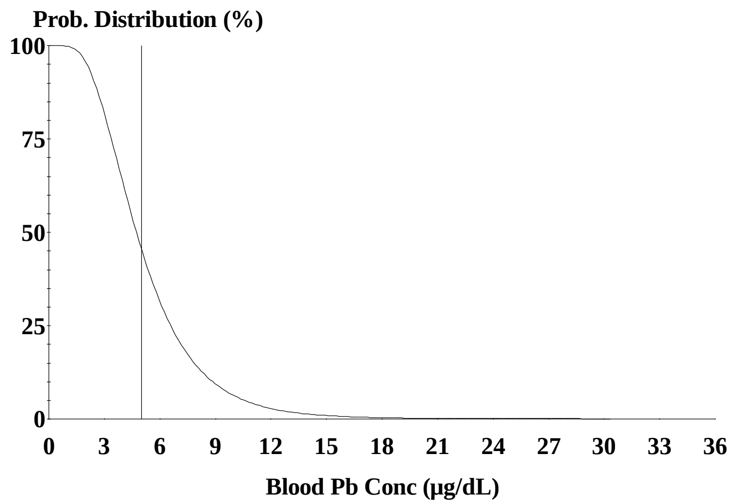
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.070	4.422	0.000	0.268
2-3	0.087	0.000	0.000	0.000
3-4	0.100	0.000	0.000	0.000
4-5	0.100	0.000	0.000	0.000
5-6	0.100	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.097	5.141	2.8
1-2	8.043	12.803	5.0
2-3	8.453	8.540	3.6
3-4	8.528	8.628	3.0
4-5	8.589	8.689	2.9
5-6	8.633	8.733	2.7
6-7	8.662	8.776	2.5

R54-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.961
GSD = 1.600
% Above = 49.339

Age Range = 12 to 24 months

Run Mode = Research

R54-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	336.200	504.300
1-2	336.200	504.300
2-3	336.200	504.300
3-4	336.200	504.300

4-5	336.200	504.300
5-6	336.200	504.300
6-7	336.200	504.300

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

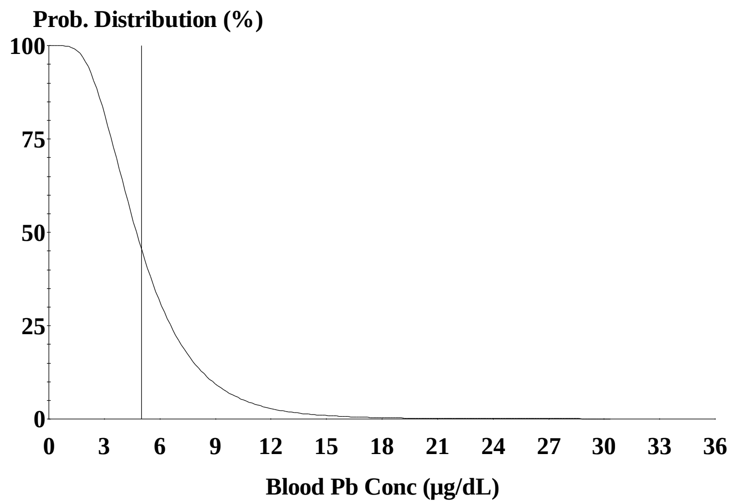
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.422	0.000	0.268
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.097	5.140	2.8
1-2	8.042	12.801	5.0
2-3	8.452	8.539	3.6
3-4	8.527	8.626	3.0
4-5	8.588	8.687	2.9
5-6	8.632	8.731	2.7
6-7	8.661	8.774	2.5

R54-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.961
GSD = 1.600
% Above = 49.331

Age Range = 12 to 24 months

Run Mode = Research

R58-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	335.600	503.400
1-2	335.600	503.400
2-3	335.600	503.400
3-4	335.600	503.400

4-5	335.600	503.400
5-6	335.600	503.400
6-7	335.600	503.400

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

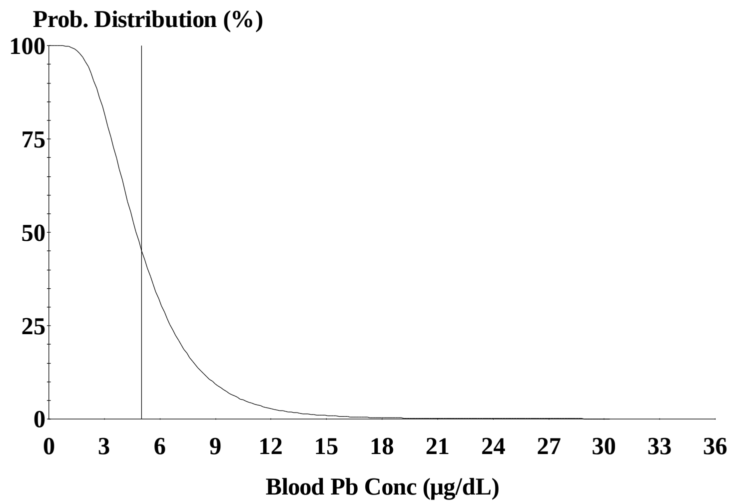
Maternal Blood Concentration: 0.800 µg Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.423	0.000	0.268
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.088	5.131	2.8
1-2	8.028	12.789	5.0
2-3	8.438	8.525	3.6
3-4	8.512	8.612	3.0
4-5	8.573	8.673	2.9
5-6	8.617	8.717	2.7
6-7	8.646	8.759	2.5

R58-S1 IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.956
GSD = 1.600
% Above = 49.242

Age Range = 12 to 24 months

Run Mode = Research

R58-S2

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	335.600	503.400
1-2	335.600	503.400
2-3	335.600	503.400
3-4	335.600	503.400

4-5	335.600	503.400
5-6	335.600	503.400
6-7	335.600	503.400

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

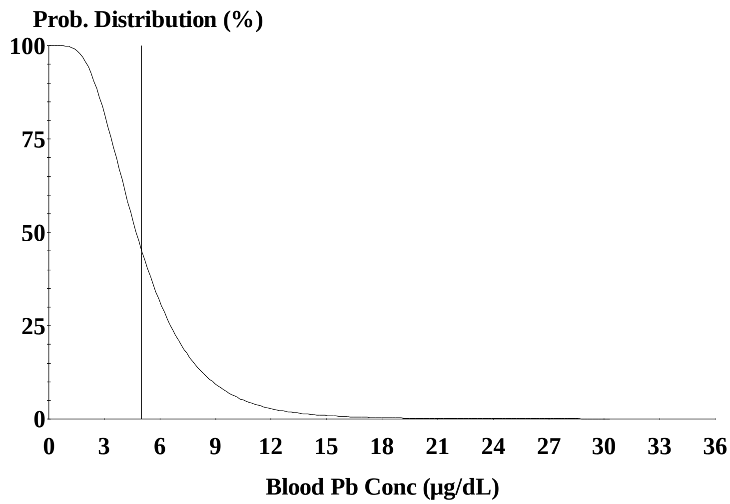
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.423	0.000	0.268
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.088	5.131	2.8
1-2	8.028	12.788	5.0
2-3	8.438	8.524	3.6
3-4	8.512	8.611	3.0
4-5	8.573	8.672	2.9
5-6	8.617	8.716	2.7
6-7	8.646	8.759	2.5

R58-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.955
GSD = 1.600
% Above = 49.240

Age Range = 12 to 24 months

Run Mode = Research

R63-S1

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	335.800	503.700
1-2	335.800	503.700
2-3	335.800	503.700
3-4	335.800	503.700

4-5	335.800	503.700
5-6	335.800	503.700
6-7	335.800	503.700

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

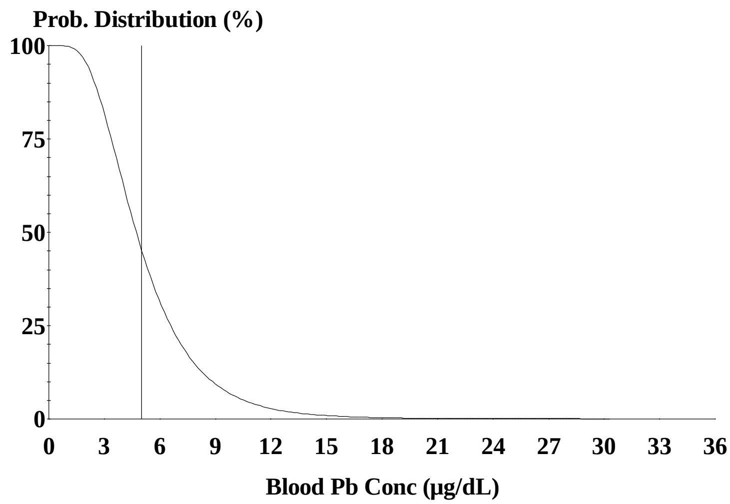
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.423	0.000	0.268
2-3	0.087	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.091	5.134	2.8
1-2	8.033	12.793	5.0
2-3	8.443	8.529	3.6
3-4	8.517	8.617	3.0
4-5	8.578	8.678	2.9
5-6	8.622	8.722	2.7
6-7	8.651	8.764	2.5

R63-S1

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.957
GSD = 1.600
% Above = 49.272

Age Range = 12 to 24 months

Run Mode = Research

R63-S2

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.079
1-2	1.400	8.000	32.000	0.079
2-3	2.000	9.500	32.000	0.079
3-4	2.000	10.900	32.000	0.079
4-5	2.000	10.900	32.000	0.079
5-6	2.000	10.900	32.000	0.079
6-7	2.000	12.400	32.000	0.079

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	9.900
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.300
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 2.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	335.700	503.600
1-2	335.700	503.600
2-3	335.700	503.600
3-4	335.700	503.600

4-5	335.700	503.600
5-6	335.700	503.600
6-7	335.700	503.600

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.800 µg Pb/dL

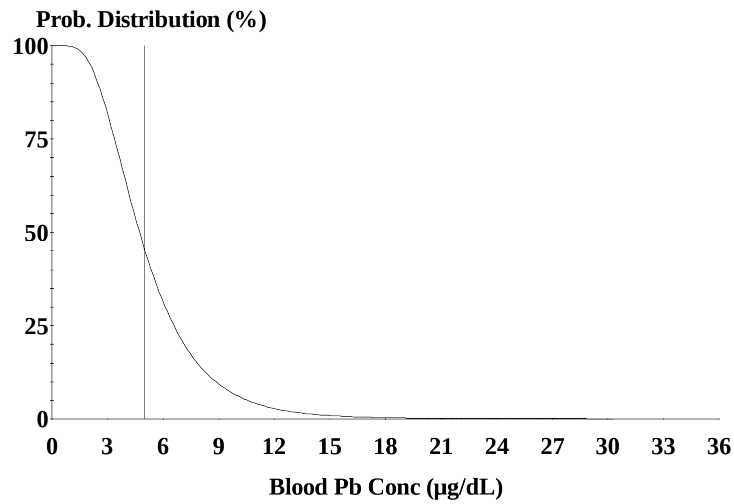
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.043	0.000	0.000	0.000
1-2	0.069	4.423	0.000	0.268
2-3	0.086	0.000	0.000	0.000
3-4	0.099	0.000	0.000	0.000
4-5	0.099	0.000	0.000	0.000
5-6	0.099	0.000	0.000	0.000
6-7	0.113	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	5.090	5.133	2.8
1-2	8.031	12.791	5.0
2-3	8.441	8.527	3.6
3-4	8.515	8.614	3.0
4-5	8.576	8.675	2.9
5-6	8.620	8.719	2.7
6-7	8.649	8.762	2.5

R63-S2

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 4.957
GSD = 1.600
% Above = 49.259

Age Range = 12 to 24 months

Run Mode = Research

Construction increment - R3

LEAD MODEL FOR WINDOWS Version 1.1

==

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.012
1-2	1.400	8.000	32.000	0.012
2-3	2.000	9.500	32.000	0.012
3-4	2.000	10.900	32.000	0.012
4-5	2.000	10.900	32.000	0.012
5-6	2.000	10.900	32.000	0.012
6-7	2.000	12.400	32.000	0.012

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 0.000 µg Pb/L

******** Soil & Dust ********

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1.500	2.250
1-2	1.500	2.250
2-3	1.500	2.250
3-4	1.500	2.250

4-5	1.500	2.250
5-6	1.500	2.250
6-7	1.500	2.250

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.000 µg Pb/dL

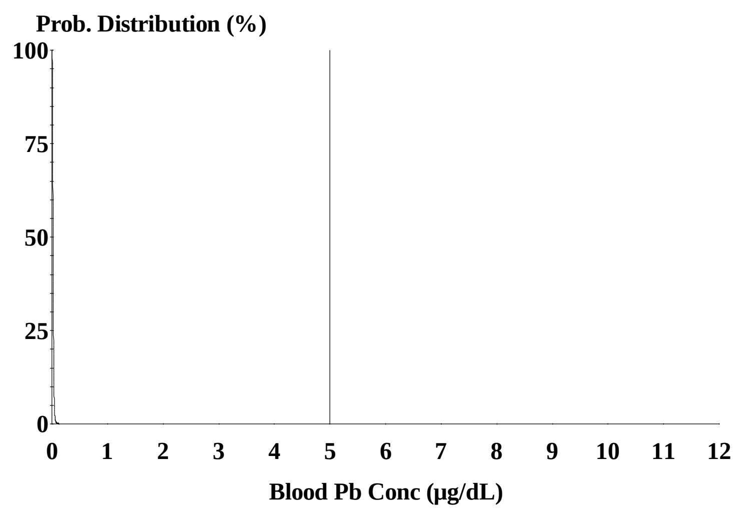
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.007	0.000	0.000	0.000
1-2	0.010	0.000	0.000	0.000
2-3	0.013	0.000	0.000	0.000
3-4	0.015	0.000	0.000	0.000
4-5	0.015	0.000	0.000	0.000
5-6	0.015	0.000	0.000	0.000
6-7	0.017	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	0.024	0.031	0.0
1-2	0.040	0.051	0.0
2-3	0.040	0.053	0.0
3-4	0.040	0.055	0.0
4-5	0.040	0.055	0.0
5-6	0.040	0.055	0.0
6-7	0.040	0.057	0.0

Construction increment - R3

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 0.021
GSD = 1.600
% Above = 0.000

Age Range = 12 to 24 months

Run Mode = Research

Construction increment - R21

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (μg Pb/m^3)
.5-1	0.500	5.400	32.000	0.007
1-2	1.400	8.000	32.000	0.007
2-3	2.000	9.500	32.000	0.007
3-4	2.000	10.900	32.000	0.007
4-5	2.000	10.900	32.000	0.007
5-6	2.000	10.900	32.000	0.007
6-7	2.000	12.400	32.000	0.007

****** Diet ******

Age	Diet Intake(μg/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 0.000 μg Pb/L

****** Soil & Dust ******

Age	Soil (μg Pb/g)	House Dust (μg Pb/g)
.5-1	0.800	1.200
1-2	0.800	1.200
2-3	0.800	1.200
3-4	0.800	1.200

4-5	0.800	1.200
5-6	0.800	1.200
6-7	0.800	1.200

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.000 µg Pb/dL

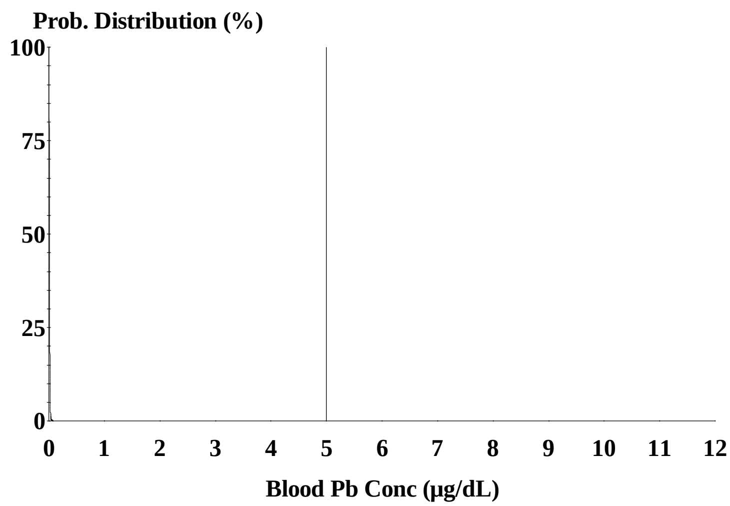
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.004	0.000	0.000	0.000
1-2	0.006	0.000	0.000	0.000
2-3	0.008	0.000	0.000	0.000
3-4	0.009	0.000	0.000	0.000
4-5	0.009	0.000	0.000	0.000
5-6	0.009	0.000	0.000	0.000
6-7	0.010	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	0.013	0.017	0.0
1-2	0.021	0.028	0.0
2-3	0.021	0.029	0.0
3-4	0.021	0.030	0.0
4-5	0.021	0.030	0.0
5-6	0.021	0.030	0.0
6-7	0.021	0.032	0.0

Construction increment - R21

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 0.011
GSD = 1.600
% Above = 0.000

Age Range = 12 to 24 months

Run Mode = Research

Construction increment - R23

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.008
1-2	1.400	8.000	32.000	0.008
2-3	2.000	9.500	32.000	0.008
3-4	2.000	10.900	32.000	0.008
4-5	2.000	10.900	32.000	0.008
5-6	2.000	10.900	32.000	0.008
6-7	2.000	12.400	32.000	0.008

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 0.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1.000	1.500
1-2	1.000	1.500
2-3	1.000	1.500
3-4	1.000	1.500

4-5	1.000	1.500
5-6	1.000	1.500
6-7	1.000	1.500

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.000 µg Pb/dL

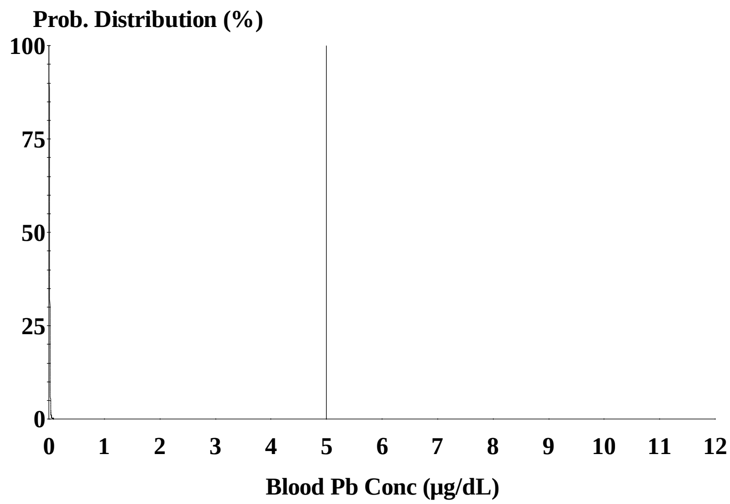
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.004	0.000	0.000	0.000
1-2	0.007	0.000	0.000	0.000
2-3	0.008	0.000	0.000	0.000
3-4	0.010	0.000	0.000	0.000
4-5	0.010	0.000	0.000	0.000
5-6	0.010	0.000	0.000	0.000
6-7	0.011	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	0.016	0.020	0.0
1-2	0.027	0.033	0.0
2-3	0.027	0.035	0.0
3-4	0.027	0.036	0.0
4-5	0.027	0.036	0.0
5-6	0.027	0.036	0.0
6-7	0.027	0.038	0.0

Construction increment - R23

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 0.014
GSD = 1.600
% Above = 0.000

Age Range = 12 to 24 months

Run Mode = Research

Construction increment - R24

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (μg Pb/m^3)
.5-1	0.500	5.400	32.000	0.008
1-2	1.400	8.000	32.000	0.008
2-3	2.000	9.500	32.000	0.008
3-4	2.000	10.900	32.000	0.008
4-5	2.000	10.900	32.000	0.008
5-6	2.000	10.900	32.000	0.008
6-7	2.000	12.400	32.000	0.008

****** Diet ******

Age	Diet Intake(μg/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 0.000 μg Pb/L

****** Soil & Dust ******

Age	Soil (μg Pb/g)	House Dust (μg Pb/g)
.5-1	1.200	1.800
1-2	1.200	1.800
2-3	1.200	1.800
3-4	1.200	1.800

4-5	1.200	1.800
5-6	1.200	1.800
6-7	1.200	1.800

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.000 µg Pb/dL

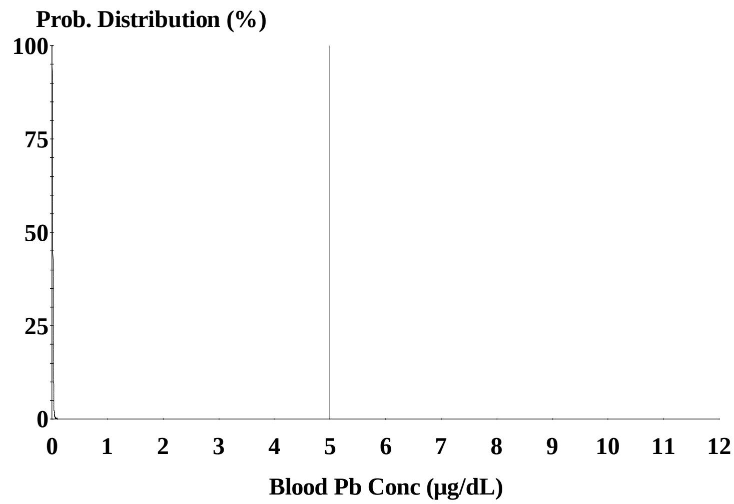
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.004	0.000	0.000	0.000
1-2	0.007	0.000	0.000	0.000
2-3	0.009	0.000	0.000	0.000
3-4	0.010	0.000	0.000	0.000
4-5	0.010	0.000	0.000	0.000
5-6	0.010	0.000	0.000	0.000
6-7	0.012	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	0.019	0.024	0.0
1-2	0.032	0.039	0.0
2-3	0.032	0.041	0.0
3-4	0.032	0.042	0.0
4-5	0.032	0.042	0.0
5-6	0.032	0.042	0.0
6-7	0.032	0.044	0.0

Construction increment - R24

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 0.016
GSD = 1.600
% Above = 0.000

Age Range = 12 to 24 months

Run Mode = Research

Construction increment - R26

LEAD MODEL FOR WINDOWS Version 1.1

==
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	0.500	5.400	32.000	0.010
1-2	1.400	8.000	32.000	0.010
2-3	2.000	9.500	32.000	0.010
3-4	2.000	10.900	32.000	0.010
4-5	2.000	10.900	32.000	0.010
5-6	2.000	10.900	32.000	0.010
6-7	2.000	12.400	32.000	0.010

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

Drinking Water Concentration: 0.000 µg Pb/L

****** Soil & Dust ******

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1.600	2.400
1-2	1.600	2.400
2-3	1.600	2.400
3-4	1.600	2.400

4-5	1.600	2.400
5-6	1.600	2.400
6-7	1.600	2.400

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 0.000 µg Pb/dL

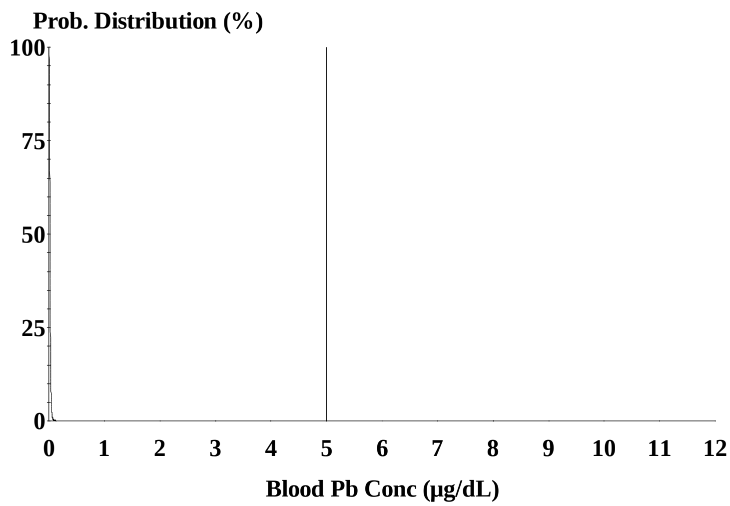
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.005	0.000	0.000	0.000
1-2	0.008	0.000	0.000	0.000
2-3	0.011	0.000	0.000	0.000
3-4	0.012	0.000	0.000	0.000
4-5	0.012	0.000	0.000	0.000
5-6	0.012	0.000	0.000	0.000
6-7	0.014	0.000	0.000	0.000

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	0.026	0.031	0.0
1-2	0.043	0.051	0.0
2-3	0.043	0.053	0.0
3-4	0.043	0.055	0.0
4-5	0.043	0.055	0.0
5-6	0.043	0.055	0.0
6-7	0.043	0.057	0.0

Construction increment - R26

IEUBK Distribution Probability Percent



Cutoff = 5.000 µg/dl
Geo Mean = 0.021
GSD = 1.600
% Above = 0.000

Age Range = 12 to 24 months

Run Mode = Research

APPENDIX J

Estimated metal intakes, hazard quotient and hazard index calculations for metals other than Pb

Arsenic, Scenario 1 (Current Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3	D3	D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5	D5	D5	D5	D5	D6	D6	D6	D6
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5	R12	R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33	R64	R65	R66	R67	R10	R34	R35	R36
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.017	0.012	0.007	0.005	0.006	0.034	0.004	0.009	0.007	0.006	0.001	0.054	0.023	0.018	0.010	0.009	0.010	0.027	0.030	0.030	0.032	0.038	0.043	0.022	0.059	0.024	0.022	0.027	0.006	0.017	0.011	0.011	0.016	0.029	0.026	0.023
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		3.5	3.5	3.5	3.5	3.5	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.4	5.4	5.4	5.4	5.4	5.4	5.4	17.3	17.3	17.3	17.3
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0050	0.0050	0.0050	0.0050	0.0050	0.0087	0.0086	0.0086	0.0086	0.0086	0.0086	0.0087	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0087	0.0087	0.0087	0.0086	0.0087	0.0079	0.0079	0.0079	0.0079	0.0079	0.0079	0.0079	0.0251	0.0251	0.0251	0.0251
	$Intake_{ing(3-13)}$		3-13 yrs	0.0023	0.0023	0.0023	0.0023	0.0023	0.0040	0.0039	0.0039	0.0039	0.0039	0.0039	0.0040	0.0040	0.0040	0.0040	0.0039	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0115	0.0115	0.0115	0.0115
	$Intake_{ing(13-18)}$		13-18 yrs	0.0005	0.0005	0.0005	0.0005	0.0005	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0009	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0009	0.0009	0.0008	0.0009	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0025	0.0025	0.0025	0.0025
	$Intake_{ing(18-82)}$		18-82 yrs	0.0004	0.0004	0.0004	0.0004	0.0004	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0018	0.0018	0.0018	0.0018
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0007	0.0007	0.0007	0.0007	0.0007	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0037	0.0037	0.0037	0.0037
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0008	0.0008	0.0008	0.0008	0.0008	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0041	0.0041	0.0041	0.0041
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.00079	0.00079	0.00079	0.00079	0.00079	0.00083	0.00078	0.00079	0.00079	0.00069	0.00078	0.00082	0.00080	0.00080	0.00079	0.00079	0.00079	0.00080	0.00081	0.00080	0.00080	0.00080	0.00081	0.00079	0.00082	0.00080	0.00080	0.00081	0.00078	0.00079	0.00079	0.00079	0.00079	0.00080	0.00080	0.00080
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00079	0.00079	0.00079	0.00079	0.00079	0.00083	0.00078	0.00079	0.00079	0.00069	0.00078	0.00082	0.00080	0.00080	0.00079	0.00079	0.00079	0.00080	0.00081	0.00080	0.00080	0.00080	0.00081	0.00079	0.00082	0.00080	0.00080	0.00081	0.00078	0.00079	0.00079	0.00079	0.00079	0.00080	0.00080	0.00080
Overall hazard quotient	$HQ_{overall}$	unitless		0.0016	0.0016	0.0016	0.0016	0.0016	0.0022	0.0022	0.0022	0.0022	0.0021	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0049	0.0049	0.0049	0.0049

Arsenic, Scenario 1 (Current Operations, incl. background)				D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7	Other (D7)	D8	D8	D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62	R8	R55	R56	R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.022	0.023	0.030	0.014	0.017	0.081	0.066	0.052	0.045	0.009	0.016	0.007	0.008	0.018	0.009	0.010	0.005	0.005	0.020	0.002	0.003	0.003	0.005	0.003	0.003	0.006	0.003	0.008	0.010	0.004	0.009	0.007	0.003	0.004
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.0251	0.0251	0.0251	0.0251	0.0251	0.0252	0.0252	0.0252	0.0252	0.0251	0.0251	0.0251	0.0251	0.0251	0.0251	0.0251	0.0251	0.0251	0.0251	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.0115	0.0115	0.0115	0.0115	0.0115	0.0116	0.0115	0.0115	0.0115	0.0115	0.0115	0.0115	0.0115	0.0115	0.0115	0.0115	0.0115	0.0115	0.0115	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.00080	0.00080	0.00080	0.00079	0.00079	0.00084	0.00083	0.00082	0.00082	0.00078	0.00079	0.00079	0.00079	0.00079	0.00079	0.00079	0.00078	0.00079	0.00079	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00079	0.00079	0.00078	0.00079	0.00078	0.00078	0.00078
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00080	0.00080	0.00080	0.00079	0.00079	0.00084	0.00083	0.00082	0.00082	0.00078	0.00079	0.00079	0.00079	0.00079	0.00079	0.00079	0.00078	0.00079	0.00079	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00079	0.00079	0.00078	0.00079	0.00078	0.00078	0.00078
Overall hazard quotient	$HQ_{overall}$	unitless		0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022

Arsenic, Scenario 2 (Mod6 Proposed Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3	D3	D3	D3
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5	R12	R13	R45
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.015	0.012	0.006	0.005	0.006	0.032	0.004	0.009	0.007	0.006	0.001	0.053	0.022	0.017	0.010	0.008	0.010
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		3.5	3.5	3.5	3.5	3.5	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0050	0.0050	0.0050	0.0050	0.0050	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0087	0.0086	0.0086	0.0086	0.0086	0.0086
	$Intake_{ing(3-13)}$		3-13 yrs	0.0023	0.0023	0.0023	0.0023	0.0023	0.0040	0.0039	0.0039	0.0039	0.0039	0.0039	0.0040	0.0040	0.0040	0.0039	0.0039	0.0039
	$Intake_{ing(13-18)}$		13-18 yrs	0.0005	0.0005	0.0005	0.0005	0.0005	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0009	0.0008	0.0008	0.0008	0.0008	0.0008
	$Intake_{ing(18-82)}$		18-82 yrs	0.0004	0.0004	0.0004	0.0004	0.0004	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0007	0.0007	0.0007	0.0007	0.0007	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0008	0.0008	0.0008	0.0008	0.0008	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.00078	0.00078	0.00078	0.00078	0.00078	0.00082	0.00078	0.00078	0.00078	0.00068	0.00078	0.00079	0.00078	0.00078	0.00078	0.00078	0.00078
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00078	0.00078	0.00078	0.00078	0.00078	0.00082	0.00078	0.00078	0.00078	0.00068	0.00078	0.00079	0.00078	0.00078	0.00078	0.00078	0.00078
Overall hazard quotient	$HQ_{overall}$	unitless		0.0016	0.0016	0.0016	0.0016	0.0016	0.0022	0.0022	0.0022	0.0022	0.0021	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022

Arsenic, Scenario 2 (Mod6 Proposed Operations, incl. background)				D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5	D5	D5	D5	D5	D6	D6	D6
Parameter	Abbreviation	Unit		R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33	R64	R65	R66	R67	R10	R34	R35
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.026	0.029	0.029	0.031	0.035	0.039	0.021	0.054	0.022	0.021	0.024	0.006	0.016	0.010	0.010	0.015	0.028	0.024
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.4	5.4	5.4	5.4	5.4	5.4	5.4	17.3	17.3	17.3
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0086	0.0086	0.0086	0.0086	0.0087	0.0087	0.0086	0.0087	0.0079	0.0079	0.0079	0.0079	0.0079	0.0079	0.0079	0.0251	0.0251	0.0251
	$Intake_{ing(3-13)}$		3-13 yrs	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0115	0.0115	0.0115
	$Intake_{ing(13-18)}$		13-18 yrs	0.0008	0.0008	0.0008	0.0008	0.0008	0.0009	0.0008	0.0009	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0025	0.0025	0.0025
	$Intake_{ing(18-82)}$		18-82 yrs	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0018	0.0018	0.0018
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0037	0.0037	0.0037
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0041	0.0041	0.0041
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.00078	0.00079	0.00078	0.00078	0.00078	0.00079	0.00078	0.00080	0.00079	0.00079	0.00079	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00078	0.00079	0.00078	0.00078	0.00078	0.00079	0.00078	0.00080	0.00079	0.00079	0.00079	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078
Overall hazard quotient	$HQ_{overall}$	unitless		0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0048	0.0049	0.0049

Arsenic, Scenario 2 (Mod6 Proposed Operations, incl. background)				D6	D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7	Other (D7)	D8	D8	D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R36	R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62	R8	R55	R56	R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.021	0.020	0.022	0.029	0.013	0.016	0.079	0.065	0.050	0.043	0.008	0.015	0.007	0.007	0.017	0.009	0.010	0.005	0.005	0.019	0.002	0.002	0.002	0.005	0.003	0.003	0.006	0.003	0.008	0.009	0.004	0.008	0.007	0.002	0.004
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.0251	0.0251	0.0251	0.0251	0.0251	0.0251	0.0252	0.0252	0.0252	0.0252	0.0251	0.0251	0.0251	0.0251	0.0251	0.0251	0.0251	0.0251	0.0251	0.0251	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.0115	0.0115	0.0115	0.0115	0.0115	0.0115	0.0116	0.0115	0.0115	0.0115	0.0115	0.0115	0.0115	0.0115	0.0115	0.0115	0.0115	0.0115	0.0115	0.0115	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00083	0.00082	0.00081	0.00080	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00083	0.00082	0.00081	0.00080	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078
Overall hazard quotient	$HQ_{overall}$	unitless		0.0049	0.0049	0.0049	0.0049	0.0048	0.0049	0.0049	0.0049	0.0049	0.0049	0.0048	0.0048	0.0048	0.0048	0.0049	0.0048	0.0048	0.0048	0.0048	0.0048	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022

Cadmium, Scenario 1 (Current Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3	D3	D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5	D5	D5	D5	D5	D6	D6	D6
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5	R12	R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33	R64	R65	R66	R67	R10	R34	R35
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.008	0.006	0.003	0.002	0.003	0.017	0.002	0.004	0.004	0.003	0.001	0.027	0.011	0.009	0.005	0.004	0.005	0.013	0.015	0.015	0.016	0.019	0.021	0.011	0.029	0.012	0.011	0.013	0.003	0.008	0.005	0.005	0.008	0.014	0.013
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		0.68	0.68	0.68	0.68	0.68	0.99	0.99	0.99	0.99	0.99	0.99	0.76	0.76	0.76	0.76	0.76	0.76	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	3.57	3.57	3.57	3.57	3.57	3.57	3.57	3.80	3.80	3.80
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0035	0.0035	0.0035	0.0035	0.0035	0.0051	0.0050	0.0051	0.0050	0.0050	0.0050	0.0040	0.0039	0.0039	0.0039	0.0039	0.0039	0.0078	0.0078	0.0078	0.0078	0.0078	0.0078	0.0078	0.0079	0.0182	0.0182	0.0183	0.0182	0.0182	0.0182	0.0182	0.0194	0.0194	0.0194
	$Intake_{ing(3-13)}$		3-13 yrs	0.0016	0.0016	0.0016	0.0016	0.0016	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0084	0.0084	0.0084	0.0083	0.0084	0.0083	0.0083	0.0089	0.0089	0.0089
	$Intake_{ing(13-18)}$		13-18 yrs	0.0003	0.0003	0.0003	0.0003	0.0003	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0019	0.0019	0.0019
	$Intake_{ing(18-82)}$		18-82 yrs	0.0002	0.0002	0.0002	0.0002	0.0002	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0005	0.0006	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0014	0.0014	0.0014
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0005	0.0005	0.0005	0.0005	0.0005	0.0008	0.0007	0.0007	0.0007	0.0007	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0011	0.0012	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0029	0.0029	0.0029
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.010	0.010	0.010	0.010	0.010	0.014	0.014	0.014	0.014	0.014	0.014	0.011	0.011	0.011	0.011	0.011	0.011	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.054	0.054	0.054
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.00032	0.00032	0.00032	0.00032	0.00032	0.00034	0.00032	0.00032	0.00032	0.00028	0.00032	0.00033	0.00032	0.00032	0.00032	0.00032	0.00032	0.00032	0.00033	0.00032	0.00032	0.00032	0.00033	0.00032	0.00033	0.00032	0.00032	0.00032	0.00032	0.00032	0.00032	0.00032	0.00032	0.00032	0.00032
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.029	0.029	0.029	0.029	0.029	0.031	0.029	0.029	0.029	0.025	0.029	0.030	0.029	0.029	0.029	0.029	0.029	0.029	0.030	0.029	0.029	0.029	0.030	0.029	0.030	0.029	0.029	0.030	0.029	0.029	0.029	0.029	0.029	0.029	0.029
Overall hazard quotient	$HQ_{overall}$	unitless		0.039	0.039	0.039	0.039	0.039	0.045	0.043	0.043	0.043	0.039	0.043	0.041	0.040	0.040	0.040	0.040	0.040	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.052	0.080	0.080	0.080	0.079	0.080	0.080	0.080	0.083	0.083	0.083

Cadmium, Scenario 1 (Current Operations, incl. background)				D6	D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7
Parameter	Abbreviation	Unit		R36	R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.011	0.011	0.011	0.015	0.007	0.009	0.040	0.033	0.026	0.022	0.004	0.008
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0194	0.0194	0.0194	0.0194	0.0194	0.0194	0.0196	0.0195	0.0195	0.0195	0.0194	0.0194
	$Intake_{ing(3-13)}$		3-13 yrs	0.0089	0.0089	0.0089	0.0089	0.0089	0.0089	0.0090	0.0089	0.0089	0.0089	0.0089	0.0089
	$Intake_{ing(13-18)}$		13-18 yrs	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019
	$Intake_{ing(18-82)}$		18-82 yrs	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.00032	0.00032	0.00032	0.00032	0.00032	0.00032	0.00034	0.00034	0.00033	0.00033	0.00032	0.00032
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.029	0.029	0.029	0.029	0.029	0.029	0.031	0.030	0.030	0.030	0.029	0.029
Overall hazard quotient	$HQ_{overall}$	unitless		0.083	0.083	0.083	0.083	0.083	0.083	0.085	0.085	0.084	0.084	0.083	0.083

Cadmium, Scenario 1 (Current Operations, incl. background)				D7	D7	D7	D7	D7	D7	D7	Other (D7)	D8	D8	D8	D9
Parameter	Abbreviation	Unit		R38	R39	R40	R51	R52	R57	R62	R8	R55	R56	R61	R16
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.004	0.004	0.009	0.005	0.005	0.002	0.003	0.010	0.001	0.001	0.001	0.003
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	1.22	1.22	1.22	1.22
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0194	0.0194	0.0194	0.0194	0.0194	0.0194	0.0194	0.0194	0.0062	0.0062	0.0062	0.0062
	$Intake_{ing(3-13)}$		3-13 yrs	0.0089	0.0089	0.0089	0.0089	0.0089	0.0089	0.0089	0.0089	0.0028	0.0028	0.0028	0.0028
	$Intake_{ing(13-18)}$		13-18 yrs	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0006	0.0006	0.0006	0.0006
	$Intake_{ing(18-82)}$		18-82 yrs	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0004	0.0004	0.0004	0.0004
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0009	0.0009	0.0009	0.0009
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.017	0.017	0.017	0.017
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.00032	0.00032	0.00032	0.00032	0.00032	0.00032	0.00032	0.00032	0.00032	0.00032	0.00032	0.00032
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029
Overall hazard quotient	$HQ_{overall}$	unitless		0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.046	0.046	0.046	0.046

Cadmium, Scenario 1 (Current Operations, incl. background)				D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.002	0.002	0.003	0.002	0.004	0.005	0.002	0.004	0.004	0.001	0.002
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		1.22	1.22	1.22	1.22	1.22	0.99	0.99	0.99	0.99	0.99	0.99
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0062	0.0062	0.0062	0.0062	0.0062	0.0051	0.0050	0.0051	0.0050	0.0050	0.0050
	$Intake_{ing(3-13)}$		3-13 yrs	0.0028	0.0028	0.0028	0.0028	0.0028	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023
	$Intake_{ing(13-18)}$		13-18 yrs	0.0006	0.0006	0.0006	0.0006	0.0006	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
	$Intake_{ing(18-82)}$		18-82 yrs	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0009	0.0009	0.0009	0.0009	0.0009	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.017	0.017	0.017	0.017	0.017	0.014	0.014	0.014	0.014	0.014	0.014
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.00032	0.00032	0.00032	0.00032	0.00032	0.00032	0.00032	0.00032	0.00032	0.00032	0.00032
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029
Overall hazard quotient	$HQ_{overall}$	unitless		0.046	0.046	0.046	0.046	0.046	0.043	0.043	0.043	0.043	0.043	0.043

Cadmium, Scenario 2 (Mod6, Proposed Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3	D3	D3	D3	D4	D4
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5	R12	R13	R45	R1	R2
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.008	0.006	0.003	0.002	0.003	0.016	0.002	0.004	0.003	0.003	0.001	0.026	0.011	0.008	0.005	0.004	0.005	0.013	0.014
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		0.68	0.68	0.68	0.68	0.68	0.99	0.99	0.99	0.99	0.99	0.99	0.76	0.76	0.76	0.76	0.76	0.76	1.52	1.52
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0035	0.0035	0.0035	0.0035	0.0035	0.0051	0.0050	0.0051	0.0050	0.0050	0.0050	0.0040	0.0039	0.0039	0.0039	0.0039	0.0039	0.0078	0.0078
	$Intake_{ing(3-13)}$		3-13 yrs	0.0016	0.0016	0.0016	0.0016	0.0016	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0036	0.0036
	$Intake_{ing(13-18)}$		13-18 yrs	0.0003	0.0003	0.0003	0.0003	0.0003	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0008	0.0008
	$Intake_{ing(18-82)}$		18-82 yrs	0.0002	0.0002	0.0002	0.0002	0.0002	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0006	0.0006
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0005	0.0005	0.0005	0.0005	0.0005	0.0008	0.0007	0.0007	0.0007	0.0007	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0012	0.0012
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.010	0.010	0.010	0.010	0.010	0.014	0.014	0.014	0.014	0.014	0.014	0.011	0.011	0.011	0.011	0.011	0.011	0.022	0.022
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.00031	0.00032	0.00031	0.00031	0.00031	0.00033	0.00031	0.00032	0.00031	0.00028	0.00031	0.00032	0.00032	0.00032	0.00032	0.00032	0.00032	0.00032	0.00032
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.028	0.029	0.029	0.029	0.029	0.030	0.029	0.029	0.029	0.025	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029
Overall hazard quotient	$HQ_{overall}$	unitless		0.038	0.038	0.038	0.038	0.038	0.044	0.043	0.043	0.043	0.039	0.043	0.040	0.040	0.040	0.040	0.039	0.040	0.050	0.051

Cadmium, Scenario 2 (Mod6, Proposed Operations, incl. background)				Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5	D5	D5	D5	D5	D6	D6	D6
Parameter	Abbreviation	Unit		R21	R22	R23	R24	R25	R26	R31	R32	R33	R64	R65	R66	R67	R10	R34	R35
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.014	0.015	0.017	0.019	0.010	0.027	0.011	0.010	0.012	0.003	0.008	0.005	0.005	0.007	0.014	0.012
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		1.52	1.52	1.52	1.52	1.52	1.52	3.57	3.57	3.57	3.57	3.57	3.57	3.57	3.80	3.80	3.80
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0078	0.0078	0.0078	0.0078	0.0078	0.0079	0.0182	0.0182	0.0182	0.0182	0.0182	0.0182	0.0182	0.0194	0.0194	0.0194
	$Intake_{ing(3-13)}$		3-13 yrs	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0084	0.0084	0.0084	0.0083	0.0084	0.0083	0.0083	0.0089	0.0089	0.0089
	$Intake_{ing(13-18)}$		13-18 yrs	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0019	0.0019	0.0019
	$Intake_{ing(18-82)}$		18-82 yrs	0.0006	0.0006	0.0006	0.0006	0.0005	0.0006	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0014	0.0014	0.0014
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0012	0.0012	0.0012	0.0012	0.0011	0.0012	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0029	0.0029	0.0029
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.022	0.022	0.022	0.022	0.022	0.022	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.054	0.054	0.054
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.00032	0.00032	0.00032	0.00032	0.00031	0.00032	0.00032	0.00032	0.00032	0.00031	0.00032	0.00032	0.00032	0.00032	0.00031	0.00031
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029
Overall hazard quotient	$HQ_{overall}$	unitless		0.050	0.050	0.051	0.051	0.050	0.051	0.080	0.080	0.080	0.079	0.079	0.079	0.079	0.083	0.083	0.083

Cadmium, Scenario 2 (Mod6, Proposed Operations, incl. background)				D6	D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7
Parameter	Abbreviation	Unit		R36	R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.010	0.010	0.011	0.014	0.006	0.008	0.039	0.032	0.024	0.021	0.004	0.007	0.003	0.003	0.008	0.004	0.005	0.002
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0194	0.0194	0.0194	0.0194	0.0194	0.0194	0.0195	0.0195	0.0195	0.0195	0.0194	0.0194	0.0194	0.0194	0.0194	0.0194	0.0194	0.0194
	$Intake_{ing(3-13)}$		3-13 yrs	0.0089	0.0089	0.0089	0.0089	0.0089	0.0089	0.0090	0.0089	0.0089	0.0089	0.0089	0.0089	0.0089	0.0089	0.0089	0.0089	0.0089	0.0089
	$Intake_{ing(13-18)}$		13-18 yrs	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019
	$Intake_{ing(18-82)}$		18-82 yrs	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.00032	0.00032	0.00032	0.00032	0.00032	0.00032	0.00034	0.00033	0.00033	0.00032	0.00031	0.00032	0.00032	0.00031	0.00032	0.00031	0.00031	0.00031
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.029	0.029	0.029	0.029	0.029	0.029	0.031	0.030	0.030	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029
Overall hazard quotient	$HQ_{overall}$	unitless		0.083	0.083	0.083	0.083	0.083	0.083	0.085	0.084	0.084	0.083	0.082	0.083	0.083	0.082	0.083	0.082	0.082	0.082

Cadmium, Scenario 2 (Mod6, Proposed Operations, incl. background)				D7	Other (D7)	D8	D8	D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R62	R8	R55	R56	R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.002	0.009	0.001	0.001	0.001	0.002	0.002	0.002	0.003	0.001	0.004	0.005	0.002	0.004	0.003	0.001	0.002
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		3.80	3.80	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	0.99	0.99	0.99	0.99	0.99	0.99
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0194	0.0194	0.0062	0.0062	0.0062	0.0062	0.0062	0.0062	0.0062	0.0062	0.0062	0.0051	0.0050	0.0051	0.0050	0.0050	0.0050
	$Intake_{ing(3-13)}$		3-13 yrs	0.0089	0.0089	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023
	$Intake_{ing(13-18)}$		13-18 yrs	0.0019	0.0019	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
	$Intake_{ing(18-82)}$		18-82 yrs	0.0014	0.0014	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0029	0.0029	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.054	0.054	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.014	0.014	0.014	0.014	0.014	0.014
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.00031	0.00031	0.00031	0.00031	0.00031	0.00031	0.00031	0.00031	0.00031	0.00031	0.00032	0.00031	0.00031	0.00031	0.00031	0.00031	0.00031
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029
Overall hazard quotient	$HQ_{overall}$	unitless		0.082	0.083	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.043	0.043	0.043	0.043	0.043	0.043

Chromium, Scenario 1 (Current Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3	D3	D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5	D5	D5	D5	D5	D6	D6	D6
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5	R12	R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33	R64	R65	R66	R67	R10	R34	R35
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0008	0.0006	0.0003	0.0002	0.0003	0.0017	0.0002	0.0005	0.0004	0.0003	0.0001	0.0027	0.0011	0.0009	0.0005	0.0004	0.0005	0.0013	0.0015	0.0015	0.0016	0.0019	0.0022	0.0011	0.0030	0.0012	0.0011	0.0014	0.0003	0.0008	0.0005	0.0006	0.0008	0.0015	0.0013
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		23	23	23	23	23	27	27	27	27	27	27	24	24	24	24	24	24	19	19	19	19	19	19	19	19	24	24	24	24	24	24	24	24	24	24
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.2091	0.2091	0.2091	0.2091	0.2091	0.2455	0.2455	0.2455	0.2455	0.2455	0.2455	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.1727	0.1727	0.1727	0.1727	0.1727	0.1727	0.1727	0.1728	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.0958	0.0958	0.0958	0.0958	0.0958	0.1125	0.1125	0.1125	0.1125	0.1125	0.1125	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0792	0.0792	0.0792	0.0792	0.0792	0.0792	0.0792	0.0792	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.0205	0.0205	0.0205	0.0205	0.0205	0.0241	0.0241	0.0241	0.0241	0.0241	0.0241	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0170	0.0170	0.0170	0.0170	0.0170	0.0170	0.0170	0.0170	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.0147	0.0147	0.0147	0.0147	0.0147	0.0173	0.0173	0.0173	0.0173	0.0173	0.0173	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0122	0.0122	0.0122	0.0122	0.0122	0.0122	0.0122	0.0122	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0308	0.0308	0.0308	0.0308	0.0308	0.0362	0.0362	0.0362	0.0362	0.0362	0.0362	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0255	0.0255	0.0255	0.0255	0.0255	0.0255	0.0255	0.0255	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0193	0.0193	0.0193	0.0193	0.0193	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0159	0.0159	0.0159	0.0159	0.0159	0.0159	0.0159	0.0159	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.0000281	0.0000283	0.0000281	0.0000280	0.0000281	0.0000298	0.0000280	0.0000281	0.0000280	0.0000246	0.0000279	0.0000292	0.0000284	0.0000284	0.0000282	0.0000282	0.0000282	0.0000284	0.0000288	0.0000285	0.0000285	0.0000286	0.0000288	0.0000282	0.0000293	0.0000284	0.0000284	0.0000287	0.0000280	0.0000282	0.0000281	0.0000281	0.0000282	0.0000284	0.0000284
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00013	0.00013	0.00013	0.00013	0.00013	0.00014	0.00013	0.00013	0.00013	0.00011	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013
Overall hazard quotient	$HQ_{overall}$	unitless		0.019	0.019	0.019	0.019	0.019	0.023	0.023	0.023	0.023	0.023	0.023	0.020	0.020	0.020	0.020	0.020	0.020	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
Unit risk factor	URF	$(\mu g/m^3)^{-1}$		2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03
Cancer risk	CR	unitless		6.41E-08	6.45E-08	6.4E-08	6.39E-08	6.4E-08	6.79E-08	6.38E-08	6.4E-08	6.39E-08	5.6E-08	6.352E-08	6.65E-08	6.48E-08	6.48E-08	6.43E-08	6.42E-08	6.43E-08	6.48E-08	6.58E-08	6.497E-08	6.501E-08	6.523E-08	6.557E-08	6.431E-08	6.684E-08	6.48E-08	6.47E-08	6.55E-08	6.38E-08	6.44E-08	6.41E-08	6.41E-08	6.44E-08	6.47E-08	6.48E-08

Chromium, Scenario 1 (Current Operations, incl. background)				D6	D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7	Other (D7)	D8	D8	D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R36	R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62	R8	R55	R56	R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0011	0.0011	0.0011	0.0015	0.0007	0.0009	0.0040	0.0033	0.0026	0.0023	0.0004	0.0008	0.0004	0.0004	0.0009	0.0005	0.0005	0.0003	0.0003	0.0010	0.0001	0.0001	0.0001	0.0003	0.0002	0.0002	0.0003	0.0002	0.0004	0.0005	0.0002	0.0004	0.0004	0.0001
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	27	27	27	27	27
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2455	0.2455	0.2455	0.2455	0.2455
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1125	0.1125	0.1125	0.1125	0.1125
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0241	0.0241	0.0241	0.0241	0.0241
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0173	0.0173	0.0173	0.0173	0.0173
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0362	0.0362	0.0362	0.0362	0.0362
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0226	0.0226	0.0226	0.0226	0.0226
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.0000284	0.0000284	0.0000284	0.0000284	0.0000282	0.0000283	0.0000299	0.0000296	0.0000291	0.0000291	0.0000280	0.0000283	0.0000281	0.0000281	0.0000283	0.0000281	0.0000281	0.0000280	0.0000281	0.0000283	0.0000279	0.0000279	0.0000279	0.0000280	0.0000279	0.0000279	0.0000280	0.0000279	0.0000280	0.0000281	0.0000279	0.0000280	0.0000280	0.0000279
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00014	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013
Overall hazard quotient	$HQ_{overall}$	unitless		0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.023	0.023	0.023	0.023	0.023
Unit risk factor	URF	$(\mu g/m^3)^{-1}$		2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03
Cancer risk	CR	unitless		6.48E-08	6.48E-08	6.47E-08	6.48E-08	6.42E-08	6.44E-08	6.80666E-08	6.76001E-08	6.64416E-08	6.64284E-08	6.38E-08	6.44E-08	6.42E-08	6.41E-08	6.45E-08	6.4E-08	6.41E-08	6.38E-08	6.4E-08	6.449E-08	6.36E-08	6.37E-08	6.37E-08	6.38E-08	6.36E-08	6.36E-08	6.38E-08	6.36E-08	6.39E-08	6.4E-08	6.37E-08	6.39E-08	6.38E-08	6.36E-08

Chromium, Scenario 1 (Current Operations, incl. background)				D10
Parameter	Abbreviation	Unit		R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0002
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		27
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001
Exposure frequency	EF	days/yr		365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1
Part of averaging time	365	days/yr		365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100
			3-13 yrs	100
			13-18 yrs	50
			18-82 yrs	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5
			3-13 yrs	10
			13-18 yrs	5
			18-82 yrs	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11
			3-13 yrs	24
			13-18 yrs	56
			18-82 yrs	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5
			3-13 yrs	10
			13-18 yrs	5
			18-82 yrs	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.2455
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.1125
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.0241
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.0173
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0362
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		1.6
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0226
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.0000279
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		0.22
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00013
Overall hazard quotient	$HQ_{overall}$	unitless		0.023

Unit risk factor	URF	(µg/m^3)$^{-1}$	2.28E-03
Cancer risk	CR	unitless	6.36E-08

Chromium, Scenario 2 (Mod6, Proposed Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3	D3	D3	D3
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5	R12	R13	R45
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0008	0.0006	0.0003	0.0002	0.0003	0.0016	0.0002	0.0004	0.0003	0.0003	0.0001	0.0026	0.0011	0.0008	0.0005	0.0004	0.0005
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		23	23	23	23	23	27	27	27	27	27	27	24	24	24	24	24	24
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.2091	0.2091	0.2091	0.2091	0.2091	0.2455	0.2455	0.2455	0.2455	0.2455	0.2455	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.0958	0.0958	0.0958	0.0958	0.0958	0.1125	0.1125	0.1125	0.1125	0.1125	0.1125	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.0205	0.0205	0.0205	0.0205	0.0205	0.0241	0.0241	0.0241	0.0241	0.0241	0.0241	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.0147	0.0147	0.0147	0.0147	0.0147	0.0173	0.0173	0.0173	0.0173	0.0173	0.0173	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0308	0.0308	0.0308	0.0308	0.0308	0.0362	0.0362	0.0362	0.0362	0.0362	0.0362	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0193	0.0193	0.0193	0.0193	0.0193	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.0000277	0.0000279	0.0000279	0.0000278	0.0000279	0.0000294	0.0000278	0.0000279	0.0000278	0.0000244	0.0000278	0.0000283	0.0000279	0.0000279	0.0000279	0.0000279	0.0000279
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00011	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013
Overall hazard quotient	$HQ_{overall}$	unitless		0.019	0.019	0.019	0.019	0.019	0.023	0.023	0.023	0.023	0.023	0.023	0.020	0.020	0.020	0.020	0.020	0.020
Unit risk factor	URF	$(\mu g/m^3)^{-1}$		2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03
Cancer risk	CR	unitless		6.31E-08	6.37E-08	6.35E-08	6.35E-08	6.35E-08	6.69E-08	6.35E-08	6.35E-08	6.35E-08	5.56E-08	6.341E-08	6.45E-08	6.35E-08	6.36E-08	6.36E-08	6.36E-08	6.37E-08

Chromium, Scenario 2 (Mod6, Proposed Operations, incl. background)				D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5	D5	D5	D5	D5	D6	D6	D6
Parameter	Abbreviation	Unit		R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33	R64	R65	R66	R67	R10	R34	R35
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0013	0.0015	0.0015	0.0015	0.0017	0.0020	0.0010	0.0027	0.0011	0.0010	0.0012	0.0003	0.0008	0.0005	0.0005	0.0008	0.0014	0.0012
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		19	19	19	19	19	19	19	19	24	24	24	24	24	24	24	24	24	24
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.1727	0.1727	0.1727	0.1727	0.1727	0.1727	0.1727	0.1727	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.0792	0.0792	0.0792	0.0792	0.0792	0.0792	0.0792	0.0792	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.0170	0.0170	0.0170	0.0170	0.0170	0.0170	0.0170	0.0170	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.0122	0.0122	0.0122	0.0122	0.0122	0.0122	0.0122	0.0122	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0255	0.0255	0.0255	0.0255	0.0255	0.0255	0.0255	0.0255	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0159	0.0159	0.0159	0.0159	0.0159	0.0159	0.0159	0.0159	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.0000280	0.0000282	0.0000279	0.0000279	0.0000280	0.0000282	0.0000278	0.0000287	0.0000281	0.0000280	0.0000282	0.0000278	0.0000280	0.0000279	0.0000279	0.0000279	0.0000278	0.0000278
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013
Overall hazard quotient	$HQ_{overall}$	unitless		0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
Unit risk factor	URF	$(\mu g/m^3)^{-1}$		2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03
Cancer risk	CR	unitless		6.38E-08	6.44E-08	6.371E-08	6.362E-08	6.377E-08	6.422E-08	6.348E-08	6.539E-08	6.4E-08	6.39E-08	6.43E-08	6.35E-08	6.38E-08	6.36E-08	6.36E-08	6.36E-08	6.34E-08	6.35E-08

Chromium, Scenario 2 (Mod6, Proposed Operations, incl. background)				D6	D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7	Other (D7)	D8	D8	D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R36	R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62	R8	R55	R56	R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0011	0.0010	0.0011	0.0014	0.0006	0.0008	0.0039	0.0032	0.0025	0.0021	0.0004	0.0007	0.0003	0.0004	0.0008	0.0004	0.0005	0.0002	0.0002	0.0009	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0003	0.0001	0.0004	0.0005	0.0002	0.0004	0.0003	0.0001
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	27	27	27	27	27
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2182	0.2455	0.2455	0.2455	0.2455	0.2455
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1125	0.1125	0.1125	0.1125	0.1125
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0241	0.0241	0.0241	0.0241	0.0241
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0173	0.0173	0.0173	0.0173	0.0173
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0362	0.0362	0.0362	0.0362	0.0362
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0226	0.0226	0.0226	0.0226	0.0226
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.0000279	0.0000280	0.0000279	0.0000279	0.0000279	0.0000279	0.0000298	0.0000292	0.0000288	0.0000285	0.0000278	0.0000279	0.0000279	0.0000278	0.0000279	0.0000278	0.0000278	0.0000278	0.0000278	0.0000278	0.0000278	0.0000278	0.0000278	0.0000278	0.0000278	0.0000278	0.0000279	0.0000278	0.0000279	0.0000278	0.0000278	0.0000278	0.0000278	0.0000278
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00014	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013
Overall hazard quotient	$HQ_{overall}$	unitless		0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.023	0.023	0.023	0.023	0.023

Unit risk factor	URF	$(\mu g/m^3)^{-1}$	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03
Cancer risk	CR	unitless	6.36E-08	6.38E-08	6.37E-08	6.36E-08	6.36E-08	6.36E-08	6.78826E-08	6.64738E-08	6.5652E-08	6.49662E-08	6.34E-08	6.36E-08	6.36E-08	6.35E-08	6.36E-08	6.34E-08	6.35E-08	6.35E-08	6.35E-08	6.343E-08	6.34E-08	6.34E-08	6.34E-08	6.35E-08	6.34E-08	6.34E-08	6.35E-08	6.34E-08	6.35E-08	6.35E-08	6.34E-08	6.35E-08	6.35E-08	6.34E-08

Chromium, Scenario 2 (Mod6, Proposed Operations, incl. background)				D10
Parameter	Abbreviation	Unit		R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0002
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		27
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001
Exposure frequency	EF	days/yr		365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1
Part of averaging time	365	days/yr		365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100
			3-13 yrs	100
			13-18 yrs	50
			18-82 yrs	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5
			3-13 yrs	10
			13-18 yrs	5
			18-82 yrs	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11
			3-13 yrs	24
			13-18 yrs	56
			18-82 yrs	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5
			3-13 yrs	10
			13-18 yrs	5
			18-82 yrs	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.2455
	$Intake_{ing(3-13)}$		3-13 yrs	0.1125
	$Intake_{ing(13-18)}$		13-18 yrs	0.0241
	$Intake_{ing(18-82)}$		18-82 yrs	0.0173
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0362
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		1.6
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0226
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.0000278
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		0.22
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00013
Overall hazard quotient	$HQ_{overall}$	unitless		0.023

Unit risk factor	URF	(µg/m^3)$^{-1}$	2.28E-03
Cancer risk	CR	unitless	6.34E-08

Iron, Scenario 1 (Current Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3	D3	D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5	D5	D5	D5	D5	D6	D6	D6
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5	R12	R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33	R64	R65	R66	R67	R10	R34	R35
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		10.2	7.5	3.9	2.9	3.7	20.3	2.6	5.4	4.4	3.7	0.8	32.2	13.6	10.7	6.1	5.2	6.1	16.0	17.9	18.2	19.3	22.7	25.9	13.0	35.5	14.2	13.4	16.4	3.7	10.0	6.3	6.6	9.6	17.5	15.5
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		12112	12112	12112	12112	12112	12471	12471	12471	12471	12471	12471	11693	11693	11693	11693	11693	11693	9557	9557	9557	9557	9557	9557	9557	9557	11884	11884	11884	11884	11884	11884	11884	13939	13939	13939
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	3.3059	3.3052	3.3042	3.3039	3.3041	3.4068	3.4020	3.4028	3.4025	3.4023	3.4015	3.1978	3.1928	3.1920	3.1907	3.1905	3.1907	2.6108	2.6114	2.6114	2.6117	2.6127	2.6135	2.6100	2.6162	3.2449	3.2447	3.2455	3.2421	3.2438	3.2428	3.2429	3.8042	3.8064	3.8058
	$Intake_{ing(3-13)}$		3-13 yrs	1.5152	1.5149	1.5144	1.5143	1.5144	1.5615	1.5592	1.5596	1.5595	1.5594	1.5590	1.4657	1.4633	1.4630	1.4624	1.4623	1.4624	1.1966	1.1969	1.1969	1.1970	1.1975	1.1979	1.1963	1.1991	1.4872	1.4872	1.4875	1.4859	1.4867	1.4863	1.4863	1.7436	1.7446	1.7443
	$Intake_{ing(13-18)}$		13-18 yrs	0.3247	0.3246	0.3245	0.3245	0.3245	0.3346	0.3341	0.3342	0.3342	0.3342	0.3341	0.3141	0.3136	0.3135	0.3134	0.3133	0.3134	0.2564	0.2565	0.2565	0.2565	0.2566	0.2567	0.2563	0.2569	0.3187	0.3187	0.3188	0.3184	0.3186	0.3185	0.3185	0.3736	0.3738	0.3738
	$Intake_{ing(18-82)}$		18-82 yrs	0.2331	0.2331	0.2330	0.2330	0.2330	0.2402	0.2399	0.2399	0.2399	0.2399	0.2398	0.2255	0.2251	0.2251	0.2250	0.2250	0.2250	0.1841	0.1841	0.1841	0.1842	0.1842	0.1843	0.1840	0.1845	0.2288	0.2288	0.2289	0.2286	0.2287	0.2287	0.2287	0.2682	0.2684	0.2684
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.4873	0.4872	0.4871	0.4870	0.4870	0.5022	0.5015	0.5016	0.5015	0.5015	0.5014	0.4714	0.4706	0.4705	0.4703	0.4703	0.4703	0.3849	0.3849	0.3849	0.3850	0.3851	0.3852	0.3847	0.3856	0.4783	0.4783	0.4784	0.4779	0.4782	0.4780	0.4780	0.5608	0.5611	0.5610
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.00076	0.00076	0.00076	0.00076	0.00076	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00074	0.00074	0.00074	0.00073	0.00073	0.00073	0.00060	0.00060	0.00060	0.00060	0.00060	0.00060	0.00060	0.00060	0.00075	0.00075	0.00075	0.00075	0.00075	0.00075	0.00075	0.00088	0.00088	0.00088
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.494	0.497	0.494	0.493	0.494	0.524	0.492	0.494	0.493	0.432	0.490	0.513	0.500	0.499	0.496	0.495	0.496	0.499	0.507	0.501	0.501	0.503	0.506	0.496	0.515	0.500	0.499	0.505	0.492	0.497	0.494	0.494	0.496	0.499	0.499
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00016	0.00016	0.00016	0.00016	0.00016	0.00017	0.00016	0.00016	0.00016	0.00014	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00017	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016
Overall hazard quotient	$HQ_{overall}$	unitless		0.0009	0.0009	0.0009	0.0009	0.0009	0.0010	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0010	0.0010	0.0010

Iron, Scenario 1 (Current Operations, incl. background)				D6	D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7
Parameter	Abbreviation	Unit		R36	R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		13.7	12.9	13.8	18.1	8.2	10.4	48.2	39.7	31.0	27.1	5.1	9.5	4.4	4.6	10.7	5.7	6.2
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		13939	13939	13939	13939	13939	13939	13939	13939	13939	13939	13939	13939	13939	13939	13939	13939	13939
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	3.8053	3.8051	3.8054	3.8065	3.8039	3.8045	3.8148	3.8124	3.8101	3.8090	3.8030	3.8042	3.8028	3.8029	3.8045	3.8032	3.8033
	$Intake_{ing(3-13)}$		3-13 yrs	1.7441	1.7440	1.7441	1.7447	1.7434	1.7437	1.7484	1.7474	1.7463	1.7458	1.7431	1.7436	1.7430	1.7430	1.7437	1.7431	1.7432
	$Intake_{ing(13-18)}$		13-18 yrs	0.3737	0.3737	0.3737	0.3739	0.3736	0.3737	0.3747	0.3744	0.3742	0.3741	0.3735	0.3736	0.3735	0.3735	0.3737	0.3735	0.3735
	$Intake_{ing(18-82)}$		18-82 yrs	0.2683	0.2683	0.2683	0.2684	0.2682	0.2683	0.2690	0.2688	0.2687	0.2686	0.2682	0.2682	0.2681	0.2682	0.2683	0.2682	0.2682
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.5609	0.5609	0.5609	0.5611	0.5607	0.5608	0.5623	0.5620	0.5616	0.5615	0.5606	0.5608	0.5606	0.5606	0.5608	0.5606	0.5606
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$µg/m^3$		0.500	0.499	0.499	0.500	0.495	0.497	0.525	0.521	0.512	0.512	0.492	0.497	0.495	0.494	0.498	0.494	0.494
Chronic air guideline value (Section 4.3.2)	AGV	$µg/m^3$		3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00017	0.00017	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016
Overall hazard quotient	$HQ_{overall}$	unitless		0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010

Iron, Scenario 1 (Current Operations, incl. background)				D7	D7	Other (D7)	D8	D8	D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R57	R62	R8	R55	R56	R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		3.0	3.2	12.1	1.5	1.6	1.6	3.1	2.1	2.0	3.6	1.8	4.9	6.0	2.4	5.2	4.3	1.5	2.3
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		13939	13939	13939	12045	12045	12045	12045	12045	12045	12045	12045	12045	12471	12471	12471	12471	12471	12471
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	3.8024	3.8025	3.8049	3.2855	3.2856	3.2856	3.2860	3.2857	3.2857	3.2861	3.2856	3.2865	3.4029	3.4019	3.4027	3.4025	3.4017	3.4019
	$Intake_{ing(3-13)}$		3-13 yrs	1.7428	1.7428	1.7439	1.5059	1.5059	1.5059	1.5061	1.5059	1.5059	1.5061	1.5059	1.5063	1.5597	1.5592	1.5596	1.5595	1.5591	1.5592
	$Intake_{ing(13-18)}$		13-18 yrs	0.3735	0.3735	0.3737	0.3227	0.3227	0.3227	0.3227	0.3227	0.3227	0.3227	0.3227	0.3228	0.3342	0.3341	0.3342	0.3342	0.3341	0.3341
	$Intake_{ing(18-82)}$		18-82 yrs	0.2681	0.2681	0.2683	0.2317	0.2317	0.2317	0.2317	0.2317	0.2317	0.2317	0.2317	0.2317	0.2399	0.2399	0.2399	0.2399	0.2399	0.2399
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.5605	0.5605	0.5609	0.4843	0.4843	0.4843	0.4844	0.4843	0.4843	0.4844	0.4843	0.4844	0.5016	0.5015	0.5016	0.5015	0.5014	0.5015
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.00088	0.00088	0.00088	0.00076	0.00076	0.00076	0.00076	0.00076	0.00076	0.00076	0.00076	0.00076	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$µg/m^3$		0.492	0.493	0.497	0.491	0.491	0.491	0.492	0.491	0.491	0.492	0.491	0.493	0.493	0.491	0.493	0.492	0.490	0.491
Chronic air guideline value (Section 4.3.2)	AGV	$µg/m^3$		3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016
Overall hazard quotient	$HQ_{overall}$	unitless		0.0010	0.0010	0.0010	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009

Iron, Scenario 2 (Mod6, Proposed Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3	D3	D3	D3
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5	R12	R13	R45
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		9.2	7.0	3.6	2.7	3.4	19.1	2.4	5.2	4.1	3.5	0.7	31.6	13.0	10.0	5.7	4.9	5.8
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		12112	12112	12112	12112	12112	12471	12471	12471	12471	12471	12471	11693	11693	11693	11693	11693	11693
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	3.3057	3.3050	3.3041	3.3039	3.3041	3.4065	3.4019	3.4027	3.4024	3.4022	3.4015	3.1977	3.1926	3.1918	3.1906	3.1904	3.1906
	$Intake_{ing(3-13)}$		3-13 yrs	1.5151	1.5148	1.5144	1.5143	1.5144	1.5613	1.5592	1.5596	1.5594	1.5593	1.5590	1.4656	1.4633	1.4629	1.4624	1.4623	1.4624
	$Intake_{ing(13-18)}$		13-18 yrs	0.3247	0.3246	0.3245	0.3245	0.3245	0.3346	0.3341	0.3342	0.3342	0.3341	0.3341	0.3141	0.3136	0.3135	0.3134	0.3133	0.3134
	$Intake_{ing(18-82)}$		18-82 yrs	0.2331	0.2330	0.2330	0.2330	0.2330	0.2402	0.2399	0.2399	0.2399	0.2399	0.2398	0.2255	0.2251	0.2251	0.2250	0.2250	0.2250
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.4873	0.4872	0.4870	0.4870	0.4870	0.5021	0.5015	0.5016	0.5015	0.5015	0.5014	0.4714	0.4706	0.4705	0.4703	0.4703	0.4703
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.00076	0.00076	0.00076	0.00076	0.00076	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078	0.00074	0.00074	0.00074	0.00073	0.00073	0.00073
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.487	0.491	0.490	0.489	0.490	0.516	0.490	0.490	0.490	0.429	0.489	0.498	0.490	0.491	0.491	0.491	0.491
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00016	0.00016	0.00016	0.00016	0.00016	0.00017	0.00016	0.00016	0.00016	0.00014	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016
Overall hazard quotient	$HQ_{overall}$	unitless		0.0009	0.0009	0.0009	0.0009	0.0009	0.0010	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009

Iron, Scenario 2 (Mod6, Proposed Operations, incl. background)				D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5	D5	D5	D5	D5	D6	D6	D6
Parameter	Abbreviation	Unit		R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33	R64	R65	R66	R67	R10	R34	R35
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		15.7	17.5	17.5	18.2	20.9	23.6	12.3	32.3	13.2	12.5	14.5	3.4	9.3	5.8	6.1	9.0	16.6	14.4
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		9557	9557	9557	9557	9557	9557	9557	9557	11884	11884	11884	11884	11884	11884	11884	13939	13939	13939
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	2.6108	2.6112	2.6113	2.6115	2.6122	2.6129	2.6098	2.6153	3.2446	3.2444	3.2450	3.2420	3.2436	3.2426	3.2427	3.8041	3.8061	3.8056
	$Intake_{ing(3-13)}$		3-13 yrs	1.1966	1.1968	1.1968	1.1969	1.1973	1.1976	1.1962	1.1987	1.4871	1.4870	1.4873	1.4859	1.4866	1.4862	1.4862	1.7435	1.7445	1.7442
	$Intake_{ing(13-18)}$		13-18 yrs	0.2564	0.2565	0.2565	0.2565	0.2566	0.2566	0.2563	0.2569	0.3187	0.3187	0.3187	0.3184	0.3186	0.3185	0.3185	0.3736	0.3738	0.3738
	$Intake_{ing(18-82)}$		18-82 yrs	0.1841	0.1841	0.1841	0.1841	0.1842	0.1842	0.1840	0.1844	0.2288	0.2288	0.2288	0.2286	0.2287	0.2286	0.2287	0.2682	0.2684	0.2683
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.3848	0.3849	0.3849	0.3849	0.3850	0.3852	0.3847	0.3855	0.4783	0.4782	0.4783	0.4779	0.4781	0.4780	0.4780	0.5607	0.5610	0.5610
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.00060	0.00060	0.00060	0.00060	0.00060	0.00060	0.00060	0.00060	0.00075	0.00075	0.00075	0.00075	0.00075	0.00075	0.00075	0.00088	0.00088	0.00088
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.492	0.497	0.491	0.491	0.492	0.495	0.490	0.504	0.494	0.493	0.496	0.490	0.492	0.490	0.491	0.490	0.489	0.490
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016
Overall hazard quotient	$HQ_{overall}$	unitless		0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0010	0.0010	0.0010

Iron, Scenario 2 (Mod6, Proposed Operations, incl. background)				D6	D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7	Other (D7)	D8	D8	D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R36	R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62	R8	R55	R56	R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		12.7	12.0	13.0	17.2	7.7	9.7	47.2	38.6	29.6	25.6	4.8	8.9	4.0	4.2	10.0	5.3	5.8	2.8	2.9	11.2	1.4	1.5	1.5	2.9	1.9	1.8	3.3	1.7	4.5	5.7	2.2	4.9	4.0	1.4	2.1
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		13939	13939	13939	13939	13939	13939	13939	13939	13939	13939	13939	13939	13939	13939	13939	13939	13939	13939	13939	13939	12045	12045	12045	12045	12045	12045	12045	12045	12045	12471	12471	12471	12471	12471	12471
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	3.8051	3.8049	3.8052	3.8063	3.8037	3.8043	3.8145	3.8121	3.8097	3.8086	3.8029	3.8040	3.8027	3.8028	3.8043	3.8031	3.8032	3.8024	3.8024	3.8047	3.2855	3.2855	3.2855	3.2859	3.2856	3.2856	3.2860	3.2856	3.2864	3.4028	3.4019	3.4026	3.4024	3.4017	3.4018
	$Intake_{ing(3-13)}$		3-13 yrs	1.7440	1.7439	1.7440	1.7446	1.7434	1.7436	1.7483	1.7472	1.7461	1.7456	1.7430	1.7435	1.7429	1.7429	1.7437	1.7431	1.7431	1.7428	1.7428	1.7438	1.5059	1.5059	1.5059	1.5060	1.5059	1.5059	1.5061	1.5059	1.5062	1.5596	1.5592	1.5595	1.5594	1.5591	1.5592
	$Intake_{ing(13-18)}$		13-18 yrs	0.3737	0.3737	0.3737	0.3738	0.3736	0.3736	0.3746	0.3744	0.3742	0.3741	0.3735	0.3736	0.3735	0.3735	0.3736	0.3735	0.3735	0.3734	0.3735	0.3737	0.3227	0.3227	0.3227	0.3227	0.3227	0.3227	0.3227	0.3227	0.3228	0.3342	0.3341	0.3342	0.3342	0.3341	0.3341
	$Intake_{ing(18-82)}$		18-82 yrs	0.2683	0.2683	0.2683	0.2684	0.2682	0.2682	0.2690	0.2688	0.2686	0.2686	0.2682	0.2682	0.2681	0.2681	0.2683	0.2682	0.2682	0.2681	0.2681	0.2683	0.2317	0.2317	0.2317	0.2317	0.2317	0.2317	0.2317	0.2317	0.2317	0.2399	0.2399	0.2399	0.2399	0.2399	0.2399
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.5609	0.5609	0.5609	0.5611	0.5607	0.5608	0.5623	0.5619	0.5616	0.5614	0.5606	0.5607	0.5605	0.5605	0.5608	0.5606	0.5606	0.5605	0.5605	0.5608	0.4843	0.4843	0.4843	0.4844	0.4843	0.4843	0.4844	0.4843	0.4844	0.5016	0.5015	0.5016	0.5015	0.5014	0.5014
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640	640
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088	0.00076	0.00076	0.00076	0.00076	0.00076	0.00076	0.00076	0.00076	0.00076	0.00078	0.00078	0.00078	0.00078	0.00078	0.00078
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$µg/m^3$		0.491	0.492	0.491	0.490	0.490	0.490	0.524	0.513	0.506	0.501	0.489	0.490	0.490	0.490	0.491	0.489	0.490	0.489	0.490	0.489	0.489	0.489	0.489	0.490	0.489	0.489	0.490	0.489	0.490	0.489	0.489	0.489	0.489	0.489	0.489
Chronic air guideline value (Section 4.3.2)	AGV	$µg/m^3$		3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120	3120
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00017	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016
Overall hazard quotient	$HQ_{overall}$	unitless		0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009

Manganese, Scenario 1 (Current Operations, incl. background)

Parameter	Abbreviation	Unit		D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3	D3
				R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5	R12
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.035	0.026	0.013	0.010	0.013	0.070	0.009	0.019	0.015	0.013	0.003	0.110	0.047	0.037	0.021
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		314	314	314	314	314	298	298	298	298	298	298	328	328	328	328
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95	1.04	1.04	1.04	1.04
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.46	0.46	0.46	0.46	0.46	0.43	0.43	0.43	0.43	0.43	0.43	0.48	0.48	0.48	0.48
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.10	0.10	0.10	0.10	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.10	0.10	0.10	0.10
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.15	0.15	0.15	0.15	0.15	0.14	0.14	0.14	0.14	0.14	0.14	0.15	0.15	0.15	0.15
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.023	0.023	0.023	0.023	0.023	0.022	0.022	0.022	0.022	0.022	0.022	0.024	0.024	0.024	0.024
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.0013	0.0014	0.0013	0.0013	0.0013	0.0014	0.0013	0.0013	0.0013	0.0012	0.0013	0.0014	0.0014	0.0014	0.0014
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.009	0.009	0.009	0.009	0.009	0.010	0.009	0.009	0.009	0.008	0.009	0.009	0.009	0.009	0.009
Overall hazard quotient	$HQ_{overall}$	unitless		0.032	0.032	0.032	0.032	0.032	0.031	0.031	0.031	0.031	0.030	0.031	0.033	0.033	0.033	0.033

Parameter	Abbreviation	Unit		D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5	D5	D5	D5	D5	D6	D6	D6
				R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33	R64	R65	R66	R67	R10	R34	R35
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.018	0.021	0.055	0.061	0.062	0.066	0.078	0.089	0.044	0.122	0.048	0.046	0.056	0.013	0.034	0.022	0.023	0.033	0.060	0.053
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		328	328	466	466	466	466	466	466	466	466	418	418	418	418	418	418	418	1086	1086	1086
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	1.04	1.04	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.33	1.33	1.33	1.33	1.33	1.33	1.33	3.46	3.46	3.46
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.48	0.48	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.61	0.61	0.61	0.61	0.61	0.61	0.61	1.58	1.58	1.58
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.10	0.10	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.34	0.34	0.34
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.07	0.07	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.24	0.24	0.24
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.15	0.15	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.51	0.51	0.51
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.024	0.024	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.031	0.031	0.031	0.031	0.031	0.031	0.031	0.080	0.080	0.080
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.0013	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0013	0.0014	0.0013	0.0013	0.0014	0.0014	0.0014
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009
Overall hazard quotient	$HQ_{overall}$	unitless		0.033	0.033	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.044	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.089	0.089	0.089

Manganese, Scenario 1 (Current Operations, incl. background)				D6	D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7	Other (D7)	D8	D8	D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R36	R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62	R8	R55	R56	R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.047	0.044	0.047	0.062	0.028	0.036	0.165	0.136	0.106	0.093	0.018	0.033	0.015	0.016	0.037	0.019	0.021	0.010	0.011	0.041	0.005	0.005	0.006	0.011	0.007	0.007	0.012	0.006	0.017	0.021	0.008	0.018	0.015	0.005	0.008
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		1086	1086	1086	1086	1086	1086	1086	1086	1086	1086	1086	1086	1086	1086	1086	1086	1086	1086	1086	1086	284	284	284	284	284	284	284	284	284	298	298	298	298	298	298
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.45	3.46	3.46	3.46	3.46	3.45	3.45	3.46	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95
	$Intake_{ing(3-13)}$		3-13 yrs	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.43	0.43	0.43	0.43	0.43	0.43
	$Intake_{ing(13-18)}$		13-18 yrs	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
	$Intake_{ing(18-82)}$		18-82 yrs	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.07
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.14	0.14	0.14	0.14	0.14	0.14
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.022	0.022	0.022	0.022	0.022	0.022
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0013	0.0014	0.0013	0.0013	0.0014	0.0013	0.0013	0.0013	0.0013	0.0014	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.009	0.009	0.009	0.009	0.009	0.009	0.010	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009
Overall hazard quotient	$HQ_{overall}$	unitless		0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.031	0.031	0.031	0.031	0.031	0.031

Manganese, Scenario 2 (Mod6, Proposed Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3	D3	D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5	D5	D5	D5	D5	D6	D6	D6
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5	R12	R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33	R64	R65	R66	R67	R10	R34	R35
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.032	0.024	0.012	0.009	0.011	0.065	0.008	0.018	0.014	0.012	0.002	0.108	0.045	0.034	0.020	0.017	0.020	0.054	0.060	0.060	0.062	0.072	0.081	0.042	0.111	0.045	0.043	0.050	0.012	0.032	0.020	0.021	0.031	0.057	0.049
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		314	314	314	314	314	298	298	298	298	298	298	328	328	328	328	328	328	466	466	466	466	466	466	466	466	418	418	418	418	418	418	418	1086	1086	1086
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95	1.04	1.04	1.04	1.04	1.04	1.04	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.33	1.33	1.33	1.33	1.33	1.33	1.33	3.46	3.46	3.46
	$Intake_{ing(3-13)}$		3-13 yrs	0.46	0.46	0.46	0.46	0.46	0.43	0.43	0.43	0.43	0.43	0.43	0.48	0.48	0.48	0.48	0.48	0.48	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.61	0.61	0.61	0.61	0.61	0.61	0.61	1.58	1.58	1.58
	$Intake_{ing(13-18)}$		13-18 yrs	0.10	0.10	0.10	0.10	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.10	0.10	0.10	0.10	0.10	0.10	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.34	0.34	0.34
	$Intake_{ing(18-82)}$		18-82 yrs	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.24	0.24	0.24
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.15	0.15	0.15	0.15	0.15	0.14	0.14	0.14	0.14	0.14	0.14	0.15	0.15	0.15	0.15	0.15	0.15	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.51	0.51	0.51
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.023	0.023	0.023	0.023	0.023	0.022	0.022	0.022	0.022	0.022	0.022	0.024	0.024	0.024	0.024	0.024	0.024	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.031	0.031	0.031	0.031	0.031	0.031	0.031	0.080	0.080	0.080
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.0013	0.0013	0.0013	0.0013	0.0013	0.0014	0.0013	0.0013	0.0013	0.0012	0.0013	0.0014	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0014	0.0013	0.0013	0.0013	0.0014	0.0013	0.0014	0.0013	0.0013	0.0014	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.008	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009
Overall hazard quotient	$HQ_{overall}$	unitless		0.032	0.032	0.032	0.032	0.032	0.031	0.031	0.031	0.031	0.030	0.031	0.033	0.033	0.033	0.033	0.033	0.033	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.088	0.088	0.088

Manganese, Scenario 2 (Mod6, Proposed Operations, incl. background)				D6	D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7
Parameter	Abbreviation	Unit		R36	R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.043	0.041	0.045	0.059	0.026	0.033	0.162	0.132	0.101	0.088	0.016	0.030	0.014	0.015	0.034	0.018	0.020	0.010	0.010
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		1086	1086	1086	1086	1086	1086	1086	1086	1086	1086	1086	1086	1086	1086	1086	1086	1086	1086	1086
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.45	3.45	3.46	3.46	3.46	3.45	3.45
	$Intake_{ing(3-13)}$		3-13 yrs	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
	$Intake_{ing(13-18)}$		13-18 yrs	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34
	$Intake_{ing(18-82)}$		18-82 yrs	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0014	0.0014	0.0014	0.0014	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.009	0.009	0.009	0.009	0.009	0.009	0.010	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009
Overall hazard quotient	$HQ_{overall}$	unitless		0.089	0.089	0.089	0.088	0.088	0.088	0.089	0.089	0.089	0.089	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088

Manganese, Scenario 2 (Mod6, Proposed Operations, incl. background)				Other (D7)	D8	D8	D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R8	R55	R56	R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.038	0.005	0.005	0.005	0.010	0.006	0.006	0.011	0.006	0.015	0.019	0.008	0.017	0.014	0.005	0.007
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil		1086	284	284	284	284	284	284	284	284	284	298	298	298	298	298	298
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	3.46	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95
	$Intake_{ing(3-13)}$		3-13 yrs	1.58	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.43	0.43	0.43	0.43	0.43	0.43
	$Intake_{ing(13-18)}$		13-18 yrs	0.34	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
	$Intake_{ing(18-82)}$		18-82 yrs	0.24	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.07
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.51	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.14	0.14	0.14	0.14	0.14	0.14
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.080	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.022	0.022	0.022	0.022	0.022	0.022
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009
Overall hazard quotient	$HQ_{overall}$	unitless		0.088	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.031	0.031	0.031	0.031	0.031	0.031

Antimony, Scenario 1 (Current Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3	D3	D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5	R12	R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0034	0.0025	0.0013	0.0010	0.0012	0.0069	0.0009	0.0018	0.0015	0.0012	0.0003	0.0109	0.0046	0.0036	0.0021	0.0018	0.0021	0.0054	0.0061	0.0062	0.0065	0.0077	0.0088	0.0044	0.0120	0.0048	0.0045	0.0055
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.000031284	0.000022982	0.000011978	0.000009080	0.000011242	0.000062612	0.000008064	0.000016756	0.000013556	0.000011329	0.000002357	0.000099193	0.000041986	0.000033079	0.000018723	0.000016064	0.000018766	0.000049251	0.000055131	0.000056018	0.000059304	0.000070027	0.000079648	0.000039976	0.000109398	0.000043586	0.000041359	0.000050440
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.000014339	0.000010533	0.000005490	0.000004162	0.000005153	0.000028697	0.000003696	0.000007680	0.000006213	0.000005192	0.000001080	0.000045463	0.000019244	0.000015161	0.000008581	0.000007363	0.000008601	0.000022573	0.000025268	0.000025675	0.000027181	0.000032096	0.000036506	0.000018322	0.000050141	0.000019977	0.000018956	0.000023118
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.000003073	0.000002257	0.000001176	0.000000892	0.000001104	0.000006149	0.000000792	0.000001646	0.000001331	0.000001113	0.000000231	0.000009742	0.000004124	0.000003249	0.000001839	0.000001578	0.000001843	0.000004837	0.000005415	0.000005502	0.000005824	0.000006878	0.000007823	0.000003926	0.000010744	0.000004281	0.000004062	0.000004954
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.000002206	0.000001621	0.000000845	0.000000640	0.000000793	0.000004415	0.000000569	0.000001181	0.000000956	0.000000799	0.000000166	0.000006994	0.000002961	0.000002332	0.000001320	0.000001133	0.000001323	0.000003473	0.000003887	0.000003950	0.000004182	0.000004938	0.000005616	0.000002819	0.000007714	0.000003073	0.000002916	0.000003557
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000004611	0.000003388	0.000001766	0.000001339	0.000001657	0.000009229	0.000001189	0.000002470	0.000001998	0.000001670	0.000000347	0.000014622	0.000006189	0.000004876	0.000002760	0.000002368	0.000002766	0.000007260	0.000008127	0.000008257	0.000008742	0.000010322	0.000011741	0.000005893	0.000016126	0.000006425	0.000006097	0.000007435
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.000000769	0.000000565	0.000000294	0.000000223	0.000000276	0.000001538	0.000000198	0.000000412	0.000000333	0.000000278	0.0000000579	0.000002437	0.000001031	0.000000813	0.000000460	0.000000395	0.000000461	0.000001210	0.000001354	0.000001376	0.000001457	0.000001720	0.000001957	0.000000982	0.000002688	0.000001071	0.000001016	0.000001239
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.000142	0.000143	0.000142	0.000142	0.000142	0.000151	0.000142	0.000142	0.000142	0.000124	0.000141	0.000148	0.000144	0.000144	0.000143	0.000143	0.000143	0.000144	0.000146	0.000144	0.000144	0.000145	0.000146	0.000143	0.000148	0.000144	0.000144	0.000146
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.0007	0.0007	0.0007	0.0007	0.0007	0.0008	0.0007	0.0007	0.0007	0.0006	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007
Overall hazard quotient	$HQ_{overall}$	unitless		0.0007	0.0007	0.0007	0.0007	0.0007	0.0008	0.0007	0.0007	0.0007	0.0006	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007

Antimony, Scenario 1 (Current Operations, incl. background)				D5	D5	D5	D5	D6	D6	D6	D6	D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7	Other (D7)	D8
Parameter	Abbreviation	Unit		R64	R65	R66	R67	R10	R34	R35	R36	R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62	R8	R55
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0013	0.0034	0.0021	0.0023	0.0033	0.0059	0.0052	0.0046	0.0044	0.0047	0.0061	0.0028	0.0035	0.0163	0.0135	0.0105	0.0092	0.0017	0.0032	0.0015	0.0016	0.0036	0.0019	0.0021	0.0010	0.0011	0.0041	0.0005
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.000011459	0.000030917	0.000019480	0.000020474	0.000029555	0.000054007	0.000047629	0.000042094	0.000039673	0.000042354	0.000055672	0.000025296	0.000032019	0.000148508	0.000122283	0.000095496	0.000083389	0.000015848	0.000029317	0.000013491	0.000014204	0.000032884	0.000017469	0.000019069	0.000009340	0.000009816	0.000037295	0.000004562
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.000005252	0.000014170	0.000008928	0.000009384	0.000013546	0.000024753	0.000021830	0.000019293	0.000018183	0.000019412	0.000025516	0.000011594	0.000014676	0.000068066	0.000056046	0.000043769	0.000038220	0.000007263	0.000013437	0.000006183	0.000006510	0.000015072	0.000008007	0.000008740	0.000004281	0.000004499	0.000017093	0.000002091
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.000001125	0.000003036	0.000001913	0.000002011	0.000002903	0.000005304	0.000004678	0.000004134	0.000003896	0.000004160	0.000005468	0.000002484	0.000003145	0.000014586	0.000012010	0.000009379	0.000008190	0.000001556	0.000002879	0.000001325	0.000001395	0.000003230	0.000001716	0.000001873	0.000000917	0.000000964	0.000003663	0.000000448
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.000000808	0.000002180	0.000001374	0.000001444	0.000002084	0.000003808	0.000003358	0.000002968	0.000002797	0.000002986	0.000003926	0.000001784	0.000002258	0.000010472	0.000008623	0.000006734	0.000005880	0.000001117	0.000002067	0.000000951	0.000001002	0.000002319	0.000001232	0.000001345	0.000000659	0.000000692	0.000002630	0.000000322
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000001689	0.000004557	0.000002871	0.000003018	0.000004357	0.000007961	0.000007021	0.000006205	0.000005848	0.000006243	0.000008206	0.000003729	0.000004720	0.000021891	0.000018025	0.000014077	0.000012292	0.000002336	0.000004321	0.000001989	0.000002094	0.000004847	0.000002575	0.000002811	0.000001377	0.000001447	0.000005497	0.000000672
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.000000282	0.000000760	0.000000479	0.000000503	0.000000726	0.000001327	0.000001170	0.000001034	0.000000975	0.000001041	0.000001368	0.000000621	0.000000787	0.000003648	0.000003004	0.000002346	0.000002049	0.000000389	0.000000720	0.000000331	0.000000349	0.000000808	0.000000429	0.000000468	0.0000002295	0.0000002411	0.000000916	0.0000001121
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.000142	0.000143	0.000142	0.000142	0.000143	0.000144	0.000144	0.000144	0.000144	0.000144	0.000144	0.000143	0.000143	0.000151	0.000150	0.000148	0.000148	0.000142	0.000143	0.000143	0.000142	0.000143	0.000142	0.000142	0.000142	0.000142	0.000143	0.000141
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0008	0.0008	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007
Overall hazard quotient	$HQ_{overall}$	unitless		0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0008	0.0008	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007

Antimony, Scenario 1 (Current Operations, incl. background)				D8	D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R56	R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0005	0.0005	0.0011	0.0007	0.0007	0.0012	0.0006	0.0017	0.0020	0.0008	0.0018	0.0015	0.0005	0.0008
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.000004929	0.000004973	0.000009599	0.000006335	0.000006075	0.000011221	0.000005643	0.000015069	0.000018615	0.000007286	0.000016020	0.000013275	0.000004756	0.000006983
	$Intake_{ing(3-13)}$		3-13 yrs	0.000002259	0.000002279	0.000004400	0.000002903	0.000002784	0.000005143	0.000002586	0.000006907	0.000008532	0.000003339	0.000007343	0.000006084	0.000002180	0.000003201
	$Intake_{ing(13-18)}$		13-18 yrs	0.000000484	0.000000488	0.000000943	0.000000622	0.000000597	0.000001102	0.000000554	0.000001480	0.000001828	0.000000716	0.000001573	0.000001304	0.000000467	0.000000686
	$Intake_{ing(18-82)}$		18-82 yrs	0.000000348	0.000000351	0.000000677	0.000000447	0.000000428	0.000000791	0.000000398	0.000001063	0.000001313	0.000000514	0.000001130	0.000000936	0.000000335	0.000000492
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000000727	0.000000733	0.000001415	0.000000934	0.000000896	0.000001654	0.000000832	0.000002221	0.000002744	0.000001074	0.000002362	0.000001957	0.000000701	0.000001029
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		6	6	6	6	6	6	6	6	6	6	6	6	6	6
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000001211	0.0000001222	0.000000236	0.0000001556	0.0000001493	0.000000276	0.0000001386	0.000000370	0.000000457	0.000000179	0.000000394	0.000000326	0.0000001169	0.0000001716
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.000141	0.000141	0.000142	0.000141	0.000141	0.000142	0.000141	0.000142	0.000142	0.000141	0.000142	0.000142	0.000141	0.000141
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007
Overall hazard quotient	$HQ_{overall}$	unitless		0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007

Antimony, Scenario 2 (Mod6, Proposed Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3	D3
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5	R12
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0031	0.0024	0.0012	0.0009	0.0011	0.0065	0.0008	0.0018	0.0014	0.0012	0.0002	0.0107	0.0044	0.0034	0.0019
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0000285	0.0000215	0.0000110	0.0000083	0.0000103	0.0000588	0.0000075	0.0000159	0.0000128	0.0000106	0.0000022	0.0000974	0.0000400	0.0000309	0.0000177
	$Intake_{ing(3-13)}$		3-13 yrs	0.0000130	0.0000098	0.0000051	0.0000038	0.0000047	0.0000270	0.0000034	0.0000073	0.0000058	0.0000049	0.0000010	0.0000446	0.0000183	0.0000142	0.0000081
	$Intake_{ing(13-18)}$		13-18 yrs	0.0000028	0.0000021	0.0000011	0.0000008	0.0000010	0.0000058	0.0000007	0.0000016	0.0000013	0.0000010	0.0000002	0.0000096	0.0000039	0.0000030	0.0000017
	$Intake_{ing(18-82)}$		18-82 yrs	0.0000020	0.0000015	0.0000008	0.0000006	0.0000007	0.0000041	0.0000005	0.0000011	0.0000009	0.0000008	0.0000002	0.0000069	0.0000028	0.0000022	0.0000012
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0000042	0.0000032	0.0000016	0.0000012	0.0000015	0.0000087	0.0000011	0.0000023	0.0000019	0.0000016	0.0000003	0.0000144	0.0000059	0.0000046	0.0000026
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.00000070	0.00000053	0.00000027	0.00000020	0.00000025	0.00000145	0.00000018	0.00000039	0.00000031	0.00000026	0.00000005	0.00000239	0.00000098	0.00000076	0.00000044
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m³		0.000140	0.000141	0.000141	0.000141	0.000141	0.000149	0.000141	0.000141	0.000141	0.000124	0.000141	0.000143	0.000141	0.000141	0.000141
Chronic air guideline value (Section 4.3.2)	AGV	µg/m³		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00070	0.00071	0.00071	0.00070	0.00071	0.00074	0.00070	0.00071	0.00070	0.00062	0.00070	0.00072	0.00071	0.00071	0.00071
Overall hazard quotient	$HQ_{overall}$	unitless		0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0006	0.0007	0.0007	0.0007	0.0007	0.0007

Antimony, Scenario 2 (Mod6, Proposed Operations, incl. background)				D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5	D5	D5
Parameter	Abbreviation	Unit		R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33	R64	R65
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0017	0.0020	0.0053	0.0059	0.0059	0.0062	0.0071	0.0080	0.0042	0.0109	0.0045	0.0042	0.0049	0.0011	0.0031
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0000152	0.0000178	0.0000482	0.0000539	0.0000540	0.0000562	0.0000644	0.0000726	0.0000378	0.0000994	0.0000407	0.0000384	0.0000447	0.0000104	0.0000285
	$Intake_{ing(3-13)}$		3-13 yrs	0.0000069	0.0000081	0.0000221	0.0000247	0.0000247	0.0000257	0.0000295	0.0000333	0.0000173	0.0000456	0.0000186	0.0000176	0.0000205	0.0000048	0.0000131
	$Intake_{ing(13-18)}$		13-18 yrs	0.0000015	0.0000017	0.0000047	0.0000053	0.0000053	0.0000055	0.0000063	0.0000071	0.0000037	0.0000098	0.0000040	0.0000038	0.0000044	0.0000010	0.0000028
	$Intake_{ing(18-82)}$		18-82 yrs	0.0000011	0.0000013	0.0000034	0.0000038	0.0000038	0.0000040	0.0000045	0.0000051	0.0000027	0.0000070	0.0000029	0.0000027	0.0000032	0.0000007	0.0000020
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0000022	0.0000026	0.0000071	0.0000079	0.0000080	0.0000083	0.0000095	0.0000107	0.0000056	0.0000147	0.0000060	0.0000057	0.0000066	0.0000015	0.0000042
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.00000037	0.00000044	0.00000119	0.00000132	0.00000133	0.00000138	0.00000158	0.00000178	0.00000093	0.00000244	0.00000100	0.00000094	0.00000110	0.00000026	0.00000070
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m³		0.000141	0.000141	0.000142	0.000143	0.000142	0.000141	0.000142	0.000143	0.000141	0.000145	0.000142	0.000142	0.000143	0.000141	0.000142
Chronic air guideline value (Section 4.3.2)	AGV	µg/m³		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00071	0.00071	0.00071	0.00072	0.00071	0.00071	0.00071	0.00071	0.00070	0.00073	0.00071	0.00071	0.00071	0.00071	0.00071
Overall hazard quotient	$HQ_{overall}$	unitless		0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007

Antimony, Scenario 2 (Mod6, Proposed Operations, incl. background)				D5	D5	D6	D6	D6	D6	D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7	Other (D7)	D8	D8	D8	D9	D9
Parameter	Abbreviation	Unit		R66	R67	R10	R34	R35	R36	R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62	R8	R55	R56	R61	R16	R19
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0020	0.0021	0.0031	0.0056	0.0049	0.0043	0.0041	0.0044	0.0058	0.0026	0.0033	0.0160	0.0131	0.0100	0.0087	0.0016	0.0030	0.0014	0.0014	0.0034	0.0018	0.0020	0.0010	0.0010	0.0038	0.0005	0.0005	0.0005	0.0010	0.0006
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.0000180	0.0000189	0.0000279	0.0000510	0.0000445	0.0000390	0.0000368	0.0000400	0.0000529	0.0000236	0.0000299	0.0001453	0.0001189	0.0000912	0.0000790	0.0000148	0.0000273	0.0000123	0.0000131	0.0000308	0.0000163	0.0000178	0.0000087	0.0000090	0.0000346	0.0000042	0.0000045	0.0000045	0.0000088	0.0000058
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.0000082	0.0000087	0.0000128	0.0000234	0.0000204	0.0000179	0.0000169	0.0000184	0.0000242	0.0000108	0.0000137	0.0000666	0.0000545	0.0000418	0.0000362	0.0000068	0.0000125	0.0000057	0.0000060	0.0000141	0.0000075	0.0000081	0.0000040	0.0000041	0.0000158	0.0000019	0.0000021	0.0000021	0.0000040	0.0000027
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.0000018	0.0000019	0.0000027	0.0000050	0.0000044	0.0000038	0.0000036	0.0000039	0.0000052	0.0000023	0.0000029	0.0000143	0.0000117	0.0000090	0.0000078	0.0000015	0.0000027	0.0000012	0.0000013	0.0000030	0.0000016	0.0000017	0.0000009	0.0000009	0.0000034	0.0000004	0.0000004	0.0000004	0.0000009	0.0000006
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.0000013	0.0000013	0.0000020	0.0000036	0.0000031	0.0000028	0.0000026	0.0000028	0.0000037	0.0000017	0.0000021	0.0000102	0.0000084	0.0000064	0.0000056	0.0000010	0.0000019	0.0000009	0.0000009	0.0000022	0.0000011	0.0000013	0.0000006	0.0000006	0.0000024	0.0000003	0.0000003	0.0000003	0.0000006	0.0000004
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0000027	0.0000028	0.0000041	0.0000075	0.0000066	0.0000058	0.0000054	0.0000059	0.0000078	0.0000035	0.0000044	0.0000214	0.0000175	0.0000134	0.0000116	0.0000022	0.0000040	0.0000018	0.0000019	0.0000045	0.0000024	0.0000026	0.0000013	0.0000013	0.0000051	0.0000006	0.0000007	0.0000007	0.0000013	0.0000009
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.00000044	0.00000046	0.00000068	0.00000125	0.00000109	0.00000096	0.00000090	0.00000098	0.00000130	0.00000058	0.00000073	0.00000357	0.00000292	0.00000224	0.00000194	0.00000036	0.00000067	0.00000030	0.00000032	0.00000076	0.00000040	0.00000044	0.00000021	0.00000022	0.00000085	0.00000010	0.00000011	0.00000011	0.00000022	0.00000014
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.000141	0.000141	0.000141	0.000141	0.000141	0.000141	0.000142	0.000141	0.000141	0.000141	0.000141	0.000151	0.000148	0.000146	0.000144	0.000141	0.000141	0.000141	0.000141	0.000141	0.000141	0.000141	0.000141	0.000141	0.000141	0.000141	0.000141	0.000141	0.000141	0.000141
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00071	0.00071	0.00071	0.00070	0.00070	0.00071	0.00071	0.00071	0.00071	0.00071	0.00071	0.00075	0.00074	0.00073	0.00072	0.00070	0.00071	0.00071	0.00070	0.00071	0.00070	0.00070	0.00070	0.00071	0.00070	0.00070	0.00070	0.00070	0.00070	0.00070
Overall hazard quotient	$HQ_{overall}$	unitless		0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0008	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007

Antimony, Scenario 2 (Mod6, Proposed Operations, incl. background)				D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0006	0.0011	0.0006	0.0015	0.0019	0.0007	0.0016	0.0014	0.0005	0.0007
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0000056	0.0000103	0.0000052	0.0000138	0.0000175	0.0000067	0.0000149	0.0000123	0.0000044	0.0000065
	$Intake_{ing(3-13)}$		3-13 yrs	0.0000026	0.0000047	0.0000024	0.0000063	0.0000080	0.0000031	0.0000068	0.0000057	0.0000020	0.0000030
	$Intake_{ing(13-18)}$		13-18 yrs	0.0000006	0.0000010	0.0000005	0.0000014	0.0000017	0.0000007	0.0000015	0.0000012	0.0000004	0.0000006
	$Intake_{ing(18-82)}$		18-82 yrs	0.0000004	0.0000007	0.0000004	0.0000010	0.0000012	0.0000005	0.0000011	0.0000009	0.0000003	0.0000005
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0000008	0.0000015	0.0000008	0.0000020	0.0000026	0.0000010	0.0000022	0.0000018	0.0000007	0.0000010
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		6	6	6	6	6	6	6	6	6	6
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.00000014	0.00000025	0.00000013	0.00000034	0.00000043	0.00000017	0.00000037	0.00000030	0.00000011	0.00000016
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.000141	0.000141	0.000141	0.000141	0.000141	0.000141	0.000141	0.000141	0.000141	0.000141
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00070	0.00071	0.00070	0.00071	0.00070	0.00070	0.00070	0.00070	0.00070	0.00070
Overall hazard quotient	$HQ_{overall}$	unitless		0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007

Barium, Scenario 1 (Current Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0008	0.0006	0.0003	0.0002	0.0003	0.0017	0.0002	0.0004	0.0004	0.0003	0.0001	0.0027	0.0011	0.0009
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.00000762	0.00000560	0.00000292	0.00000221	0.00000274	0.00001525	0.00000196	0.00000408	0.00000330	0.00000276	0.00000057	0.00002416	0.00001023	0.00000806
	$Intake_{ing(3-13)}$		3-13 yrs	0.00000349	0.00000257	0.00000134	0.00000101	0.00000126	0.00000699	0.00000090	0.00000187	0.00000151	0.00000126	0.00000026	0.00001108	0.00000469	0.00000369
	$Intake_{ing(13-18)}$		13-18 yrs	0.00000075	0.00000055	0.00000029	0.00000022	0.00000027	0.00000150	0.00000019	0.00000040	0.00000032	0.00000027	0.00000006	0.00000237	0.00000100	0.00000079
	$Intake_{ing(18-82)}$		18-82 yrs	0.00000054	0.00000039	0.00000021	0.00000016	0.00000019	0.00000108	0.00000014	0.00000029	0.00000023	0.00000019	0.00000004	0.00000170	0.00000072	0.00000057
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0000011	0.0000008	0.0000004	0.0000003	0.0000004	0.0000022	0.0000003	0.0000006	0.0000005	0.0000004	0.0000001	0.0000036	0.0000015	0.0000012
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		50	50	50	50	50	50	50	50	50	50	50	50	50	50
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.000000022	0.000000017	0.000000009	0.000000007	0.000000008	0.000000045	0.000000006	0.000000012	0.000000010	0.000000008	0.0000000017	0.000000071	0.000000030	0.000000024
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.000035	0.000036	0.000035	0.000035	0.000035	0.000037	0.000035	0.000035	0.000035	0.000031	0.000035	0.000037	0.000036	0.000036
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000035	0.000036	0.000035	0.000035	0.000035	0.000037	0.000035	0.000035	0.000035	0.000031	0.000035	0.000037	0.000036	0.000036
Overall hazard quotient	$HQ_{overall}$	unitless		0.000035	0.000036	0.000035	0.000035	0.000035	0.000038	0.000035	0.000035	0.000035	0.000031	0.000035	0.000037	0.000036	0.000036

Barium, Scenario 1 (Current Operations, incl. background)				D3	D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5
Parameter	Abbreviation	Unit		R12	R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0005	0.0004	0.0005	0.0013	0.0015	0.0015	0.0016	0.0019	0.0021	0.0011	0.0029	0.0012	0.0011	0.0014
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.00000456	0.00000391	0.00000457	0.00001200	0.00001343	0.00001365	0.00001445	0.00001706	0.00001940	0.00000974	0.00002665	0.00001062	0.00001008	0.00001229
	$Intake_{ing(3-13)}$		3-13 yrs	0.00000209	0.00000179	0.00000210	0.00000550	0.00000616	0.00000625	0.00000662	0.00000782	0.00000889	0.00000446	0.00001221	0.00000487	0.00000462	0.00000563
	$Intake_{ing(13-18)}$		13-18 yrs	0.00000045	0.00000038	0.00000045	0.00000118	0.00000132	0.00000134	0.00000142	0.00000168	0.00000191	0.00000096	0.00000262	0.00000104	0.00000099	0.00000121
	$Intake_{ing(18-82)}$		18-82 yrs	0.00000032	0.00000028	0.00000032	0.00000085	0.00000095	0.00000096	0.00000102	0.00000120	0.00000137	0.00000069	0.00000188	0.00000075	0.00000071	0.00000087
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0000007	0.0000006	0.0000007	0.0000018	0.0000020	0.0000020	0.0000021	0.0000025	0.0000029	0.0000014	0.0000039	0.0000016	0.0000015	0.0000018
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		50	50	50	50	50	50	50	50	50	50	50	50	50	50
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.000000013	0.000000012	0.000000013	0.000000035	0.000000040	0.000000040	0.000000043	0.000000050	0.000000057	0.000000029	0.000000079	0.000000031	0.000000030	0.000000036
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.000036	0.000035	0.000036	0.000036	0.000036	0.000036	0.000036	0.000036	0.000036	0.000036	0.000037	0.000036	0.000036	0.000036
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000036	0.000035	0.000036	0.000036	0.000036	0.000036	0.000036	0.000036	0.000036	0.000036	0.000037	0.000036	0.000036	0.000036
Overall hazard quotient	$HQ_{overall}$	unitless		0.000036	0.000035	0.000036	0.000036	0.000036	0.000036	0.000036	0.000036	0.000036	0.000036	0.000037	0.000036	0.000036	0.000036

Barium, Scenario 1 (Current Operations, incl. background)				D5	D5	D5	D5	D6	D6	D6	D6	D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7	Other (D7)	D8
Parameter	Abbreviation	Unit		R64	R65	R66	R67	R10	R34	R35	R36	R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62	R8	R55
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0003	0.0008	0.0005	0.0005	0.0008	0.0014	0.0013	0.0011	0.0011	0.0011	0.0015	0.0007	0.0009	0.0040	0.0033	0.0026	0.0022	0.0004	0.0008	0.0004	0.0004	0.0009	0.0005	0.0005	0.0003	0.0003	0.0010	0.0001
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.00000279	0.00000753	0.00000475	0.00000499	0.00000720	0.00001316	0.00001160	0.00001025	0.00000966	0.00001032	0.00001356	0.00000616	0.00000780	0.00003618	0.00002979	0.00002326	0.00002031	0.00000386	0.00000714	0.00000329	0.00000346	0.00000801	0.00000426	0.00000465	0.00000228	0.00000239	0.00000909	0.00000111
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.00000128	0.00000345	0.00000217	0.00000229	0.00000330	0.00000603	0.00000532	0.00000470	0.00000443	0.00000473	0.00000622	0.00000282	0.00000358	0.00001658	0.00001365	0.00001066	0.00000931	0.00000177	0.00000327	0.00000151	0.00000159	0.00000367	0.00000195	0.00000213	0.00000104	0.00000110	0.00000416	0.00000051
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.00000027	0.00000074	0.00000047	0.00000049	0.00000071	0.00000129	0.00000114	0.00000101	0.00000095	0.00000101	0.00000133	0.00000061	0.00000077	0.00000355	0.00000293	0.00000228	0.00000200	0.00000038	0.00000070	0.00000032	0.00000034	0.00000079	0.00000042	0.00000046	0.00000022	0.00000023	0.00000089	0.00000011
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.00000020	0.00000053	0.00000033	0.00000035	0.00000051	0.00000093	0.00000082	0.00000072	0.00000068	0.00000073	0.00000096	0.00000043	0.00000055	0.00000255	0.00000210	0.00000164	0.00000143	0.00000027	0.00000050	0.00000023	0.00000024	0.00000056	0.00000030	0.00000033	0.00000016	0.00000017	0.00000064	0.00000008
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0000004	0.0000011	0.0000007	0.0000007	0.0000011	0.0000019	0.0000017	0.0000015	0.0000014	0.0000015	0.0000020	0.0000009	0.0000011	0.0000053	0.0000044	0.0000034	0.0000030	0.0000006	0.0000011	0.0000005	0.0000005	0.0000012	0.0000006	0.0000007	0.0000003	0.0000004	0.0000013	0.0000002
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.000000008	0.000000022	0.000000014	0.000000015	0.000000021	0.000000039	0.000000034	0.000000030	0.000000028	0.000000030	0.000000040	0.000000018	0.000000023	0.000000107	0.000000088	0.000000069	0.000000060	0.000000011	0.000000021	0.000000010	0.000000010	0.000000024	0.000000013	0.000000014	0.000000007	0.000000007	0.000000027	0.000000003
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.000035	0.000036	0.000035	0.000035	0.000036	0.000036	0.000036	0.000036	0.000036	0.000036	0.000036	0.000035	0.000036	0.000038	0.000037	0.000037	0.000037	0.000035	0.000036	0.000035	0.000035	0.000036	0.000035	0.000035	0.000035	0.000035	0.000036	0.000035
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000035	0.000036	0.000035	0.000035	0.000036	0.000036	0.000036	0.000036	0.000036	0.000036	0.000036	0.000035	0.000036	0.000038	0.000037	0.000037	0.000037	0.000035	0.000036	0.000035	0.000035	0.000036	0.000035	0.000035	0.000035	0.000035	0.000036	0.000035
Overall hazard quotient	$HQ_{overall}$	unitless		0.000035	0.000036	0.000035	0.000035	0.000036	0.000036	0.000036	0.000036	0.000036	0.000036	0.000036	0.000035	0.000036	0.000038	0.000037	0.000037	0.000037	0.000035	0.000036	0.000035	0.000035	0.000036	0.000035	0.000035	0.000035	0.000035	0.000036	0.000035

Barium, Scenario 1 (Current Operations, incl. background)				D8	D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R56	R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0001	0.0001	0.0003	0.0002	0.0002	0.0003	0.0002	0.0004	0.0005	0.0002	0.0004	0.0004	0.0001	0.0002
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.00000120	0.00000121	0.00000234	0.00000154	0.00000148	0.00000273	0.00000137	0.00000367	0.00000453	0.00000177	0.00000390	0.00000323	0.00000116	0.00000170
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.00000055	0.00000056	0.00000107	0.00000071	0.00000068	0.00000125	0.00000063	0.00000168	0.00000208	0.00000081	0.00000179	0.00000148	0.00000053	0.00000078
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.00000012	0.00000012	0.00000023	0.00000015	0.00000015	0.00000027	0.00000014	0.00000036	0.00000045	0.00000017	0.00000038	0.00000032	0.00000011	0.00000017
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.00000008	0.00000009	0.00000016	0.00000011	0.00000010	0.00000019	0.00000010	0.00000026	0.00000032	0.00000013	0.00000028	0.00000023	0.00000008	0.00000012
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0000002	0.0000002	0.0000003	0.0000002	0.0000002	0.0000004	0.0000002	0.0000005	0.0000007	0.0000003	0.0000006	0.0000005	0.0000002	0.0000003
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		50	50	50	50	50	50	50	50	50	50	50	50	50	50
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.000000004	0.000000004	0.000000007	0.000000005	0.000000004	0.000000008	0.000000004	0.000000011	0.000000013	0.000000005	0.000000012	0.000000010	0.000000003	0.000000005
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035
Overall hazard quotient	$HQ_{overall}$	unitless		0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035

Barium, Scenario 2 (Mod6, Proposed Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.00076	0.00058	0.00030	0.00022	0.00028	0.00158	0.00020	0.00043	0.00034	0.00029
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0000069	0.0000052	0.0000027	0.0000020	0.0000025	0.0000143	0.0000018	0.0000039	0.0000031	0.0000026
	$Intake_{ing(3-13)}$		3-13 yrs	0.0000032	0.0000024	0.0000012	0.0000009	0.0000012	0.0000066	0.0000008	0.0000018	0.0000014	0.0000012
	$Intake_{ing(13-18)}$		13-18 yrs	0.0000007	0.0000005	0.0000003	0.0000002	0.0000002	0.0000014	0.0000002	0.0000004	0.0000003	0.0000003
	$Intake_{ing(18-82)}$		18-82 yrs	0.0000005	0.0000004	0.0000002	0.0000001	0.0000002	0.0000010	0.0000001	0.0000003	0.0000002	0.0000002
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0000010	0.0000008	0.0000004	0.0000003	0.0000004	0.0000021	0.0000003	0.0000006	0.0000005	0.0000004
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		50	50	50	50	50	50	50	50	50	50
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000000204	0.0000000154	0.0000000079	0.0000000060	0.0000000074	0.0000000422	0.0000000054	0.0000000114	0.0000000092	0.0000000076
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.000035	0.000035	0.000035	0.000035	0.000035	0.000037	0.000035	0.000035	0.000035	0.000031
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		1	1	1	1	1	1	1	1	1	1
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000035	0.000035	0.000035	0.000035	0.000035	0.000037	0.000035	0.000035	0.000035	0.000031
Overall hazard quotient	$HQ_{overall}$	unitless		0.000035	0.000035	0.000035	0.000035	0.000035	0.000037	0.000035	0.000035	0.000035	0.000031

Barium, Scenario 2 (Mod6, Proposed Operations, incl. background)				Other (D2)	D3	D3	D3	D3	D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5
Parameter	Abbreviation	Unit		R59	R3	R4	R5	R12	R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.00006	0.00261	0.00107	0.00083	0.00047	0.00041	0.00048	0.00129	0.00144	0.00145	0.00151	0.00173	0.00195	0.00101	0.00266	0.00109	0.00103	0.00120
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0000005	0.0000237	0.0000097	0.0000075	0.0000043	0.0000037	0.0000043	0.0000118	0.0000131	0.0000132	0.0000137	0.0000157	0.0000177	0.0000092	0.0000242	0.0000099	0.0000093	0.0000109
	$Intake_{ing(3-13)}$		3-13 yrs	0.0000002	0.0000109	0.0000045	0.0000035	0.0000020	0.0000017	0.0000020	0.0000054	0.0000060	0.0000060	0.0000063	0.0000072	0.0000081	0.0000042	0.0000111	0.0000045	0.0000043	0.0000050
	$Intake_{ing(13-18)}$		13-18 yrs	0.0000001	0.0000023	0.0000010	0.0000007	0.0000004	0.0000004	0.0000004	0.0000012	0.0000013	0.0000013	0.0000013	0.0000015	0.0000017	0.0000009	0.0000024	0.0000010	0.0000009	0.0000011
	$Intake_{ing(18-82)}$		18-82 yrs	0.0000000	0.0000017	0.0000007	0.0000005	0.0000003	0.0000003	0.0000003	0.0000008	0.0000009	0.0000009	0.0000010	0.0000011	0.0000012	0.0000006	0.0000017	0.0000007	0.0000007	0.0000008
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0000001	0.0000035	0.0000014	0.0000011	0.0000006	0.0000005	0.0000006	0.0000017	0.0000019	0.0000019	0.0000020	0.0000023	0.0000026	0.0000014	0.0000036	0.0000015	0.0000014	0.0000016
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000000016	0.0000000699	0.0000000287	0.0000000222	0.0000000127	0.0000000109	0.0000000127	0.0000000346	0.0000000387	0.0000000388	0.0000000403	0.0000000463	0.0000000521	0.0000000271	0.0000000714	0.0000000292	0.0000000276	0.0000000321
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.000035	0.000036	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000036	0.000035	0.000035	0.000035	0.000035	0.000035	0.000036	0.000035	0.000035	0.000036
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000035	0.000036	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000036	0.000035	0.000035	0.000035	0.000035	0.000035	0.000036	0.000035	0.000035	0.000036
Overall hazard quotient	$HQ_{overall}$	unitless		0.000035	0.000036	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000036	0.000035	0.000035	0.000035	0.000036	0.000035	0.000036	0.000035	0.000035	0.000036

Barium, Scenario 2 (Mod6, Proposed Operations, incl. background)				D5	D5	D5	D5	D6	D6	D6	D6	D6	D6	D6	D6	D6	Other (D6)
Parameter	Abbreviation	Unit		R64	R65	R66	R67	R10	R34	R35	R36	R37	R41	R42	R47	R50	R27
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.00028	0.00076	0.00048	0.00051	0.00075	0.00137	0.00119	0.00105	0.00099	0.00107	0.00142	0.00063	0.00080	0.00389
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0000025	0.0000069	0.0000044	0.0000046	0.0000068	0.0000124	0.0000108	0.0000095	0.0000090	0.0000098	0.0000129	0.0000057	0.0000073	0.0000354
	$Intake_{ing(3-13)}$		3-13 yrs	0.0000012	0.0000032	0.0000020	0.0000021	0.0000031	0.0000057	0.0000050	0.0000044	0.0000041	0.0000045	0.0000059	0.0000026	0.0000033	0.0000162
	$Intake_{ing(13-18)}$		13-18 yrs	0.0000002	0.0000007	0.0000004	0.0000005	0.0000007	0.0000012	0.0000011	0.0000009	0.0000009	0.0000010	0.0000013	0.0000006	0.0000007	0.0000035
	$Intake_{ing(18-82)}$		18-82 yrs	0.0000002	0.0000005	0.0000003	0.0000003	0.0000005	0.0000009	0.0000008	0.0000007	0.0000006	0.0000007	0.0000009	0.0000004	0.0000005	0.0000025
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0000004	0.0000010	0.0000006	0.0000007	0.0000010	0.0000018	0.0000016	0.0000014	0.0000013	0.0000014	0.0000019	0.0000008	0.0000011	0.0000052
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		50	50	50	50	50	50	50	50	50	50	50	50	50	50
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000000075	0.0000000205	0.0000000129	0.0000000136	0.0000000200	0.0000000366	0.0000000320	0.0000000280	0.0000000264	0.0000000288	0.0000000380	0.0000000169	0.0000000215	0.0000001044
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000037
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000037
Overall hazard quotient	$HQ_{overall}$	unitless		0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000038

Barium, Scenario 2 (Mod6, Proposed Operations, incl. background)				Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7	Other (D7)	D8
Parameter	Abbreviation	Unit		R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62	R8	R55
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.00319	0.00244	0.00212	0.00040	0.00073	0.00033	0.00035	0.00082	0.00044	0.00048	0.00023	0.00024	0.00093	0.00011
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0000290	0.0000222	0.0000192	0.0000036	0.0000067	0.0000030	0.0000032	0.0000075	0.0000040	0.0000043	0.0000021	0.0000022	0.0000084	0.0000010
	$Intake_{ing(3-13)}$		3-13 yrs	0.0000133	0.0000102	0.0000088	0.0000016	0.0000031	0.0000014	0.0000015	0.0000034	0.0000018	0.0000020	0.0000010	0.0000010	0.0000039	0.0000005
	$Intake_{ing(13-18)}$		13-18 yrs	0.0000028	0.0000022	0.0000019	0.0000004	0.0000007	0.0000003	0.0000003	0.0000007	0.0000004	0.0000004	0.0000002	0.0000002	0.0000008	0.0000001
	$Intake_{ing(18-82)}$		18-82 yrs	0.0000020	0.0000016	0.0000014	0.0000003	0.0000005	0.0000002	0.0000002	0.0000005	0.0000003	0.0000003	0.0000001	0.0000002	0.0000006	0.0000001
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0000043	0.0000033	0.0000028	0.0000005	0.0000010	0.0000004	0.0000005	0.0000011	0.0000006	0.0000006	0.0000003	0.0000003	0.0000012	0.0000002
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		50	50	50	50	50	50	50	50	50	50	50	50	50	50
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000000854	0.0000000655	0.0000000567	0.0000000106	0.0000000196	0.0000000089	0.0000000094	0.0000000221	0.0000000117	0.0000000127	0.0000000062	0.0000000064	0.0000000248	0.0000000030
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.000037	0.000036	0.000036	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000037	0.000036	0.000036	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035
Overall hazard quotient	$HQ_{overall}$	unitless		0.000037	0.000036	0.000036	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035

Barium, Scenario 2 (Mod6, Proposed Operations, incl. background)				D8	D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R56	R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.00012	0.00012	0.00024	0.00016	0.00015	0.00028	0.00014	0.00037	0.00047	0.00018	0.00040	0.00033	0.00012	0.00017
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0000011	0.0000011	0.0000021	0.0000014	0.0000014	0.0000025	0.0000013	0.0000034	0.0000043	0.0000016	0.0000036	0.0000030	0.0000011	0.0000016
	$Intake_{ing(3-13)}$		3-13 yrs	0.0000005	0.0000005	0.0000010	0.0000006	0.0000006	0.0000012	0.0000006	0.0000015	0.0000020	0.0000008	0.0000017	0.0000014	0.0000005	0.0000007
	$Intake_{ing(13-18)}$		13-18 yrs	0.0000001	0.0000001	0.0000002	0.0000001	0.0000001	0.0000002	0.0000001	0.0000003	0.0000004	0.0000002	0.0000004	0.0000003	0.0000001	0.0000002
	$Intake_{ing(18-82)}$		18-82 yrs	0.0000001	0.0000001	0.0000002	0.0000001	0.0000001	0.0000002	0.0000001	0.0000002	0.0000003	0.0000001	0.0000003	0.0000002	0.0000001	0.0000001
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0000002	0.0000002	0.0000003	0.0000002	0.0000002	0.0000004	0.0000002	0.0000005	0.0000006	0.0000002	0.0000005	0.0000004	0.0000002	0.0000002
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		50	50	50	50	50	50	50	50	50	50	50	50	50	50
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000000033	0.0000000033	0.0000000063	0.0000000042	0.0000000040	0.0000000074	0.0000000037	0.0000000099	0.0000000125	0.0000000048	0.0000000107	0.0000000089	0.0000000032	0.0000000046
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m³		0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035
Chronic air guideline value (Section 4.3.2)	AGV	µg/m³		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035
Overall hazard quotient	$HQ_{overall}$	unitless		0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035

Beryllium,Scenario 1 (Current Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0000114	0.0000084	0.0000044	0.0000033	0.0000041	0.0000229	0.0000029	0.0000061	0.0000049	0.0000041	0.0000009	0.0000362	0.0000153	0.0000121
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0000001038	0.0000000763	0.0000000398	0.0000000301	0.0000000373	0.0000002078	0.0000000268	0.0000000556	0.0000000450	0.0000000376	0.0000000078	0.0000003292	0.0000001393	0.0000001098
	$Intake_{ing(3-13)}$		3-13 yrs	0.0000000476	0.0000000350	0.0000000182	0.0000000138	0.0000000171	0.0000000952	0.0000000123	0.0000000255	0.0000000206	0.0000000172	0.0000000036	0.0000001509	0.0000000639	0.0000000503
	$Intake_{ing(13-18)}$		13-18 yrs	0.0000000102	0.0000000075	0.0000000039	0.0000000030	0.0000000037	0.0000000204	0.0000000026	0.0000000055	0.0000000044	0.0000000037	0.0000000008	0.0000000323	0.0000000137	0.0000000108
	$Intake_{ing(18-82)}$		18-82 yrs	0.0000000073	0.0000000054	0.0000000028	0.0000000021	0.0000000026	0.0000000147	0.0000000019	0.0000000039	0.0000000032	0.0000000027	0.0000000006	0.0000000232	0.0000000098	0.0000000077
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000000015	0.000000011	0.000000006	0.000000004	0.000000005	0.000000031	0.000000004	0.000000008	0.000000007	0.000000006	0.000000001	0.000000049	0.000000021	0.000000016
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000000128	0.0000000094	0.0000000049	0.0000000037	0.0000000046	0.0000000255	0.0000000033	0.0000000068	0.0000000055	0.0000000046	0.0000000010	0.0000000404	0.0000000171	0.0000000135
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.00000038	0.00000039	0.00000038	0.00000038	0.00000038	0.00000041	0.00000038	0.00000038	0.00000038	0.00000034	0.00000038	0.00000040	0.00000039	0.00000039
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000055	0.000055	0.000055	0.000055	0.000055	0.000058	0.000055	0.000055	0.000055	0.000048	0.000054	0.000057	0.000055	0.000055
Overall hazard quotient	$HQ_{overall}$	unitless		0.00005	0.00006	0.00005	0.00005	0.00005	0.00006	0.00005	0.00005	0.00005	0.00005	0.00005	0.00006	0.00006	0.00006

Beryllium,Scenario 1 (Current Operations, incl. background)				D3	D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5
Parameter	Abbreviation	Unit		R12	R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0000068	0.0000059	0.0000069	0.0000180	0.0000201	0.0000204	0.0000216	0.0000256	0.0000291	0.0000146	0.0000399	0.0000159	0.0000151
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0000000621	0.0000000533	0.0000000623	0.0000001635	0.0000001830	0.0000001859	0.0000001968	0.0000002324	0.0000002643	0.0000001327	0.0000003631	0.0000001447	0.0000001373
	$Intake_{ing(3-13)}$		3-13 yrs	0.0000000285	0.0000000244	0.0000000285	0.0000000749	0.0000000839	0.0000000852	0.0000000902	0.0000001065	0.0000001212	0.0000000608	0.0000001664	0.0000000663	0.0000000629
	$Intake_{ing(13-18)}$		13-18 yrs	0.0000000061	0.0000000052	0.0000000061	0.0000000161	0.0000000180	0.0000000183	0.0000000193	0.0000000228	0.0000000260	0.0000000130	0.0000000357	0.0000000142	0.0000000135
	$Intake_{ing(18-82)}$		18-82 yrs	0.0000000044	0.0000000038	0.0000000044	0.0000000115	0.0000000129	0.0000000131	0.0000000139	0.0000000164	0.0000000186	0.0000000094	0.0000000256	0.0000000102	0.0000000097
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000000009	0.000000008	0.000000009	0.000000024	0.000000027	0.000000027	0.000000029	0.000000034	0.000000039	0.000000020	0.000000054	0.000000021	0.000000020
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000000076	0.0000000065	0.0000000077	0.0000000201	0.0000000225	0.0000000228	0.0000000242	0.0000000285	0.0000000325	0.0000000163	0.0000000446	0.0000000178	0.0000000169
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.00000039	0.00000038	0.00000039	0.00000039	0.00000039	0.00000039	0.00000039	0.00000039	0.00000039	0.00000039	0.00000040	0.00000039	0.00000039
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000055	0.000055	0.000055	0.000055	0.000056	0.000056	0.000056	0.000056	0.000056	0.000055	0.000057	0.000055	0.000055
Overall hazard quotient	$HQ_{overall}$	unitless		0.00006	0.00005	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006

Beryllium,Scenario 1 (Current Operations, incl. background)				D5	D5	D5	D5	D5	D6	D6	D6	D6	D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7
Parameter	Abbreviation	Unit		R33	R64	R65	R66	R67	R10	R34	R35	R36	R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0000184	0.0000042	0.0000113	0.0000071	0.0000075	0.0000108	0.0000197	0.0000174	0.0000154	0.0000145	0.0000155	0.0000203	0.0000092	0.0000117	0.0000542	0.0000446	0.0000349	0.0000304	0.0000058	0.0000107	0.0000049	0.0000052	0.0000120	0.0000064	0.0000070	0.0000034	0.0000036
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0000001674	0.0000000380	0.0000001026	0.0000000646	0.0000000679	0.0000000981	0.0000001792	0.0000001581	0.0000001397	0.0000001317	0.0000001406	0.0000001848	0.0000000839	0.0000001063	0.0000004929	0.0000004058	0.0000003169	0.0000002767	0.0000000526	0.0000000973	0.0000000448	0.0000000471	0.0000001091	0.0000000580	0.0000000633	0.0000000310	0.0000000326
	$Intake_{ing(3-13)}$		3-13 yrs	0.0000000767	0.0000000174	0.0000000470	0.0000000296	0.0000000311	0.0000000450	0.0000000821	0.0000000724	0.0000000640	0.0000000603	0.0000000644	0.0000000847	0.0000000385	0.0000000487	0.0000002259	0.0000001860	0.0000001453	0.0000001268	0.0000000241	0.0000000446	0.0000000205	0.0000000216	0.0000000500	0.0000000266	0.0000000290	0.0000000142	0.0000000149
	$Intake_{ing(13-18)}$		13-18 yrs	0.0000000164	0.0000000037	0.0000000101	0.0000000063	0.0000000067	0.0000000096	0.0000000176	0.0000000155	0.0000000137	0.0000000129	0.0000000138	0.0000000181	0.0000000082	0.0000000104	0.0000000484	0.0000000399	0.0000000311	0.0000000272	0.0000000052	0.0000000096	0.0000000044	0.0000000046	0.0000000107	0.0000000057	0.0000000062	0.0000000030	0.0000000032
	$Intake_{ing(18-82)}$		18-82 yrs	0.0000000118	0.0000000027	0.0000000072	0.0000000046	0.0000000048	0.0000000069	0.0000000126	0.0000000111	0.0000000099	0.0000000093	0.0000000099	0.0000000130	0.0000000059	0.0000000075	0.0000000348	0.0000000286	0.0000000223	0.0000000195	0.0000000037	0.0000000069	0.0000000032	0.0000000033	0.0000000077	0.0000000041	0.0000000045	0.0000000022	0.0000000023
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000000025	0.000000006	0.000000015	0.000000010	0.000000010	0.000000014	0.000000026	0.000000023	0.000000021	0.000000019	0.000000021	0.000000027	0.000000012	0.000000016	0.000000073	0.000000060	0.000000047	0.000000041	0.000000008	0.000000014	0.000000007	0.000000007	0.000000016	0.000000009	0.000000009	0.000000005	0.000000005
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000000206	0.0000000047	0.0000000126	0.0000000079	0.0000000083	0.0000000120	0.0000000220	0.0000000194	0.0000000172	0.0000000162	0.0000000173	0.0000000227	0.0000000103	0.0000000131	0.0000000605	0.0000000499	0.0000000389	0.0000000340	0.0000000065	0.0000000120	0.0000000055	0.0000000058	0.0000000134	0.0000000071	0.0000000078	0.0000000038	0.0000000040
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.00000039	0.00000038	0.00000039	0.00000038	0.00000038	0.00000039	0.00000039	0.00000039	0.00000039	0.00000039	0.00000039	0.00000039	0.00000039	0.00000039	0.00000041	0.00000041	0.00000040	0.00000040	0.00000038	0.00000039	0.00000038	0.00000038	0.00000039	0.00000038	0.00000038	0.00000038	0.00000038
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000056	0.000055	0.000055	0.000055	0.000055	0.000055	0.000055	0.000055	0.000055	0.000055	0.000055	0.000055	0.000055	0.000055	0.000058	0.000058	0.000057	0.000057	0.000055	0.000055	0.000055	0.000055	0.000055	0.000055	0.000055	0.000055	0.000055
Overall hazard quotient	$HQ_{overall}$	unitless		0.00006	0.00005	0.00006	0.00005	0.00005	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00005	0.00006	0.00005	0.00005	0.00006	0.00005	0.00005	0.00005	0.00005

Beryllium,Scenario 1 (Current Operations, incl. background)				Other (D7)	D8	D8	D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R8	R55	R56	R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0000136	0.0000017	0.0000018	0.0000018	0.0000035	0.0000023	0.0000022	0.0000041	0.0000021	0.0000055	0.0000068	0.0000027	0.0000058	0.0000048	0.0000017	0.0000025
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0000001238	0.0000000151	0.0000000164	0.0000000165	0.0000000319	0.0000000210	0.0000000202	0.0000000372	0.0000000187	0.0000000500	0.0000000618	0.0000000242	0.0000000532	0.0000000441	0.0000000158	0.0000000232
	$Intake_{ing(3-13)}$		3-13 yrs	0.0000000567	0.0000000069	0.0000000075	0.0000000076	0.0000000146	0.0000000096	0.0000000092	0.0000000171	0.0000000086	0.0000000229	0.0000000283	0.0000000111	0.0000000244	0.0000000202	0.0000000072	0.0000000106
	$Intake_{ing(13-18)}$		13-18 yrs	0.0000000122	0.0000000015	0.0000000016	0.0000000016	0.0000000031	0.0000000021	0.0000000020	0.0000000037	0.0000000018	0.0000000049	0.0000000061	0.0000000024	0.0000000052	0.0000000043	0.0000000016	0.0000000023
	$Intake_{ing(18-82)}$		18-82 yrs	0.0000000087	0.0000000011	0.0000000012	0.0000000012	0.0000000022	0.0000000015	0.0000000014	0.0000000026	0.0000000013	0.0000000035	0.0000000044	0.0000000017	0.0000000037	0.0000000031	0.0000000011	0.0000000016
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000000018	0.000000002	0.000000002	0.000000002	0.000000005	0.000000003	0.000000003	0.000000005	0.000000003	0.000000007	0.000000009	0.000000004	0.000000008	0.000000006	0.000000002	0.000000003
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000000152	0.0000000019	0.0000000020	0.0000000020	0.0000000039	0.0000000026	0.0000000025	0.0000000046	0.0000000023	0.0000000061	0.0000000076	0.0000000030	0.0000000065	0.0000000054	0.0000000019	0.0000000028
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m³		0.00000039	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038
Chronic air guideline value (Section 4.3.2)	AGV	µg/m³		0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000055	0.000054	0.000055	0.000055	0.000055	0.000055	0.000055	0.000055	0.000054	0.000055	0.000055	0.000055	0.000055	0.000055	0.000054	0.000054
Overall hazard quotient	$HQ_{overall}$	unitless		0.00006	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005

Beryllium, Scenario 2 (Mod6, Proposed Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.000010	0.000008	0.000004	0.000003	0.000004	0.000021	0.000003	0.000006	0.000005	0.000004	0.000001
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.0000000944	0.0000000712	0.0000000366	0.0000000276	0.0000000343	0.0000001952	0.0000000249	0.0000000528	0.0000000423	0.0000000353	0.0000000072
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.0000000433	0.0000000327	0.0000000168	0.0000000127	0.0000000157	0.0000000895	0.0000000114	0.0000000242	0.0000000194	0.0000000162	0.0000000033
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.0000000093	0.0000000070	0.0000000036	0.0000000027	0.0000000034	0.0000000192	0.0000000024	0.0000000052	0.0000000042	0.0000000035	0.0000000007
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.0000000067	0.0000000050	0.0000000026	0.0000000019	0.0000000024	0.0000000138	0.0000000018	0.0000000037	0.0000000030	0.0000000025	0.0000000005
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000000014	0.000000011	0.000000005	0.000000004	0.000000005	0.000000029	0.000000004	0.000000008	0.000000006	0.000000005	0.000000001
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000000116	0.0000000088	0.0000000045	0.0000000034	0.0000000042	0.0000000240	0.0000000031	0.0000000065	0.0000000052	0.0000000043	0.0000000009
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000040	0.00000038	0.00000038	0.00000038	0.00000033	0.00000038
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000054	0.000055	0.000054	0.000054	0.000054	0.000057	0.000054	0.000054	0.000054	0.000048	0.000054
Overall hazard quotient	$HQ_{overall}$	unitless		0.00005	0.00005	0.00005	0.00005	0.00005	0.00006	0.00005	0.00005	0.00005	0.00005	0.00005

Beryllium, Scenario 2 (Mod6, Proposed Operations, incl. background)				D3	D3	D3	D3	D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5
Parameter	Abbreviation	Unit		R3	R4	R5	R12	R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.000036	0.000015	0.000011	0.000006	0.000006	0.000006	0.000018	0.000020	0.000020	0.000021	0.000024	0.000027	0.000014	0.000036	0.000015	0.000014	0.000016
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.0000003232	0.0000001328	0.0000001026	0.0000000588	0.0000000503	0.0000000589	0.0000001601	0.0000001787	0.0000001792	0.0000001864	0.0000002139	0.0000002409	0.0000001254	0.0000003299	0.0000001350	0.0000001274	0.0000001483
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.0000001482	0.0000000609	0.0000000470	0.0000000269	0.0000000231	0.0000000270	0.0000000734	0.0000000819	0.0000000821	0.0000000854	0.0000000980	0.0000001104	0.0000000575	0.0000001512	0.0000000619	0.0000000584	0.0000000680
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.0000000317	0.0000000130	0.0000000101	0.0000000058	0.0000000049	0.0000000058	0.0000000157	0.0000000176	0.0000000176	0.0000000183	0.0000000210	0.0000000237	0.0000000123	0.0000000324	0.0000000133	0.0000000125	0.0000000146
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.0000000228	0.0000000094	0.0000000072	0.0000000041	0.0000000035	0.0000000042	0.0000000113	0.0000000126	0.0000000126	0.0000000131	0.0000000151	0.0000000170	0.0000000088	0.0000000233	0.0000000095	0.0000000090	0.0000000105
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000000048	0.000000020	0.000000015	0.000000009	0.000000007	0.000000009	0.000000024	0.000000026	0.000000026	0.000000027	0.000000032	0.000000036	0.000000018	0.000000049	0.000000020	0.000000019	0.000000022
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000000397	0.0000000163	0.0000000126	0.0000000072	0.0000000062	0.0000000072	0.0000000197	0.0000000220	0.0000000220	0.0000000229	0.0000000263	0.0000000296	0.0000000154	0.0000000405	0.0000000166	0.0000000156	0.0000000182
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.00000039	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000039	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000039	0.00000038	0.00000038	0.00000039
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000055	0.000054	0.000054	0.000055	0.000054	0.000055	0.000055	0.000055	0.000055	0.000054	0.000055	0.000055	0.000054	0.000056	0.000055	0.000055	0.000055
Overall hazard quotient	$HQ_{overall}$	unitless		0.00006	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00006	0.00005	0.00005	0.00005	0.00006	0.00005	0.00006	0.00005	0.00005	0.00006

Beryllium, Scenario 2 (Mod6, Proposed Operations, incl. background)				D5	D5	D5	D5	D6	D6	D6	D6	D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7	Other (D7)	D8
Parameter	Abbreviation	Unit		R64	R65	R66	R67	R10	R34	R35	R36	R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62	R8	R55
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.000004	0.000010	0.000007	0.000007	0.000010	0.000019	0.000016	0.000014	0.000013	0.000015	0.000019	0.000009	0.000011	0.000053	0.000043	0.000033	0.000029	0.000005	0.000010	0.000005	0.000005	0.000011	0.000006	0.000006	0.000003	0.000003	0.000013	0.000002
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.0000000347	0.0000000946	0.0000000597	0.0000000626	0.0000000925	0.0000001692	0.0000001477	0.0000001295	0.0000001222	0.0000001329	0.0000001754	0.0000000783	0.0000000992	0.0000004823	0.0000003946	0.0000003026	0.0000002621	0.0000000490	0.0000000907	0.0000000410	0.0000000433	0.0000001022	0.0000000541	0.0000000589	0.0000000288	0.0000000298	0.0000001147	0.0000000140
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.0000000159	0.0000000434	0.0000000274	0.0000000287	0.0000000424	0.0000000775	0.0000000677	0.0000000594	0.0000000560	0.0000000609	0.0000000804	0.0000000359	0.0000000454	0.0000002211	0.0000001809	0.0000001387	0.0000001201	0.0000000225	0.0000000416	0.0000000188	0.0000000199	0.0000000468	0.0000000248	0.0000000270	0.0000000132	0.0000000136	0.0000000526	0.0000000064
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.0000000034	0.0000000093	0.0000000059	0.0000000062	0.0000000091	0.0000000166	0.0000000145	0.0000000127	0.0000000120	0.0000000131	0.0000000172	0.0000000077	0.0000000097	0.0000000474	0.0000000388	0.0000000297	0.0000000257	0.0000000048	0.0000000089	0.0000000040	0.0000000043	0.0000000100	0.0000000053	0.0000000058	0.0000000028	0.0000000029	0.0000000113	0.0000000014
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.0000000024	0.0000000067	0.0000000042	0.0000000044	0.0000000065	0.0000000119	0.0000000104	0.0000000091	0.0000000086	0.0000000094	0.0000000124	0.0000000055	0.0000000070	0.0000000340	0.0000000278	0.0000000213	0.0000000185	0.0000000035	0.0000000064	0.0000000029	0.0000000031	0.0000000072	0.0000000038	0.0000000042	0.0000000020	0.0000000021	0.0000000081	0.0000000010
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000000005	0.000000014	0.000000009	0.000000009	0.000000014	0.000000025	0.000000022	0.000000019	0.000000018	0.000000020	0.000000026	0.000000012	0.000000015	0.000000071	0.000000058	0.000000045	0.000000039	0.000000007	0.000000013	0.000000006	0.000000006	0.000000015	0.000000008	0.000000009	0.000000004	0.000000004	0.000000017	0.000000002
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000000043	0.0000000116	0.0000000073	0.0000000077	0.0000000114	0.0000000208	0.0000000181	0.0000000159	0.0000000150	0.0000000163	0.0000000215	0.0000000096	0.0000000122	0.0000000592	0.0000000485	0.0000000372	0.0000000322	0.0000000060	0.0000000111	0.0000000050	0.0000000053	0.0000000126	0.0000000066	0.0000000072	0.0000000035	0.0000000037	0.0000000141	0.0000000017
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000041	0.00000040	0.00000039	0.00000039	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000054	0.000055	0.000054	0.000054	0.000054	0.000054	0.000054	0.000055	0.000055	0.000055	0.000054	0.000054	0.000054	0.000058	0.000057	0.000056	0.000056	0.000054	0.000054	0.000054	0.000054	0.000055	0.000054	0.000054	0.000054	0.000054	0.000054	0.000054
Overall hazard quotient	$HQ_{overall}$	unitless		0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00006	0.00006	0.00006	0.00006	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005

Beryllium, Scenario 2 (Mod6, Proposed Operations, incl. background)				D8	D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R56	R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.000002	0.000002	0.000003	0.000002	0.000002	0.000004	0.000002	0.000005	0.000006	0.000002	0.000005	0.000005	0.000002	0.000002
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0000000151	0.0000000151	0.0000000292	0.0000000193	0.0000000187	0.0000000342	0.0000000172	0.0000000459	0.0000000580	0.0000000224	0.0000000496	0.0000000410	0.0000000146	0.0000000215
	$Intake_{ing(3-13)}$		3-13 yrs	0.0000000069	0.0000000069	0.0000000134	0.0000000088	0.0000000086	0.0000000157	0.0000000079	0.0000000210	0.0000000266	0.0000000103	0.0000000227	0.0000000188	0.0000000067	0.0000000098
	$Intake_{ing(13-18)}$		13-18 yrs	0.0000000015	0.0000000015	0.0000000029	0.0000000019	0.0000000018	0.0000000034	0.0000000017	0.0000000045	0.0000000057	0.0000000022	0.0000000049	0.0000000040	0.0000000014	0.0000000021
	$Intake_{ing(18-82)}$		18-82 yrs	0.0000000011	0.0000000011	0.0000000021	0.0000000014	0.0000000013	0.0000000024	0.0000000012	0.0000000032	0.0000000041	0.0000000016	0.0000000035	0.0000000029	0.0000000010	0.0000000015
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000000002	0.000000002	0.000000004	0.000000003	0.000000003	0.000000005	0.000000003	0.000000007	0.000000009	0.000000003	0.000000007	0.000000006	0.000000002	0.000000003
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000000019	0.0000000019	0.0000000036	0.0000000024	0.0000000023	0.0000000042	0.0000000021	0.0000000056	0.0000000071	0.0000000027	0.0000000061	0.0000000050	0.0000000018	0.0000000026
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038	0.00000038
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000054	0.000054	0.000054	0.000054	0.000054	0.000054	0.000054	0.000054	0.000054	0.000054	0.000054	0.000054	0.000054	0.000054
Overall hazard quotient	$HQ_{overall}$	unitless		0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005

Copper, Scenario 1 (Current Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.12	0.09	0.05	0.04	0.04	0.24	0.03	0.07	0.05	0.04	0.01	0.39	0.16	0.13
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.001109	0.000815	0.000425	0.000322	0.000399	0.002221	0.000286	0.000594	0.000481	0.000402	0.000084	0.003518	0.001489	0.001173
	$Intake_{ing(3-13)}$		3-13 yrs	0.000509	0.000374	0.000195	0.000148	0.000183	0.001018	0.000131	0.000272	0.000220	0.000184	0.000038	0.001612	0.000682	0.000538
	$Intake_{ing(13-18)}$		13-18 yrs	0.000109	0.000080	0.000042	0.000032	0.000039	0.000218	0.000028	0.000058	0.000047	0.000039	0.000008	0.000346	0.000146	0.000115
	$Intake_{ing(18-82)}$		18-82 yrs	0.000078	0.000057	0.000030	0.000023	0.000028	0.000157	0.000020	0.000042	0.000034	0.000028	0.000006	0.000248	0.000105	0.000083
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.00016	0.00012	0.00006	0.00005	0.00006	0.00033	0.00004	0.00009	0.00007	0.00006	0.00001	0.00052	0.00022	0.00017
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		39	39	39	39	39	39	39	39	39	39	39	39	39	39
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000042	0.0000031	0.0000016	0.0000012	0.0000015	0.0000084	0.0000011	0.0000022	0.0000018	0.0000015	0.0000003	0.0000133	0.0000056	0.0000044
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.0054	0.0054	0.0054	0.0053	0.0053	0.0057	0.0053	0.0053	0.0053	0.0047	0.0053	0.0056	0.0054	0.0054
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.0054	0.0054	0.0054	0.0053	0.0053	0.0057	0.0053	0.0053	0.0053	0.0047	0.0053	0.0056	0.0054	0.0054
Overall hazard quotient	$HQ_{overall}$	unitless		0.005	0.005	0.005	0.005	0.005	0.006	0.005	0.005	0.005	0.005	0.005	0.006	0.005	0.005

Copper, Scenario 1 (Current Operations, incl. background)				D3	D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5
Parameter	Abbreviation	Unit		R12	R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.07	0.06	0.07	0.19	0.22	0.22	0.23	0.27	0.31	0.16	0.43	0.17	0.16	0.20
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.000664	0.000570	0.000666	0.001747	0.001955	0.001987	0.002103	0.002484	0.002825	0.001418	0.003880	0.001546	0.001467	0.001789
	$Intake_{ing(3-13)}$		3-13 yrs	0.000304	0.000261	0.000305	0.000801	0.000896	0.000911	0.000964	0.001138	0.001295	0.000650	0.001778	0.000708	0.000672	0.000820
	$Intake_{ing(13-18)}$		13-18 yrs	0.000065	0.000056	0.000065	0.000172	0.000192	0.000195	0.000207	0.000244	0.000277	0.000139	0.000381	0.000152	0.000144	0.000176
	$Intake_{ing(18-82)}$		18-82 yrs	0.000047	0.000040	0.000047	0.000123	0.000138	0.000140	0.000148	0.000175	0.000199	0.000100	0.000274	0.000109	0.000103	0.000126
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.00010	0.00008	0.00010	0.00026	0.00029	0.00029	0.00031	0.00037	0.00042	0.00021	0.00057	0.00023	0.00022	0.00026
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		39	39	39	39	39	39	39	39	39	39	39	39	39	39
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000025	0.0000022	0.0000025	0.0000066	0.0000074	0.0000075	0.0000079	0.0000094	0.0000107	0.0000054	0.0000147	0.0000058	0.0000055	0.0000068
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.0054	0.0054	0.0054	0.0054	0.0055	0.0054	0.0054	0.0055	0.0055	0.0054	0.0056	0.0054	0.0054	0.0055
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.0054	0.0054	0.0054	0.0054	0.0055	0.0054	0.0054	0.0055	0.0055	0.0054	0.0056	0.0054	0.0054	0.0055
Overall hazard quotient	$HQ_{overall}$	unitless		0.005	0.005	0.005	0.005	0.006	0.005	0.005	0.005	0.005	0.005	0.006	0.005	0.005	0.005

Copper, Scenario 1 (Current Operations, incl. background)				D5	D5	D5	D5	D6	D6	D6	D6	D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7	Other (D7)	D8	D8
Parameter	Abbreviation	Unit		R64	R65	R66	R67	R10	R34	R35	R36	R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62	R8	R55	R56
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.04	0.12	0.08	0.08	0.12	0.21	0.19	0.16	0.15	0.17	0.22	0.10	0.12	0.58	0.48	0.37	0.33	0.06	0.11	0.05	0.06	0.13	0.07	0.07	0.04	0.04	0.15	0.02	0.02
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.000406	0.001096	0.000691	0.000726	0.001048	0.001915	0.001689	0.001493	0.001407	0.001502	0.001974	0.000897	0.001136	0.005267	0.004337	0.003387	0.002957	0.000562	0.001040	0.000478	0.000504	0.001166	0.000620	0.000676	0.000331	0.000348	0.001323	0.000162	0.000175
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.000186	0.000503	0.000317	0.000333	0.000480	0.000878	0.000774	0.000684	0.000645	0.000688	0.000905	0.000411	0.000520	0.002414	0.001988	0.001552	0.001355	0.000258	0.000477	0.000219	0.000231	0.000535	0.000284	0.000310	0.000152	0.000160	0.000606	0.000074	0.000080
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.000040	0.000108	0.000068	0.000071	0.000103	0.000188	0.000166	0.000147	0.000138	0.000148	0.000194	0.000088	0.000112	0.000517	0.000426	0.000333	0.000290	0.000055	0.000102	0.000047	0.000049	0.000115	0.000061	0.000066	0.000033	0.000034	0.000130	0.000016	0.000017
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.000029	0.000077	0.000049	0.000051	0.000074	0.000135	0.000119	0.000105	0.000099	0.000106	0.000139	0.000063	0.000080	0.000371	0.000306	0.000239	0.000209	0.000040	0.000073	0.000034	0.000036	0.000082	0.000044	0.000048	0.000023	0.000025	0.000093	0.000011	0.000012
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.00006	0.00016	0.00010	0.00011	0.00015	0.00028	0.00025	0.00022	0.00021	0.00022	0.00029	0.00013	0.00017	0.00078	0.00064	0.00050	0.00044	0.00008	0.00015	0.00007	0.00007	0.00017	0.00009	0.00010	0.00005	0.00005	0.00019	0.00002	0.00003
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000015	0.0000041	0.0000026	0.0000027	0.0000040	0.0000072	0.0000064	0.0000056	0.0000053	0.0000057	0.0000075	0.0000034	0.0000043	0.0000199	0.0000164	0.0000128	0.0000112	0.0000021	0.0000039	0.0000018	0.0000019	0.0000044	0.0000023	0.0000026	0.0000013	0.0000013	0.0000050	0.0000006	0.0000007
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.0053	0.0054	0.0054	0.0054	0.0054	0.0054	0.0054	0.0054	0.0054	0.0054	0.0054	0.0054	0.0054	0.0057	0.0057	0.0056	0.0056	0.0053	0.0054	0.0054	0.0054	0.0054	0.0053	0.0054	0.0053	0.0053	0.0054	0.0053	0.0053
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.0053	0.0054	0.0054	0.0054	0.0054	0.0054	0.0054	0.0054	0.0054	0.0054	0.0054	0.0054	0.0054	0.0057	0.0057	0.0056	0.0056	0.0053	0.0054	0.0054	0.0054	0.0054	0.0053	0.0054	0.0053	0.0053	0.0054	0.0053	0.0053
Overall hazard quotient	$HQ_{overall}$	unitless		0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.006	0.006	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005

Copper, Scenario 1 (Current Operations, incl. background)				D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.02	0.04	0.02	0.02	0.04	0.02	0.06	0.07	0.03	0.06	0.05	0.02	0.03
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.000176	0.000340	0.000225	0.000215	0.000398	0.000200	0.000534	0.000660	0.000258	0.000568	0.000471	0.000169	0.000248
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.000081	0.000156	0.000103	0.000099	0.000182	0.000092	0.000245	0.000303	0.000118	0.000260	0.000216	0.000077	0.000114
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.000017	0.000033	0.000022	0.000021	0.000039	0.000020	0.000052	0.000065	0.000025	0.000056	0.000046	0.000017	0.000024
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.000012	0.000024	0.000016	0.000015	0.000028	0.000014	0.000038	0.000047	0.000018	0.000040	0.000033	0.000012	0.000017
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.00003	0.00005	0.00003	0.00003	0.00006	0.00003	0.00008	0.00010	0.00004	0.00008	0.00007	0.00002	0.00004
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		39	39	39	39	39	39	39	39	39	39	39	39	39
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000007	0.0000013	0.0000008	0.0000008	0.0000015	0.0000008	0.0000020	0.0000025	0.0000010	0.0000021	0.0000018	0.0000006	0.0000009
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		1	1	1	1	1	1	1	1	1	1	1	1	1
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Overall hazard quotient	$HQ_{overall}$	unitless		0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005

Copper, Scenario 2 (Mod6, Proposed Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.11	0.08	0.04	0.03	0.04	0.23	0.03	0.06	0.05	0.04	0.01	0.38	0.16	0.12
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.001009	0.000761	0.000391	0.000295	0.000367	0.002086	0.000266	0.000564	0.000452	0.000377	0.000077	0.003454	0.001419	0.001096
	$Intake_{ing(3-13)}$		3-13 yrs	0.000462	0.000349	0.000179	0.000135	0.000168	0.000956	0.000122	0.000259	0.000207	0.000173	0.000035	0.001583	0.000650	0.000503
	$Intake_{ing(13-18)}$		13-18 yrs	0.000099	0.000075	0.000038	0.000029	0.000036	0.000205	0.000026	0.000055	0.000044	0.000037	0.000008	0.000339	0.000139	0.000108
	$Intake_{ing(18-82)}$		18-82 yrs	0.000071	0.000054	0.000028	0.000021	0.000026	0.000147	0.000019	0.000040	0.000032	0.000027	0.000005	0.000244	0.000100	0.000077
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.00015	0.00011	0.00006	0.00004	0.00005	0.00031	0.00004	0.00008	0.00007	0.00006	0.00001	0.00051	0.00021	0.00016
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		39	39	39	39	39	39	39	39	39	39	39	39	39	39
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000038	0.0000029	0.0000015	0.0000011	0.0000014	0.0000079	0.0000010	0.0000021	0.0000017	0.0000014	0.0000003	0.0000131	0.0000054	0.0000041
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.0053	0.0053	0.0053	0.0053	0.0053	0.0056	0.0053	0.0053	0.0053	0.0046	0.0053	0.0054	0.0053	0.0053
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.0053	0.0053	0.0053	0.0053	0.0053	0.0056	0.0053	0.0053	0.0053	0.0046	0.0053	0.0054	0.0053	0.0053
Overall hazard quotient	$HQ_{overall}$	unitless		0.005	0.005	0.005	0.005	0.005	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005

Copper, Scenario 2 (Mod6, Proposed Operations, incl. background)				D3	D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5
Parameter	Abbreviation	Unit		R12	R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.07	0.06	0.07	0.19	0.21	0.21	0.22	0.25	0.28	0.15	0.39	0.16	0.15	0.17
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.000628	0.000537	0.000630	0.001711	0.001910	0.001915	0.001992	0.002286	0.002575	0.001340	0.003526	0.001442	0.001361	0.001585
	$Intake_{ing(3-13)}$		3-13 yrs	0.000288	0.000246	0.000289	0.000784	0.000875	0.000878	0.000913	0.001048	0.001180	0.000614	0.001616	0.000661	0.000624	0.000726
	$Intake_{ing(13-18)}$		13-18 yrs	0.000062	0.000053	0.000062	0.000168	0.000188	0.000188	0.000196	0.000224	0.000253	0.000132	0.000346	0.000142	0.000134	0.000156
	$Intake_{ing(18-82)}$		18-82 yrs	0.000044	0.000038	0.000044	0.000121	0.000135	0.000135	0.000140	0.000161	0.000182	0.000095	0.000249	0.000102	0.000096	0.000112
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.00009	0.00008	0.00009	0.00025	0.00028	0.00028	0.00029	0.00034	0.00038	0.00020	0.00052	0.00021	0.00020	0.00023
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		39	39	39	39	39	39	39	39	39	39	39	39	39	39
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000024	0.0000020	0.0000024	0.0000065	0.0000072	0.0000072	0.0000075	0.0000086	0.0000097	0.0000051	0.0000133	0.0000055	0.0000051	0.0000060
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.0053	0.0053	0.0053	0.0053	0.0054	0.0053	0.0053	0.0053	0.0054	0.0053	0.0055	0.0054	0.0053	0.0054
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.0053	0.0053	0.0053	0.0053	0.0054	0.0053	0.0053	0.0053	0.0054	0.0053	0.0055	0.0054	0.0053	0.0054
Overall hazard quotient	$HQ_{overall}$	unitless		0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005

Copper, Scenario 2 (Mod6, Proposed Operations, incl. background)				D5	D5	D5	D5	D6	D6	D6	D6	D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7	Other (D7)	D8	D8
Parameter	Abbreviation	Unit		R64	R65	R66	R67	R10	R34	R35	R36	R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62	R8	R55	R56
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.04	0.11	0.07	0.07	0.11	0.20	0.17	0.15	0.14	0.16	0.21	0.09	0.12	0.57	0.46	0.36	0.31	0.06	0.11	0.05	0.05	0.12	0.06	0.07	0.03	0.04	0.13	0.02	0.02
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.000370	0.001011	0.000638	0.000669	0.000988	0.001808	0.001578	0.001384	0.001306	0.001420	0.001875	0.000837	0.001060	0.005154	0.004217	0.003233	0.002801	0.000524	0.000969	0.000438	0.000463	0.001092	0.000578	0.000630	0.000307	0.000318	0.001226	0.000150	0.000161
	$Intake_{ing(3-13)}$		3-13 yrs	0.000170	0.000464	0.000292	0.000307	0.000453	0.000829	0.000723	0.000634	0.000598	0.000651	0.000859	0.000383	0.000486	0.002362	0.001933	0.001482	0.001284	0.000240	0.000444	0.000201	0.000212	0.000500	0.000265	0.000289	0.000141	0.000146	0.000562	0.000069	0.000074
	$Intake_{ing(13-18)}$		13-18 yrs	0.000036	0.000099	0.000063	0.000066	0.000097	0.000178	0.000155	0.000136	0.000128	0.000139	0.000184	0.000082	0.000104	0.000506	0.000414	0.000318	0.000275	0.000051	0.000095	0.000043	0.000045	0.000107	0.000057	0.000062	0.000030	0.000031	0.000120	0.000015	0.000016
	$Intake_{ing(18-82)}$		18-82 yrs	0.000026	0.000071	0.000045	0.000047	0.000070	0.000127	0.000111	0.000098	0.000092	0.000100	0.000132	0.000059	0.000075	0.000363	0.000297	0.000228	0.000198	0.000037	0.000068	0.000031	0.000033	0.000077	0.000041	0.000044	0.000022	0.000022	0.000086	0.000011	0.000011
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.00005	0.00015	0.00009	0.00010	0.00015	0.00027	0.00023	0.00020	0.00019	0.00021	0.00028	0.00012	0.00016	0.00076	0.00062	0.00048	0.00041	0.00008	0.00014	0.00006	0.00007	0.00016	0.00009	0.00009	0.00005	0.00005	0.00018	0.00002	0.00002
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000014	0.0000038	0.0000024	0.0000025	0.0000037	0.0000068	0.0000060	0.0000052	0.0000049	0.0000054	0.0000071	0.0000032	0.0000040	0.0000195	0.0000159	0.0000122	0.0000106	0.0000020	0.0000037	0.0000017	0.0000018	0.0000041	0.0000022	0.0000024	0.0000012	0.0000012	0.0000046	0.0000006	0.0000006
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0057	0.0056	0.0055	0.0054	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0057	0.0056	0.0055	0.0054	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Overall hazard quotient	$HQ_{overall}$	unitless		0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005

Copper, Scenario 2 (Mod6, Proposed Operations, incl. background)				D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.02	0.03	0.02	0.02	0.04	0.02	0.05	0.07	0.03	0.06	0.05	0.02	0.03
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.000161	0.000312	0.000206	0.000199	0.000366	0.000184	0.000491	0.000620	0.000239	0.000530	0.000438	0.000156	0.000229
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.000074	0.000143	0.000095	0.000091	0.000168	0.000084	0.000225	0.000284	0.000110	0.000243	0.000201	0.000072	0.000105
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.000016	0.000031	0.000020	0.000020	0.000036	0.000018	0.000048	0.000061	0.000023	0.000052	0.000043	0.000015	0.000023
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.000011	0.000022	0.000015	0.000014	0.000026	0.000013	0.000035	0.000044	0.000017	0.000037	0.000031	0.000011	0.000016
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.00002	0.00005	0.00003	0.00003	0.00005	0.00003	0.00007	0.00009	0.00004	0.00008	0.00006	0.00002	0.00003
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		39	39	39	39	39	39	39	39	39	39	39	39	39
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000006	0.0000012	0.0000008	0.0000008	0.0000014	0.0000007	0.0000019	0.0000023	0.0000009	0.0000020	0.0000017	0.0000006	0.0000009
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		1	1	1	1	1	1	1	1	1	1	1	1	1
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Overall hazard quotient	$HQ_{overall}$	unitless		0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005

Mercury, Scenario 1 (Current Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3	D3	D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5	R12	R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.000019	0.000014	0.000007	0.000006	0.000007	0.000038	0.000005	0.000010	0.000008	0.000007	0.000001	0.000060	0.000026	0.000020	0.000011	0.000010	0.000011	0.000030	0.000034	0.000034	0.000036	0.000043	0.000049	0.000024	0.000067	0.000027	0.000025
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.000000173	0.000000127	0.000000066	0.000000050	0.000000062	0.000000347	0.000000045	0.000000093	0.000000075	0.000000063	0.000000013	0.000000549	0.000000232	0.000000183	0.000000104	0.000000089	0.000000104	0.000000273	0.000000305	0.000000310	0.000000328	0.000000388	0.000000441	0.000000221	0.000000606	0.000000241	0.000000229
	$Intake_{ing(3-13)}$		3-13 yrs	0.000000079	0.000000058	0.000000030	0.000000023	0.000000029	0.000000159	0.000000020	0.000000043	0.000000034	0.000000029	0.000000006	0.000000252	0.000000107	0.000000084	0.000000048	0.000000041	0.000000048	0.000000125	0.000000140	0.000000142	0.000000151	0.000000178	0.000000202	0.000000101	0.000000278	0.000000111	0.000000105
	$Intake_{ing(13-18)}$		13-18 yrs	0.000000017	0.000000012	0.000000007	0.000000005	0.000000006	0.000000034	0.000000004	0.000000009	0.000000007	0.000000006	0.000000001	0.000000054	0.000000023	0.000000018	0.000000010	0.000000009	0.000000010	0.000000027	0.000000030	0.000000030	0.000000032	0.000000038	0.000000043	0.000000022	0.000000059	0.000000024	0.000000022
	$Intake_{ing(18-82)}$		18-82 yrs	0.000000012	0.000000009	0.000000005	0.000000004	0.000000004	0.000000024	0.000000003	0.000000007	0.000000005	0.000000004	0.000000001	0.000000039	0.000000016	0.000000013	0.000000007	0.000000006	0.000000007	0.000000019	0.000000022	0.000000022	0.000000023	0.000000027	0.000000031	0.000000016	0.000000043	0.000000017	0.000000016
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000000026	0.000000019	0.000000010	0.000000007	0.000000009	0.000000051	0.000000007	0.000000014	0.000000011	0.000000009	0.000000002	0.000000081	0.000000034	0.000000027	0.000000015	0.000000013	0.000000015	0.000000040	0.000000045	0.000000046	0.000000048	0.000000057	0.000000065	0.000000033	0.000000089	0.000000036	0.000000034
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.00000011	0.00000008	0.00000004	0.00000003	0.00000004	0.00000021	0.00000003	0.00000006	0.00000005	0.00000004	0.00000001	0.00000034	0.00000014	0.00000011	0.00000006	0.00000005	0.00000006	0.00000017	0.00000019	0.00000019	0.00000020	0.00000024	0.00000027	0.00000014	0.00000037	0.00000015	0.00000014
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.00000077	0.00000077	0.00000077	0.00000076	0.00000076	0.00000081	0.00000076	0.00000076	0.00000076	0.00000067	0.00000076	0.00000080	0.00000077	0.00000077	0.00000077	0.00000077	0.00000077	0.00000077	0.00000079	0.00000078	0.00000078	0.00000078	0.00000078	0.00000077	0.00000080	0.00000077	0.00000077
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000026	0.000026	0.000026	0.000025	0.000025	0.000027	0.000025	0.000025	0.000025	0.000022	0.000025	0.000027	0.000026	0.000026	0.000026	0.000026	0.000026	0.000026	0.000026	0.000026	0.000026	0.000026	0.000026	0.000026	0.000027	0.000026	0.000026
Overall hazard quotient	$HQ_{overall}$	unitless		0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003

Mercury, Scenario 1 (Current Operations, incl. background)				D5	D5	D5	D5	D5	D6	D6	D6	D6	D6	D6	D6	D6	D6
Parameter	Abbreviation	Unit		R33	R64	R65	R66	R67	R10	R34	R35	R36	R37	R41	R42	R47	R50
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.000031	0.000007	0.000019	0.000012	0.000012	0.000018	0.000033	0.000029	0.000026	0.000024	0.000026	0.000034	0.000015	0.000020
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.000000279	0.000000063	0.000000171	0.000000108	0.000000113	0.000000164	0.000000299	0.000000264	0.000000233	0.000000220	0.000000235	0.000000308	0.000000140	0.000000177
	$Intake_{ing(3-13)}$		3-13 yrs	0.000000128	0.000000029	0.000000078	0.000000049	0.000000052	0.000000075	0.000000137	0.000000121	0.000000107	0.000000101	0.000000107	0.000000141	0.000000064	0.000000081
	$Intake_{ing(13-18)}$		13-18 yrs	0.000000027	0.000000006	0.000000017	0.000000011	0.000000011	0.000000016	0.000000029	0.000000026	0.000000023	0.000000022	0.000000023	0.000000030	0.000000014	0.000000017
	$Intake_{ing(18-82)}$		18-82 yrs	0.000000020	0.000000004	0.000000012	0.000000008	0.000000008	0.000000012	0.000000021	0.000000019	0.000000016	0.000000015	0.000000017	0.000000022	0.000000010	0.000000013
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000000041	0.000000009	0.000000025	0.000000016	0.000000017	0.000000024	0.000000044	0.000000039	0.000000034	0.000000032	0.000000035	0.000000045	0.000000021	0.000000026
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.00000017	0.00000004	0.00000011	0.00000007	0.00000007	0.00000010	0.00000018	0.00000016	0.00000014	0.00000013	0.00000014	0.00000019	0.00000009	0.00000011
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.00000078	0.00000076	0.00000077	0.00000077	0.00000077	0.00000077	0.00000077	0.00000077	0.00000077	0.00000077	0.00000077	0.00000077	0.00000077	0.00000077
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000026	0.000025	0.000026	0.000026	0.000026	0.000026	0.000026	0.000026	0.000026	0.000026	0.000026	0.000026	0.000026	0.000026
Overall hazard quotient	$HQ_{overall}$	unitless		0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003

Mercury, Scenario 1 (Current Operations, incl. background)				Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7	Other (D7)
Parameter	Abbreviation	Unit		R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62	R8
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.000090	0.000074	0.000058	0.000051	0.000010	0.000018	0.000008	0.000009	0.000020	0.000011	0.000012	0.000006	0.000006	0.000023
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.000000822	0.000000677	0.000000529	0.000000462	0.000000088	0.000000162	0.000000075	0.000000079	0.000000182	0.000000097	0.000000106	0.000000052	0.000000054	0.000000207
	$Intake_{ing(3-13)}$		3-13 yrs	0.000000377	0.000000310	0.000000242	0.000000212	0.000000040	0.000000074	0.000000034	0.000000036	0.000000083	0.000000044	0.000000048	0.000000024	0.000000025	0.000000095
	$Intake_{ing(13-18)}$		13-18 yrs	0.000000081	0.000000067	0.000000052	0.000000045	0.000000009	0.000000016	0.000000007	0.000000008	0.000000018	0.000000010	0.000000010	0.000000005	0.000000005	0.000000020
	$Intake_{ing(18-82)}$		18-82 yrs	0.000000058	0.000000048	0.000000037	0.000000033	0.000000006	0.000000011	0.000000005	0.000000006	0.000000013	0.000000007	0.000000007	0.000000004	0.000000004	0.000000015
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000000121	0.000000100	0.000000078	0.000000068	0.000000013	0.000000024	0.000000011	0.000000012	0.000000027	0.000000014	0.000000016	0.000000008	0.000000008	0.000000030
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.00000051	0.00000042	0.00000032	0.00000028	0.00000005	0.00000010	0.00000005	0.00000005	0.00000011	0.00000006	0.00000006	0.00000003	0.00000003	0.00000013
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.00000081	0.00000081	0.00000079	0.00000079	0.00000076	0.00000077	0.00000077	0.00000077	0.00000077	0.00000076	0.00000077	0.00000076	0.00000076	0.00000077
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000027	0.000027	0.000026	0.000026	0.000025	0.000026	0.000026	0.000026	0.000026	0.000025	0.000026	0.000025	0.000025	0.000026
Overall hazard quotient	$HQ_{overall}$	unitless		0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003

Mercury, Scenario 1 (Current Operations, incl. background)				D8	D8	D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R55	R56	R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.000003	0.000003	0.000003	0.000006	0.000004	0.000004	0.000007	0.000003	0.000009	0.000011	0.000004	0.000010	0.000008	0.000003	0.000004
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.000000025	0.000000027	0.000000028	0.000000053	0.000000035	0.000000034	0.000000062	0.000000031	0.000000083	0.000000103	0.000000040	0.000000089	0.000000074	0.000000026	0.000000039
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.000000012	0.000000013	0.000000013	0.000000024	0.000000016	0.000000015	0.000000028	0.000000014	0.000000038	0.000000047	0.000000018	0.000000041	0.000000034	0.000000012	0.000000018
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.000000002	0.000000003	0.000000003	0.000000005	0.000000003	0.000000003	0.000000006	0.000000003	0.000000008	0.000000010	0.000000004	0.000000009	0.000000007	0.000000003	0.000000004
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.000000002	0.000000002	0.000000002	0.000000004	0.000000002	0.000000002	0.000000004	0.000000002	0.000000006	0.000000007	0.000000003	0.000000006	0.000000005	0.000000002	0.000000003
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000000004	0.000000004	0.000000004	0.000000008	0.000000005	0.000000005	0.000000009	0.000000005	0.000000012	0.000000015	0.000000006	0.000000013	0.000000011	0.000000004	0.000000006
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.00000002	0.00000002	0.00000002	0.00000003	0.00000002	0.00000002	0.00000004	0.00000002	0.00000005	0.00000006	0.00000002	0.00000005	0.00000005	0.00000002	0.00000002
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025
Overall hazard quotient	$HQ_{overall}$	unitless		0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003

Mercury, Scenario 2 (Mod6, Proposed Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0000173	0.0000131	0.0000067	0.0000051	0.0000063	0.0000358	0.0000046	0.0000097	0.0000078	0.0000065	0.0000013	0.0000593	0.0000244	0.0000188
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.000000158	0.000000119	0.000000061	0.000000046	0.000000057	0.000000326	0.000000042	0.000000088	0.000000071	0.000000059	0.000000012	0.000000539	0.000000222	0.000000171
	$Intake_{ing(3-13)}$		3-13 yrs	0.000000072	0.000000054	0.000000028	0.000000021	0.000000026	0.000000149	0.000000019	0.000000040	0.000000032	0.000000027	0.000000006	0.000000247	0.000000102	0.000000078
	$Intake_{ing(13-18)}$		13-18 yrs	0.000000015	0.000000012	0.000000006	0.000000005	0.000000006	0.000000032	0.000000004	0.000000009	0.000000007	0.000000006	0.000000001	0.000000053	0.000000022	0.000000017
	$Intake_{ing(18-82)}$		18-82 yrs	0.000000011	0.000000008	0.000000004	0.000000003	0.000000004	0.000000023	0.000000003	0.000000006	0.000000005	0.000000004	0.000000001	0.000000038	0.000000016	0.000000012
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000000023	0.000000018	0.000000009	0.000000007	0.000000008	0.000000048	0.000000006	0.000000013	0.000000010	0.000000009	0.000000002	0.000000079	0.000000033	0.000000025
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.00000010	0.00000007	0.00000004	0.00000003	0.00000004	0.00000020	0.00000003	0.00000005	0.00000004	0.00000004	0.00000001	0.00000033	0.00000014	0.00000011
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.00000075	0.00000076	0.00000076	0.00000076	0.00000076	0.00000080	0.00000076	0.00000076	0.00000076	0.00000066	0.00000076	0.00000077	0.00000076	0.00000076
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000025	0.000025	0.000025	0.000025	0.000025	0.000027	0.000025	0.000025	0.000025	0.000022	0.000025	0.000026	0.000025	0.000025
Overall hazard quotient	$HQ_{overall}$	unitless		0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002	0.00003	0.00003	0.00003	0.00003

Mercury, Scenario 2 (Mod6, Proposed Operations, incl. background)				D3	D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5
Parameter	Abbreviation	Unit		R12	R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0000108	0.0000092	0.0000108	0.0000294	0.0000328	0.0000329	0.0000342	0.0000393	0.0000442	0.0000230	0.0000605	0.0000248	0.0000234	0.0000272
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.000000098	0.000000084	0.000000098	0.000000267	0.000000298	0.000000299	0.000000311	0.000000357	0.000000402	0.000000209	0.000000550	0.000000225	0.000000212	0.000000247
	$Intake_{ing(3-13)}$		3-13 yrs	0.000000045	0.000000038	0.000000045	0.000000122	0.000000137	0.000000137	0.000000143	0.000000164	0.000000184	0.000000096	0.000000252	0.000000103	0.000000097	0.000000113
	$Intake_{ing(13-18)}$		13-18 yrs	0.000000010	0.000000008	0.000000010	0.000000026	0.000000029	0.000000029	0.000000031	0.000000035	0.000000039	0.000000021	0.000000054	0.000000022	0.000000021	0.000000024
	$Intake_{ing(18-82)}$		18-82 yrs	0.000000007	0.000000006	0.000000007	0.000000019	0.000000021	0.000000021	0.000000022	0.000000025	0.000000028	0.000000015	0.000000039	0.000000016	0.000000015	0.000000017
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000000014	0.000000012	0.000000014	0.000000039	0.000000044	0.000000044	0.000000046	0.000000053	0.000000059	0.000000031	0.000000081	0.000000033	0.000000031	0.000000036
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.00000006	0.00000005	0.00000006	0.00000016	0.00000018	0.00000018	0.00000019	0.00000022	0.00000025	0.00000013	0.00000034	0.00000014	0.00000013	0.00000015
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.00000076	0.00000076	0.00000076	0.00000076	0.00000077	0.00000076	0.00000076	0.00000076	0.00000077	0.00000076	0.00000078	0.00000077	0.00000076	0.00000077
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000025	0.000025	0.000025	0.000025	0.000026	0.000025	0.000025	0.000025	0.000026	0.000025	0.000026	0.000026	0.000025	0.000026
Overall hazard quotient	$HQ_{overall}$	unitless		0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003

Mercury, Scenario 2 (Mod6, Proposed Operations, incl. background)				D5	D5	D5	D5	D6	D6	D6	D6	D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7	Other (D7)	D8
Parameter	Abbreviation	Unit		R64	R65	R66	R67	R10	R34	R35	R36	R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62	R8	R55
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0000064	0.0000174	0.0000110	0.0000115	0.0000170	0.0000311	0.0000271	0.0000238	0.0000224	0.0000244	0.0000322	0.0000144	0.0000182	0.0000885	0.0000724	0.0000555	0.0000481	0.0000090	0.0000166	0.0000075	0.0000080	0.0000188	0.0000099	0.0000108	0.0000053	0.0000055	0.0000211	0.0000026
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.000000058	0.000000158	0.000000100	0.000000105	0.000000154	0.000000282	0.000000246	0.000000216	0.000000204	0.000000222	0.000000293	0.000000131	0.000000165	0.000000805	0.000000658	0.000000505	0.000000437	0.000000082	0.000000151	0.000000068	0.000000072	0.000000170	0.000000090	0.000000098	0.000000048	0.000000050	0.000000191	0.000000023
	$Intake_{ing(3-13)}$		3-13 yrs	0.000000027	0.000000072	0.000000046	0.000000048	0.000000071	0.000000129	0.000000113	0.000000099	0.000000093	0.000000102	0.000000134	0.000000060	0.000000076	0.000000369	0.000000302	0.000000231	0.000000200	0.000000037	0.000000069	0.000000031	0.000000033	0.000000078	0.000000041	0.000000045	0.000000022	0.000000023	0.000000088	0.000000011
	$Intake_{ing(13-18)}$		13-18 yrs	0.000000006	0.000000016	0.000000010	0.000000010	0.000000015	0.000000028	0.000000024	0.000000021	0.000000020	0.000000022	0.000000029	0.000000013	0.000000016	0.000000079	0.000000065	0.000000050	0.000000043	0.000000008	0.000000015	0.000000007	0.000000007	0.000000017	0.000000009	0.000000010	0.000000005	0.000000005	0.000000019	0.000000002
	$Intake_{ing(18-82)}$		18-82 yrs	0.000000004	0.000000011	0.000000007	0.000000007	0.000000011	0.000000020	0.000000017	0.000000015	0.000000014	0.000000016	0.000000021	0.000000009	0.000000012	0.000000057	0.000000046	0.000000036	0.000000031	0.000000006	0.000000011	0.000000005	0.000000005	0.000000012	0.000000006	0.000000007	0.000000003	0.000000004	0.000000013	0.000000002
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000000009	0.000000023	0.000000015	0.000000015	0.000000023	0.000000042	0.000000036	0.000000032	0.000000030	0.000000033	0.000000043	0.000000019	0.000000024	0.000000119	0.000000097	0.000000074	0.000000064	0.000000012	0.000000022	0.000000010	0.000000011	0.000000025	0.000000013	0.000000014	0.000000007	0.000000007	0.000000028	0.000000003
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.00000004	0.00000010	0.00000006	0.00000006	0.00000009	0.00000017	0.00000015	0.00000013	0.00000013	0.00000014	0.00000018	0.00000008	0.00000010	0.00000049	0.00000040	0.00000031	0.00000027	0.00000005	0.00000009	0.00000004	0.00000004	0.00000010	0.00000006	0.00000006	0.00000003	0.00000003	0.00000012	0.00000001
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000081	0.00000079	0.00000078	0.00000078	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000027	0.000026	0.000026	0.000026	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025
Overall hazard quotient	$HQ_{overall}$	unitless		0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003

Mercury, Scenario 2 (Mod6, Proposed Operations, incl. background)				D8	D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R56	R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0000028	0.0000028	0.0000054	0.0000035	0.0000034	0.0000063	0.0000032	0.0000084	0.0000106	0.0000041	0.0000091	0.0000075	0.0000027	0.0000039
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.000000025	0.000000025	0.000000049	0.000000032	0.000000031	0.000000057	0.000000029	0.000000077	0.000000097	0.000000037	0.000000083	0.000000068	0.000000024	0.000000036
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.000000012	0.000000012	0.000000022	0.000000015	0.000000014	0.000000026	0.000000013	0.000000035	0.000000044	0.000000017	0.000000038	0.000000031	0.000000011	0.000000016
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.000000002	0.000000002	0.000000005	0.000000003	0.000000003	0.000000006	0.000000003	0.000000008	0.000000010	0.000000004	0.000000008	0.000000007	0.000000002	0.000000004
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.000000002	0.000000002	0.000000003	0.000000002	0.000000002	0.000000004	0.000000002	0.000000005	0.000000007	0.000000003	0.000000006	0.000000005	0.000000002	0.000000003
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000000004	0.000000004	0.000000007	0.000000005	0.000000005	0.000000008	0.000000004	0.000000011	0.000000014	0.000000006	0.000000012	0.000000010	0.000000004	0.000000005
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.00000002	0.00000002	0.00000003	0.00000002	0.00000002	0.00000004	0.00000002	0.00000005	0.00000006	0.00000002	0.00000005	0.00000004	0.00000001	0.00000002
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076	0.00000076
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025
Overall hazard quotient	$HQ_{overall}$	unitless		0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003

Nickel, Scenario 1 (Current Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3	D3	D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5	R12	R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.00065	0.00047	0.00025	0.00019	0.00023	0.00129	0.00017	0.00035	0.00028	0.00023	0.00005	0.00205	0.00087	0.00068	0.00039	0.00033	0.00039	0.00102	0.00114	0.00116	0.00122	0.00145	0.00164	0.00083	0.00226	0.00090	0.00085	0.00104
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.00000587	0.00000431	0.00000225	0.00000170	0.00000211	0.00001175	0.00000151	0.00000314	0.00000254	0.00000213	0.00000044	0.00001862	0.00000788	0.00000621	0.00000351	0.00000302	0.00000352	0.00000924	0.00001035	0.00001051	0.00001113	0.00001314	0.00001495	0.00000750	0.00002053	0.00000818	0.00000776	0.00000947
	$Intake_{ing(3-13)}$		3-13 yrs	0.00000269	0.00000198	0.00000103	0.00000078	0.00000097	0.00000539	0.00000069	0.00000144	0.00000117	0.00000097	0.00000020	0.00000853	0.00000361	0.00000285	0.00000161	0.00000138	0.00000161	0.00000424	0.00000474	0.00000482	0.00000510	0.00000602	0.00000685	0.00000344	0.00000941	0.00000375	0.00000356	0.00000434
	$Intake_{ing(13-18)}$		13-18 yrs	0.00000058	0.00000042	0.00000022	0.00000017	0.00000021	0.00000115	0.00000015	0.00000031	0.00000025	0.00000021	0.0000004	0.00000183	0.00000077	0.00000061	0.00000035	0.00000030	0.00000035	0.00000091	0.00000102	0.00000103	0.00000109	0.00000129	0.00000147	0.00000074	0.00000202	0.00000080	0.00000076	0.00000093
	$Intake_{ing(18-82)}$		18-82 yrs	0.00000041	0.00000030	0.00000016	0.00000012	0.00000015	0.00000083	0.00000011	0.00000022	0.00000018	0.00000015	0.00000003	0.00000131	0.00000056	0.00000044	0.00000025	0.00000021	0.00000025	0.00000065	0.00000073	0.00000074	0.00000078	0.00000093	0.00000105	0.00000053	0.00000145	0.00000058	0.00000055	0.00000067
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0000009	0.0000006	0.0000003	0.0000003	0.0000003	0.0000017	0.0000002	0.0000005	0.0000004	0.0000003	0.0000001	0.0000027	0.0000012	0.0000009	0.0000005	0.0000004	0.0000005	0.0000014	0.0000015	0.0000015	0.0000016	0.0000019	0.0000022	0.0000011	0.0000030	0.0000012	0.0000011	0.0000014
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.00000048	0.00000035	0.00000018	0.00000014	0.00000017	0.00000096	0.00000012	0.00000026	0.00000021	0.00000017	0.00000004	0.00000152	0.00000065	0.00000051	0.00000029	0.00000025	0.00000029	0.00000076	0.00000085	0.00000086	0.00000091	0.00000108	0.00000122	0.00000061	0.00000168	0.00000067	0.00000064	0.00000078
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.000022	0.000022	0.000022	0.000021	0.000022	0.000023	0.000021	0.000022	0.000021	0.000019	0.000021	0.000022	0.000022	0.000022	0.000022	0.000022	0.000022	0.000022	0.000022	0.000022	0.000022	0.000022	0.000022	0.000022	0.000022	0.000022	0.000022	0.000022
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0009	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011
Overall hazard quotient	$HQ_{overall}$	unitless		0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0009	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011
Unit risk factor	URF	$(\mu g/m^3)^{-1}$		0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434
Cancer risk	CR	unitless		9.359E-10	9.4195E-10	9.3515E-10	9.32806E-10	9.34584E-10	9.915E-10	9.315E-10	9.34637E-10	9.326E-10	8.1823E-10	9.27624E-10	9.717E-10	9.46335E-10	9.458E-10	9.3922E-10	9.37314E-10	9.3928E-10	9.4565E-10	9.6056E-10	9.48815E-10	9.49428E-10	9.52634E-10	9.575E-10	9.39098E-10	9.761E-10	9.4591E-10	9.4462E-10	9.5674E-10

Nickel, Scenario 1 (Current Operations, incl. background)				D5	D5	D5	D5	D6	D6	D6	D6	D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7	Other (D7)	D8
Parameter	Abbreviation	Unit		R64	R65	R66	R67	R10	R34	R35	R36	R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62	R8	R55
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.00024	0.00064	0.00040	0.00042	0.00061	0.00112	0.00098	0.00087	0.00082	0.00087	0.00115	0.00052	0.00066	0.00307	0.00252	0.00197	0.00172	0.00033	0.00061	0.00028	0.00029	0.00068	0.00036	0.00039	0.00019	0.00020	0.00077	0.00009
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.00000215	0.00000580	0.00000366	0.00000384	0.00000555	0.00001014	0.00000894	0.00000790	0.00000745	0.00000795	0.00001045	0.00000475	0.00000601	0.00002787	0.00002295	0.00001792	0.00001565	0.00000297	0.00000550	0.00000253	0.00000267	0.00000617	0.00000328	0.00000358	0.00000175	0.00000184	0.00000700	0.00000086
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.00000099	0.00000266	0.00000168	0.00000176	0.00000254	0.00000465	0.00000410	0.00000362	0.00000341	0.00000364	0.00000479	0.00000218	0.00000275	0.00001278	0.00001052	0.00000822	0.00000717	0.00000136	0.00000252	0.00000116	0.00000122	0.00000283	0.00000150	0.00000164	0.00000080	0.00000084	0.00000321	0.00000039
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.00000021	0.00000057	0.00000036	0.00000038	0.00000054	0.00000100	0.00000088	0.00000078	0.00000073	0.00000078	0.00000103	0.00000047	0.00000059	0.00000274	0.00000225	0.00000176	0.00000154	0.00000029	0.00000054	0.00000025	0.00000026	0.00000061	0.00000032	0.00000035	0.00000017	0.00000018	0.00000069	0.00000008
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.00000015	0.00000041	0.00000026	0.00000027	0.00000039	0.00000071	0.00000063	0.00000056	0.00000053	0.00000056	0.00000074	0.00000033	0.00000042	0.00000197	0.00000162	0.00000126	0.00000110	0.00000021	0.00000039	0.00000018	0.00000019	0.00000044	0.00000023	0.00000025	0.00000012	0.00000013	0.00000049	0.00000006
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0000003	0.0000009	0.0000005	0.0000006	0.0000008	0.0000015	0.0000013	0.0000012	0.0000011	0.0000012	0.0000015	0.0000007	0.0000009	0.0000041	0.0000034	0.0000026	0.0000023	0.0000004	0.0000008	0.0000004	0.0000004	0.0000009	0.0000005	0.0000005	0.0000003	0.0000003	0.0000010	0.0000001
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.00000018	0.00000048	0.00000030	0.00000031	0.00000045	0.00000083	0.00000073	0.00000065	0.00000061	0.00000065	0.00000086	0.00000039	0.00000049	0.00000228	0.00000188	0.00000147	0.00000128	0.00000024	0.00000045	0.00000021	0.00000022	0.00000051	0.00000027	0.00000029	0.00000014	0.00000015	0.00000057	0.00000007
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.000021	0.000022	0.000022	0.000022	0.000022	0.000022	0.000022	0.000022	0.000022	0.000022	0.000022	0.000022	0.000022	0.000023	0.000023	0.000022	0.000022	0.000021	0.000022	0.000022	0.000022	0.000022	0.000022	0.000022	0.000021	0.000022	0.000022	0.000021
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011
Overall hazard quotient	$HQ_{overall}$	unitless		0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011
Unit risk factor	URF	$(\mu g/m^3)^{-1}$		0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434
Cancer risk	CR	unitless		9.317E-10	9.406E-10	9.359E-10	9.3627E-10	9.39975E-10	9.4511E-10	9.458E-10	9.461E-10	9.45675E-10	9.454E-10	9.4621E-10	9.38E-10	9.4106E-10	9.94014E-10	9.87201E-10	9.70282E-10	9.70089E-10	9.32E-10	9.4063E-10	9.37E-10	9.3588E-10	9.42304E-10	9.346E-10	9.3591E-10	9.3155E-10	9.3397E-10	9.41729E-10	9.2929E-10

Nickel, Scenario 1 (Current Operations, incl. background)				D8	D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R56	R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.00010	0.00010	0.00020	0.00013	0.00013	0.00023	0.00012	0.00031	0.00038	0.00015	0.00033	0.00027	0.00010	0.00014
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.00000093	0.00000093	0.00000180	0.00000119	0.00000114	0.00000211	0.00000106	0.00000283	0.00000349	0.00000137	0.00000301	0.00000249	0.00000089	0.00000131
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.00000042	0.00000043	0.00000083	0.00000054	0.00000052	0.00000097	0.00000049	0.00000130	0.00000160	0.00000063	0.00000138	0.00000114	0.00000041	0.00000060
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.00000009	0.00000009	0.00000018	0.00000012	0.00000011	0.00000021	0.00000010	0.00000028	0.00000034	0.00000013	0.00000030	0.00000024	0.00000009	0.00000013
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.00000007	0.00000007	0.00000013	0.00000008	0.00000008	0.00000015	0.00000007	0.00000020	0.00000025	0.00000010	0.00000021	0.00000018	0.00000006	0.00000009
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0000001	0.0000001	0.0000003	0.0000002	0.0000002	0.0000003	0.0000002	0.0000004	0.0000005	0.0000002	0.0000004	0.0000004	0.0000001	0.0000002
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.00000008	0.00000008	0.00000015	0.00000010	0.00000009	0.00000017	0.00000009	0.00000023	0.00000029	0.00000011	0.00000025	0.00000020	0.00000007	0.00000011
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.000021	0.000021	0.000021	0.000021	0.000021	0.000021	0.000021	0.000022	0.000022	0.000021	0.000021	0.000021	0.000021	0.000021
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011
Overall hazard quotient	$HQ_{overall}$	unitless		0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011
Unit risk factor	URF	(µg/m^3)$^{-1}$		0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434
Cancer risk	CR	unitless		9.295E-10	9.2972E-10	9.31E-10	9.29448E-10	9.29334E-10	9.318E-10	9.2886E-10	9.33593E-10	9.34424E-10	9.298E-10	9.3299E-10	9.317E-10	9.287E-10	9.292E-10

Nickel, Scenario 2 (Mod6, Proposed Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3	D3
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5	R12
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.00059	0.00044	0.00023	0.00017	0.00021	0.00121	0.00015	0.00033	0.00026	0.00022	0.00005	0.00201	0.00083	0.00064	0.00037
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.00000534	0.00000403	0.00000207	0.00000156	0.00000194	0.00001104	0.00000141	0.00000299	0.00000239	0.00000200	0.00000041	0.00001828	0.00000751	0.00000580	0.00000332
	$Intake_{ing(3-13)}$		3-13 yrs	0.00000245	0.00000185	0.00000095	0.00000072	0.00000089	0.00000506	0.00000065	0.00000137	0.00000110	0.00000092	0.00000019	0.00000838	0.00000344	0.00000266	0.00000152
	$Intake_{ing(13-18)}$		13-18 yrs	0.00000052	0.00000040	0.00000020	0.00000015	0.00000019	0.00000108	0.00000014	0.00000029	0.00000024	0.00000020	0.00000004	0.00000180	0.00000074	0.00000057	0.00000033
	$Intake_{ing(18-82)}$		18-82 yrs	0.00000038	0.00000028	0.00000015	0.00000011	0.00000014	0.00000078	0.00000010	0.00000021	0.00000017	0.00000014	0.00000003	0.00000129	0.00000053	0.00000041	0.00000023
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0000008	0.0000006	0.0000003	0.0000002	0.0000003	0.0000016	0.0000002	0.0000004	0.0000004	0.0000003	0.0000001	0.0000027	0.0000011	0.0000009	0.0000005
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000004	0.0000003	0.0000002	0.0000001	0.0000002	0.0000009	0.0000001	0.0000002	0.0000002	0.0000002	0.0000000	0.0000015	0.0000006	0.0000005	0.0000003
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.000021	0.000021	0.000021	0.000021	0.000021	0.000023	0.000021	0.000021	0.000021	0.000019	0.000021	0.000022	0.000021	0.000021	0.000021
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0009	0.0011	0.0011	0.0011	0.0011	0.0011
Overall hazard quotient	$HQ_{overall}$	unitless		0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0009	0.0011	0.0011	0.0011	0.0011	0.0011
Unit risk factor	URF	$(\mu g/m^3)^{-1}$		0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434
Cancer risk	CR	unitless		9.2193E-10	9.2981E-10	9.2749E-10	9.2683E-10	9.2735E-10	9.7734E-10	9.2695E-10	9.279E-10	9.2703E-10	8.1231E-10	9.2595E-10	9.4249E-10	9.2792E-10	9.293E-10	9.294E-10

Nickel, Scenario 2 (Mod6, Proposed Operations, incl. background)				D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5	D5	D5
Parameter	Abbreviation	Unit		R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33	R64	R65
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.00031	0.00037	0.00100	0.00111	0.00111	0.00116	0.00133	0.00150	0.00078	0.00205	0.00084	0.00079	0.00092	0.00022	0.00059
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.00000284	0.00000333	0.00000905	0.00001011	0.00001013	0.00001054	0.00001210	0.00001363	0.00000709	0.00001866	0.00000763	0.00000720	0.00000839	0.00000196	0.00000535
	$Intake_{ing(3-13)}$		3-13 yrs	0.00000130	0.00000153	0.00000415	0.00000463	0.00000464	0.00000483	0.00000554	0.00000625	0.00000325	0.00000855	0.00000350	0.00000330	0.00000384	0.00000090	0.00000245
	$Intake_{ing(13-18)}$		13-18 yrs	0.00000028	0.00000033	0.00000089	0.00000099	0.00000100	0.00000104	0.00000119	0.00000134	0.00000070	0.00000183	0.00000075	0.00000071	0.00000082	0.00000019	0.00000053
	$Intake_{ing(18-82)}$		18-82 yrs	0.00000020	0.00000023	0.00000064	0.00000071	0.00000071	0.00000074	0.00000085	0.00000096	0.00000050	0.00000132	0.00000054	0.00000051	0.00000059	0.00000014	0.00000038
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0000004	0.0000005	0.0000013	0.0000015	0.0000015	0.0000016	0.0000018	0.0000020	0.0000010	0.0000028	0.0000011	0.0000011	0.0000012	0.0000003	0.0000008
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000002	0.0000003	0.0000007	0.0000008	0.0000008	0.0000009	0.0000010	0.0000011	0.0000006	0.0000015	0.0000006	0.0000006	0.0000007	0.0000002	0.0000004
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.000021	0.000021	0.000021	0.000022	0.000021	0.000021	0.000021	0.000022	0.000021	0.000022	0.000022	0.000022	0.000022	0.000021	0.000021
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011
Overall hazard quotient	$HQ_{overall}$	unitless		0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011
Unit risk factor	URF	$(\mu g/m^3)^{-1}$		0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434
Cancer risk	CR	unitless		9.2885E-10	9.2962E-10	9.3223E-10	9.4046E-10	9.3041E-10	9.2915E-10	9.3122E-10	9.3781E-10	9.2708E-10	9.5493E-10	9.3504E-10	9.3367E-10	9.3953E-10	9.2718E-10	9.3131E-10

Nickel, Scenario 2 (Mod6, Proposed Operations, incl. background)				D5	D5	D6	D6	D6	D6	D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7	Other (D7)	D8	D8	D8	D9
Parameter	Abbreviation	Unit		R66	R67	R10	R34	R35	R36	R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62	R8	R55	R56	R61	R16
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.00037	0.00039	0.00058	0.00105	0.00092	0.00081	0.00076	0.00083	0.00109	0.00049	0.00062	0.00300	0.00246	0.00188	0.00163	0.00030	0.00056	0.00025	0.00027	0.00064	0.00034	0.00037	0.00018	0.00019	0.00071	0.00009	0.00009	0.00009	0.00018
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.00000338	0.00000354	0.00000523	0.00000957	0.00000835	0.00000732	0.00000691	0.00000752	0.00000992	0.00000443	0.00000561	0.00002728	0.00002232	0.00001711	0.00001482	0.00000277	0.00000513	0.00000232	0.00000245	0.00000578	0.00000306	0.00000333	0.00000163	0.00000168	0.00000649	0.00000079	0.00000085	0.00000085	0.00000165
	$Intake_{ing(3-13)}$		3-13 yrs	0.00000155	0.00000162	0.00000240	0.00000439	0.00000383	0.00000336	0.00000317	0.00000344	0.00000455	0.00000203	0.00000257	0.00001250	0.00001023	0.00000784	0.00000679	0.00000127	0.00000235	0.00000106	0.00000112	0.00000265	0.00000140	0.00000153	0.00000075	0.00000077	0.00000297	0.00000036	0.00000039	0.00000039	0.00000076
	$Intake_{ing(13-18)}$		13-18 yrs	0.00000033	0.00000035	0.00000051	0.00000094	0.00000082	0.00000072	0.00000068	0.00000074	0.00000097	0.00000043	0.00000055	0.00000268	0.00000219	0.00000168	0.00000146	0.00000027	0.00000050	0.00000023	0.00000024	0.00000057	0.00000030	0.00000033	0.00000016	0.00000017	0.00000064	0.00000008	0.00000008	0.00000008	0.00000016
	$Intake_{ing(18-82)}$		18-82 yrs	0.00000024	0.00000025	0.00000037	0.00000067	0.00000059	0.00000052	0.00000049	0.00000053	0.00000070	0.00000031	0.00000040	0.00000192	0.00000157	0.00000121	0.00000105	0.00000020	0.00000036	0.00000016	0.00000017	0.00000041	0.00000022	0.00000023	0.00000011	0.00000012	0.00000046	0.00000006	0.00000006	0.00000006	0.00000012
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0000005	0.0000005	0.0000008	0.0000014	0.0000012	0.0000011	0.0000010	0.0000011	0.0000015	0.0000007	0.0000008	0.0000040	0.0000033	0.0000025	0.0000022	0.0000004	0.0000008	0.0000003	0.0000004	0.0000009	0.0000005	0.0000005	0.0000002	0.0000002	0.0000010	0.0000001	0.0000001	0.0000001	0.0000002
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000003	0.0000003	0.0000004	0.0000008	0.0000007	0.0000006	0.0000006	0.0000006	0.0000008	0.0000004	0.0000005	0.0000022	0.0000018	0.0000014	0.0000012	0.0000002	0.0000004	0.0000002	0.0000002	0.0000005	0.0000003	0.0000003	0.0000001	0.0000001	0.0000005	0.0000001	0.0000001	0.0000001	0.0000001
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.000021	0.000021	0.000021	0.000021	0.000021	0.000021	0.000021	0.000021	0.000021	0.000021	0.000021	0.000023	0.000022	0.000022	0.000022	0.000021	0.000021	0.000021	0.000021	0.000021	0.000021	0.000021	0.000021	0.000021	0.000021	0.000021	0.000021	0.000021	0.000021
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011
Overall hazard quotient	$HQ_{overall}$	unitless		0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011
Unit risk factor	URF	(µg/m^3)$^{-1}$		0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434
Cancer risk	CR	unitless		9.2872E-10	9.2882E-10	9.2818E-10	9.2644E-10	9.2696E-10	9.2949E-10	9.3172E-10	9.3029E-10	9.2816E-10	9.2818E-10	9.286E-10	9.91326E-10	9.70753E-10	9.58751E-10	9.48736E-10	9.2579E-10	9.2861E-10	9.2818E-10	9.2693E-10	9.2939E-10	9.2651E-10	9.2694E-10	9.2666E-10	9.272E-10	9.2624E-10	9.2616E-10	9.2604E-10	9.261E-10	9.2703E-10

Nickel, Scenario 2 (Mod6, Proposed Operations, incl. background)				D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.00012	0.00012	0.00021	0.00011	0.00029	0.00036	0.00014	0.00031	0.00025	0.00009	0.00013
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.00000109	0.00000106	0.00000194	0.00000097	0.00000260	0.00000328	0.00000127	0.00000280	0.00000232	0.00000083	0.00000121
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.00000050	0.00000048	0.00000089	0.00000045	0.00000119	0.00000150	0.00000058	0.00000129	0.00000106	0.00000038	0.00000056
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.00000011	0.00000010	0.00000019	0.00000010	0.00000026	0.00000032	0.00000012	0.00000028	0.00000023	0.00000008	0.00000012
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.00000008	0.00000007	0.00000014	0.00000007	0.00000018	0.00000023	0.00000009	0.00000020	0.00000016	0.00000006	0.00000009
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.0000002	0.0000002	0.0000003	0.0000001	0.0000004	0.0000005	0.0000002	0.0000004	0.0000003	0.0000001	0.0000002
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000001	0.0000001	0.0000002	0.0000001	0.0000002	0.0000003	0.0000001	0.0000002	0.0000002	0.0000001	0.0000001
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.000021	0.000021	0.000021	0.000021	0.000021	0.000021	0.000021	0.000021	0.000021	0.000021	0.000021
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011
Overall hazard quotient	$HQ_{overall}$	unitless		0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011
Unit risk factor	URF	$(\mu g/m^3)^{-1}$		0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434	0.0000434
Cancer risk	CR	unitless		9.2655E-10	9.2646E-10	9.2732E-10	9.2632E-10	9.2783E-10	9.2665E-10	9.2635E-10	9.2675E-10	9.2675E-10	9.2615E-10	9.259E-10

Silver, Scenario 1 (Current Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3	D3	D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5	R12	R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0043	0.0032	0.0017	0.0013	0.0016	0.0087	0.0011	0.0023	0.0019	0.0016	0.0003	0.0138	0.0058	0.0046	0.0026	0.0022	0.0026	0.0068	0.0076	0.0078	0.0082	0.0097	0.0111	0.0055	0.0152	0.0060	0.0057	0.0070
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.0000395	0.0000290	0.0000151	0.0000115	0.0000142	0.0000790	0.0000102	0.0000211	0.0000171	0.0000143	0.0000030	0.0001251	0.0000530	0.0000417	0.0000236	0.0000203	0.0000237	0.0000621	0.0000695	0.0000707	0.0000748	0.0000883	0.0001005	0.0000504	0.0001380	0.0000550	0.0000522	0.0000636
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.0000181	0.0000133	0.0000069	0.0000052	0.0000065	0.0000362	0.0000047	0.0000097	0.0000078	0.0000065	0.0000014	0.0000573	0.0000243	0.0000191	0.0000108	0.0000093	0.0000108	0.0000285	0.0000319	0.0000324	0.0000343	0.0000405	0.0000460	0.0000231	0.0000632	0.0000252	0.0000239	0.0000292
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.0000039	0.0000028	0.0000015	0.0000011	0.0000014	0.0000078	0.0000010	0.0000021	0.0000017	0.0000014	0.0000003	0.0000123	0.0000052	0.0000041	0.0000023	0.0000020	0.0000023	0.0000061	0.0000068	0.0000069	0.0000073	0.0000087	0.0000099	0.0000050	0.0000136	0.0000054	0.0000051	0.0000062
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.0000028	0.0000020	0.0000011	0.0000008	0.0000010	0.0000056	0.0000007	0.0000015	0.0000012	0.0000010	0.0000002	0.0000088	0.0000037	0.0000029	0.0000017	0.0000014	0.0000017	0.0000044	0.0000049	0.0000050	0.0000053	0.0000062	0.0000071	0.0000036	0.0000097	0.0000039	0.0000037	0.0000045
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000006	0.000004	0.000002	0.000002	0.000002	0.000012	0.000001	0.000003	0.000003	0.000002	0.000000	0.000018	0.000008	0.000006	0.000003	0.000003	0.000003	0.000009	0.000010	0.000010	0.000011	0.000013	0.000015	0.000007	0.000020	0.000008	0.000008	0.000009
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.000000015	0.000000011	0.000000006	0.000000004	0.000000005	0.000000029	0.000000004	0.000000008	0.000000006	0.000000005	0.000000001	0.000000046	0.000000020	0.000000015	0.000000009	0.000000007	0.000000009	0.000000023	0.000000026	0.000000026	0.000000028	0.000000033	0.000000037	0.000000019	0.000000051	0.000000020	0.000000019	0.000000023
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m³		0.00016	0.00016	0.00016	0.00016	0.00016	0.00017	0.00016	0.00016	0.00016	0.00014	0.00016	0.00017	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00017	0.00016	0.00017	0.00017	0.00017	0.00016	0.00017	0.00016	0.00016	0.00017
Chronic air guideline value (Section 4.3.2)	AGV	µg/m³		1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000011	0.00000010	0.00000010	0.00000010	0.00000009	0.00000010	0.00000011	0.00000011	0.00000011	0.00000010	0.00000010	0.00000010	0.00000011	0.00000011	0.00000011	0.00000011	0.00000011	0.00000011	0.00000010	0.00000011	0.00000011	0.00000011	0.00000011
Overall hazard quotient	$HQ_{overall}$	unitless		0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000002	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000002	0.0000001	0.0000001	0.0000001

Silver, Scenario 1 (Current Operations, incl. background)				D5	D5	D5	D5	D6	D6	D6	D6	D6	D6	D6	D6	D6	Other (D6)
Parameter	Abbreviation	Unit		R64	R65	R66	R67	R10	R34	R35	R36	R37	R41	R42	R47	R50	R27
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0016	0.0043	0.0027	0.0028	0.0041	0.0075	0.0066	0.0058	0.0055	0.0059	0.0077	0.0035	0.0044	0.0206
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0000145	0.0000390	0.0000246	0.0000258	0.0000373	0.0000681	0.0000601	0.0000531	0.0000500	0.0000534	0.0000702	0.0000319	0.0000404	0.0001873
	$Intake_{ing(3-13)}$		3-13 yrs	0.0000066	0.0000179	0.0000113	0.0000118	0.0000171	0.0000312	0.0000275	0.0000243	0.0000229	0.0000245	0.0000322	0.0000146	0.0000185	0.0000859
	$Intake_{ing(13-18)}$		13-18 yrs	0.0000014	0.0000038	0.0000024	0.0000025	0.0000037	0.0000067	0.0000059	0.0000052	0.0000049	0.0000052	0.0000069	0.0000031	0.0000040	0.0000184
	$Intake_{ing(18-82)}$		18-82 yrs	0.0000010	0.0000027	0.0000017	0.0000018	0.0000026	0.0000048	0.0000042	0.0000037	0.0000035	0.0000038	0.0000050	0.0000022	0.0000028	0.0000132
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000002	0.000006	0.000004	0.000004	0.000005	0.000010	0.000009	0.000008	0.000007	0.000008	0.000010	0.000005	0.000006	0.000028
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		400	400	400	400	400	400	400	400	400	400	400	400	400	400
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.000000005	0.000000014	0.000000009	0.000000010	0.000000014	0.000000025	0.000000022	0.000000020	0.000000018	0.000000020	0.000000026	0.000000012	0.000000015	0.000000069
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00017
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000011	0.00000011	0.00000011	0.00000011	0.00000011	0.00000011	0.00000010	0.00000010	0.00000011
Overall hazard quotient	$HQ_{overall}$	unitless		0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000002

Silver, Scenario 1 (Current Operations, incl. background)				Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7	Other (D7)	D8
Parameter	Abbreviation	Unit		R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62	R8	R55
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0170	0.0132	0.0116	0.0022	0.0041	0.0019	0.0020	0.0046	0.0024	0.0026	0.0013	0.0014	0.0052	0.0006
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0001542	0.0001205	0.0001052	0.0000200	0.0000370	0.0000170	0.0000179	0.0000415	0.0000220	0.0000241	0.0000118	0.0000124	0.0000470	0.0000058
	$Intake_{ing(3-13)}$		3-13 yrs	0.0000707	0.0000552	0.0000482	0.0000092	0.0000169	0.0000078	0.0000082	0.0000190	0.0000101	0.0000110	0.0000054	0.0000057	0.0000216	0.0000026
	$Intake_{ing(13-18)}$		13-18 yrs	0.0000151	0.0000118	0.0000103	0.0000020	0.0000036	0.0000017	0.0000018	0.0000041	0.0000022	0.0000024	0.0000012	0.0000012	0.0000046	0.0000006
	$Intake_{ing(18-82)}$		18-82 yrs	0.0000109	0.0000085	0.0000074	0.0000014	0.0000026	0.0000012	0.0000013	0.0000029	0.0000016	0.0000017	0.0000008	0.0000009	0.0000033	0.0000004
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000023	0.000018	0.000016	0.000003	0.000005	0.000003	0.000003	0.000006	0.000003	0.000004	0.000002	0.000002	0.000007	0.000001
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		400	400	400	400	400	400	400	400	400	400	400	400	400	400
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.000000057	0.000000044	0.000000039	0.000000007	0.000000014	0.000000006	0.000000007	0.000000015	0.000000008	0.000000009	0.000000004	0.000000005	0.000000017	0.000000002
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.00017	0.00017	0.00017	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00000011	0.00000011	0.00000011	0.00000010	0.00000010	0.00000010	0.00000010	0.00000011	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010
Overall hazard quotient	$HQ_{overall}$	unitless		0.0000002	0.0000002	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001

Silver, Scenario 1 (Current Operations, incl. background)				D8	D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R56	R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0007	0.0007	0.0013	0.0009	0.0008	0.0016	0.0008	0.0021	0.0026	0.0010	0.0022	0.0018	0.0007	0.0010
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.0000062	0.0000063	0.0000121	0.0000080	0.0000077	0.0000142	0.0000071	0.0000190	0.0000235	0.0000092	0.0000202	0.0000167	0.0000060	0.0000088
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.0000028	0.0000029	0.0000055	0.0000037	0.0000035	0.0000065	0.0000033	0.0000087	0.0000108	0.0000042	0.0000093	0.0000077	0.0000027	0.0000040
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.0000006	0.0000006	0.0000012	0.0000008	0.0000008	0.0000014	0.0000007	0.0000019	0.0000023	0.0000009	0.0000020	0.0000016	0.0000006	0.0000009
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.0000004	0.0000004	0.0000009	0.0000006	0.0000005	0.0000010	0.0000005	0.0000013	0.0000017	0.0000006	0.0000014	0.0000012	0.0000004	0.0000006
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000001	0.000001	0.000002	0.000001	0.000001	0.000002	0.000001	0.000003	0.000003	0.000001	0.000003	0.000002	0.000001	0.000001
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		400	400	400	400	400	400	400	400	400	400	400	400	400	400
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.000000002	0.000000002	0.000000004	0.000000003	0.000000003	0.000000005	0.000000003	0.000000007	0.000000009	0.000000003	0.000000007	0.000000006	0.000000002	0.000000003
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010
Overall hazard quotient	$HQ_{overall}$	unitless		0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001

Silver, Scenario 2 (Mod6, Proposed Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3	D3	D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5	R12	R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0039	0.0030	0.0015	0.0012	0.0014	0.0082	0.0010	0.0022	0.0018	0.0015	0.0003	0.0135	0.0056	0.0043	0.0025	0.0021	0.0025	0.0067	0.0075	0.0075	0.0078	0.0089	0.0101	0.0052	0.0138	0.0056	0.0053	0.0062
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0000359	0.0000271	0.0000139	0.0000105	0.0000130	0.0000742	0.0000095	0.0000201	0.0000161	0.0000134	0.0000028	0.0001229	0.0000505	0.0000390	0.0000223	0.0000191	0.0000224	0.0000608	0.0000679	0.0000681	0.0000708	0.0000813	0.0000916	0.0000477	0.0001254	0.0000513	0.0000484	0.0000564
	$Intake_{ing(3-13)}$		3-13 yrs	0.0000164	0.0000124	0.0000064	0.0000048	0.0000060	0.0000340	0.0000043	0.0000092	0.0000074	0.0000061	0.0000013	0.0000563	0.0000231	0.0000179	0.0000102	0.0000088	0.0000103	0.0000279	0.0000311	0.0000312	0.0000325	0.0000373	0.0000420	0.0000218	0.0000575	0.0000235	0.0000222	0.0000258
	$Intake_{ing(13-18)}$		13-18 yrs	0.0000035	0.0000027	0.0000014	0.0000010	0.0000013	0.0000073	0.0000009	0.0000020	0.0000016	0.0000013	0.0000003	0.0000121	0.0000050	0.0000038	0.0000022	0.0000019	0.0000022	0.0000060	0.0000067	0.0000067	0.0000070	0.0000080	0.0000090	0.0000047	0.0000123	0.0000050	0.0000048	0.0000055
	$Intake_{ing(18-82)}$		18-82 yrs	0.0000025	0.0000019	0.0000010	0.0000007	0.0000009	0.0000052	0.0000007	0.0000014	0.0000011	0.0000009	0.0000002	0.0000087	0.0000036	0.0000027	0.0000016	0.0000013	0.0000016	0.0000043	0.0000048	0.0000048	0.0000050	0.0000057	0.0000065	0.0000034	0.0000088	0.0000036	0.0000034	0.0000040
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000005	0.000004	0.000002	0.000002	0.000002	0.000011	0.000001	0.000003	0.000002	0.000002	0.000000	0.000018	0.000007	0.000006	0.000003	0.000003	0.000003	0.000009	0.000010	0.000010	0.000010	0.000012	0.000013	0.000007	0.000018	0.000008	0.000007	0.000008
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000000132	0.0000000100	0.0000000051	0.0000000039	0.0000000048	0.0000000273	0.0000000035	0.0000000074	0.0000000059	0.0000000049	0.0000000010	0.0000000453	0.0000000186	0.0000000144	0.0000000082	0.0000000070	0.0000000083	0.0000000224	0.0000000250	0.0000000251	0.0000000261	0.0000000300	0.0000000337	0.0000000176	0.0000000462	0.0000000189	0.0000000178	0.0000000208
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.00016	0.00016	0.00016	0.00016	0.00016	0.00017	0.00016	0.00016	0.00016	0.00014	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00017	0.00016	0.00016	0.00016
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000011	0.00000010	0.00000010	0.00000010	0.00000009	0.00000010	0.00000011	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000011	0.00000010	0.00000010	0.00000010
Overall hazard quotient	$HQ_{overall}$	unitless		0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000002	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000002	0.0000001	0.0000001	0.0000001

Silver, Scenario 2 (Mod6, Proposed Operations, incl. background)				D5	D5	D5	D5	D6	D6	D6	D6	D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7	Other (D7)	D8
Parameter	Abbreviation	Unit		R64	R65	R66	R67	R10	R34	R35	R36	R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62	R8	R55
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0014	0.0040	0.0025	0.0026	0.0039	0.0071	0.0062	0.0054	0.0051	0.0056	0.0073	0.0033	0.0041	0.0202	0.0165	0.0126	0.0110	0.0020	0.0038	0.0017	0.0018	0.0043	0.0023	0.0025	0.0012	0.0012	0.0048	0.0006
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0000132	0.0000360	0.0000227	0.0000238	0.0000352	0.0000643	0.0000561	0.0000492	0.0000464	0.0000505	0.0000667	0.0000298	0.0000377	0.0001833	0.0001500	0.0001150	0.0000996	0.0000186	0.0000345	0.0000156	0.0000165	0.0000388	0.0000206	0.0000224	0.0000109	0.0000113	0.0000436	0.0000053
	$Intake_{ing(3-13)}$		3-13 yrs	0.0000060	0.0000165	0.0000104	0.0000109	0.0000161	0.0000295	0.0000257	0.0000226	0.0000213	0.0000231	0.0000306	0.0000136	0.0000173	0.0000840	0.0000687	0.0000527	0.0000457	0.0000085	0.0000158	0.0000071	0.0000075	0.0000178	0.0000094	0.0000103	0.0000050	0.0000052	0.0000200	0.0000024
	$Intake_{ing(13-18)}$		13-18 yrs	0.0000013	0.0000035	0.0000022	0.0000023	0.0000035	0.0000063	0.0000055	0.0000048	0.0000046	0.0000050	0.0000065	0.0000029	0.0000037	0.0000180	0.0000147	0.0000113	0.0000098	0.0000018	0.0000034	0.0000015	0.0000016	0.0000038	0.0000020	0.0000022	0.0000011	0.0000011	0.0000043	0.0000005
	$Intake_{ing(18-82)}$		18-82 yrs	0.0000009	0.0000025	0.0000016	0.0000017	0.0000025	0.0000045	0.0000040	0.0000035	0.0000033	0.0000036	0.0000047	0.0000021	0.0000027	0.0000129	0.0000106	0.0000081	0.0000070	0.0000013	0.0000024	0.0000011	0.0000012	0.0000027	0.0000014	0.0000016	0.0000008	0.0000008	0.0000031	0.0000004
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000002	0.000005	0.000003	0.000004	0.000005	0.000009	0.000008	0.000007	0.000007	0.000007	0.000010	0.000004	0.000006	0.000027	0.000022	0.000017	0.000015	0.000003	0.000005	0.000002	0.000002	0.000006	0.000003	0.000003	0.000002	0.000002	0.000006	0.000001
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000000049	0.0000000133	0.0000000084	0.0000000088	0.0000000130	0.0000000237	0.0000000207	0.0000000181	0.0000000171	0.0000000186	0.0000000246	0.0000000110	0.0000000139	0.0000000676	0.0000000553	0.0000000424	0.0000000367	0.0000000069	0.0000000127	0.0000000057	0.0000000061	0.0000000143	0.0000000076	0.0000000083	0.0000000040	0.0000000042	0.0000000161	0.0000000020
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00017	0.00017	0.00017	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000011	0.00000011	0.00000011	0.00000011	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010
Overall hazard quotient	$HQ_{overall}$	unitless		0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000002	0.0000002	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001

Silver, Scenario 2 (Mod6, Proposed Operations, incl. background)				D8	D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R56	R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.0006	0.0006	0.0012	0.0008	0.0008	0.0014	0.0007	0.0019	0.0024	0.0009	0.0021	0.0017	0.0006	0.0009
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine-derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0000057	0.0000057	0.0000111	0.0000073	0.0000071	0.0000130	0.0000065	0.0000175	0.0000220	0.0000085	0.0000188	0.0000156	0.0000056	0.0000082
	$Intake_{ing(3-13)}$		3-13 yrs	0.0000026	0.0000026	0.0000051	0.0000034	0.0000032	0.0000060	0.0000030	0.0000080	0.0000101	0.0000039	0.0000086	0.0000071	0.0000025	0.0000037
	$Intake_{ing(13-18)}$		13-18 yrs	0.0000006	0.0000006	0.0000011	0.0000007	0.0000007	0.0000013	0.0000006	0.0000017	0.0000022	0.0000008	0.0000019	0.0000015	0.0000005	0.0000008
	$Intake_{ing(18-82)}$		18-82 yrs	0.0000004	0.0000004	0.0000008	0.0000005	0.0000005	0.0000009	0.0000005	0.0000012	0.0000016	0.0000006	0.0000013	0.0000011	0.0000004	0.0000006
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.000001	0.000001	0.000002	0.000001	0.000001	0.000002	0.000001	0.000003	0.000003	0.000001	0.000003	0.000002	0.000001	0.000001
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		400	400	400	400	400	400	400	400	400	400	400	400	400	400
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.0000000021	0.0000000021	0.0000000041	0.0000000027	0.0000000026	0.0000000048	0.0000000024	0.0000000064	0.0000000081	0.0000000031	0.0000000069	0.0000000057	0.0000000021	0.0000000030
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010	0.00000010
Overall hazard quotient	$HQ_{overall}$	unitless		0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001

Zinc, Scenario 1 (Current Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3	D3	D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5	R12	R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		5.0	3.7	1.9	1.5	1.8	10.1	1.3	2.7	2.2	1.8	0.4	15.9	6.7	5.3	3.0	2.6	3.0	7.9	8.9	9.0	9.5	11.2	12.8	6.4	17.6	7.0	6.6	8.1
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.0457	0.0336	0.0175	0.0133	0.0164	0.0914	0.0118	0.0245	0.0198	0.0165	0.0034	0.1448	0.0613	0.0483	0.0273	0.0235	0.0274	0.0719	0.0805	0.0818	0.0866	0.1023	0.1163	0.0584	0.1597	0.0636	0.0604	0.0737
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.0209	0.0154	0.0080	0.0061	0.0075	0.0419	0.0054	0.0112	0.0091	0.0076	0.0016	0.0664	0.0281	0.0221	0.0125	0.0108	0.0126	0.0330	0.0369	0.0375	0.0397	0.0469	0.0533	0.0268	0.0732	0.0292	0.0277	0.0338
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.0045	0.0033	0.0017	0.0013	0.0016	0.0090	0.0012	0.0024	0.0019	0.0016	0.0003	0.0142	0.0060	0.0047	0.0027	0.0023	0.0027	0.0071	0.0079	0.0080	0.0085	0.0100	0.0114	0.0057	0.0157	0.0063	0.0059	0.0072
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.0032	0.0024	0.0012	0.0009	0.0012	0.0064	0.0008	0.0017	0.0014	0.0012	0.0002	0.0102	0.0043	0.0034	0.0019	0.0017	0.0019	0.0051	0.0057	0.0058	0.0061	0.0072	0.0082	0.0041	0.0113	0.0045	0.0043	0.0052
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.007	0.005	0.003	0.002	0.002	0.013	0.002	0.004	0.003	0.002	0.001	0.021	0.009	0.007	0.004	0.003	0.004	0.011	0.012	0.012	0.013	0.015	0.017	0.009	0.024	0.009	0.009	0.011
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.000021	0.000015	0.000008	0.000006	0.000008	0.000042	0.000005	0.000011	0.000009	0.000008	0.000002	0.000067	0.000028	0.000022	0.000013	0.000011	0.000013	0.000033	0.000037	0.000038	0.000040	0.000047	0.000054	0.000027	0.000074	0.000029	0.000028	0.000034
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.196	0.197	0.196	0.195	0.196	0.208	0.195	0.196	0.195	0.171	0.194	0.204	0.198	0.198	0.197	0.196	0.197	0.198	0.201	0.199	0.199	0.200	0.201	0.197	0.204	0.198	0.198	0.200
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00016	0.00016	0.00016	0.00016	0.00016	0.00017	0.00016	0.00016	0.00016	0.00014	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016
Overall hazard quotient	$HQ_{overall}$	unitless		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002

Zinc, Scenario 1 (Current Operations, incl. background)				D5	D5	D5	D5	D6	D6	D6	D6	D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7	Other (D7)	D8	D8
Parameter	Abbreviation	Unit		R64	R65	R66	R67	R10	R34	R35	R36	R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62	R8	R55	R56
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		1.8	5.0	3.1	3.3	4.7	8.7	7.7	6.8	6.4	6.8	8.9	4.1	5.1	23.9	19.6	15.3	13.4	2.5	4.7	2.2	2.3	5.3	2.8	3.1	1.5	1.6	6.0	0.7	0.8
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0167	0.0451	0.0284	0.0299	0.0432	0.0789	0.0695	0.0615	0.0579	0.0618	0.0813	0.0369	0.0468	0.2169	0.1786	0.1394	0.1218	0.0231	0.0428	0.0197	0.0207	0.0480	0.0255	0.0278	0.0136	0.0143	0.0545	0.0067	0.0072
	$Intake_{ing(3-13)}$		3-13 yrs	0.0077	0.0207	0.0130	0.0137	0.0198	0.0361	0.0319	0.0282	0.0266	0.0283	0.0373	0.0169	0.0214	0.0994	0.0818	0.0639	0.0558	0.0106	0.0196	0.0090	0.0095	0.0220	0.0117	0.0128	0.0063	0.0066	0.0250	0.0031	0.0033
	$Intake_{ing(13-18)}$		13-18 yrs	0.0016	0.0044	0.0028	0.0029	0.0042	0.0077	0.0068	0.0060	0.0057	0.0061	0.0080	0.0036	0.0046	0.0213	0.0175	0.0137	0.0120	0.0023	0.0042	0.0019	0.0020	0.0047	0.0025	0.0027	0.0013	0.0014	0.0053	0.0007	0.0007
	$Intake_{ing(18-82)}$		18-82 yrs	0.0012	0.0032	0.0020	0.0021	0.0030	0.0056	0.0049	0.0043	0.0041	0.0044	0.0057	0.0026	0.0033	0.0153	0.0126	0.0098	0.0086	0.0016	0.0030	0.0014	0.0015	0.0034	0.0018	0.0020	0.0010	0.0010	0.0038	0.0005	0.0005
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.002	0.007	0.004	0.004	0.006	0.012	0.010	0.009	0.009	0.009	0.012	0.005	0.007	0.032	0.026	0.021	0.018	0.003	0.006	0.003	0.003	0.007	0.004	0.004	0.002	0.002	0.008	0.001	0.001
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.000008	0.000021	0.000013	0.000014	0.000020	0.000036	0.000032	0.000028	0.000027	0.000028	0.000037	0.000017	0.000022	0.000100	0.000082	0.000064	0.000056	0.000011	0.000020	0.000009	0.000010	0.000022	0.000012	0.000013	0.000006	0.000007	0.000025	0.000003	0.000003
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.195	0.197	0.196	0.196	0.197	0.198	0.198	0.198	0.198	0.198	0.198	0.197	0.197	0.208	0.207	0.203	0.203	0.195	0.197	0.196	0.196	0.197	0.196	0.196	0.195	0.196	0.197	0.195	0.195
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00017	0.00017	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016
Overall hazard quotient	$HQ_{overall}$	unitless		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002

Zinc, Scenario 1 (Current Operations, incl. background)				D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.8	1.5	1.0	1.0	1.8	0.9	2.4	3.0	1.2	2.6	2.1	0.8	1.1
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0073	0.0140	0.0093	0.0089	0.0164	0.0082	0.0220	0.0272	0.0106	0.0234	0.0194	0.0069	0.0102
	$Intake_{ing(3-13)}$		3-13 yrs	0.0033	0.0064	0.0042	0.0041	0.0075	0.0038	0.0101	0.0125	0.0049	0.0107	0.0089	0.0032	0.0047
	$Intake_{ing(13-18)}$		13-18 yrs	0.0007	0.0014	0.0009	0.0009	0.0016	0.0008	0.0022	0.0027	0.0010	0.0023	0.0019	0.0007	0.0010
	$Intake_{ing(18-82)}$		18-82 yrs	0.0005	0.0010	0.0007	0.0006	0.0012	0.0006	0.0016	0.0019	0.0008	0.0016	0.0014	0.0005	0.0007
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.001	0.002	0.001	0.001	0.002	0.001	0.003	0.004	0.002	0.003	0.003	0.001	0.002
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		320	320	320	320	320	320	320	320	320	320	320	320	320
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.000003	0.000006	0.000004	0.000004	0.000008	0.000004	0.000010	0.000013	0.000005	0.000011	0.000009	0.000003	0.000005
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.195	0.195	0.195	0.195	0.195	0.195	0.196	0.196	0.195	0.195	0.195	0.195	0.195
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016
Overall hazard quotient	$HQ_{overall}$	unitless		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002

Zinc, Scenario 2 (Mod6, Proposed Operations, incl. background)				D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3	D3	D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5
Parameter	Abbreviation	Unit		R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5	R12	R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		4.6	3.4	1.8	1.3	1.7	9.4	1.2	2.6	2.0	1.7	0.4	15.6	6.4	5.0	2.8	2.4	2.9	7.7	8.7	8.7	9.0	10.4	11.7	6.1	16.0	6.5	6.2	7.2
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0\text{-}3)}$	µg/kg/d	0.5-3 yrs	0.0415	0.0313	0.0161	0.0122	0.0151	0.0859	0.0110	0.0232	0.0186	0.0155	0.0032	0.1422	0.0584	0.0451	0.0259	0.0221	0.0259	0.0704	0.0786	0.0788	0.0820	0.0941	0.1060	0.0552	0.1452	0.0594	0.0560	0.0653
	$Intake_{ing(3\text{-}13)}$		3-13 yrs	0.0190	0.0144	0.0074	0.0056	0.0069	0.0394	0.0050	0.0106	0.0085	0.0071	0.0015	0.0652	0.0268	0.0207	0.0119	0.0101	0.0119	0.0323	0.0360	0.0361	0.0376	0.0431	0.0486	0.0253	0.0665	0.0272	0.0257	0.0299
	$Intake_{ing(13\text{-}18)}$		13-18 yrs	0.0041	0.0031	0.0016	0.0012	0.0015	0.0084	0.0011	0.0023	0.0018	0.0015	0.0003	0.0140	0.0057	0.0044	0.0025	0.0022	0.0025	0.0069	0.0077	0.0077	0.0081	0.0092	0.0104	0.0054	0.0143	0.0058	0.0055	0.0064
	$Intake_{ing(18\text{-}82)}$		18-82 yrs	0.0029	0.0022	0.0011	0.0009	0.0011	0.0061	0.0008	0.0016	0.0013	0.0011	0.0002	0.0100	0.0041	0.0032	0.0018	0.0016	0.0018	0.0050	0.0055	0.0056	0.0058	0.0066	0.0075	0.0039	0.0102	0.0042	0.0040	0.0046
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.006	0.005	0.002	0.002	0.002	0.013	0.002	0.003	0.003	0.002	0.000	0.021	0.009	0.007	0.004	0.003	0.004	0.010	0.012	0.012	0.012	0.014	0.016	0.008	0.021	0.009	0.008	0.010
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.000019	0.000014	0.000007	0.000006	0.000007	0.000040	0.000005	0.000011	0.000009	0.000007	0.000001	0.000066	0.000027	0.000021	0.000012	0.000010	0.000012	0.000032	0.000036	0.000036	0.000038	0.000043	0.000049	0.000025	0.000067	0.000027	0.000026	0.000030
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	$\mu g/m^3$		0.193	0.195	0.194	0.194	0.194	0.205	0.194	0.194	0.194	0.170	0.194	0.197	0.194	0.195	0.195	0.195	0.195	0.195	0.197	0.195	0.195	0.195	0.196	0.194	0.200	0.196	0.196	0.197
Chronic air guideline value (Section 4.3.2)	AGV	$\mu g/m^3$		1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00015	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00014	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016
Overall hazard quotient	$HQ_{overall}$	unitless		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002

Zinc, Scenario 2 (Mod6, Proposed Operations, incl. background)				D5	D5	D5	D5	D6	D6	D6	D6	D6	D6	D6	D6	D6
Parameter	Abbreviation	Unit		R64	R65	R66	R67	R10	R34	R35	R36	R37	R41	R42	R47	R50
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		1.7	4.6	2.9	3.0	4.5	8.2	7.1	6.3	5.9	6.4	8.5	3.8	4.8
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0152	0.0416	0.0263	0.0276	0.0407	0.0744	0.0650	0.0570	0.0538	0.0585	0.0772	0.0344	0.0436
	$Intake_{ing(3-13)}$		3-13 yrs	0.0070	0.0191	0.0120	0.0126	0.0187	0.0341	0.0298	0.0261	0.0246	0.0268	0.0354	0.0158	0.0200
	$Intake_{ing(13-18)}$		13-18 yrs	0.0015	0.0041	0.0026	0.0027	0.0040	0.0073	0.0064	0.0056	0.0053	0.0057	0.0076	0.0034	0.0043
	$Intake_{ing(18-82)}$		18-82 yrs	0.0011	0.0029	0.0019	0.0019	0.0029	0.0052	0.0046	0.0040	0.0038	0.0041	0.0054	0.0024	0.0031
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.002	0.006	0.004	0.004	0.006	0.011	0.010	0.008	0.008	0.009	0.011	0.005	0.006
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		320	320	320	320	320	320	320	320	320	320	320	320	320
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.000007	0.000019	0.000012	0.000013	0.000019	0.000034	0.000030	0.000026	0.000025	0.000027	0.000036	0.000016	0.000020
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.194	0.195	0.195	0.195	0.194	0.194	0.194	0.195	0.195	0.195	0.194	0.194	0.195
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016
Overall hazard quotient	$HQ_{overall}$	unitless		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002

Zinc, Scenario 2 (Mod6, Proposed Operations, incl. background)				Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7	Other (D7)	D8	D8
Parameter	Abbreviation	Unit		R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62	R8	R55	R56
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		23.3	19.1	14.6	12.7	2.4	4.4	2.0	2.1	4.9	2.6	2.9	1.4	1.4	5.6	0.7	0.7
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.2122	0.1736	0.1331	0.1153	0.0216	0.0399	0.0180	0.0191	0.0450	0.0238	0.0259	0.0127	0.0131	0.0505	0.0062	0.0066
	$Intake_{ing(3-13)}$		3-13 yrs	0.0973	0.0796	0.0610	0.0529	0.0099	0.0183	0.0083	0.0087	0.0206	0.0109	0.0119	0.0058	0.0060	0.0231	0.0028	0.0030
	$Intake_{ing(13-18)}$		13-18 yrs	0.0208	0.0171	0.0131	0.0113	0.0021	0.0039	0.0018	0.0019	0.0044	0.0023	0.0025	0.0012	0.0013	0.0050	0.0006	0.0007
	$Intake_{ing(18-82)}$		18-82 yrs	0.0150	0.0122	0.0094	0.0081	0.0015	0.0028	0.0013	0.0013	0.0032	0.0017	0.0018	0.0009	0.0009	0.0036	0.0004	0.0005
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.031	0.026	0.020	0.017	0.003	0.006	0.003	0.003	0.007	0.004	0.004	0.002	0.002	0.007	0.001	0.001
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.000098	0.000080	0.000061	0.000053	0.000010	0.000018	0.000008	0.000009	0.000021	0.000011	0.000012	0.000006	0.000006	0.000023	0.000003	0.000003
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.208	0.203	0.201	0.199	0.194	0.195	0.194	0.194	0.195	0.194	0.194	0.194	0.194	0.194	0.194	0.194
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00017	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016
Overall hazard quotient	$HQ_{overall}$	unitless		0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002

Zinc, Scenario 2 (Mod6, Proposed Operations, incl. background)				D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
Parameter	Abbreviation	Unit		R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
Soil metal concentration after 5 yrs remaining mine life (calculated from Equations in Table 2-4)	C_s	mg metal/kg soil		0.7	1.4	0.9	0.9	1.7	0.8	2.2	2.8	1.1	2.4	2.0	0.7	1.0
Bioaccessibility of mine-derived soil/dust (Section 2.5.2)	$BAc_{mine\text{-}derived}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1
Existing (i.e. 'background') soil metal conc after 5 yrs remaining mine life (calculated from Equation in Table 2-5)	$C_{s\_existing(end)}$	mg metal/kg soil (note: these data are not available for this metal; assumed to be zero)		0	0	0	0	0	0	0	0	0	0	0	0	0
Bioaccessibility of background (i.e. existing) soil/dust (Section 2.5.2)	$BAc_{background}$	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1
Conversion factor	CF	(kg/mg soil) (µg/mg)		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Exposure frequency	EF	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365
Absolute bioavailability of ingested metal (i.e. absorption from GI tract)	BA_{oral}	unitless		1	1	1	1	1	1	1	1	1	1	1	1	1
Part of averaging time	365	days/yr		365	365	365	365	365	365	365	365	365	365	365	365	365
Age-specific rate of soil/dust ingestion per day (Section 4.4.1.1)	IR_{as}	mg/day	0.5-3 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100
			3-13 yrs	100	100	100	100	100	100	100	100	100	100	100	100	100
			13-18 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50
			18-82 yrs	50	50	50	50	50	50	50	50	50	50	50	50	50
Age-interval exposure duration (Section 4.4.1.1)	ED_x	years	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64
Age-interval body weight (Section 4.4.1.1)	BW_{as}	kg	0.5-3 yrs	11	11	11	11	11	11	11	11	11	11	11	11	11
			3-13 yrs	24	24	24	24	24	24	24	24	24	24	24	24	24
			13-18 yrs	56	56	56	56	56	56	56	56	56	56	56	56	56
			18-82 yrs	78	78	78	78	78	78	78	78	78	78	78	78	78
Averaging time (Section 4.4.1.1)	AT_x	yrs	0.5-3 yrs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
			3-13 yrs	10	10	10	10	10	10	10	10	10	10	10	10	10
			13-18 yrs	5	5	5	5	5	5	5	5	5	5	5	5	5
			18-82 yrs	64	64	64	64	64	64	64	64	64	64	64	64	64
Life stage intake of metal from soil/dust via ingestion (Calculated from Equation 1 in Table 4-3)	$Intake_{ing(0-3)}$	µg/kg/d	0.5-3 yrs	0.0066	0.0128	0.0085	0.0082	0.0151	0.0076	0.0202	0.0255	0.0098	0.0218	0.0180	0.0064	0.0094
	$Intake_{ing(3-13)}$		3-13 yrs	0.0030	0.0059	0.0039	0.0038	0.0069	0.0035	0.0093	0.0117	0.0045	0.0100	0.0083	0.0030	0.0043
	$Intake_{ing(13-18)}$		13-18 yrs	0.0007	0.0013	0.0008	0.0008	0.0015	0.0007	0.0020	0.0025	0.0010	0.0021	0.0018	0.0006	0.0009
	$Intake_{ing(18-82)}$		18-82 yrs	0.0005	0.0009	0.0006	0.0006	0.0011	0.0005	0.0014	0.0018	0.0007	0.0015	0.0013	0.0005	0.0007
Averaging time for lifetime exposure	$AT_{lifetime}$	days		29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930	29930
Oral TWADI of metal from soil/dust ingestion over lifetime (Calculated from Equation 2 in Table 4-3)	$Intake_{ing\_lifetime}$	µg/kg/d		0.001	0.002	0.001	0.001	0.002	0.001	0.003	0.004	0.001	0.003	0.003	0.001	0.001
Tolerable daily intake adjusted for background intakes from diet, water & air (Section 4.3.1)	TDIadj	µg/kg/d		320	320	320	320	320	320	320	320	320	320	320	320	320
Hazard quotient from oral intake (Calculated from Equation 3 in Table 4-3)	HQoral	unitless		0.000003	0.000006	0.000004	0.000004	0.000007	0.000003	0.000009	0.000012	0.000005	0.000010	0.000008	0.000003	0.000004
Modelled annual avg conc of metal in PM_{10} (from ERM 2020b)	C_A	µg/m^3		0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194	0.194
Chronic air guideline value (Section 4.3.2)	AGV	µg/m^3		1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248
Hazard quotient from inhalation intake (Calculated from Equation in Table 4-4)	HQ_{inhal}	unitless		0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016	0.00016
Overall hazard quotient	$HQ_{overall}$	unitless		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002

HQs S1 (Current Operations, incl. background)	D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3	D3	D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5	D5	D5	D5	D5	D6	D6	D6
	R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5	R12	R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33	R64	R65	R66	R67	R10	R34	R35
As	0.0016	0.0016	0.0016	0.0016	0.0016	0.0022	0.0022	0.0022	0.0022	0.0021	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0049	0.0049	0.0049
Cd	0.039	0.039	0.039	0.039	0.039	0.045	0.043	0.043	0.043	0.039	0.043	0.041	0.040	0.040	0.040	0.040	0.040	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.052	0.080	0.080	0.080	0.079	0.080	0.080	0.080	0.083	0.083	0.083
Cr	0.0194	0.0194	0.0194	0.0194	0.0194	0.0227	0.0227	0.0227	0.0227	0.0227	0.0227	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0160	0.0160	0.0160	0.0160	0.0160	0.0160	0.0160	0.0160	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202
Fe	0.0009	0.0009	0.0009	0.0009	0.0009	0.0010	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0010	0.0010	0.0010
Mn	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.09	0.09	0.09
Sb	0.0007	0.0007	0.0007	0.0007	0.0007	0.0008	0.0007	0.0007	0.0007	0.0006	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007
Ba	0.000035	0.000036	0.000035	0.000035	0.000035	0.000038	0.000035	0.000035	0.000035	0.000031	0.000035	0.000037	0.000036	0.000036	0.000036	0.000035	0.000036	0.000036	0.000036	0.000036	0.000036	0.000036	0.000036	0.000036	0.000037	0.000036	0.000036	0.000036	0.000035	0.000036	0.000035	0.000035	0.000036	0.000036	0.000036
Be	0.00005	0.00006	0.00005	0.00005	0.00005	0.00006	0.00005	0.00005	0.00005	0.00005	0.00005	0.00006	0.00006	0.00006	0.00006	0.00005	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00005	0.00006	0.00005	0.00005	0.00006	0.00006	0.00006
Cu	0.005	0.005	0.005	0.005	0.005	0.006	0.005	0.005	0.005	0.005	0.005	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.006	0.005	0.005	0.005	0.005	0.005	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Hg	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003
Ni	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0009	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011
Ag	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000002	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000002	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001
Zn	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Overall HI	0.10	0.10	0.10	0.10	0.10	0.11	0.11	0.11	0.11	0.10	0.11	0.11	0.10	0.10	0.10	0.10	0.10	0.12	0.12	0.12	0.121	0.12	0.12	0.12	0.12	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.21	0.21	0.21

HQs S2 (Proposed Operations, incl. background)	D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3	D3	D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5	D5	D5	D5	D5	D6	D6	D6
	R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5	R12	R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33	R64	R65	R66	R67	R10	R34	R35
As	0.0016	0.0016	0.0016	0.0016	0.0016	0.0022	0.0022	0.0022	0.0022	0.0021	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0048	0.0049	0.0049
Cd	0.038	0.038	0.038	0.038	0.038	0.044	0.043	0.043	0.043	0.039	0.043	0.040	0.040	0.040	0.040	0.039	0.040	0.050	0.051	0.050	0.050	0.051	0.051	0.050	0.051	0.080	0.080	0.080	0.079	0.079	0.079	0.079	0.083	0.083	0.083
Cr	0.0194	0.0194	0.0194	0.0194	0.0194	0.0227	0.0227	0.0227	0.0227	0.0227	0.0227	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0160	0.0160	0.0160	0.0160	0.0160	0.0160	0.0160	0.0160	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202
Fe	0.0009	0.0009	0.0009	0.0009	0.0009	0.0010	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0010	0.0010	0.0010
Mn	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.09	0.09	0.09
Sb	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0006	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007
Ba	0.000035	0.000035	0.000035	0.000035	0.000035	0.000037	0.000035	0.000035	0.000035	0.000031	0.000035	0.000036	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000036	0.000035	0.000035	0.000035	0.000036	0.000035	0.000036	0.000035	0.000035	0.000036	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035
Be	0.00005	0.00005	0.00005	0.00005	0.00005	0.00006	0.00005	0.00005	0.00005	0.00005	0.00005	0.00006	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00006	0.00005	0.00005	0.00005	0.00006	0.00005	0.00006	0.00005	0.00005	0.00006	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005
Cu	0.005	0.005	0.005	0.005	0.005	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Hg	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003
Ni	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0009	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011
Ag	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000002	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000002	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001
Zn	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Overall HI	0.10	0.10	0.10	0.10	0.10	0.11	0.11	0.11	0.11	0.10	0.11	0.10	0.10	0.10	0.10	0.10	0.10	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.20	0.20	0.20

Cancer Risk Sum of Ni & Cr	D1	D1	D1	D1	D1	D2	D2	D2	D2	D2	Other (D2)	D3	D3	D3	D3	D3	D3	D4	D4	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	Other (D4)	D5	D5	D5	D5	D5	D5	D5	D6	D6	D6
	R6	R11	R18	R46	R53	R43	R44	R68	R69	R70	R59	R3	R4	R5	R12	R13	R45	R1	R2	R21	R22	R23	R24	R25	R26	R31	R32	R33	R64	R65	R66	R67	R10	R34	R35
S1 (Current Operations)	6.50E-08	6.54E-08	6.50E-08	6.48E-08	6.49E-08	6.89E-08	6.47E-08	6.49E-08	6.48E-08	5.68E-08	6.44E-08	6.75E-08	6.57E-08	6.57E-08	6.53E-08	6.51E-08	6.53E-08	6.57E-08	6.67E-08	6.59E-08	6.60E-08	6.62E-08	6.65E-08	6.52E-08	6.78E-08	6.57E-08	6.56E-08	6.65E-08	6.47E-08	6.53E-08	6.50E-08	6.50E-08	6.53E-08	6.57E-08	6.57E-08
S2 (Proposed Operations)	6.41E-08	6.46E-08	6.44E-08	6.44E-08	6.44E-08	6.79E-08	6.44E-08	6.45E-08	6.44E-08	5.64E-08	6.43E-08	6.55E-08	6.45E-08	6.46E-08	6.46E-08	6.45E-08	6.46E-08	6.48E-08	6.53E-08	6.46E-08	6.46E-08	6.47E-08	6.52E-08	6.44E-08	6.63E-08	6.50E-08	6.49E-08	6.53E-08	6.44E-08	6.47E-08	6.45E-08	6.45E-08	6.45E-08	6.44E-08	6.44E-08

HQs S1 (Current Operations, incl. background)	D6	D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7	Other (D7)	D8	D8	D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
	R36	R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62	R8	R55	R56	R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
As	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022
Cd	0.083	0.083	0.083	0.083	0.083	0.083	0.085	0.085	0.084	0.084	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.043	0.043	0.043	0.043	0.043	0.043
Cr	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0227	0.0227	0.0227	0.0227	0.0227	0.0227
Fe	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009
Mn	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Sb	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0008	0.0008	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007
Ba	0.000036	0.000036	0.000036	0.000036	0.000035	0.000036	0.000038	0.000037	0.000037	0.000037	0.000035	0.000036	0.000035	0.000035	0.000036	0.000035	0.000035	0.000035	0.000035	0.000036	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035
Be	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00005	0.00006	0.00005	0.00005	0.00006	0.00005	0.00005	0.00005	0.00005	0.00006	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005
Cu	0.005	0.005	0.005	0.005	0.005	0.005	0.006	0.006	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Hg	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003
Ni	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011
Ag	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000002	0.0000002	0.0000002	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001
Zn	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Overall HI	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.20	0.21	0.20	0.20	0.21	0.20	0.20	0.20	0.20	0.21	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11

HQs S2 (Proposed Operations, incl. background)	D6	D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7	Other (D7)	D8	D8	D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
	R36	R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62	R8	R55	R56	R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
As	0.0049	0.0049	0.0049	0.0049	0.0048	0.0049	0.0049	0.0049	0.0049	0.0049	0.0048	0.0048	0.0048	0.0048	0.0049	0.0048	0.0048	0.0048	0.0048	0.0048	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022
Cd	0.083	0.083	0.083	0.083	0.083	0.083	0.085	0.084	0.084	0.083	0.082	0.083	0.083	0.082	0.083	0.082	0.082	0.082	0.082	0.083	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.043	0.043	0.043	0.043	0.043	0.043
Cr	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0202	0.0227	0.0227	0.0227	0.0227	0.0227	0.0227
Fe	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009
Mn	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Sb	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0008	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007
Ba	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000038	0.000037	0.000036	0.000036	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035
Be	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00006	0.00006	0.00006	0.00006	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005
Cu	0.005	0.005	0.005	0.005	0.005	0.005	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Hg	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003
Ni	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011
Ag	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000002	0.0000002	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001
Zn	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Overall HI	0.20	0.20	0.20	0.20	0.20	0.20	0.21	0.21	0.21	0.21	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11

Cancer Risk Sum of Ni & Cr	D6	D6	D6	D6	D6	D6	Other (D6)	Other (D6)	Other (D6)	Other (D6)	D7	D7	D7	D7	D7	D7	D7	D7	D7	Other (D7)	D8	D8	D8	D9	D9	D9	D9	D9	D9	D10	D10	D10	D10	D10	D10
	R36	R37	R41	R42	R47	R50	R27	R28	R29	R30	R7	R9	R38	R39	R40	R51	R52	R57	R62	R8	R55	R56	R61	R16	R19	R20	R48	R49	R60	R14	R15	R17	R54	R58	R63
S1 (Current Operations)	6.57E-08	6.57E-08	6.57E-08	6.57E-08	6.52E-08	6.54E-08	6.91E-08	6.86E-08	6.74E-08	6.74E-08	6.48E-08	6.54E-08	6.51E-08	6.50E-08	6.55E-08	6.49E-08	6.50E-08	6.47E-08	6.49E-08	6.54E-08	6.46E-08	6.46E-08	6.46E-08	6.47E-08	6.46E-08	6.46E-08	6.47E-08	6.45E-08	6.49E-08	6.49E-08	6.46E-08	6.48E-08	6.47E-08	6.45E-08	6.46E-08
S2 (Proposed Operations)	6.46E-08	6.47E-08	6.46E-08	6.45E-08	6.45E-08	6.45E-08	6.89E-08	6.74E-08	6.66E-08	6.59E-08	6.43E-08	6.45E-08	6.45E-08	6.44E-08	6.46E-08	6.44E-08	6.44E-08	6.44E-08	6.44E-08	6.44E-08	6.43E-08	6.43E-08	6.43E-08	6.44E-08	6.44E-08	6.44E-08	6.44E-08	6.44E-08	6.45E-08	6.44E-08	6.44E-08	6.44E-08	6.44E-08	6.43E-08	6.43E-08

APPENDIX K

Toxicity Category Summary

The toxicity category table below summarises whether a metal/metalloid has been evaluated by a competent authority for genotoxic, carcinogenic or reproductive toxicity potential. It also identifies the major target organs for which critical effects have been observed.

The metals were placed into 'toxicity categories' by consulting the following sources:

1. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans and Supplements. http://monographs.iarc.fr/
2. Environmental Health Criteria Monograph Series from the International Programme on Chemical Safety (IPCS) - a cooperative programme of the World Health Organization (WHO), the International Labour Organisation (ILO), and the United Nations Environment Programme (UNEP). http://www.inchem.org/
3. Screening Information Data Set Series from the Organisation for Economic Co-operation and Development (OECD) and produced by United Nations Environment Programme (UNEP). http://www.oecd.org/chemicalsafety/risk-assessment/publishedassessments.htm
4. Concise International Chemical Assessment Documents from the International Programme on Chemical Safety (IPCS) - a cooperative programme of the World Health Organization (WHO), the International Labour Organisation (ILO), and the United Nations Environment Programme (UNEP). http://www.inchem.org/
5. Toxicological Profiles for Chemical Substances, Agency for Toxic substances and Disease Registry (ATSDR), US Department of Health and Human Services. https://www.atsdr.cdc.gov/
6. Re-evaluation of Human Toxicological Maximum Permissible Risk Levels, Dutch National Institute of Public Health and the Environment (RIVM 2001).
7. WHO Guidelines for Air Quality (2000a); Air Quality Guidelines for Europe, 2nd Edition (2000b), World Health Organization.
8. Priority Existing Chemical (PEC) Reports. National Industrial Chemicals Notification and Assessment Scheme (NICNAS), Commonwealth of Australia. https://www.nicnas.gov.au/chemical-information/pec-assessments
9. European Union Existing Chemical Risk Assessment Reports, European Commission, Joint Research Centre European Chemical Bureau, European Union. https://echa.europa.eu/information-on-chemicals/transitional-measures/voluntary-risk-assessment-reports
10. Office of Environmental Human Hazard Assessment (OEHHA), Californian Environmental Protection Agency. https://oehha.ca.gov/
11. EU Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures.
12. WHO. Safety Evaluation of Certain Food Additives and Contaminants. WHO Food Additives Series. Prepared by the Joint FAO/WHO Expert Committee on Food Additives (JECFA) World Health Organization, Geneva. http://www.inchem.org/
13. Patty's Industrial hygiene and toxicology / George D. Clayton and Florence E. Clayton, editors. Electronic edition.
14. Dictionary of Substances and their Effects. Editor, M.L. Richardson; Cambridge, England: Royal Society of Chemistry. Electronic edition.

Table K.1: Toxicity category summary table

Metal/Metalloid	Target Organ of Concern	Toxicity Category		
		Genotoxic	Carcinogenic (route of exposure)	Reproductive Toxicant
Silver (Ag)	Skin (argyria).		N (US EPA D)	
Antimony (Sb)	Lung and lung tumours (from inhalation of antimony trioxide).	U [2]	Y (Antimony trioxide - IARC 2B) (Inhalation) N (Antimony trisulfide – IARC 3)	N
Arsenic (As)	Respiratory; skin; cardiovascular; nervous system; lung cancer.	Y/N [3]	Y (IARC 1, US EPA A) (oral & inhalation)	N
Barium (Ba)	Nephropathy (kidney).	N	N (US EPA D)	N
Beryllium (Be)	Lung, e.g. acute & chronic beryllium disease, and lung tumours (from inhalation exposure). Gastrointestinal (oral).	?	Y (IARC 1, US EPA B1) (inhalation) [4]	N
Cadmium (Cd)	Respiratory system; kidney; lung cancer.	Y/N [5]	Y (IARC 1, US EPA B1) (inhalation) [5]	Y
Chromium (Cr as Cr^{VI})	Lung and nasal tumours (from inhalation). Gastrointestinal tract tumours in experimental animals (from exposure in drinking water).	Y	Y (IARC 1, US EPA D for oral route) [1]	Y
Copper (Cu)	Essential element. Nausea, vomiting, stomach cramps, diarrhoea.	N	N (US EPA D)	N
Iron (Fe)	Essential element. Gastrointestinal irritation. Most effects of concern associated with Fe deficiency.	N	N	N
Lead (Pb)	Impaired neurobehavioural functioning and IQ in children.	N	Y (IARC 2A, US EPA B2)	Y
Mercury (Hg)	Central nervous system; kidney.	N	N	Y
Manganese (Mn)	Nervous system; lungs; reproductive system; immune system.	N	N (US EPA D)	Y

Metal/Metalloid	Target Organ of Concern	Toxicity Category		
		Genotoxic	Carcinogenic (route of exposure)	Reproductive Toxicant
Nickel (Ni)	Allergic reaction (e.g. eczema) as a result of exposure in sensitised individuals (inhalation & oral). Lung and nasal tumours (inhalation).	Y	Y (IARC 1) (inhalation) N (oral)	N
Zinc (Zn)	Secondary copper deficiency, i.e. haematopoietic; kidney; pancreas.	N	N (US EPA D)	N

Y = Yes, N = No, ? = Uncertainty whether this metal/metalloid can cause this due to mixed or inadequate experimental results. U = Unlikely relevant to humans.

[1] US EPA (1998) have classified Cr^{VI} in Group D (not classifiable as to its carcinogenicity) via the oral route. However, since the US EPA (1998) review was published, there have been additional experimental animal studies in rats and mice which have shown the development of gastrointestinal tumours after lifetime intake of Cr^{VI} in drinking water (IARC 2012). In a recent critical review of relevant published data, TCEQ (2016a) concluded that the weight of evidence indicates that cytotoxicity-induced regenerative hyperplasia is indubitably the most scientifically well-supported mode of action for the oral carcinogenicity of Cr^{VI}, and evidence for a mutagenic mode of action is weak. Compensatory crypt enterocyte hyperplasia induced by chronic villous toxicity is considered a required (but not always sufficient) key event in Cr^{VI}-induced intestinal tumorigenesis (TCEQ 2016a). Therefore, the oral carcinogenicity of Cr^{VI} is best evaluated using a threshold TDI approach rather than an oral slope factor. However, Cr^{VI} was considered a potential genotoxic inhalational carcinogen in this HHRA.

[2] There is some evidence of mutagenic potential of antimony trioxide, however a number of technical experts have independently concluded that antimony trioxide is unlikely to be mutagenic *in vivo* (US EPA 2014). US EPA (2014) indicated a possible local genotoxic effect of antimony trioxide would only be relevant under exposure conditions that also produce lung overload, and therefore this indicates minimal concerns for genotoxicity in humans. Safe Work Australia (2019) have recently concluded insufficient data are available to determine if antimony is a non-threshold based genotoxic carcinogen. For these reasons, antimony has not been evaluated as a genotoxic carcinogen in this HHRA.

[3] There is some evidence for mutagenic and clastogenic effects associated with inorganic As exposure. However, the evidence is weak, generally only seen *in vitro* at cytotoxic concentrations, and the precise mechanism for any observed genotoxic effects has not been established, nor is it entirely clear whether genotoxicity *in vivo* is due to metabolic conversion to methyl arsenic. Mechanisms may include oxygen radical damage, the ability of arsenic to act as a phosphate analogue, and impaired DNA repair process (IPCS 2001). However, for long-term, low-dose exposure (more relevant to human exposures) observed genotoxic effects may be secondary to genomic instability, perhaps mediated by increased levels of reactive oxygen species, or induction of oxidative DNA damage and DNA-repair inhibition, changes in DNA-methylation patterns, aneuploidy, and gene amplification. Inhibition of DNA repair is also co-mutagenic (IARC 2012). There are additional recent published studies that also cast doubt on the validity of assuming linearity of the dose-response relationship for arsenic carcinogenicity at low exposures, and emerging evidence that a threshold approach may be applied to the assessment of both cancer (and possible pre-cancer) and non-cancer endpoints (Gentry et al. 2014a, b; Tsuji et al. 2014, 2015; Lamm et al. 2014, Sidhu et al. 2015, Lewis et al. 2015). WHO (2017) indicated the available mode of action data on arsenic do not provide a biological basis for using either a linear or non-linear extrapolation. Consistent with deliberations in the NEPM (2013), a threshold dose-response approach for the assessment of carcinogenic effects associated with arsenic exposure was used in this HHRA.

[4] Beryllium compounds have produced mixed results in mutation and chromosomal aberration assays (NRC 2007). Although the bacterial assays have been largely negative, the mammalian test systems exposed to beryllium compounds have shown evidence of mutations, chromosomal aberrations, and cell transformations (NRC 2007). ATSDR (2002) consider beryllium compounds to be weakly genotoxic. Reviews summarised in NEPM (2013) concluded whilst lung cancer is an important end point, it is unlikely to be a concern for beryllium in soil/dust. Beryllium lung disease appears to occur prior to the development of lung cancer and may play a role in its induction. Consistent with NEPM (2013), a threshold approach was considered appropriate to assess the risk of adverse health effects from beryllium exposure in this HHRA.

[5] The evidence for the genotoxicity of cadmium is mixed (ATSDR 2012). *In vitro* studies, as well as studies of chromosomal aberration in humans and animals, have provided both positive and negative results; DNA damage has been consistently observed in *in vitro* studies (ATSDR 2012). TCEQ (2016b) indicates the various molecular mechanisms involved in cadmium-induced lung carcinogenesis are poorly understood; nevertheless there is evidence that many of the plausible mechanisms for cadmium-induced genotoxicity may operate via thresholds, rather than a linear dose response. In line with the approach taken in NEPM (2013), a threshold approach was considered appropriate to assess the risk of adverse health effects from cadmium exposure in this HHRA.

Carcinogen classifications of IARC and US EPA

IARC Carcinogen Classifications	
Group	Category
1	Is a human carcinogen.
2A	Is probably carcinogenic to humans.
2B	Is possibly carcinogenic to humans.
3	Is not classifiable as to its carcinogenicity to humans.

US EPA Carcinogen classifications	
Group	Category
A	Human carcinogen.
B	Probable human carcinogen.
B1	Indicates limited human evidence.
B2	Indicates sufficient evidence in animals and inadequate or no evidence in humans.
C	Possible human carcinogen.
D	Not classifiable as to human carcinogenicity.
E	Evidence of non-carcinogenicity for humans.

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