

Appendix 2

Perilya Broken Hill North Mine HHRA

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Perilya Broken Hill North Mine HHRA

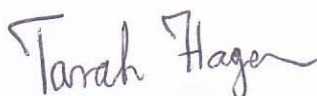
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Executive Summary

Background

R.W. Corkery & Co. Pty Ltd (RWC), on behalf of Perilya Broken Hill Limited (PBH), has submitted a proposal to the NSW Department of Planning and Environment to recommence mining operations at the Broken Hill North Mine (“the Proposal”). The mining operations, to run over 15 years, may result in dust emissions from the Mine Site, and/or from associated roadways. The NSW Environment Protection Authority and NSW Health raised a number of issues with the previous air quality (AQ) and human health risk assessment (HHRA). ToxConsult was engaged to provide a new HHRA that considered updated AQ modelling undertaken by Pacific Environment Limited (PEL) and which addressed government questions. The revised air dispersion modelling took account of PBH engineering initiatives to minimise dust emissions from the Proposal.

HHRA methodology

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

Locations considered

The PEL air quality modelling predicted metal concentrations in airborne dust and deposition to soil at approximately 100 locations throughout Broken Hill. The locations include residences, parks, playgrounds, schools, etc. In this HHRA the data and impact assessment is organised according to the Broken Hill ‘lead risk’ districts developed by Boreland et al. (2002), but with additions as required by the location of the proposal and some of the modelled receptor locations which are not within the ‘Boreland’ districts. The district/area divisions considered are:

- 10 ‘Boreland’ health risk districts (D1 – D10), but district 5 has been separated into areas 5a and 5b based on proximity to the North Mine proposal and consequently the different dust exposure patterns predicted in different parts of this area.
- A group of residences owned by Perilya on the northern side, but within the Mine Site (designated ‘PBH residences’).
- A group of residences a short distance to the south west of PBH residences, outside of the Mine Site (designated ‘Other-close’).
- Residences on the edge of the RASP mine (designated ‘Other-RASP’).
- A number of isolated residences some distance from the proposal and not within the main Broken Hill town area (designated ‘Other-far’).

The areas with the highest, but still small, exposure to lead in dust due to the Proposal, are District 5a and the PBH residences within the Mine Site. PEL also indicates the emissions due to the Proposal are approximately equal between fugitive emissions and mine shaft ventilation.

Scenarios evaluated

To be able to discern and assess the change in public exposure that might occur from the North Mine proposal, the HHRA has evaluated dust emissions from three exposure scenarios:

- **Scenario 1 (S1):** the existing situation (i.e. the North Mine as it currently stands, i.e. no active mining). For lead, this scenario also includes estimated background concentrations in air and soil, i.e. lead not derived from the Mine Site.
- **Scenario 2 (S2):** assesses health risks associated with lead, and other metals, from the North Mine Proposal only (i.e. the active North Mine, no background included). However, this scenario includes some contribution from the existing non-developed mine because some of the dust sources will be unchanged by the Proposal.
- **Scenario 3 (S3):** the cumulative impact of lead in dust from the North Mine Proposal (S2) plus current estimated lead background concentrations from non-Proposalsources.

For each of the above scenarios the impact of 15 years mine operation has been conservatively undertaken by assuming deposition to soil and air metal concentrations are always, over each of the 15 years, at the level modelled for the maximum extraction year, and there is accumulation of the metals in surface soil over the 15 years with no loss occurring from the soil.

Lead (Pb)

Risk characterisation methodology:

For lead, potential health impacts were assessed by using a validated biokinetic model (IEUBK from the US EPA) to predict blood lead (BPb) concentrations in the most vulnerable and susceptible exposed population, i.e. 1-2 year old children. Risk characterisation was performed by comparing:

- modelled BPb to the NHMRC (2015) target action level of 5 µg Pb/dL,
- the modelled BPb population profiles for a number of locations within and outside the Mine Site under existing conditions (S1) and when the proposal is in operation (S3). These locations (District D5a and PBH residences) receive the highest predicted Pb exposure from the proposed mine.

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

The IEUBK modelling predicts changes in the geometric mean BPb concentration for a hypothetical population of children who are all exposed to the same environmental lead exposures that are assumed to be present at a given specific location (i.e. receptor). The modelling pertains to an individual only in a statistical sense.

Bioaccessibility:

Aside from location-specific air Pb and soil Pb concentrations, one of the most important site-specific considerations that affects the numerical BPb predictions from the IEUBK model is the bioaccessibility of Pb in soil and dust. This is the amount of Pb released from soil (e.g. during digestion in the gastrointestinal tract) that is available to be absorbed into the systemic circulation. Very different bioaccessibility results have been obtained for lead in soil and dust at Broken Hill when different bioaccessibility methods have been used:

- 23.7 – 89.3% (average 60%) for topsoil determined with the *In Vitro* Bioaccessibility Assay (IVBA) method.
- 3.7 – 14.6 (average 7.3%) in Rasp mine site surface dust, 0.9 – 2.1% (average 1.4%) in Rasp mine ore with the Physiologically Based Extraction Test (PBET) method.

Although arguably the PBET test is more representative of overall physiological conditions in the gastrointestinal tract, in the absence of additional *in vivo* validation of either test for the soils in question, it is difficult to favour one technique over the other. Therefore for this HHRA the more conservative average bioaccessibility of 60%, rather than 7%, was assumed for Pb in dust from the Proposed North Mine and residential soils. The bioaccessibility assumption in the modelling is likely conservative and will result in overestimation of modelled BPb concentrations in children.

Due to the uncertainty in bioaccessibility and other BPb modelling parameters, in this HHRA less weight is placed on the absolute values of predicted BPb, but more on the comparison between different scenarios and the relativity of any shifts in predicted BPb population distributions. Since BPb modelling for each scenario has the same input parameters such comparisons inherently minimise the uncertainty attached to the common BPb modelling input assumptions, the primary differences between scenarios being the changed Pb exposures resulting from the Proposal.

Results and conclusions:

(a) Modelled BPb¹ from proposed North Mine (i.e. Scenario 2).

The BPb for 1 - 2 year old children exposed to air concentrations of lead dust associated with the maximum activity of the proposed mine, and also exposed to accumulated increases in soil lead estimated to occur after 15 years of mine operation, is predicted by the BPb modelling to be very small. It should be noted the modelled BPb includes some contribution from the existing non-developed mine because some of the dust sources will be unchanged by the Proposal.

The predicted BPb is 0.001 - 0.185 µg/dL (i.e. approximately 10 – 1,800 times lower than the bottom end of the range of BPb levels found in non-impacted communities). The exception is a PBH residence within the North Mine lease (location 'I') where modelled BPb is about 2.5x lower than the bottom end of the background BPb concentration range.

It should be kept in mind that the modelled BPb's for Scenario 2 do not represent changes in BPb solely as a result of the Proposal. The status quo, i.e. the existing situation (i.e. the existing North Mine) would still make a contribution to BPb even if the Proposal did not go ahead. The difference between the two (i.e. the existing vs. the proposed situation), and whether the Proposal would result in any material increases in BPb is considered the more appropriate comparator to judge the potential impact of the Proposal.

(b) Relative BPb change due to Proposal (S1 vs. S3).

The potential relative change in BPb due to the Proposal was investigated by comparing modelled BPb from Scenario 1 (i.e. existing North Mine, including background and Pb deposition from other sources) with Scenario 3 (i.e. proposed North Mine, including background and Pb deposition from other sources). The results indicated:

- For the majority of modelled receptors there is no change predicted for BPb as a result of the Proposal.
- At some receptors the predicted change in BPb is a slight reduction in BPb as a result of the Proposal going ahead.

District 5a:

- At the discrete receptor R4 in D5a, which is one of the locations where PEL predicted the highest Pb dust deposition there is a predicted increase in geometric mean BPb of 0.062 µg/dL). For a hypothetical population of children living at R4, the BPb modelling

¹ Where results of BPb modelling at a receptor or location are discussed in this report it is in reference to the predicted geometric mean BPb concentration for a hypothetical population exposed to the environmental conditions that exist at the receptor or location. That is some individuals in the hypothetical population forecast to be lower and some higher.

predicts the proportion of children with BPb above the NHMRC investigation target of 5 µg/dL would increase from approximately 70.1% to 70.8%, an increase of 0.7%.

- For the D5a district as a whole, the median change in lead exposure is modelled to result in a slight BPb decrease of - 0.008 µg/dL, and the proportion of children with BPb above the NHMRC investigation target of 5 µg/dL would decrease from 70.095% to 70.001%, i.e. 0.094% less children to be above 5 µg/dL.

In summary, BPb concentrations in 1 -2 year old children living at locations in district D5a with predicted lead deposition similar to R4 are anticipated to be only slightly affected by activities associated with the proposed North mine. For the majority of D5a, the change is predicted to be negligible.

PBH residences:

- Due to its close proximity to the mining operations, Receptor 'I' has the highest predicted annual deposited Pb in dust. This location also gives the highest predicted increase in geometric mean BPb as a result of the Proposal (0.56 µg/dL). This absolute predicted increase at this location is approximately 10% of the current NHMRC (2015) target BPb investigation level of 5 µg/dL (noting the BPb forecast is likely an overestimate). Furthermore for a hypothetical population of children, the proportion with BPb above the NHMRC investigation target of 5 µg/dL would increase from approximately 65.4% to 72%, an increase of 6.6%.
- However, using the median increase in Pb exposure as an exposure index for the PBH residences as a group, the BPb modelling suggests a slight increase in geometric mean BPb of 0.06 µg/dL in 1-2 year old children (i.e. 1.3% of the NHMRC target) and an additional 0.8% higher than 5 µg/dL.

Overall, the PBH residences are the most highly impacted by the North mine proposal. Although as a group there is a small predicted increase in children's predicted BPb, there is a residence within the group where the increase in BPb could be viewed as unacceptable (i.e. residence 'I'). ToxConsult is informed that PBH has committed to actively monitor and manage BPb levels in children in all PBH Residences within the Mine Site, including undertaking measures to reduce BPb levels in any child recording a concentration higher than 5 µg/dL. This includes physical works at residences, education and assistance for parents and, as a last resort, relocation of the family.

Other metals

Other metals of potential concern within emitted dust that were assessed are silver, arsenic, cadmium, chromium, copper, iron, mercury, manganese, nickel and zinc. As with lead, 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 into the body for potential health effects to occur. Nevertheless, it has been conservatively assumed these metals (apart from arsenic, for which there were data for Broken Hill) may be fully (i.e. 100%) soluble.

Risk characterisation methodology

The HHRA for metals other than Pb has been undertaken for Scenarios 1 (existing North Mine, no background) and 2 (proposed North Mine, no background) as follows. S3 has not been modelled as there was no information for background concentrations of metals other than lead in soil and air of Broken Hill.

- Acute health risks of air emissions from the Proposed North Mine were judged by comparison of 1-hour modelled metal concentrations (99.9th, 99th, 97.5th, 95th, and 50th percentile)² in airborne PM₁₀ to acute air guideline values set for protection of human health. The resulting ratio is called a hazard quotient (HQ). As there were no data on background concentrations for these metals in air, this assessment did not include metal concentrations from sources other than the North Mine operations.
- Chronic risks were evaluated by calculation of lifetime time-weighted average daily intakes (this includes combined intakes from inhalation in air and ingestion of the metal in soil/dust) and comparison with tolerable daily intakes (TDIs) set to protect human health. The TDI's were adjusted for high-end assumed 'background' exposures. Comparison with chronic air guideline values has not been undertaken as the TDI assessment inherently considers chronic inhalational exposure. The resulting ratio of the intake to the background-adjusted TDI is a 'chronic' HQ.
- In addition, for those metals for which the health effect of concern is cancer, and whose mode of action is by directly altering genetic material (i.e. they are genotoxic) (cadmium and nickel) cancer risk from inhalation exposure was calculated by multiplying the annual average concentration in PM₁₀ by an estimate of the carcinogenic potency of the metal. The resulting estimated 'cancer risk' was compared with a target acceptable risk of 1×10^{-5} as suggested by enHealth (2012a) and NEPM (2013). Similar to the acute air assessment, this comparison is for the Proposal only and does not include metal concentrations from sources other than the North Mine operations.

² The 99.9th percentile can be regarded as a maximum potential concentration.

For all three of the above, it was conservatively assumed the toxicological effects of the metals are additive. To this end, the individual metal HQ's or cancer risks were summed to calculate an overall hazard index (HI) or overall cancer risk. As with the assessment for Pb, the exposure assumptions are conservative and err on the side of safety.

An 'unacceptable' risk, as defined by regulatory standards and requirements, is often determined as an exposure being larger than the toxicity reference value used to calculate the hazard quotient, i.e. by a 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.

Results and conclusions

(a) Acute hazard indices (HI's)

- HI's for acute air exposure in Scenario 1 (the existing North Mine) ranged from 0.0000006 (for the 50th percentile air concentration at R26 in District 1 and R82 in District 10) to 0.005 (for the 99.9th percentile at PBH Residence 'D' the highest exposed receptor).
- In Scenario 2 (the Proposed North Mine), acute HI ranged from 0.000001 (for the 50th percentile at R51 and R58 in District 8) to 0.4 (for the 99.9th percentile at PBH Residence 'I').
- The two areas with the highest predicted 1-hour average air concentrations and therefore the highest HI's were District 5a and the PBH residences.

Although the assessment did not include background concentrations of metals in air (as no data were available), all HI's were markedly below the target hazard index of 1. Taking into consideration the overall conservatism in the assessment, this indicates the likelihood of exceeding the health-based acute air guideline values as a result of the Proposal proceeding is low.

(b) Chronic HI's for TDI analysis

- For Scenario 1 (existing North Mine), chronic HI ranged from 0.00004 (District 8) to 0.05 (PBH Residence 'D').
- For Scenario 2 (Proposed North Mine) the HI ranged from 0.0001 (District 8) to 0.16 (PBH Residence 'I').

Although the assessment does not include existing concentrations of metals in air or soil (as no data were available), the calculated HI's associated with the Proposal are low. Considering the overall

conservatism in the assessment, this indicates the likelihood of exceeding health-based chronic TDI's as a result of the Proposal going forward is low.

(c) Overall cancer risk

The highest calculated overall cancer risk is 4.5×10^{-7} (PBH Residence 'N', Scenario 2). This is below the commonly accepted risk of one in one hundred thousand (1×10^{-5}), therefore it is concluded the emissions from the existing and Proposed North Mine do not pose an unacceptable inhalation carcinogenic risk.

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List of Abbreviations

AQ	Air Quality
BPb	Blood lead
CoPC	Chemical of Potential Concern
HHRA	Human health risk assessment
HI	Hazard index
HQ	Hazard quotient
IEUBK	Integrated Exposure Uptake Biokinetic Model (for lead)
IVBA	In Vitro Bioaccessibility Assay
LoR	Limit of Reporting
PBET	Physiologically Based Extraction Test
PBH	Perilya Broken Hill Limited
PM₁₀	Particulate matter 10 micrometres or less in diameter
RWC	R.W. Corkery & Co. Pty Ltd
TDI	Tolerable daily intake
TRV	Toxicity Reference Value
UF	Uncertainty Factor
US EPA	United States Environmental Protection Agency

1. Introduction

R.W. Corkery & Co. Pty Ltd (RWC), on behalf of Perilya Broken Hill Limited (PBH), has submitted a proposal to the NSW Department of Planning and Environment to recommence mining operations at the Broken Hill North Mine (“the Proposal”). The Broken Hill North Mine (“the Mine”) is located on the Line of Lode, Broken Hill. In brief, PBH proposes to:

- Recommence mining operations using the existing Cosmopolitan Decline to extract up to 4.2Mt of ore from below the base of previous mining operations over a period of approximately 15 years³.
- Crush the extracted ore within the existing North Mine Run-of-Mine (ROM) pad using a mobile crusher. This crusher will be enclosed and the enclosure fitted with dust extraction systems.
- Transport crushed ore via the public road network to PBH’s Southern Operations.
- Undertake ancillary activities associated with the proposed mining works, including re-establishment and refurbishment of a range of existing infrastructure, construction and operation of a Paste Fill Plant for use in backfilling completed underground stopes, a tailings harvesting area, three lined evaporation ponds and a short section of haul road.

A detailed description of the Proposal is provided in the Environmental Impact Statement (EIS) submitted as part of the Proposal (RWC 2017). Minor amendments to the Proposal are presented in the *Response to Submissions* document to which this report forms an Appendix.

The EIS, which included an Air Quality (AQ) and Human Health Risk Assessment (HHRA) prepared by Pacific Environment Limited (PEL), was on public exhibition between 5 February and 6 March, 2017. During the exhibition period, the NSW Environmental Protection Authority (EPA) and NSW Health raised a number of issues with the AQ assessment and the HHRA. The issues identified for the AQ assessment have been considered and addressed by PEL in a separate report (PEL 2017a).

ToxConsult Pty Ltd (ToxConsult) was engaged to provide a new HHRA report for the Proposal which considers the revised air quality modelling undertaken by PEL and the comments from NSW EPA and NSW Health.

The HHRA has used air quality modelling information as provided to ToxConsult by PEL (2017b) via e-mail in a series of spreadsheets⁴. The information from PEL has been used on face value.

³ The indicative production schedule in Table 2.3 of RWC (2017) shows the amount approved for extraction is planned to occur within 16 years, with no extraction occurring within the first year. The maximum indicative amount extracted in any one year is 0.3Mt (RWC 2017). The air quality modelling undertaken for this project has modelled the yearly maximum amount extracted (0.3Mt/year). After consultation with PEL and RWC, it was agreed the assessment herein should assume a 15 year mine life to coincide with the period that ore is extracted (e-mail correspondence with RWC, dated 03/05/2017).

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 per enHealth (2012b).

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

- *Issue identification*
 - PBH proposes to recommence mining operations at the Broken Hill North Mine. The operations may result in a change in exposure of persons in the surrounding area due to dust altered emissions from the Mine site, and/or from associated roadways.
- *Hazard assessment*
 - Chemicals of potential concern are metals in the emitted dust, of which the principal metal of concern is lead (Section 2.2).
 - Dose response is assessed when determining targets for blood concentrations for lead (Section 3.3) and air quality guidelines and/or toxicity reference values for other metals (Section 4.3).
- *Exposure assessment*
 - Adaptation of air modelling dust and metal information to potential exposures by the general public (Section 2.6).
 - Application of background metal and dust exposures gleaned from the scientific literature or other sources to exposure estimations.
 - Scenario and receptor identification for the general public (Section 2.3 and 2.4). This HHRA does not consider occupational exposures.
- *Risk characterisation*
 - For lead, 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).
 - For other metals (Section 4), risk of exceedance of an air guideline or toxicity reference value is judged by examining the hazard quotients (HQ) for individual metals and combined

⁴ The latest set of spreadsheets (entitled “Metals_1h_av_PM10 – DISCRETE – Existing”, “Metals_ann_av_PM10 – DISCRETE – Existing”, “Metals_1hr_av_PM10 – DISCRETE – Proposed”, “Metals_ann_av_PM10 – DISCRETE – Proposed”, “Metals_ann_av_TSP & Dep – DISCRETE – Existing – Update 5-6-17”, “Metals_ann_av_TSP & Dep – DISCRETE – Proposed”, “21310 Discrete receptor results – ALL – 5-6-17 – Pb update”, “21310 Predictions at mon locations – Pb update 5-6-17”), received by ToxConsult on the 5th of June 2017, was used in the HHRA.

hazard index (HI), excluding lead. Cancer risk is judged for relevant metals by comparison with 'acceptable' risk levels.

2.2 Chemicals of potential concern

The substances of potential concern associated with the Proposal are dust *per se* and various metals in the dust.

- The risk of exceedance of air quality standards for dust *per se* (as PM₁₀, PM_{2.5}, and TSP) is considered in the air quality assessment by PEL (2017a)⁵ and is not addressed in this HHRA.
- The chemicals of potential concern for the North Mine Proposal 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.

- *Lead (Pb)*, assessed in Section 3:

Lead is the principal chemical of potential concern (CoPC). This is because Broken Hill has a long history of lead mining and there is considerable community cognisance of past and present exposure to lead, 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 has progressively decreased from the early 1990's through to 2011, after which concentrations have remained fairly constant (NSW Health 2016) (Section 3.8). 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 other initiatives directed at modification of personal behaviour to minimise lead exposure (e.g. educational campaigns highlighting the importance of hand washing and not using rainwater collected from roofs for drinking and cooking).

⁵ From the dispersion modelling, the PEL (2017a) report found there will be no predicted exceedances at privately-owned locations of the annual average PM_{2.5}, PM₁₀, TSP or dust deposition assessment criteria, either from the Proposal alone or cumulatively. The report also indicated the modelling showed the Proposal would not cause any additional 24-hour exceedances of the PM₁₀ or PM_{2.5} criterion at the privately-owned locations during maximum daily operations. PEL (2017a) concluded the proposed Mine Site is predicted to result in a minimal change to concentrations at sensitive locations when compared to the predicted contribution from the existing Mine Site. PEL (2017a) considered these minor increases in concentrations would be on the limits of detection of the instrument and within the bounds of measurement uncertainty (noise). PEL (2017a) also considered the predictions presented in their report are conservative, and actual concentrations are expected to be lower than predicted during normal operations of the Proposal.

- *Other metals*, assessed in Section 4:

Other metals of potential concern within emitted dust that require assessment are silver (Ag), arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), iron (Fe), mercury (Hg), manganese (Mn), nickel (Ni) and zinc (Zn). It should be noted, that as with lead, 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 into the body for potential health effects to occur.

2.3 Exposure Scenarios

A total amount of 4.2Mt of ore is planned to be extracted from the North Mine over 15 years (RWC 2017), and the air quality modelling undertaken for this project has modelled dust emissions for the maximum amount extracted in any single year (0.3Mt). However this HHRA assumes metal emissions associated with this maximum yearly extraction may occur in each of the operating 15 years. This is conservative.

To be able to discern and assess the incremental metal exposure (i.e. the change in public exposure that might occur from the North Mine proposal), dust and metal emissions associated with existing conditions, with the proposed North Mine operations, and background emissions have been estimated in the following combinations (PEL 2017).

- **Scenario 1 (S1):** Evaluates health risks from metals in dust for the existing situation (i.e. the North Mine as it currently stands, i.e. no active mining). For lead, but not other metals (see Scenario 3), this scenario also includes estimated background lead in air and soil from other sources (e.g. previous and currently active mines in Broken Hill, metals in wind-blown dust from non-mining areas).
- **Scenario 2 (S2):** Assesses health risks of lead and other metals from the North Mine Proposal only (i.e. the active North Mine, no background included). Thus this scenario excludes any existing metals in soil as well as any metals in air or soil from sources other than the Proposal. However, this scenario includes some contribution from the existing non-developed mine because some of the dust sources will be unchanged by the Proposal.
- **Scenario 3 (S3):** Health risks from the cumulative impact of lead in dust from the North Mine Proposal (S2) plus current background from other sources as determined from existing air quality monitoring stations and existing soil Pb measurements, used to estimate background Pb concentrations in air and soil at modelled locations. This scenario was only evaluated for lead, as estimated background data were not available for any of the other metals.

For each of the above scenarios the impact of 15 years operation has been undertaken by assuming air metal concentrations are always, over the 15 years, at the level modelled for the maximum extraction year, and there is accumulation of the metals in surface soil over the 15 years with no loss occurring.

2.4 Receptor locations

For the proposal PEL (2017a, b) has predicted concentrations for metals in airborne dust, and deposition of metals to soil, at approximately 100 locations throughout Broken Hill. 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 Proposal and some of the modelled receptor locations which are not within the 'Boreland' districts. As described in Figure 2.4.1 these are:

- 10 'Boreland' health risk districts (D1 – D10), but district 5 has been separated into areas 5a and 5b based on closeness to the North Mine proposal and consequently the different dust exposure patterns predicted by the air dispersion modelling (Figure 3.5.1).
- A group of residences owned by Perilya in the northern section of the Project Site (designated 'PBH residences').
- A group of residences a short distance to the south west of PBH residences (designated 'Other-close').
- Residences on the edge of the RASP mine (designated 'Other-RASP').
- A number of isolated residences some distance from the Project Site and not within the main Broken Hill town area (designated 'Other-far').

For ease of report reading and presentation, selected receptors within each 'district' are presented in summary tables and figures in this report; these were selected after consideration of:

- Proximity to the Proposed mine activity.
- The historical lead health risk zones (i.e. districts) in Broken Hill town (Boreland et al. 2002, 2006) used to organise and interpret lead biomonitoring data.
- Predicted dust Pb deposition from the Proposed mine activities.

For lead the receptor with the maximum predicted Pb deposition rate, determined from the dispersion modelling, has generally been selected as representative for a district/area. Inspection of the air dispersion modelling data for dust deposition shows District 5a and the PBH residences have the highest exposure to dust from the proposal (Figure 3.5.1).

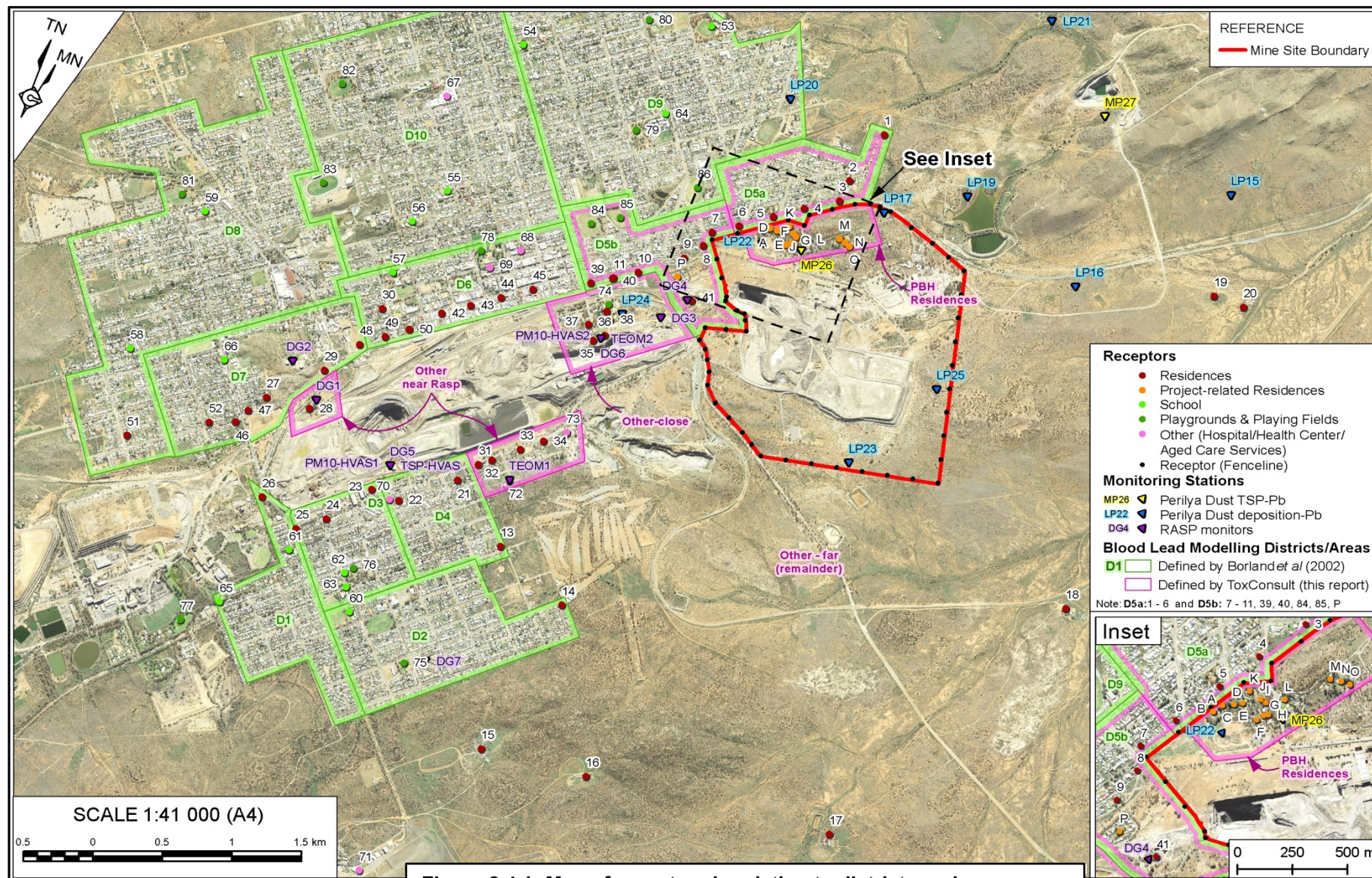


Figure 2.4.1: Map of receptors in relation to districts and area D = District

2.5 Risk characterisation

The detail for assessing health risk from the potential change in lead exposures is provided in Section 3 and for the other metals in Section 4.

2.5.1 Lead

In brief, for lead, blood lead (BPb) concentrations in children when exposed to air and soil lead concentrations in the selected 'districts' or areas were predicted using a validated toxicokinetic model (US EPA 2010). This model has been used in Australia to assist with determination of appropriate soil concentrations for residential land such that childrens' blood lead does not become elevated (NEPM 2013). Risk characterisation was performed by comparing:

- modelled BPb to the NHMRC (2015) target action level of 5 µg/dL,
- modelled BPb to the most recently available BPb biomonitoring available for Broken Hill children,
- the modelled BPb population profiles for locations outside and within the Proposal lease area (which receive the highest lead exposure from the proposed mine) under existing conditions (S1) with the modelled profiles predicted when the proposal is in operation (S3).

Due to the uncertainty in bioaccessibility of Pb in dust from the North Mine and other sources, as well as in existing soils of Broken Hill (see Section 3.6), in this HHRA less weight is placed on the absolute values of predicted BPb, and more on the comparison between different scenarios and the relativity of any shifts in predicted BPb population distributions. Since the same assumptions (and inherent uncertainty therein) are in BPb predictions from both scenarios being compared the uncertainty influences are minimised.

2.5.2 Other metals

The risk assessment for other metals has been undertaken via two approaches (Section 4):

- Acute health risks of air emissions from the Proposed North Mine are judged by comparison of modelled metal concentrations in PM₁₀ with acute air guideline values.
- Chronic risks are judged by calculation of lifetime time-weighted average daily intakes of the metal being assessed (this includes combined intakes from air and soil/dust) and comparison with tolerable daily intakes (TDI). The latter have been adjusted for possible high-end 'background' exposures.
 - o In addition, for those metals for which the health effect of concern is cancer, and whose mode of action is by directly altering genetic material (i.e. they are genotoxic) cancer risk from inhalation exposure was calculated by multiplying the annual average

concentration in PM₁₀ by an estimate of the carcinogenic potency of the metal. The latter is commonly called the unit risk factor. The resulting estimated 'cancer risk' was compared with a target acceptable risk of 1×10^{-5} as suggested by enHealth (2012a) and NEPM (2013).

2.6 Calculating metal concentrations in soil

For the maximum yearly production, ToxConsult was provided with estimates of annual deposition of lead and 10 other metals at each of the approximately 100 receptor locations discussed in Section 2.4 and for the three scenarios summarised in Section 2.3.

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, i.e. 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 top soil layer as part of remediation works.

Data are not available to include these processes into the calculations of incremental increases of soil lead or other metals. Consequently it has been conservatively assumed for this HHRA that none of the deposited metals from mine dust or from 'other sources' are removed from receptor locations where they are deposited.

The concentration of lead and other metals in soil was calculated using Equation 2.6.1 (adapted from Equation 5-1 in US EPA 2005). The deposition rate ($M_{\text{ann dep}}$) for each metal was sourced from data spreadsheets provided by PEL (2017b), values for other parameters in Equation 2.6.1 are those recommended by US EPA (2005, pg. 5-21) for untilled (non-agricultural) soil. The equation assumes the environmental half-life of the metals at each receptor is infinite, and there is no physical loss from the soil due to wind erosion, percolation by rain or water runoff.

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 (US EPA 2005). This mixing depth has been adopted in estimating soil metal concentrations at receptor locations after 15 years operation of the North Mine (see Section 2.3). This is the same equation used in a previous risk assessment for Broken Hill (Toxikos 2010) and in by Yang and Cattle (2017).

$$C_s = [M_{\text{ann dep}} (\text{g M/m}^2/\text{yr}) \times T (\text{yr}) \times 100] \div [\rho (\text{g/cm}^3) \times D (\text{cm})] \dots\dots\dots \text{Equation 2.6.1}$$

Where:

- C_s = Concentration of metal in soil after 15 years of mine operation ($\mu\text{g M/g soil}$).
- $M_{\text{ann dep}}$ = Annual deposition of Metal from dust (i.e. TSP) onto receptor location soil from mine site ($\text{g M/m}^2/\text{yr}$).
This value from PEL (2017b) is receptor and scenario specific.
- T = Time of mine operation (15 years).
- 100 = Unit conversion factor ($10^6 \mu\text{g/g}/10^4 \text{cm}^2/\text{m}^2$).
- ρ = Soil bulk density⁶, assumed to be 1.5 g/cm^3 . This value is the recommended default by the US EPA (2005).
US EPA guidance states that literature values for soil bulk density range from $0.93\text{-}1.84 \text{ g/cm}^3$, depending on soil type. It is not stated what soil type coincides with the value of 1.5 g/cm^3 , and the original references were not available to ToxConsult 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.
- D = Soil mixing depth, assumed to be 2 cm (US EPA 2005).

Note that the metal deposition rates were provided as annual values from TSP for the maximum amount of ore mined in a year. To calculate the accumulation of metal in soil the annual deposition rate was simply multiplied by the number of years of exposure based on the 15 year operational life of the Proposed mine (as indicated this assumes no loss of metal from soil).

The calculated soil concentrations representing 15 years of mine operations are presented in Appendix C and were used as inputs for the three scenarios evaluated for risk characterisation by modelling BPb concentrations in children (Section 3) and using the TDI analysis (Section 4) for other metals. Note the soil concentrations for Scenario 3 are not simply the sum of those for Scenarios 1 and 2, since Scenario 2 includes some contribution from the existing non-developed mine because some of the dust/metal sources will be unchanged by the Proposal.

For lead, in Scenarios 1 and 3, soil concentrations predicted to result from the North Mine and other existing sources in Broken Hill were added to an assumed existing background soil lead concentration described in Section 3.4.

For the TDI analyses for other metals, no background soil information was available. Therefore, soil metal concentrations predicted to result from the North Mine only were used in the intake assessments. Here, small HQ's indicate no substantial change from the exposures occurring from the existing (non-developed) North mine.

⁶ This assumed soil bulk density of 1.5 g/cm^3 is the same as that assumed by Toxikos (2010) in a previous risk assessment for Broken Hill. In a recent publication by Yang and Cattle (2017), the authors assumed a lower bulk density of 1.2 g/cm^3 , but do not provide a rationale for choosing this value.

3. Lead risk assessment

3.1 Overview

Figure 3.1.1 is a summary of the risk assessment approach for lead. For each of the exposure scenarios described in Section 2.3 blood lead (BPb) concentrations for 1 -2 year old children have been modelled using the US EPA (2010) IEUBK software (Sections 3.9 and 3.10). Important aspects of the modelling are:

- Calculating accumulation of lead in surface soil at locations outside and at residences within the Mine Site.
- Incorporating into the modelling information for existing surface soil lead concentrations.
- Rationalisation of the bioaccessibility and bioavailability of lead in mine derived dust, lead from other sources, and for the lead already existing in surface soils at Broken Hill.
- Incorporating inhalation exposure (indoors and outdoors) to lead in inhalable airborne dust.
- Background lead intake from diet.
- Background blood lead concentrations in children.

Risk characterisation

In this HHRA, potential health risks to children exposed to mine dust containing lead (in combination with existing background lead exposures and sources other than the proposed Mine) has been assessed by modelling blood lead 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 lead exposures should be investigated and reduced.
- the most recently available BPb biomonitoring available for Broken Hill children.

In addition, BPb concentrations have been modelled for a hypothetical population of children at locations within and outside the Mine Site area which receive the highest lead exposure from the proposed mine; for the same locations these modelled BPb concentration profiles for possible exposures due to the Proposal are compared with the population BPb concentration profiles resulting from current exposures (i.e. without the proposed mine).

Exposure considerations for lead are detailed in Sections 3.4 – 3.8, modelling of blood lead concentrations in Section 3.9, and the risk characterisation in Sections 3.10 – 3.11.

The HHRA methodology for Pb is outlined in Figure 3.1.1.

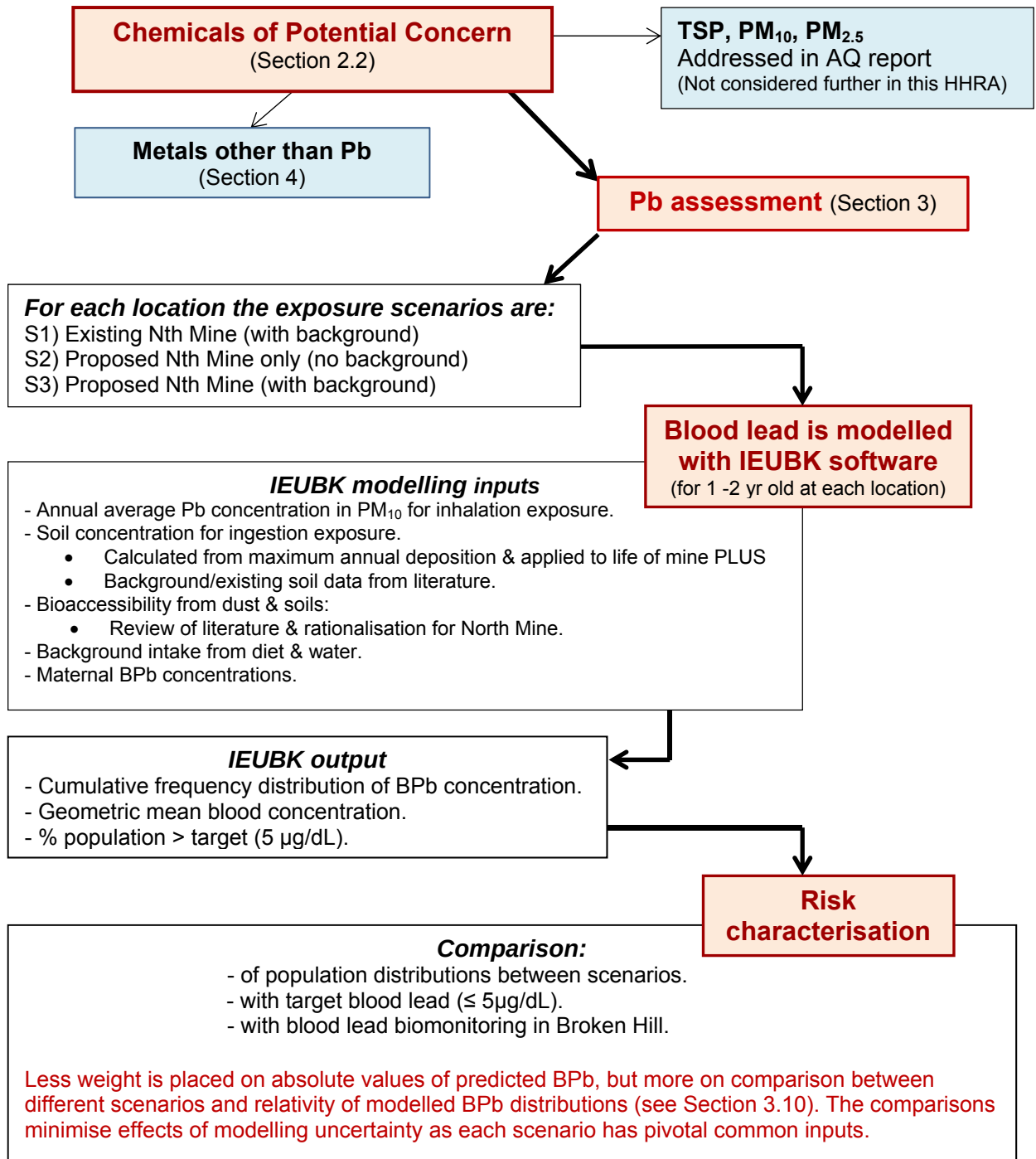


Figure 3.1.1 Summary of lead HHRA methodology process.

AQ = Air Quality;

IEUBK = Integrated Exposure Uptake Biokinetic Model (for lead) (US EPA software).

3.2 Conceptual model for lead exposure

Conceptual exposure pathways considered for lead from the Mine Site⁷ are summarised in Figures 3.2.1 and 3.2.2. In Figure 3.2.2 the pathways considered to be major for the scenarios being investigated are denoted with a bolded arrow. These pathways were also included in exposure estimations for the other metals.

At the receptor locations, exposure to the mine derived metal may occur via incidental ingestion of soil, 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. Of these the first three have been included quantitatively in exposure estimates. The other pathways are unlikely to be major exposure routes (for the reasons following Figure 3.2.2) or there are no data available to evaluate them.

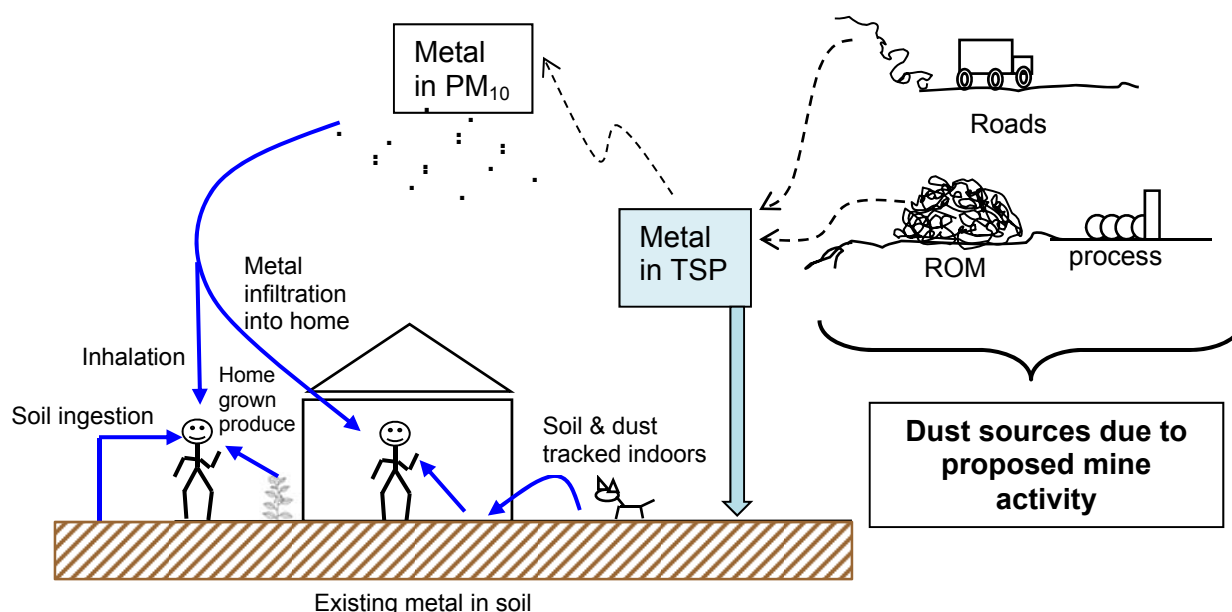
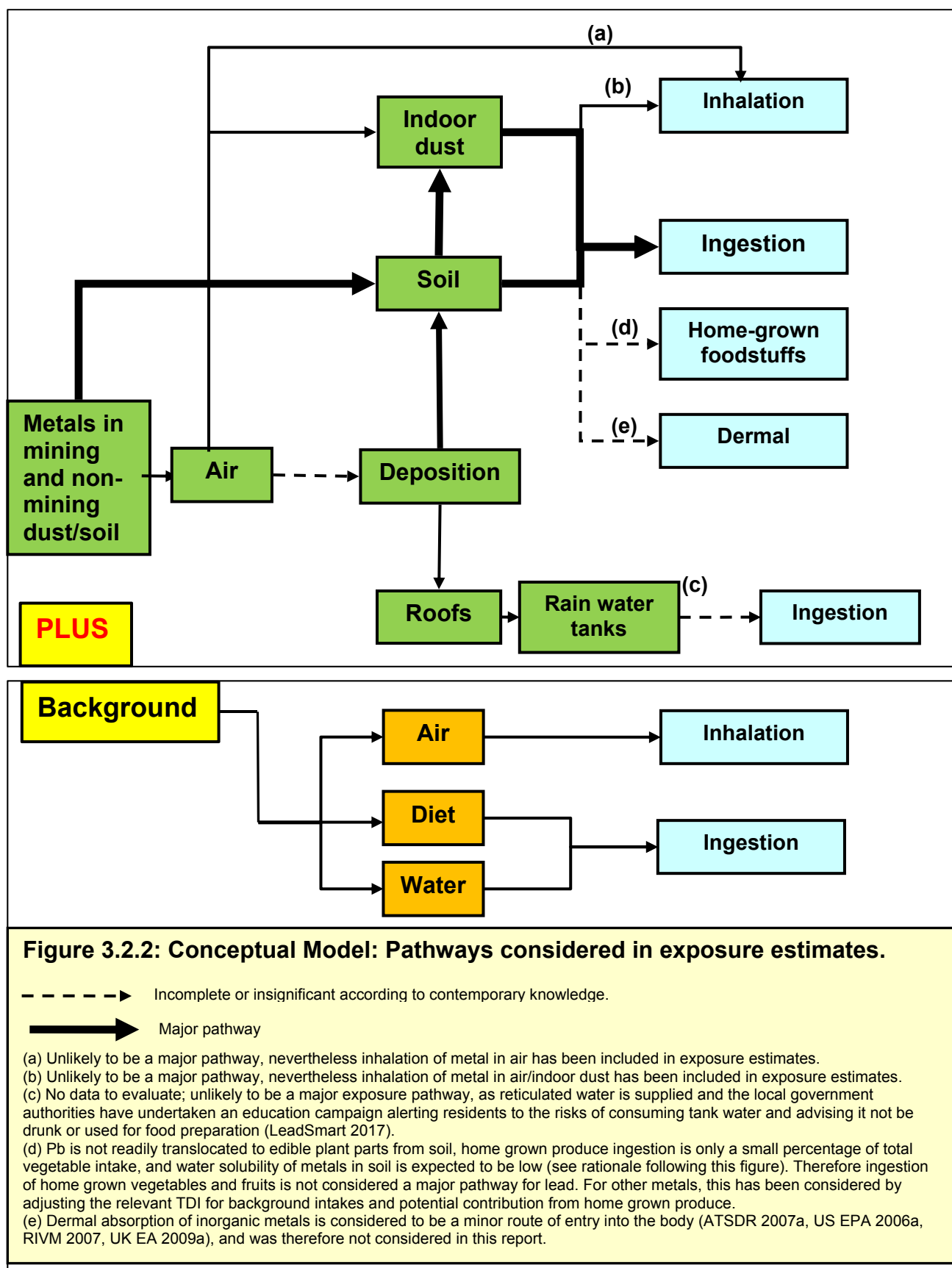


Figure 3.2.1: Conceptual representation of potential dust sources and residential exposure pathways to metals in dust.

⁷ Non mine sources of lead exposure, such as lead paint in soil or indoors from renovating houses, or from hobbies involving lead, are not included in the assessment. It is however recognised that these may contribute to biomonitoring data.



Ingestion of metal in tank water

There are no data available to evaluate this pathway. It is unlikely to be a major exposure pathway, as reticulated water is supplied and local government authorities have undertaken an education campaign alerting residents to the lead risks of consuming tank water and advising it should not be drunk or used for food preparation (LeadSmart 2017).

Consumption of vegetables or fruits grown in home garden soil

Plant uptake of lead from home-grown produce was not considered a complete exposure pathway because:

- According to IARC (2006), of all the heavy metals, lead is the least available to plants. Water soluble and exchangeable lead that is readily available for uptake by plants constitutes only about 0.1% of total lead in most soils. In addition lead is very poorly transported from roots to shoots.
- The Handbook on the Toxicology of Metals (Nordberg et al. 2007) indicates the uptake pathway of lead by roots of vegetables to be a relatively unimportant human exposure pathway. Lead is considered to be 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 conducted for this risk assessment also indicated lead 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, Ciesliński and Mercik 1993, Mbila and Thompson 2004)⁸. Lead uptake from soil by plants varies with plant type, different soil conditions and the species of lead in soil. Data indicate accumulation becomes important when levels of water soluble lead are around 500 mg/kg⁹ (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 lead from contaminated urban soils; the form of lead was not provided by the authors.
- Regarding plant uptake of lead in air, Lagerwerff (1971) published a study of metal uptake by radish from soil and air and concluded there was no significant translocation of lead from leaves contaminated by aerial deposition to the roots, and large changes in soil lead caused only small changes in radish root lead. Nevertheless, it is apparent that plants can absorb and accumulate some forms of lead through their leaves from atmospheric fallout. For example tetraethyl lead near road sides (Nasralla and Ali 1985) or lead from smelters (Kachenko and

⁸ 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.

⁹ 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).

Singh 2004) can be taken up by leaves of herbs and leafy vegetables. In these studies care was taken to wash and remove deposited lead on the surface of leaves. Thus in field studies conducted near atmospheric emitters of lead, and where deposition is occurring, it is difficult to separate the relative contribution of soil and air lead to concentrations of lead in leaves.

- Lead associated with the North Mine 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 lead 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 (Section 3.9.3.7).
- 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 (Patton Street and Broken Hill airport) for 1947-2017 was 255-281 mm/year (BoM 2017). Thus the likelihood of vegetables and fruits being grown at home is lower than other parts of Australia, where rainfall is higher¹⁰.

Overall, ingestion of lead by Broken Hill residents from vegetables is expected/assumed to be similar to that of people residing in unimpacted communities¹¹ around Australia. Therefore for lead, as per NEPM (2013), this pathway is accounted for in the blood lead modelling by including dietary background intakes of lead.

¹⁰ For comparison, Sydney (Observatory Hill) had an average rainfall of around 1216 mm/year between 1859 and 2017.

¹¹ 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.

3.3 Lead toxicity assessment

Only those aspects of the toxicity of lead 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 lead 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 lead ($3.5 \mu\text{g/kg/d} \times 7 \text{ days} = \text{PTWI of } 25 \mu\text{g/kg/week}$). Since that time a large number of studies investigating the impact of lead on intellectual development in children have become available. Collectively these show measurable decrements on intellectual function at much lower blood lead (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.

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 blood lead 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 '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 ($\leq 5 \mu\text{g/dL}$), 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 iron affects the absorption of lead (ATSDR 2007a, IARC 2006).

3.4 Existing soil lead concentrations

A literature search and consultation with officers of the Broken Hill Environmental Lead Program was undertaken to source recent data on soil Pb concentrations in residential areas of Broken Hill.

Taylor et al. (2014, Fig. 2c therein) provide mean soil Pb concentrations at six Broken Hill playgrounds (sampled in September 2013)¹²; these locations coincide with PEL (2017) modelled receptors 75-80. The data are summarised in Table 3.4.1.

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)¹³. The authors have presented these data as mean concentrations for each 'district'¹⁴. The district codes and locations are the same as those depicted in Figure 2.4.1. The data are amalgamated and summarised in Table 3.4.1.

¹² At least two surface soil (0-2 cm) samples were taken from each playground in accordance with AS 4874-2000 using a plastic trowel that was wiped clean each time prior to sampling using KimWipesTM and deionised water. Soil samples were analysed for Pb by the National Measurement Institute (NMI), Sydney. Further details of analysis were not provided (Taylor et al. 2014).

¹³ Surface soils (0.1 m depth) were collected at 53 sampling sites using a stainless steel, hand-held soil auger. For each sample, three adjacent core samples were collected and mixed. All soil samples were air-dried at 40°C, gently crushed, and passed through a 2 mm stainless steel sieve to remove gravel, plant material and other debris. Total Pb concentration was determined by portable X-ray fluorescence (pXRF) analyser with a Pb detection limit of 5 mg/kg (Yang and Cattle 2017).

¹⁴ From previous soil Pb sampling investigations, based on soil lead levels and proximity to the mine, Broken Hill was divided into ten districts (see Section 2.4). The 'district' concept for organising environmental lead data was retained by various authors over the years (Boreland et al. 2002, Boreland and Lyle 2006, Boreland et al. 2006).

Table 3.4.1: Published Pb concentrations in topsoil of Broken Hill by district, sampled in 2013

District/ Location	Number of samples	Topsoil ^d Pb concentration (µg/g)	
		Arithmetic mean ± SD	Range
D1, D3, D4 ^a	8 ^c	733 ± 690	101 – 1,810
D2, D5, D8, D9, D10 ^a	30 ^c	275 ± 214	41.3 – 922
D6, D7 ^a	9 ^c	1,125 ± 1,590	71 – 4,644
Playground 1, R75 ^b (D2)	14 (individual sample numbers not provided)	700 ^b	-
Playground 2, R76 ^b (D3)		700 ^b	-
Playground 3, R77 ^b (D1)		2,450 ^b	-
Playground 4, R78 ^b (D6)		300 ^b	-
Playground 5, R79 ^b (D9)		250 ^b	-
Playground 6, R80 ^b (D9)		80 ^b	-

- = The range of soil Pb concentrations was not provided in Taylor et al. (2014).

SD = Standard deviation

^a Data from Yang and Cattle (2015).

^b Concentrations are approximations for these locations, as they were read off Figure 2c in Taylor et al. (2014). Standard deviations were not provided in the publication.

^c Yang and Cattle (2015) excluded two sampling sites from each of these areas for calculation of statistics, because they were located outside residential areas.

^d 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.

It is apparent from Table 3.4.1 that there is large variation in reported surface lead soil concentrations in Broken Hill. This is primarily evinced by the size of the standard deviations in the measurements of Yang and Cattle (2015). While there is reasonable concordance between the concentrations reported by Yang and Cattle (2015) and Taylor et al. (2014) there are large differences for districts D1 and D6. Because the data of Yang and Cattle (2015) has a number of data points within a district, and the fact that the data is presented as numerical values rather than graphically, ToxConsult has assumed the mean¹⁵ soil Pb concentration reported by Yang and Cattle (2015) are more representative of the existing mean soil concentrations within districts than Taylor et al. (2014).

Specific receptors selected as representative for districts and used for BPb modelling, together with the existing soil lead concentration incorporated in the modelling, are summarised in Table 3.4.2 (see Section 3.5 for selection of receptors). Note some PEL 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.

¹⁵ US EPA recommends using mean soil concentrations for IEUBK modelling <https://www.epa.gov/superfund/lead-superfund-sites-frequent-questions-risk-assessors-integrated-exposure-uptake>

Table 3.4.2: Assumed existing soil Pb concentrations (µg/g) at each chosen receptor

District/Area ^a	Receptor ^b	Assumed existing soil Pb (µg/g) ^c
D1	26	733
D2	14	275
D3	23	733
D4	13	733
D5a	1	275
	4	275
	D5a_median	275
D5b	7	275
D6	45	1,125
D7	48	1,125
D8	51	275
D9	86	275
D10	56	275
Other - near Rasp ^d	73	733
Other – close ^e	41	275
Other – far ^f	19	100
PBH Residences ^e	A	275
	I	275
	PBH residences_median	275

^a Refer to Figures 2.4.1 and 3.5.1 for locations of districts/areas.

^b Representative receptors as per highlighted receptors in Table 3.5.1 and are the receptors where maximum lead deposition is predicted to occur (PEL 2017b).

^c Assumed existing soil Pb as measured in 2013 by Yang and Cattle (2015).

^d Closest district is D4, thus existing soil Pb assumed to be the same as in D4.

^e Closest district is D5, thus existing soil Pb assumed to be the same as in D5.

^f These locations are relatively far away from Broken Hill town and mining activity, thus existing soil Pb concentrations are expected to be low. However no data are available for these locations. Existing soil Pb was assumed to be at 100 µg Pb/g soil (approx. 40% of the average measured in D5).

In addition to existing soil lead concentrations, lead deposition from sources other than the existing or Proposed Mine has also been included in BPb modelling of Scenarios 1 and 3. Lead deposition from other sources was calculated by ToxConsult as per e-mail instructions received from PEL on 01/06/2017 (see also Table 3.4.3). Details of how this was calculated are presented in Appendix E.

Table 3.4.3: Calculation of Pb deposition from sources other than the North Mine

District/ Area ^a	Receptor ^b	Relevant monitoring location for Pb deposition ^c	A: 2016 measured Pb deposition at monitoring location (g/m ² /yr) ^d	B: Modelled existing Pb deposition (g/m ² /yr)	C: Calculated Pb deposition from sources other than North Mine (Column A MINUS B) (g/m ² /yr)
D1	26	DG5	0.110	0.00015	0.110
D2	14	DG7	0.134	0.00067	0.133
D3	23	DG5	0.110	0.00025	0.110
D4	13	DG5	0.110	0.00054	0.109
D5a	1	LP17	0.107	0.0035	0.104
	4	LP17	0.107	0.0072	0.100
	D5a_median	-	0.107 ^e	-	0.099 ^e
D5b	7	LP22	0.042	0.0024	0.039
D6	45	DG6	0.029	0.00043	0.029
D7	48	DG1	0.042	0.00017	0.042
D8	51	DG1	0.042	0.0001	0.042
D9	86	LP22	0.042	0.0013	0.040
D10	56	DG2	0.027	0.00014	0.027
Other - near Rasp	73	DG6	0.029	0.0028	0.086
Other - close	41	DG4	0.089	0.00086	0.029
Other - far	19	LP15	0.032	0.00066	0.031
PBH Residences	A	LP22	0.042	0.0093	0.032
	I	LP22	0.042	0.0126	0.029
	PBH residences_ median	-	0.042 ^e	-	0.029 ^e

- = D5a_median and PBH residences_median are hypothetical receptors chosen by ToxConsult for BPb modelling to provide a representative receptor for the districts/areas in which the highest Pb deposition from the Proposal are predicted to occur. As these are hypothetical receptors, there is no modelled existing Pb deposition at these locations. The Pb deposition from sources other than the North Mine for these receptors was calculated as the median in the relevant district/area (Column C). The measured Pb deposition was assumed to be the same as that of other receptors in the district/area.

^a Refer to Figure 3.5.1 for locations of districts/areas.

^b Representative receptors as per highlighted receptors in Table 3.5.1 and are the receptors where maximum lead deposition is predicted to occur (PEL 2017b).

^c Relevant monitoring locations are those in closest proximity to the relevant receptor, as per e-mail instructions received from PEL on 01/06/2017.

^d 2016 measured Pb deposition from PEL (2017b) spreadsheet entitled "21310 Predictions at mon locations - Pb update 5-6-17". Values presented to three decimal places to be able to show the slight difference between Column A and Column C.

^e The hypothetical median receptors in the D5a and PBH residences group were not modelled by PEL (2017a, b). Pb deposition from sources other than the North Mine was assumed to be equal to the median of all receptors within D5a or PBH residences modelled by PEL (2017b). This was 0.099 g/m²/yr for D5a and 0.029 g/m²/yr for PBH residences. The 2016 measured Pb deposition was assumed to be the same as that of other receptors in the district/area.

3.5 Proposal associated lead concentrations in exposure media

Exposure to lead by children at Broken Hill is recognised to largely occur via transfer of soil/dust on hands to the mouth after which it is swallowed (Gulson et al. 1994a, 1994b; Taylor et al. 2014). Thus atmospheric deposition of lead in dust from the Proposal to soil is an important consideration. Annual predicted atmospheric deposition of lead from PEL (2017b) at various locations in Broken Hill is summarised in Table 3.5.1 and Figure 3.5.1. Table 3.5.1 also presents the accumulated soil Pb concentration predicted from the Proposal (calculated as per Section 2.6) for each location.

From Figure 3.5.1, it is evident that predicted Pb deposition and therefore accumulated soil concentrations are similar for most receptors within and between many districts/areas. For the districts/areas where there is minimal difference between individual receptors, and where predicted Pb deposition is low, the receptor with the maximum predicted Pb deposition rate has been chosen as the representative receptor for that district/area (Table 3.5.1).

For districts/areas where Pb deposition is predicted to be highest (District 5a and PBH residences), the minimum and maximum impacted receptor have been selected, along with a calculated median for the area (Table 3.5.1). Table 3.5.1 also contains the aggregated lead soil concentrations (S3) (existing plus predicted deposition from Proposal, plus deposition from other sources) and air lead in PM₁₀ used in blood lead modelling.

Table 3.5.1: Modelled annual average Pb deposition and Pb in PM₁₀ from Proposed mine activities (Scenario 2) and 15 year accumulation in soil at each receptor

District or Area ^a	Receptor ^b	Annual average deposited Pb from Proposal (S2) (g/m ² /yr) ^c	Comment regarding deposited Pb from Proposal	15 yr soil Pb from North Mine Proposal (S2) (µg Pb/g) ^g	15 yr soil Pb from sources other than North Mine (µg Pb/g) ^j	Existing soil Pb (µg Pb/g) ^k	Aggregated soil Pb (S3) (µg Pb/g) ^h	Annual average Pb in PM ₁₀ (S2) (µg/m ³) ⁱ
D1	26	0.00016	Max in D1	0.08	54.81	733	787.9	0.0001
	61	0.00016		0.08	54.79	733	787.9	0.0001
	65	0.00012		0.06	66.69	733	799.8	0.0001
	77 ^d	0.00011		0.05	66.70	2450	2516.8	0.0001
D2	14	0.00043	Max in D2	0.2	66.43	275	341.6	0.0003
	60	0.00022		0.1	66.64	275	341.8	0.0002
	75	0.00026		0.1	66.61	700	766.7	0.0002
D3	23	0.00023	Max in D3	0.1	54.76	733	787.9	0.0002
	24	0.00018		0.09	54.78	733	787.9	0.0001
	25	0.00016		0.08	54.79	733	787.9	0.0001
	62	0.00022		0.1	66.65	733	799.8	0.0002
	63	0.00023		0.1	66.65	733	799.8	0.0002
	76	0.00023		0.1	54.76	700	754.9	0.0002

District or Area ^a	Receptor ^b	Annual average deposited Pb from Proposal (S2) (g/m ² /yr) ^c	Comment regarding deposited Pb from Proposal	15 yr soil Pb from North Mine Proposal (S2) (µg Pb/g) ^g	15 yr soil Pb from sources other than North Mine (µg Pb/g) ^j	Existing soil Pb (µg Pb/g) ^k	Aggregated soil Pb (S3) (µg Pb/g) ^h	Annual average Pb in PM ₁₀ (S2) (µg/m ³) ⁱ
D4	13	0.00041	Max in D4	0.2	54.61	733	787.8	0.0002
	21	0.00033		0.2	54.69	733	787.9	0.0002
	22	0.00024		0.1	54.74	733	787.9	0.0001
	70	0.00024		0.1	54.75	733	787.9	0.0002
D5a	1	0.00344	Min in D5a	1.7	51.94	275	328.7	0.0012
	2	0.00656		3.3	50.74	275	329.0	0.0015
	3	0.00968		4.8	48.97	275	328.8	0.0016
	4	0.01774	Max in D5a	8.9	50.07	275	333.9	0.0025
	5	0.00701		3.5	17.46	275	296.0	0.0018
	6	0.00353		1.8	18.59	275	295.4	0.0012
	D5a_ median	0.00679	Calculated median in D5a	3.4	49.52	275	327.9	0.0015
D5b	7	0.00212	Max in D5b	1.1	19.63	275	295.7	0.0008
	8	0.00208		1.0	19.66	275	295.7	0.0008
	9	0.00165		0.8	19.92	275	295.7	0.0007
	10	0.00098		0.5	63.98	275	339.5	0.0004
	11	0.00080		0.4	64.10	275	339.5	0.0003
	39	0.00067		0.3	64.17	275	339.5	0.0003
	40	0.00079		0.4	64.10	275	339.5	0.0003
	84	0.00049		0.2	64.24	275	339.5	0.0003
	85	0.00058		0.3	64.17	275	339.5	0.0003
	P ^e	0.00170		0.8	19.89	275	295.7	0.0007
D6	30	0.00021		0.1	13.49	1125	1138.6	0.0001
	42	0.00027		0.1	21.09	1125	1146.2	0.0001
	43	0.00031		0.2	14.56	1125	1139.7	0.0002
	44	0.00037		0.2	14.53	1125	1139.7	0.0002
	45	0.00045	Max in D6	0.2	14.49	1125	1139.7	0.0003
	49	0.00021		0.1	21.13	1125	1146.2	0.0001
	50	0.00023		0.1	21.11	1125	1146.2	0.0001
	57	0.00020		0.1	13.50	1125	1138.6	0.0001
	68	0.00035		0.2	14.53	1125	1139.7	0.0002
	69	0.00032		0.2	14.56	1125	1139.7	0.0002
	78	0.00028		0.1	14.57	300	314.7	0.0001
D7	27	0.00015		0.08	13.51	1125	1138.6	0.0001
	29	0.00018		0.09	13.50	1125	1138.6	0.0001
	46	0.00013		0.07	21.15	1125	1146.2	0.0001
	47	0.00014		0.07	21.15	1125	1146.2	0.0001
	48	0.00019	Max in D7	0.1	21.13	1125	1146.2	0.0001

District or Area ^a	Receptor ^b	Annual average deposited Pb from Proposal (S2) (g/m ² /yr) ^c	Comment regarding deposited Pb from Proposal	15 yr soil Pb from North Mine Proposal (S2) (µg Pb/g) ^g	15 yr soil Pb from sources other than North Mine (µg Pb/g) ^j	Existing soil Pb (µg Pb/g) ^k	Aggregated soil Pb (S3) (µg Pb/g) ^h	Annual average Pb in PM ₁₀ (S2) (µg/m ³) ⁱ
	52	0.00012		0.06	21.16	1125	1146.2	0.0001
	66	0.00012		0.06	13.52	1125	1138.6	0.00008
D8	51	0.00010	Max in D8	0.05	21.17	275	296.2	0.0001
	58	0.00009		0.04	13.54	275	288.6	0.00006
	59	0.00009		0.04	13.54	275	288.6	0.00007
	81	0.00009		0.04	13.54	275	288.6	0.00009
D9	53	0.00055		0.3	20.45	275	295.7	0.0003
	54	0.00018		0.09	20.63	275	295.7	0.00009
	64	0.00055		0.3	20.42	275	295.7	0.0003
	79	0.00048		0.2	20.46	250	270.7	0.0003
	80	0.00036		0.2	20.54	80	100.7	0.0002
	86	0.00118	Max in D9	0.6	20.18	275	295.8	0.0005
D10	55	0.00018		0.09	64.43	275	339.5	0.00009
	56	0.00020	Max in D10	0.1	13.51	275	288.6	0.0001
	67	0.00016		0.08	64.43	275	339.5	0.00008
	82	0.00009		0.05	13.53	275	288.6	0.00006
	83	0.00013		0.07	13.53	275	288.6	0.00009
Other - near Rasp	28	0.00017		0.08	21.13	733	754.2	0.0001
	31	0.00037		0.2	54.66	733	787.8	0.0002
	32	0.00040		0.2	54.64	733	787.8	0.0002
	33	0.00047		0.2	54.59	733	787.8	0.0002
	34	0.00055		0.3	54.53	733	787.8	0.0003
	72	0.00046		0.2	54.61	733	787.8	0.0002
	73	0.00064	Max for 'other – near Rasp'	0.3	14.28	733	747.6	0.0003
Other - close	12	0.00080		0.4	64.07	275	339.5	0.0003
	35	0.00074		0.4	14.31	275	289.7	0.0003
	36	0.00082		0.4	14.26	275	289.7	0.0003
	37	0.00069		0.3	14.34	275	289.7	0.0003
	38	0.00083		0.4	64.06	275	339.5	0.0003
	41	0.00240	Max for 'other – close'	1.2	43.03	275	319.2	0.0007
	74	0.00080		0.4	64.07	275	339.5	0.0003
Other - far	15	0.00024		0.1	66.60	100	166.7	0.0002
	16	0.00020		0.1	66.61	100	166.7	0.0001
	17	0.00016		0.08	26.05	100	126.1	0.00006
	18	0.00038		0.2	25.80	100	126.0	0.0001
	19	0.00047	Max for 'other – far'	0.2	15.49	100	115.7	0.0001

District or Area ^a	Receptor ^b	Annual average deposited Pb from Proposal (S2) (g/m ² /yr) ^c	Comment regarding deposited Pb from Proposal	15 yr soil Pb from North Mine Proposal (S2) (µg Pb/g) ^g	15 yr soil Pb from sources other than North Mine (µg Pb/g) ^j	Existing soil Pb (µg Pb/g) ^k	Aggregated soil Pb (S3) (µg Pb/g) ^h	Annual average Pb in PM ₁₀ (S2) (µg/m ³) ⁱ
	20	0.00040		0.2	15.54	100	115.7	0.0001
	71	0.00014		0.07	66.67	100	166.7	0.0001
PBH Residences	A	0.00660	Min for PBH residences	3.3	16.16	275	294.5	0.0019
	B	0.00666		3.3	16.08	275	294.4	0.0019
	C	0.00806		4.0	15.86	275	294.9	0.0021
	D	0.01133		5.7	9.28	275	289.9	0.0024
	E	0.01611		8.1	16.09	275	299.1	0.0029
	F	0.03057		15.3	12.67	275	303.0	0.0046
	G	0.04932		24.7	13.75	275	313.4	0.0059
	H	0.07628		38.1	13.75	275	326.9	0.0076
	I	0.10789	Max for PBH residences	53.9	14.55	275	343.5	0.009
	J	0.05324		26.6	14.80	275	316.4	0.0058
	K	0.02427		12.1	14.49	275	301.6	0.0035
	L	0.06470		32.4	10.94	275	318.3	0.0064
	M	0.01895		9.5	43.93	275	328.4	0.0037
	N	0.02076		10.4	-	275	-	0.0038
	O	0.02339		11.7	6.75	275	293.4	0.0037
	PBH residence s_{median}	0.02339	Calculated median for PBH resid'ns ^f	11.7	14.52	275	301.2	0.0037

- 15 yr soil Pb from sources other than the North Mine and aggregated soil Pb could not be calculated for Receptor location N, because there were no data in the spreadsheets provided by PEL (2017b) for the relevant Pb deposition monitoring location (LP18); thus the Pb deposition from sources other than the Proposed Mine could not be calculated.

^a Refer to Figure 3.5.1 for locations of districts/areas.

^b Bolded and shaded receptors have been chosen as representative for a specific district/area.

^c Modelled annual average deposited Pb in TSP dust (g/m²/yr) from PEL (2017b) for Proposed mine only (i.e. Scenario 2). Data provided to 5 decimal places to enable comparison with all other receptors.

^d Although not strictly located in the boundaries of District 1, modelled concentrations are similar for Receptor 77 and due to its close proximity to District 1, for this risk assessment Receptor 77 was treated as if it was in District 1.

^e Although identified by PEL (2017) as a project-related residence (presumably because owned by PBH), Receptor P (Junction Circle) has been grouped with other receptors in District D5b, due to its proximity and similar modelled deposited Pb concentrations.

^f The calculated median annual average deposited Pb (Scenario 2) for PBH residences gives the same value as predicted at Receptor O.

^g Calculated from annual average deposited Pb (Scenario 2) using Equation 2.6.1 (Section 2.6).

^h This is the calculated 15 year soil Pb from the North Mine Proposal (S2) plus the assumed existing soil Pb (Section 3.4), plus 15 year soil Pb from other sources (calculated using Equation 2.6.1 from deposition rates in Column C of Table 3.4.3).

ⁱ Modelled annual average Pb in PM₁₀ for Proposed mine only (i.e. Scenario 2). These are the Pb concentrations in air used for inhalation exposure inputs for IEUBK modelling of Scenario 2.

^j This is the deposition rates in Column C of Table 3.4.3, converted to 15 yr soil Pb concentrations (from sources other than the North Mine) using Equation 2.6.1 (Section 2.6).

^k Assumed existing soil Pb as per Table 3.4.2 in Section 3.4.

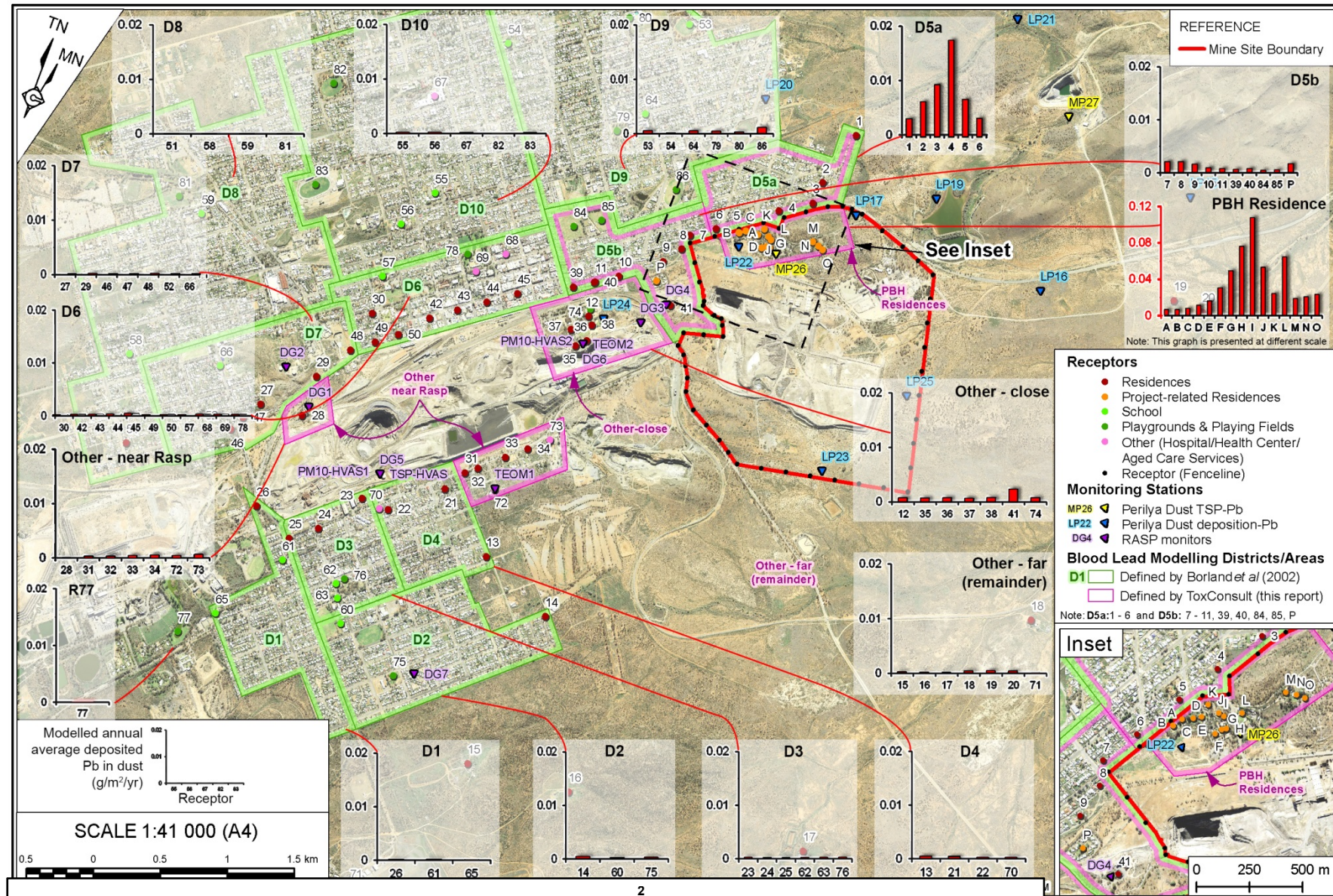


Figure 3.4.1: Modelled annual average deposited Pb in dust (g/m²/yr) – S2 (proposal only) by district/area
D = District. R = Receptor. **Note different scale for PBH residences.**

3.6 Bioaccessibility of Pb in soil and deposited dust

Appendix H provides information on bioaccessibility concepts and measurement techniques, and how the latter have been applied to soils, dust and ore at Broken Hill. The discussion in Appendix H indicates very different bioaccessibility results have been obtained for Broken Hill soil and dust samples when different bioaccessibility methods are used:

- 23.7 – 89.3% (average 60%) for topsoil using the IVBA method (Yang and Cattle 2015).
- 3.7 – 14.6 (average 7.3%) in Rasp mine site surface dust and 0.9 – 2.1% (average 1.4%) in Rasp mine ore using the PBET method (Toxikos 2010).

Recognising that the samples tested were not collected from the same area, the disparity in results suggests the different techniques give markedly different bioaccessibility results. Both techniques have been validated using *in vivo* animal data (the IVBA with juvenile swine, the PBET with rats) and both techniques have been applied in risk assessments of mine sites in Australia and overseas (Appendix H). Arguably the PBET test is more representative of physiological and real-World conditions, since it incorporates an intestinal phase, which is where absorption of lead in humans occurs. However, in the absence of additional *in vivo* validation for the soils in question, it is difficult to favour one technique over the other.

Thus for this HHRA the more conservative average bioaccessibility of 60%, rather than 7%, has been assumed for lead in dust from the Proposed North Mine and other sources, as well as for existing lead in soils in the surrounding areas. This tacitly assumes 60% of the lead in dust and soil is soluble in the stomach milieu.

Use of a 60% bioaccessibility translates into an absolute bioavailability of 30% after taking into account 50% absorption of soluble lead by children (US EPA 1999b, ATSDR 2007a). An assumption of 30% absolute bioavailability of lead from soil and dust is the same as the IEUBK default value for this parameter.

Uncertainty in the actual bioaccessibility of lead from Broken Hill soils and dust should be kept in mind when interpreting the results of the IEUBK PbB modelling for absolute BPb concentrations undertaken in this HHRA. The bioaccessibility assumption in the modelling is likely conservative and will result in overestimation of BPb concentrations in children. As a result, in this HHRA less weight is placed on the absolute values of predicted BPb, and more on the comparison between different scenarios and the relativity of any shifts in predicted BPb population distributions (Section 3.10). Since BPb modelling for each scenario has the same input parameters, such comparisons inherently minimise

the uncertainty attached to the common BPb modelling input assumptions, the primary differences between scenarios being the changed lead exposures resulting from the Proposal.

3.7 Background blood lead concentrations

Background blood lead concentrations (i.e. those measured in non-impacted communities¹⁶) in Australia and overseas have decreased with time (Figure 3.7.1 and Appendix B). 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 contemporary information for background BPb (i.e. dietary exposure) is used for BPb modelling.

Geometric mean (GM) BPb concentrations for children (<6 years) in non-impacted communities in Australia measured in 2000 or later¹⁷ ranged from 1.8 µg/dL in Fremantle (Guttinger et al. 2008) to 2.6 µg/dL in Sydney (Gulson et al. 2006), with a rounded average GM of 2 µg/dL from three 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. 1.8 – 2.6 µg/dL) are comparable with the overseas range for non-impacted children (<14 years) for the same time period (1.3 - 3.1 µg/dL, with rounded average GM of 2 µg/dL from 7 studies) (Appendix B).

Inspection of Figure 3.7.1 shows the decline in background levels of BPb in Australian children is lagging behind those of overseas children, but both appear to be plateauing at about 2 µg/dL. Plateauing is also observed for the percentage of children with BPb levels above the previous NHMRC blood lead recommendation of 10 µg/dL (NHMRC 2009). This ranges from 0 to 5% in non-impacted communities (average of 2.5%, including data from 2000 or later) in Australia, which is also consistent with overseas communities (0 - 4.1%, average of 1.3%) (Figure 3.7.2).

Note, as indicated in Section 3.3, in 2015, the NHMRC revised the target investigation BPb level to 5µg/dL. Because the target level was recently revised, previous BPb investigations have not reported the percentage of children with BPb >5 µg/dL.

¹⁶ An impacted community is defined as one residing near a known anthropogenic point source of atmospheric lead. Blood lead concentrations in a non-impacted community represent background, or reference, concentrations.

¹⁷ To correspond with the phasing out of leaded petrol in Australia (DEWHA 2001).

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 3.9.3.7):

- BPb GMs = 1.8 - 2.6 $\mu\text{g/dL}$; average GM of 2 $\mu\text{g/dL}$.
- Percentage of children with BPb >10 $\mu\text{g/dL}$ = 0 - 5%; average 2.5%.
- Percentage of children with BPb > 5 $\mu\text{g/dL}$ = no data available.

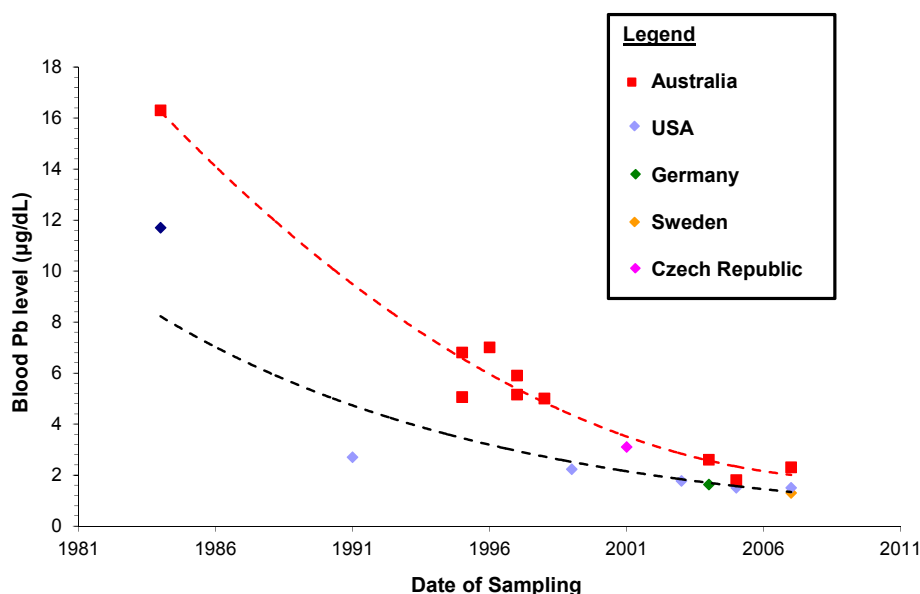


Figure 3.7.1: Blood lead concentrations (geometric means) in Australian (<6 yrs) and overseas (<14 yrs) children.
(Graph drawn from information in Appendix B)

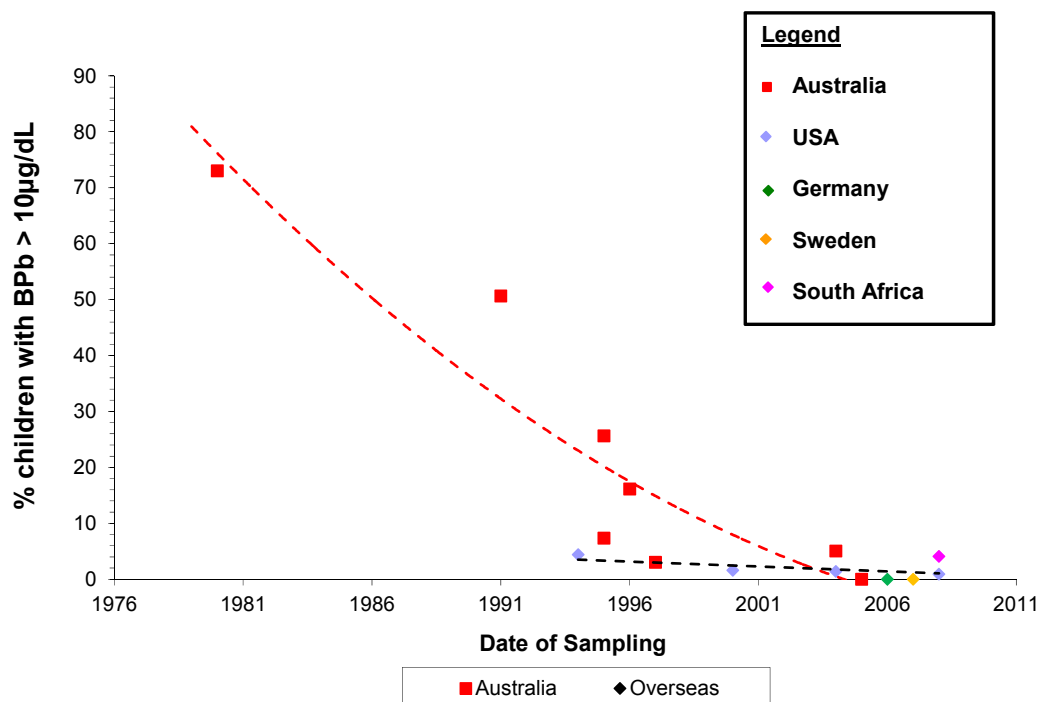


Figure 3.7.2: Percentage of children with blood lead concentrations > 10µg/dL in Australian (<6 yrs) and overseas (<14 yrs) children.
(Graph drawn from information in Appendix B)

3.8 Existing blood lead concentrations at Broken Hill

Women:

The NSW Ministry of Health (Lesjak and Jones 2015) have published information on BPb levels for people in Broken Hill, including geometric mean BPb concentrations in umbilical cord blood (at birth) and children aged 1-4 years old for each year from 1996-2014. Between 2000 and 2008 there has been a steady decline in cord BPb concentrations. From 2008-2014, women living in Broken Hill consistently had a geometric mean umbilical cord BPb concentration of 1.2 µg/dL (Figure 3.8.1).

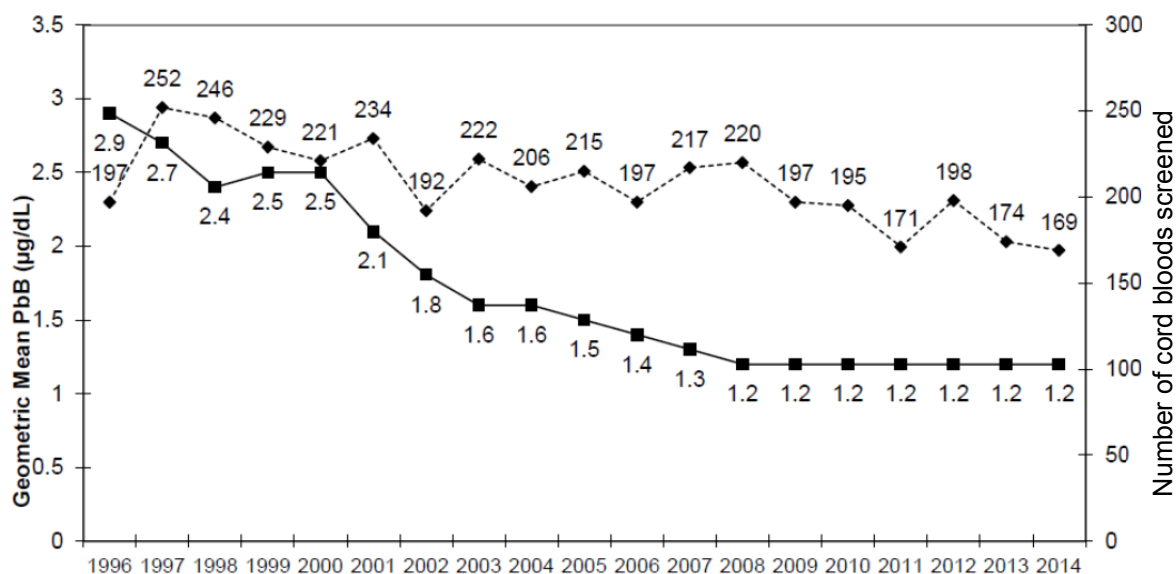


Figure 3.8.1: Geometric mean blood Pb concentrations (µg/dL) of cord blood in Broken Hill measured from 1996-2014 (Lesjak and Jones 2015).

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 1-4 years, from a high of 16.7 µg/dL in 1991 to 5.8 µg/dL in 2007. However since 2007 non-indigenous children's mean BPb concentrations have been relatively stable at 4.9 – 5.2 µg/dL (Figure 3.8.2). According to Lesjak and Jones (2015), small fluctuations in the geometric mean in later years in part reflect the number of children tested.

In 2014, the percentage of children in Broken Hill with BPb:

- ≥10 µg/dL was 20%.
- ≥5 µg/dL was 48%.

For the first time in 2014 since the voluntary BPb screening program started, there were no children with BPb >29 µg/dL (Lesjak and Jones 2015).

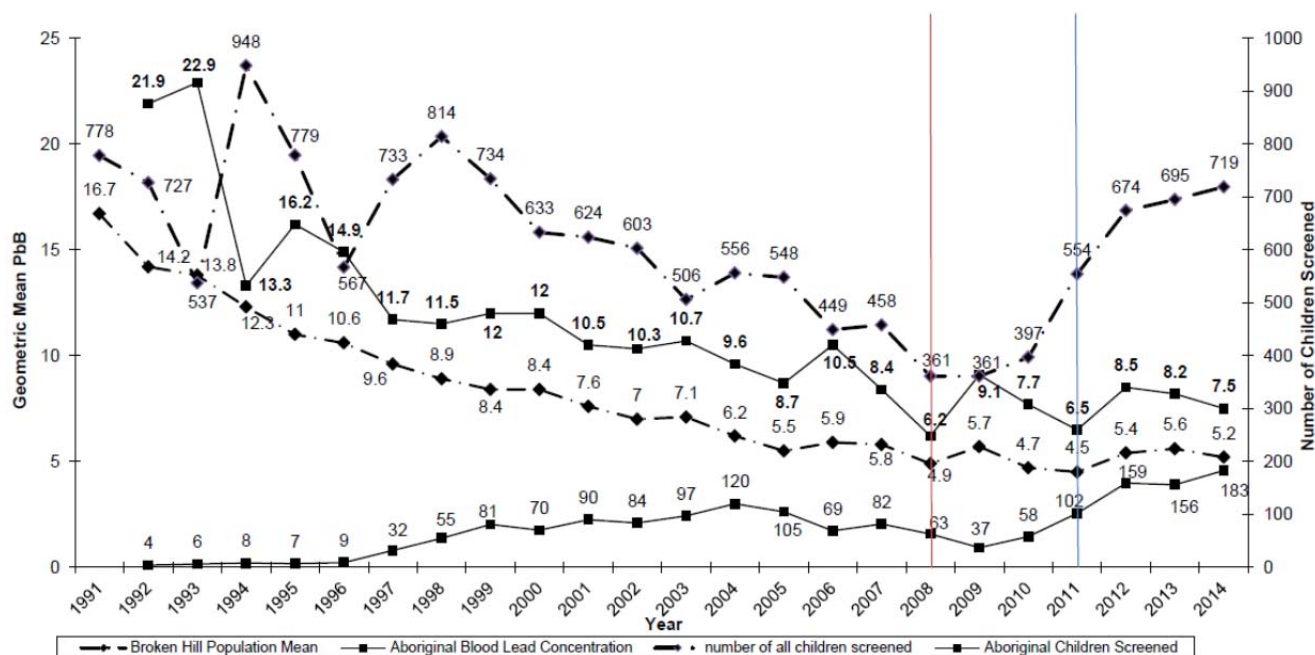


Figure 3.8.2: Geometric mean blood Pb concentrations (µg/dL) of children aged 1-4 years in Broken Hill measured from 1991-2014 (Lesjak and Jones 2015).

3.9 Modelling blood lead concentrations

3.9.1 Overview

A number of lead PBPK models have been developed that are able to predict blood lead concentrations, e.g. O'Flaherty 1993, 1995 and Leggett 1993, IEUBK. However only the *Integrated Exposure Uptake Biokinetic* (IEUBK) model developed by the US EPA is publically 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) and to inform deliberations in establishing a health investigation level (HIL) for lead in soil (NEPM 2013).

Briefly, the model was applied to estimate blood lead levels for the most vulnerable and sensitive life stage (1-2 year old children) residing at selected locations in Broken Hill (Section 3.5).

The blood lead modelling for the two locations with the highest predicted Pb deposition from the North Mine (R4 and PBH Residence 'I') for various age groups showed the 1 - 2 year old as having the

highest potential blood lead increase (Table 3.9.1.1). This is consistent with conventional risk assessment wisdom in which the behaviour of this age group confers high exposure to environmental chemicals (Toxikos 2010, enHealth 2012a, b). Hence in the remainder of this report the BPb modelling results are for the 1-2 year old age group. The 1-2 year old modelling also takes into account Pb exposure prior to one year of age.

Table 3.9.1.1: Scenario 2 IEUBK predicted geometric mean BPb ($\mu\text{g}/\text{dL}$) in hypothetical population of children living at R4 or PBH Residence 'I'

Age Group (years) ^c	Scenario 2 predicted geometric mean BPb ($\mu\text{g}/\text{dL}$) ^a	
	R4 ^b	PBH Residence 'I' ^b
0.5 – 1	0.120	0.680
1 – 2	0.140	0.835
2 – 3	0.129	0.772
3 – 4	0.121	0.724
4 – 5	0.115	0.685
5 – 6	0.107	0.640
6 – 7	0.098	0.590

^a A brief description of the IEUBK model and the input parameters assumed for the modelling are provided in Sections 3.9.2 and 3.9.3, respectively. Modeled geometric mean BPb is presented to three decimal places to be able to discern subtle differences, although it is noted this level of precision for the absolute BPb is not warranted due to the uncertainties associated with the modelling inputs (see Section 3.11).

^b These receptors are the locations with the highest predicted Pb dust deposition from the North Mine (Section 3.5, 3.10).

^c The BPb modelling for each age group takes into account Pb exposure prior to that age group.

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 olds 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 (as a percentage) of the hypothetical child population that may have BPb concentrations above a specific target level (in this case 5 $\mu\text{g}/\text{dL}$). Thus the model outputs relate to an individual only in a statistical sense.

A brief description of the IEUBK PBPK model for lead is given in Section 3.9.2. Figure 3.9.1 provides an overview of the methodology followed for predictive BPb modelling in relation to exposure in Broken Hill for the three scenarios described in Section 2.3.

Of interest for this risk assessment is the change in population BPb concentration profile that may arise as a result of the North Mine Proposal (i.e. Scenario 2). As previously noted, Scenario 2 also

includes some contribution from the existing non-developed mine because some of the dust/metal sources will be unchanged by the Proposal. The predicted relative change in BPb due to the Proposal is assessed by comparing the modelled existing situation (Scenario 1, includes existing soil and other sources) with the modelled cumulative situation (Proposal, plus other sources, plus existing soil, Scenario 3).

Lead in blood due to the diet and/or in consumed water has been addressed by including 'background' dietary intakes in the IEUBK modelling for Scenarios 1 and 3 (Scenario 2 did not include background). The model does not allow input of a BPb level which corresponds to measured 'background' (i.e. dietary) concentrations such as those described in Section 3.7. 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 3.9.3.7). The modelled 'background' BPb estimates from assumed 'background' Pb intakes via diet and water are compared in Section 3.9.3.7 to measured 'background' BPb concentrations from overseas and Australian data to determine how well the assumed intakes predict 'background' BPb.

Inputs

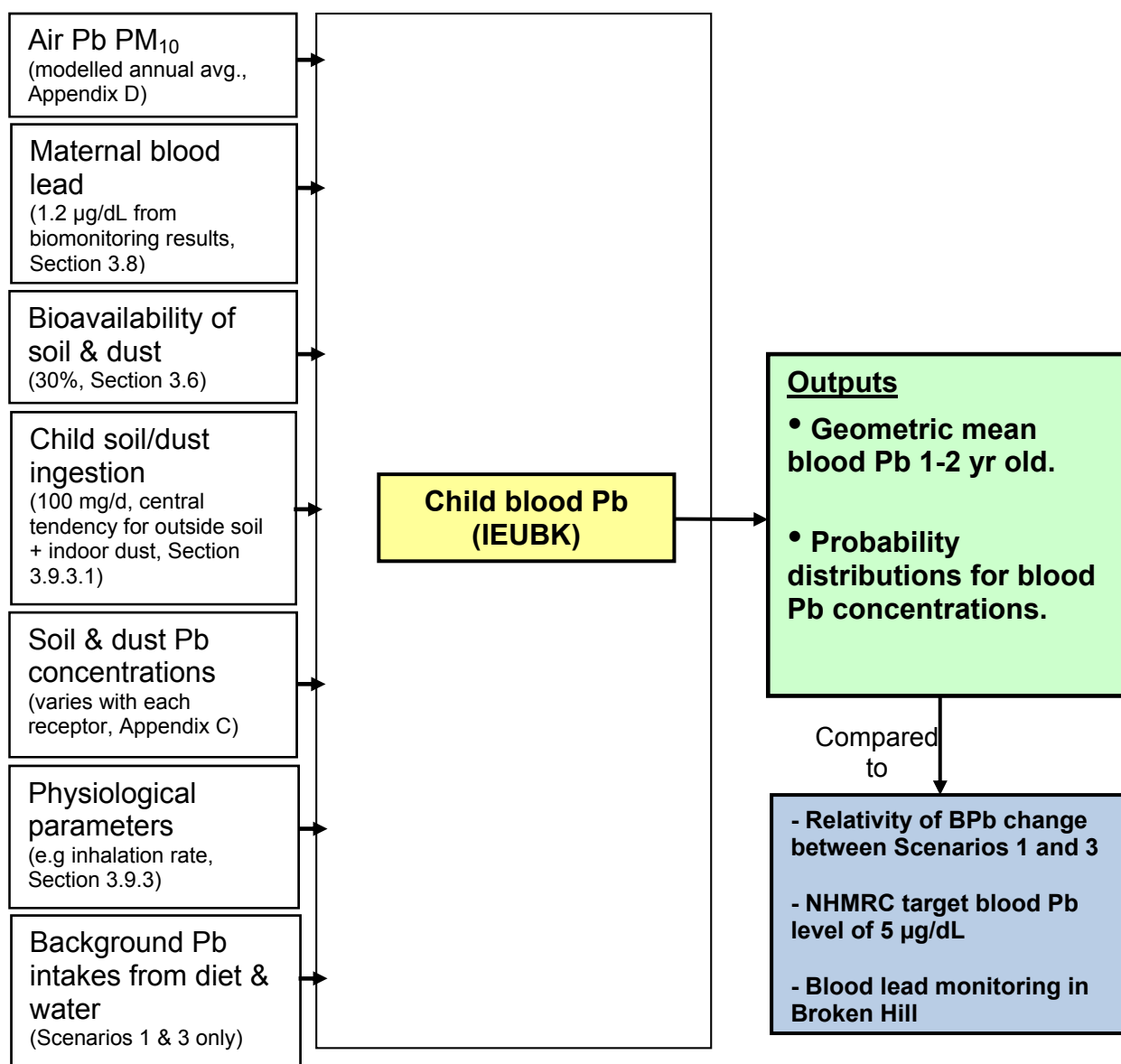


Figure 3.9.1: Overview of methodology for blood Pb predictions

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 blood lead levels arising from lead in the diet and consumed water (Section 3.7). These are dubbed 'background' blood lead concentrations and are expected to occur in the absence of any anthropogenic mining activity that has, or may, result in lead 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' lead intakes are included for 1-2 year old children in the IEUBK modelling for Scenarios 1 and 3.

Comparison of modelled 'background' dietary lead intake with measured background levels (Section 3.7) shows the IEUBK modelling agrees well with the published data (Section 3.9.3.7).

- Existing soil lead concentrations (Section 3.4). These were sourced from the recent scientific literature and added to modelled estimates for soil Pb from North mine Proposal (and other sources) related dust deposition (for Scenarios 1 and 3). The soil concentrations at each receptor evaluated in this HHRA and used as inputs into the IEUBK modelling are summarised in Appendix C.
- The bioaccessibility of Pb in soil and deposited dust from the North Mine Proposal and other existing sources (Section 3.6).
- The amount of soil/dust that may be ingested by a child (Section 3.9.3.1).
- The extent of absorption of lead in the soil/dust into the blood (Section 3.9.3.2).
- The contribution of lead from a mother to her children (Section 3.9.3.3).
- The extent to which lead in outside soil is part of indoor dust (Section 3.9.3.4).
- The time a child spends outdoors/indoors (Section 3.9.3.5).
- The inhalation (i.e. ventilation rate) of air by children (Section 3.9.3.6).
- Lead air concentrations, modelled by PEL (2017b) as an annual average in PM₁₀, at each location evaluated in this HHRA are summarised in Appendix D.

3.9.2 IEUBK model description

A brief description of the Integrated Exposure Uptake Biokinetic (IEUBK) model for lead 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 lead in air, water, soil, dust, diet, and paint, as well as other sources to predict blood lead levels in children from 6 months to 7 years old. It consists of four major components:

- 1) an **exposure module** that relates environmental lead concentrations to age-dependent intake via inhalation and ingestion,
- 2) an **absorption (or uptake) module** that relates lead intake to lead 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 blood lead levels in *populations* of children exposed to lead-contaminated media, and constructs a plausible distribution of blood lead 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'. In this assessment for Scenario 2 (proposed North Mine, no background) only the 'air', 'maternal', 'dust' and 'soil' compartments in the exposure module in Figure 3.9.2 have been operated. Blood lead from background intake via diet and water was included for Scenarios 1 (existing North Mine with background) and 3 (proposed North Mine with background) 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 3.9.3.7).

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 3.9.3). The biological structure of the IEUBK model is shown pictorially in Figure 3.9.2.

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).

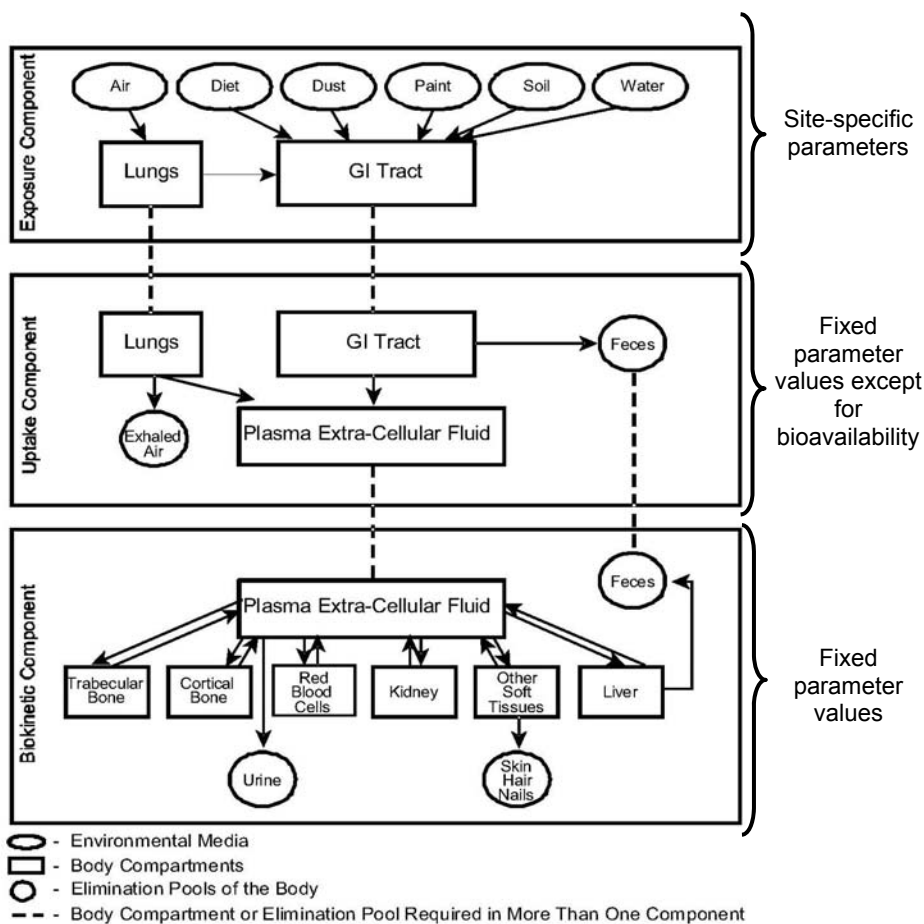


Figure 3.9.2: Biological structure of IEUBKwin model (US EPA 2007a, pg. 4)

3.9.3 IEUBK input parameters

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

It should be noted that many of the input parameters are common to the BPb modelling for the different scenarios described in Section 2.3. 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 value (except for lead 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.

3.9.3.1 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 Clausen 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.

3.9.3.2 Total gastrointestinal absorption of lead from dust and soil

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

As discussed in Section 3.6, this default parameter has not been modified in this HHRA. It coincides with 'bioaccessible' data obtained from various locations around Broken Hill by Yang and Cattle (2015) who used the *in vitro* IVBA test. It is noted in Appendix H and Section 3.6 that bioaccessibility obtained by the IVBA method is likely conservative. The PBET test is more representative of physiological and real-world conditions as it incorporates an intestinal phase which is where absorption of lead occurs. However, in the absence of additional *in vivo* validation for the soil and mine ore in question, it is difficult to assign more weight to data from one or the other bioaccessibility techniques.

3.9.3.3 Maternal blood Pb

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

This value was changed to 1.2 µg/dL to coincide with the geometric mean umbilical cord BPb concentration measured by recent biomonitoring at Broken Hill (see Section 3.8).

3.9.3.4 Ratio of indoor dust lead to soil lead concentration

The IEUBK default value for the ratio of indoor dust lead to soil lead 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 lead) is more appropriate for Broken Hill. This was based on data from Gulson et al. (1995b). No additional relevant information was identified in a literature search undertaken for this HHRA. Therefore, a ratio of 1.5 (indoor dust to soil lead) was adopted in the IEUBK analysis instead of the default factor of 0.7.¹⁸

3.9.3.5 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.

3.9.3.6 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 m³/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 m³/d for 0-1, 1-2, 2-3, 3-6, and 6-7 year old children, respectively.

3.9.3.7 Background intakes of Pb

Section 3.7 examines published background blood lead concentrations in non-impacted communities in Australia and overseas and concluded a population geometric mean of 2 µg Pb/dL was a reasonable estimate for background (i.e. dietary derived) BPb for Broken Hill children. For Scenarios 1 (existing North Mine with background) and 3 (proposed North Mine with background), an estimate of 'background' intakes of Pb from diet and water by 1-2 year old children was included in the IEUBK modelling.

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

¹⁸ 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.

from provided Pb dietary intakes. The assumed Pb intakes have been based on literature information for Pb for the general Australian population.

Intake from food:

FSANZ (2003) reported a range of mean dietary intake of lead of 0.03 - 0.93 µg/kg bw/day for 2 year olds. For this HHRA background intake of lead 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 NRMCC (2016) state that total lead concentrations in Australian reticulated water supplies may be up to 10 µg/L, with typical concentrations of less than 5 µg/L. The conservative high end concentration of 10 µg/L, together with a mean daily water intake of 0.3 L/day for a 1 – 2 yr old (enHealth 2012b)¹⁹, were used as input parameters for the calculation of background lead intake from water.

Intake from air:

Monitoring of lead 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 2017, SA EPA 2003). Thus the contribution of Pb intake from air to 'background' BPb (i.e. other than from existing sources and the proposed North Mine in Broken Hill) 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 PM₁₀.

Modelled intake from diet and water:

Table 3.9.3.1 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 background BPb in an assumed population of 1-2 year old children is approximately 2.2 µg/dL, which is within the range of background BPb for Australian and overseas children from non-impacted communities (1.8 - 2.6 µg/dL) (Section 3.7).

¹⁹ 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).

Thus the IEUBK modelling of 'background' BPb concentrations at the chosen parameter values agrees well with the published data summarised in Section 3.7. Therefore the 'background' dietary intake assumptions above were used to account for 'background' BPb levels in modelling Scenarios 1 and 3 blood lead estimates.

Table 3.9.3.1: Predicted background blood lead results for 1-2 year old child

	Predicted blood lead (µg/dL)	% of population >5 µg/dL	% of population >10 µg/dL
Total Background	2.16^a	3.7	0.056^b

^a This predicted 'background' blood lead is within the range of measured 'background' BPb for Australian and overseas children from non-impacted communities (1.8 – 2.6 µg/dL) (Section 3.7).

^b This is within the range of 0 – 5% >10 µg/dL measured in Australian and overseas children from non-impacted communities (Section 3.7).

3.9.3.8 Summary of BPb modelling parameters

Table 3.9.3.2 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 report²⁰.

²⁰ The blood lead modelling for various age groups showed the 1 -2 year old child as potentially having the highest blood lead increase (Section 3.9.1). This is consistent with conventional risk assessment wisdom in which the behaviour of this age group confers high exposure to environmental chemicals (Toxikos 2010, enHealth 2012a, b).

Table 3.9.3.2: 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 D for individual values and Section 3.5 for S2 values
Time spent outdoors	hrs/day	0.5, 1.4, or 2 (for 0-1, 1-2, 2-7 yr old)	Section 3.9.3.5
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 3.9.3.6
DIET^a			
Dietary lead intake	µg/day	9.9	Section 3.9.3.7
WATER^a			
Water consumption	L/day	0.3	Section 3.9.3.7
Pb concentration in drinking water	µg/L	10	Section 3.9.3.7
SOIL/DUST			
Outdoor soil Pb concentration	µg/g	- Calculated from modelled annual Pb deposition in TSP (Sections 2.6, 3.5). - Added to existing soil Pb concentrations and soil Pb from other sources (Section 3.4) for Scenarios 1 and 3.	see Appendix C and Section 3.5 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 3.9.3.4 See Appendix C for individual values
Total dust + soil ingestion	g/day	0.06 or 0.1 (0-1, 1-7 yr old)	Section 3.9.3.1
MATERNAL			
Mother's blood Pb concentration	µg/dL	1.2	Section 3.9.3.3
GI/BIO			
Absorbed fraction from soil	%	30	Section 3.9.3.2
Absorbed fraction from dust	%	30	Section 3.9.3.2
Absorbed fraction from diet/water	%	50	IEUBK default

^a The diet and water modules were only used for modelling BPb in 1-2 year olds for Scenarios 1 (existing North Mine with background) and 3 (Proposed North Mine with background). For Scenario 2 (Proposed North Mine only), these modules were 'switched off'.

3.10 Results and conclusions

3.10.1 Modelled BPb from Proposed North mine (Scenario 2)

Scenario 2 represents the health risks of lead and other metals from the North Mine Proposal only (i.e. the active North Mine, no background included). It does not include existing lead in soils or contributions to lead in air from other lead dust producing activities in Broken Hill. It does, however, include some contribution from the existing non-developed mine because some of the dust, and hence lead sources will be unchanged by the Proposal.

Although it has been emphasised in previous sections of this report that there is uncertainty regarding the absoluteness, i.e. accuracy, of the predicted BPb concentrations, and that scenario comparison is more useful regarding potential impacts of the mine proposal, it is nonetheless informative to determine (even approximately) what the effects of the proposed mine (which includes some contribution of the existing non-developed mine), on its own, may be.

It should be kept in mind that conservative modelling parameter values (e.g. for bioaccessibility, modelled air concentrations, and deposited Pb) have been chosen and that the modelling is more likely to over predict BPb concentrations rather than under predict (Section 3.11).

After 15 years of assumed mine operational life the modelled geometric mean BPb concentrations in a hypothetical population of 1-2 year olds at each chosen receptor are presented in Table 3.10.1 and Figure 3.10.1. The modelled BPb geometric mean estimates are reported to three decimal places in Table 3.10.1 in order to be able to discern subtle differences between receptors. However, given the uncertainties and likely conservatism in some of the modelling input parameters (e.g. bioaccessibility) (see Section 3.11), this level of precision in the absolute values is not warranted.

Table 3.10.1: Scenario 2 (Proposal only) modelled geometric mean BPb concentrations (µg/dL) at each chosen receptor after 15 years of assumed mine operational life ^a

District/ Area ^b	Receptor ^c	Scenario 2: <i>Proposed Nth Mine (no background)</i> Modelled BPb (µg/dL) ^d
D1	26	0.002
D2	14	0.004
D3	23	0.002
D4	13	0.004
D5a	1	0.028
	4	0.14
	D5a_median ^e	0.054
D5b	7	0.017
D6	45	0.004
D7	48	0.002
D8	51	0.001
D9	86	0.01
D10	56	0.002
Other - near Rasp	73	0.005
Other – close	41	0.019
Other – far	19	0.004
PBH Residences	A	0.053
	I	0.835
	PBH residences_ median ^e	0.185

^a NOTE: this includes some contribution from the existing non-developed mine.

^b Refer to Figure 3.5.1 for locations of districts/areas.

^c Representative receptors as per Section 3.5.

^d Input parameters/assumptions as per Section 3.9.3, assumed soil/dust Pb concentrations are in Appendix C, and assumed Pb in PM₁₀ concentrations are in Appendix D.

^e For districts/areas where Pb deposition is predicted to be highest (District 5a and PBH residences), the minimum and maximum impacted receptor have been selected, along with a calculated median for the area (refer also to Table 3.5.1).

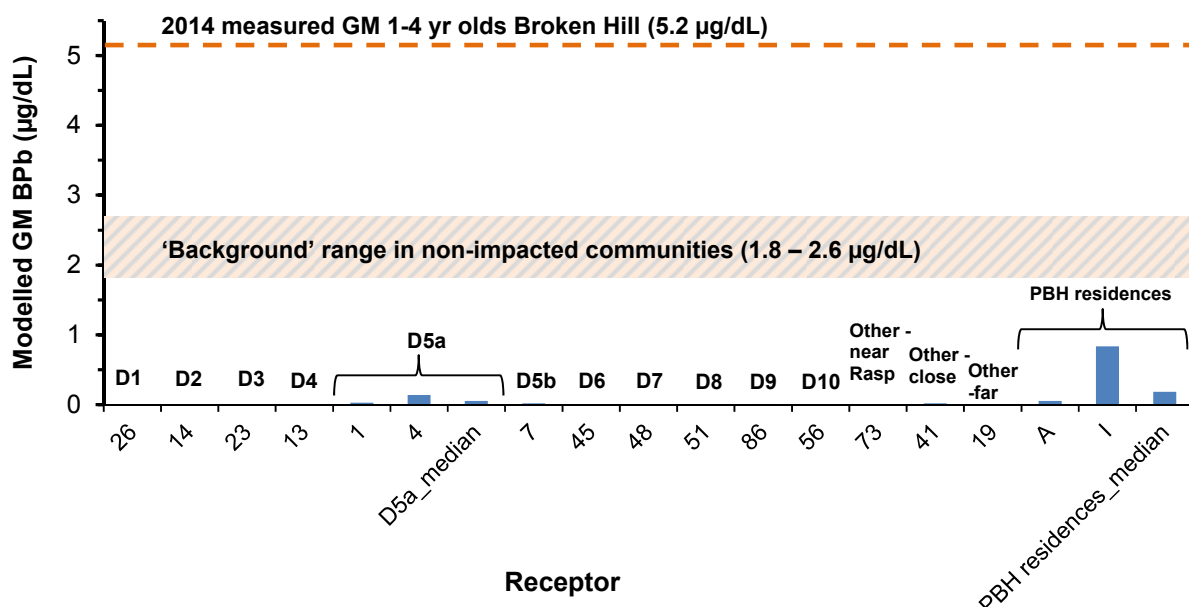


Figure 3.10.1: Scenario 2 (Proposed North Mine, no background) modelled geometric mean BPb for 1-2 yr old at each chosen receptor after 15 years of assumed operational mine life

Also shown is the 2014 measured geometric mean for 1-4 yr old children in Broken Hill (from Lesjak and Jones 2015), and the range of BPb concentrations in non-impacted Australian communities (i.e. 'background' range due to intake from diet and water) (see Section 3.7). D = District; GM = Geometric mean.

From Table 3.10.1 and Figure 3.10.1, and keeping in mind that the representative receptor chosen for each district/area is the one that is most impacted by the proposal (Section 3.5):

- The BPb attributable to the proposed mine predicted from 15 years of operation of the Proposed North Mine is very low at most receptors, 10 – 1,800 times lower than the bottom end of the range of BPb levels found in non-impacted communities (i.e. 1.8 µg/dL). The exception is a single receptor (location 'I', a PBH residence within the North Mine lease) where modelled BPb is about 2.5x lower than the bottom end of the background range of BPb concentrations.
- The areas with the highest predicted modelled BPb for Scenario 2 are District 5a and the PBH residences within the mine lease.

As previously mentioned, it should be kept in mind that the modelled BPb's for Scenario 2 do not represent changes in BPb solely as a result of the Proposal. The status quo, i.e. the existing situation (i.e. the existing North Mine) would still make a contribution to BPb even if the Proposal did not go ahead. The difference between the two (i.e. the existing vs. the proposed situation), and whether the Proposal would result in any material increases in BPb is considered the more appropriate comparator to judge the potential health impact of the Proposal, and this is discussed in Section 3.10.2 where Scenario 1 is compared with Scenario 3.

3.10.2 Relative BPb change due to Proposal

As discussed previously, the impact of the Proposal on modelled BPb levels is best judged by comparing the difference between the modelled BPb levels for Scenario 1 (the existing North Mine after 15 years, including background) and Scenario 3 (the proposed North Mine after 15 years, including background). The results are presented in Table 3.10.2.

Table 3.10.2: Modelled geometric mean BPb concentrations (µg/dL) for S1 and S3 after 15 years of assumed mine operational life

District/ Area ^a	Receptor ^b	Modelled BPb concentration (µg/dL) ^c		Relative difference in BPb (µg/dL) (S3 MINUS S1)
		Scenario 1: <i>Existing Nth Mine (with bckgnd)</i>	Scenario 3: <i>Proposed Nth Mine (with bckgnd)</i>	
D1	26	11.165	11.165	0
D2	14	6.555	6.550	- 0.005
D3	23	11.165	11.165	0
D4	13	11.165	11.165	0
D5a	1	6.406	6.406	0
	4	6.406	6.468	0.062
	D5a_median ^d	6.406	6.398	- 0.008
D5b	7	6.021	6.021	0
D6	45	14.207	14.208	0.001
D7	48	14.253	14.253	0
D8	51	6.019	6.019	0
D9	86	6.021	6.021	0
D10	56	5.934	5.934	0
Other - near Rasp	73	10.790	10.785	- 0.005
Other – close	41	6.297	6.296	- 0.001
Other – far	19	3.769	3.769	0
PBH Residences	A	6.021	6.006	- 0.015
	I	6.021	6.579	0.558
	PBH residences_ median ^d	6.021	6.085	0.064

^a Refer to Figure 3.5.1 for locations of districts/areas.

^b Representative receptors as per Section 3.5.

^c Input parameters/assumptions as per Section 3.9.3 are the same for S1 and S3, assumed soil/dust Pb concentrations are different and are in Appendix C, and the different assumed Pb in PM₁₀ concentrations are in Appendix D.

^d For districts/areas where Pb deposition is predicted to be highest (District 5a and PBH residences), the minimum and maximum impacted receptor have been selected, along with a calculated median for the area (refer also to Table 3.5.1).

From Table 3.10.2:

- At most modelled receptors there is no change predicted for BPb as a result of the Proposal. At some receptors (R14, D5a_median, R73, R41, 'A', in districts/areas D2, D5a, Other – Rasp, Other – Close, and PBH residences, respectively), the predicted change in BPb is apparently beneficial, i.e. the modelling indicates a slight reduction in BPb as a result of the Proposal going ahead. While it is tempting to ascribe this to increased use of dust controls as a result of the Proposal, it is difficult to envision how this can have an effect in districts that are some distance from the mine (e.g. D2 and Other – Rasp). The predicted increase of 0.001 µg/dL at R45 in D6 and the predicted decreases of -0.001 to -0.015 µg/dL at other receptors can be regarded as minor to negligible.

District D5a (Northern boundary of North mine site):

The predicted increase in geometric mean BPb at the highest impacted receptor (R4) in district D5a is low (+ 0.062 µg/dL). For a hypothetical population of children living at R4, the modelling predicts the proportion of children with BPb above the NHMRC investigation target of 5 µg/dL would increase from approximately 70.095% to 70.802%, an increase of 0.707% (Figure 3.10.2). For the D5a district as a whole, the median change in lead exposure is modelled to result in a BPb decrease of 0.008 µg/dL, and 0.094% less children to be above 5 µg/dL (Figure 3.10.3). That is for the district as a whole no change in childrens' BPb is predicted.

Overall, BPb concentrations in 1 -2 year old children living at locations in district D5a with predicted lead deposition similar to R4 are anticipated to be only slightly affected by activities associated with the proposed North mine. For the majority of D5a, the change is predicted to be negligible.

PBH residences:

Due to its close proximity to the mining operations, Receptor 'I' , has the highest predicted annual deposited Pb in dust. This location also gives the highest predicted increase in geometric mean BPb as a result of the Proposal (0.558 µg/dL). Noting the absolute predicted increase is likely a conservative estimate (see Section 3.11) the absolute predicted increase at this location is approximately 10% of the current NHMRC (2015) target BPb investigation level of 5 µg/dL and a 28% increase over BPb expected from diet. . Furthermore for a hypothetical population of children, the proportion with BPb above the NHMRC investigation target of 5 µg/dL is modelled to increase from approximately 65.4% to 72%, an increase of 6.6% (Figure 3.10.4).

Using the median increase in lead exposure as an exposure index for the PBH residences as a group, the BPb modelling suggests an increase in geometric mean BPb of 0.064 µg/dL in 1 -2 year old children (i.e. 1.3% of the NHMRC target) and an additional 0.826% of children higher than 5 µg/dL (Figure 3.10.5).

Overall, the PBH residences are the most highly impacted by the North mine proposal. Although as a group there is a small predicted increase in children's predicted BPb, there is a residence within the group where the increase in BPb could be viewed as unacceptable (i.e. residence 'I').

However, ToxConsult has been advised the following.

- PBH has committed to actively monitor and manage BPb levels in children in all PBH Residences within the Mine Site, including undertaking measures to reduce BPb levels in any child recording a concentration higher than 5 µg/dL. This includes physical works at residences, education and assistance for parents and, as a last resort, relocation of the family.

The major contributor to modelled BPb changes is lead dust deposition from the proposed mine, and from the PEL (2017) report that fugitive and stack emissions at the proposed mine equally contribute to this deposition.

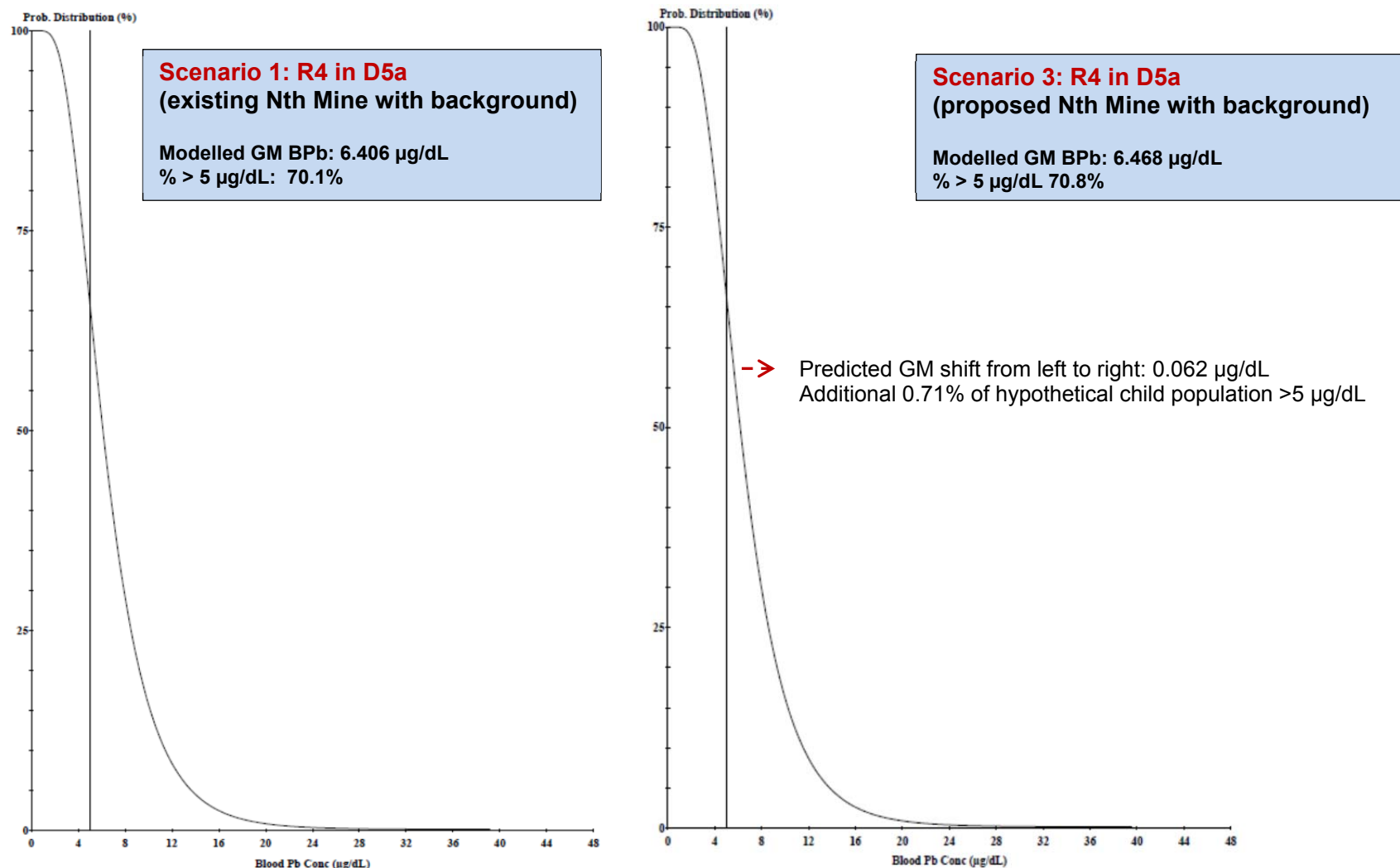


Figure 3.10.2: Probability distribution IEUBK outputs of Scenarios 1 and 3 for R4 (maximum exposed location in district 5a).
The vertical line marks the BPb target investigation level of 5 µg/dL.

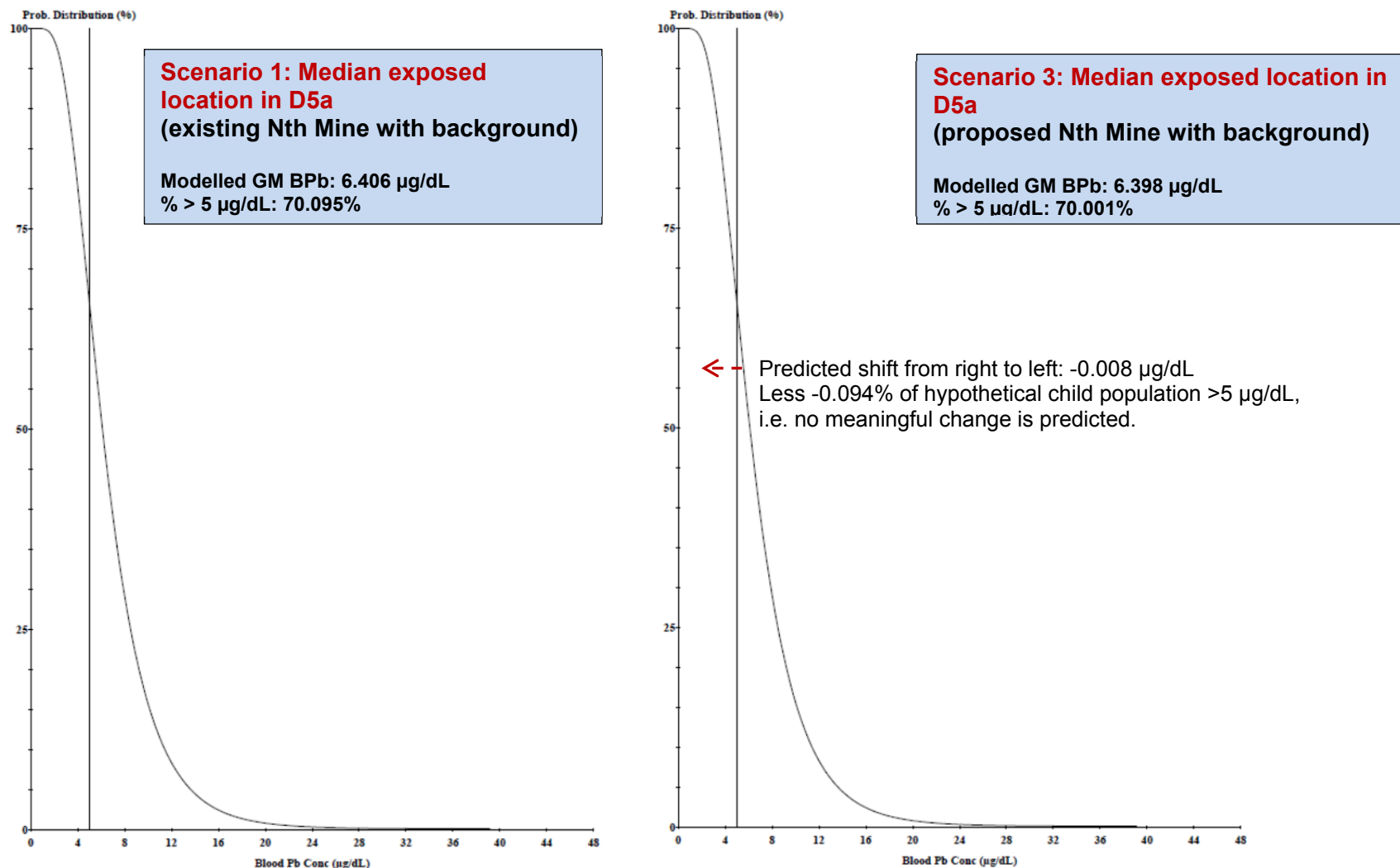


Figure 3.10.3: Probability distribution IEUBK outputs of Scenarios 1 and 3 for D5a_median (median exposed location in district 5a).
The vertical line marks the BPb target investigation level of 5 µg/dL.

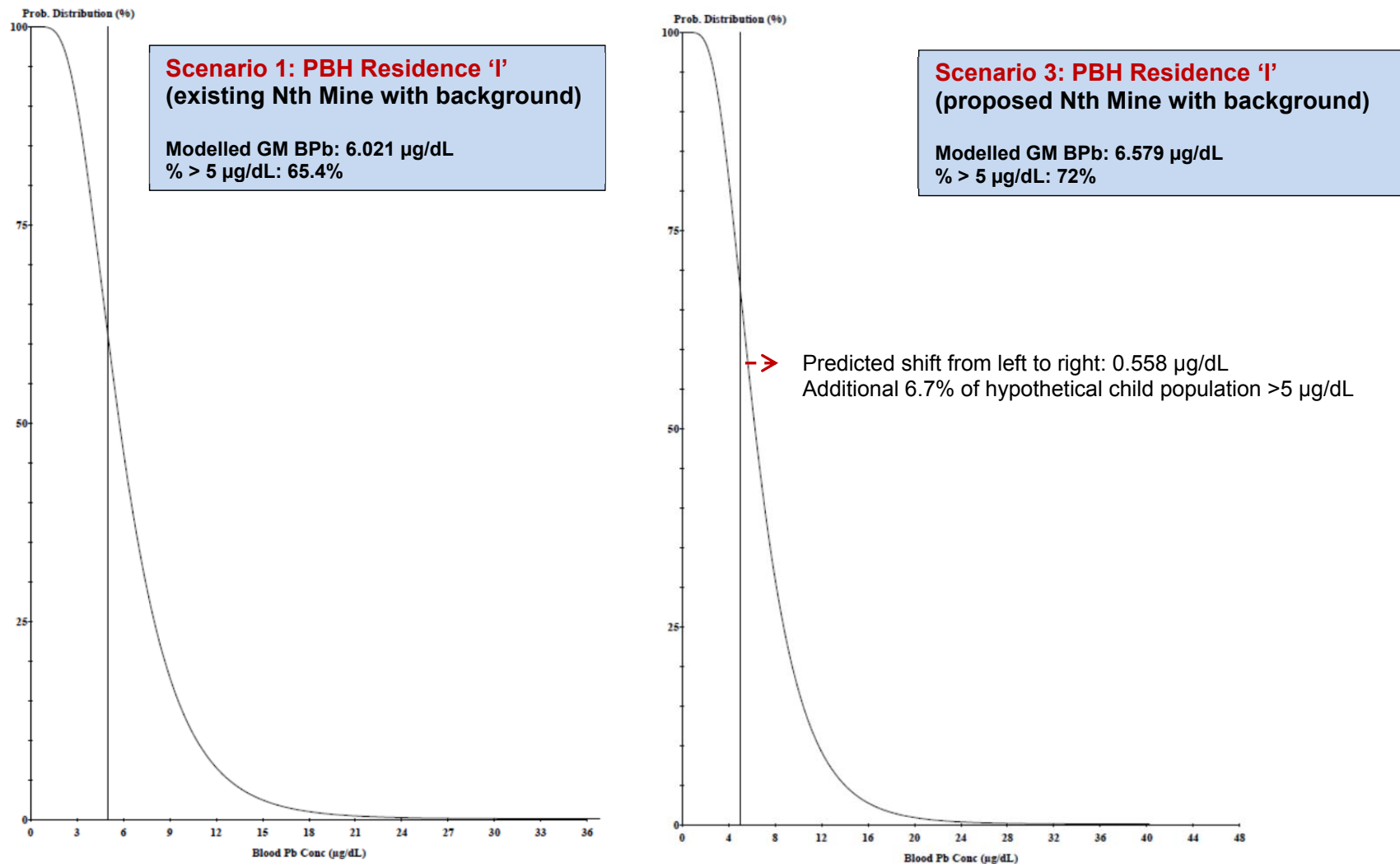


Figure 3.10.4: Probability distribution IEUBK outputs of Scenarios 1 and 3 for Receptor I (maximum exposed location in PBH residences).

The vertical line marks the BPb target investigation level of 5 µg/dL.

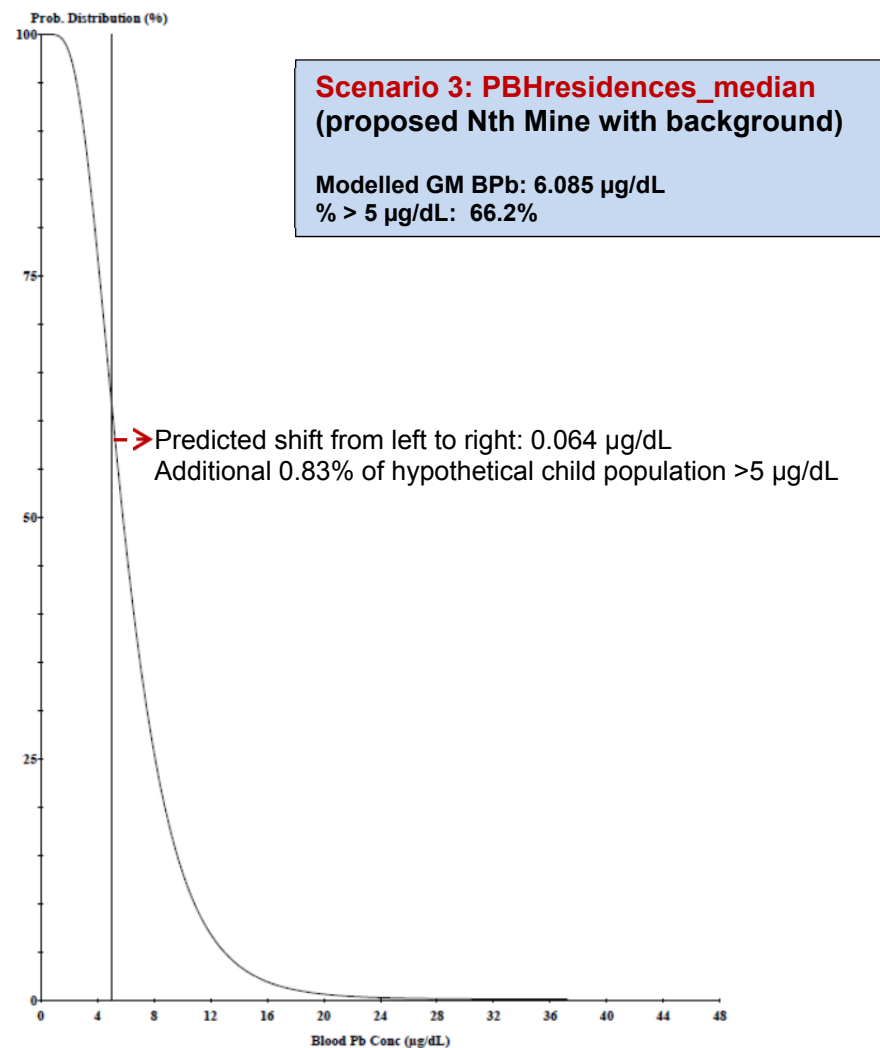
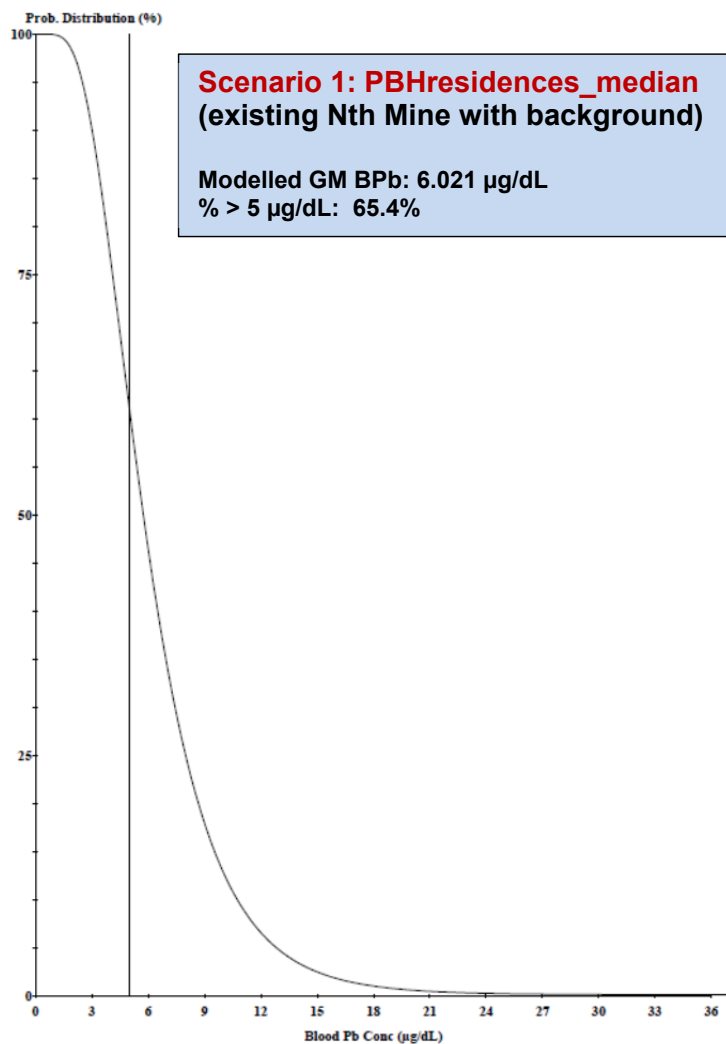


Figure 3.10.5: Probability distribution IEUBK outputs of Scenarios 1 and 3 for PBH residences_median (median exposed location in PBH residences).
The vertical line marks the BPb target investigation level of 5 µg/dL.

3.11. Uncertainty analysis

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.

In Section 3.10.2, two exposure circumstances (Scenarios) have been compared so that the influence of changes in lead exposure due to the proposed mine could be determined. These two sets of exposures have been evaluated using the same parameter values. The difference between the two scenarios lies in the environmental media lead concentrations. Consequently differences in children's predicted BPb levels between the two scenarios are largely independent of the actual parameter values that have been applied.

Table 3.11.1 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, accumulated soil calculations.)
- Internal exposure estimation (blood lead 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 3.11.1: Uncertainties in the risk assessment for mine lead emissions and potential effect on health risk assessment outcome.

Uncertainty/ Assumption	Comment	Effect on Risk Assessment
Exposure estimation <i>Modelled Pb concentrations in air and deposited dust. Provided to ToxConsult by Pacific Environment Limited (PEL 2017b).</i>	ToxConsult has not assessed the information provided by PEL for its representativeness for predicted air metal concentrations or metal deposition to soil at receptors. However we note PEL (2017b) has provided predictions for the maximum year of emissions, and considers the predictions to be conservative (PEL 2017a). The PEL information has been taken on face value.	The calculated increase in receptor soil concentrations has a major influence on estimation of Pb exposure and BPb levels. This is based on maximum deposition information from PEL (2017a, b) which therefore likely results in potential overestimation of soil metal concentrations at the receptor and exaggerates differences between the districts/areas and scenarios.
<i>Receptor soil concentrations</i>	The soil Pb concentrations were calculated assuming the maximum yearly ore extraction will occur for each of the 15 years of mining operation and deposition will be into the top 2cm of soil, and no loss of deposited metals occurs over the 15 years.	Smaller mixing depth would increase soil concentrations and larger mixing depth would decrease them. The assumption of zero loss of mine related deposited dust will over-estimate exposure and BPb levels. However mixing depth and loss have minor impact on the assessment because the same assumption is made for S1 & S3.
<i>Existing soil and air Pb concentrations</i>	Data for existing soil Pb concentrations were not available for individual receptor locations. However information for lead in soil at a number of locations roughly corresponding to the designated risk districts/areas was gleaned from recent publications. Existing concentrations of Pb in PM ₁₀ are based on 2016 annual average measured data at one of two monitoring stations (the closest monitoring station to the receptor location was taken to be representative of background).	Application of the published soil lead 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 assumption is made for S1 & S3. The existing air Pb concentration is based on measured data closest to the location of interest and because it is low, it has minimal impact on modelled BPb.

Uncertainty/ Assumption	Comment	Effect on Risk Assessment
<i>Background exposures</i>	For BPb modelling of Scenarios 1 and 3, background intake assumptions have been made to incorporate the contribution of background Pb exposure to BPb.	The modelled background BPb (2.2 µg/dL) from dietary assumptions was within the range of measured background BPb for Australian and overseas children from non-impacted communities (1.8 - 2.6 µg/dL). Thus the IEUBK modelling of 'background' BPb concentrations agrees well with published measurement data. However, background assumptions have minor impact on the assessment because the same assumptions are made for S1 & S3.
<i>Exclusion of home-grown foodstuff pathway for Pb</i>	Literature information showed risk 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).	Exclusion of the home-grown produce pathway for Pb is considered appropriate and is unlikely to affect the outcome of the HHRA. It is missing from all scenarios.

Uncertainty/ Assumption	Comment	Effect on Risk Assessment
<i>Bioaccessibility of Pb from soil and dust</i>	The actual bioaccessibility of lead from the existing receptor location soils at Broken Hill is unknown. There are two estimates of bioaccessibility available: Yang & Cattle (2015) and Toxikos (2010). They have used different techniques which have provided very different bioaccessibility values. Because data are not specifically available for the soils and dusts in question this HHRA has used the highest of the two estimates. When taking into account the incomplete absorption of lead from the gut by children the absolute bioavailability used for BPb modelling is the same as the default in the IEUBK BPb model.	Use of the highest bioaccessibility may overestimate predictions of BPb concentrations. Hence the absolute differences in BPb predictions between Scenarios 1 and 3 could be overpredicted by assuming a high bioaccessibility. If the lower bioaccessibility of 7% were used in the assessment instead of the assumed 60%, the predicted absolute BPb levels would be lower. For example, for PBH residence 'I', the predicted BPb and % above 5 µg/dL using a bioaccessibility of 7% are given below: - Scenario 1: 2.893 µg/dL (% > 5 µg/dL = 12.213%) - Scenario 3: 2.971 µg/dL (% > 5 µg/dL = 13.407%) Using a 60% bioaccessibility the results are as follows: - Scenario 1: 6.021 µg/dL (% > 5 µg/dL = 65.4%) - Scenario 3: 6.579 µg/dL (% > 5 µg/dL = 72%) Thus using a 7% bioaccessibility, the difference in BPb as a result of the Proposal amounts only to 0.078 µg/dL (approx. a factor of 7 lower than the change predicted using a 60% bioaccessibility, i.e. 0.558 µg/dL).

Uncertainty/ Assumption	Comment	Effect on Risk Assessment
Receptor Uncertainty <i>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 lead and other metals from the mine site.</i>	It is widely accepted by health authorities that the effects of lead are well correlated with blood lead levels. Intrinsic variability (i.e. toxicodynamic variability) has not been identified as a major contributor to the effects of lead. When a given population is exposed to the same environmental concentrations of lead, 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). This is the result of behavioural differences between persons resulting in different personal exposures (e.g. extent of time outdoors, extent of hand mouth activity, personal and house hygiene etc) and differences that affect the absorption of lead.	Impact on the conclusions of the HRA is minimal. Because: 1. Worst case Pb air concentrations and deposition have been used, which together with high end background exposure, ensure the most exposed persons are included in the HHRA. 2. Worst case and/or high end exposure assumptions were used as input to the IEUBK model. 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 blood lead 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 lead 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 assessment because the same assumptions are made in S1 & S3.

4. Risk assessment for other metals

4.1 Overview

Risk of exposure to chemicals acting via a threshold mode of action can be assessed by comparing estimated exposures to health-based toxicity reference values (TRVs). TRVs used in this assessment were:

- Health based acute air quality guidelines, and
- Tolerable daily intakes (TDI) for long term (assumed lifetime) exposure.

Risk of exposure to chemicals acting via a non-threshold (i.e. genotoxic) mode of action is typically assessed by calculating the cancer risk associated with the estimated exposure and comparing this with an 'acceptable' level of risk.

The metals assessed are silver (Ag), arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), iron (Fe), mercury (Hg), manganese (Mn), nickel (Ni) and zinc (Zn).

The HHRA for metals other than Pb has been undertaken as follows for Scenarios 1 (existing North Mine) and 2 (proposed North Mine):

- Acute health risks of air emissions from the Proposed North Mine are judged by comparison of 1-hour modelled (provided by PEL 2017b) metal concentrations in PM₁₀ to acute air guideline values for the same averaging time set for protection of human health (Section 4.3.1). The latter has been undertaken for a number of modelled air concentration percentiles (99.9th, 99th, 97.5th, 95th, and 50th). The resulting ratio is called a hazard quotient (HQ). As there were no data on background concentrations of metals (other than Pb) in air, this assessment is for the Proposal only and does not include metal concentrations from sources other than the North Mine operations.
- Comparison of modelled chronic air concentrations with chronic air guideline values has not been undertaken as the TDI assessment herein inherently considers chronic inhalational exposure. Chronic risks are judged in this HHRA by calculation of lifetime time-weighted average daily intakes (this includes combined intakes from air [inhalation] and soil/dust [ingestion]) and comparison with tolerable daily intakes (TDIs) (Section 4.3.2). The latter have been adjusted for high-end 'background' exposures. The resulting ratio of the intake to the background-adjusted TDI is a HQ. The exposure pathways considered are the same as those for Pb described in

Section 3.2, except that for other metals, plant uptake of metals from soil may or may not be significant. This has been considered by adjusting the TDI to account for this pathway (and background intakes). The adjustment is metal-specific (Section 4.3.2).

- In addition, for those metals for which the health effect of concern is cancer (cadmium and nickel), and whose mode of action is by directly altering genetic material (i.e. they are genotoxic), cancer risk from inhalation exposure was calculated by multiplying the annual average concentration in PM₁₀ by an estimate of the carcinogenic potency of the metal (Section 4.3.3). The latter is commonly called the unit risk factor. The resulting estimated 'cancer risk' was compared with a target acceptable risk of 1×10^{-5} as suggested by enHealth (2012a) and NEPM (2013). Similar to the acute air assessment, this comparison is for the Proposal only and does not include metal concentrations from sources other than the North Mine operations.

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, and that possibly multiple sub-threshold exposures may result in an effect. 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, US EPA 1989a, NRC 2008). The HHRA methodology for metals other than Pb is outlined in Figure 4.1.1.

Interpretation of Hazard Quotients and Hazard Indices

If the HQ for the acute air assessment or the cumulative exposure pathways in the TDI assessment is greater than one ($HQ > 1$) then there is a possibility that the TDI or acute air guideline for that substance might be exceeded. This does not directly equate with possibility of harm as the TDI and acute air guideline values have inherent safety margins incorporated within them. In calculating HQ's for chronic exposure the TDI is adjusted for potential background exposure which is mostly from diet. No adjustment for background exposure could be undertaken for the acute risk assessment, as there was no monitoring data for metals other than Pb in Broken Hill.

An 'unacceptable' risk, as defined by regulatory standards and requirements, is often determined as an exposure being larger than the 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 conservatism incorporated into the exposure assessment and toxicity reference values.

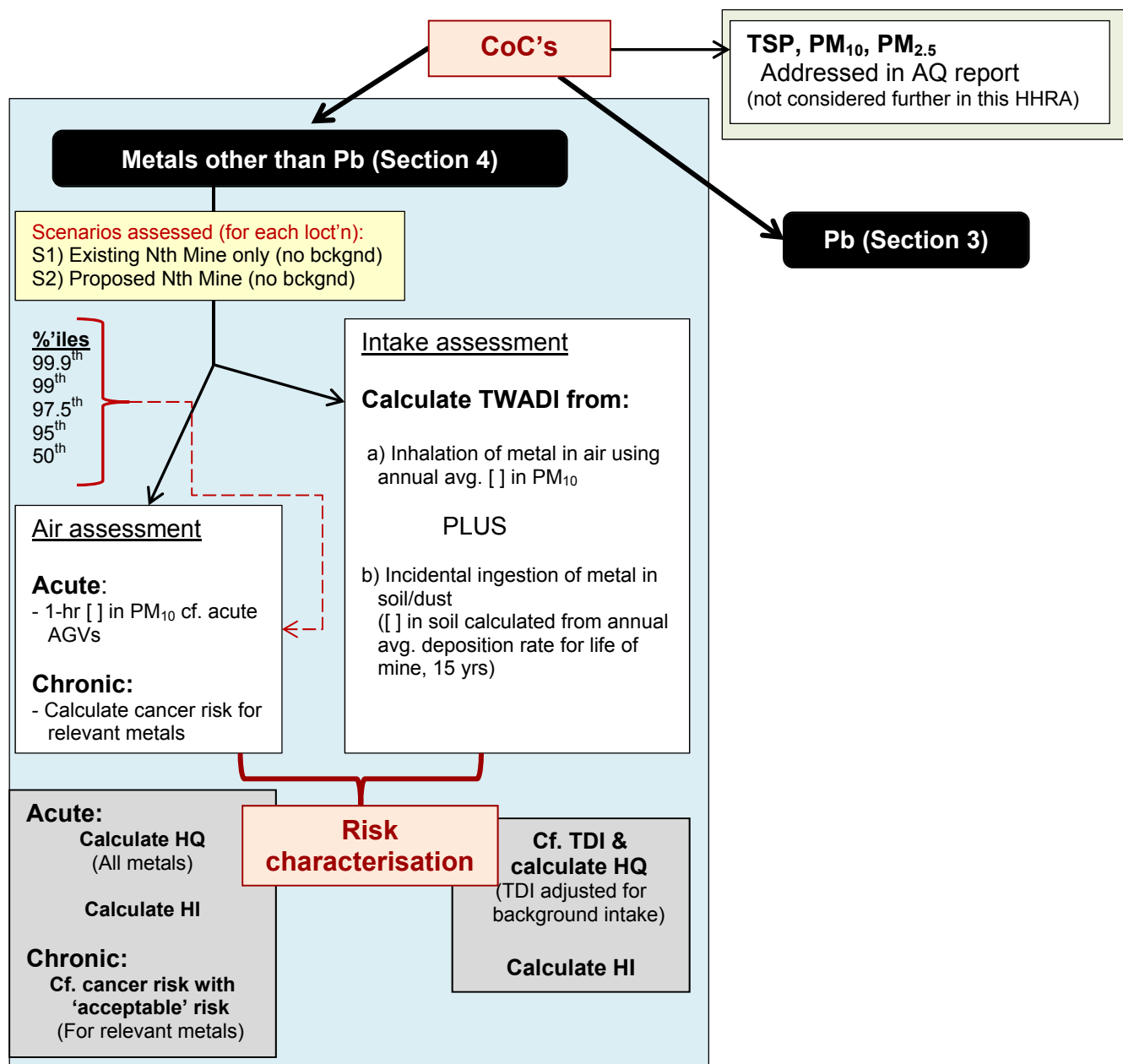


Figure 4.1.1: Summary of HHRA methodology for metals other than lead.

CoC's = Chemicals of Concern; AQ = Air Quality; bckgnd = background; [] = concentration; %'iles = percentiles; cf. = compared with; TWADI = Time-weighted Average Daily Intake; HQ = Hazard quotient.

4.2 Interactions between metals

The hazard index, i.e. the sum of hazard quotients, is a screening risk assessment technique commonly used to judge whether there is concern for additive effects between chemicals. Similar to the interpretation of hazard quotients, if the hazard index is less than unity 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 Toxicity assessment of other metals

4.3.1 Acute air guideline values

Acute air guideline values for metal CoC's were sourced from competent national and international agencies. The values selected for use in this HHRA are summarised in Table 4.3.1.

Table 4.3.1: Acute air guideline values for metal CoC's

Compound	Health endpoint for guideline value	Critical effect level [mg/m ³] ^b	UF ^c	Air Guideline Value [µg/m ³] ^a	Averaging time for guideline value	Particulate fraction ^f	Source
Silver (Ag)	Effects of concern are associated with long term exposure. No acute health guideline located.						
Arsenic (As)	Developmental toxicity	0.2 (LOAEL)	1,000	0.2 (0.2) ^d	4 hours (1 hour) ^d	- (PM ₁₀) ^g	OEHHA (2008)
Cadmium (Cd)	Effects of concern are associated with long term exposure. No acute health guideline located.						
Chromium (as Cr ^{III})	No acute health guideline located.						
Copper (Cu)	Based on prevention of metal fume fever	1 (NOAEL)	10	100	1 hour	- (PM ₁₀) ^h	OEHHA (2008)
Iron (Fe)	No acute health guideline located.						
Mercury (Hg)	CNS disturbances in offspring	1.8 (LOAEL)	3,000	0.6	1 hour	- (PM ₁₀) ⁱ	OEHHA (2008)

Compound	Health endpoint for guideline value	Critical effect level [mg/m ³] ^b	UF ^c	Air Guideline Value [µg/m ³] ^a	Averaging time for guideline value	Particulate fraction ^f	Source
Manganese (Mn)	No acute health guideline located.						
Nickel (Ni)	Slight changes in lung function in asthmatics	0.033 (LOAEL)	6	6	1 hour	- (PM ₁₀) ^j	OEHHA (2008)
Zinc (Zn)	Metal fume fever	Based on OEL of 2 (TWA) ^e	10	200	1 hour	PM ₁₀	ACGIH (2015)

- = not reported in reference; UF = Uncertainty Factor.

^a Obtained from a variety of competent authorities where documentation is available for subsequent verification of the guideline if required.

^b NOAEL = No Observed Adverse Effect Level, LOAEL = Lowest Observed Adverse Effect Level, TWA = Time weighted average.

^c UF = Uncertainty factor applied to the critical effect level (i.e. NOAEL or LOAEL).

^d The OEHHA (2008) acute air guideline value for arsenic is based on a 4-hour experimental exposure, however OEHHA (2008) indicate it can be applied to a 1-hour averaging time without temporal adjustment. This is because the critical period of exposure for a developmental effect may be very short relative to the study duration.

^e The only acute air guideline value which could be located for zinc was from the Ontario Ministry of Environment (Ontario MoE 2012), 120 µg/m³ as a 24-hour average for zinc (particulate). Because the supporting documentation of the guideline value was unavailable and the basis of the guideline value is unknown, the ACGIH occupational exposure limit (OEL) for zinc oxide was chosen to derive a health-based air guideline value for zinc. The OEL is based on the development of "metal fume fever" following inhalation to zinc oxide fumes and to a lesser extent zinc metal and many other zinc compound fumes. Symptoms for "metal fume fever" generally appear a few hours after exposure, and are reversible 1-4 days following cessation of exposure. Therefore, the symptoms are related to acute exposure to zinc oxide. The OEL was converted to an acute air guideline value for zinc through the inclusion of an adjustment factor of 10 to account for 8 hours at work vs. 24 hour ambient exposure and 5 day working week vs. 7 day ambient exposure ($7/5 \times 24/8 = 4.2$), multiplied by a factor of 3.2 (to account for human variability), giving an UF of 13.44. This was then multiplied by 0.8 to account for the molecular weight ratio of zinc in zinc oxide, giving an UF of 10.8. This was rounded down to 10. The resulting air guideline value (AGV) of 200 µg/m³ over a 1-hour averaging time works out to be lower than the Ontario MoE AGV of 120 µg/m³ over a 24-hour averaging time; therefore, the use of an OEL based on known acute effects in the derivation of an AGV for zinc is conservative.

^f This is the particle size fraction in dust (e.g. PM₁₀ or TSP) that the guideline applies to.

^g The experiment underpinning the acute AGV used an aerosol spray of As₂O₃, particle size not provided. It is assumed the AGV is applicable to the respirable (i.e. PM₁₀) fraction in air.

^h Since the data underpinning the acute AGV for copper comes from human exposures to copper fume (particle size not reported) and fumes are generally regarded as being of small particle size, it is assumed the AGV is applicable to the respirable (i.e. PM₁₀) fraction in air.

ⁱ The experiment underpinning the acute AGV used a Hg⁰ vapour, particle size not provided. It is assumed the AGV is applicable to the respirable (i.e. PM₁₀) fraction in air.

^j The human experiment underpinning the acute AGV for nickel involved exposure of asthmatics to nickel sulphate (particle size not reported). It is assumed the AGV is applicable to the respirable (i.e. PM₁₀) fraction in air.

4.3.2 Tolerable daily intakes

A toxicity category summary for the metals assessed in this HHRA is provided in Appendix A. Table 4.3.2 summarises tolerable daily intake (TDI's) for all metals assessed in this HHRA, except for Pb which was evaluated using predicted BPb levels (see Section 3). The TDI's were adjusted for assumed high end background intakes. The adjusted TDI's are also presented in the table. The adjusted TDI's represent the dose of metal (adjusted for background intakes) which can be ingested every day over a lifetime without adverse health effects.

Table 4.3.2: Tolerable daily intakes (TDIs) for metal CoC's

Metal CoC	TDI (µg/kg/d)	TDI Basis (reference)	Assumed background intake, as % of TDI ^f (reference)	Adjusted TDI used in HHRA (µg/kg/d)
Silver (Ag)	400	Based on oral NOAEL for argyria in humans for a total lifetime intake of 10 g of silver on the basis of human case reports and long-term experiments. Use of UF not described (NHMRC and NRMMC 2016).	1% (NHMRC 2016) ^a	396
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 value to international agency deliberations.	54.5% (NEPM 2013) ^d	0.91
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 β2MG urinary excretion in susceptible population (≥50yrs) (JECFA 2011b).	93.4% (NEPM 2013) ^e	0.053

Metal CoC	TDI (µg/kg/d)	TDI Basis (reference)	Assumed background intake, as % of TDI ^f (reference)	Adjusted TDI used in HHRA (µg/kg/d)
Chromium (as Cr ^{III})	3	Based on an evaluation of available literature for a TDI by the UK EA (2002a). The TDI is based on an RfD set by the US EPA 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). The US EPA has also derived an RfD of 1,500 µg/kg/day for Cr ^{III} (US EPA 1998). Because of the difficulties in characterising oxidation state of Cr, but considering that it is expected that much of the Cr present in soil will be in the form of Cr ^{III} rather than Cr ^{VI} , the UK EA recommended to use the US EPA RfD as a TDI.	46.9% (NEPM 2013) ^b	1.6
Copper (Cu)	130	WHO (2011b) note that intakes derived from consuming 2-3 L of water/day are not expected to exceed a tolerable upper intake level of 10 mg Cu/day. This upper intake level is equal to a TDI of 0.13 mg/kg/day for a 78kg adult. This is consistent with an oral TDI of 0.14 mg/kg/day derived by RIVM (2001) based on an oral chronic mouse study.	70% (NEPM 2013)	39
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) ^c	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) ^g	0.24

Metal CoC	TDI (µg/kg/d)	TDI Basis (reference)	Assumed background intake, as % of TDI ^f (reference)	Adjusted TDI used in HHRA (µg/kg/d)
Manganese (Mn)	6.4	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.	0% (background intake already included in derivation)	6.4
Nickel (Ni)	12	Derived from an acute LOAEL of 0.012 mg/kg/day established after oral provocation (via drinking water) of 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 2011b).	85.2% (NEPM 2013) ^h	1.8
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

CoC = Chemical of Concern; TDI = Tolerable Daily Intake; NOAEL = No Observed Adverse Effect Level; UF = Uncertainty Factor; PTMI = Provisional Tolerable Monthly Intake; β2MG = beta-2-microglobulin; RfD = Reference Dose (US EPA terminology); DW = Drinking Water; BMDL₁₀ = Benchmark Dose Lower 10% response level.

^a NHMRC (2016) indicate daily dietary intake of silver 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. An assumption of background intake of 1% of the TDI has been made to account for any other potential background exposure pathways including silver in home-grown produce.

^b NEPM (2013) does not provide background intakes for Cr^{III}. However for Cr^{VI}, in derivation of a soil health investigation level, NEPM (2013) assumed background intakes from other sources could constitute up to 10% of the TDI. Of the left-over TRV, 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 TRV). Thus total background intake of Cr^{VI} could be 46.9% of the TRV. The same assumption has been made for Cr^{III} in this report.

^c Background intake corresponds to the 95th percentile intake of iron 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 iron 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 20% and includes home-grown produce.

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

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

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

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

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

4.3.3 Unit risks (cancer)

From Appendix A, two of the metals assessed in this HHRA are considered to induce lung cancer in humans at high concentrations when inhaled (occupational exposures) via a genotoxic mode of action. The two metals are cadmium and nickel. For these metals, lifetime cancer risks have been calculated using unit risks from reputable national and international agencies.

For air borne carcinogens, the “unit” is generally $1 \mu\text{g}/\text{m}^3$ 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 $1 \mu\text{g}/\text{m}^3$ 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 $1 \mu\text{g}/\text{m}^3$ for their lifetime then one individual may develop cancer. This probability is expressed as 0.5 in 100 or 0.5×10^{-2} per $\mu\text{g}/\text{m}^3$, written as $0.5 \times 10^{-2} (\mu\text{g}/\text{m}^3)^{-1}$. 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 (1×10^{-6}) or one in one hundred thousand (1×10^{-5}) (see also Section 4.5.3).

Unit risks for cadmium and nickel are presented in Table 4.3.3 below. ‘Cancer risk’ for each metal in Table 4.3.3 was calculated for each receptor by multiplying the annual average modelled metal in PM_{10} concentration by the unit risk factor. The cancer risks for cadmium and nickel were then added to estimate a cumulative ‘cancer risk’. This was compared with a target acceptable risk of 1×10^{-5} as suggested by enHealth (2012a) and NEPM (2013).

Table 4.3.3: Unit risks for cadmium and nickel

Metal	Health endpoint	Unit Risk [$\mu\text{g}/\text{m}^3$] ⁻¹	IARC group ^a	Source
Cadmium (Cd)	Lung cancer in workers	1.8×10^{-3}	1	US EPA (1987)
Nickel (Ni)	Lung cancer in workers	3.8×10^{-4}	1	WHO (2000a)

^a IARC Cancer classifications are briefly described in Appendix A. IARC group 1 substances are classified as human carcinogens.

4.4 Exposure equations and parameterisation for TDI assessment

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.

The TDI comparison was performed for Scenarios 1 (existing North Mine) and 2 (Proposed North Mine) against the TDI's adjusted for high-end potential background exposures from diet, water and air; the latter includes consideration of metal intake from home-grown produce. 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). The overall lifetime weighted daily intake for all life stages, called the time weighted average daily intake or TWADI, has been compared to the background-adjusted TDI to generate a HQ and a HI. If these 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.

4.4.1.1 Ingestion of metals in soil/dust deposited from North Mine site

Estimated daily intake via ingestion of soil/dust was calculated using Equation 4.1 below (from enHealth 2012a).

I_{ingest_s} ($\mu\text{g/kg/day}$) =

$$\frac{C_s (\mu\text{g/g}) \times IR_{as} (\text{mg/day}) \times CF (\text{g/mg}) \times EF (\text{day/yr}) \times ED_x (\text{yr}) \times BAC_{\text{soil}} \times BA_{\text{oral}}}{365 \text{ d/yr} \times BW_{as} (\text{kg}) \times AT_x (\text{yrs})}$$

.....Equation 4.1

Where:

I_{ingest_s} = Life stage intake of metal/metalloid from soil via ingestion ($\mu\text{g/kg bw/day}$).

C_s = Concentration of metal in soil ($\mu\text{g/g}$). Calculated from deposition data as per Section 2.6; varies by receptor and scenario (Appendix C).

IR_{as} = Age-specific rate of soil ingestion per day (mg/day) (Section 4.4.2).

CF = Conversion factor from g to mg (i.e. 10^{-3}).

EF = Exposure frequency (days/yr). Residential exposure assumes exposure throughout the whole year (365 days/year).

ED_x = Age-interval exposure duration (yr). Number of years in relevant age dependent exposure span²¹.

BAC_{soil} = Bioaccessibility of metal in soil. Assumed to be 4% for arsenic (as per results of PBET testing for Broken Hill, reported by Toxikos 2010) and conservatively assumed to be 100% for other metals.

BA_{oral} = Absolute bioavailability of ingested metal (i.e. absorption from the GI tract). Assumed to be the same as the bioavailability in the study from which the TDI was derived. Unitless. Since the TDI's for all metals are based on applied doses in dietary or drinking water studies (Section 4.3.2), the bioavailabilities of all metals assessed in this section were assumed to be 100%.

BW_{as} = Age-specific body weight in kg (Section 4.4.2).

AT_x = Averaging time (yrs). This is the age-specific exposure period, and is equal to the exposure duration.

4.4.1.2 Inhalation of metals in airborne dust from mine site

Estimated daily metal intake via inhalation of airborne dust was calculated using Equation 4.2 below.

I_{inhal} ($\mu\text{g/kg/day}$) =

$$\frac{C_A (\mu\text{g/m}^3) \times VR_{as} (\text{m}^3/\text{day}) \times EF (\text{day/yr}) \times ED_x (\text{yr}) \times BA_{\text{inhal}}}{365 \text{ d/yr} \times BW_{as} (\text{kg}) \times AT_x (\text{yr})}$$

..... Equation 4.2

Where:

I_{inhal} = Intake of metal from air delivered from the mine site via inhalation ($\mu\text{g/kg bw/day}$).

C_A = Modelled annual average concentration of metal in PM_{10} fraction in air ($\mu\text{g/m}^3$). Varies with receptor (Appendix D).

VR_{as} = Age-specific ventilation, i.e. inhalation rate (m^3/day) (Section 4.4.2).

EF = Exposure frequency (days/yr). Residential exposure assumes exposure throughout the whole year (365 days/year).

²¹ 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).

ED_x = Age-interval exposure duration (yr). This refers to the number of years the resident is exposed. The resident is assumed to have lived at the receptor since birth.

BA_{inhal} = Bioavailability (i.e. absorption) of inhaled metal. Unitless. Conservatively assumed to be 100%.

BW_{as} = Age-specific body weight in kg (Section 4.4.2).

AT_x = Averaging time (yrs). This is the age-specific exposure period, and is equal to the exposure duration.

4.4.1.3 Total age-specific daily intake

Total intakes were calculated for four age groups using Equation 4.3:

- 0.5 up to 3 years.
- 3 up to 13 years.
- 13 up to 18 years.
- 18 up to 82 years (the average Australian life expectancy).

$$I_{total\_as} (\mu\text{g/kg/day}) = I_{ingest\_s} + I_{inhal}$$

.....Equation 4.3

Where:

I_{total_as} = Total age-specific intake. The sum of metal/metalloid intake via soil ingestion and inhalation of air.

I_{ingest_s} = Intake of metals from soil via ingestion ($\mu\text{g/kg bw/day}$). Calculated using Equation 4.1.

I_{inhal} = Intake of metal from air delivered from the mine site via inhalation ($\mu\text{g/kg bw/day}$). Calculated using Equation 4.2.

4.4.1.4 Lifetime time-weighted average daily intake (TWADI)

Potential lifetime average daily intake from the North Mine was calculated using Equation 4.4.

$$I_{lifetime} (\mu\text{g/kg/day}) = \frac{(I_{total(0.5-3)} \times 365 \times AT_x) + (I_{total(3-13)} \times 365 \times AT_x) + (I_{total(13-18)} \times 365 \times AT_x) + (I_{total(18-82)} \times 365 \times AT_x)}{AT_{lifetime} (\text{days})}$$

..... Equation 4.4

Where:

$I_{lifetime}$ = Total time-weighted average daily intake of metal over a lifetime ($\mu\text{g/kg/day}$).

$I_{total(0.5-3)}$ = Total intake of metal for a child aged 0.5-3 years ($\mu\text{g/kg/day}$).

$I_{total(3-13)}$ = Total intake of metal for a child aged 3-13 years ($\mu\text{g/kg/day}$).

$I_{total(13-18)}$ = Total intake of metal for an adolescent/adult aged 13-18 years ($\mu\text{g/kg/day}$).

$I_{total(18-82)}$ = Total intake of metal for an adult aged 18-82 years ($\mu\text{g/kg/day}$).

365 = days/year of exposure. Assumed to occur every day of the year.

AT_x = Averaging time (years). This refers to the age-specific exposure, and is the same as the exposure duration.

$AT_{lifetime}$ = Averaging time for lifetime exposure (82 years $\times$ 365 days/year = 29,930)

The total lifetime intake was then compared to the background-adjusted TDI of the metal to generate a hazard quotient, as per Equation 4.5.

$$HQ = \frac{I_{\text{lifetime}} (\mu\text{g/kg/day})}{TDI_{\text{adj}} (\mu\text{g/kg/day})} \quad \dots\dots\dots \text{Equation 4.5}$$

Where:

HQ = Hazard quotient for a metal at each receptor. Unitless.

I_{lifetime} = Average lifetime daily exposure of metal for 82 year lifespan ($\mu\text{g/kg/day}$).

TDI_{adj} = Tolerable daily intake over an individual's lifetime ($\mu\text{g/kg/day}$), adjusted for potential high-end background intakes from diet, water and air; the latter also considered potential intakes from home-grown produce (Section 4.3.2).

The hazard quotients (HQ's) for individual metals were added together to calculate a hazard index (HI) as per Equation 4.6.

$$HI = HQ_{\text{metal1}} + HQ_{\text{metal2}} + HQ_{\text{metal3}} + HQ_{\text{metal} \dots i} \quad \dots\dots\dots \text{Equation 4.6}$$

Where:

HI = Hazard index for metal CoPCs assessed in this HHRA (excludes Pb, which has been assessed separately) (unitless).

$HQ_{\text{metal1, metal2, metal} \dots i}$ = Hazard quotient for individual metals (unitless).

4.4.2 Exposure parameterisation

Exposure calculations rely on a number of assumptions for exposure in the absence of site-specific information. Where possible this risk assessment incorporates exposure factors from contemporary Australian studies (enHealth 2012b), where this is not appropriate data from recently published US Exposure Factors Handbooks (US EPA 2008, 2011) has been applied with reasoning why it has been chosen.

Age-specific physiological parameters (e.g. body weight, inhalation 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 ($[(0.5 + 3)/2 = 1.75 \text{ yrs, rounded to 2 yrs}]$).

A summary of the exposure parameters used in the equations above for each life stage is given in Table 4.4.1.

Table 4.4.1: Summary of exposure parameters

Parameter	Life Stage				Comment
	Infant 0.5-3 yr	Child 3-13 yr	Adolescent 13-18 yr	Adult 18-82 yr	
SOIL/DUST INGESTION					
Soil concentration (µg/g) C_s	-	-	-	-	Varies by receptor and metal and is calculated from modelled soil deposition data (Section 2.6, Appendix C).
Soil ingestion (mg/d) IR_{as}	100	100	50	50	Central tendency values (outside soil + indoor dust) (enHealth 2012b).
Conversion factor (g/mg) CF	10^{-3}	10^{-3}	10^{-3}	10^{-3}	Conversion factor from g to mg.
Exposure Frequency (day/yr) EF	365	365	365	365	Assumed to be continuous and occur every day of the year.
Age-interval exposure Duration (yr) ED_x	2.5 ^a	10	5	64	This refers to the duration of exposure of the age range.
Bioaccessibility of metal in soil (unitless) BAC_{soil}	-	-	-	-	Assumed to be 4% (i.e. 0.04) for arsenic (as per results of PBET testing for Broken Hill, reported by Toxikos 2010) and conservatively assumed to be 100% for other metals.
Bioavailability of ingested metal (unitless) BA_{oral}	-	-	-	-	Assumed to be the same as the bioavailability in the study from which the TDI was derived. Since the TDI's for all metals are based on applied doses in dietary or drinking water studies (Section 4.3.2), the bioavailabilities of all metals (except lead) were assumed to be 100%.
Age interval body weight (kg) BW_{as}	11	24	56	78	Average body weight by age range (enHealth 2012b).
Age-specific averaging time (yrs) AT_x	2.5	10	5	64	Equal to exposure duration.
Averaging time [exposure duration (82 years) x days (365) per year] $AT_{lifetime}$	29,930	29,930	29,930	29,930	Life expectancy (82 yrs) x 365 days/year.
INHALATION OF METAL FROM MINE SITE AIRBORNE DUST					
Concentration of compound in air (µg/m ³) C_A	-	-	-	-	Modelled concentration of compound in PM ₁₀ fraction in air (PEL 2017b). Varies by receptor and by metal (Appendix D).
Ventilation, i.e. Inhalation Rate (m ³ /d) VR_{as}	8	12.4	15.1	15	Average inhalation rate by age range (enHealth 2012b).

Exposure Frequency (day/yr)	EF	365	365	365	365	Assumed to be continuous and to occur every day of the year.
Age-interval exposure Duration (yr)	ED _x	2.5 ^a	10	5	64	This refers to the duration of exposure of the age range.
Age interval body weight (kg)	BW _x	11	24	56	78	Average body weight by age range (enHealth 2012b).
Age-specific averaging time (days)	AT _x	2.5	10	5	64	Equal to exposure duration.
Averaging time [exposure duration (82 years) x days (365) per year]	AT _{lifetime}	29,930	29,930	29,930	29,930	Life expectancy (82 yrs) x 365 days/year.
Bioavailability of inhaled metal (unitless)	BA _{inhal}	1	1	1	1	Absorption of metal via the lungs is assumed be 100%.

^a Note that exposure was calculated as an average daily intake over a lifetime from all exposure routes, starting with the age range of 0.5-3 years. Neonate exposure was not considered as it is expected exposure to receptor site soil will be very low for the first 0.5 years of life.

4.5 Results and conclusions

4.5.1 Comparison with acute AGVs

For assessment of acute health risks from the Proposal, the modelled 1-hour average metal concentrations in PM₁₀ (for a number of percentiles: 99.9th, 99th, 97.5th, 95th, and 50th) were compared with acute AGVs from reputable international authorities (Section 4.3.1). Hazard quotients (HQ's) and an overall hazard index (HI) were generated for each receptor and for the two scenarios evaluated. The results are presented for each location in Appendix E. Note there were no data on background concentrations of metals (other than Pb) in air, therefore this assessment is for the Proposal only and does not include metal concentrations from sources other than the North Mine operations.

The 99.9th percentile can be regarded as a maximum potential concentration, as the modelled 'maximum' is very unstable²². The other percentiles can be interpreted as follows, using the 97.5th percentile as an example. The metal concentration in air is expected to be lower than the 97.5th percentile concentration 97.5% of the time (i.e. 0.975 x 8,760 hours per year = 8,541 hours or 356 days).

²² Verbal communication with PEL.

Hazard indices (HI) for acute air exposure in **Scenario 1** (the existing North Mine) ranged from 0.0000006 (for the 50th percentile at R26 in District 1 and R82 in District 10) to 0.005 (for the 99.9th percentile at PBH Residence 'D') (see Figure 2.4.1 for receptor locations).

In **Scenario 2** (the Proposed North Mine), acute HI ranged from 0.000001 (for the 50th percentile at R51 and R58 in District 8) to 0.4 (for the 99.9th percentile at PBH Residence 'I', the highest exposed location within the modelling domain). The HI for the two areas with the highest predicted 1-hour average air concentrations (District 5a and PBH residences) are presented in Figure 4.5.1.

All HI's are below the target hazard index of 1, indicating the likelihood of exceeding the health-based acute AGVs as a result of the Proposal is low. The assessment is conservative in that it assumes additivity between metals (see Section 4.2). Particularly for the 99.9th percentile, the assessment uses the 'maximum' modelled concentration for each of the metals to calculate the combined HI, which is very conservative.

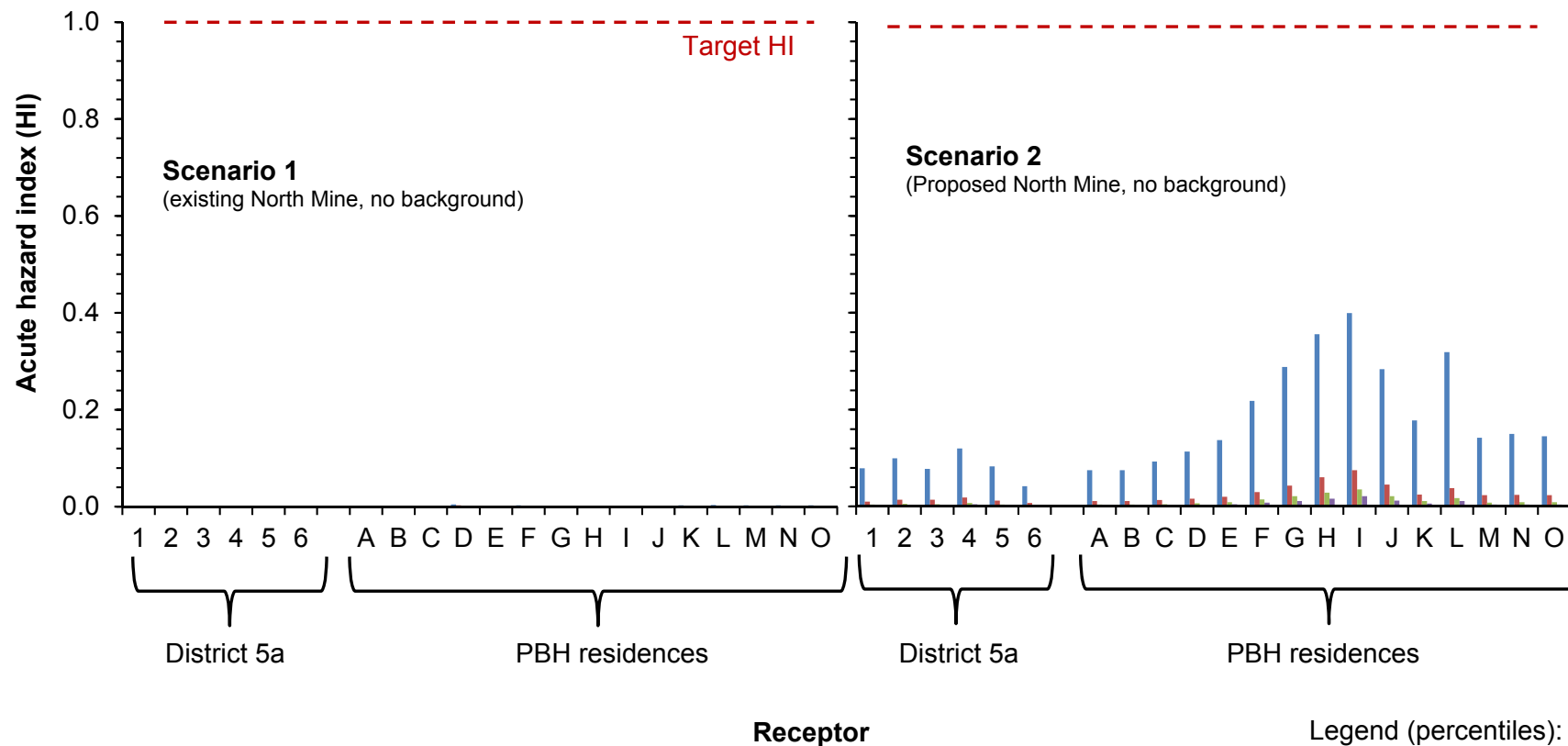


Figure 4.5.1: Acute hazard indices for selected receptors

The HI are the sum of hazard quotients of individual metals with acute air guideline values (AGVs) (As, Cu, Hg, Ni, and Zn). Although the assessment does not include background concentrations of metals in air (as no data were available), the calculated HI from the Proposal are low indicating likelihood of exceeding health-based acute AGVs as a result of the Proposal going forward is also low.

4.5.2 TDI analysis

The lifetime average daily intake of metals other than Pb from incidental ingestion of metal in soil/dust and inhalation of metal in air was estimated and compared with tolerable daily intakes (TDI), the latter adjusted for high end background intakes. The scenarios evaluated assume 15 years' operational life of the North Mine at the maximum modelled deposition year (Section 2.3, 2.6). Contemporary existing soil metal concentrations (other than Pb) were not available for Broken Hill, therefore the evaluation does not incorporate intakes from existing sources other than the North Mine.

For each metal, total intakes for each life-stage, the average lifetime daily intake and resulting hazard quotients (HQ) are presented in Appendix F.

Hazard indices (HI) (which represent the sum of HQs for all ten metals assessed) are summarised in Figure 4.5.2 for each receptor.

- For Scenario 1 (existing North Mine), HI ranged from 0.00004 (R81 in District 8) to 0.05 (PBH Residence 'D').
- For Scenario 2 (Proposed North Mine) from 0.0001 (R51, R58, R59 in District 8) to 0.16 (PBH Residence 'I').

Since all HI are less than unity, it is concluded the risk of exceeding the health-based metal TDI's as a result of the North Mine Proposal is low. The assessment is conservative in that it assumes additivity between metals (see Section 4.2).

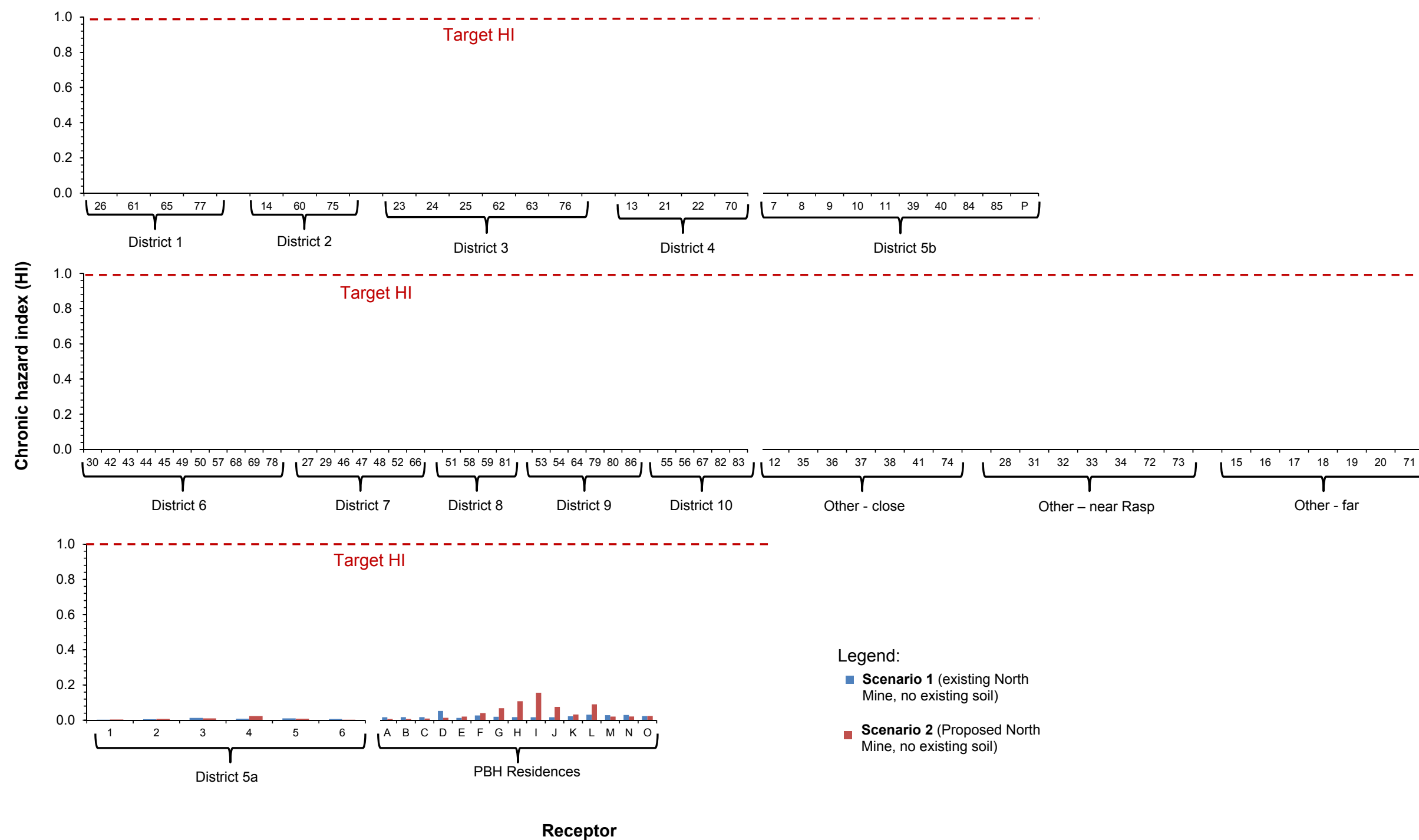


Figure 4.5.2: Chronic hazard indices for selected receptors

The HI are the sum of hazard quotients of individual metals (Ag, As, Cd, Cr, Cu, Hg, Fe, Mn, Ni, and Zn), where an estimate of the lifetime average daily intake of metal from North Mine soil/dust and air was compared with TDI's for each metal, the latter adjusted for high-end background intakes. Although the assessment does not include existing concentrations of metals in air or soil (as no data were available), the calculated HI from the Proposal are low indicating likelihood of exceeding health-based chronic TDI's as a result of the Proposal going forward is also low.

4.5.3 Cancer risk

It is common practice to assume cancer risks due to different genotoxic carcinogenic air pollutants are additive, summing the individual cancer risks is used to estimate a total lifetime risk of developing cancer. However unit risk estimates are upper bound 95% confidence estimates and do not reflect the central tendency or average. When several upper bound estimates are added together it is questionable whether the predicted cancer risk is plausible. The process of adding upper bound cancer risk estimates together is inherently conservative.

For the chemicals of potential concern evaluated in this risk assessment, two metals (Ni and Cd) are considered genotoxic carcinogens (Appendix A). 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 suggested by enHealth (2012a) and NEPM (2013).

The highest calculated total cancer risk is 0.45×10^{-6} (Figure 4.5.3, PBH Residence 'N', Scenario 2). This is below the commonly accepted risk of one in one hundred thousand, therefore it is concluded the emissions from the existing and Proposed North Mine do not pose an unacceptable inhalation carcinogenic risk. The cancer risk calculations are presented in Appendix G.

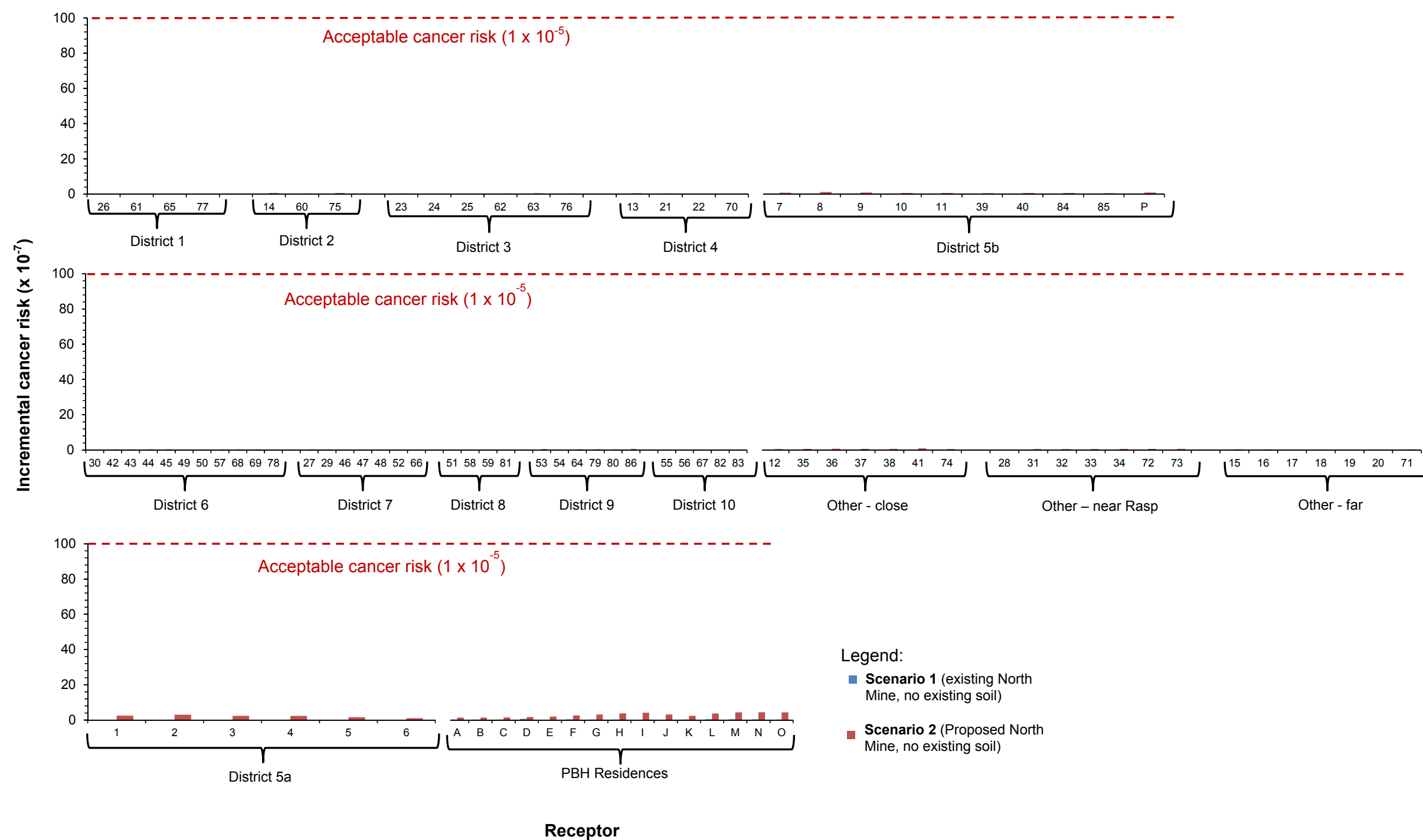


Figure 4.5.3: Incremental cancer risk at all receptors for the two scenarios evaluated

Incremental lifetime cancer risks from inhalation exposure to Ni and Cd from the existing (S1) or Proposed (S2) North Mine are markedly lower than what is commonly considered to be acceptable (1×10^{-5}), therefore it is concluded the risk of developing cancer from the emissions of the Mine is low.

4.6 Uncertainty analysis

Many of the uncertainties discussed for Pb in Section 3.11 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 4.6.1.

Table 4.6.1: Uncertainties in the risk assessment for mine metal emissions and potential effect on health risk assessment outcome.

Uncertainty/ Assumption	Comment	Effect on Risk Assessment
<i>Existing soil and air metal concentrations</i>	Existing concentrations of metals other than Pb in soil and air were not available, so these have not been included in the HHRA.	Information for existing exposures to other metals in soil and air was not available. However compared to the background-adjusted TDI for these metals the incremental intake was very small and therefore unlikely to markedly change the existing exposures to these metals.
<i>Background exposures</i>	The TDI's were adjusted for the potential contribution from background exposures (including home grown produce). The contribution from background exposures was taken from literature information, including for high end background dietary intakes.	The intake assumptions are for high end intakes, and are likely to be conservative.
<i>Bioaccessibility of metal from soil</i>	For As, a 4% bioaccessibility has been assumed, consistent with Toxikos (2010), as this was the only information available. For other metals, in the absence of any data, 100% bioaccessibility was assumed.	It is uncertain whether 4% As bioaccessibility in Broken Hill soil/dust is representative of all receptors. However, in the absence of other information, it is appropriate to use the best data that are available. The assumption makes no marked impact on the conclusions, since the predicted combined HI's are very low. Any potential underprediction in the health risk of As exposure is considered to be more than balanced out by the conservative assumptions of 100% bioaccessibility and 100% lung and intestinal absorption for other metals.
<i>Toxicological potency of metals emitted from the Mine</i>	The HHRA relies on regulatory guidelines (TDIs) 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 are 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 for creating public health guidelines.

Uncertainty/ Assumption	Comment	Effect on Risk Assessment
<i>There may be interactive health effects between metals emitted</i>	Regardless of effect or mode of toxicological action, additivity of either dose or effect has been assumed to occur between metals emitted from the Mine (Section 4.2).	This practice causes the HHRA to grossly overestimate the risks to combined exposure to metals. Nevertheless the resulting hazard index, after accounting for potential high end background intakes, at the most affected receptor is about 0.16. Therefore a health effects interaction between the metals in dust from the mine site is considered unlikely. This does not alter, in fact it strengthens, the conclusions of the HHRA.

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Perilya Broken Hill North Mine HHRA

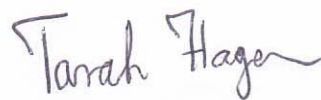
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Appendix A: Supporting toxicological information for metals assessed in this HHRA

The toxicity category table below summarises whether a metal has been evaluated by a relevant 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 A1.1: Toxicity category summary table

Contaminant of Potential Concern	Target Organ of Concern	Toxicity Category		
		Genotoxic	Carcinogenic	Reproductive Toxicant
Silver (Ag)	Skin (argyria).		N (USEPA D)	
Arsenic (As)	Respiratory; skin; reproductive/developmental; cardiovascular; nervous system; lung cancer.	N ^a	Y (IARC 1, USEPA A)	N
Cadmium (Cd)	Respiratory system; kidney; lung cancer.	Y	Y (IARC 1, USEPA B1)	Y
Chromium (Cr as Cr ^{III})	Essential element.	N	N	N
Copper (Cu)	Respiratory system irritation.	N	N (USEPA D)	N
Iron (Fe)	Most effects of concern associated with Fe deficiency. Target organs include liver and heart.	N	N	N
Mercury (Hg)	CNS; kidney.	N	N	Y
Manganese (Mn)	Nervous system; lungs; reproductive system.	N	N (USEPA D)	Y
Nickel (Ni)	Lung and nasal tumours.	Y	Y (IARC 1, USEPA A)	N
Lead (Pb)	Impaired neurobehavioural functioning and IQ in children.	N	Y (IARC 2A, USEPA B2)	Y
Zinc (Zn)	Haematopoietic; kidney; pancreas.	N	N (USEPA D)	N

Y = Yes, N = No.

^a There is some evidence for mutagenic and clastogenic effects associated with inorganic arsenic. 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).

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.
4	Is probably not carcinogenic 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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Appendix B: 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								
2007	Port Esperance	<6 yrs, [45] ^a	-	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	Queens-town	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
1984	NW Adelaide	0-4 yr, [513]	-	16.3	-	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			
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								
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	Batářiiová et al. 2006
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

^a 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.

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Appendix C: Metal soil/dust concentrations used in the HHRA

C.1 Lead (Pb)

Table C.1.1: Estimated Pb concentrations in soil

District/ Area	Receptor	Pb deposition in TSP (g/m ² /yr) ^a			Estimated Pb in soil (µg Pb/g soil) ^b			Existing soil Pb ^c (µg Pb/g soil)
		Scenario 1: Existing Nth Mine (with bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 3: Proposed Nth Mine (with bckgnd)	Scenario 1: Existing Nth Mine (with bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 3: Proposed Nth Mine (with bckgnd)	
D1	26	0.1098	0.0002	0.1098	54.9	0.08	54.9	733
D2	14	0.1335	0.0004	0.1333	66.8	0.2	66.6	275
D3	23	0.1098	0.0002	0.1098	54.9	0.1	54.9	733
D4	13	0.1098	0.0004	0.1096	54.9	0.2	54.8	733
D5a	1	0.1073	0.0034	0.1073	53.7	1.7	53.7	275
D5a	4	0.1073	0.0177	0.1179	53.7	8.9	58.9	275
D5a	D5a_median	0.1073	0.0068	0.1058	53.7	3.4	52.9	275
D5b	7	0.0417	0.0021	0.0414	20.8	1.1	20.7	275
D6	45	0.0294	0.0005	0.0294	14.7	0.2	14.7	1125
D7	48	0.0424	0.0002	0.0425	21.2	0.1	21.2	1125
D8	51	0.0424	0.0001	0.0424	21.2	0.05	21.2	275
D9	86	0.0417	0.0012	0.0415	20.8	0.6	20.8	275
D10	56	0.0272	0.0002	0.0272	13.6	0.1	13.6	275
Other - close	41	0.0888	0.0024	0.0885	44.4	1.2	44.2	275
Other - near Rasp	73	0.0294	0.0006	0.0292	14.7	0.3	14.6	733
Other- far	19	0.0316	0.0005	0.0315	15.8	0.2	15.7	100
PBH Residences	A	0.0417	0.0066	0.0389	20.8	3.3	19.5	275
PBH Residences	I	0.0417	0.1079	0.1370	20.8	53.9	68.5	275

District/ Area	Receptor	Pb deposition in TSP (g/m ² /yr) ^a			Estimated Pb in soil (µg Pb/g soil) ^b			Existing soil Pb ^c (µg Pb/g soil)
		Scenario 1: Existing Nth Mine (with bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 3: Proposed Nth Mine (with bckgnd)	Scenario 1: Existing Nth Mine (with bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 3: Proposed Nth Mine (with bckgnd)	
PBH Residences	PBH residences_ median	0.0417	0.0234	0.0524	21	11.7	26	275

^a For Scenario 1, this is the 2016 measured Pb deposition in TSP at the monitoring location closest to the receptor of interest. As per e-mail instructions received from PEL on 01/06/2017, relevant monitoring locations were taken from spreadsheet entitled "Receptors -FINAL - inc FENCELINE", (received 25/05/17). The reported Pb deposition rates in units of g/m²/month were converted to annual deposition rates by multiplying by 12. For the hypothetical D5a_median and PBH residences_median receptors, the measured Pb deposition was assumed to be the same as that of other receptors in the district/area.

For Scenario 2, Pb deposition in TSP is as reported in Column E of spreadsheet entitled "Metals_ann_av_TSP & Dep - DISCRETE – Proposed" (received 05/06/2017). For the hypothetical D5a_median and PBH residences_median receptors, the Pb deposition in Scenario 2 was the calculated median of all modelled receptors in the particular district/area.

For Scenario 3, Pb deposition in TSP was calculated by ToxConsult as per e-mail instructions received from PEL on 01/06/2017. The modelled annual Pb deposition rate for the existing North Mine was subtracted from the 2016 measured background deposition rate at the monitoring location closest to the receptor of interest (see Section 3.4); then the left-over 'background' deposition was added to the modelled deposition from Scenario 2. For the hypothetical D5a_median and PBH residences_median, Pb deposition from sources other than the North Mine was calculated as the median in the relevant district/area.

^b Pb concentrations in soil over a 15 year mine operation life were calculated from Pb deposition rates in TSP using Equation 2.6.1 (Section 2.6).

^c Existing soil Pb concentrations were sourced from the literature (see Section 3.4).

Table C.1.2: Pb concentrations in soil and indoor dust used in IEUBK modelling

District/ Area	Receptor	Pb in soil as used in IEUBK modelling (µg Pb/g soil) ^a			Pb in indoor dust as used in IEUBK modelling (µg Pb/g dust) ^b		
		Scenario 1: Existing Nth Mine (with bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 3: Proposed Nth Mine (with bckgnd)	Scenario 1: Existing Nth Mine (with bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 3: Proposed Nth Mine (with bckgnd)
D1	26	787.9	0.08	787.9	1182	0.12	1182
D2	14	341.8	0.2	341.6	513	0.33	512
D3	23	787.9	0.1	787.9	1182	0.17	1182
D4	13	787.9	0.2	787.8	1182	0.31	1182
D5a	1	328.7	1.7	328.7	493	2.58	493
D5a	4	328.7	8.9	333.9	493	13.31	501
D5a	D5a_median	328.7	3.4	327.9	493	5.09	492
D5b	7	295.8	1.1	295.7	444	1.59	444
D6	45	1139.7	0.2	1139.7	1710	0.34	1710
D7	48	1146.2	0.1	1146.2	1719	0.15	1719
D8	51	296.2	0.05	296.2	444	0.07	444
D9	86	295.8	0.6	295.8	444	0.88	444
D10	56	288.6	0.1	288.6	433	0.15	433
Other - close	41	319.4	1.2	319.2	479	1.80	479
Other - near Rasp	73	747.7	0.3	747.6	1122	0.48	1121
Other- far	19	115.8	0.2	115.7	174	0.35	174
PBH Residences	A	295.8	3.3	294.5	444	4.95	442
PBH Residences	I	295.8	53.9	343.5	444	80.91	515
PBH Residences	PBH residences_ median	295.8	11.7	301.2	444	17.54	452

^a For Scenarios 1 and 3, the estimated soil concentrations from 15 years mine operation in Table C.1.1 were added to the existing soil concentrations as determined from literature information.

^b Pb concentrations in indoor dust were calculated by multiplying the soil Pb concentrations in this table by a factor of 1.5 (see Section 3.9.3.4).

C.2 Silver (Ag)

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5a	1	0.000046	0.000071	0.0228	0.035
D5a	2	0.000096	0.000091	0.0482	0.046
D5a	3	0.000207	0.000095	0.1035	0.047
D5a	4	0.000136	0.000062	0.0680	0.031
D5a	5	0.000156	0.000048	0.0778	0.024
D5a	6	0.000103	0.000035	0.0513	0.017
D5b	7	0.000039	0.000026	0.0194	0.013
D5b	8	0.000037	0.000029	0.0185	0.014
D5b	9	0.000025	0.000025	0.0126	0.012
D5b	10	0.000012	0.000019	0.0061	0.010
D5b	11	0.000009	0.000017	0.0046	0.009
Other - close	12	0.000010	0.000017	0.0049	0.009
D4	13	0.000006	0.000014	0.0028	0.007
D2	14	0.000007	0.000015	0.0033	0.007
Other- far	15	0.000003	0.000008	0.0016	0.004
Other- far	16	0.000003	0.000006	0.0015	0.003
Other- far	17	0.000003	0.000004	0.0013	0.002
Other- far	18	0.000008	0.000011	0.0040	0.005
Other- far	19	0.000007	0.000015	0.0034	0.007
Other- far	20	0.000006	0.000012	0.0028	0.006
D4	21	0.000004	0.000010	0.0021	0.005
D4	22	0.000003	0.000008	0.0015	0.004
D3	23	0.000003	0.000008	0.0013	0.004
D3	24	0.000002	0.000006	0.0011	0.003
D3	25	0.000002	0.000006	0.0009	0.003
D1	26	0.000002	0.000006	0.0008	0.003
D7	27	0.000001	0.000005	0.0007	0.002
Other - near Rasp	28	0.000002	0.000005	0.0008	0.003
D7	29	0.000002	0.000006	0.0008	0.003
D6	30	0.000002	0.000006	0.0009	0.003
Other - near Rasp	31	0.000005	0.000011	0.0023	0.006
Other - near Rasp	32	0.000005	0.000012	0.0026	0.006
Other - near Rasp	33	0.000006	0.000014	0.0031	0.007
Other - near Rasp	34	0.000008	0.000016	0.0038	0.008
Other - close	35	0.000009	0.000017	0.0046	0.009
Other - close	36	0.000010	0.000019	0.0052	0.009
Other - close	37	0.000008	0.000016	0.0041	0.008

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
Other - close	38	0.000010	0.000019	0.0052	0.009
D5b	39	0.000007	0.000016	0.0037	0.008
D5b	40	0.000009	0.000017	0.0045	0.009
Other - close	41	0.000041	0.000033	0.0204	0.016
D6	42	0.000003	0.000007	0.0013	0.004
D6	43	0.000003	0.000009	0.0015	0.004
D6	44	0.000004	0.000010	0.0018	0.005
D6	45	0.000004	0.000012	0.0022	0.006
D7	46	0.000001	0.000004	0.0006	0.002
D7	47	0.000001	0.000005	0.0007	0.002
D7	48	0.000002	0.000006	0.0009	0.003
D6	49	0.000002	0.000006	0.0010	0.003
D6	50	0.000002	0.000007	0.0011	0.003
D8	51	0.000001	0.000003	0.0005	0.002
D7	52	0.000001	0.000004	0.0006	0.002
D9	53	0.000006	0.000012	0.0031	0.006
D9	54	0.000002	0.000004	0.0009	0.002
D10	55	0.000002	0.000005	0.0009	0.002
D10	56	0.000002	0.000004	0.0008	0.002
D6	57	0.000002	0.000006	0.0009	0.003
D8	58	0.000001	0.000003	0.0004	0.001
D8	59	0.000001	0.000002	0.0004	0.001
D2	60	0.000003	0.000009	0.0013	0.004
D1	61	0.000002	0.000005	0.0009	0.003
D3	62	0.000002	0.000009	0.0012	0.004
D3	63	0.000002	0.000009	0.0012	0.005
D9	64	0.000007	0.000011	0.0034	0.005
D1	65	0.000001	0.000005	0.0007	0.002
D7	66	0.000001	0.000004	0.0006	0.002
D10	67	0.000001	0.000004	0.0007	0.002
D6	68	0.000004	0.000008	0.0018	0.004
D6	69	0.000003	0.000009	0.0016	0.004
D4	70	0.000003	0.000008	0.0014	0.004
Other- far	71	0.000002	0.000005	0.0010	0.003
Other - near Rasp	72	0.000006	0.000013	0.0031	0.007
Other - near Rasp	73	0.000009	0.000019	0.0046	0.009
Other - close	74	0.000010	0.000017	0.0049	0.009
D2	75	0.000003	0.000010	0.0016	0.005
D3	76	0.000002	0.000009	0.0012	0.005
D1	77	0.000001	0.000004	0.0006	0.002

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D6	78	0.000003	0.000007	0.0014	0.003
D9	79	0.000006	0.000011	0.0028	0.006
D9	80	0.000004	0.000008	0.0020	0.004
D8	81	0.000001	0.000002	0.0003	0.001
D10	82	0.000001	0.000003	0.0005	0.001
D10	83	0.000001	0.000003	0.0005	0.002
D5b	84	0.000006	0.000012	0.0028	0.006
D5b	85	0.000007	0.000012	0.0036	0.006
D9	86	0.000017	0.000019	0.0083	0.009
PBH Residences	A	0.000264	0.000047	0.1319	0.024
PBH Residences	B	0.000270	0.000047	0.1349	0.024
PBH Residences	C	0.000276	0.000051	0.1380	0.025
PBH Residences	D	0.000819	0.000057	0.4097	0.028
PBH Residences	E	0.000209	0.000061	0.1044	0.031
PBH Residences	F	0.000417	0.000077	0.2087	0.038
PBH Residences	G	0.000304	0.000082	0.1522	0.041
PBH Residences	H	0.000278	0.000088	0.1389	0.044
PBH Residences	I	0.000260	0.000080	0.1301	0.040
PBH Residences	J	0.000268	0.000074	0.1339	0.037
PBH Residences	K	0.000346	0.000063	0.1731	0.032
PBH Residences	L	0.000496	0.000105	0.2481	0.053
PBH Residences	M	0.000451	0.000164	0.2257	0.082
PBH Residences	N	0.000471	0.000191	0.2354	0.095
PBH Residences	O	0.000367	0.000225	0.1834	0.113
D5b	P	0.000025	0.000027	0.0125	0.013

^a Data from PEL spreadsheets entitled:

- Scenario 1: "Metals_ann_av_TSP & Dep – DISCRETE – Existing – Update 5-6-17" (received on 05/06/2017).
- Scenario 2: "Metals_ann_av_TSP & Dep – DISCRETE – Proposed – Update 5-6-17" (received on 05/06/2017).

^b Calculated over a 15 year mine operation life were from metal deposition rates in TSP using Equation 2.6.1 (Section 2.6).

C.3 Arsenic (As)

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5a	1	0.000115	0.000220	0.0576	0.110
D5a	2	0.000204	0.000322	0.1020	0.161
D5a	3	0.000355	0.000390	0.1775	0.195
D5a	4	0.000264	0.000642	0.1319	0.321
D5a	5	0.000266	0.000270	0.1329	0.135
D5a	6	0.000178	0.000150	0.0892	0.075
D5b	7	0.000088	0.000101	0.0438	0.051
D5b	8	0.000085	0.000108	0.0427	0.054
D5b	9	0.000065	0.000088	0.0325	0.044
D5b	10	0.000036	0.000062	0.0181	0.031
D5b	11	0.000028	0.000054	0.0141	0.027
Other - close	12	0.000030	0.000054	0.0148	0.027
D4	13	0.000018	0.000040	0.0092	0.020
D2	14	0.000023	0.000042	0.0113	0.021
Other- far	15	0.000011	0.000023	0.0056	0.012
Other- far	16	0.000010	0.000018	0.0052	0.009
Other- far	17	0.000009	0.000011	0.0045	0.006
Other- far	18	0.000026	0.000031	0.0131	0.016
Other- far	19	0.000022	0.000043	0.0108	0.022
Other- far	20	0.000018	0.000036	0.0090	0.018
D4	21	0.000013	0.000029	0.0065	0.015
D4	22	0.000010	0.000023	0.0048	0.012
D3	23	0.000008	0.000023	0.0041	0.011
D3	24	0.000007	0.000018	0.0034	0.009
D3	25	0.000006	0.000017	0.0030	0.008
D1	26	0.000005	0.000016	0.0024	0.008
D7	27	0.000004	0.000014	0.0022	0.007
Other - near Rasp	28	0.000006	0.000015	0.0028	0.008
D7	29	0.000005	0.000017	0.0027	0.008
D6	30	0.000006	0.000017	0.0029	0.009
Other - near Rasp	31	0.000015	0.000033	0.0075	0.017
Other - near Rasp	32	0.000016	0.000035	0.0082	0.018
Other - near Rasp	33	0.000020	0.000041	0.0100	0.020
Other - near Rasp	34	0.000024	0.000048	0.0120	0.024
Other - close	35	0.000027	0.000053	0.0136	0.027

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
Other - close	36	0.000031	0.000057	0.0153	0.029
Other - close	37	0.000025	0.000050	0.0124	0.025
Other - close	38	0.000031	0.000057	0.0154	0.029
D5b	39	0.000023	0.000048	0.0115	0.024
D5b	40	0.000028	0.000054	0.0140	0.027
Other - close	41	0.000100	0.000119	0.0500	0.060
D6	42	0.000009	0.000022	0.0043	0.011
D6	43	0.000010	0.000025	0.0050	0.013
D6	44	0.000012	0.000030	0.0059	0.015
D6	45	0.000015	0.000035	0.0073	0.018
D7	46	0.000004	0.000013	0.0022	0.006
D7	47	0.000005	0.000013	0.0023	0.007
D7	48	0.000006	0.000017	0.0028	0.008
D6	49	0.000006	0.000018	0.0031	0.009
D6	50	0.000007	0.000020	0.0037	0.010
D8	51	0.000003	0.000010	0.0016	0.005
D7	52	0.000004	0.000012	0.0020	0.006
D9	53	0.000019	0.000037	0.0094	0.019
D9	54	0.000006	0.000014	0.0032	0.007
D10	55	0.000005	0.000014	0.0027	0.007
D10	56	0.000005	0.000014	0.0024	0.007
D6	57	0.000006	0.000018	0.0028	0.009
D8	58	0.000003	0.000008	0.0014	0.004
D8	59	0.000003	0.000007	0.0013	0.004
D2	60	0.000008	0.000025	0.0041	0.012
D1	61	0.000006	0.000016	0.0030	0.008
D3	62	0.000008	0.000025	0.0039	0.012
D3	63	0.000008	0.000026	0.0040	0.013
D9	64	0.000021	0.000035	0.0105	0.017
D1	65	0.000005	0.000013	0.0024	0.007
D7	66	0.000004	0.000011	0.0019	0.006
D10	67	0.000005	0.000011	0.0026	0.006
D6	68	0.000012	0.000026	0.0060	0.013
D6	69	0.000010	0.000026	0.0052	0.013
D4	70	0.000009	0.000023	0.0046	0.011
Other- far	71	0.000007	0.000014	0.0033	0.007
Other - near Rasp	72	0.000018	0.000039	0.0092	0.019
Other - near Rasp	73	0.000029	0.000055	0.0146	0.027
Other - close	74	0.000030	0.000054	0.0148	0.027

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D2	75	0.000011	0.000029	0.0053	0.015
D3	76	0.000008	0.000025	0.0041	0.013
D1	77	0.000004	0.000012	0.0021	0.006
D6	78	0.000009	0.000021	0.0046	0.011
D9	79	0.000018	0.000035	0.0089	0.018
D9	80	0.000013	0.000025	0.0063	0.012
D8	81	0.000002	0.000007	0.0012	0.003
D10	82	0.000003	0.000008	0.0015	0.004
D10	83	0.000003	0.000010	0.0016	0.005
D5b	84	0.000018	0.000037	0.0092	0.019
D5b	85	0.000023	0.000040	0.0114	0.020
D9	86	0.000045	0.000065	0.0225	0.033
PBH Residences	A	0.000395	0.000251	0.1976	0.126
PBH Residences	B	0.000403	0.000254	0.2014	0.127
PBH Residences	C	0.000417	0.000301	0.2087	0.150
PBH Residences	D	0.001062	0.000410	0.5308	0.205
PBH Residences	E	0.000366	0.000573	0.1831	0.286
PBH Residences	F	0.000657	0.001056	0.3287	0.528
PBH Residences	G	0.000535	0.001710	0.2677	0.855
PBH Residences	H	0.000517	0.002651	0.2586	1.326
PBH Residences	I	0.000469	0.003791	0.2343	1.895
PBH Residences	J	0.000462	0.001869	0.2312	0.934
PBH Residences	K	0.000525	0.000862	0.2624	0.431
PBH Residences	L	0.000778	0.002223	0.3888	1.112
PBH Residences	M	0.000737	0.000604	0.3687	0.302
PBH Residences	N	0.000770	0.000657	0.3851	0.329
PBH Residences	O	0.000660	0.000737	0.3298	0.369
D5b	P	0.000066	0.000093	0.0331	0.046

^a Data from PEL spreadsheets entitled:

- Scenario 1: "Metals_ann_av_TSP & Dep – DISCRETE – Existing – Update 5-6-17" (received on 05/06/2017).
- Scenario 2: "Metals_ann_av_TSP & Dep – DISCRETE – Proposed – Update 5-6-17" (received on 05/06/2017).

^b Calculated over a 15 year mine operation life were from metal deposition rates in TSP using Equation 2.6.1 (Section 2.6).

C.4 Cadmium (Cd)

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5a	1	0.0000069	0.0000593	0.0034	0.030
D5a	2	0.0000135	0.0000982	0.0067	0.049
D5a	3	0.0000268	0.0001330	0.0134	0.067
D5a	4	0.0000183	0.0002782	0.0092	0.139
D5a	5	0.0000200	0.0000950	0.0100	0.048
D5a	6	0.0000132	0.0000406	0.0066	0.020
D5b	7	0.0000054	0.0000264	0.0027	0.013
D5b	8	0.0000052	0.0000280	0.0026	0.014
D5b	9	0.0000037	0.0000231	0.0019	0.012
D5b	10	0.0000019	0.0000161	0.0010	0.008
D5b	11	0.0000015	0.0000142	0.0007	0.007
Other - close	12	0.0000015	0.0000139	0.0008	0.007
D4	13	0.0000009	0.0000102	0.0005	0.005
D2	14	0.0000011	0.0000104	0.0006	0.005
Other- far	15	0.0000006	0.0000057	0.0003	0.003
Other- far	16	0.0000005	0.0000043	0.0003	0.002
Other- far	17	0.0000005	0.0000028	0.0002	0.001
Other- far	18	0.0000014	0.0000075	0.0007	0.004
Other- far	19	0.0000012	0.0000106	0.0006	0.005
Other- far	20	0.0000010	0.0000088	0.0005	0.004
D4	21	0.0000007	0.0000074	0.0003	0.004
D4	22	0.0000005	0.0000059	0.0002	0.003
D3	23	0.0000004	0.0000058	0.0002	0.003
D3	24	0.0000003	0.0000046	0.0002	0.002
D3	25	0.0000003	0.0000042	0.0002	0.002
D1	26	0.0000002	0.0000041	0.0001	0.002
D7	27	0.0000002	0.0000036	0.0001	0.002
Other - near Rasp	28	0.0000003	0.0000039	0.0001	0.002
D7	29	0.0000003	0.0000042	0.0001	0.002
D6	30	0.0000003	0.0000044	0.0001	0.002
Other - near Rasp	31	0.0000008	0.0000084	0.0004	0.004
Other - near Rasp	32	0.0000008	0.0000090	0.0004	0.004
Other - near Rasp	33	0.0000010	0.0000104	0.0005	0.005
Other - near Rasp	34	0.0000012	0.0000122	0.0006	0.006
Other - close	35	0.0000014	0.0000136	0.0007	0.007
Other - close	36	0.0000016	0.0000148	0.0008	0.007
Other - close	37	0.0000013	0.0000128	0.0006	0.006

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
Other - close	38	0.0000016	0.0000148	0.0008	0.007
D5b	39	0.0000012	0.0000125	0.0006	0.006
D5b	40	0.0000015	0.0000141	0.0007	0.007
Other - close	41	0.0000059	0.0000294	0.0029	0.015
D6	42	0.0000004	0.0000056	0.0002	0.003
D6	43	0.0000005	0.0000065	0.0002	0.003
D6	44	0.0000006	0.0000076	0.0003	0.004
D6	45	0.0000007	0.0000090	0.0004	0.005
D7	46	0.0000002	0.0000032	0.0001	0.002
D7	47	0.0000002	0.0000034	0.0001	0.002
D7	48	0.0000003	0.0000043	0.0001	0.002
D6	49	0.0000003	0.0000046	0.0002	0.002
D6	50	0.0000004	0.0000050	0.0002	0.003
D8	51	0.0000002	0.0000025	0.0001	0.001
D7	52	0.0000002	0.0000030	0.0001	0.001
D9	53	0.0000010	0.0000098	0.0005	0.005
D9	54	0.0000003	0.0000035	0.0002	0.002
D10	55	0.0000003	0.0000037	0.0001	0.002
D10	56	0.0000003	0.0000035	0.0001	0.002
D6	57	0.0000003	0.0000045	0.0001	0.002
D8	58	0.0000001	0.0000020	0.0001	0.001
D8	59	0.0000001	0.0000018	0.0001	0.001
D2	60	0.0000004	0.0000062	0.0002	0.003
D1	61	0.0000003	0.0000040	0.0002	0.002
D3	62	0.0000004	0.0000063	0.0002	0.003
D3	63	0.0000004	0.0000066	0.0002	0.003
D9	64	0.0000011	0.0000093	0.0006	0.005
D1	65	0.0000002	0.0000034	0.0001	0.002
D7	66	0.0000002	0.0000029	0.0001	0.001
D10	67	0.0000003	0.0000029	0.0001	0.001
D6	68	0.0000006	0.0000067	0.0003	0.003
D6	69	0.0000005	0.0000067	0.0003	0.003
D4	70	0.0000005	0.0000058	0.0002	0.003
Other- far	71	0.0000003	0.0000036	0.0002	0.002
Other - near Rasp	72	0.0000010	0.0000100	0.0005	0.005
Other - near Rasp	73	0.0000015	0.0000140	0.0008	0.007
Other - close	74	0.0000015	0.0000138	0.0008	0.007
D2	75	0.0000005	0.0000073	0.0003	0.004
D3	76	0.0000004	0.0000064	0.0002	0.003
D1	77	0.0000002	0.0000030	0.0001	0.002

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D6	78	0.0000005	0.0000055	0.0002	0.003
D9	79	0.0000009	0.0000092	0.0005	0.005
D9	80	0.0000007	0.0000065	0.0003	0.003
D8	81	0.0000001	0.0000017	0.0001	0.001
D10	82	0.0000002	0.0000019	0.0001	0.001
D10	83	0.0000002	0.0000027	0.0001	0.001
D5b	84	0.0000009	0.0000099	0.0005	0.005
D5b	85	0.0000012	0.0000104	0.0006	0.005
D9	86	0.0000026	0.0000174	0.0013	0.009
PBH Residences	A	0.0000324	0.0000801	0.0162	0.040
PBH Residences	B	0.0000331	0.0000810	0.0166	0.040
PBH Residences	C	0.0000339	0.0001044	0.0170	0.052
PBH Residences	D	0.0000955	0.0001564	0.0477	0.078
PBH Residences	E	0.0000271	0.0002364	0.0136	0.118
PBH Residences	F	0.0000521	0.0004679	0.0261	0.234
PBH Residences	G	0.0000394	0.0007959	0.0197	0.398
PBH Residences	H	0.0000366	0.0012663	0.0183	0.633
PBH Residences	I	0.0000339	0.0018411	0.0170	0.921
PBH Residences	J	0.0000345	0.0008820	0.0172	0.441
PBH Residences	K	0.0000428	0.0003837	0.0214	0.192
PBH Residences	L	0.0000616	0.0010525	0.0308	0.526
PBH Residences	M	0.0000569	0.0002161	0.0284	0.108
PBH Residences	N	0.0000595	0.0002290	0.0298	0.115
PBH Residences	O	0.0000479	0.0002516	0.0240	0.126
D5b	P	0.0000037	0.0000238	0.0019	0.012

^a Data from PEL spreadsheets entitled:

- Scenario 1: "Metals_ann_av_TSP & Dep – DISCRETE – Existing – Update 5-6-17" (received on 05/06/2017).
- Scenario 2: "Metals_ann_av_TSP & Dep – DISCRETE – Proposed – Update 5-6-17" (received on 05/06/2017).

^b Calculated over a 15 year mine operation life were from metal deposition rates in TSP using Equation 2.6.1 (Section 2.6).

C.5 Chromium (Cr)

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5a	1	0.003798	0.000238	1.8989	0.119
D5a	2	0.008295	0.000382	4.1475	0.191
D5a	3	0.018422	0.000533	9.2110	0.267
D5a	4	0.011921	0.000326	5.9607	0.163
D5a	5	0.013951	0.000331	6.9754	0.166
D5a	6	0.009206	0.000373	4.6028	0.186
D5b	7	0.003356	0.000158	1.6780	0.079
D5b	8	0.003181	0.000159	1.5906	0.079
D5b	9	0.002129	0.000110	1.0646	0.055
D5b	10	0.000995	0.000065	0.4977	0.033
D5b	11	0.000744	0.000055	0.3722	0.027
Other - close	12	0.000794	0.000056	0.3971	0.028
D4	13	0.000440	0.000041	0.2201	0.021
D2	14	0.000518	0.000045	0.2591	0.022
Other- far	15	0.000261	0.000024	0.1304	0.012
Other- far	16	0.000245	0.000020	0.1225	0.010
Other- far	17	0.000215	0.000014	0.1073	0.007
Other- far	18	0.000641	0.000041	0.3203	0.021
Other- far	19	0.000543	0.000047	0.2713	0.023
Other- far	20	0.000455	0.000039	0.2273	0.019
D4	21	0.000336	0.000030	0.1678	0.015
D4	22	0.000240	0.000023	0.1199	0.012
D3	23	0.000205	0.000022	0.1024	0.011
D3	24	0.000170	0.000018	0.0850	0.009
D3	25	0.000149	0.000016	0.0747	0.008
D1	26	0.000120	0.000015	0.0601	0.008
D7	27	0.000106	0.000013	0.0532	0.006
Other - near Rasp	28	0.000133	0.000014	0.0663	0.007
D7	29	0.000128	0.000015	0.0638	0.008
D6	30	0.000147	0.000016	0.0734	0.008
Other - near Rasp	31	0.000378	0.000033	0.1891	0.017
Other - near Rasp	32	0.000413	0.000036	0.2064	0.018
Other - near Rasp	33	0.000507	0.000042	0.2536	0.021
Other - near Rasp	34	0.000610	0.000049	0.3051	0.025
Other - close	35	0.000748	0.000055	0.3738	0.027
Other - close	36	0.000844	0.000060	0.4220	0.030
Other - close	37	0.000667	0.000051	0.3334	0.025

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
Other - close	38	0.000850	0.000060	0.4249	0.030
D5b	39	0.000595	0.000048	0.2977	0.024
D5b	40	0.000738	0.000055	0.3692	0.027
Other - close	41	0.003485	0.000158	1.7425	0.079
D6	42	0.000207	0.000021	0.1033	0.010
D6	43	0.000242	0.000024	0.1212	0.012
D6	44	0.000291	0.000028	0.1457	0.014
D6	45	0.000362	0.000033	0.1809	0.017
D7	46	0.000102	0.000012	0.0509	0.006
D7	47	0.000103	0.000012	0.0517	0.006
D7	48	0.000145	0.000015	0.0724	0.008
D6	49	0.000160	0.000016	0.0801	0.008
D6	50	0.000178	0.000018	0.0890	0.009
D8	51	0.000076	0.000009	0.0379	0.005
D7	52	0.000092	0.000011	0.0461	0.005
D9	53	0.000512	0.000037	0.2561	0.019
D9	54	0.000149	0.000013	0.0747	0.007
D10	55	0.000137	0.000013	0.0685	0.006
D10	56	0.000128	0.000012	0.0639	0.006
D6	57	0.000138	0.000016	0.0689	0.008
D8	58	0.000066	0.000007	0.0329	0.004
D8	59	0.000057	0.000006	0.0286	0.003
D2	60	0.000204	0.000023	0.1018	0.012
D1	61	0.000147	0.000015	0.0735	0.008
D3	62	0.000192	0.000023	0.0958	0.012
D3	63	0.000196	0.000025	0.0978	0.012
D9	64	0.000562	0.000037	0.2810	0.018
D1	65	0.000115	0.000013	0.0574	0.006
D7	66	0.000088	0.000010	0.0438	0.005
D10	67	0.000117	0.000011	0.0585	0.005
D6	68	0.000288	0.000025	0.1439	0.012
D6	69	0.000249	0.000024	0.1243	0.012
D4	70	0.000228	0.000023	0.1142	0.011
Other- far	71	0.000154	0.000015	0.0772	0.007
Other - near Rasp	72	0.000501	0.000040	0.2503	0.020
Other - near Rasp	73	0.000743	0.000058	0.3716	0.029
Other - close	74	0.000791	0.000055	0.3957	0.028
D2	75	0.000250	0.000028	0.1250	0.014
D3	76	0.000199	0.000024	0.0996	0.012
D1	77	0.000103	0.000011	0.0513	0.006

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D6	78	0.000219	0.000020	0.1096	0.010
D9	79	0.000460	0.000035	0.2300	0.018
D9	80	0.000321	0.000024	0.1605	0.012
D8	81	0.000052	0.000006	0.0262	0.003
D10	82	0.000072	0.000007	0.0361	0.004
D10	83	0.000077	0.000009	0.0385	0.005
D5b	84	0.000453	0.000036	0.2265	0.018
D5b	85	0.000589	0.000041	0.2944	0.020
D9	86	0.001395	0.000075	0.6974	0.038
PBH Residences	A	0.024045	0.000479	12.0225	0.240
PBH Residences	B	0.024609	0.000485	12.3043	0.243
PBH Residences	C	0.025121	0.000486	12.5603	0.243
PBH Residences	D	0.075809	0.000527	37.9044	0.264
PBH Residences	E	0.018623	0.000504	9.3114	0.252
PBH Residences	F	0.037702	0.000570	18.8508	0.285
PBH Residences	G	0.027045	0.000524	13.5227	0.262
PBH Residences	H	0.024425	0.000525	12.2126	0.262
PBH Residences	I	0.023013	0.000486	11.5065	0.243
PBH Residences	J	0.023866	0.000460	11.9328	0.230
PBH Residences	K	0.031438	0.000411	15.7188	0.205
PBH Residences	L	0.044676	0.000624	22.3382	0.312
PBH Residences	M	0.040304	0.001353	20.1521	0.677
PBH Residences	N	0.042017	0.001523	21.0087	0.762
PBH Residences	O	0.032185	0.002355	16.0926	1.178
D5b	P	0.002100	0.000112	1.0500	0.056

^a Data from PEL spreadsheets entitled:

- Scenario 1: "Metals_ann_av_TSP & Dep – DISCRETE – Existing – Update 5-6-17" (received on 05/06/2017).
- Scenario 2: "Metals_ann_av_TSP & Dep – DISCRETE – Proposed – Update 5-6-17" (received on 05/06/2017).

^b Calculated over a 15 year mine operation life were from metal deposition rates in TSP using Equation 2.6.1 (Section 2.6).

C.6 Copper (Cu)

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5a	1	0.000125	0.000201	0.0627	0.100
D5a	2	0.000234	0.000424	0.1168	0.212
D5a	3	0.000436	0.000653	0.2179	0.327
D5a	4	0.000309	0.000962	0.1545	0.481
D5a	5	0.000324	0.000409	0.1619	0.205
D5a	6	0.000215	0.000199	0.1076	0.099
D5b	7	0.000096	0.000118	0.0482	0.059
D5b	8	0.000093	0.000113	0.0467	0.056
D5b	9	0.000069	0.000093	0.0343	0.046
D5b	10	0.000037	0.000056	0.0184	0.028
D5b	11	0.000028	0.000044	0.0142	0.022
Other - close	12	0.000030	0.000044	0.0150	0.022
D4	13	0.000018	0.000019	0.0091	0.010
D2	14	0.000022	0.000020	0.0111	0.010
Other- far	15	0.000011	0.000011	0.0055	0.005
Other- far	16	0.000010	0.000009	0.0051	0.005
Other- far	17	0.000009	0.000009	0.0044	0.005
Other- far	18	0.000026	0.000019	0.0130	0.010
Other- far	19	0.000022	0.000022	0.0109	0.011
Other- far	20	0.000018	0.000018	0.0092	0.009
D4	21	0.000013	0.000016	0.0066	0.008
D4	22	0.000010	0.000011	0.0048	0.006
D3	23	0.000008	0.000010	0.0041	0.005
D3	24	0.000007	0.000008	0.0034	0.004
D3	25	0.000006	0.000007	0.0030	0.004
D1	26	0.000005	0.000007	0.0024	0.003
D7	27	0.000004	0.000008	0.0022	0.004
Other - near Rasp	28	0.000006	0.000008	0.0028	0.004
D7	29	0.000005	0.000009	0.0027	0.005
D6	30	0.000006	0.000010	0.0030	0.005
Other - near Rasp	31	0.000015	0.000018	0.0075	0.009
Other - near Rasp	32	0.000016	0.000019	0.0082	0.010
Other - near Rasp	33	0.000020	0.000023	0.0100	0.012
Other - near Rasp	34	0.000024	0.000026	0.0120	0.013
Other - close	35	0.000028	0.000039	0.0139	0.020
Other - close	36	0.000031	0.000044	0.0157	0.022
Other - close	37	0.000025	0.000038	0.0126	0.019

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
Other - close	38	0.000032	0.000046	0.0158	0.023
D5b	39	0.000023	0.000037	0.0116	0.018
D5b	40	0.000028	0.000044	0.0141	0.022
Other - close	41	0.000107	0.000133	0.0537	0.067
D6	42	0.000009	0.000014	0.0043	0.007
D6	43	0.000010	0.000016	0.0050	0.008
D6	44	0.000012	0.000020	0.0059	0.010
D6	45	0.000015	0.000024	0.0073	0.012
D7	46	0.000004	0.000006	0.0022	0.003
D7	47	0.000004	0.000007	0.0022	0.003
D7	48	0.000006	0.000010	0.0028	0.005
D6	49	0.000006	0.000011	0.0031	0.005
D6	50	0.000007	0.000012	0.0037	0.006
D8	51	0.000003	0.000005	0.0016	0.002
D7	52	0.000004	0.000006	0.0020	0.003
D9	53	0.000019	0.000031	0.0097	0.015
D9	54	0.000006	0.000009	0.0031	0.005
D10	55	0.000005	0.000010	0.0027	0.005
D10	56	0.000005	0.000012	0.0024	0.006
D6	57	0.000006	0.000011	0.0028	0.005
D8	58	0.000003	0.000004	0.0014	0.002
D8	59	0.000003	0.000005	0.0013	0.002
D2	60	0.000008	0.000009	0.0041	0.005
D1	61	0.000006	0.000007	0.0030	0.004
D3	62	0.000008	0.000009	0.0039	0.005
D3	63	0.000008	0.000009	0.0040	0.005
D9	64	0.000021	0.000031	0.0107	0.016
D1	65	0.000005	0.000006	0.0024	0.003
D7	66	0.000004	0.000006	0.0019	0.003
D10	67	0.000005	0.000009	0.0025	0.005
D6	68	0.000012	0.000020	0.0059	0.010
D6	69	0.000010	0.000017	0.0051	0.008
D4	70	0.000009	0.000011	0.0046	0.005
Other- far	71	0.000006	0.000007	0.0032	0.003
Other - near Rasp	72	0.000019	0.000022	0.0094	0.011
Other - near Rasp	73	0.000029	0.000031	0.0146	0.016
Other - close	74	0.000030	0.000044	0.0150	0.022
D2	75	0.000010	0.000011	0.0052	0.006
D3	76	0.000008	0.000009	0.0041	0.005
D1	77	0.000004	0.000005	0.0021	0.002

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D6	78	0.000009	0.000015	0.0046	0.008
D9	79	0.000018	0.000026	0.0090	0.013
D9	80	0.000013	0.000020	0.0063	0.010
D8	81	0.000002	0.000005	0.0012	0.002
D10	82	0.000003	0.000005	0.0015	0.002
D10	83	0.000003	0.000007	0.0016	0.004
D5b	84	0.000018	0.000026	0.0091	0.013
D5b	85	0.000023	0.000031	0.0114	0.016
D9	86	0.000047	0.000067	0.0236	0.034
PBH Residences	A	0.000506	0.000379	0.2529	0.190
PBH Residences	B	0.000516	0.000383	0.2581	0.192
PBH Residences	C	0.000532	0.000465	0.2662	0.233
PBH Residences	D	0.001445	0.000644	0.7224	0.322
PBH Residences	E	0.000443	0.000889	0.2213	0.445
PBH Residences	F	0.000828	0.001638	0.4142	0.819
PBH Residences	G	0.000650	0.002516	0.3248	1.258
PBH Residences	H	0.000617	0.003763	0.3084	1.881
PBH Residences	I	0.000564	0.005093	0.2820	2.546
PBH Residences	J	0.000564	0.002625	0.2820	1.313
PBH Residences	K	0.000670	0.001267	0.3352	0.633
PBH Residences	L	0.000988	0.003365	0.4938	1.683
PBH Residences	M	0.000926	0.001541	0.4629	0.771
PBH Residences	N	0.000968	0.001741	0.4839	0.870
PBH Residences	O	0.000805	0.001989	0.4024	0.995
D5b	P	0.000069	0.000096	0.0347	0.048

^a Data from PEL spreadsheets entitled:

- Scenario 1: "Metals_ann_av_TSP & Dep – DISCRETE – Existing – Update 5-6-17" (received on 05/06/2017).
- Scenario 2: "Metals_ann_av_TSP & Dep – DISCRETE – Proposed – Update 5-6-17" (received on 05/06/2017).

^b Calculated over a 15 year mine operation life were from metal deposition rates in TSP using Equation 2.6.1 (Section 2.6).

C.7 Mercury (Hg)

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5a	1	0.0000150	0.0006089	0.0075	0.304
D5a	2	0.0000326	0.0015257	0.0163	0.763
D5a	3	0.0000723	0.0026012	0.0362	1.301
D5a	4	0.0000468	0.0064250	0.0234	3.212
D5a	5	0.0000547	0.0019894	0.0273	0.995
D5a	6	0.0000360	0.0006981	0.0180	0.349
D5b	7	0.0000131	0.0003863	0.0066	0.193
D5b	8	0.0000124	0.0003703	0.0062	0.185
D5b	9	0.0000083	0.0002941	0.0041	0.147
D5b	10	0.0000039	0.0001675	0.0019	0.084
D5b	11	0.0000029	0.0001320	0.0015	0.066
Other - close	12	0.0000031	0.0001248	0.0015	0.062
D4	13	0.0000017	0.0000525	0.0009	0.026
D2	14	0.0000020	0.0000513	0.0010	0.026
Other- far	15	0.0000010	0.0000272	0.0005	0.014
Other- far	16	0.0000010	0.0000219	0.0005	0.011
Other- far	17	0.0000009	0.0000231	0.0004	0.012
Other- far	18	0.0000025	0.0000442	0.0013	0.022
Other- far	19	0.0000022	0.0000522	0.0011	0.026
Other- far	20	0.0000018	0.0000446	0.0009	0.022
D4	21	0.0000013	0.0000454	0.0007	0.023
D4	22	0.0000009	0.0000323	0.0005	0.016
D3	23	0.0000008	0.0000283	0.0004	0.014
D3	24	0.0000007	0.0000233	0.0003	0.012
D3	25	0.0000006	0.0000206	0.0003	0.010
D1	26	0.0000005	0.0000188	0.0002	0.009
D7	27	0.0000004	0.0000202	0.0002	0.010
Other - near Rasp	28	0.0000005	0.0000222	0.0003	0.011
D7	29	0.0000005	0.0000253	0.0003	0.013
D6	30	0.0000006	0.0000294	0.0003	0.015
Other - near Rasp	31	0.0000015	0.0000500	0.0007	0.025
Other - near Rasp	32	0.0000016	0.0000544	0.0008	0.027
Other - near Rasp	33	0.0000020	0.0000661	0.0010	0.033
Other - near Rasp	34	0.0000024	0.0000762	0.0012	0.038
Other - close	35	0.0000029	0.0001123	0.0015	0.056
Other - close	36	0.0000033	0.0001254	0.0016	0.063
Other - close	37	0.0000026	0.0001068	0.0013	0.053

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
Other - close	38	0.0000033	0.0001309	0.0017	0.065
D5b	39	0.0000023	0.0001081	0.0012	0.054
D5b	40	0.0000029	0.0001310	0.0014	0.065
Other - close	41	0.0000136	0.0003797	0.0068	0.190
D6	42	0.0000008	0.0000388	0.0004	0.019
D6	43	0.0000009	0.0000456	0.0005	0.023
D6	44	0.0000011	0.0000553	0.0006	0.028
D6	45	0.0000014	0.0000691	0.0007	0.035
D7	46	0.0000004	0.0000172	0.0002	0.009
D7	47	0.0000004	0.0000183	0.0002	0.009
D7	48	0.0000006	0.0000283	0.0003	0.014
D6	49	0.0000006	0.0000310	0.0003	0.015
D6	50	0.0000007	0.0000338	0.0003	0.017
D8	51	0.0000003	0.0000128	0.0002	0.006
D7	52	0.0000004	0.0000160	0.0002	0.008
D9	53	0.0000020	0.0000945	0.0010	0.047
D9	54	0.0000006	0.0000275	0.0003	0.014
D10	55	0.0000005	0.0000317	0.0003	0.016
D10	56	0.0000005	0.0000317	0.0003	0.016
D6	57	0.0000005	0.0000311	0.0003	0.016
D8	58	0.0000003	0.0000124	0.0001	0.006
D8	59	0.0000002	0.0000133	0.0001	0.007
D2	60	0.0000008	0.0000265	0.0004	0.013
D1	61	0.0000006	0.0000201	0.0003	0.010
D3	62	0.0000008	0.0000262	0.0004	0.013
D3	63	0.0000008	0.0000263	0.0004	0.013
D9	64	0.0000022	0.0000969	0.0011	0.048
D1	65	0.0000005	0.0000158	0.0002	0.008
D7	66	0.0000003	0.0000174	0.0002	0.009
D10	67	0.0000005	0.0000246	0.0002	0.012
D6	68	0.0000011	0.0000568	0.0006	0.028
D6	69	0.0000010	0.0000497	0.0005	0.025
D4	70	0.0000009	0.0000306	0.0004	0.015
Other- far	71	0.0000006	0.0000176	0.0003	0.009
Other - near Rasp	72	0.0000020	0.0000647	0.0010	0.032
Other - near Rasp	73	0.0000029	0.0000896	0.0015	0.045
Other - close	74	0.0000031	0.0001266	0.0015	0.063
D2	75	0.0000010	0.0000307	0.0005	0.015
D3	76	0.0000008	0.0000272	0.0004	0.014
D1	77	0.0000004	0.0000138	0.0002	0.007

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D6	78	0.0000009	0.0000442	0.0004	0.022
D9	79	0.0000018	0.0000800	0.0009	0.040
D9	80	0.0000013	0.0000610	0.0006	0.030
D8	81	0.0000002	0.0000129	0.0001	0.006
D10	82	0.0000003	0.0000131	0.0001	0.007
D10	83	0.0000003	0.0000215	0.0002	0.011
D5b	84	0.0000018	0.0000855	0.0009	0.043
D5b	85	0.0000023	0.0001003	0.0012	0.050
D9	86	0.0000055	0.0002162	0.0027	0.108
PBH Residences	A	0.0000941	0.0016410	0.0470	0.820
PBH Residences	B	0.0000962	0.0016619	0.0481	0.831
PBH Residences	C	0.0000982	0.0022333	0.0491	1.117
PBH Residences	D	0.0002964	0.0035103	0.1482	1.755
PBH Residences	E	0.0000730	0.0054680	0.0365	2.734
PBH Residences	F	0.0001475	0.0111791	0.0738	5.590
PBH Residences	G	0.0001060	0.0191677	0.0530	9.584
PBH Residences	H	0.0000958	0.0306118	0.0479	15.306
PBH Residences	I	0.0000903	0.0444371	0.0451	22.219
PBH Residences	J	0.0000935	0.0211670	0.0468	10.584
PBH Residences	K	0.0001229	0.0090297	0.0615	4.515
PBH Residences	L	0.0001752	0.0255052	0.0876	12.753
PBH Residences	M	0.0001580	0.0050610	0.0790	2.531
PBH Residences	N	0.0001650	0.0053479	0.0825	2.674
PBH Residences	O	0.0001266	0.0058739	0.0633	2.937
D5b	P	0.0000082	0.0002854	0.0041	0.143

^a Data from PEL spreadsheets entitled:

- Scenario 1: "Metals_ann_av_TSP & Dep – DISCRETE – Existing – Update 5-6-17" (received on 05/06/2017).
- Scenario 2: "Metals_ann_av_TSP & Dep – DISCRETE – Proposed – Update 5-6-17" (received on 05/06/2017).

^b Calculated over a 15 year mine operation life were from metal deposition rates in TSP using Equation 2.6.1 (Section 2.6).

C.8 Iron (Fe)

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5a	1	0.0431	0.0128	21.57	6.42
D5a	2	0.0886	0.0286	44.32	14.30
D5a	3	0.1851	0.0462	92.57	23.10
D5a	4	0.1240	0.0902	62.00	45.10
D5a	5	0.1399	0.0347	69.97	17.34
D5a	6	0.0927	0.0177	46.36	8.87
D5b	7	0.0365	0.0096	18.27	4.82
D5b	8	0.0349	0.0092	17.46	4.59
D5b	9	0.0243	0.0070	12.16	3.49
D5b	10	0.0121	0.0038	6.03	1.92
D5b	11	0.0092	0.0030	4.58	1.49
Other - close	12	0.0097	0.0029	4.86	1.47
D4	13	0.0056	0.0012	2.81	0.62
D2	14	0.0067	0.0013	3.37	0.65
Other- far	15	0.0034	0.0007	1.68	0.34
Other- far	16	0.0031	0.0006	1.57	0.30
Other- far	17	0.0027	0.0006	1.37	0.30
Other- far	18	0.0081	0.0013	4.05	0.65
Other- far	19	0.0068	0.0014	3.38	0.71
Other- far	20	0.0057	0.0012	2.83	0.60
D4	21	0.0042	0.0010	2.08	0.52
D4	22	0.0030	0.0007	1.51	0.37
D3	23	0.0026	0.0007	1.29	0.33
D3	24	0.0021	0.0005	1.07	0.27
D3	25	0.0019	0.0005	0.94	0.24
D1	26	0.0015	0.0004	0.75	0.22
D7	27	0.0014	0.0005	0.68	0.23
Other - near Rasp	28	0.0017	0.0005	0.85	0.26
D7	29	0.0016	0.0006	0.81	0.29
D6	30	0.0018	0.0007	0.92	0.33
Other - near Rasp	31	0.0047	0.0012	2.37	0.58
Other - near Rasp	32	0.0052	0.0013	2.58	0.63
Other - near Rasp	33	0.0063	0.0015	3.17	0.77
Other - near Rasp	34	0.0076	0.0018	3.81	0.89
Other - close	35	0.0091	0.0026	4.53	1.31
Other - close	36	0.0102	0.0029	5.11	1.46
Other - close	37	0.0081	0.0025	4.07	1.24

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
Other - close	38	0.0103	0.0031	5.15	1.53
D5b	39	0.0074	0.0024	3.69	1.22
D5b	40	0.0091	0.0030	4.54	1.48
Other - close	41	0.0390	0.0102	19.52	5.12
D6	42	0.0026	0.0009	1.31	0.44
D6	43	0.0031	0.0010	1.54	0.52
D6	44	0.0037	0.0013	1.84	0.63
D6	45	0.0045	0.0016	2.27	0.78
D7	46	0.0013	0.0004	0.66	0.20
D7	47	0.0013	0.0004	0.67	0.21
D7	48	0.0018	0.0006	0.89	0.32
D6	49	0.0020	0.0007	0.99	0.35
D6	50	0.0023	0.0008	1.13	0.38
D8	51	0.0010	0.0003	0.49	0.15
D7	52	0.0012	0.0004	0.60	0.19
D9	53	0.0062	0.0020	3.12	1.02
D9	54	0.0019	0.0006	0.96	0.31
D10	55	0.0017	0.0007	0.85	0.33
D10	56	0.0016	0.0007	0.78	0.36
D6	57	0.0017	0.0007	0.87	0.34
D8	58	0.0009	0.0003	0.43	0.14
D8	59	0.0008	0.0003	0.38	0.15
D2	60	0.0026	0.0006	1.29	0.30
D1	61	0.0019	0.0005	0.93	0.23
D3	62	0.0024	0.0006	1.21	0.30
D3	63	0.0025	0.0006	1.24	0.30
D9	64	0.0069	0.0021	3.44	1.07
D1	65	0.0015	0.0004	0.73	0.18
D7	66	0.0011	0.0004	0.57	0.19
D10	67	0.0015	0.0006	0.76	0.28
D6	68	0.0037	0.0013	1.84	0.64
D6	69	0.0032	0.0011	1.58	0.54
D4	70	0.0029	0.0007	1.44	0.35
Other- far	71	0.0020	0.0004	0.99	0.22
Other - near Rasp	72	0.0061	0.0015	3.05	0.74
Other - near Rasp	73	0.0093	0.0021	4.64	1.05
Other - close	74	0.0097	0.0030	4.85	1.49
D2	75	0.0032	0.0007	1.60	0.36
D3	76	0.0025	0.0006	1.26	0.31
D1	77	0.0013	0.0003	0.65	0.16

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D6	78	0.0028	0.0010	1.40	0.50
D9	79	0.0057	0.0018	2.85	0.89
D9	80	0.0040	0.0013	2.00	0.67
D8	81	0.0007	0.0003	0.35	0.15
D10	82	0.0009	0.0003	0.46	0.16
D10	83	0.0010	0.0005	0.48	0.23
D5b	84	0.0057	0.0018	2.86	0.91
D5b	85	0.0073	0.0022	3.66	1.11
D9	86	0.0162	0.0049	8.11	2.44
PBH Residences	A	0.2336	0.0334	116.79	16.71
PBH Residences	B	0.2389	0.0338	119.43	16.89
PBH Residences	C	0.2446	0.0410	122.29	20.50
PBH Residences	D	0.7140	0.0581	357.01	29.06
PBH Residences	E	0.1882	0.0828	94.10	41.39
PBH Residences	F	0.3708	0.1582	185.39	79.09
PBH Residences	G	0.2737	0.2563	136.86	128.14
PBH Residences	H	0.2513	0.3978	125.63	198.90
PBH Residences	I	0.2345	0.5642	117.24	282.09
PBH Residences	J	0.2403	0.2770	120.15	138.49
PBH Residences	K	0.3063	0.1250	153.17	62.49
PBH Residences	L	0.4391	0.3372	219.55	168.61
PBH Residences	M	0.4003	0.0978	200.16	48.91
PBH Residences	N	0.4175	0.1065	208.73	53.27
PBH Residences	O	0.3280	0.1247	164.02	62.35
D5b	P	0.0242	0.0071	12.12	3.54

^a Data from PEL spreadsheets entitled:

- Scenario 1: "Metals_ann_av_TSP & Dep – DISCRETE – Existing – Update 5-6-17" (received on 05/06/2017).
- Scenario 2: "Metals_ann_av_TSP & Dep – DISCRETE – Proposed – Update 5-6-17" (received on 05/06/2017).

^b Calculated over a 15 year mine operation life were from metal deposition rates in TSP using Equation 2.6.1 (Section 2.6).

C.9 Manganese (Mn)

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5a	1	0.00868	0.00246	4.34	1.23
D5a	2	0.01816	0.00380	9.08	1.90
D5a	3	0.03859	0.00487	19.29	2.44
D5a	4	0.02557	0.00614	12.79	3.07
D5a	5	0.02912	0.00329	14.56	1.65
D5a	6	0.01925	0.00233	9.63	1.16
D5b	7	0.00741	0.00137	3.71	0.68
D5b	8	0.00707	0.00140	3.53	0.70
D5b	9	0.00486	0.00109	2.43	0.54
D5b	10	0.00237	0.00071	1.19	0.35
D5b	11	0.00179	0.00060	0.90	0.30
Other - close	12	0.00191	0.00060	0.95	0.30
D4	13	0.00109	0.00041	0.54	0.21
D2	14	0.00130	0.00043	0.65	0.22
Other- far	15	0.00065	0.00024	0.32	0.12
Other- far	16	0.00061	0.00019	0.30	0.09
Other- far	17	0.00053	0.00013	0.27	0.07
Other- far	18	0.00157	0.00036	0.79	0.18
Other- far	19	0.00132	0.00046	0.66	0.23
Other- far	20	0.00111	0.00038	0.55	0.19
D4	21	0.00082	0.00030	0.41	0.15
D4	22	0.00059	0.00024	0.29	0.12
D3	23	0.00050	0.00023	0.25	0.11
D3	24	0.00042	0.00019	0.21	0.09
D3	25	0.00037	0.00017	0.18	0.08
D1	26	0.00029	0.00016	0.15	0.08
D7	27	0.00026	0.00014	0.13	0.07
Other - near Rasp	28	0.00033	0.00016	0.16	0.08
D7	29	0.00032	0.00017	0.16	0.08
D6	30	0.00036	0.00018	0.18	0.09
Other - near Rasp	31	0.00092	0.00034	0.46	0.17
Other - near Rasp	32	0.00101	0.00037	0.50	0.18
Other - near Rasp	33	0.00124	0.00043	0.62	0.21
Other - near Rasp	34	0.00149	0.00050	0.74	0.25
Other - close	35	0.00179	0.00058	0.89	0.29
Other - close	36	0.00201	0.00063	1.01	0.32
Other - close	37	0.00160	0.00055	0.80	0.27

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
Other - close	38	0.00203	0.00064	1.01	0.32
D5b	39	0.00144	0.00053	0.72	0.26
D5b	40	0.00178	0.00060	0.89	0.30
Other - close	41	0.00785	0.00157	3.93	0.78
D6	42	0.00051	0.00023	0.26	0.12
D6	43	0.00060	0.00027	0.30	0.13
D6	44	0.00072	0.00031	0.36	0.16
D6	45	0.00089	0.00037	0.44	0.19
D7	46	0.00025	0.00013	0.13	0.06
D7	47	0.00026	0.00014	0.13	0.07
D7	48	0.00035	0.00017	0.18	0.09
D6	49	0.00039	0.00018	0.19	0.09
D6	50	0.00044	0.00020	0.22	0.10
D8	51	0.00019	0.00010	0.09	0.05
D7	52	0.00023	0.00012	0.12	0.06
D9	53	0.00123	0.00041	0.61	0.20
D9	54	0.00037	0.00014	0.19	0.07
D10	55	0.00033	0.00015	0.17	0.07
D10	56	0.00031	0.00015	0.15	0.07
D6	57	0.00034	0.00018	0.17	0.09
D8	58	0.00017	0.00008	0.08	0.04
D8	59	0.00014	0.00007	0.07	0.04
D2	60	0.00050	0.00024	0.25	0.12
D1	61	0.00036	0.00016	0.18	0.08
D3	62	0.00047	0.00024	0.24	0.12
D3	63	0.00048	0.00026	0.24	0.13
D9	64	0.00135	0.00039	0.68	0.20
D1	65	0.00028	0.00013	0.14	0.07
D7	66	0.00022	0.00011	0.11	0.06
D10	67	0.00029	0.00012	0.15	0.06
D6	68	0.00071	0.00028	0.36	0.14
D6	69	0.00062	0.00027	0.31	0.14
D4	70	0.00056	0.00023	0.28	0.12
Other- far	71	0.00038	0.00015	0.19	0.07
Other - near Rasp	72	0.00120	0.00041	0.60	0.20
Other - near Rasp	73	0.00181	0.00058	0.90	0.29
Other - close	74	0.00190	0.00060	0.95	0.30
D2	75	0.00062	0.00029	0.31	0.14
D3	76	0.00049	0.00025	0.25	0.13
D1	77	0.00025	0.00012	0.13	0.06

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D6	78	0.00054	0.00023	0.27	0.11
D9	79	0.00112	0.00038	0.56	0.19
D9	80	0.00078	0.00027	0.39	0.14
D8	81	0.00013	0.00007	0.07	0.04
D10	82	0.00018	0.00008	0.09	0.04
D10	83	0.00019	0.00011	0.09	0.05
D5b	84	0.00111	0.00040	0.56	0.20
D5b	85	0.00143	0.00044	0.71	0.22
D9	86	0.00323	0.00078	1.62	0.39
PBH Residences	A	0.04906	0.00356	24.53	1.78
PBH Residences	B	0.05018	0.00360	25.09	1.80
PBH Residences	C	0.05134	0.00397	25.67	1.99
PBH Residences	D	0.15141	0.00496	75.71	2.48
PBH Residences	E	0.03910	0.00619	19.55	3.09
PBH Residences	F	0.07768	0.01028	38.84	5.14
PBH Residences	G	0.05692	0.01500	28.46	7.50
PBH Residences	H	0.05204	0.02195	26.02	10.98
PBH Residences	I	0.04867	0.02985	24.33	14.92
PBH Residences	J	0.05002	0.01572	25.01	7.86
PBH Residences	K	0.06433	0.00807	32.17	4.04
PBH Residences	L	0.09213	0.01922	46.07	9.61
PBH Residences	M	0.08382	0.00945	41.91	4.72
PBH Residences	N	0.08742	0.01055	43.71	5.28
PBH Residences	O	0.06828	0.01314	34.14	6.57
D5b	P	0.00483	0.00115	2.42	0.57

^a Data from PEL spreadsheets entitled:

- Scenario 1: "Metals_ann_av_TSP & Dep – DISCRETE – Existing – Update 5-6-17" (received on 05/06/2017).
- Scenario 2: "Metals_ann_av_TSP & Dep – DISCRETE – Proposed – Update 5-6-17" (received on 05/06/2017).

^b Calculated over a 15 year mine operation life were from metal deposition rates in TSP using Equation 2.6.1 (Section 2.6).

C.10 Nickel (Ni)

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5a	1	0.000075	0.000986	0.0376	0.493
D5a	2	0.000161	0.001162	0.0805	0.581
D5a	3	0.000350	0.001066	0.1750	0.533
D5a	4	0.000229	0.000647	0.1145	0.323
D5a	5	0.000265	0.000515	0.1323	0.258
D5a	6	0.000175	0.000386	0.0874	0.193
D5b	7	0.000065	0.000321	0.0327	0.160
D5b	8	0.000062	0.000375	0.0311	0.187
D5b	9	0.000042	0.000327	0.0211	0.164
D5b	10	0.000020	0.000265	0.0101	0.132
D5b	11	0.000015	0.000246	0.0076	0.123
Other - close	12	0.000016	0.000246	0.0081	0.123
D4	13	0.000009	0.000214	0.0045	0.107
D2	14	0.000011	0.000220	0.0054	0.110
Other- far	15	0.000005	0.000122	0.0027	0.061
Other- far	16	0.000005	0.000090	0.0025	0.045
Other- far	17	0.000004	0.000053	0.0022	0.026
Other- far	18	0.000013	0.000154	0.0066	0.077
Other- far	19	0.000011	0.000223	0.0055	0.111
Other- far	20	0.000009	0.000185	0.0046	0.092
D4	21	0.000007	0.000150	0.0034	0.075
D4	22	0.000005	0.000122	0.0025	0.061
D3	23	0.000004	0.000120	0.0021	0.060
D3	24	0.000003	0.000097	0.0017	0.048
D3	25	0.000003	0.000089	0.0015	0.045
D1	26	0.000002	0.000087	0.0012	0.043
D7	27	0.000002	0.000073	0.0011	0.037
Other - near Rasp	28	0.000003	0.000079	0.0014	0.040
D7	29	0.000003	0.000086	0.0013	0.043
D6	30	0.000003	0.000086	0.0015	0.043
Other - near Rasp	31	0.000008	0.000170	0.0039	0.085
Other - near Rasp	32	0.000008	0.000180	0.0042	0.090
Other - near Rasp	33	0.000010	0.000207	0.0052	0.104
Other - near Rasp	34	0.000012	0.000243	0.0062	0.121
Other - close	35	0.000015	0.000250	0.0076	0.125
Other - close	36	0.000017	0.000267	0.0085	0.134
Other - close	37	0.000014	0.000235	0.0068	0.118

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
Other - close	38	0.000017	0.000263	0.0086	0.132
D5b	39	0.000012	0.000226	0.0061	0.113
D5b	40	0.000015	0.000246	0.0075	0.123
Other - close	41	0.000068	0.000415	0.0342	0.208
D6	42	0.000004	0.000110	0.0021	0.055
D6	43	0.000005	0.000125	0.0025	0.063
D6	44	0.000006	0.000145	0.0030	0.073
D6	45	0.000007	0.000171	0.0037	0.086
D7	46	0.000002	0.000066	0.0011	0.033
D7	47	0.000002	0.000071	0.0011	0.035
D7	48	0.000003	0.000084	0.0015	0.042
D6	49	0.000003	0.000089	0.0016	0.045
D6	50	0.000004	0.000098	0.0018	0.049
D8	51	0.000002	0.000052	0.0008	0.026
D7	52	0.000002	0.000062	0.0010	0.031
D9	53	0.000010	0.000167	0.0052	0.084
D9	54	0.000003	0.000065	0.0015	0.033
D10	55	0.000003	0.000066	0.0014	0.033
D10	56	0.000003	0.000063	0.0013	0.031
D6	57	0.000003	0.000089	0.0014	0.044
D8	58	0.000001	0.000041	0.0007	0.020
D8	59	0.000001	0.000034	0.0006	0.017
D2	60	0.000004	0.000133	0.0021	0.066
D1	61	0.000003	0.000083	0.0015	0.041
D3	62	0.000004	0.000135	0.0020	0.068
D3	63	0.000004	0.000144	0.0020	0.072
D9	64	0.000011	0.000151	0.0057	0.076
D1	65	0.000002	0.000071	0.0012	0.036
D7	66	0.000002	0.000057	0.0009	0.029
D10	67	0.000002	0.000053	0.0012	0.027
D6	68	0.000006	0.000121	0.0030	0.061
D6	69	0.000005	0.000128	0.0026	0.064
D4	70	0.000005	0.000120	0.0023	0.060
Other- far	71	0.000003	0.000075	0.0016	0.038
Other - near Rasp	72	0.000010	0.000197	0.0051	0.098
Other - near Rasp	73	0.000015	0.000276	0.0076	0.138
Other - close	74	0.000016	0.000243	0.0080	0.121
D2	75	0.000005	0.000158	0.0026	0.079
D3	76	0.000004	0.000139	0.0020	0.069
D1	77	0.000002	0.000064	0.0011	0.032

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D6	78	0.000005	0.000101	0.0023	0.051
D9	79	0.000009	0.000164	0.0047	0.082
D9	80	0.000007	0.000112	0.0033	0.056
D8	81	0.000001	0.000033	0.0006	0.017
D10	82	0.000001	0.000037	0.0007	0.019
D10	83	0.000002	0.000050	0.0008	0.025
D5b	84	0.000009	0.000175	0.0047	0.087
D5b	85	0.000012	0.000175	0.0060	0.088
D9	86	0.000028	0.000251	0.0139	0.126
PBH Residences	A	0.000451	0.000481	0.2256	0.240
PBH Residences	B	0.000462	0.000482	0.2308	0.241
PBH Residences	C	0.000472	0.000511	0.2358	0.256
PBH Residences	D	0.001408	0.000552	0.7039	0.276
PBH Residences	E	0.000354	0.000586	0.1771	0.293
PBH Residences	F	0.000711	0.000660	0.3553	0.330
PBH Residences	G	0.000515	0.000691	0.2574	0.346
PBH Residences	H	0.000468	0.000725	0.2338	0.363
PBH Residences	I	0.000439	0.000706	0.2195	0.353
PBH Residences	J	0.000453	0.000674	0.2267	0.337
PBH Residences	K	0.000591	0.000621	0.2953	0.311
PBH Residences	L	0.000842	0.000842	0.4210	0.421
PBH Residences	M	0.000763	0.001388	0.3813	0.694
PBH Residences	N	0.000796	0.001620	0.3978	0.810
PBH Residences	O	0.000615	0.001857	0.3075	0.928
D5b	P	0.000042	0.000355	0.0209	0.178

^a Data from PEL spreadsheets entitled:

- Scenario 1: "Metals_ann_av_TSP & Dep – DISCRETE – Existing – Update 5-6-17" (received on 05/06/2017).
- Scenario 2: "Metals_ann_av_TSP & Dep – DISCRETE – Proposed – Update 5-6-17" (received on 05/06/2017).

^b Calculated over a 15 year mine operation life were from metal deposition rates in TSP using Equation 2.6.1 (Section 2.6).

C.11 Zinc (Zn)

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5a	1	0.00592	0.00792	2.96	3.96
D5a	2	0.01011	0.01461	5.06	7.31
D5a	3	0.01651	0.02121	8.26	10.61
D5a	4	0.01272	0.03879	6.36	19.40
D5a	5	0.01221	0.01513	6.10	7.56
D5a	6	0.00820	0.00752	4.10	3.76
D5b	7	0.00433	0.00457	2.17	2.29
D5b	8	0.00425	0.00451	2.12	2.25
D5b	9	0.00330	0.00359	1.65	1.80
D5b	10	0.00189	0.00219	0.94	1.10
D5b	11	0.00148	0.00180	0.74	0.90
Other - close	12	0.00155	0.00179	0.78	0.89
D4	13	0.00097	0.00099	0.49	0.49
D2	14	0.00120	0.00104	0.60	0.52
Other- far	15	0.00059	0.00057	0.30	0.29
Other- far	16	0.00055	0.00047	0.27	0.24
Other- far	17	0.00047	0.00039	0.24	0.20
Other- far	18	0.00137	0.00094	0.69	0.47
Other- far	19	0.00113	0.00117	0.57	0.58
Other- far	20	0.00095	0.00098	0.47	0.49
D4	21	0.00069	0.00077	0.34	0.38
D4	22	0.00051	0.00058	0.25	0.29
D3	23	0.00043	0.00054	0.22	0.27
D3	24	0.00036	0.00044	0.18	0.22
D3	25	0.00032	0.00040	0.16	0.20
D1	26	0.00025	0.00038	0.13	0.19
D7	27	0.00024	0.00037	0.12	0.18
Other - near Rasp	28	0.00029	0.00040	0.15	0.20
D7	29	0.00028	0.00044	0.14	0.22
D6	30	0.00031	0.00048	0.16	0.24
Other - near Rasp	31	0.00079	0.00086	0.40	0.43
Other - near Rasp	32	0.00086	0.00092	0.43	0.46
Other - near Rasp	33	0.00106	0.00110	0.53	0.55
Other - near Rasp	34	0.00127	0.00127	0.63	0.64
Other - close	35	0.00143	0.00167	0.71	0.83
Other - close	36	0.00160	0.00184	0.80	0.92
Other - close	37	0.00130	0.00157	0.65	0.79

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
Other - close	38	0.00161	0.00188	0.81	0.94
D5b	39	0.00121	0.00153	0.61	0.76
D5b	40	0.00147	0.00179	0.73	0.89
Other - close	41	0.00503	0.00514	2.51	2.57
D6	42	0.00045	0.00062	0.23	0.31
D6	43	0.00053	0.00072	0.26	0.36
D6	44	0.00063	0.00086	0.31	0.43
D6	45	0.00077	0.00104	0.38	0.52
D7	46	0.00024	0.00032	0.12	0.16
D7	47	0.00024	0.00034	0.12	0.17
D7	48	0.00029	0.00046	0.15	0.23
D6	49	0.00032	0.00049	0.16	0.25
D6	50	0.00039	0.00054	0.19	0.27
D8	51	0.00017	0.00024	0.09	0.12
D7	52	0.00022	0.00030	0.11	0.15
D9	53	0.00099	0.00125	0.50	0.62
D9	54	0.00033	0.00041	0.17	0.21
D10	55	0.00028	0.00043	0.14	0.21
D10	56	0.00025	0.00045	0.12	0.23
D6	57	0.00030	0.00048	0.15	0.24
D8	58	0.00015	0.00021	0.08	0.10
D8	59	0.00014	0.00021	0.07	0.11
D2	60	0.00044	0.00055	0.22	0.27
D1	61	0.00032	0.00038	0.16	0.19
D3	62	0.00042	0.00054	0.21	0.27
D3	63	0.00042	0.00057	0.21	0.28
D9	64	0.00110	0.00124	0.55	0.62
D1	65	0.00025	0.00031	0.13	0.15
D7	66	0.00020	0.00029	0.10	0.15
D10	67	0.00027	0.00036	0.14	0.18
D6	68	0.00063	0.00082	0.32	0.41
D6	69	0.00055	0.00074	0.27	0.37
D4	70	0.00049	0.00056	0.24	0.28
Other- far	71	0.00035	0.00036	0.17	0.18
Other - near Rasp	72	0.00097	0.00106	0.48	0.53
Other - near Rasp	73	0.00154	0.00148	0.77	0.74
Other - close	74	0.00155	0.00180	0.78	0.90
D2	75	0.00056	0.00065	0.28	0.33
D3	76	0.00043	0.00056	0.22	0.28
D1	77	0.00022	0.00027	0.11	0.14

District/Area	Receptor	Annual average metal deposition in TSP (g/m ² /yr) ^a		Metal in soil (µg/g) ^b	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D6	78	0.00049	0.00065	0.25	0.32
D9	79	0.00094	0.00111	0.47	0.56
D9	80	0.00067	0.00083	0.33	0.41
D8	81	0.00013	0.00021	0.07	0.10
D10	82	0.00016	0.00022	0.08	0.11
D10	83	0.00016	0.00031	0.08	0.15
D5b	84	0.00097	0.00115	0.49	0.57
D5b	85	0.00120	0.00132	0.60	0.66
D9	86	0.00231	0.00260	1.16	1.30
PBH Residences	A	0.01722	0.01409	8.61	7.05
PBH Residences	B	0.01752	0.01424	8.76	7.12
PBH Residences	C	0.01828	0.01732	9.14	8.66
PBH Residences	D	0.04321	0.02447	21.60	12.23
PBH Residences	E	0.01703	0.03496	8.52	17.48
PBH Residences	F	0.02946	0.06655	14.73	33.28
PBH Residences	G	0.02511	0.10785	12.55	53.92
PBH Residences	H	0.02480	0.16721	12.40	83.60
PBH Residences	I	0.02217	0.23703	11.09	118.52
PBH Residences	J	0.02150	0.11669	10.75	58.35
PBH Residences	K	0.02310	0.05301	11.55	26.51
PBH Residences	L	0.03507	0.14169	17.54	70.84
PBH Residences	M	0.03397	0.04085	16.98	20.42
PBH Residences	N	0.03553	0.04481	17.77	22.40
PBH Residences	O	0.03162	0.05052	15.81	25.26
D5b	P	0.00338	0.00370	1.69	1.85

^a Data from PEL spreadsheets entitled:

- Scenario 1: "Metals_ann_av_TSP & Dep – DISCRETE – Existing – Update 5-6-17" (received on 05/06/2017).
- Scenario 2: "Metals_ann_av_TSP & Dep – DISCRETE – Proposed – Update 5-6-17" (received on 05/06/2017).

^b Calculated over a 15 year mine operation life were from metal deposition rates in TSP using Equation 2.6.1 (Section 2.6).

Appendix D: Metal annual average air concentrations (in PM₁₀) used in the HHRA

D.1 Lead (Pb)

District/ Area	Receptor	Annual average Pb in PM ₁₀ (µg/m ³)				
		Modelled existing Nth Mine ^a (without bckgnd)	Adopted background ^b (HVAS1 or HVAS2)	Scenario 1: ^c Existing Nth Mine (with bckgnd)	Scenario 2: ^d Proposed Nth Mine (no bckgnd)	Scenario 3: ^e Proposed Nth Mine (with bckgnd)
D1	26	0.0001	0.0692	0.0693	0.0001	0.0693
D2	14	0.0002	0.0692	0.0694	0.0003	0.0695
D3	23	0.0001	0.0692	0.0693	0.0002	0.0694
D4	13	0.0002	0.0692	0.0694	0.0002	0.0694
D5a	1	0.0005	0.0798	0.0803	0.0012	0.0810
D5a	4	0.0010	0.0798	0.0808	0.0025	0.0823
D5a	D5a_ median	0.0009	0.0798	0.0807	0.0015	0.0813
D5b	7	0.0004	0.0798	0.0802	0.0008	0.0805
D6	45	0.0001	0.0798	0.0799	0.0003	0.0800
D7	48	0.0001	0.0692	0.0693	0.0001	0.0693
D8	51	0.0000	0.0692	0.0692	0.0001	0.0693
D9	86	0.0002	0.0798	0.0800	0.0005	0.0803
D10	56	0.00004	0.0798	0.0798	0.0001	0.0799
Other - close	41	0.0005	0.0798	0.0803	0.0007	0.0805
Other - near Rasp	73	0.0002	0.0692	0.0694	0.0003	0.0695
Other- far	19	0.0001	0.0692	0.0693	0.0001	0.0693
PBH Residences	A	0.0012	0.0798	0.0810	0.0019	0.0816
PBH Residences	I	0.0016	0.0798	0.0814	0.0090	0.0888
PBH Residences	PBH residences_ median	0.0018	0.0798	0.0816	0.0037	0.0835

- ^a From PEL spreadsheet entitled "Metals_ann_av_PM10 - DISCRETE - Existing" (received 05/06/2017).
- ^b Pb in PM₁₀ has only been measured at two monitoring stations (HVAS1 and HVAS2). The 2016 annual average Pb concentrations at these stations (after subtracting the contribution from the existing North Mine) were 0.0692 and 0.0798 µg/m³, respectively (from spreadsheet entitled "21310 Predictions at mon locations - Pb update 5-6-17"). The background concentration at each relevant receptor was taken to be equivalent to the 'background' concentration at the closest monitoring station.
- ^c Modelled existing North Mine PLUS Adopted background.
- ^d From spreadsheet entitled "Metals_ann_av_PM10 - DISCRETE - Proposed" (received 05/06/2017).
- ^e Adopted background PLUS Scenario 2.

D.2 Silver (Ag)

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5a	1	0.0000062	0.0000353
D5a	2	0.0000125	0.0000418
D5a	3	0.0000245	0.0000331
D5a	4	0.0000168	0.0000295
D5a	5	0.0000189	0.0000220
D5a	6	0.0000131	0.0000148
D5b	7	0.0000057	0.0000117
D5b	8	0.0000057	0.0000170
D5b	9	0.0000044	0.0000127
D5b	10	0.0000024	0.0000092
D5b	11	0.0000019	0.0000090
Other - close	12	0.0000021	0.0000084
D4	13	0.0000014	0.0000083
D2	14	0.0000015	0.0000091
Other- far	15	0.0000008	0.0000069
Other- far	16	0.0000005	0.0000048
Other- far	17	0.0000002	0.0000020
Other- far	18	0.0000004	0.0000035
Other- far	19	0.0000006	0.0000045
Other- far	20	0.0000005	0.0000038
D4	21	0.0000012	0.0000067
D4	22	0.0000009	0.0000056
D3	23	0.0000008	0.0000061
D3	24	0.0000007	0.0000050
D3	25	0.0000006	0.0000049
D1	26	0.0000005	0.0000058
D7	27	0.0000004	0.0000047
Other - near Rasp	28	0.0000005	0.0000045
D7	29	0.0000005	0.0000051
D6	30	0.0000005	0.0000043
Other - near Rasp	31	0.0000013	0.0000073
Other - near Rasp	32	0.0000014	0.0000076
Other - near Rasp	33	0.0000017	0.0000081
Other - near Rasp	34	0.0000019	0.0000090
Other - close	35	0.0000020	0.0000097
Other - close	36	0.0000022	0.0000102
Other - close	37	0.0000018	0.0000089

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
Other - close	38	0.0000022	0.0000094
D5b	39	0.0000016	0.0000085
D5b	40	0.0000019	0.0000090
Other - close	41	0.0000070	0.0000128
D6	42	0.0000007	0.0000049
D6	43	0.0000007	0.0000055
D6	44	0.0000009	0.0000063
D6	45	0.0000010	0.0000072
D7	46	0.0000004	0.0000040
D7	47	0.0000004	0.0000045
D7	48	0.0000005	0.0000043
D6	49	0.0000005	0.0000043
D6	50	0.0000006	0.0000044
D8	51	0.0000003	0.0000036
D7	52	0.0000004	0.0000040
D9	53	0.0000012	0.0000075
D9	54	0.0000004	0.0000034
D10	55	0.0000004	0.0000044
D10	56	0.0000004	0.0000040
D6	57	0.0000005	0.0000048
D8	58	0.0000003	0.0000026
D8	59	0.0000002	0.0000023
D2	60	0.0000008	0.0000066
D1	61	0.0000006	0.0000044
D3	62	0.0000007	0.0000070
D3	63	0.0000008	0.0000075
D9	64	0.0000013	0.0000064
D1	65	0.0000005	0.0000041
D7	66	0.0000003	0.0000034
D10	67	0.0000004	0.0000028
D6	68	0.0000008	0.0000048
D6	69	0.0000007	0.0000053
D4	70	0.0000009	0.0000056
Other- far	71	0.0000005	0.0000048
Other - near Rasp	72	0.0000015	0.0000095
Other - near Rasp	73	0.0000022	0.0000098
Other - close	74	0.0000021	0.0000082
D2	75	0.0000009	0.0000085
D3	76	0.0000008	0.0000071
D1	77	0.0000004	0.0000039

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D6	78	0.0000007	0.0000042
D9	79	0.0000011	0.0000072
D9	80	0.0000008	0.0000054
D8	81	0.0000002	0.0000028
D10	82	0.0000002	0.0000027
D10	83	0.0000003	0.0000045
D5b	84	0.0000011	0.0000089
D5b	85	0.0000014	0.0000072
D9	86	0.0000027	0.0000095
PBH Residences	A	0.0000303	0.0000193
PBH Residences	B	0.0000309	0.0000194
PBH Residences	C	0.0000309	0.0000208
PBH Residences	D	0.0000780	0.0000227
PBH Residences	E	0.0000246	0.0000244
PBH Residences	F	0.0000433	0.0000305
PBH Residences	G	0.0000329	0.0000320
PBH Residences	H	0.0000307	0.0000341
PBH Residences	I	0.0000291	0.0000323
PBH Residences	J	0.0000288	0.0000308
PBH Residences	K	0.0000372	0.0000279
PBH Residences	L	0.0000534	0.0000400
PBH Residences	M	0.0000489	0.0000635
PBH Residences	N	0.0000472	0.0000665
PBH Residences	O	0.0000355	0.0000666
D5b	P	0.0000046	0.0000126

^a Data from PEL spreadsheets entitled:

- Scenario 1: "Metals_ann_av_PM10 – DISCRETE – Existing" (received on 05/06/2017).
- Scenario 2: "Metals_ann_av_PM10 – DISCRETE – Proposed" (received on 05/06/2017).

D.3 Arsenic (As)

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5a	1	0.0000166	0.0000993
D5a	2	0.0000283	0.0001200
D5a	3	0.0000454	0.0001000
D5a	4	0.0000354	0.0001189
D5a	5	0.0000354	0.0000764
D5a	6	0.0000252	0.0000477
D5b	7	0.0000143	0.0000361
D5b	8	0.0000142	0.0000508
D5b	9	0.0000115	0.0000380
D5b	10	0.0000070	0.0000266
D5b	11	0.0000057	0.0000254
Other - close	12	0.0000063	0.0000238
D4	13	0.0000051	0.0000229
D2	14	0.0000054	0.0000251
Other- far	15	0.0000027	0.0000189
Other- far	16	0.0000019	0.0000131
Other- far	17	0.0000007	0.0000056
Other- far	18	0.0000015	0.0000097
Other- far	19	0.0000019	0.0000124
Other- far	20	0.0000015	0.0000107
D4	21	0.0000039	0.0000184
D4	22	0.0000030	0.0000154
D3	23	0.0000026	0.0000170
D3	24	0.0000022	0.0000139
D3	25	0.0000020	0.0000134
D1	26	0.0000017	0.0000157
D7	27	0.0000015	0.0000127
Other - near Rasp	28	0.0000017	0.0000123
D7	29	0.0000017	0.0000140
D6	30	0.0000017	0.0000118
Other - near Rasp	31	0.0000044	0.0000201
Other - near Rasp	32	0.0000047	0.0000208
Other - near Rasp	33	0.0000056	0.0000225
Other - near Rasp	34	0.0000065	0.0000252
Other - close	35	0.0000063	0.0000270
Other - close	36	0.0000069	0.0000284
Other - close	37	0.0000056	0.0000248

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
Other - close	38	0.0000067	0.0000263
D5b	39	0.0000048	0.0000239
D5b	40	0.0000056	0.0000254
Other - close	41	0.0000175	0.0000378
D6	42	0.0000023	0.0000137
D6	43	0.0000025	0.0000152
D6	44	0.0000029	0.0000174
D6	45	0.0000033	0.0000200
D7	46	0.0000014	0.0000109
D7	47	0.0000014	0.0000122
D7	48	0.0000017	0.0000118
D6	49	0.0000018	0.0000119
D6	50	0.0000020	0.0000122
D8	51	0.0000010	0.0000100
D7	52	0.0000013	0.0000109
D9	53	0.0000038	0.0000211
D9	54	0.0000015	0.0000095
D10	55	0.0000014	0.0000120
D10	56	0.0000012	0.0000111
D6	57	0.0000015	0.0000131
D8	58	0.0000009	0.0000072
D8	59	0.0000007	0.0000065
D2	60	0.0000027	0.0000183
D1	61	0.0000020	0.0000120
D3	62	0.0000026	0.0000191
D3	63	0.0000026	0.0000206
D9	64	0.0000043	0.0000185
D1	65	0.0000017	0.0000113
D7	66	0.0000012	0.0000093
D10	67	0.0000012	0.0000079
D6	68	0.0000026	0.0000136
D6	69	0.0000024	0.0000150
D4	70	0.0000029	0.0000154
Other- far	71	0.0000017	0.0000131
Other - near Rasp	72	0.0000052	0.0000260
Other - near Rasp	73	0.0000075	0.0000274
Other - close	74	0.0000062	0.0000233
D2	75	0.0000031	0.0000233
D3	76	0.0000027	0.0000194
D1	77	0.0000015	0.0000108

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D6	78	0.0000021	0.0000118
D9	79	0.0000037	0.0000204
D9	80	0.0000028	0.0000152
D8	81	0.0000007	0.0000076
D10	82	0.0000008	0.0000073
D10	83	0.0000008	0.0000123
D5b	84	0.0000037	0.0000249
D5b	85	0.0000045	0.0000206
D9	86	0.0000082	0.0000280
PBH Residences	A	0.0000493	0.0000686
PBH Residences	B	0.0000501	0.0000689
PBH Residences	C	0.0000511	0.0000765
PBH Residences	D	0.0001074	0.0000898
PBH Residences	E	0.0000471	0.0001068
PBH Residences	F	0.0000748	0.0001590
PBH Residences	G	0.0000637	0.0002095
PBH Residences	H	0.0000626	0.0002719
PBH Residences	I	0.0000573	0.0003257
PBH Residences	J	0.0000552	0.0002147
PBH Residences	K	0.0000615	0.0001383
PBH Residences	L	0.0000893	0.0002396
PBH Residences	M	0.0000856	0.0001900
PBH Residences	N	0.0000851	0.0001938
PBH Residences	O	0.0000731	0.0001899
D5b	P	0.0000120	0.0000374

^a Data from PEL spreadsheets entitled:

- Scenario 1: "Metals_ann_av_PM10 – DISCRETE – Existing" (received on 05/06/2017).
- Scenario 2: "Metals_ann_av_PM10 – DISCRETE – Proposed" (received on 05/06/2017).

D.4 Cadmium (Cd)

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5a	1	0.00000075	0.00002473
D5a	2	0.00000140	0.00003091
D5a	3	0.00000262	0.00002681
D5a	4	0.00000174	0.00003819
D5a	5	0.00000182	0.00002178
D5a	6	0.00000118	0.00001237
D5b	7	0.00000051	0.00000922
D5b	8	0.00000049	0.00001286
D5b	9	0.00000037	0.00000964
D5b	10	0.00000020	0.00000669
D5b	11	0.00000016	0.00000640
Other - close	12	0.00000017	0.00000585
D4	13	0.00000013	0.00000563
D2	14	0.00000015	0.00000615
Other- far	15	0.00000007	0.00000465
Other- far	16	0.00000006	0.00000320
Other- far	17	0.00000003	0.00000138
Other- far	18	0.00000006	0.00000234
Other- far	19	0.00000007	0.00000302
Other- far	20	0.00000006	0.00000260
D4	21	0.00000010	0.00000457
D4	22	0.00000007	0.00000380
D3	23	0.00000006	0.00000417
D3	24	0.00000005	0.00000343
D3	25	0.00000005	0.00000331
D1	26	0.00000004	0.00000388
D7	27	0.00000003	0.00000313
Other - near Rasp	28	0.00000004	0.00000305
D7	29	0.00000004	0.00000347
D6	30	0.00000004	0.00000289
Other - near Rasp	31	0.00000011	0.00000496
Other - near Rasp	32	0.00000012	0.00000515
Other - near Rasp	33	0.00000014	0.00000557
Other - near Rasp	34	0.00000016	0.00000621
Other - close	35	0.00000016	0.00000667
Other - close	36	0.00000018	0.00000702
Other - close	37	0.00000015	0.00000614
Other - close	38	0.00000018	0.00000649
D5b	39	0.00000013	0.00000597

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5b	40	0.00000016	0.00000639
Other - close	41	0.00000058	0.00000918
D6	42	0.00000005	0.00000335
D6	43	0.00000006	0.00000372
D6	44	0.00000007	0.00000425
D6	45	0.00000008	0.00000494
D7	46	0.00000003	0.00000270
D7	47	0.00000003	0.00000302
D7	48	0.00000004	0.00000294
D6	49	0.00000004	0.00000295
D6	50	0.00000005	0.00000302
D8	51	0.00000002	0.00000245
D7	52	0.00000003	0.00000268
D9	53	0.00000012	0.00000527
D9	54	0.00000004	0.00000237
D10	55	0.00000004	0.00000302
D10	56	0.00000003	0.00000274
D6	57	0.00000003	0.00000329
D8	58	0.00000002	0.00000178
D8	59	0.00000002	0.00000160
D2	60	0.00000006	0.00000447
D1	61	0.00000005	0.00000297
D3	62	0.00000006	0.00000470
D3	63	0.00000006	0.00000504
D9	64	0.00000013	0.00000466
D1	65	0.00000004	0.00000281
D7	66	0.00000003	0.00000232
D10	67	0.00000003	0.00000195
D6	68	0.00000007	0.00000337
D6	69	0.00000006	0.00000379
D4	70	0.00000007	0.00000380
Other- far	71	0.00000004	0.00000323
Other - near Rasp	72	0.00000014	0.00000646
Other - near Rasp	73	0.00000019	0.00000673
Other - close	74	0.00000017	0.00000571
D2	75	0.00000008	0.00000571
D3	76	0.00000006	0.00000478
D1	77	0.00000003	0.00000267
D6	78	0.00000005	0.00000294
D9	79	0.00000011	0.00000510
D9	80	0.00000008	0.00000372

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D8	81	0.00000002	0.00000187
D10	82	0.00000002	0.00000180
D10	83	0.00000002	0.00000309
D5b	84	0.00000010	0.00000631
D5b	85	0.00000013	0.00000521
D9	86	0.00000027	0.00000702
PBH Residences	A	0.00000280	0.00001924
PBH Residences	B	0.00000286	0.00001935
PBH Residences	C	0.00000286	0.00002234
PBH Residences	D	0.00000664	0.00002769
PBH Residences	E	0.00000248	0.00003495
PBH Residences	F	0.00000426	0.00005643
PBH Residences	G	0.00000325	0.00008093
PBH Residences	H	0.00000305	0.00011090
PBH Residences	I	0.00000285	0.00013877
PBH Residences	J	0.00000286	0.00008439
PBH Residences	K	0.00000367	0.00004841
PBH Residences	L	0.00000488	0.00009139
PBH Residences	M	0.00000458	0.00005163
PBH Residences	N	0.00000465	0.00005212
PBH Residences	O	0.00000373	0.00005065
D5b	P	0.00000037	0.00000944

^a Data from PEL spreadsheets entitled:

- Scenario 1: "Metals_ann_av_PM10 – DISCRETE – Existing" (received on 05/06/2017).
- Scenario 2: "Metals_ann_av_PM10 – DISCRETE – Proposed" (received on 05/06/2017).

D.5 Chromium (Cr)

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5a	1	0.000549	0.000088
D5a	2	0.001127	0.000116
D5a	3	0.002235	0.000114
D5a	4	0.001552	0.000089
D5a	5	0.001768	0.000077
D5a	6	0.001223	0.000070
D5b	7	0.000529	0.000040
D5b	8	0.000527	0.000052
D5b	9	0.000399	0.000038
D5b	10	0.000213	0.000025
D5b	11	0.000165	0.000023
Other - close	12	0.000181	0.000022
D4	13	0.000124	0.000021
D2	14	0.000128	0.000023
Other- far	15	0.000067	0.000017
Other- far	16	0.000047	0.000012
Other- far	17	0.000017	0.000005
Other- far	18	0.000038	0.000008
Other- far	19	0.000050	0.000011
Other- far	20	0.000040	0.000009
D4	21	0.000101	0.000017
D4	22	0.000078	0.000014
D3	23	0.000068	0.000015
D3	24	0.000060	0.000012
D3	25	0.000055	0.000012
D1	26	0.000039	0.000013
D7	27	0.000034	0.000011
Other - near Rasp	28	0.000045	0.000011
D7	29	0.000038	0.000012
D6	30	0.000043	0.000010
Other - near Rasp	31	0.000112	0.000018
Other - near Rasp	32	0.000121	0.000019
Other - near Rasp	33	0.000143	0.000021
Other - near Rasp	34	0.000167	0.000023
Other - close	35	0.000172	0.000025
Other - close	36	0.000191	0.000026
Other - close	37	0.000156	0.000023
Other - close	38	0.000191	0.000025
D5b	39	0.000137	0.000021

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5b	40	0.000164	0.000023
Other - close	41	0.000627	0.000043
D6	42	0.000058	0.000012
D6	43	0.000065	0.000013
D6	44	0.000074	0.000015
D6	45	0.000089	0.000017
D7	46	0.000036	0.000009
D7	47	0.000035	0.000010
D7	48	0.000043	0.000010
D6	49	0.000047	0.000010
D6	50	0.000052	0.000011
D8	51	0.000026	0.000008
D7	52	0.000033	0.000009
D9	53	0.000105	0.000018
D9	54	0.000038	0.000008
D10	55	0.000033	0.000010
D10	56	0.000033	0.000009
D6	57	0.000038	0.000011
D8	58	0.000023	0.000006
D8	59	0.000018	0.000005
D2	60	0.000069	0.000016
D1	61	0.000053	0.000011
D3	62	0.000065	0.000016
D3	63	0.000067	0.000018
D9	64	0.000116	0.000016
D1	65	0.000042	0.000010
D7	66	0.000030	0.000008
D10	67	0.000030	0.000007
D6	68	0.000072	0.000012
D6	69	0.000065	0.000013
D4	70	0.000075	0.000014
Other- far	71	0.000040	0.000011
Other - near Rasp	72	0.000125	0.000023
Other - near Rasp	73	0.000195	0.000026
Other - close	74	0.000180	0.000022
D2	75	0.000075	0.000020
D3	76	0.000067	0.000017
D1	77	0.000038	0.000009
D6	78	0.000058	0.000010
D9	79	0.000098	0.000018
D9	80	0.000073	0.000013

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D8	81	0.000017	0.000006
D10	82	0.000018	0.000006
D10	83	0.000021	0.000010
D5b	84	0.000100	0.000021
D5b	85	0.000125	0.000018
D9	86	0.000248	0.000026
PBH Residences	A	0.002869	0.000089
PBH Residences	B	0.002930	0.000090
PBH Residences	C	0.002933	0.000092
PBH Residences	D	0.007401	0.000099
PBH Residences	E	0.002282	0.000099
PBH Residences	F	0.004062	0.000113
PBH Residences	G	0.003040	0.000111
PBH Residences	H	0.002813	0.000114
PBH Residences	I	0.002673	0.000108
PBH Residences	J	0.002664	0.000104
PBH Residences	K	0.003518	0.000095
PBH Residences	L	0.004932	0.000134
PBH Residences	M	0.004493	0.000239
PBH Residences	N	0.004293	0.000257
PBH Residences	O	0.003168	0.000349
D5b	P	0.000419	0.000038

^a Data from PEL spreadsheets entitled:

- Scenario 1: "Metals_ann_av_PM10 – DISCRETE – Existing" (received on 05/06/2017).
- Scenario 2: "Metals_ann_av_PM10 – DISCRETE – Proposed" (received on 05/06/2017).

D.6 Copper (Cu)

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5a	1	0.0000181	0.0000268
D5a	2	0.0000322	0.0000435
D5a	3	0.0000547	0.0000543
D5a	4	0.0000414	0.0000936
D5a	5	0.0000428	0.0000556
D5a	6	0.0000299	0.0000313
D5b	7	0.0000156	0.0000194
D5b	8	0.0000156	0.0000198
D5b	9	0.0000124	0.0000186
D5b	10	0.0000073	0.0000109
D5b	11	0.0000059	0.0000094
Other - close	12	0.0000065	0.0000064
D4	13	0.0000051	0.0000043
D2	14	0.0000053	0.0000042
Other- far	15	0.0000027	0.0000025
Other- far	16	0.0000019	0.0000019
Other- far	17	0.0000007	0.0000011
Other- far	18	0.0000015	0.0000022
Other- far	19	0.0000019	0.0000025
Other- far	20	0.0000015	0.0000021
D4	21	0.0000039	0.0000034
D4	22	0.0000030	0.0000027
D3	23	0.0000026	0.0000025
D3	24	0.0000023	0.0000020
D3	25	0.0000020	0.0000019
D1	26	0.0000017	0.0000019
D7	27	0.0000014	0.0000016
Other - near Rasp	28	0.0000017	0.0000017
D7	29	0.0000016	0.0000018
D6	30	0.0000017	0.0000024
Other - near Rasp	31	0.0000044	0.0000039
Other - near Rasp	32	0.0000047	0.0000042
Other - near Rasp	33	0.0000056	0.0000050
Other - near Rasp	34	0.0000065	0.0000060
Other - close	35	0.0000064	0.0000052
Other - close	36	0.0000071	0.0000057
Other - close	37	0.0000058	0.0000051
Other - close	38	0.0000069	0.0000060
D5b	39	0.0000050	0.0000084

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5b	40	0.0000058	0.0000093
Other - close	41	0.0000190	0.0000158
D6	42	0.0000023	0.0000028
D6	43	0.0000026	0.0000038
D6	44	0.0000029	0.0000049
D6	45	0.0000034	0.0000062
D7	46	0.0000014	0.0000016
D7	47	0.0000014	0.0000017
D7	48	0.0000017	0.0000016
D6	49	0.0000018	0.0000017
D6	50	0.0000020	0.0000020
D8	51	0.0000010	0.0000015
D7	52	0.0000013	0.0000016
D9	53	0.0000039	0.0000055
D9	54	0.0000015	0.0000020
D10	55	0.0000013	0.0000014
D10	56	0.0000012	0.0000024
D6	57	0.0000015	0.0000027
D8	58	0.0000009	0.0000010
D8	59	0.0000007	0.0000014
D2	60	0.0000027	0.0000027
D1	61	0.0000020	0.0000019
D3	62	0.0000026	0.0000028
D3	63	0.0000027	0.0000029
D9	64	0.0000044	0.0000072
D1	65	0.0000017	0.0000018
D7	66	0.0000012	0.0000013
D10	67	0.0000012	0.0000017
D6	68	0.0000027	0.0000045
D6	69	0.0000024	0.0000039
D4	70	0.0000029	0.0000026
Other- far	71	0.0000016	0.0000017
Other - near Rasp	72	0.0000051	0.0000037
Other - near Rasp	73	0.0000075	0.0000069
Other - close	74	0.0000064	0.0000073
D2	75	0.0000031	0.0000031
D3	76	0.0000027	0.0000028
D1	77	0.0000015	0.0000016
D6	78	0.0000022	0.0000033
D9	79	0.0000037	0.0000060
D9	80	0.0000028	0.0000041

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D8	81	0.0000007	0.0000018
D10	82	0.0000008	0.0000008
D10	83	0.0000008	0.0000017
D5b	84	0.0000038	0.0000057
D5b	85	0.0000046	0.0000060
D9	86	0.0000085	0.0000129
PBH Residences	A	0.0000627	0.0000544
PBH Residences	B	0.0000638	0.0000548
PBH Residences	C	0.0000647	0.0000635
PBH Residences	D	0.0001451	0.0000807
PBH Residences	E	0.0000564	0.0001025
PBH Residences	F	0.0000930	0.0001692
PBH Residences	G	0.0000762	0.0002352
PBH Residences	H	0.0000739	0.0003148
PBH Residences	I	0.0000681	0.0003745
PBH Residences	J	0.0000663	0.0002325
PBH Residences	K	0.0000779	0.0001321
PBH Residences	L	0.0001124	0.0002679
PBH Residences	M	0.0001066	0.0001571
PBH Residences	N	0.0001046	0.0001718
PBH Residences	O	0.0000863	0.0001807
D5b	P	0.0000130	0.0000192

^a Data from PEL spreadsheets entitled:

- Scenario 1: "Metals_ann_av_PM10 – DISCRETE – Existing" (received on 05/06/2017).
- Scenario 2: "Metals_ann_av_PM10 – DISCRETE – Proposed" (received on 05/06/2017).

D.7 Mercury (Hg)

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5a	1	0.00000194	0.00007754
D5a	2	0.00000403	0.00014687
D5a	3	0.00000818	0.00019921
D5a	4	0.00000538	0.00053912
D5a	5	0.00000609	0.00024238
D5a	6	0.00000412	0.00010678
D5b	7	0.00000171	0.00006349
D5b	8	0.00000168	0.00006683
D5b	9	0.00000126	0.00005691
D5b	10	0.00000066	0.00003193
D5b	11	0.00000051	0.00002660
Other - close	12	0.00000057	0.00001726
D4	13	0.00000037	0.00001092
D2	14	0.00000039	0.00001092
Other- far	15	0.00000020	0.00000665
Other- far	16	0.00000014	0.00000427
Other- far	17	0.00000006	0.00000269
Other- far	18	0.00000013	0.00000496
Other- far	19	0.00000016	0.00000572
Other- far	20	0.00000013	0.00000499
D4	21	0.00000031	0.00000937
D4	22	0.00000024	0.00000750
D3	23	0.00000021	0.00000700
D3	24	0.00000018	0.00000596
D3	25	0.00000016	0.00000557
D1	26	0.00000013	0.00000518
D7	27	0.00000011	0.00000446
Other - near Rasp	28	0.00000014	0.00000504
D7	29	0.00000012	0.00000518
D6	30	0.00000013	0.00000578
Other - near Rasp	31	0.00000035	0.00001048
Other - near Rasp	32	0.00000037	0.00001125
Other - near Rasp	33	0.00000044	0.00001328
Other - near Rasp	34	0.00000051	0.00001586
Other - close	35	0.00000056	0.00001524
Other - close	36	0.00000062	0.00001684
Other - close	37	0.00000050	0.00001453
Other - close	38	0.00000061	0.00001719
D5b	39	0.00000043	0.00002235

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5b	40	0.00000051	0.00002649
Other - close	41	0.00000206	0.00004171
D6	42	0.00000018	0.00000712
D6	43	0.00000020	0.00000877
D6	44	0.00000024	0.00001120
D6	45	0.00000028	0.00001509
D7	46	0.00000011	0.00000470
D7	47	0.00000011	0.00000490
D7	48	0.00000014	0.00000483
D6	49	0.00000015	0.00000507
D6	50	0.00000016	0.00000577
D8	51	0.00000008	0.00000388
D7	52	0.00000010	0.00000439
D9	53	0.00000035	0.00001632
D9	54	0.00000012	0.00000613
D10	55	0.00000011	0.00000533
D10	56	0.00000011	0.00000626
D6	57	0.00000012	0.00000824
D8	58	0.00000007	0.00000322
D8	59	0.00000006	0.00000362
D2	60	0.00000020	0.00000685
D1	61	0.00000016	0.00000553
D3	62	0.00000019	0.00000737
D3	63	0.00000020	0.00000732
D9	64	0.00000037	0.00002151
D1	65	0.00000013	0.00000510
D7	66	0.00000009	0.00000415
D10	67	0.00000010	0.00000449
D6	68	0.00000022	0.00001239
D6	69	0.00000020	0.00001241
D4	70	0.00000023	0.00000730
Other- far	71	0.00000012	0.00000447
Other - near Rasp	72	0.00000041	0.00001114
Other - near Rasp	73	0.00000059	0.00001816
Other - close	74	0.00000056	0.00001848
D2	75	0.00000022	0.00000768
D3	76	0.00000020	0.00000755
D1	77	0.00000011	0.00000470
D6	78	0.00000018	0.00000960
D9	79	0.00000031	0.00001758
D9	80	0.00000024	0.00001072

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D8	81	0.00000005	0.00000421
D10	82	0.00000006	0.00000226
D10	83	0.00000007	0.00000546
D5b	84	0.00000031	0.00001995
D5b	85	0.00000039	0.00001998
D9	86	0.00000080	0.00003751
PBH Residences	A	0.00000994	0.00022422
PBH Residences	B	0.00001016	0.00022641
PBH Residences	C	0.00001009	0.00028370
PBH Residences	D	0.00002574	0.00039643
PBH Residences	E	0.00000793	0.00055549
PBH Residences	F	0.00001402	0.00101967
PBH Residences	G	0.00001038	0.00160432
PBH Residences	H	0.00000960	0.00231399
PBH Residences	I	0.00000918	0.00299509
PBH Residences	J	0.00000919	0.00168324
PBH Residences	K	0.00001224	0.00082964
PBH Residences	L	0.00001720	0.00176964
PBH Residences	M	0.00001577	0.00048686
PBH Residences	N	0.00001525	0.00048651
PBH Residences	O	0.00001137	0.00048187
D5b	P	0.00000131	0.00005547

^a Data from PEL spreadsheets entitled:

- Scenario 1: "Metals_ann_av_PM10 – DISCRETE – Existing" (received on 05/06/2017).
- Scenario 2: "Metals_ann_av_PM10 – DISCRETE – Proposed" (received on 05/06/2017).

D.8 Iron (Fe)

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5a	1	0.00626	0.00162
D5a	2	0.01217	0.00278
D5a	3	0.02281	0.00367
D5a	4	0.01638	0.00802
D5a	5	0.01806	0.00425
D5a	6	0.01258	0.00234
D5b	7	0.00586	0.00139
D5b	8	0.00583	0.00144
D5b	9	0.00451	0.00122
D5b	10	0.00251	0.00069
D5b	11	0.00197	0.00057
Other - close	12	0.00217	0.00042
D4	13	0.00158	0.00026
D2	14	0.00165	0.00026
Other- far	15	0.00085	0.00015
Other- far	16	0.00059	0.00011
Other- far	17	0.00021	0.00006
Other- far	18	0.00048	0.00013
Other- far	19	0.00062	0.00015
Other- far	20	0.00049	0.00012
D4	21	0.00126	0.00020
D4	22	0.00096	0.00017
D3	23	0.00084	0.00016
D3	24	0.00074	0.00013
D3	25	0.00067	0.00012
D1	26	0.00051	0.00010
D7	27	0.00043	0.00009
Other - near Rasp	28	0.00056	0.00010
D7	29	0.00049	0.00010
D6	30	0.00053	0.00014
Other - near Rasp	31	0.00140	0.00024
Other - near Rasp	32	0.00151	0.00025
Other - near Rasp	33	0.00179	0.00030
Other - near Rasp	34	0.00208	0.00037
Other - close	35	0.00210	0.00034
Other - close	36	0.00231	0.00038
Other - close	37	0.00189	0.00033
Other - close	38	0.00229	0.00040
D5b	39	0.00165	0.00050

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5b	40	0.00196	0.00057
Other - close	41	0.00699	0.00112
D6	42	0.00072	0.00017
D6	43	0.00081	0.00022
D6	44	0.00092	0.00028
D6	45	0.00109	0.00035
D7	46	0.00045	0.00010
D7	47	0.00044	0.00010
D7	48	0.00053	0.00010
D6	49	0.00058	0.00011
D6	50	0.00064	0.00013
D8	51	0.00033	0.00008
D7	52	0.00041	0.00009
D9	53	0.00128	0.00034
D9	54	0.00048	0.00013
D10	55	0.00042	0.00009
D10	56	0.00040	0.00014
D6	57	0.00047	0.00016
D8	58	0.00029	0.00007
D8	59	0.00023	0.00008
D2	60	0.00086	0.00016
D1	61	0.00066	0.00012
D3	62	0.00082	0.00016
D3	63	0.00084	0.00017
D9	64	0.00143	0.00045
D1	65	0.00053	0.00011
D7	66	0.00037	0.00008
D10	67	0.00038	0.00010
D6	68	0.00088	0.00028
D6	69	0.00079	0.00025
D4	70	0.00093	0.00016
Other- far	71	0.00051	0.00010
Other - near Rasp	72	0.00159	0.00023
Other - near Rasp	73	0.00243	0.00043
Other - close	74	0.00215	0.00046
D2	75	0.00096	0.00017
D3	76	0.00084	0.00016
D1	77	0.00047	0.00010
D6	78	0.00071	0.00021
D9	79	0.00121	0.00037
D9	80	0.00091	0.00025

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D8	81	0.00021	0.00010
D10	82	0.00024	0.00005
D10	83	0.00027	0.00010
D5b	84	0.00124	0.00037
D5b	85	0.00152	0.00041
D9	86	0.00292	0.00083
PBH Residences	A	0.02831	0.00424
PBH Residences	B	0.02888	0.00427
PBH Residences	C	0.02903	0.00501
PBH Residences	D	0.07049	0.00657
PBH Residences	E	0.02347	0.00866
PBH Residences	F	0.04068	0.01502
PBH Residences	G	0.03139	0.02225
PBH Residences	H	0.02949	0.03108
PBH Residences	I	0.02775	0.03912
PBH Residences	J	0.02742	0.02284
PBH Residences	K	0.03483	0.01197
PBH Residences	L	0.04913	0.02454
PBH Residences	M	0.04526	0.00941
PBH Residences	N	0.04361	0.00977
PBH Residences	O	0.03341	0.01032
D5b	P	0.00472	0.00125

^a Data from PEL spreadsheets entitled:

- Scenario 1: "Metals_ann_av_PM10 – DISCRETE – Existing" (received on 05/06/2017).
- Scenario 2: "Metals_ann_av_PM10 – DISCRETE – Proposed" (received on 05/06/2017).

D.9 Manganese (Mn)

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5a	1	0.00126	0.00094
D5a	2	0.00249	0.00117
D5a	3	0.00473	0.00104
D5a	4	0.00337	0.00115
D5a	5	0.00374	0.00080
D5a	6	0.00260	0.00055
D5b	7	0.00118	0.00039
D5b	8	0.00118	0.00051
D5b	9	0.00090	0.00039
D5b	10	0.00050	0.00026
D5b	11	0.00039	0.00025
Other - close	12	0.00043	0.00023
D4	13	0.00031	0.00021
D2	14	0.00032	0.00023
Other- far	15	0.00016	0.00017
Other- far	16	0.00011	0.00012
Other- far	17	0.00004	0.00005
Other- far	18	0.00009	0.00009
Other- far	19	0.00012	0.00012
Other- far	20	0.00010	0.00010
D4	21	0.00025	0.00017
D4	22	0.00019	0.00014
D3	23	0.00016	0.00016
D3	24	0.00014	0.00013
D3	25	0.00013	0.00012
D1	26	0.00010	0.00014
D7	27	0.00008	0.00012
Other - near Rasp	28	0.00011	0.00011
D7	29	0.00010	0.00013
D6	30	0.00010	0.00011
Other - near Rasp	31	0.00027	0.00019
Other - near Rasp	32	0.00029	0.00020
Other - near Rasp	33	0.00035	0.00021
Other - near Rasp	34	0.00041	0.00024
Other - close	35	0.00041	0.00025
Other - close	36	0.00046	0.00027
Other - close	37	0.00037	0.00023
Other - close	38	0.00045	0.00025
D5b	39	0.00033	0.00023

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5b	40	0.00039	0.00025
Other - close	41	0.00141	0.00040
D6	42	0.00014	0.00013
D6	43	0.00016	0.00014
D6	44	0.00018	0.00017
D6	45	0.00021	0.00019
D7	46	0.00009	0.00010
D7	47	0.00009	0.00011
D7	48	0.00010	0.00011
D6	49	0.00011	0.00011
D6	50	0.00013	0.00011
D8	51	0.00006	0.00009
D7	52	0.00008	0.00010
D9	53	0.00025	0.00020
D9	54	0.00009	0.00009
D10	55	0.00008	0.00011
D10	56	0.00008	0.00010
D6	57	0.00009	0.00012
D8	58	0.00006	0.00007
D8	59	0.00004	0.00006
D2	60	0.00017	0.00017
D1	61	0.00013	0.00011
D3	62	0.00016	0.00017
D3	63	0.00016	0.00019
D9	64	0.00028	0.00018
D1	65	0.00010	0.00010
D7	66	0.00007	0.00009
D10	67	0.00007	0.00007
D6	68	0.00017	0.00013
D6	69	0.00016	0.00014
D4	70	0.00018	0.00014
Other- far	71	0.00010	0.00012
Other - near Rasp	72	0.00031	0.00024
Other - near Rasp	73	0.00047	0.00026
Other - close	74	0.00042	0.00023
D2	75	0.00019	0.00021
D3	76	0.00016	0.00018
D1	77	0.00009	0.00010
D6	78	0.00014	0.00011
D9	79	0.00024	0.00019
D9	80	0.00018	0.00014

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D8	81	0.00004	0.00007
D10	82	0.00005	0.00007
D10	83	0.00005	0.00011
D5b	84	0.00024	0.00023
D5b	85	0.00030	0.00020
D9	86	0.00058	0.00028
PBH Residences	A	0.00592	0.00078
PBH Residences	B	0.00604	0.00078
PBH Residences	C	0.00607	0.00084
PBH Residences	D	0.01490	0.00097
PBH Residences	E	0.00486	0.00111
PBH Residences	F	0.00848	0.00157
PBH Residences	G	0.00649	0.00194
PBH Residences	H	0.00608	0.00241
PBH Residences	I	0.00573	0.00276
PBH Residences	J	0.00568	0.00193
PBH Residences	K	0.00728	0.00133
PBH Residences	L	0.01027	0.00223
PBH Residences	M	0.00944	0.00211
PBH Residences	N	0.00908	0.00220
PBH Residences	O	0.00690	0.00237
D5b	P	0.00095	0.00039

^a Data from PEL spreadsheets entitled:

- Scenario 1: "Metals_ann_av_PM10 – DISCRETE – Existing" (received on 05/06/2017).
- Scenario 2: "Metals_ann_av_PM10 – DISCRETE – Proposed" (received on 05/06/2017).

D.10 Nickel (Ni)

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5a	1	0.0000107	0.0005511
D5a	2	0.0000215	0.0006461
D5a	3	0.0000421	0.0004958
D5a	4	0.0000294	0.0004338
D5a	5	0.0000332	0.0003204
D5a	6	0.0000229	0.0002144
D5b	7	0.0000101	0.0001746
D5b	8	0.0000101	0.0002618
D5b	9	0.0000077	0.0001922
D5b	10	0.0000042	0.0001410
D5b	11	0.0000033	0.0001383
Other - close	12	0.0000036	0.0001316
D4	13	0.0000025	0.0001315
D2	14	0.0000026	0.0001443
Other- far	15	0.0000013	0.0001101
Other- far	16	0.0000009	0.0000762
Other- far	17	0.0000003	0.0000322
Other- far	18	0.0000008	0.0000544
Other- far	19	0.0000010	0.0000704
Other- far	20	0.0000008	0.0000606
D4	21	0.0000020	0.0001065
D4	22	0.0000015	0.0000887
D3	23	0.0000013	0.0000979
D3	24	0.0000012	0.0000804
D3	25	0.0000011	0.0000776
D1	26	0.0000008	0.0000925
D7	27	0.0000007	0.0000745
Other - near Rasp	28	0.0000009	0.0000716
D7	29	0.0000008	0.0000822
D6	30	0.0000008	0.0000675
Other - near Rasp	31	0.0000022	0.0001154
Other - near Rasp	32	0.0000024	0.0001195
Other - near Rasp	33	0.0000028	0.0001283
Other - near Rasp	34	0.0000033	0.0001421
Other - close	35	0.0000034	0.0001534
Other - close	36	0.0000038	0.0001607
Other - close	37	0.0000031	0.0001410
Other - close	38	0.0000038	0.0001475
D5b	39	0.0000027	0.0001315

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5b	40	0.0000032	0.0001382
Other - close	41	0.0000121	0.0001941
D6	42	0.0000011	0.0000779
D6	43	0.0000013	0.0000860
D6	44	0.0000015	0.0000975
D6	45	0.0000018	0.0001119
D7	46	0.0000007	0.0000632
D7	47	0.0000007	0.0000710
D7	48	0.0000009	0.0000692
D6	49	0.0000009	0.0000694
D6	50	0.0000010	0.0000705
D8	51	0.0000005	0.0000578
D7	52	0.0000007	0.0000632
D9	53	0.0000021	0.0001175
D9	54	0.0000008	0.0000542
D10	55	0.0000007	0.0000707
D10	56	0.0000007	0.0000634
D6	57	0.0000008	0.0000754
D8	58	0.0000005	0.0000417
D8	59	0.0000004	0.0000370
D2	60	0.0000014	0.0001053
D1	61	0.0000011	0.0000694
D3	62	0.0000013	0.0001112
D3	63	0.0000013	0.0001193
D9	64	0.0000023	0.0000980
D1	65	0.0000008	0.0000659
D7	66	0.0000006	0.0000544
D10	67	0.0000006	0.0000451
D6	68	0.0000014	0.0000738
D6	69	0.0000013	0.0000841
D4	70	0.0000015	0.0000887
Other- far	71	0.0000008	0.0000768
Other - near Rasp	72	0.0000025	0.0001518
Other - near Rasp	73	0.0000038	0.0001532
Other - close	74	0.0000035	0.0001276
D2	75	0.0000015	0.0001359
D3	76	0.0000013	0.0001130
D1	77	0.0000007	0.0000627
D6	78	0.0000011	0.0000655
D9	79	0.0000019	0.0001128
D9	80	0.0000015	0.0000837

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D8	81	0.0000003	0.0000434
D10	82	0.0000004	0.0000430
D10	83	0.0000004	0.0000725
D5b	84	0.0000020	0.0001402
D5b	85	0.0000024	0.0001126
D9	86	0.0000048	0.0001432
PBH Residences	A	0.0000534	0.0002746
PBH Residences	B	0.0000545	0.0002752
PBH Residences	C	0.0000546	0.0002942
PBH Residences	D	0.0001365	0.0003182
PBH Residences	E	0.0000429	0.0003416
PBH Residences	F	0.0000755	0.0004203
PBH Residences	G	0.0000569	0.0004382
PBH Residences	H	0.0000530	0.0004645
PBH Residences	I	0.0000502	0.0004471
PBH Residences	J	0.0000500	0.0004310
PBH Residences	K	0.0000653	0.0003976
PBH Residences	L	0.0000919	0.0005489
PBH Residences	M	0.0000839	0.0008985
PBH Residences	N	0.0000805	0.0009302
PBH Residences	O	0.0000601	0.0009097
D5b	P	0.0000081	0.0001901

^a Data from PEL spreadsheets entitled:

- Scenario 1: "Metals_ann_av_PM10 – DISCRETE – Existing" (received on 05/06/2017).
- Scenario 2: "Metals_ann_av_PM10 – DISCRETE – Proposed" (received on 05/06/2017).

D.11 Zinc (Zn)

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5a	1	0.00087	0.00212
D5a	2	0.00143	0.00276
D5a	3	0.00217	0.00280
D5a	4	0.00178	0.00453
D5a	5	0.00171	0.00267
D5a	6	0.00122	0.00154
D5b	7	0.00073	0.00104
D5b	8	0.00073	0.00124
D5b	9	0.00060	0.00104
D5b	10	0.00037	0.00063
D5b	11	0.00030	0.00057
Other - close	12	0.00033	0.00049
D4	13	0.00027	0.00043
D2	14	0.00029	0.00046
Other- far	15	0.00014	0.00033
Other- far	16	0.00010	0.00023
Other- far	17	0.00004	0.00010
Other- far	18	0.00008	0.00020
Other- far	19	0.00010	0.00025
Other- far	20	0.00008	0.00021
D4	21	0.00021	0.00033
D4	22	0.00016	0.00027
D3	23	0.00014	0.00030
D3	24	0.00012	0.00024
D3	25	0.00011	0.00024
D1	26	0.00009	0.00025
D7	27	0.00008	0.00021
Other - near Rasp	28	0.00009	0.00021
D7	29	0.00009	0.00023
D6	30	0.00009	0.00022
Other - near Rasp	31	0.00023	0.00037
Other - near Rasp	32	0.00025	0.00039
Other - near Rasp	33	0.00030	0.00043
Other - near Rasp	34	0.00034	0.00050
Other - close	35	0.00034	0.00051
Other - close	36	0.00037	0.00054
Other - close	37	0.00030	0.00047
Other - close	38	0.00035	0.00051
D5b	39	0.00026	0.00053

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5b	40	0.00030	0.00057
Other - close	41	0.00089	0.00096
D6	42	0.00012	0.00026
D6	43	0.00014	0.00031
D6	44	0.00015	0.00036
D6	45	0.00018	0.00042
D7	46	0.00007	0.00019
D7	47	0.00008	0.00021
D7	48	0.00009	0.00020
D6	49	0.00009	0.00020
D6	50	0.00011	0.00021
D8	51	0.00006	0.00018
D7	52	0.00007	0.00019
D9	53	0.00020	0.00044
D9	54	0.00008	0.00018
D10	55	0.00007	0.00019
D10	56	0.00007	0.00021
D6	57	0.00008	0.00024
D8	58	0.00005	0.00012
D8	59	0.00004	0.00012
D2	60	0.00014	0.00034
D1	61	0.00011	0.00021
D3	62	0.00014	0.00033
D3	63	0.00014	0.00037
D9	64	0.00023	0.00046
D1	65	0.00009	0.00019
D7	66	0.00006	0.00016
D10	67	0.00007	0.00014
D6	68	0.00014	0.00030
D6	69	0.00013	0.00030
D4	70	0.00015	0.00028
Other- far	71	0.00009	0.00023
Other - near Rasp	72	0.00027	0.00044
Other - near Rasp	73	0.00040	0.00056
Other - close	74	0.00033	0.00051
D2	75	0.00017	0.00041
D3	76	0.00014	0.00034
D1	77	0.00008	0.00018
D6	78	0.00011	0.00024
D9	79	0.00020	0.00043
D9	80	0.00015	0.00033

District/Area	Receptor	Annual average metal in PM ₁₀ (µg/m ³) ^a	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D8	81	0.00004	0.00015
D10	82	0.00004	0.00011
D10	83	0.00005	0.00020
D5b	84	0.00020	0.00048
D5b	85	0.00024	0.00044
D9	86	0.00043	0.00076
PBH Residences	A	0.00227	0.00254
PBH Residences	B	0.00230	0.00255
PBH Residences	C	0.00237	0.00293
PBH Residences	D	0.00461	0.00365
PBH Residences	E	0.00230	0.00461
PBH Residences	F	0.00354	0.00747
PBH Residences	G	0.00314	0.01058
PBH Residences	H	0.00314	0.01435
PBH Residences	I	0.00284	0.01770
PBH Residences	J	0.00270	0.01083
PBH Residences	K	0.00286	0.00615
PBH Residences	L	0.00420	0.01186
PBH Residences	M	0.00411	0.00639
PBH Residences	N	0.00412	0.00658
PBH Residences	O	0.00368	0.00659
D5b	P	0.00062	0.00100

^a Data from PEL spreadsheets entitled:

- Scenario 1: "Metals_ann_av_PM10 – DISCRETE – Existing" (received on 05/06/2017).
- Scenario 2: "Metals_ann_av_PM10 – DISCRETE – Proposed" (received on 05/06/2017).

Appendix E: Acute HQ and HI for metals with acute AGVs

E.1 Arsenic (As)

AGV ($\mu\text{g}/\text{m}^3$)	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
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
99.9th	0.0002	0.0002	0.0004	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.00007	0.00008	0.00005
99th	0.0001	0.0002	0.0003	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.00009	0.00009	0.00009	0.00006	0.00006	0.00004
97.5th	0.00009	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.00009	0.00006	0.00005	0.00006	0.00005	0.00005	0.00003
95th	0.00008	0.0001	0.0002	0.0001	0.0001	0.0001	0.00007	0.00006	0.00005	0.00003	0.00003	0.00003	0.00004	0.00004	0.00002
50th	0.000003	0.000005	0.000008	0.00001	0.00001	0.000008	0.000005	0.000005	0.000004	0.000002	0.000002	0.000001	0.0000007	0.0000008	0.0000003
HQ															
99.9th	0.0008	0.001	0.002	0.001	0.002	0.001	0.0009	0.0009	0.0008	0.0006	0.0006	0.0006	0.0004	0.0004	0.0003
99th	0.0006	0.0009	0.001	0.0009	0.001	0.0009	0.0007	0.0007	0.0006	0.0004	0.0004	0.0005	0.0003	0.0003	0.0002
97.5th	0.0005	0.0007	0.001	0.0008	0.0009	0.0007	0.0005	0.0005	0.0004	0.0003	0.0003	0.0003	0.0002	0.0003	0.0001
95th	0.0004	0.0006	0.0009	0.0007	0.0007	0.0006	0.0004	0.0003	0.0003	0.0002	0.0001	0.0002	0.0002	0.0002	0.0001
50th	0.00001	0.00002	0.00004	0.00005	0.00006	0.00004	0.00002	0.00002	0.00002	0.00001	0.000008	0.000007	0.000003	0.000004	0.000002
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
99.9th	0.01	0.01	0.009	0.008	0.005	0.003	0.004	0.003	0.003	0.002	0.002	0.002	0.001	0.001	0.002
99th	0.001	0.002	0.002	0.002	0.001	0.0009	0.0006	0.0007	0.0006	0.0006	0.0005	0.0006	0.0004	0.0005	0.0004
97.5th	0.0006	0.0007	0.0006	0.0005	0.0004	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0003	0.0003	0.0003	0.00009
95th	0.0003	0.0003	0.0003	0.0003	0.0002	0.00009	0.00007	0.00007	0.00007	0.00005	0.00004	0.00005	0.0001	0.0001	0.00005
50th	0.000004	0.000006	0.000007	0.000009	0.000006	0.000004	0.000002	0.000002	0.000002	0.000001	0.0000009	0.0000008	0.0000004	0.0000004	0.0000002
HQ															
99.9th	0.05	0.06	0.04	0.04	0.03	0.01	0.02	0.02	0.02	0.01	0.01	0.008	0.006	0.006	0.009
99th	0.007	0.009	0.008	0.008	0.006	0.005	0.003	0.003	0.003	0.003	0.002	0.003	0.002	0.002	0.002
97.5th	0.003	0.004	0.003	0.003	0.002	0.001	0.001	0.001	0.001	0.0008	0.0007	0.001	0.001	0.001	0.0004
95th	0.001	0.002	0.001	0.001	0.0008	0.0005	0.0004	0.0004	0.0004	0.0002	0.0002	0.0003	0.0006	0.0006	0.0002
50th	0.00002	0.00003	0.00004	0.00005	0.00003	0.00002	0.00001	0.00001	0.000009	0.000005	0.000004	0.000004	0.000002	0.000002	0.000001

AGV ($\mu\text{g}/\text{m}^3$)	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
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
99.9th	0.00005	0.00002	0.00004	0.00006	0.00004	0.00008	0.00007	0.00007	0.00006	0.00005	0.00005	0.00005	0.00006	0.00007	0.00007
99th	0.00004	0.000006	0.00002	0.00003	0.00002	0.00006	0.00005	0.00005	0.00004	0.00004	0.00004	0.00004	0.00004	0.00004	0.00005
97.5th	0.00002	0.000002	0.000007	0.00001	0.000009	0.00004	0.00003	0.00003	0.00002	0.00002	0.00003	0.00002	0.00002	0.00002	0.00002
95th	0.000006	0.000001	0.000003	0.000004	0.000003	0.00003	0.00002	0.00002	0.00002	0.00002	0.000006	0.000004	0.000006	0.000004	0.000002
50th	0.0000004	0.0000005	0.0000009	0.0000008	0.0000007	0.0000004	0.0000003	0.0000003	0.0000002	0.0000002	0.0000001	0.0000001	0.0000002	0.0000002	0.0000002
Percentile	HQ														
	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
99.9th	0.0003	0.00008	0.0002	0.0003	0.0002	0.0004	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0003	0.0003	0.0003
99th	0.0002	0.00003	0.00008	0.0001	0.0001	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
97.5th	0.0001	0.00001	0.00003	0.00007	0.00004	0.0002	0.0002	0.0002	0.0001	0.0001	0.0002	0.00009	0.0001	0.0001	0.00008
95th	0.00003	0.000007	0.00002	0.00002	0.00002	0.0002	0.0001	0.00009	0.00009	0.00008	0.00003	0.00002	0.00003	0.00002	0.00001
50th	0.000002	0.000002	0.000005	0.000004	0.000004	0.000002	0.000002	0.000001	0.000001	0.000001	0.0000006	0.0000007	0.000001	0.0000009	0.000001
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
99.9th	0.002	0.0005	0.0006	0.0009	0.0007	0.0007	0.0008	0.002	0.001	0.001	0.002	0.002	0.001	0.002	0.001
99th	0.0002	0.00009	0.0002	0.0002	0.0002	0.0003	0.0003	0.0004	0.0003	0.0003	0.0004	0.0003	0.0003	0.0003	0.0003
97.5th	0.00008	0.00003	0.00006	0.00008	0.00007	0.0002	0.0002	0.0001	0.0001	0.0001	0.00006	0.00005	0.0001	0.00006	0.00009
95th	0.00002	0.00001	0.00003	0.00003	0.00003	0.00006	0.00004	0.00004	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00001
50th	0.0000003	0.0000005	0.000001	0.000001	0.000001	0.0000003	0.0000003	0.0000003	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000003
Percentile	HQ														
	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
99.9th	0.008	0.003	0.003	0.005	0.004	0.004	0.004	0.008	0.005	0.005	0.008	0.009	0.007	0.009	0.005
99th	0.001	0.0005	0.0009	0.001	0.0009	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.002	0.001
97.5th	0.0004	0.0002	0.0003	0.0004	0.0004	0.001	0.001	0.0006	0.0007	0.0006	0.0003	0.0003	0.0005	0.0003	0.0005
95th	0.0001	0.00007	0.0001	0.0002	0.0001	0.0003	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.00007
50th	0.000001	0.000002	0.000005	0.000007	0.000006	0.000002	0.000001	0.000001	0.000001	0.000001	0.0000009	0.000001	0.000001	0.000001	0.000001

AGV ($\mu\text{g}/\text{m}^3$)	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
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
99.9th	0.00008	0.00008	0.00009	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.00008	0.00009	0.00009	0.00009
99th	0.00006	0.00006	0.00007	0.00007	0.0001	0.0001	0.00009	0.0001	0.00007	0.00008	0.0002	0.00005	0.00005	0.00006	0.00006
97.5th	0.00005	0.00005	0.00006	0.00006	0.00007	0.00007	0.00006	0.00006	0.00005	0.00005	0.0001	0.00002	0.00003	0.00003	0.00003
95th	0.00003	0.00004	0.00004	0.00005	0.00003	0.00003	0.00003	0.00004	0.00002	0.00003	0.00007	0.000004	0.000006	0.000009	0.00001
50th	0.0000006	0.0000006	0.0000008	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000002	0.000005	0.0000004	0.0000005	0.0000006	0.0000008
HQ															
99.9th	0.0004	0.0004	0.0004	0.0005	0.0007	0.0007	0.0007	0.0007	0.0006	0.0006	0.001	0.0004	0.0004	0.0005	0.0004
99th	0.0003	0.0003	0.0003	0.0004	0.0005	0.0005	0.0004	0.0005	0.0004	0.0004	0.0008	0.0003	0.0003	0.0003	0.0003
97.5th	0.0002	0.0002	0.0003	0.0003	0.0003	0.0004	0.0003	0.0003	0.0002	0.0003	0.0005	0.0001	0.0001	0.0001	0.0002
95th	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0004	0.00002	0.00003	0.00005	0.00006
50th	0.000003	0.000003	0.000004	0.000005	0.000005	0.000006	0.000005	0.000007	0.000006	0.000008	0.00003	0.000002	0.000002	0.000003	0.000004
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
99.9th	0.001	0.001	0.001	0.001	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.0009	0.001	0.001	0.002
99th	0.0004	0.0004	0.0004	0.0004	0.0006	0.0006	0.0005	0.0006	0.0005	0.0005	0.0008	0.0003	0.0004	0.0004	0.0004
97.5th	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0004	0.0001	0.0001	0.0001	0.0001
95th	0.00006	0.00006	0.00007	0.00008	0.00007	0.00008	0.00006	0.00006	0.00004	0.00004	0.0001	0.00002	0.00002	0.00002	0.00003
50th	0.0000004	0.0000004	0.0000005	0.0000005	0.0000007	0.0000008	0.0000007	0.0000008	0.0000007	0.0000009	0.000002	0.0000004	0.0000004	0.0000005	0.0000005
HQ															
99.9th	0.006	0.006	0.007	0.007	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.005	0.006	0.007	0.009
99th	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.002	0.002	0.004	0.002	0.002	0.002	0.002
97.5th	0.001	0.001	0.001	0.002	0.0009	0.001	0.001	0.001	0.0007	0.0007	0.002	0.0007	0.0006	0.0006	0.0006
95th	0.0003	0.0003	0.0004	0.0004	0.0004	0.0004	0.0003	0.0003	0.0002	0.0002	0.0006	0.00008	0.00009	0.0001	0.0001
50th	0.000002	0.000002	0.000002	0.000003	0.000004	0.000004	0.000003	0.000004	0.000004	0.000004	0.000009	0.000002	0.000002	0.000002	0.000003

AGV ($\mu\text{g}/\text{m}^3$)	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
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
99.9th	0.00005	0.00005	0.00007	0.00007	0.00007	0.00004	0.00004	0.00007	0.00006	0.00007	0.00008	0.00007	0.00004	0.00004	0.00006
99th	0.00003	0.00003	0.00004	0.00005	0.00005	0.00002	0.00003	0.00006	0.00004	0.00005	0.00003	0.00004	0.00002	0.00002	0.00004
97.5th	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00004	0.00002	0.000008	0.00001	0.00001	0.00001	0.000005	0.00003
95th	0.000004	0.000004	0.000003	0.000004	0.000005	0.000003	0.000004	0.00002	0.000002	0.0000009	0.0000008	0.000003	0.0000009	0.0000006	0.00002
50th	0.0000002	0.0000002	0.0000002	0.0000002	0.0000003	0.0000002	0.0000002	0.0000008	0.0000003	0.0000002	0.0000002	0.0000003	0.0000002	0.0000002	0.0000003
HQ															
99.9th	0.0002	0.0002	0.0004	0.0004	0.0003	0.0002	0.0002	0.0004	0.0003	0.0004	0.0004	0.0003	0.0002	0.0002	0.0003
99th	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0001	0.00009	0.0002
97.5th	0.00008	0.00008	0.0001	0.0001	0.0001	0.00006	0.00007	0.0002	0.00008	0.00004	0.00005	0.00006	0.00005	0.00002	0.0001
95th	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00002	0.0001	0.00001	0.000005	0.000004	0.00001	0.000005	0.000003	0.0001
50th	0.000001	0.000001	0.0000009	0.000001	0.000002	0.000001	0.000001	0.000004	0.000002	0.0000009	0.0000009	0.000001	0.0000009	0.0000008	0.000002
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
99.9th	0.001	0.001	0.001	0.0009	0.0008	0.001	0.001	0.002	0.001	0.002	0.001	0.002	0.0005	0.0006	0.001
99th	0.0002	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0005	0.0002	0.0001	0.0002	0.0003	0.0002	0.0002	0.0004
97.5th	0.00008	0.00007	0.0001	0.0001	0.0001	0.00006	0.00007	0.0001	0.00003	0.00003	0.00004	0.00005	0.00006	0.00003	0.0001
95th	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00004	0.000007	0.000005	0.000007	0.00001	0.00001	0.000005	0.00006
50th	0.0000002	0.0000002	0.0000003	0.0000003	0.0000003	0.0000002	0.0000002	0.0000007	0.0000004	0.0000003	0.0000003	0.0000003	0.0000002	0.0000002	0.0000002
HQ															
99.9th	0.006	0.007	0.005	0.004	0.004	0.006	0.006	0.009	0.005	0.01	0.007	0.008	0.002	0.003	0.007
99th	0.001	0.001	0.002	0.002	0.002	0.001	0.001	0.002	0.001	0.0007	0.0009	0.001	0.0009	0.0009	0.002
97.5th	0.0004	0.0003	0.0005	0.0005	0.0006	0.0003	0.0004	0.0005	0.0001	0.0002	0.0002	0.0002	0.0003	0.0001	0.0007
95th	0.00009	0.0001	0.00009	0.00008	0.00008	0.00008	0.00009	0.0002	0.00003	0.00003	0.00003	0.00007	0.00005	0.00003	0.0003
50th	0.0000009	0.000001	0.000001	0.000001	0.000002	0.0000008	0.0000009	0.000004	0.000002	0.000002	0.000001	0.000001	0.0000008	0.0000008	0.000001

AGV ($\mu\text{g}/\text{m}^3$)	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
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
99.9th	0.00005	0.00005	0.00006	0.00009	0.00004	0.00005	0.00005	0.00008	0.00007	0.00006	0.00004	0.00009	0.0001	0.0001	0.00005
99th	0.00004	0.00004	0.00004	0.00007	0.00003	0.00003	0.00004	0.00005	0.00005	0.00005	0.00003	0.00008	0.00008	0.00009	0.00004
97.5th	0.00002	0.00003	0.00003	0.00005	0.00002	0.00001	0.000009	0.00003	0.00003	0.00003	0.00002	0.00007	0.00007	0.00006	0.00003
95th	0.00001	0.00001	0.00002	0.00002	0.000007	0.000001	0.000001	0.000006	0.000007	0.00002	0.00001	0.00004	0.00005	0.00003	0.00002
50th	0.0000002	0.0000003	0.0000003	0.000001	0.0000002	0.0000002	0.0000003	0.0000007	0.0000006	0.0000003	0.0000002	0.0000003	0.000001	0.000002	0.0000004
HQ															
99.9th	0.0002	0.0003	0.0003	0.0005	0.0002	0.0003	0.0003	0.0004	0.0004	0.0003	0.0002	0.0004	0.0005	0.0006	0.0003
99th	0.0002	0.0002	0.0002	0.0003	0.0001	0.0001	0.0002	0.0003	0.0002	0.0002	0.0001	0.0004	0.0004	0.0004	0.0002
97.5th	0.0001	0.0002	0.0002	0.0002	0.0001	0.00007	0.00005	0.0001	0.0001	0.0002	0.00008	0.0003	0.0003	0.0003	0.0002
95th	0.00007	0.00007	0.00008	0.00009	0.00003	0.000007	0.000005	0.00003	0.00003	0.0001	0.00006	0.0002	0.0003	0.0002	0.0001
50th	0.000001	0.000002	0.000002	0.000006	0.000001	0.000001	0.000001	0.000003	0.000003	0.000002	0.000001	0.000001	0.000006	0.000008	0.000002
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
99.9th	0.0006	0.002	0.002	0.002	0.0006	0.001	0.001	0.001	0.001	0.001	0.0009	0.002	0.002	0.002	0.002
99th	0.0002	0.0004	0.0004	0.0003	0.0002	0.0002	0.0002	0.0004	0.0004	0.0003	0.0003	0.0006	0.0005	0.0006	0.0005
97.5th	0.0002	0.0001	0.0001	0.00008	0.0001	0.00007	0.00002	0.00006	0.00006	0.0002	0.00008	0.0002	0.0003	0.0002	0.0002
95th	0.00004	0.00004	0.00005	0.00002	0.00003	0.00001	0.000005	0.00002	0.00002	0.00004	0.00004	0.00005	0.00009	0.00004	0.00007
50th	0.0000002	0.0000002	0.0000002	0.0000009	0.0000002	0.0000002	0.0000003	0.0000005	0.0000004	0.0000003	0.0000002	0.0000004	0.0000006	0.0000008	0.0000003
HQ															
99.9th	0.003	0.009	0.01	0.009	0.003	0.005	0.005	0.005	0.007	0.005	0.005	0.009	0.008	0.008	0.008
99th	0.001	0.002	0.002	0.002	0.001	0.001	0.001	0.002	0.002	0.002	0.001	0.003	0.002	0.003	0.002
97.5th	0.0008	0.0006	0.0006	0.0004	0.0007	0.0003	0.0001	0.0003	0.0003	0.001	0.0004	0.001	0.002	0.001	0.0009
95th	0.0002	0.0002	0.0002	0.0001	0.0001	0.00006	0.00002	0.00009	0.00008	0.0002	0.0002	0.0003	0.0004	0.0002	0.0003
50th	0.000001	0.000001	0.000001	0.000004	0.0000008	0.0000009	0.000002	0.000003	0.000002	0.000001	0.000001	0.000002	0.000003	0.000004	0.000001

AGV ($\mu\text{g}/\text{m}^3$)	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
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
99.9th	0.00005	0.00004	0.00007	0.00009	0.00007	0.00004	0.00006	0.00006	0.0001	0.0001	0.0001	0.0004	0.0004	0.0003	0.0008
99th	0.00004	0.00003	0.00004	0.00006	0.00005	0.00002	0.00002	0.00002	0.00007	0.00008	0.0001	0.0002	0.0002	0.0002	0.0005
97.5th	0.00003	0.00002	0.00002	0.00004	0.00003	0.000003	0.000002	0.000003	0.00004	0.00004	0.00007	0.0002	0.0002	0.0002	0.0004
95th	0.00001	0.000006	0.000004	0.00001	0.00001	0.0000006	0.0000004	0.0000005	0.00001	0.00001	0.00004	0.0002	0.0002	0.0002	0.0003
50th	0.0000003	0.0000002	0.0000005	0.000001	0.0000006	0.0000002	0.0000001	0.0000001	0.000001	0.000001	0.000002	0.00002	0.00002	0.00002	0.00006
HQ															
99.9th	0.0003	0.0002	0.0003	0.0005	0.0003	0.0002	0.0003	0.0003	0.0005	0.0005	0.0007	0.002	0.002	0.002	0.004
99th	0.0002	0.0001	0.0002	0.0003	0.0002	0.00009	0.0001	0.0001	0.0003	0.0004	0.0005	0.001	0.001	0.001	0.003
97.5th	0.0002	0.0001	0.0001	0.0002	0.0002	0.00002	0.00001	0.00002	0.0002	0.0002	0.0004	0.001	0.001	0.001	0.002
95th	0.00007	0.00003	0.00002	0.00007	0.00006	0.000003	0.000002	0.000003	0.00005	0.00007	0.0002	0.0009	0.0009	0.0008	0.002
50th	0.000002	0.000001	0.000003	0.000005	0.000003	0.0000009	0.0000005	0.0000006	0.000006	0.000007	0.00001	0.00009	0.00009	0.0001	0.0003
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
99.9th	0.002	0.0006	0.0009	0.002	0.002	0.001	0.001	0.002	0.002	0.002	0.003	0.004	0.004	0.005	0.006
99th	0.0004	0.0002	0.0003	0.0003	0.0003	0.0001	0.00007	0.00007	0.0003	0.0004	0.0005	0.001	0.001	0.001	0.001
97.5th	0.0001	0.0001	0.00006	0.00008	0.00006	0.00002	0.00002	0.00003	0.00009	0.00009	0.0001	0.0004	0.0004	0.0004	0.0005
95th	0.00004	0.00003	0.00001	0.00002	0.00002	0.000005	0.000003	0.000004	0.00002	0.00003	0.00003	0.0002	0.0002	0.0002	0.0002
50th	0.0000002	0.0000002	0.0000004	0.0000008	0.0000006	0.0000002	0.0000002	0.0000002	0.0000007	0.0000009	0.000002	0.000006	0.000006	0.000007	0.000009
HQ															
99.9th	0.009	0.003	0.005	0.01	0.008	0.007	0.006	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
99th	0.002	0.001	0.002	0.001	0.002	0.0006	0.0004	0.0004	0.002	0.002	0.003	0.006	0.006	0.006	0.007
97.5th	0.0006	0.0006	0.0003	0.0004	0.0003	0.0001	0.0001	0.0002	0.0005	0.0005	0.0006	0.002	0.002	0.002	0.002
95th	0.0002	0.0001	0.00007	0.00008	0.00009	0.00003	0.00001	0.00002	0.00008	0.0001	0.0002	0.0008	0.0008	0.0009	0.001
50th	0.000001	0.0000008	0.000002	0.000004	0.000003	0.0000008	0.000001	0.000001	0.000004	0.000004	0.000008	0.00003	0.00003	0.00003	0.00004

AGV ($\mu\text{g}/\text{m}^3$)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$												
Scenario 1 (Existing North Mine, no background)												
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})											
	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
99.9th	0.0003	0.0005	0.0004	0.0004	0.0003	0.0003	0.0005	0.0006	0.0005	0.0005	0.0005	0.0002
99th	0.0002	0.0004	0.0003	0.0003	0.0002	0.0002	0.0003	0.0004	0.0003	0.0004	0.0003	0.0001
97.5th	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.00008
95th	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.00005
50th	0.00002	0.00004	0.00003	0.00004	0.00003	0.00003	0.00002	0.00005	0.00005	0.00005	0.00004	0.000004
HQ												
99.9th	0.002	0.003	0.002	0.002	0.002	0.002	0.002	0.003	0.002	0.003	0.002	0.0008
99th	0.001	0.002	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.0006
97.5th	0.0009	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.0004
95th	0.0008	0.001	0.0009	0.0009	0.0008	0.0008	0.001	0.001	0.001	0.001	0.001	0.0003
50th	0.00009	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0003	0.0003	0.0003	0.0002	0.00002
Scenario 2 (Proposed North Mine, no background)												
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})											
	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
99.9th	0.006	0.009	0.01	0.01	0.02	0.01	0.007	0.01	0.01	0.01	0.01	0.003
99th	0.001	0.002	0.002	0.003	0.004	0.003	0.002	0.003	0.003	0.003	0.003	0.0007
97.5th	0.0006	0.0008	0.001	0.001	0.002	0.001	0.0007	0.001	0.0009	0.0009	0.001	0.0002
95th	0.0003	0.0005	0.0006	0.0008	0.001	0.0006	0.0004	0.0006	0.0004	0.0004	0.0004	0.00008
50th	0.00001	0.00002	0.00003	0.00004	0.00004	0.00003	0.00002	0.00004	0.00002	0.00002	0.00002	0.000002
HQ												
99.9th	0.03	0.04	0.06	0.07	0.08	0.06	0.04	0.06	0.06	0.07	0.07	0.02
99th	0.007	0.01	0.01	0.02	0.02	0.01	0.009	0.01	0.01	0.01	0.01	0.003
97.5th	0.003	0.004	0.006	0.007	0.008	0.005	0.004	0.005	0.004	0.004	0.005	0.001
95th	0.002	0.002	0.003	0.004	0.005	0.003	0.002	0.003	0.002	0.002	0.002	0.0004
50th	0.00006	0.0001	0.0002	0.0002	0.0002	0.0002	0.00009	0.0002	0.0001	0.0001	0.0001	0.000008

E.2 Copper (Cu)

AGV (µg/m³)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
HQ = C _{air} (µg/m³) ÷ AGV (µg/m³)															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 (µg/m³) (C _{air})														
	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
99.9th	0.0002	0.0003	0.0005	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.00008	0.00008	0.00006
99th	0.0001	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.00009	0.00008	0.00008	0.00005	0.00006	0.00004
97.5th	0.0001	0.0002	0.0003	0.0002	0.0002	0.0002	0.0001	0.0001	0.00009	0.00007	0.00006	0.00006	0.00005	0.00005	0.00003
95th	0.00008	0.0001	0.0002	0.0001	0.0002	0.0001	0.00007	0.00007	0.00007	0.00004	0.00003	0.00004	0.00004	0.00004	0.00002
50th	0.000003	0.000005	0.00001	0.00001	0.00001	0.00001	0.000005	0.000005	0.000004	0.000002	0.000001	0.000001	0.0000007	0.0000007	0.0000003
HQ															
99.9th	0.000002	0.000003	0.000005	0.000003	0.000003	0.000003	0.000002	0.000002	0.000002	0.000001	0.000001	0.000001	0.0000008	0.0000008	0.0000006
99th	0.000001	0.000002	0.000003	0.000002	0.000002	0.000002	0.000002	0.000001	0.000001	0.0000009	0.0000008	0.0000008	0.0000005	0.0000006	0.0000004
97.5th	0.000001	0.000002	0.000003	0.000002	0.000002	0.000002	0.000001	0.000001	0.0000009	0.0000007	0.0000006	0.0000006	0.0000005	0.0000005	0.0000003
95th	0.0000008	0.000001	0.000002	0.000001	0.000002	0.000001	0.0000007	0.0000007	0.0000007	0.0000004	0.0000003	0.0000004	0.0000004	0.0000004	0.0000002
50th	0.00000003	0.00000005	0.0000001	0.0000001	0.0000001	0.0000001	0.00000005	0.00000005	0.00000004	0.00000002	0.00000001	0.00000001	0.000000007	0.000000007	0.000000003
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 (µg/m³) (C _{air})														
	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
99.9th	0.002	0.004	0.003	0.008	0.006	0.004	0.002	0.002	0.002	0.002	0.001	0.001	0.0005	0.0003	0.0003
99th	0.0003	0.0006	0.0007	0.001	0.0007	0.0004	0.0003	0.0003	0.0002	0.0001	0.00009	0.00008	0.00006	0.00006	0.00004
97.5th	0.0001	0.0002	0.0003	0.0005	0.0003	0.0002	0.00009	0.0001	0.00008	0.00004	0.00004	0.00004	0.00002	0.00002	0.00001
95th	0.00007	0.0001	0.0002	0.0003	0.0002	0.00007	0.00004	0.00004	0.00003	0.00002	0.00001	0.00001	0.00001	0.00001	0.000006
50th	0.000001	0.000002	0.000003	0.000003	0.000003	0.000002	0.000001	0.000001	0.0000008	0.0000004	0.0000003	0.0000002	0.00000009	0.00000009	0.00000004
HQ															
99.9th	0.00002	0.00004	0.00003	0.00008	0.00006	0.00004	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.000005	0.000003	0.000003
99th	0.000003	0.000006	0.000007	0.00001	0.000007	0.000004	0.000003	0.000003	0.000002	0.000001	0.0000009	0.0000008	0.0000006	0.0000006	0.0000004
97.5th	0.000001	0.000002	0.000003	0.000005	0.000003	0.000002	0.0000009	0.000001	0.0000008	0.0000004	0.0000004	0.0000004	0.0000002	0.0000002	0.0000001
95th	0.0000007	0.000001	0.000002	0.000003	0.000002	0.0000007	0.0000004	0.0000004	0.0000003	0.0000002	0.0000001	0.0000001	0.0000001	0.0000001	0.00000006
50th	0.00000001	0.00000002	0.00000003	0.00000003	0.00000003	0.00000002	0.00000001	0.00000001	0.000000008	0.000000004	0.000000003	0.000000002	0.0000000009	0.0000000009	0.0000000004

AGV (µg/m³)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
HQ = C _{air} (µg/m³) ÷ AGV (µg/m³)															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 (µg/m³) (C _{air})														
	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
99.9th	0.00005	0.00002	0.00004	0.00005	0.00004	0.00007	0.00006	0.00006	0.00005	0.00005	0.00005	0.00005	0.00005	0.00006	0.00006
99th	0.00004	0.000006	0.00002	0.00003	0.00002	0.00006	0.00005	0.00005	0.00004	0.00004	0.00004	0.00004	0.00004	0.00004	0.00004
97.5th	0.00002	0.000002	0.000007	0.00001	0.000009	0.00004	0.00003	0.00003	0.00003	0.00002	0.00003	0.00002	0.00002	0.00002	0.00002
95th	0.00001	0.000001	0.000003	0.000005	0.000003	0.00003	0.00003	0.00002	0.00002	0.00002	0.000007	0.000005	0.000006	0.000005	0.000003
50th	0.0000003	0.0000005	0.000001	0.0000009	0.0000008	0.0000004	0.0000003	0.0000003	0.0000002	0.0000002	0.0000001	0.0000001	0.0000002	0.0000002	0.0000002
HQ															
99.9th	0.0000005	0.0000002	0.0000004	0.0000005	0.0000004	0.0000007	0.0000006	0.0000006	0.0000005	0.0000005	0.0000005	0.0000005	0.0000005	0.0000006	0.0000006
99th	0.0000004	0.00000006	0.0000002	0.0000003	0.0000002	0.0000006	0.0000005	0.0000005	0.0000004	0.0000004	0.0000004	0.0000004	0.0000004	0.0000004	0.0000004
97.5th	0.0000002	0.00000002	0.00000007	0.0000001	0.00000009	0.0000004	0.0000003	0.0000003	0.0000003	0.0000002	0.0000003	0.0000002	0.0000002	0.0000002	0.0000002
95th	0.00000006	0.00000001	0.00000003	0.00000005	0.00000003	0.0000003	0.0000003	0.0000002	0.0000002	0.0000002	0.00000007	0.00000005	0.00000006	0.00000005	0.00000003
50th	0.000000003	0.000000005	0.00000001	0.000000009	0.000000008	0.000000004	0.000000003	0.000000003	0.000000002	0.000000002	0.000000001	0.000000001	0.000000002	0.000000002	0.000000002
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 (µg/m³) (C _{air})														
	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
99.9th	0.0003	0.0001	0.0003	0.0003	0.0003	0.0004	0.0004	0.0004	0.0003	0.0003	0.0002	0.0002	0.0002	0.0003	0.0003
99th	0.00002	0.00001	0.00002	0.00002	0.00002	0.00003	0.00003	0.00004	0.00003	0.00003	0.00003	0.00002	0.00003	0.00002	0.00003
97.5th	0.000009	0.000006	0.00001	0.00001	0.00001	0.00002	0.00001	0.00001	0.00001	0.00001	0.000009	0.000008	0.00001	0.000009	0.00001
95th	0.000003	0.000003	0.000007	0.000009	0.000008	0.000008	0.000006	0.000003	0.000003	0.000003	0.000002	0.000002	0.000002	0.000002	0.000002
50th	0.00000004	0.00000008	0.0000002	0.0000002	0.0000002	0.00000007	0.00000005	0.00000005	0.00000004	0.00000004	0.00000003	0.00000003	0.00000004	0.00000004	0.00000005
HQ															
99.9th	0.000003	0.000001	0.000003	0.000003	0.000003	0.000004	0.000004	0.000004	0.000003	0.000003	0.000002	0.000002	0.000002	0.000003	0.000003
99th	0.0000002	0.0000001	0.0000002	0.0000002	0.0000002	0.0000003	0.0000003	0.0000004	0.0000003	0.0000003	0.0000003	0.0000002	0.0000003	0.0000002	0.0000003
97.5th	0.00000009	0.00000006	0.0000001	0.0000001	0.0000001	0.0000002	0.0000001	0.0000001	0.0000001	0.0000001	0.00000009	0.00000008	0.0000001	0.00000009	0.0000001
95th	0.00000003	0.00000003	0.00000007	0.00000009	0.00000008	0.00000008	0.00000006	0.00000003	0.00000003	0.00000003	0.00000002	0.00000002	0.00000002	0.00000002	0.00000002
50th	0.0000000004	0.0000000008	0.0000000002	0.000000002	0.000000002	0.0000000007	0.0000000005	0.0000000005	0.0000000004	0.0000000004	0.0000000003	0.0000000003	0.0000000004	0.0000000004	0.0000000005

AGV (µg/m³)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
HQ = C _{air} (µg/m³) ÷ AGV (µg/m³)															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 (µg/m³) (C _{air})														
	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
99.9th	0.00008	0.00008	0.00008	0.00009	0.0001	0.0001	0.0001	0.0001	0.00009	0.0001	0.0002	0.00006	0.00007	0.00008	0.00008
99th	0.00006	0.00006	0.00007	0.00007	0.00009	0.00009	0.00008	0.00009	0.00007	0.00008	0.0001	0.00005	0.00005	0.00006	0.00006
97.5th	0.00005	0.00005	0.00005	0.00006	0.00007	0.00007	0.00006	0.00006	0.00005	0.00006	0.0001	0.00003	0.00003	0.00003	0.00004
95th	0.00003	0.00004	0.00004	0.00005	0.00004	0.00004	0.00004	0.00004	0.00003	0.00003	0.00008	0.000006	0.000007	0.00001	0.00001
50th	0.0000005	0.0000006	0.0000007	0.000001	0.0000009	0.000001	0.000001	0.000001	0.000001	0.000001	0.000005	0.0000004	0.0000005	0.0000006	0.0000007
HQ															
99.9th	0.0000008	0.0000008	0.0000008	0.0000009	0.000001	0.000001	0.000001	0.000001	0.0000009	0.000001	0.000002	0.0000006	0.0000007	0.0000008	0.0000008
99th	0.0000006	0.0000006	0.0000007	0.0000007	0.0000009	0.0000009	0.0000008	0.0000009	0.0000007	0.0000008	0.000001	0.0000005	0.0000005	0.0000006	0.0000006
97.5th	0.0000005	0.0000005	0.0000005	0.0000006	0.0000007	0.0000007	0.0000006	0.0000006	0.0000005	0.0000006	0.000001	0.0000003	0.0000003	0.0000003	0.0000004
95th	0.0000003	0.0000004	0.0000004	0.0000005	0.0000004	0.0000004	0.0000004	0.0000004	0.0000003	0.0000003	0.0000008	0.00000006	0.00000007	0.0000001	0.0000001
50th	0.000000005	0.000000006	0.000000007	0.00000001	0.000000009	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000005	0.000000004	0.000000005	0.000000006	0.000000007
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 (µg/m³) (C _{air})														
	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
99.9th	0.0005	0.0005	0.0006	0.0007	0.0006	0.0006	0.0006	0.0007	0.0008	0.001	0.002	0.0004	0.0005	0.0005	0.0006
99th	0.00004	0.00005	0.00005	0.00008	0.00008	0.0001	0.00007	0.00008	0.00008	0.00009	0.0002	0.00003	0.00004	0.00005	0.00006
97.5th	0.00002	0.00002	0.00002	0.00003	0.00004	0.00005	0.00003	0.00004	0.00003	0.00004	0.0001	0.00001	0.00002	0.00002	0.00002
95th	0.000008	0.000009	0.00001	0.00001	0.000008	0.00001	0.00001	0.00001	0.000008	0.00001	0.00004	0.000004	0.000004	0.000004	0.000005
50th	0.00000008	0.00000009	0.0000001	0.0000001	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000003	0.000001	0.00000007	0.00000008	0.00000009	0.0000001
HQ															
99.9th	0.000005	0.000005	0.000006	0.000007	0.000006	0.000006	0.000006	0.000007	0.000008	0.00001	0.00002	0.000004	0.000005	0.000005	0.000006
99th	0.0000004	0.0000005	0.0000005	0.0000008	0.0000008	0.000001	0.0000007	0.0000008	0.0000008	0.0000009	0.000002	0.0000003	0.0000004	0.0000005	0.0000006
97.5th	0.0000002	0.0000002	0.0000002	0.0000003	0.0000004	0.0000005	0.0000003	0.0000004	0.0000003	0.0000004	0.000001	0.0000001	0.0000002	0.0000002	0.0000002
95th	0.00000008	0.00000009	0.0000001	0.0000001	0.00000008	0.0000001	0.0000001	0.0000001	0.00000008	0.0000001	0.0000004	0.00000004	0.00000004	0.00000004	0.00000005
50th	0.0000000008	0.0000000009	0.000000001	0.000000001	0.000000002	0.000000002	0.000000002	0.000000002	0.000000002	0.000000003	0.00000001	0.0000000007	0.0000000008	0.0000000009	0.000000001

AGV (µg/m³)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
HQ = C _{air} (µg/m³) ÷ AGV (µg/m³)															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 (µg/m³) (C _{air})														
	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
99.9th	0.00004	0.00004	0.00006	0.00006	0.00006	0.00003	0.00004	0.00008	0.00006	0.00006	0.00006	0.00006	0.00004	0.00004	0.00007
99th	0.00003	0.00003	0.00004	0.00004	0.00005	0.00003	0.00003	0.00006	0.00004	0.00004	0.00003	0.00004	0.00002	0.00002	0.00004
97.5th	0.00002	0.00002	0.00003	0.00003	0.00003	0.00001	0.00001	0.00004	0.00002	0.000009	0.00001	0.00001	0.00001	0.000005	0.00003
95th	0.000004	0.000005	0.000004	0.000004	0.000006	0.000003	0.000004	0.00002	0.000002	0.000001	0.0000009	0.000003	0.0000009	0.0000006	0.00002
50th	0.0000002	0.0000002	0.0000002	0.0000002	0.0000003	0.0000002	0.0000002	0.0000008	0.0000003	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000003
Percentile	HQ														
	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
99.9th	0.0000004	0.0000004	0.0000006	0.0000006	0.0000006	0.0000003	0.0000004	0.0000008	0.0000006	0.0000006	0.0000006	0.0000006	0.0000004	0.0000004	0.0000007
99th	0.0000003	0.0000003	0.0000004	0.0000004	0.0000005	0.0000003	0.0000003	0.0000006	0.0000004	0.0000004	0.0000003	0.0000004	0.0000002	0.0000002	0.0000004
97.5th	0.0000002	0.0000002	0.0000003	0.0000003	0.0000003	0.0000001	0.0000001	0.0000004	0.0000002	0.00000009	0.0000001	0.0000001	0.0000001	0.00000005	0.0000003
95th	0.00000004	0.00000005	0.00000004	0.00000004	0.00000006	0.00000003	0.00000004	0.0000002	0.00000002	0.00000001	0.000000009	0.00000003	0.000000009	0.000000006	0.0000002
50th	0.000000002	0.000000002	0.000000002	0.000000002	0.000000003	0.000000002	0.000000002	0.000000008	0.000000003	0.000000002	0.000000002	0.000000002	0.000000002	0.000000002	0.000000003
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 (µg/m³) (C _{air})														
	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
99.9th	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0005	0.0001	0.0002	0.0004	0.0004	0.0001	0.0002	0.0004
99th	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00003	0.00007	0.00002	0.00002	0.00002	0.00003	0.00001	0.00002	0.00006
97.5th	0.000009	0.000008	0.00001	0.00001	0.00001	0.000006	0.000007	0.00003	0.000008	0.000005	0.000005	0.00001	0.000006	0.000004	0.00001
95th	0.000002	0.000002	0.000002	0.000003	0.000003	0.000002	0.000002	0.00001	0.000002	0.000001	0.000001	0.000002	0.000002	0.000001	0.000004
50th	0.00000003	0.00000003	0.00000004	0.00000004	0.00000005	0.00000003	0.00000003	0.0000002	0.00000006	0.00000004	0.00000004	0.00000005	0.00000003	0.00000003	0.00000004
Percentile	HQ														
	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
99.9th	0.000003	0.000003	0.000003	0.000003	0.000003	0.000002	0.000002	0.000005	0.000001	0.000002	0.000004	0.000004	0.000001	0.000002	0.000004
99th	0.0000003	0.0000003	0.0000002	0.0000002	0.0000002	0.0000002	0.0000003	0.0000007	0.0000002	0.0000002	0.0000002	0.0000003	0.0000001	0.0000002	0.0000006
97.5th	0.00000009	0.00000008	0.0000001	0.0000001	0.0000001	0.00000006	0.00000007	0.0000003	0.00000008	0.00000005	0.00000005	0.0000001	0.00000006	0.00000004	0.0000001
95th	0.00000002	0.00000002	0.00000002	0.00000003	0.00000003	0.00000002	0.00000002	0.0000001	0.00000002	0.00000001	0.00000001	0.00000002	0.00000002	0.00000001	0.00000004
50th	0.0000000003	0.0000000003	0.0000000004	0.0000000004	0.0000000005	0.0000000003	0.0000000003	0.000000002	0.0000000006	0.0000000004	0.0000000004	0.0000000005	0.0000000003	0.0000000003	0.0000000004

AGV (µg/m³)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
HQ = C _{air} (µg/m³) ÷ AGV (µg/m³)															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 (µg/m³) (C _{air})														
	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
99.9th	0.00005	0.00006	0.00007	0.00009	0.00004	0.00004	0.00006	0.00007	0.00007	0.00006	0.00004	0.00008	0.0001	0.0001	0.00007
99th	0.00004	0.00004	0.00004	0.00007	0.00003	0.00003	0.00004	0.00005	0.00005	0.00005	0.00003	0.00007	0.00008	0.00008	0.00004
97.5th	0.00003	0.00003	0.00003	0.00005	0.00002	0.00002	0.00001	0.00003	0.00003	0.00003	0.00002	0.00006	0.00006	0.00006	0.00003
95th	0.00001	0.00002	0.00002	0.00002	0.000007	0.000002	0.000001	0.000008	0.000008	0.00003	0.00001	0.00003	0.00005	0.00004	0.00002
50th	0.0000002	0.0000003	0.0000003	0.000001	0.0000002	0.0000002	0.0000003	0.0000006	0.0000006	0.0000003	0.0000002	0.0000003	0.000001	0.000001	0.0000004
Percentile	HQ														
99.9th	0.0000005	0.0000006	0.0000007	0.0000009	0.0000004	0.0000004	0.0000006	0.0000007	0.0000007	0.0000006	0.0000004	0.0000008	0.000001	0.000001	0.0000007
99th	0.0000004	0.0000004	0.0000004	0.0000007	0.0000003	0.0000003	0.0000004	0.0000005	0.0000005	0.0000005	0.0000003	0.0000007	0.0000008	0.0000008	0.0000004
97.5th	0.0000003	0.0000003	0.0000003	0.0000005	0.0000002	0.0000002	0.0000001	0.0000003	0.0000003	0.0000003	0.0000002	0.0000006	0.0000006	0.0000006	0.0000003
95th	0.0000001	0.0000002	0.0000002	0.0000002	0.00000007	0.00000002	0.00000001	0.00000008	0.00000008	0.0000003	0.0000001	0.0000003	0.0000005	0.0000004	0.0000002
50th	0.000000002	0.000000003	0.000000003	0.00000001	0.000000002	0.000000002	0.000000003	0.000000006	0.000000006	0.000000003	0.000000002	0.000000003	0.00000001	0.00000001	0.000000004
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 (µg/m³) (C _{air})														
	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
99.9th	0.0003	0.0003	0.0003	0.0009	0.0002	0.0002	0.0004	0.0007	0.0006	0.0004	0.0001	0.0005	0.0008	0.001	0.0004
99th	0.00002	0.00005	0.00006	0.00007	0.00001	0.00001	0.00002	0.00005	0.00004	0.00003	0.00003	0.00004	0.00009	0.00009	0.00005
97.5th	0.000009	0.00001	0.00001	0.00002	0.000007	0.000007	0.000006	0.00002	0.00001	0.00001	0.00001	0.00002	0.00003	0.00004	0.00002
95th	0.000004	0.000005	0.000005	0.000009	0.000004	0.000002	0.000002	0.000004	0.000003	0.000005	0.000004	0.000009	0.00002	0.00001	0.000007
50th	0.00000004	0.00000004	0.00000004	0.0000002	0.00000003	0.00000003	0.00000005	0.0000001	0.00000009	0.00000005	0.00000003	0.00000008	0.0000002	0.0000002	0.00000005
Percentile	HQ														
99.9th	0.000003	0.000003	0.000003	0.000009	0.000002	0.000002	0.000004	0.000007	0.000006	0.000004	0.000001	0.000005	0.000008	0.00001	0.000004
99th	0.0000002	0.0000005	0.0000006	0.0000007	0.0000001	0.0000001	0.0000002	0.0000005	0.0000004	0.0000003	0.0000003	0.0000004	0.0000009	0.0000009	0.0000005
97.5th	0.00000009	0.0000001	0.0000001	0.0000002	0.00000007	0.00000007	0.00000006	0.0000002	0.0000001	0.0000001	0.0000001	0.0000002	0.0000003	0.0000004	0.0000002
95th	0.00000004	0.00000005	0.00000005	0.00000009	0.00000004	0.00000002	0.00000002	0.00000004	0.00000003	0.00000005	0.00000004	0.00000009	0.0000002	0.0000001	0.00000007
50th	0.0000000004	0.0000000004	0.0000000004	0.000000002	0.0000000003	0.0000000003	0.0000000005	0.000000001	0.0000000009	0.0000000005	0.0000000003	0.0000000008	0.000000002	0.000000002	0.0000000005

AGV ($\mu\text{g}/\text{m}^3$)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
99.9th	0.00007	0.00003	0.00006	0.00009	0.00007	0.00004	0.00005	0.00005	0.00009	0.0001	0.0001	0.0004	0.0004	0.0004	0.001
99th	0.00004	0.00003	0.00004	0.00006	0.00005	0.00002	0.00003	0.00003	0.00006	0.00007	0.0001	0.0003	0.0003	0.0003	0.0007
97.5th	0.00003	0.00002	0.00003	0.00004	0.00004	0.000004	0.000003	0.000004	0.00004	0.00005	0.00008	0.0002	0.0003	0.0002	0.0005
95th	0.00002	0.000006	0.000005	0.00002	0.00001	0.0000006	0.0000004	0.0000005	0.00001	0.00002	0.00005	0.0002	0.0002	0.0002	0.0004
50th	0.0000003	0.0000002	0.0000005	0.000001	0.0000006	0.0000002	0.0000001	0.0000001	0.000001	0.000001	0.000002	0.00002	0.00002	0.00003	0.00008
HQ															
99.9th	0.0000007	0.0000003	0.0000006	0.0000009	0.0000007	0.0000004	0.0000005	0.0000005	0.0000009	0.000001	0.000001	0.000004	0.000004	0.000004	0.00001
99th	0.0000004	0.0000003	0.0000004	0.0000006	0.0000005	0.0000002	0.0000003	0.0000003	0.0000006	0.0000007	0.000001	0.000003	0.000003	0.000003	0.000007
97.5th	0.0000003	0.0000002	0.0000003	0.0000004	0.0000004	0.00000004	0.00000003	0.00000004	0.0000004	0.0000005	0.0000008	0.000002	0.000003	0.000002	0.000005
95th	0.0000002	0.00000006	0.00000005	0.0000002	0.0000001	0.000000006	0.000000004	0.000000005	0.0000001	0.0000002	0.0000005	0.000002	0.000002	0.000002	0.000004
50th	0.000000003	0.000000002	0.000000005	0.000000001	0.000000006	0.000000002	0.000000001	0.000000001	0.00000001	0.00000001	0.00000002	0.0000002	0.0000002	0.0000003	0.0000008
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
99.9th	0.0003	0.0002	0.0005	0.0005	0.0006	0.0002	0.00009	0.0003	0.0007	0.0005	0.002	0.006	0.006	0.007	0.009
99th	0.00005	0.00001	0.00003	0.00006	0.00005	0.00002	0.00001	0.00002	0.00007	0.00008	0.0002	0.0007	0.0007	0.0008	0.001
97.5th	0.00001	0.000007	0.00001	0.00002	0.00002	0.000003	0.000003	0.000003	0.00002	0.00003	0.00005	0.0003	0.0003	0.0003	0.0004
95th	0.000005	0.000004	0.000003	0.000007	0.000006	0.000001	0.0000008	0.000001	0.000006	0.000009	0.00002	0.0001	0.0001	0.0002	0.0002
50th	0.00000004	0.00000003	0.00000008	0.0000002	0.0000001	0.00000003	0.00000003	0.00000003	0.0000002	0.0000002	0.0000005	0.000004	0.000004	0.000004	0.000004
HQ															
99.9th	0.000003	0.000002	0.000005	0.000005	0.000006	0.000002	0.0000009	0.000003	0.000007	0.000005	0.00002	0.00006	0.00006	0.00007	0.00009
99th	0.0000005	0.0000001	0.0000003	0.0000006	0.0000005	0.0000002	0.0000001	0.0000002	0.0000007	0.0000008	0.000002	0.000007	0.000007	0.000008	0.00001
97.5th	0.0000001	0.00000007	0.0000001	0.0000002	0.0000002	0.00000003	0.00000003	0.00000003	0.0000002	0.0000003	0.0000005	0.000003	0.000003	0.000003	0.000004
95th	0.00000005	0.00000004	0.00000003	0.00000007	0.00000006	0.00000001	0.000000008	0.00000001	0.00000006	0.00000009	0.0000002	0.000001	0.000001	0.000002	0.000002
50th	0.0000000004	0.0000000003	0.0000000008	0.000000002	0.000000001	0.0000000003	0.0000000003	0.0000000003	0.000000002	0.000000002	0.000000005	0.00000004	0.00000004	0.00000004	0.00000004

AGV ($\mu\text{g}/\text{m}^3$)	100	100	100	100	100	100	100	100	100	100	100	100
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$												
Scenario 1 (Existing North Mine, no background)												
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})											
	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
99.9th	0.0004	0.0007	0.0005	0.0004	0.0004	0.0004	0.0006	0.0008	0.0006	0.0007	0.0005	0.0001
99th	0.0003	0.0005	0.0003	0.0003	0.0003	0.0003	0.0004	0.0004	0.0004	0.0004	0.0004	0.0001
97.5th	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003	0.0004	0.0003	0.0003	0.0003	0.00009
95th	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.0002	0.00007
50th	0.00002	0.00005	0.00005	0.00005	0.00004	0.00003	0.00003	0.00007	0.00007	0.00007	0.00005	0.000004
HQ												
99.9th	0.000004	0.000007	0.000005	0.000004	0.000004	0.000004	0.000006	0.000008	0.000006	0.000007	0.000005	0.000001
99th	0.000003	0.000005	0.000003	0.000003	0.000003	0.000003	0.000004	0.000004	0.000004	0.000004	0.000004	0.000001
97.5th	0.000002	0.000003	0.000002	0.000002	0.000002	0.000002	0.000003	0.000004	0.000003	0.000003	0.000003	0.0000009
95th	0.000002	0.000003	0.000002	0.000002	0.000002	0.000002	0.000003	0.000003	0.000003	0.000003	0.000002	0.0000007
50th	0.0000002	0.0000005	0.0000005	0.0000005	0.0000004	0.0000003	0.0000003	0.0000007	0.0000007	0.0000007	0.0000005	0.00000004
Scenario 2 (Proposed North Mine, no background)												
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})											
	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
99.9th	0.01	0.02	0.02	0.02	0.03	0.02	0.01	0.02	0.01	0.01	0.01	0.002
99th	0.001	0.002	0.003	0.004	0.004	0.003	0.002	0.002	0.002	0.002	0.002	0.0002
97.5th	0.0006	0.0009	0.001	0.002	0.002	0.001	0.0007	0.001	0.0008	0.0008	0.0008	0.00008
95th	0.0003	0.0005	0.0007	0.0009	0.001	0.0007	0.0004	0.0007	0.0004	0.0004	0.0005	0.00003
50th	0.000004	0.000005	0.000004	0.000004	0.000004	0.000004	0.000004	0.000005	0.000009	0.00001	0.00001	0.0000008
HQ												
99.9th	0.0001	0.0002	0.0002	0.0002	0.0003	0.0002	0.0001	0.0002	0.0001	0.0001	0.0001	0.00002
99th	0.00001	0.00002	0.00003	0.00004	0.00004	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.000002
97.5th	0.000006	0.000009	0.00001	0.00002	0.00002	0.00001	0.000007	0.00001	0.000008	0.000008	0.000008	0.0000008
95th	0.000003	0.000005	0.000007	0.000009	0.00001	0.000007	0.000004	0.000007	0.000004	0.000004	0.000005	0.0000003
50th	0.00000004	0.00000005	0.00000004	0.00000004	0.00000004	0.00000004	0.00000004	0.00000005	0.00000009	0.0000001	0.0000001	0.000000008

E.3 Mercury (Hg)

AGV ($\mu\text{g}/\text{m}^3$)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
99.9th	0.00002	0.00004	0.00007	0.00004	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.000007	0.000007	0.000005
99th	0.00001	0.00003	0.00005	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00001	0.000009	0.000009	0.000005	0.000006	0.000003
97.5th	0.00001	0.00002	0.00004	0.00002	0.00003	0.00002	0.00001	0.00001	0.00001	0.000007	0.000006	0.000007	0.000004	0.000004	0.000003
95th	0.000009	0.00002	0.00003	0.00002	0.00002	0.00002	0.000007	0.000007	0.000006	0.000004	0.000003	0.000004	0.000003	0.000003	0.000001
50th	0.0000002	0.0000006	0.000001	0.000002	0.000002	0.000001	0.0000004	0.0000004	0.0000002	0.00000009	0.00000007	0.00000006	0.00000001	0.00000002	0.00000001
HQ															
99.9th	0.00003	0.00006	0.0001	0.00007	0.00008	0.00007	0.00005	0.00005	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001	0.000008
99th	0.00002	0.00004	0.00009	0.00005	0.00006	0.00005	0.00003	0.00003	0.00003	0.00002	0.00002	0.00001	0.000008	0.000009	0.000006
97.5th	0.00002	0.00004	0.00007	0.00004	0.00005	0.00004	0.00002	0.00002	0.00002	0.00001	0.000009	0.00001	0.000007	0.000007	0.000005
95th	0.00002	0.00003	0.00006	0.00003	0.00004	0.00003	0.00001	0.00001	0.00001	0.000006	0.000005	0.000007	0.000005	0.000005	0.000002
50th	0.0000004	0.000001	0.000002	0.000003	0.000003	0.000002	0.0000007	0.0000007	0.0000004	0.0000002	0.0000001	0.0000001	0.00000002	0.00000003	0.00000002
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
99.9th	0.01	0.01	0.02	0.04	0.03	0.01	0.006	0.006	0.008	0.004	0.003	0.002	0.001	0.001	0.0008
99th	0.0009	0.002	0.002	0.006	0.003	0.001	0.0008	0.0008	0.0005	0.0003	0.0003	0.0003	0.0001	0.0001	0.00009
97.5th	0.0003	0.0007	0.001	0.003	0.001	0.0005	0.0003	0.0003	0.0002	0.0001	0.0001	0.0001	0.00005	0.00006	0.00004
95th	0.0002	0.0004	0.0006	0.002	0.0007	0.0002	0.0001	0.0001	0.00009	0.00004	0.00003	0.00004	0.00003	0.00004	0.00001
50th	0.000002	0.000003	0.000003	0.000003	0.000002	0.000002	0.000001	0.000001	0.000001	0.0000006	0.0000005	0.0000004	0.0000002	0.0000002	0.00000008
HQ															
99.9th	0.02	0.02	0.03	0.07	0.05	0.02	0.01	0.01	0.01	0.007	0.005	0.004	0.002	0.002	0.001
99th	0.001	0.003	0.004	0.009	0.005	0.002	0.001	0.001	0.0009	0.0006	0.0005	0.0004	0.0002	0.0002	0.0001
97.5th	0.0006	0.001	0.002	0.005	0.002	0.0009	0.0005	0.0005	0.0004	0.0002	0.0002	0.0002	0.00009	0.0001	0.00006
95th	0.0003	0.0007	0.001	0.003	0.001	0.0004	0.0002	0.0002	0.0001	0.00007	0.00005	0.00007	0.00006	0.00006	0.00002
50th	0.000003	0.000005	0.000004	0.000005	0.000003	0.000003	0.000002	0.000002	0.000002	0.000001	0.0000008	0.0000007	0.0000003	0.0000003	0.0000001

AGV ($\mu\text{g}/\text{m}^3$)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
99.9th	0.000005	0.000001	0.000003	0.000005	0.000004	0.000007	0.000006	0.000006	0.000006	0.000005	0.000004	0.000005	0.000005	0.000005	0.000006
99th	0.000004	0.0000005	0.000002	0.000002	0.000002	0.000005	0.000004	0.000004	0.000004	0.000003	0.000003	0.000003	0.000004	0.000003	0.000004
97.5th	0.000002	0.0000002	0.0000007	0.000001	0.0000009	0.000004	0.000003	0.000003	0.000003	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002
95th	0.0000004	0.0000001	0.0000003	0.0000004	0.0000003	0.000002	0.000001	0.0000008	0.0000006	0.0000004	0.0000005	0.0000008	0.0000002	0.0000009	0.0000001
50th	0.00000001	0.00000001	0.00000002	0.00000002	0.00000002	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0	0.00000001	0.00000001	0.00000001	0.00000001
HQ															
99.9th	0.000009	0.000002	0.000005	0.000008	0.000007	0.00001	0.00001	0.00001	0.000009	0.000008	0.000007	0.000008	0.000009	0.000009	0.00001
99th	0.000006	0.0000009	0.000003	0.000004	0.000003	0.000009	0.000007	0.000007	0.000006	0.000006	0.000005	0.000006	0.000006	0.000006	0.000007
97.5th	0.000003	0.0000004	0.000001	0.000002	0.000002	0.000007	0.000006	0.000005	0.000005	0.000004	0.000003	0.000003	0.000004	0.000003	0.000003
95th	0.0000007	0.0000002	0.0000005	0.0000007	0.0000005	0.000004	0.000002	0.000001	0.0000009	0.0000007	0.0000008	0.0000001	0.0000003	0.0000002	0.0000002
50th	0.00000002	0.00000002	0.00000003	0.00000003	0.00000003	0.00000002	0.00000002	0.00000002	0.00000002	0.00000002	0	0.00000002	0.00000002	0.00000002	0.00000002
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
99.9th	0.0006	0.0003	0.0006	0.0007	0.0006	0.001	0.001	0.0009	0.0007	0.0007	0.0004	0.0006	0.0006	0.0007	0.001
99th	0.00007	0.00004	0.00006	0.00007	0.00007	0.00009	0.00009	0.0001	0.00007	0.00007	0.00009	0.00007	0.00007	0.00008	0.00007
97.5th	0.00002	0.00002	0.00003	0.00004	0.00003	0.00004	0.00004	0.00004	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003
95th	0.000009	0.000009	0.00002	0.00002	0.00002	0.00003	0.00002	0.00001	0.00001	0.00001	0.000005	0.000005	0.000008	0.000006	0.000007
50th	0.00000009	0.0000001	0.0000003	0.0000004	0.0000003	0.0000002	0.0000001	0.0000001	0.00000009	0.00000008	0.00000007	0.00000008	0.00000009	0.00000009	0.0000001
HQ															
99.9th	0.001	0.0004	0.001	0.001	0.001	0.002	0.002	0.002	0.001	0.001	0.0007	0.001	0.001	0.001	0.002
99th	0.0001	0.00007	0.00009	0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
97.5th	0.00003	0.00003	0.00005	0.00006	0.00005	0.00007	0.00006	0.00006	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00006
95th	0.00002	0.00002	0.00003	0.00003	0.00003	0.00004	0.00003	0.00002	0.00002	0.00002	0.000009	0.000009	0.00001	0.00001	0.00001
50th	0.0000001	0.0000002	0.0000005	0.0000006	0.0000005	0.0000003	0.0000002	0.0000002	0.0000001	0.0000001	0.0000001	0.0000001	0.0000002	0.0000002	0.0000002

AGV ($\mu\text{g}/\text{m}^3$)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
99.9th	0.000007	0.000007	0.000008	0.000009	0.00001	0.00001	0.00001	0.00002	0.00001	0.00001	0.00002	0.000007	0.000007	0.000008	0.00001
99th	0.000006	0.000006	0.000006	0.000007	0.000009	0.000009	0.000008	0.000009	0.000008	0.000009	0.00002	0.000005	0.000005	0.000005	0.000006
97.5th	0.000004	0.000005	0.000005	0.000006	0.000007	0.000007	0.000006	0.000007	0.000005	0.000006	0.00002	0.000002	0.000002	0.000003	0.000004
95th	0.000003	0.000003	0.000004	0.000004	0.000004	0.000004	0.000003	0.000005	0.000002	0.000003	0.00001	0.000004	0.000006	0.000007	0.000001
50th	0.00000002	0.00000002	0.00000002	0.00000003	0.00000005	0.00000006	0.00000005	0.00000007	0.00000005	0.00000006	0.0000003	0.00000001	0.00000002	0.00000002	0.00000003
Percentile	HQ														
	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
99.9th	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.00003	0.00002	0.00002	0.00004	0.00001	0.00001	0.00001	0.00002
99th	0.000009	0.00001	0.00001	0.00001	0.00001	0.00002	0.00001	0.00001	0.00001	0.00002	0.00003	0.000008	0.000008	0.000009	0.00001
97.5th	0.000007	0.000008	0.000008	0.000009	0.00001	0.00001	0.00001	0.00001	0.000008	0.000009	0.00003	0.000003	0.000004	0.000005	0.000007
95th	0.000005	0.000005	0.000006	0.000007	0.000007	0.000007	0.000006	0.000008	0.000003	0.000005	0.00002	0.000007	0.000001	0.000001	0.000002
50th	0.00000003	0.00000003	0.00000003	0.00000005	0.00000008	0.0000001	0.00000008	0.0000001	0.00000008	0.0000001	0.0000005	0.00000002	0.00000003	0.00000003	0.00000005
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
99.9th	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.005	0.001	0.001	0.002	0.002
99th	0.0001	0.0002	0.0002	0.0002	0.0003	0.0003	0.0002	0.0003	0.0003	0.0003	0.0007	0.00009	0.0001	0.0001	0.0001
97.5th	0.00005	0.00005	0.00006	0.00007	0.0001	0.0001	0.0001	0.0001	0.00009	0.0001	0.0003	0.00004	0.00005	0.00005	0.00007
95th	0.00003	0.00003	0.00003	0.00004	0.00003	0.00003	0.00003	0.00004	0.00003	0.00003	0.0001	0.00001	0.00001	0.00002	0.00002
50th	0.0000002	0.0000002	0.0000002	0.0000003	0.0000004	0.0000004	0.0000004	0.0000004	0.0000004	0.0000005	0.0000008	0.0000002	0.0000002	0.0000002	0.0000003
Percentile	HQ														
	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
99.9th	0.002	0.002	0.003	0.003	0.003	0.004	0.003	0.003	0.005	0.005	0.008	0.002	0.002	0.003	0.004
99th	0.0002	0.0003	0.0003	0.0003	0.0004	0.0004	0.0004	0.0005	0.0004	0.0005	0.001	0.0001	0.0002	0.0002	0.0002
97.5th	0.00008	0.00009	0.00009	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.00007	0.00008	0.00009	0.0001
95th	0.00005	0.00005	0.00006	0.00006	0.00005	0.00005	0.00005	0.00006	0.00004	0.00005	0.0002	0.00002	0.00002	0.00003	0.00003
50th	0.0000003	0.0000003	0.0000004	0.0000005	0.0000006	0.0000007	0.0000006	0.0000007	0.0000007	0.0000008	0.000001	0.0000003	0.0000003	0.0000004	0.0000005

AGV ($\mu\text{g}/\text{m}^3$)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
99.9th	0.000004	0.000004	0.000007	0.000007	0.000008	0.000004	0.000004	0.000009	0.000006	0.000007	0.000006	0.000006	0.000004	0.000004	0.000005
99th	0.000003	0.000003	0.000004	0.000004	0.000005	0.000002	0.000003	0.000006	0.000003	0.000003	0.000003	0.000004	0.000002	0.000002	0.000003
97.5th	0.000002	0.000002	0.000001	0.000001	0.000002	0.000001	0.000001	0.000004	0.0000008	0.0000009	0.0000007	0.000001	0.0000004	0.0000002	0.000003
95th	0.0000001	0.00000008	0.0000002	0.0000003	0.0000003	0.00000007	0.00000007	0.000002	0.0000002	0.00000006	0.00000006	0.00000008	0.00000004	0.00000003	0.000001
50th	0	0	0.00000001	0.00000001	0.00000001	0	0	0.00000002	0.00000001	0.00000001	0.00000001	0.00000001	0	0	0.00000001
Percentile	HQ														
	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
99.9th	0.000007	0.000007	0.00001	0.00001	0.00001	0.000006	0.000007	0.00001	0.00001	0.00001	0.00001	0.000009	0.000006	0.000006	0.000008
99th	0.000005	0.000005	0.000007	0.000007	0.000008	0.000004	0.000005	0.00001	0.000005	0.000006	0.000006	0.000006	0.000004	0.000003	0.000005
97.5th	0.000003	0.000003	0.000002	0.000002	0.000003	0.000002	0.000002	0.000007	0.000001	0.000001	0.000001	0.000002	0.0000007	0.0000003	0.000005
95th	0.0000002	0.0000001	0.0000004	0.0000005	0.0000005	0.0000001	0.0000001	0.000003	0.0000003	0.0000001	0.0000001	0.0000001	0.00000007	0.00000005	0.000002
50th	0	0	0.00000002	0.00000002	0.00000002	0	0	0.00000003	0.00000002	0.00000002	0.00000002	0.00000002	0	0	0.00000002
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
99.9th	0.0005	0.0006	0.0008	0.0008	0.0008	0.0006	0.0005	0.002	0.0004	0.0007	0.001	0.001	0.0005	0.0007	0.0008
99th	0.00006	0.00007	0.00007	0.00007	0.00007	0.00005	0.00006	0.0002	0.00007	0.00007	0.00007	0.00009	0.00004	0.00004	0.0001
97.5th	0.00002	0.00003	0.00003	0.00003	0.00004	0.00002	0.00002	0.00009	0.00002	0.00002	0.00002	0.00003	0.00002	0.00002	0.00004
95th	0.000006	0.000007	0.000007	0.000008	0.00001	0.000006	0.000006	0.00004	0.000005	0.000004	0.000004	0.000006	0.000005	0.000003	0.00001
50th	0.00000007	0.00000008	0.0000001	0.0000001	0.0000001	0.00000006	0.00000007	0.0000004	0.0000002	0.0000001	0.0000001	0.0000001	0.00000006	0.00000006	0.00000009
Percentile	HQ														
	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
99.9th	0.0009	0.001	0.001	0.001	0.001	0.0009	0.0009	0.003	0.0007	0.001	0.002	0.002	0.0008	0.001	0.001
99th	0.0001	0.0001	0.0001	0.0001	0.0001	0.00009	0.0001	0.0003	0.0001	0.0001	0.0001	0.0001	0.00006	0.00007	0.0002
97.5th	0.00004	0.00004	0.00005	0.00006	0.00006	0.00003	0.00004	0.0001	0.00004	0.00003	0.00003	0.00005	0.00003	0.00003	0.00006
95th	0.00001	0.00001	0.00001	0.00001	0.00002	0.00001	0.00001	0.00006	0.000009	0.000007	0.000007	0.00001	0.000008	0.000005	0.00002
50th	0.0000001	0.0000001	0.0000002	0.0000002	0.0000002	0.0000001	0.0000001	0.0000006	0.0000003	0.0000002	0.0000002	0.0000002	0.00000009	0.0000001	0.0000001

AGV ($\mu\text{g}/\text{m}^3$)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
99.9th	0.000005	0.000005	0.000005	0.00001	0.000004	0.000005	0.000006	0.00001	0.000008	0.000006	0.000003	0.000008	0.00001	0.00001	0.000005
99th	0.000003	0.000003	0.000004	0.000007	0.000003	0.000003	0.000003	0.000005	0.000005	0.000004	0.000002	0.000006	0.000007	0.000009	0.000004
97.5th	0.000002	0.000003	0.000003	0.000004	0.000002	0.0000006	0.0000004	0.000002	0.000003	0.000003	0.000001	0.000005	0.000006	0.000006	0.000003
95th	0.0000006	0.000001	0.000001	0.000002	0.0000006	0.00000005	0.00000006	0.0000004	0.0000003	0.000001	0.0000007	0.000004	0.000005	0.000003	0.000002
50th	0.00000001	0.00000001	0.00000001	0.00000004	0	0	0.00000001	0.00000002	0.00000002	0.00000001	0	0.00000002	0.00000004	0.00000006	0.00000001
Percentile	HQ														
	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
99.9th	0.000008	0.000008	0.000008	0.00002	0.000007	0.000009	0.00001	0.00002	0.00001	0.00001	0.000005	0.00001	0.00002	0.00002	0.000008
99th	0.000006	0.000006	0.000006	0.00001	0.000004	0.000005	0.000005	0.000009	0.000008	0.000007	0.000004	0.00001	0.00001	0.00002	0.000006
97.5th	0.000004	0.000004	0.000005	0.000007	0.000003	0.000001	0.0000006	0.000004	0.000005	0.000006	0.000002	0.000009	0.00001	0.00001	0.000005
95th	0.000001	0.000002	0.000002	0.000003	0.000001	0.00000008	0.0000001	0.0000007	0.0000005	0.000002	0.000001	0.000006	0.000008	0.000005	0.000003
50th	0.00000002	0.00000002	0.00000002	0.00000007	0	0	0.00000002	0.00000003	0.00000003	0.00000002	0	0.00000003	0.00000007	0.0000001	0.00000002
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
99.9th	0.0007	0.0008	0.001	0.003	0.0006	0.0005	0.0009	0.003	0.002	0.0009	0.0005	0.002	0.002	0.003	0.0008
99th	0.00005	0.0001	0.0001	0.0002	0.00005	0.00005	0.00006	0.0001	0.0001	0.00009	0.00007	0.0002	0.0002	0.0002	0.0001
97.5th	0.00003	0.00004	0.00004	0.00007	0.00003	0.00002	0.00002	0.00005	0.00005	0.00004	0.00003	0.00006	0.00008	0.0001	0.00005
95th	0.00001	0.00001	0.00001	0.00003	0.00001	0.000006	0.000004	0.00001	0.00001	0.00002	0.00001	0.00002	0.00004	0.00004	0.00002
50th	0.00000008	0.00000009	0.00000009	0.0000004	0.00000006	0.00000007	0.0000001	0.0000002	0.0000002	0.0000001	0.00000006	0.0000002	0.0000003	0.0000004	0.0000001
Percentile	HQ														
	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
99.9th	0.001	0.001	0.002	0.005	0.001	0.0009	0.002	0.004	0.003	0.002	0.0008	0.003	0.004	0.004	0.001
99th	0.00008	0.0002	0.0002	0.0003	0.00008	0.00008	0.00009	0.0002	0.0002	0.0002	0.0001	0.0003	0.0003	0.0004	0.0002
97.5th	0.00004	0.00007	0.00007	0.0001	0.00004	0.00004	0.00003	0.00008	0.00008	0.00006	0.00005	0.0001	0.0001	0.0002	0.00008
95th	0.00002	0.00002	0.00002	0.00004	0.00002	0.00001	0.000007	0.00002	0.00002	0.00003	0.00002	0.00004	0.00007	0.00007	0.00004
50th	0.0000001	0.0000002	0.0000002	0.0000007	0.0000001	0.0000001	0.0000002	0.0000004	0.0000003	0.0000002	0.0000001	0.0000003	0.0000005	0.0000007	0.0000002

AGV ($\mu\text{g}/\text{m}^3$)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
99.9th	0.000005	0.000004	0.000008	0.000009	0.000008	0.000004	0.000004	0.000005	0.00001	0.00001	0.00002	0.00008	0.00008	0.00007	0.0002
99th	0.000004	0.000002	0.000005	0.000006	0.000005	0.000001	0.000002	0.000002	0.000006	0.000007	0.00001	0.00006	0.00006	0.00005	0.0002
97.5th	0.000003	0.000002	0.000002	0.000003	0.000003	0.0000002	0.0000001	0.0000004	0.000003	0.000004	0.000007	0.00005	0.00005	0.00004	0.0001
95th	0.000001	0.0000005	0.0000002	0.000001	0.0000009	0.00000003	0.00000003	0.00000003	0.0000009	0.000001	0.000004	0.00004	0.00004	0.00004	0.00008
50th	0.00000001	0	0.00000002	0.00000004	0.00000002	0	0.00000001	0.00000001	0.00000004	0.00000006	0.0000001	0.000003	0.000003	0.000004	0.00001
HQ															
99.9th	0.000008	0.000006	0.00001	0.00002	0.00001	0.000006	0.000007	0.000008	0.00002	0.00002	0.00003	0.0001	0.0001	0.0001	0.0004
99th	0.000006	0.000004	0.000008	0.00001	0.000009	0.000002	0.000004	0.000004	0.000009	0.00001	0.00002	0.0001	0.0001	0.00009	0.0003
97.5th	0.000004	0.000003	0.000003	0.000005	0.000004	0.0000004	0.0000002	0.0000007	0.000006	0.000007	0.00001	0.00008	0.00008	0.00007	0.0002
95th	0.000002	0.0000009	0.0000004	0.000002	0.000001	0.00000005	0.00000005	0.00000005	0.000002	0.000002	0.000006	0.00006	0.00006	0.00006	0.0001
50th	0.00000002	0	0.00000003	0.00000007	0.00000003	0	0.00000002	0.00000002	0.00000007	0.0000001	0.0000002	0.000005	0.000006	0.000006	0.00002
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
99.9th	0.0008	0.0005	0.002	0.002	0.001	0.0005	0.0002	0.0008	0.003	0.002	0.005	0.03	0.03	0.04	0.05
99th	0.0001	0.00004	0.0001	0.0002	0.0001	0.00005	0.00004	0.00005	0.0002	0.0002	0.0004	0.003	0.003	0.004	0.005
97.5th	0.00004	0.00002	0.00004	0.00006	0.00006	0.00001	0.000008	0.00001	0.00006	0.00007	0.0002	0.001	0.001	0.002	0.002
95th	0.00001	0.00001	0.000009	0.00002	0.00002	0.000003	0.000003	0.000003	0.00002	0.00003	0.00006	0.0006	0.0007	0.0008	0.001
50th	0.00000009	0.00000006	0.0000002	0.0000004	0.0000003	0.00000006	0.00000008	0.00000009	0.0000004	0.0000005	0.0000009	0.000002	0.000002	0.000002	0.000002
HQ															
99.9th	0.001	0.0009	0.003	0.003	0.002	0.0008	0.0004	0.001	0.004	0.004	0.008	0.05	0.05	0.06	0.08
99th	0.0002	0.00007	0.0002	0.0003	0.0002	0.00008	0.00007	0.00008	0.0003	0.0004	0.0007	0.005	0.005	0.006	0.008
97.5th	0.00007	0.00004	0.00007	0.00009	0.00009	0.00002	0.00001	0.00002	0.0001	0.0001	0.0003	0.002	0.002	0.003	0.004
95th	0.00002	0.00002	0.00001	0.00003	0.00003	0.000005	0.000004	0.000005	0.00004	0.00004	0.00009	0.001	0.001	0.001	0.002
50th	0.0000002	0.0000001	0.0000003	0.0000006	0.0000004	0.0000001	0.0000001	0.0000001	0.0000007	0.0000008	0.000001	0.000003	0.000003	0.000004	0.000004

AGV ($\mu\text{g}/\text{m}^3$)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$												
Scenario 1 (Existing North Mine, no background)												
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})											
	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
99.9th	0.00007	0.0002	0.0001	0.00008	0.00007	0.00008	0.0001	0.0002	0.0001	0.0001	0.00007	0.00002
99th	0.00005	0.00009	0.00006	0.00004	0.00004	0.00005	0.00009	0.0001	0.00008	0.00009	0.00005	0.00002
97.5th	0.00004	0.00007	0.00004	0.00003	0.00003	0.00004	0.00007	0.00008	0.00006	0.00006	0.00004	0.00001
95th	0.00003	0.00005	0.00003	0.00003	0.00003	0.00003	0.00005	0.00006	0.00005	0.00004	0.00003	0.000007
50th	0.000003	0.000007	0.000005	0.000005	0.000005	0.000005	0.000004	0.000009	0.000009	0.00001	0.000007	0.0000002
HQ												
99.9th	0.0001	0.0003	0.0002	0.0001	0.0001	0.0001	0.0002	0.0003	0.0002	0.0002	0.0001	0.00004
99th	0.00008	0.0002	0.0001	0.00007	0.00007	0.00008	0.0001	0.0002	0.0001	0.0001	0.00008	0.00003
97.5th	0.00006	0.0001	0.00007	0.00006	0.00006	0.00006	0.0001	0.0001	0.0001	0.0001	0.00006	0.00002
95th	0.00005	0.00009	0.00005	0.00005	0.00005	0.00005	0.00009	0.0001	0.00008	0.00007	0.00005	0.00001
50th	0.000004	0.00001	0.000009	0.000009	0.000008	0.000008	0.000006	0.00002	0.00002	0.00002	0.00001	0.0000004
Scenario 2 (Proposed North Mine, no background)												
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})											
	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
99.9th	0.06	0.1	0.1	0.2	0.2	0.1	0.08	0.1	0.04	0.04	0.04	0.009
99th	0.007	0.01	0.02	0.03	0.03	0.02	0.009	0.01	0.005	0.005	0.005	0.0006
97.5th	0.003	0.006	0.009	0.01	0.02	0.009	0.004	0.007	0.002	0.002	0.002	0.0003
95th	0.002	0.003	0.005	0.007	0.01	0.005	0.003	0.005	0.001	0.001	0.001	0.00008
50th	0.000003	0.000004	0.000004	0.000004	0.000004	0.000003	0.000003	0.000005	0.000007	0.000007	0.000008	0.000001
HQ												
99.9th	0.1	0.2	0.2	0.3	0.3	0.2	0.1	0.2	0.07	0.07	0.06	0.02
99th	0.01	0.02	0.03	0.04	0.05	0.03	0.02	0.02	0.008	0.008	0.008	0.0009
97.5th	0.006	0.01	0.02	0.02	0.03	0.02	0.007	0.01	0.003	0.003	0.003	0.0004
95th	0.003	0.005	0.008	0.01	0.02	0.009	0.004	0.008	0.002	0.002	0.002	0.0001
50th	0.000004	0.000006	0.000007	0.000007	0.000006	0.000006	0.000004	0.000008	0.00001	0.00001	0.00001	0.000002

E.4 Nickel (Ni)

AGV ($\mu\text{g}/\text{m}^3$)	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
99.9th	0.0001	0.0002	0.0003	0.0002	0.0002	0.0002	0.0001	0.0002	0.0001	0.00007	0.00006	0.00006	0.00004	0.00004	0.00003
99th	0.00007	0.0001	0.0003	0.0001	0.0002	0.0001	0.00009	0.00009	0.00007	0.00005	0.00004	0.00004	0.00002	0.00003	0.00002
97.5th	0.00006	0.0001	0.0002	0.0001	0.0001	0.0001	0.00006	0.00007	0.00006	0.00004	0.00003	0.00004	0.00002	0.00002	0.00001
95th	0.00005	0.00008	0.0002	0.0001	0.0001	0.00009	0.00005	0.00004	0.00004	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001
50th	0.000002	0.000003	0.000008	0.00001	0.00001	0.000008	0.000003	0.000003	0.000002	0.0000009	0.0000006	0.0000005	0.0000003	0.0000003	0.00000008
HQ															
99.9th	0.00002	0.00003	0.00006	0.00003	0.00004	0.00004	0.00002	0.00003	0.00002	0.00001	0.000009	0.00001	0.000007	0.000007	0.000005
99th	0.00001	0.00002	0.00004	0.00002	0.00003	0.00002	0.00002	0.00001	0.00001	0.000008	0.000007	0.000007	0.000004	0.000005	0.000003
97.5th	0.000009	0.00002	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.000006	0.000006	0.000006	0.000004	0.000004	0.000002
95th	0.000008	0.00001	0.00003	0.00002	0.00002	0.00002	0.000008	0.000007	0.000006	0.000004	0.000003	0.000004	0.000003	0.000003	0.000002
50th	0.0000003	0.0000006	0.000001	0.000002	0.000002	0.000001	0.0000005	0.0000006	0.0000003	0.0000001	0.0000001	0.00000009	0.00000004	0.00000005	0.00000001
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
99.9th	0.06	0.08	0.05	0.04	0.03	0.02	0.02	0.02	0.02	0.02	0.01	0.009	0.007	0.007	0.01
99th	0.009	0.01	0.009	0.007	0.004	0.004	0.003	0.004	0.003	0.003	0.003	0.003	0.002	0.003	0.002
97.5th	0.004	0.004	0.003	0.002	0.001	0.0009	0.0008	0.0009	0.0008	0.0007	0.0008	0.001	0.002	0.002	0.0005
95th	0.001	0.002	0.001	0.0005	0.0004	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0007	0.0005	0.0003
50th	0.00002	0.00002	0.00003	0.00002	0.00002	0.00001	0.000009	0.000008	0.000007	0.000005	0.000004	0.000004	0.000002	0.000002	0.000001
HQ															
99.9th	0.01	0.01	0.009	0.006	0.004	0.003	0.004	0.003	0.003	0.003	0.002	0.002	0.001	0.001	0.002
99th	0.001	0.002	0.002	0.001	0.0007	0.0007	0.0005	0.0006	0.0005	0.0005	0.0005	0.0005	0.0004	0.0004	0.0004
97.5th	0.0006	0.0006	0.0004	0.0003	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0003	0.0003	0.00008
95th	0.0002	0.0003	0.0002	0.00009	0.00006	0.00005	0.00004	0.00004	0.00004	0.00003	0.00003	0.00004	0.0001	0.00009	0.00004
50th	0.000003	0.000004	0.000005	0.000004	0.000003	0.000002	0.000001	0.000001	0.000001	0.0000008	0.0000007	0.0000006	0.0000003	0.0000004	0.0000002

AGV ($\mu\text{g}/\text{m}^3$)	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
99.9th	0.00003	0.000007	0.00002	0.00003	0.00002	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002
99th	0.00002	0.000003	0.000008	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002
97.5th	0.00001	0.000001	0.000003	0.000007	0.000005	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.000009	0.00001	0.00001	0.00001
95th	0.000003	0.0000007	0.000002	0.000003	0.000002	0.00002	0.00001	0.00001	0.00001	0.00001	0.000005	0.000003	0.000003	0.000004	0.000002
50th	0.00000009	0.0000002	0.0000004	0.0000005	0.0000004	0.0000001	0.0000001	0.00000008	0.00000007	0.00000006	0.00000004	0.00000004	0.00000006	0.00000006	0.00000007
HQ															
99.9th	0.000004	0.000001	0.000003	0.000004	0.000003	0.000006	0.000005	0.000004	0.000005	0.000005	0.000003	0.000003	0.000004	0.000004	0.000004
99th	0.000003	0.0000005	0.000001	0.000002	0.000002	0.000004	0.000004	0.000003	0.000003	0.000003	0.000003	0.000003	0.000003	0.000003	0.000003
97.5th	0.000002	0.0000002	0.0000006	0.000001	0.0000008	0.000004	0.000003	0.000003	0.000003	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002
95th	0.0000005	0.0000001	0.0000003	0.0000004	0.0000003	0.000003	0.000002	0.000002	0.000002	0.000002	0.0000009	0.0000004	0.0000005	0.0000007	0.0000003
50th	0.00000002	0.00000004	0.00000007	0.00000008	0.00000006	0.00000002	0.00000002	0.00000001	0.00000001	0.00000001	0.000000007	0.000000007	0.00000001	0.00000001	0.00000001
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
99.9th	0.01	0.003	0.004	0.006	0.004	0.004	0.005	0.01	0.006	0.006	0.01	0.01	0.008	0.01	0.006
99th	0.001	0.0006	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
97.5th	0.0004	0.0002	0.0004	0.0005	0.0004	0.001	0.001	0.0007	0.0008	0.0007	0.0003	0.0003	0.0006	0.0003	0.0005
95th	0.0001	0.00007	0.0001	0.0002	0.0001	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.00008
50th	0.000001	0.000002	0.000005	0.000006	0.000006	0.000002	0.000002	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000002
HQ															
99.9th	0.002	0.0005	0.0007	0.0009	0.0007	0.0007	0.0008	0.002	0.001	0.001	0.002	0.002	0.001	0.002	0.0009
99th	0.0002	0.00009	0.0002	0.0002	0.0002	0.0003	0.0003	0.0004	0.0003	0.0003	0.0004	0.0003	0.0003	0.0003	0.0003
97.5th	0.00007	0.00003	0.00006	0.00008	0.00007	0.0002	0.0002	0.0001	0.0001	0.0001	0.00006	0.00005	0.0001	0.00006	0.00009
95th	0.00002	0.00001	0.00002	0.00003	0.00002	0.00005	0.00004	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00001
50th	0.0000002	0.0000004	0.0000008	0.000001	0.0000009	0.0000003	0.0000003	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000003

AGV ($\mu\text{g}/\text{m}^3$)	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
99.9th	0.00004	0.00004	0.00004	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.0001	0.00003	0.00003	0.00003	0.00004
99th	0.00003	0.00003	0.00003	0.00003	0.00004	0.00004	0.00004	0.00004	0.00004	0.00004	0.00008	0.00002	0.00003	0.00003	0.00003
97.5th	0.00002	0.00002	0.00002	0.00003	0.00003	0.00003	0.00003	0.00004	0.00003	0.00003	0.00007	0.00002	0.00002	0.00002	0.00002
95th	0.00002	0.00002	0.00002	0.00002	0.00003	0.00003	0.00002	0.00003	0.00002	0.00002	0.00006	0.000004	0.000005	0.000007	0.000008
50th	0.0000002	0.0000002	0.0000002	0.0000004	0.0000004	0.0000004	0.0000004	0.0000005	0.0000004	0.0000006	0.000002	0.0000001	0.0000002	0.0000002	0.0000003
HQ															
99.9th	0.000006	0.000006	0.000007	0.000008	0.000008	0.000009	0.000008	0.000009	0.000008	0.000009	0.00002	0.000005	0.000005	0.000006	0.000006
99th	0.000004	0.000004	0.000005	0.000005	0.000006	0.000007	0.000006	0.000007	0.000007	0.000007	0.00001	0.000004	0.000004	0.000005	0.000005
97.5th	0.000004	0.000004	0.000004	0.000004	0.000005	0.000006	0.000005	0.000006	0.000005	0.000006	0.00001	0.000003	0.000003	0.000003	0.000004
95th	0.000003	0.000003	0.000003	0.000004	0.000004	0.000005	0.000004	0.000004	0.000003	0.000003	0.000009	0.0000007	0.0000008	0.000001	0.000001
50th	0.00000003	0.00000003	0.00000004	0.00000006	0.00000006	0.00000007	0.00000006	0.00000008	0.00000007	0.0000001	0.0000003	0.00000002	0.00000003	0.00000003	0.00000004
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
99.9th	0.007	0.007	0.008	0.009	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.005	0.007	0.009	0.01
99th	0.002	0.002	0.002	0.003	0.004	0.004	0.003	0.003	0.003	0.003	0.004	0.002	0.002	0.002	0.002
97.5th	0.001	0.002	0.002	0.002	0.001	0.001	0.0009	0.001	0.0008	0.0008	0.002	0.0008	0.0007	0.0007	0.0006
95th	0.0003	0.0003	0.0003	0.0004	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0004	0.00009	0.0001	0.0001	0.0001
50th	0.000002	0.000002	0.000002	0.000003	0.000003	0.000004	0.000003	0.000004	0.000004	0.000004	0.000007	0.000002	0.000002	0.000002	0.000003
HQ															
99.9th	0.001	0.001	0.001	0.001	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.0009	0.001	0.001	0.002
99th	0.0004	0.0004	0.0004	0.0004	0.0006	0.0006	0.0005	0.0006	0.0005	0.0005	0.0007	0.0003	0.0004	0.0004	0.0004
97.5th	0.0002	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0003	0.0001	0.0001	0.0001	0.0001
95th	0.00005	0.00005	0.00006	0.00006	0.00005	0.00005	0.00004	0.00005	0.00003	0.00003	0.00007	0.00002	0.00002	0.00002	0.00002
50th	0.0000003	0.0000004	0.0000004	0.0000004	0.0000006	0.0000006	0.0000006	0.0000006	0.0000006	0.0000007	0.000001	0.0000003	0.0000004	0.0000004	0.0000005

AGV ($\mu\text{g}/\text{m}^3$)	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
99.9th	0.00002	0.00002	0.00003	0.00003	0.00003	0.00002	0.00002	0.00005	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002	0.00003
99th	0.00001	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00003	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00002
97.5th	0.00001	0.00001	0.00001	0.00002	0.00002	0.000007	0.00001	0.00002	0.00001	0.000007	0.00001	0.000009	0.000007	0.000003	0.00001
95th	0.000002	0.000002	0.000003	0.000003	0.000004	0.000001	0.000002	0.00001	0.000001	0.0000006	0.0000006	0.000002	0.0000005	0.0000002	0.00001
50th	0.00000006	0.00000006	0.00000006	0.00000007	0.00000009	0.00000005	0.00000005	0.0000004	0.0000001	0.00000008	0.00000007	0.00000008	0.00000005	0.00000005	0.0000001
Percentile	HQ														
	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
99.9th	0.000004	0.000003	0.000004	0.000004	0.000005	0.000003	0.000003	0.000008	0.000005	0.000005	0.000005	0.000005	0.000003	0.000003	0.000005
99th	0.000002	0.000003	0.000003	0.000004	0.000004	0.000002	0.000002	0.000005	0.000003	0.000003	0.000003	0.000003	0.000002	0.000002	0.000003
97.5th	0.000002	0.000002	0.000002	0.000003	0.000003	0.000001	0.000002	0.000004	0.000002	0.000001	0.000002	0.000001	0.000001	0.0000005	0.000002
95th	0.0000004	0.0000004	0.0000005	0.0000006	0.0000007	0.0000002	0.0000003	0.000002	0.0000002	0.0000001	0.0000001	0.0000003	0.00000009	0.00000004	0.000002
50th	0.00000001	0.00000001	0.00000001	0.00000001	0.00000002	0.000000008	0.000000008	0.00000006	0.00000002	0.00000001	0.00000001	0.00000001	0.000000008	0.000000008	0.00000002
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
99.9th	0.007	0.008	0.006	0.005	0.005	0.006	0.008	0.01	0.007	0.01	0.008	0.009	0.003	0.004	0.009
99th	0.001	0.002	0.002	0.002	0.002	0.001	0.001	0.003	0.001	0.0008	0.001	0.002	0.001	0.001	0.002
97.5th	0.0005	0.0004	0.0006	0.0006	0.0007	0.0003	0.0004	0.0005	0.0002	0.0002	0.0002	0.0003	0.0003	0.0001	0.0008
95th	0.00009	0.0001	0.00009	0.00009	0.00009	0.00009	0.00009	0.0002	0.00003	0.00003	0.00004	0.00007	0.00005	0.00003	0.0004
50th	0.000001	0.000001	0.000001	0.000002	0.000002	0.0000009	0.0000009	0.000004	0.000002	0.000002	0.000002	0.000002	0.0000008	0.0000009	0.000001
Percentile	HQ														
	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
99.9th	0.001	0.001	0.001	0.0009	0.0008	0.001	0.001	0.002	0.001	0.002	0.001	0.002	0.0004	0.0006	0.001
99th	0.0002	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0004	0.0002	0.0001	0.0002	0.0003	0.0002	0.0002	0.0004
97.5th	0.00008	0.00007	0.0001	0.0001	0.0001	0.00006	0.00007	0.00008	0.00003	0.00003	0.00004	0.00005	0.00006	0.00002	0.0001
95th	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00003	0.000005	0.000005	0.000006	0.00001	0.000009	0.000005	0.00006
50th	0.0000002	0.0000002	0.0000002	0.0000003	0.0000003	0.0000001	0.0000002	0.0000006	0.0000003	0.0000003	0.0000003	0.0000003	0.0000001	0.0000002	0.0000002

AGV ($\mu\text{g}/\text{m}^3$)	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
99.9th	0.00003	0.00002	0.00002	0.00005	0.00002	0.00002	0.00003	0.00004	0.00003	0.00003	0.00002	0.00004	0.00005	0.00006	0.00003
99th	0.00002	0.00002	0.00002	0.00003	0.00001	0.00002	0.00002	0.00003	0.00002	0.00002	0.00001	0.00003	0.00003	0.00004	0.00002
97.5th	0.00001	0.00001	0.00001	0.00002	0.00001	0.000009	0.000006	0.00002	0.00002	0.00002	0.000008	0.00002	0.00003	0.00004	0.00001
95th	0.000008	0.00001	0.00001	0.00001	0.000004	0.000001	0.0000004	0.000006	0.000005	0.00001	0.000006	0.00002	0.00002	0.00003	0.00001
50th	0.00000007	0.00000009	0.0000001	0.0000005	0.00000006	0.00000005	0.00000008	0.0000002	0.0000002	0.0000001	0.0000001	0.0000001	0.0000005	0.0000005	0.0000001
HQ															
99.9th	0.000004	0.000004	0.000004	0.000009	0.000003	0.000003	0.000005	0.000007	0.000006	0.000005	0.000003	0.000006	0.000009	0.00001	0.000004
99th	0.000003	0.000003	0.000003	0.000006	0.000002	0.000003	0.000003	0.000005	0.000004	0.000004	0.000002	0.000005	0.000006	0.000007	0.000003
97.5th	0.000002	0.000002	0.000002	0.000004	0.000002	0.000001	0.000001	0.000003	0.000003	0.000003	0.000001	0.000004	0.000005	0.000006	0.000002
95th	0.000001	0.000002	0.000002	0.000002	0.0000006	0.0000002	0.00000007	0.000001	0.0000008	0.000002	0.000001	0.000003	0.000004	0.000004	0.000002
50th	0.00000001	0.00000002	0.00000002	0.00000008	0.00000001	0.000000008	0.00000001	0.00000004	0.00000003	0.00000002	0.00000002	0.00000002	0.00000008	0.00000009	0.00000002
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
99.9th	0.003	0.01	0.01	0.009	0.004	0.006	0.006	0.006	0.009	0.006	0.006	0.01	0.01	0.01	0.009
99th	0.001	0.002	0.002	0.002	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003
97.5th	0.0009	0.0007	0.0006	0.0003	0.0008	0.0004	0.0001	0.0003	0.0004	0.001	0.0005	0.001	0.002	0.001	0.001
95th	0.0002	0.0002	0.0003	0.0001	0.0001	0.00007	0.00002	0.0001	0.00009	0.0002	0.0002	0.0003	0.0004	0.0002	0.0004
50th	0.000001	0.000001	0.000001	0.000004	0.0000009	0.000001	0.000002	0.000003	0.000002	0.000001	0.000001	0.000002	0.000003	0.000004	0.000001
HQ															
99.9th	0.0006	0.002	0.002	0.002	0.0006	0.0009	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002
99th	0.0002	0.0004	0.0004	0.0003	0.0002	0.0002	0.0002	0.0004	0.0003	0.0003	0.0003	0.0006	0.0005	0.0005	0.0005
97.5th	0.0002	0.0001	0.0001	0.00005	0.0001	0.00006	0.00002	0.00005	0.00006	0.0002	0.00008	0.0002	0.0003	0.0002	0.0002
95th	0.00003	0.00004	0.00005	0.00002	0.00002	0.00001	0.000004	0.00002	0.00001	0.00003	0.00004	0.00005	0.00006	0.00004	0.00006
50th	0.0000002	0.0000002	0.0000002	0.0000007	0.0000002	0.0000002	0.0000003	0.0000004	0.0000004	0.0000002	0.0000002	0.0000003	0.0000005	0.0000006	0.0000002

AGV ($\mu\text{g}/\text{m}^3$)	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
99.9th	0.00002	0.00002	0.00003	0.00005	0.00004	0.00002	0.00002	0.00002	0.00005	0.00006	0.00008	0.0004	0.0004	0.0004	0.001
99th	0.00002	0.00001	0.00002	0.00003	0.00003	0.000009	0.00001	0.00001	0.00003	0.00004	0.00005	0.0003	0.0003	0.0003	0.0007
97.5th	0.00001	0.00001	0.00002	0.00002	0.00002	0.000002	0.000001	0.000003	0.00002	0.00002	0.00004	0.0002	0.0002	0.0002	0.0005
95th	0.00001	0.000003	0.000004	0.000009	0.000007	0.0000002	0.0000002	0.0000002	0.000008	0.00001	0.00003	0.0002	0.0002	0.0002	0.0004
50th	0.00000009	0.00000006	0.0000002	0.0000004	0.0000002	0.00000005	0.00000004	0.00000004	0.0000004	0.0000006	0.000001	0.00002	0.00002	0.00002	0.00008
HQ															
99.9th	0.000004	0.000003	0.000006	0.000009	0.000006	0.000004	0.000004	0.000004	0.000008	0.00001	0.00001	0.00006	0.00006	0.00006	0.0002
99th	0.000003	0.000002	0.000004	0.000005	0.000004	0.000001	0.000002	0.000002	0.000005	0.000006	0.000009	0.00005	0.00005	0.00004	0.0001
97.5th	0.000002	0.000002	0.000003	0.000004	0.000003	0.0000004	0.0000002	0.0000005	0.000003	0.000004	0.000007	0.00004	0.00004	0.00003	0.00008
95th	0.000002	0.0000005	0.0000006	0.000002	0.000001	0.00000004	0.00000003	0.00000004	0.000001	0.000002	0.000005	0.00003	0.00003	0.00003	0.00007
50th	0.00000002	0.00000001	0.00000003	0.00000007	0.00000004	0.000000008	0.000000007	0.000000007	0.00000007	0.00000009	0.0000002	0.000003	0.000004	0.000004	0.00001
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
99.9th	0.01	0.004	0.006	0.01	0.009	0.008	0.007	0.01	0.01	0.01	0.01	0.03	0.02	0.03	0.04
99th	0.002	0.001	0.002	0.002	0.002	0.0007	0.0004	0.0004	0.002	0.002	0.003	0.005	0.005	0.005	0.005
97.5th	0.0007	0.0008	0.0003	0.0003	0.0003	0.0001	0.0001	0.0002	0.0005	0.0004	0.0006	0.001	0.001	0.001	0.001
95th	0.0002	0.0001	0.00008	0.00007	0.00008	0.00003	0.00002	0.00002	0.00008	0.0001	0.0001	0.0004	0.0004	0.0004	0.0004
50th	0.000001	0.0000009	0.000002	0.000004	0.000003	0.0000009	0.000001	0.000001	0.000003	0.000004	0.000006	0.00002	0.00002	0.00002	0.00002
HQ															
99.9th	0.002	0.0006	0.0009	0.002	0.002	0.001	0.001	0.002	0.002	0.002	0.002	0.004	0.004	0.006	0.006
99th	0.0004	0.0002	0.0003	0.0003	0.0003	0.0001	0.00006	0.00007	0.0003	0.0003	0.0005	0.0008	0.0008	0.0008	0.0009
97.5th	0.0001	0.0001	0.00005	0.00004	0.00005	0.00002	0.00002	0.00003	0.00008	0.00006	0.0001	0.0002	0.0002	0.0002	0.0002
95th	0.00004	0.00002	0.00001	0.00001	0.00001	0.000005	0.000003	0.000004	0.00001	0.00002	0.00002	0.00007	0.00007	0.00006	0.00007
50th	0.0000002	0.0000001	0.0000004	0.0000006	0.0000005	0.0000001	0.0000002	0.0000002	0.0000006	0.0000007	0.000001	0.000003	0.000003	0.000003	0.000003

AGV ($\mu\text{g}/\text{m}^3$)	6	6	6	6	6	6	6	6	6	6	6	6
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$												
Scenario 1 (Existing North Mine, no background)												
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})											
	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
99.9th	0.0003	0.0007	0.0005	0.0004	0.0003	0.0004	0.0006	0.0009	0.0005	0.0007	0.0003	0.00009
99th	0.0002	0.0004	0.0003	0.0002	0.0002	0.0002	0.0004	0.0004	0.0003	0.0004	0.0002	0.00007
97.5th	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.0002	0.00006
95th	0.0001	0.0002	0.0002	0.0001	0.0001	0.0001	0.0002	0.0003	0.0002	0.0002	0.0001	0.00004
50th	0.00002	0.00004	0.00003	0.00004	0.00003	0.00003	0.00002	0.00006	0.00005	0.00006	0.00004	0.000002
HQ												
99.9th	0.00006	0.0001	0.00008	0.00006	0.00006	0.00006	0.0001	0.0001	0.00008	0.0001	0.00005	0.00002
99th	0.00004	0.00007	0.00005	0.00004	0.00004	0.00004	0.00007	0.00007	0.00006	0.00007	0.00004	0.00001
97.5th	0.00003	0.00005	0.00003	0.00003	0.00003	0.00003	0.00005	0.00006	0.00005	0.00005	0.00003	0.00001
95th	0.00002	0.00004	0.00003	0.00002	0.00002	0.00002	0.00004	0.00005	0.00004	0.00003	0.00002	0.000007
50th	0.000003	0.000007	0.000006	0.000006	0.000005	0.000005	0.000004	0.000009	0.000009	0.000009	0.000007	0.0000003
Scenario 2 (Proposed North Mine, no background)												
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})											
	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
99.9th	0.04	0.05	0.05	0.05	0.04	0.04	0.03	0.04	0.07	0.08	0.08	0.02
99th	0.005	0.006	0.007	0.007	0.006	0.006	0.005	0.007	0.01	0.01	0.01	0.003
97.5th	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.004	0.004	0.004	0.001
95th	0.0004	0.0007	0.0008	0.0008	0.0007	0.0006	0.0005	0.0009	0.001	0.001	0.001	0.0003
50th	0.00002	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002	0.00004	0.00006	0.00007	0.00008	0.000007
HQ												
99.9th	0.006	0.008	0.008	0.008	0.007	0.006	0.005	0.007	0.01	0.01	0.01	0.003
99th	0.0009	0.001	0.001	0.001	0.001	0.001	0.0009	0.001	0.002	0.002	0.002	0.0006
97.5th	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0004	0.0006	0.0007	0.0007	0.0002
95th	0.00007	0.0001	0.0001	0.0001	0.0001	0.0001	0.00009	0.0001	0.0002	0.0002	0.0002	0.00005
50th	0.000004	0.000004	0.000005	0.000005	0.000005	0.000005	0.000004	0.000006	0.00001	0.00001	0.00001	0.000001

E.5 Zinc (Zn)

AGV ($\mu\text{g}/\text{m}^3$)	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
99.9th	0.008	0.01	0.02	0.01	0.02	0.01	0.01	0.01	0.009	0.007	0.007	0.007	0.004	0.004	0.003
99th	0.006	0.009	0.01	0.009	0.01	0.009	0.008	0.007	0.007	0.005	0.005	0.005	0.003	0.003	0.002
97.5th	0.005	0.007	0.01	0.008	0.009	0.008	0.006	0.005	0.004	0.003	0.003	0.003	0.003	0.003	0.001
95th	0.004	0.006	0.009	0.007	0.007	0.005	0.004	0.003	0.003	0.002	0.001	0.001	0.002	0.002	0.001
50th	0.0001	0.0002	0.0004	0.0005	0.0006	0.0004	0.0002	0.0003	0.0002	0.0001	0.00009	0.00008	0.00004	0.00004	0.00002
HQ															
99.9th	0.00004	0.00006	0.00009	0.00007	0.00008	0.00006	0.00005	0.00005	0.00005	0.00004	0.00003	0.00004	0.00002	0.00002	0.00001
99th	0.00003	0.00004	0.00007	0.00005	0.00005	0.00005	0.00004	0.00004	0.00003	0.00003	0.00002	0.00003	0.00002	0.00002	0.00001
97.5th	0.00002	0.00004	0.00005	0.00004	0.00004	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00002	0.00001	0.00001	0.000007
95th	0.00002	0.00003	0.00004	0.00003	0.00003	0.00003	0.00002	0.00002	0.00001	0.000008	0.000006	0.000007	0.00001	0.00001	0.000005
50th	0.0000007	0.000001	0.000002	0.000003	0.000003	0.000002	0.000001	0.000001	0.000001	0.0000006	0.0000004	0.0000004	0.0000002	0.0000002	0.0000001
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
99.9th	0.2	0.2	0.1	0.3	0.2	0.1	0.07	0.1	0.1	0.07	0.05	0.04	0.02	0.03	0.03
99th	0.03	0.04	0.04	0.05	0.04	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.008	0.007	0.007
97.5th	0.01	0.02	0.02	0.02	0.01	0.01	0.007	0.008	0.006	0.005	0.004	0.005	0.005	0.005	0.002
95th	0.007	0.009	0.009	0.01	0.008	0.004	0.002	0.003	0.002	0.001	0.001	0.001	0.003	0.002	0.0008
50th	0.00009	0.0001	0.0002	0.0003	0.0002	0.0001	0.00007	0.00007	0.00005	0.00003	0.00002	0.00002	0.000009	0.00001	0.000005
HQ															
99.9th	0.0008	0.0009	0.0007	0.002	0.001	0.0006	0.0004	0.0005	0.0006	0.0003	0.0003	0.0002	0.0001	0.0001	0.0001
99th	0.0001	0.0002	0.0002	0.0003	0.0002	0.0001	0.0001	0.00009	0.00009	0.00005	0.00005	0.00005	0.00004	0.00004	0.00004
97.5th	0.00007	0.00009	0.00009	0.0001	0.00007	0.00005	0.00003	0.00004	0.00003	0.00002	0.00002	0.00003	0.00002	0.00002	0.000008
95th	0.00003	0.00004	0.00005	0.00007	0.00004	0.00002	0.00001	0.00001	0.00001	0.000006	0.000006	0.000006	0.00001	0.00001	0.000004
50th	0.0000005	0.0000007	0.000001	0.000002	0.000001	0.0000006	0.0000003	0.0000003	0.0000003	0.0000001	0.0000001	0.0000001	0.00000005	0.00000005	0.00000003

AGV ($\mu\text{g}/\text{m}^3$)	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
99.9th	0.003	0.0009	0.002	0.003	0.002	0.004	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.004	0.004
99th	0.002	0.0003	0.0009	0.002	0.001	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.003
97.5th	0.001	0.0001	0.0004	0.0007	0.0005	0.002	0.002	0.002	0.001	0.001	0.002	0.001	0.001	0.001	0.0007
95th	0.0003	0.00007	0.0002	0.0002	0.0002	0.002	0.001	0.0009	0.0009	0.0007	0.0003	0.0002	0.0003	0.0002	0.0001
50th	0.00002	0.00003	0.00005	0.00005	0.00004	0.00002	0.00002	0.00002	0.00001	0.00001	0.000007	0.000008	0.00001	0.00001	0.00001
HQ															
99.9th	0.00001	0.000004	0.00001	0.00002	0.00001	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002
99th	0.00001	0.000002	0.000004	0.000008	0.000005	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
97.5th	0.000006	0.0000006	0.000002	0.000003	0.000002	0.00001	0.000009	0.000008	0.000006	0.000005	0.000008	0.000005	0.000006	0.000006	0.000004
95th	0.000002	0.0000004	0.0000008	0.000001	0.0000008	0.000009	0.000006	0.000004	0.000004	0.000004	0.000001	0.0000009	0.000002	0.000001	0.0000007
50th	0.0000001	0.0000001	0.0000003	0.0000002	0.0000002	0.0000001	0.0000001	0.00000009	0.00000007	0.00000007	0.00000004	0.00000004	0.00000006	0.00000005	0.00000007
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
99.9th	0.03	0.006	0.009	0.01	0.01	0.03	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.02
99th	0.003	0.002	0.003	0.004	0.003	0.005	0.005	0.007	0.006	0.006	0.006	0.005	0.005	0.005	0.005
97.5th	0.001	0.0006	0.001	0.001	0.001	0.004	0.003	0.002	0.002	0.002	0.001	0.0008	0.001	0.001	0.002
95th	0.0005	0.0003	0.0007	0.0009	0.0008	0.001	0.001	0.0007	0.0007	0.0006	0.0004	0.0004	0.0004	0.0004	0.0003
50th	0.000006	0.00001	0.00003	0.00003	0.00003	0.000007	0.000006	0.000006	0.000005	0.000004	0.000004	0.000004	0.000005	0.000005	0.000006
HQ															
99.9th	0.0001	0.00003	0.00005	0.00007	0.00005	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00009	0.0001	0.0001
99th	0.00002	0.000008	0.00002	0.00002	0.00002	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002	0.00003	0.00003
97.5th	0.000006	0.000003	0.000005	0.000007	0.000006	0.00002	0.00002	0.000009	0.00001	0.000009	0.000006	0.000004	0.000007	0.000006	0.000008
95th	0.000003	0.000002	0.000003	0.000005	0.000004	0.000007	0.000005	0.000004	0.000004	0.000003	0.000002	0.000002	0.000002	0.000002	0.000001
50th	0.0000003	0.00000005	0.0000001	0.0000002	0.0000001	0.00000004	0.00000003	0.00000003	0.00000002	0.00000002	0.00000002	0.00000002	0.00000002	0.00000003	0.00000003

AGV ($\mu\text{g}/\text{m}^3$)	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
99.9th	0.004	0.004	0.005	0.005	0.008	0.008	0.007	0.008	0.006	0.007	0.01	0.004	0.005	0.005	0.005
99th	0.003	0.003	0.004	0.004	0.006	0.006	0.005	0.006	0.004	0.005	0.009	0.003	0.003	0.003	0.003
97.5th	0.002	0.003	0.003	0.003	0.004	0.004	0.003	0.003	0.003	0.003	0.006	0.001	0.001	0.001	0.002
95th	0.002	0.002	0.002	0.003	0.001	0.002	0.001	0.002	0.001	0.001	0.004	0.0002	0.0003	0.0005	0.0006
50th	0.00003	0.00004	0.00005	0.00006	0.00005	0.00007	0.00006	0.00008	0.00007	0.00009	0.0003	0.00002	0.00003	0.00003	0.00005
HQ															
99.9th	0.00002	0.00002	0.00002	0.00003	0.00004	0.00004	0.00004	0.00004	0.00003	0.00003	0.00006	0.00002	0.00002	0.00002	0.00002
99th	0.00002	0.00002	0.00002	0.00002	0.00003	0.00003	0.00002	0.00003	0.00002	0.00002	0.00004	0.00001	0.00001	0.00002	0.00002
97.5th	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00003	0.000006	0.000007	0.000007	0.000008
95th	0.00001	0.00001	0.00001	0.00001	0.000007	0.000008	0.000006	0.000008	0.000005	0.000006	0.00002	0.000001	0.000001	0.000002	0.000003
50th	0.0000002	0.0000002	0.0000002	0.0000003	0.0000003	0.0000003	0.0000003	0.0000004	0.0000004	0.0000004	0.000001	0.0000001	0.0000001	0.0000002	0.0000002
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
99.9th	0.03	0.03	0.03	0.04	0.04	0.05	0.04	0.04	0.05	0.05	0.06	0.02	0.03	0.04	0.05
99th	0.007	0.007	0.007	0.009	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.006	0.006	0.007	0.007
97.5th	0.004	0.004	0.005	0.005	0.004	0.004	0.004	0.005	0.003	0.003	0.009	0.002	0.002	0.002	0.002
95th	0.001	0.002	0.002	0.002	0.002	0.002	0.001	0.002	0.001	0.001	0.004	0.0004	0.0004	0.0006	0.0007
50th	0.000009	0.000009	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00006	0.000008	0.000009	0.00001	0.00001
HQ															
99.9th	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0001	0.0002	0.0002	0.0002
99th	0.00003	0.00003	0.00004	0.00004	0.00006	0.00006	0.00005	0.00005	0.00005	0.00005	0.00009	0.00003	0.00003	0.00003	0.00004
97.5th	0.00002	0.00002	0.00002	0.00003	0.00002	0.00002	0.00002	0.00002	0.00001	0.00002	0.00004	0.00001	0.00001	0.00001	0.00001
95th	0.000007	0.000008	0.000009	0.00001	0.000008	0.000009	0.000007	0.000008	0.000005	0.000006	0.00002	0.000002	0.000002	0.000003	0.000004
50th	0.00000004	0.00000005	0.00000005	0.00000006	0.00000008	0.00000009	0.00000009	0.0000001	0.00000009	0.0000001	0.0000003	0.00000004	0.00000005	0.00000005	0.00000006

AGV ($\mu\text{g}/\text{m}^3$)	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
99.9th	0.002	0.002	0.004	0.004	0.004	0.002	0.002	0.004	0.003	0.004	0.004	0.004	0.002	0.002	0.003
99th	0.002	0.002	0.002	0.002	0.003	0.001	0.002	0.003	0.002	0.003	0.002	0.002	0.001	0.001	0.002
97.5th	0.0008	0.0009	0.001	0.001	0.001	0.0006	0.0008	0.002	0.0008	0.0004	0.0005	0.0007	0.0005	0.0002	0.001
95th	0.0002	0.0002	0.0001	0.0002	0.0002	0.0001	0.0002	0.001	0.0001	0.00005	0.00005	0.0001	0.00005	0.00003	0.001
50th	0.00001	0.00001	0.000009	0.00001	0.00002	0.00001	0.00001	0.00005	0.00002	0.00001	0.000009	0.00002	0.00001	0.00001	0.00002
HQ															
99.9th	0.00001	0.00001	0.00002	0.00002	0.00002	0.000009	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00002
99th	0.000009	0.000009	0.00001	0.00001	0.00001	0.000007	0.000008	0.00001	0.00001	0.00001	0.000009	0.000009	0.000006	0.000005	0.00001
97.5th	0.000004	0.000005	0.000006	0.000006	0.000006	0.000003	0.000004	0.00001	0.000004	0.000002	0.000002	0.000003	0.000003	0.000001	0.000007
95th	0.000001	0.000001	0.0000007	0.0000008	0.000001	0.0000007	0.000001	0.000005	0.0000006	0.0000003	0.0000002	0.0000007	0.0000003	0.0000002	0.000005
50th	0.00000006	0.00000006	0.00000005	0.00000005	0.00000009	0.00000006	0.00000006	0.0000002	0.00000009	0.00000005	0.00000004	0.00000008	0.00000005	0.00000005	0.0000001
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
99.9th	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.009	0.01	0.03
99th	0.004	0.004	0.005	0.005	0.005	0.004	0.004	0.008	0.004	0.002	0.003	0.005	0.003	0.003	0.008
97.5th	0.001	0.001	0.002	0.002	0.002	0.0009	0.001	0.003	0.0007	0.0006	0.0009	0.001	0.001	0.0006	0.002
95th	0.0003	0.0004	0.0003	0.0003	0.0003	0.0003	0.0003	0.0009	0.0001	0.0001	0.0001	0.0003	0.0002	0.0001	0.001
50th	0.000004	0.000004	0.000006	0.000006	0.000007	0.000003	0.000004	0.00002	0.000008	0.000007	0.000006	0.000006	0.000003	0.000004	0.000005
HQ															
99.9th	0.00009	0.0001	0.00008	0.00008	0.00008	0.00009	0.00009	0.0002	0.00009	0.0001	0.0001	0.0001	0.00005	0.00006	0.0001
99th	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00004	0.00002	0.00001	0.00001	0.00002	0.00001	0.00001	0.00004
97.5th	0.000006	0.000005	0.000009	0.00001	0.00001	0.000005	0.000005	0.00002	0.000004	0.000003	0.000005	0.000005	0.000006	0.000003	0.00001
95th	0.000002	0.000002	0.000001	0.000001	0.000001	0.000002	0.000002	0.000005	0.0000006	0.0000006	0.0000006	0.000001	0.0000008	0.0000005	0.000005
50th	0.00000002	0.00000002	0.00000003	0.00000003	0.00000003	0.00000002	0.00000002	0.00000008	0.00000004	0.00000003	0.00000003	0.00000003	0.00000002	0.00000002	0.00000002

AGV ($\mu\text{g}/\text{m}^3$)	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
99.9th	0.003	0.003	0.003	0.005	0.002	0.003	0.003	0.004	0.004	0.003	0.002	0.005	0.006	0.007	0.003
99th	0.002	0.002	0.002	0.004	0.002	0.001	0.002	0.003	0.003	0.003	0.001	0.004	0.004	0.005	0.002
97.5th	0.001	0.002	0.002	0.002	0.001	0.0007	0.0005	0.001	0.001	0.002	0.0008	0.004	0.004	0.003	0.002
95th	0.0007	0.0007	0.0008	0.0009	0.0004	0.00008	0.00006	0.0003	0.0003	0.001	0.0006	0.002	0.003	0.001	0.001
50th	0.00002	0.00002	0.00002	0.00006	0.00001	0.00001	0.00002	0.00004	0.00004	0.00002	0.00002	0.00001	0.00007	0.00009	0.00002
HQ															
99.9th	0.00001	0.00002	0.00002	0.00003	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00001	0.00002	0.00003	0.00003	0.00001
99th	0.00001	0.00001	0.00001	0.00002	0.000008	0.000007	0.00001	0.00001	0.00001	0.00001	0.000007	0.00002	0.00002	0.00002	0.00001
97.5th	0.000006	0.000009	0.000009	0.00001	0.000006	0.000004	0.000002	0.000006	0.000007	0.000008	0.000004	0.00002	0.00002	0.00002	0.000009
95th	0.000003	0.000003	0.000004	0.000005	0.000002	0.0000004	0.0000003	0.000002	0.000002	0.000006	0.000003	0.000009	0.00001	0.000007	0.000006
50th	0.00000008	0.0000001	0.0000001	0.0000003	0.00000007	0.00000006	0.00000008	0.0000002	0.0000002	0.0000001	0.00000008	0.00000007	0.0000004	0.0000004	0.0000001
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
99.9th	0.02	0.03	0.03	0.07	0.01	0.01	0.02	0.03	0.03	0.02	0.01	0.03	0.04	0.04	0.03
99th	0.004	0.007	0.008	0.007	0.004	0.004	0.003	0.007	0.007	0.006	0.004	0.01	0.009	0.01	0.008
97.5th	0.002	0.002	0.002	0.002	0.002	0.001	0.0005	0.002	0.002	0.003	0.001	0.004	0.006	0.005	0.003
95th	0.0007	0.0008	0.0008	0.0006	0.0006	0.0002	0.0001	0.0003	0.0004	0.0009	0.0007	0.001	0.002	0.001	0.001
50th	0.000004	0.000005	0.000005	0.00002	0.000004	0.000004	0.000007	0.00001	0.00001	0.000006	0.000004	0.000008	0.00002	0.00002	0.000006
HQ															
99.9th	0.00009	0.0001	0.0002	0.0004	0.00007	0.00007	0.0001	0.0001	0.0002	0.0001	0.00007	0.0001	0.0002	0.0002	0.0001
99th	0.00002	0.00004	0.00004	0.00004	0.00002	0.00002	0.00002	0.00003	0.00003	0.00003	0.00002	0.00005	0.00005	0.00005	0.00004
97.5th	0.00001	0.00001	0.00001	0.00001	0.00001	0.000007	0.000003	0.000009	0.000008	0.00001	0.000007	0.00002	0.00003	0.00002	0.00001
95th	0.000004	0.000004	0.000004	0.000003	0.000003	0.000001	0.0000005	0.000002	0.000002	0.000005	0.000004	0.000006	0.00001	0.000005	0.000006
50th	0.00000002	0.00000003	0.00000003	0.0000001	0.00000002	0.00000002	0.00000003	0.00000006	0.00000005	0.00000003	0.00000002	0.00000004	0.00000008	0.0000001	0.00000003

AGV ($\mu\text{g}/\text{m}^3$)	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$															
Scenario 1 (Existing North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
99.9th	0.003	0.002	0.004	0.005	0.004	0.002	0.003	0.003	0.005	0.006	0.007	0.02	0.02	0.02	0.03
99th	0.002	0.001	0.002	0.003	0.003	0.001	0.001	0.001	0.004	0.004	0.006	0.01	0.01	0.01	0.02
97.5th	0.002	0.001	0.001	0.002	0.002	0.0002	0.0001	0.0002	0.002	0.002	0.004	0.01	0.01	0.01	0.02
95th	0.0007	0.0003	0.0002	0.0008	0.0006	0.00003	0.00002	0.00003	0.0005	0.0007	0.002	0.008	0.008	0.008	0.01
50th	0.00002	0.00001	0.00003	0.00006	0.00004	0.00001	0.000006	0.000007	0.00006	0.00008	0.0001	0.0008	0.0009	0.0009	0.002
HQ															
99.9th	0.00002	0.000009	0.00002	0.00002	0.00002	0.00001	0.00002	0.00002	0.00003	0.00003	0.00004	0.00009	0.00009	0.00008	0.0002
99th	0.00001	0.000007	0.00001	0.00002	0.00001	0.000005	0.000006	0.000006	0.00002	0.00002	0.00003	0.00006	0.00006	0.00005	0.0001
97.5th	0.000009	0.000005	0.000006	0.00001	0.000009	0.0000009	0.0000007	0.0000009	0.000009	0.00001	0.00002	0.00005	0.00005	0.00005	0.00009
95th	0.000003	0.000002	0.000001	0.000004	0.000003	0.0000002	0.0000001	0.0000001	0.000003	0.000003	0.00001	0.00004	0.00004	0.00004	0.00007
50th	0.0000001	0.00000006	0.0000002	0.0000003	0.0000002	0.00000005	0.00000003	0.00000003	0.0000003	0.0000004	0.0000006	0.000004	0.000004	0.000005	0.00001
Scenario 2 (Proposed North Mine, no background)															
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})														
	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
99.9th	0.03	0.01	0.03	0.04	0.04	0.03	0.02	0.04	0.06	0.04	0.07	0.2	0.2	0.2	0.3
99th	0.007	0.003	0.006	0.007	0.006	0.002	0.002	0.002	0.006	0.009	0.01	0.04	0.04	0.05	0.06
97.5th	0.002	0.002	0.002	0.002	0.001	0.0005	0.0004	0.0005	0.002	0.002	0.004	0.01	0.01	0.02	0.02
95th	0.0008	0.0006	0.0003	0.0004	0.0004	0.0001	0.00006	0.0001	0.0005	0.0006	0.001	0.007	0.007	0.008	0.01
50th	0.000005	0.000003	0.00001	0.00002	0.00001	0.000003	0.000004	0.000005	0.00002	0.00002	0.00004	0.0002	0.0002	0.0002	0.0003
HQ															
99.9th	0.0002	0.00006	0.0001	0.0002	0.0002	0.0001	0.00009	0.0002	0.0003	0.0002	0.0003	0.0009	0.001	0.001	0.001
99th	0.00004	0.00002	0.00003	0.00004	0.00003	0.000009	0.000009	0.000008	0.00003	0.00004	0.00007	0.0002	0.0002	0.0002	0.0003
97.5th	0.00001	0.00001	0.000008	0.00001	0.000007	0.000003	0.000002	0.000003	0.00001	0.00001	0.00002	0.00007	0.00007	0.00008	0.0001
95th	0.000004	0.000003	0.000001	0.000002	0.000002	0.0000006	0.0000003	0.0000005	0.000002	0.000003	0.000006	0.00004	0.00004	0.00004	0.00006
50th	0.0000003	0.0000002	0.00000005	0.00000009	0.00000006	0.00000002	0.00000002	0.00000002	0.00000009	0.0000001	0.0000002	0.000001	0.000001	0.000001	0.000002

AGV ($\mu\text{g}/\text{m}^3$)	200	200	200	200	200	200	200	200	200	200	200	200
HQ = $C_{\text{air}} (\mu\text{g}/\text{m}^3) \div \text{AGV} (\mu\text{g}/\text{m}^3)$												
Scenario 1 (Existing North Mine, no background)												
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})											
	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
99.9th	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.009
99th	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.007
97.5th	0.009	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.004
95th	0.008	0.01	0.01	0.01	0.009	0.009	0.009	0.01	0.01	0.01	0.01	0.003
50th	0.0008	0.002	0.002	0.002	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.0002
HQ												
99.9th	0.00008	0.0001	0.0001	0.0001	0.00009	0.00009	0.0001	0.0001	0.0001	0.0001	0.0001	0.00005
99th	0.00006	0.00008	0.00007	0.00007	0.00006	0.00006	0.00007	0.00008	0.00008	0.00009	0.00009	0.00003
97.5th	0.00005	0.00006	0.00006	0.00006	0.00005	0.00005	0.00005	0.00007	0.00007	0.00007	0.00007	0.00002
95th	0.00004	0.00005	0.00005	0.00005	0.00004	0.00004	0.00004	0.00006	0.00005	0.00006	0.00006	0.00001
50th	0.000004	0.000008	0.000008	0.000008	0.000007	0.000006	0.000005	0.00001	0.00001	0.00001	0.000009	0.000001
Scenario 2 (Proposed North Mine, no background)												
Percentile	1-hr average PM10 ($\mu\text{g}/\text{m}^3$) (C_{air})											
	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
99.9th	0.4	0.6	0.8	0.9	1.0	0.8	0.5	0.9	0.4	0.4	0.3	0.09
99th	0.07	0.09	0.1	0.2	0.2	0.1	0.07	0.1	0.08	0.08	0.09	0.01
97.5th	0.03	0.04	0.06	0.08	0.09	0.06	0.03	0.05	0.03	0.04	0.04	0.007
95th	0.01	0.02	0.03	0.04	0.05	0.03	0.02	0.03	0.02	0.02	0.02	0.003
50th	0.0004	0.0007	0.0008	0.0008	0.0007	0.0007	0.0005	0.001	0.0007	0.0007	0.0008	0.00005
HQ												
99.9th	0.002	0.003	0.004	0.005	0.005	0.004	0.002	0.004	0.002	0.002	0.002	0.0005
99th	0.0003	0.0004	0.0006	0.0008	0.0009	0.0006	0.0004	0.0005	0.0004	0.0004	0.0004	0.00007
97.5th	0.0001	0.0002	0.0003	0.0004	0.0005	0.0003	0.0002	0.0003	0.0002	0.0002	0.0002	0.00003
95th	0.00007	0.0001	0.0002	0.0002	0.0003	0.0002	0.00009	0.0002	0.00008	0.00009	0.0001	0.00001
50th	0.000002	0.000003	0.000004	0.000004	0.000004	0.000003	0.000003	0.000005	0.000003	0.000003	0.000004	0.0000003

E.6 Overall acute Hazard Index (HI)

$$HI = HQ_{\text{metal1}} + HQ_{\text{metal2}} + \dots + HQ_{\text{metali}}$$

Scenario 1 (Existing North Mine, no background)

Percentile	Acute Hazard Index (HI)														
	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
99.9th	0.0009	0.001	0.002	0.001	0.002	0.001	0.001	0.001	0.0009	0.0007	0.0006	0.0007	0.0004	0.0005	0.0003
99th	0.0006	0.001	0.002	0.001	0.001	0.001	0.0008	0.0007	0.0007	0.0005	0.0005	0.0005	0.0003	0.0003	0.0002
97.5th	0.0005	0.0008	0.001	0.0009	0.001	0.0008	0.0006	0.0006	0.0005	0.0003	0.0003	0.0003	0.0003	0.0003	0.0001
95th	0.0004	0.0007	0.001	0.0007	0.0008	0.0006	0.0004	0.0004	0.0003	0.0002	0.0001	0.0002	0.0002	0.0002	0.0001
50th	0.00002	0.00003	0.00005	0.00006	0.00006	0.00005	0.00003	0.00003	0.00002	0.00001	0.000009	0.000008	0.000004	0.000004	0.000002

Scenario 2 (Proposed North Mine, no background)

Percentile	Acute Hazard Index (HI)														
	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
99.9th	0.08	0.1	0.08	0.1	0.08	0.04	0.03	0.03	0.03	0.02	0.02	0.01	0.009	0.009	0.01
99th	0.01	0.01	0.01	0.02	0.01	0.007	0.005	0.005	0.005	0.004	0.003	0.004	0.003	0.003	0.003
97.5th	0.004	0.005	0.005	0.008	0.004	0.002	0.002	0.002	0.002	0.001	0.001	0.002	0.002	0.002	0.0006
95th	0.002	0.003	0.003	0.005	0.002	0.0009	0.0006	0.0006	0.0006	0.0004	0.0003	0.0004	0.0008	0.0007	0.0003
50th	0.00003	0.00004	0.00005	0.00006	0.00004	0.00002	0.00002	0.00001	0.00001	0.000007	0.000006	0.000005	0.000003	0.000003	0.000002

$$HI = HQ_{\text{metal1}} + HQ_{\text{metal2}} + \dots + HQ_{\text{metali}}$$

Scenario 1 (Existing North Mine, no background)

Percentile	Acute Hazard Index (HI)														
	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
99.9th	0.0003	0.00009	0.0002	0.0003	0.0002	0.0004	0.0004	0.0004	0.0003	0.0003	0.0003	0.0003	0.0003	0.0004	0.0004
99th	0.0002	0.00003	0.00009	0.0002	0.0001	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003
97.5th	0.0001	0.00001	0.00004	0.00007	0.00005	0.0002	0.0002	0.0002	0.0001	0.0001	0.0002	0.0001	0.0001	0.0001	0.00009
95th	0.00003	0.000008	0.00002	0.00002	0.00002	0.0002	0.0001	0.0001	0.00009	0.00008	0.00003	0.00002	0.00003	0.00002	0.00001
50th	0.000002	0.000002	0.000005	0.000005	0.000004	0.000002	0.000002	0.000002	0.000001	0.000001	0.0000006	0.0000007	0.000001	0.0000009	0.000001

Scenario 2 (Proposed North Mine, no background)

Percentile	Acute Hazard Index (HI)														
	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
99.9th	0.01	0.004	0.005	0.007	0.005	0.006	0.007	0.01	0.008	0.008	0.01	0.01	0.009	0.01	0.008
99th	0.001	0.0006	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
97.5th	0.0005	0.0002	0.0004	0.0006	0.0005	0.002	0.001	0.0008	0.0009	0.0008	0.0004	0.0004	0.0007	0.0004	0.0006
95th	0.0001	0.00009	0.0002	0.0002	0.0002	0.0004	0.0003	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001
50th	0.000002	0.000003	0.000007	0.000008	0.000007	0.000002	0.000002	0.000002	0.000001	0.000001	0.000001	0.000001	0.000001	0.000002	0.000002

HI = HQ _{metal1} + HQ _{metal2} + ...HQ _{metali}															
Scenario 1 (Existing North Mine, no background)															
Percentile	Acute Hazard Index (HI)														
	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
99.9th	0.0004	0.0004	0.0005	0.0005	0.0008	0.0008	0.0008	0.0008	0.0006	0.0006	0.001	0.0004	0.0005	0.0005	0.0005
99th	0.0003	0.0003	0.0004	0.0004	0.0006	0.0006	0.0005	0.0005	0.0004	0.0005	0.0009	0.0003	0.0003	0.0003	0.0003
97.5th	0.0003	0.0003	0.0003	0.0003	0.0004	0.0004	0.0003	0.0003	0.0003	0.0003	0.0006	0.0001	0.0002	0.0002	0.0002
95th	0.0002	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0004	0.00003	0.00003	0.00005	0.00006
50th	0.000003	0.000003	0.000004	0.000006	0.000005	0.000006	0.000006	0.000007	0.000007	0.000009	0.00003	0.000002	0.000003	0.000003	0.000004
Scenario 2 (Proposed North Mine, no background)															
Percentile	Acute Hazard Index (HI)														
	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
99.9th	0.009	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.007	0.01	0.01	0.02
99th	0.003	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.003	0.003	0.006	0.002	0.002	0.003	0.003
97.5th	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.0009	0.0008	0.0008	0.0008
95th	0.0004	0.0004	0.0005	0.0005	0.0005	0.0005	0.0004	0.0004	0.0003	0.0003	0.0008	0.0001	0.0001	0.0002	0.0002
50th	0.000003	0.000003	0.000003	0.000004	0.000005	0.000005	0.000005	0.000006	0.000005	0.000006	0.00001	0.000002	0.000003	0.000003	0.000004

HI = HQ _{metal1} + HQ _{metal2} + ...HQ _{metali}															
Scenario 1 (Existing North Mine, no background)															
Percentile	Acute Hazard Index (HI)														
	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
99.9th	0.0003	0.0003	0.0004	0.0004	0.0004	0.0002	0.0002	0.0004	0.0003	0.0004	0.0004	0.0004	0.0002	0.0002	0.0003
99th	0.0002	0.0002	0.0002	0.0003	0.0003	0.0001	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0002
97.5th	0.00009	0.00009	0.0001	0.0001	0.0001	0.00006	0.00008	0.0002	0.00008	0.00005	0.00006	0.00006	0.00006	0.00003	0.0001
95th	0.00002	0.00002	0.00002	0.00002	0.00003	0.00001	0.00002	0.0001	0.00001	0.000005	0.000004	0.00001	0.000005	0.000003	0.0001
50th	0.000001	0.000001	0.0000009	0.000001	0.000002	0.000001	0.000001	0.000004	0.000002	0.000001	0.0000009	0.000001	0.000001	0.0000009	0.000002
Scenario 2 (Proposed North Mine, no background)															
Percentile	Acute Hazard Index (HI)														
	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
99.9th	0.008	0.009	0.007	0.007	0.006	0.008	0.009	0.01	0.007	0.01	0.01	0.01	0.004	0.005	0.01
99th	0.002	0.002	0.002	0.002	0.002	0.001	0.002	0.003	0.002	0.001	0.001	0.002	0.001	0.001	0.003
97.5th	0.0005	0.0005	0.0006	0.0007	0.0008	0.0004	0.0005	0.0007	0.0002	0.0002	0.0003	0.0003	0.0004	0.0002	0.0009
95th	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0003	0.00005	0.00004	0.00005	0.0001	0.00007	0.00004	0.0004
50th	0.000001	0.000001	0.000002	0.000002	0.000002	0.000001	0.000001	0.000005	0.000002	0.000002	0.000002	0.000002	0.000001	0.000001	0.000002

HI = HQ _{metal1} + HQ _{metal2} + ...HQ _{metali}															
Scenario 1 (Existing North Mine, no background)															
Percentile	Acute Hazard Index (HI)														
	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
99.9th	0.0003	0.0003	0.0003	0.0005	0.0002	0.0003	0.0003	0.0004	0.0004	0.0004	0.0002	0.0005	0.0006	0.0007	0.0003
99th	0.0002	0.0002	0.0002	0.0004	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0001	0.0004	0.0005	0.0005	0.0002
97.5th	0.0001	0.0002	0.0002	0.0003	0.0001	0.00008	0.00005	0.0001	0.0001	0.0002	0.00009	0.0004	0.0004	0.0003	0.0002
95th	0.00007	0.00008	0.00009	0.0001	0.00004	0.000008	0.000006	0.00003	0.00004	0.0001	0.00006	0.0002	0.0003	0.0002	0.0001
50th	0.000001	0.000002	0.000002	0.000006	0.000001	0.000001	0.000001	0.000004	0.000003	0.000002	0.000001	0.000001	0.000007	0.000008	0.000002
Scenario 2 (Proposed North Mine, no background)															
Percentile	Acute Hazard Index (HI)														
	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
99.9th	0.005	0.01	0.01	0.02	0.005	0.007	0.007	0.01	0.01	0.008	0.007	0.01	0.01	0.01	0.01
99th	0.002	0.003	0.003	0.002	0.001	0.001	0.001	0.003	0.002	0.002	0.002	0.004	0.003	0.004	0.003
97.5th	0.001	0.0008	0.0007	0.0006	0.0009	0.0004	0.0002	0.0004	0.0005	0.001	0.0005	0.001	0.002	0.002	0.001
95th	0.0002	0.0003	0.0003	0.0002	0.0002	0.00009	0.00004	0.0001	0.0001	0.0003	0.0003	0.0004	0.0006	0.0003	0.0004
50th	0.000001	0.000002	0.000002	0.000006	0.000001	0.000001	0.000002	0.000003	0.000003	0.000002	0.000001	0.000003	0.000004	0.000006	0.000002

HI = HQ _{metal1} + HQ _{metal2} + ...HQ _{metali}															
Scenario 1 (Existing North Mine, no background)															
Percentile	Acute Hazard Index (HI)														
	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
99.9th	0.0003	0.0002	0.0004	0.0005	0.0004	0.0002	0.0003	0.0003	0.0005	0.0006	0.0008	0.002	0.002	0.002	0.005
99th	0.0002	0.0001	0.0002	0.0004	0.0003	0.0001	0.0001	0.0001	0.0004	0.0004	0.0006	0.001	0.001	0.001	0.003
97.5th	0.0002	0.0001	0.0001	0.0002	0.0002	0.00002	0.00001	0.00002	0.0002	0.0002	0.0004	0.001	0.001	0.001	0.002
95th	0.00008	0.00003	0.00002	0.00008	0.00006	0.000003	0.000002	0.000003	0.00006	0.00008	0.0002	0.001	0.001	0.001	0.002
50th	0.000002	0.000001	0.000003	0.000005	0.000003	0.0000009	0.0000006	0.0000007	0.000006	0.000007	0.00001	0.0001	0.0001	0.0001	0.0003
Scenario 2 (Proposed North Mine, no background)															
Percentile	Acute Hazard Index (HI)														
	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
99.9th	0.01	0.005	0.008	0.02	0.01	0.009	0.008	0.02	0.02	0.02	0.02	0.07	0.08	0.09	0.1
99th	0.003	0.001	0.002	0.002	0.002	0.0008	0.0005	0.0005	0.002	0.003	0.004	0.01	0.01	0.01	0.02
97.5th	0.0008	0.0008	0.0004	0.0005	0.0004	0.0002	0.0002	0.0002	0.0006	0.0007	0.001	0.004	0.004	0.005	0.007
95th	0.0003	0.0002	0.0001	0.0001	0.0001	0.00004	0.00002	0.00003	0.0001	0.0002	0.0003	0.002	0.002	0.002	0.003
50th	0.000002	0.000001	0.000003	0.000005	0.000004	0.000001	0.000001	0.000001	0.000005	0.000006	0.00001	0.00004	0.00004	0.00004	0.00005

$$HI = HQ_{\text{metal1}} + HQ_{\text{metal2}} + \dots + HQ_{\text{metali}}$$

Scenario 1 (Existing North Mine, no background)

Percentile	Acute Hazard Index (HI)											
	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
99.9th	0.002	0.003	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.0009
99th	0.001	0.002	0.002	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.0007
97.5th	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.001	0.0005
95th	0.0009	0.001	0.001	0.001	0.0009	0.0009	0.001	0.001	0.001	0.001	0.001	0.0003
50th	0.0001	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0003	0.0003	0.0003	0.0002	0.00002

Scenario 2 (Proposed North Mine, no background)

Percentile	Acute Hazard Index (HI)											
	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
99.9th	0.1	0.2	0.3	0.4	0.4	0.3	0.2	0.3	0.1	0.1	0.1	0.04
99th	0.02	0.03	0.04	0.06	0.07	0.05	0.03	0.04	0.02	0.02	0.02	0.005
97.5th	0.009	0.01	0.02	0.03	0.04	0.02	0.01	0.02	0.008	0.009	0.009	0.002
95th	0.005	0.008	0.01	0.02	0.02	0.01	0.006	0.01	0.004	0.004	0.004	0.0006
50th	0.00007	0.0001	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0001	0.0001	0.0002	0.00001

Appendix F: Chronic HQ and HI for TDI analysis

F.1 Exposure equations and assumptions common to all metals

Soil ingestion

Intake of metal ingestion from soil/dust (I_{ingest_s}) =
$$\frac{C_s \text{ (ug/g)} \times IR_{as} \text{ (mg/day)} \times CF \text{ (g/mg)} \times EF \text{ (day/yr)} \times Ed_x \text{ (yr)} \times Bac_{soil} \times BA_{oral}}{365 \text{ d/yr} \times BW_{as} \text{ (kg)} \times AT_x \text{ (yrs)}}$$

Parameter	Abbreviation	Unit	Value			
			Life Stage			
			0.5-3 years	3-13 years	13-18 years	18-82 years
Intake of metal from soil/dust via ingestion	I_{ingest_s}	µg/kg bw/day	Calculated			
Soil concentration	C_s	µg/g	Varies with receptor, scenario and metal. Refer to soil concentration worksheets or Appendix C.			
Soil ingestion	IR_{as}	mg/day	100	100	50	50
Conversion Factor	CF	g/mg	0.001	0.001	0.001	0.001
Exposure Frequency	EF	days/yr	365	365	365	365
Exposure Duration	ED_x	yr	2.5	10	5	64
Bioaccessibility compound in soil	BAC_{soil}	%	Varies with metal (assumed to be 4% for As, and 100% for others).			
Absolute bioavailability of ingested metal	BA_{oral}	Unitless	1	1	1	1
Body weight	BW_{as}	kg	11	24	56	78
365 d/yr	365	d/yr	365	365	365	365
Age-specific averaging time	AT_x	yrs	2.5	10	5	64
Averaging time for lifetime intake	$AT_{lifetime}$	days	29930	29930	29930	29930

Inhalation in air

Intake of metal
in air via
inhalation (I_{inhal})

=

$$\frac{C_A \text{ (ug/m}^3\text{)} \times VR_{as} \text{ (m}^3\text{/day)} \times EF \text{ (day/yr)} \times Ed_x \text{ (yr)} \times BA_{inhal}}{365 \text{ d/yr} \times BW_{as} \text{ (kg)} \times AT_x \text{ (yrs)}}$$

Parameter	Abbreviation	Unit	Value			
			Life Stage			
			0.5-3 years	3-13 years	13-18 years	18-82 years
Intake of metal from inhalation of air	I_{inhal}	µg/kg bw/day	Calculated			
Annual average air concentration in PM ₁₀	C_A	µg/m ³	Varies with receptor, scenario and metal. Refer to air concentration worksheets or Appendix D.			
Ventilation, i.e. inhalation rate	VR_{as}	m ³ /day	8	12.4	15.1	15
Exposure Frequency	EF	days/yr	365	365	365	365
Exposure Duration	ED_x	yr	2.5	10	5	64
Lung absorption of metal in air	BA_{inhal}	Unitless	1	1	1	1
365 d/yr	365	d/yr	365	365	365	365
Body weight	BW_{as}	kg	11	24	56	78
Age-specific averaging time	AT_x	yrs	2.5	10	5	64
Averaging time for lifetime intake	$AT_{lifetime}$	days	29930	29930	29930	29930

F.2 Silver (Ag)

Equations:

Total Intake (I_{total_as})	=	$I_{ingest\_s} + I_{inhal}$
Average lifetime daily exposure for 82 year life span	=	$(I_{total(0.5-3)} \times 365 \times At_x) + (I_{total(3-13)} \times 365 \times At_x) + (I_{total(13-18)} \times 365 \times At_x) + (I_{total(18-82)} \times 365 \times At_x) / AT_{lifetime}$
HQ	=	$I_{lifetime} / TDI_{adj}$

F.2.1 Scenario 1

Adjusted TDI

	All receptors
Background adjusted tolerable daily intake (TDI_{adj}) ($\mu\text{g}/\text{kg}/\text{d}$)	396

Soil & air concentrations:

R1-15

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil concentration ($\mu\text{g}/\text{g}$) (Appendix C)	0.023	0.04818	0.10351	0.06801	0.077805	0.051305	0.019385	0.01845	0.01258	0.006055	0.004565	0.00487	0.00275	0.00326	0.001635
Air concentration ($\mu\text{g}/\text{m}^3$) (Appendix D)	0.0000062	0.0000125	0.0000245	0.0000168	0.0000189	0.0000131	0.0000057	0.0000057	0.0000044	0.0000024	0.0000019	0.0000021	0.0000014	0.0000015	0.0000008

R16-30

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil concentration ($\mu\text{g}/\text{g}$) (Appendix C)	0.00153	0.00134	0.003985	0.003385	0.002835	0.00207	0.00149	0.00127	0.001055	0.00093	0.00075	0.00067	0.00083	0.0008	0.000915
Air concentration ($\mu\text{g}/\text{m}^3$) (Appendix D)	0.0000005	0.0000002	0.0000004	0.0000006	0.0000005	0.0000012	0.0000009	0.0000008	0.0000007	0.0000006	0.0000005	0.0000004	0.0000005	0.0000005	0.0000005

R31-45

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil concentration ($\mu\text{g}/\text{g}$) (Appendix C)	0.002345	0.002555	0.003135	0.00377	0.00457	0.00515	0.00409	0.005185	0.00367	0.00453	0.0204	0.00129	0.001515	0.001815	0.002245
Air concentration ($\mu\text{g}/\text{m}^3$) (Appendix D)	0.0000013	0.0000014	0.0000017	0.0000019	0.0000020	0.0000022	0.0000018	0.0000022	0.0000016	0.0000019	0.0000070	0.0000007	0.0000007	0.0000009	0.0000010

R46-60

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil concentration (µg/g) (Appendix C)	0.000645	0.000655	0.000895	0.00099	0.00111	0.00048	0.000585	0.00314	0.000935	0.00085	0.00078	0.00086	0.000415	0.00036	0.001265
Air concentration (µg/m ³) (Appendix D)	0.0000004	0.0000004	0.0000005	0.0000005	0.0000006	0.0000003	0.0000004	0.0000012	0.0000004	0.0000004	0.0000004	0.0000005	0.0000003	0.0000002	0.0000008

R61-75

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil concentration (µg/g) (Appendix C)	0.000915	0.001195	0.00122	0.003445	0.000715	0.000555	0.00074	0.001795	0.001555	0.00142	0.00097	0.003065	0.00459	0.00485	0.001565
Air concentration (µg/m ³) (Appendix D)	0.0000006	0.0000007	0.0000008	0.0000013	0.0000005	0.0000003	0.0000004	0.0000008	0.0000007	0.0000009	0.0000005	0.0000015	0.0000022	0.0000021	0.0000009

R76-D

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil concentration (µg/g) (Appendix C)	0.00124	0.00064	0.00137	0.00284	0.001985	0.000335	0.00045	0.00048	0.002815	0.003625	0.00833	0.13189	0.13493	0.137995	0.409685
Air concentration (µg/m ³) (Appendix D)	0.0000008	0.0000004	0.0000007	0.0000011	0.0000008	0.0000002	0.0000002	0.0000003	0.0000011	0.0000014	0.0000027	0.0000303	0.0000309	0.0000309	0.0000780

E-P

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil concentration (µg/g) (Appendix C)	0.10441	0.20871	0.152225	0.13892	0.130055	0.133855	0.17307	0.248125	0.225675	0.235415	0.183385	0.01247
Air concentration (µg/m ³) (Appendix D)	0.0000246	0.0000433	0.0000329	0.0000307	0.0000291	0.0000288	0.0000372	0.0000534	0.0000489	0.0000472	0.0000355	0.0000046

Intakes & hazard quotients:

R1-15

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0002	0.0004	0.0009	0.0006	0.0007	0.0005	0.0002	0.0002	0.0001	0.00006	0.00004	0.00004	0.00003	0.00003	0.00001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000004	0.000009	0.00002	0.00001	0.00001	0.000009	0.000004	0.000004	0.000003	0.000002	0.000001	0.000002	0.000001	0.000001	0.0000006
Total Intake (µg/kg/d)	0.0002	0.0004	0.001	0.0006	0.0007	0.0005	0.0002	0.0002	0.0001	0.00006	0.00004	0.00005	0.00003	0.00003	0.00002
HQ (unitless)	0.0000005	0.000001	0.000002	0.000002	0.000002	0.000001	0.0000005	0.0000004	0.0000003	0.0000001	0.0000001	0.0000001	0.00000007	0.00000008	0.00000004

Life stage: Child (3-13 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00009	0.0002	0.0004	0.0003	0.0003	0.0002	0.00008	0.00008	0.00005	0.00003	0.00002	0.00002	0.00001	0.00001	0.000007
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000003	0.000006	0.00001	0.000009	0.00001	0.000007	0.000003	0.000003	0.000002	0.000001	0.000001	0.000001	0.0000007	0.0000008	0.0000004
Total Intake (µg/kg/d)	0.0001	0.0002	0.0004	0.0003	0.0003	0.0002	0.00008	0.00008	0.00005	0.00003	0.00002	0.00002	0.00001	0.00001	0.000007
HQ (unitless)	0.0000002	0.0000005	0.000001	0.0000007	0.0000008	0.0000006	0.0000002	0.0000002	0.0000001	0.00000007	0.00000005	0.00000005	0.00000003	0.00000004	0.00000002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00002	0.00004	0.00009	0.00006	0.00007	0.00005	0.00002	0.00002	0.00001	0.000005	0.000004	0.000004	0.000002	0.000003	0.000001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000002	0.000003	0.000007	0.000005	0.000005	0.000004	0.000002	0.000002	0.000001	0.0000006	0.0000005	0.0000006	0.0000004	0.0000004	0.0000002
Total Intake (µg/kg/d)	0.00002	0.00005	0.0001	0.00007	0.00007	0.00005	0.00002	0.00002	0.00001	0.000006	0.000005	0.000005	0.000003	0.000003	0.000002
HQ (unitless)	0.00000006	0.0000001	0.0000003	0.0000002	0.0000002	0.0000001	0.00000005	0.00000005	0.00000003	0.00000002	0.00000001	0.00000001	0.000000007	0.000000008	0.000000004

Life stage: Adult (18-82 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00001	0.00003	0.00007	0.00004	0.00005	0.00003	0.00001	0.00001	0.000008	0.000004	0.000003	0.000003	0.000002	0.000002	0.000001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.000002	0.000005	0.000003	0.000004	0.000003	0.000001	0.000001	0.0000008	0.0000005	0.0000004	0.0000004	0.0000003	0.0000003	0.0000001
Total Intake (µg/kg/d)	0.00002	0.00003	0.00007	0.00005	0.00005	0.00004	0.00001	0.00001	0.000009	0.000004	0.000003	0.000004	0.000002	0.000002	0.000001
HQ (unitless)	0.00000004	0.00000008	0.0000002	0.0000001	0.0000001	0.00000009	0.00000003	0.00000003	0.00000002	0.00000001	0.000000008	0.000000009	0.000000005	0.000000006	0.000000003

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.00003	0.00007	0.0001	0.0001	0.0001	0.00007	0.00003	0.00003	0.00002	0.000009	0.000007	0.000007	0.000004	0.000005	0.000002
HQ (unitless)	0.00000008	0.0000002	0.0000004	0.0000002	0.0000003	0.0000002	0.00000007	0.00000007	0.00000005	0.00000002	0.00000002	0.00000002	0.00000001	0.00000001	0.000000006

R16-30

Life stage: Infant/Toddler (0.5-3 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00001	0.00001	0.00004	0.00003	0.00003	0.00002	0.00001	0.00001	0.00001	0.000008	0.000007	0.000006	0.000008	0.000007	0.000008
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000004	0.0000001	0.0000003	0.0000004	0.0000003	0.0000009	0.0000006	0.0000006	0.0000005	0.0000004	0.0000003	0.0000003	0.0000004	0.0000003	0.0000004
Total Intake ($\mu\text{g/kg/d}$)	0.00001	0.00001	0.00004	0.00003	0.00003	0.00002	0.00001	0.00001	0.00001	0.000009	0.000007	0.000006	0.000008	0.000008	0.000009
HQ (unitless)	0.00000004	0.00000003	0.00000009	0.00000008	0.00000007	0.00000005	0.00000004	0.00000003	0.00000003	0.00000002	0.00000002	0.00000002	0.00000002	0.00000002	0.00000002

Life stage: Child (3-13 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000006	0.000006	0.00002	0.00001	0.00001	0.000009	0.000006	0.000005	0.000004	0.000004	0.000003	0.000003	0.000003	0.000003	0.000004
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000003	0.0000001	0.0000002	0.0000003	0.0000002	0.0000006	0.0000005	0.0000004	0.0000003	0.0000003	0.0000002	0.0000002	0.0000003	0.0000002	0.0000003
Total Intake ($\mu\text{g/kg/d}$)	0.000007	0.000006	0.00002	0.00001	0.00001	0.000009	0.000007	0.000006	0.000005	0.000004	0.000003	0.000003	0.000004	0.000004	0.000004
HQ (unitless)	0.00000002	0.00000001	0.00000004	0.00000004	0.00000003	0.00000002	0.00000002	0.00000001	0.00000001	0.00000001	0.000000008	0.000000008	0.000000009	0.000000009	0.000000001

Life stage: Adolescent/Adult (13-18 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000001	0.000001	0.000004	0.000003	0.000003	0.000002	0.000001	0.000001	0.0000009	0.0000008	0.0000007	0.0000006	0.0000007	0.0000007	0.0000008
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000001	0.00000005	0.0000001	0.0000002	0.0000001	0.0000003	0.0000002	0.0000002	0.0000002	0.0000002	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001
Total Intake ($\mu\text{g/kg/d}$)	0.000002	0.000001	0.000004	0.000003	0.000003	0.000002	0.000002	0.000001	0.000001	0.000001	0.0000008	0.0000007	0.0000009	0.0000008	0.0000009
HQ (unitless)	0.000000004	0.000000003	0.000000009	0.000000008	0.000000007	0.000000005	0.000000004	0.000000003	0.000000003	0.000000003	0.000000002	0.000000002	0.000000002	0.000000002	0.000000002

Life stage: Adult (18-82 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000001	0.0000009	0.000003	0.000002	0.000002	0.000001	0.000001	0.0000008	0.0000007	0.0000006	0.0000005	0.0000004	0.0000005	0.0000005	0.0000006
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000001	0.00000004	0.00000008	0.0000001	0.00000009	0.00000002	0.00000002	0.0000001	0.0000001	0.0000001	0.00000009	0.00000008	0.0000001	0.00000009	0.00000009
Total Intake (µg/kg/d)	0.000001	0.0000009	0.000003	0.000002	0.000002	0.000002	0.000001	0.000001	0.0000008	0.0000007	0.0000006	0.0000005	0.0000006	0.0000006	0.0000007
HQ (unitless)	0.000000003	0.000000002	0.000000007	0.000000006	0.000000005	0.000000004	0.000000003	0.000000002	0.000000002	0.000000002	0.000000001	0.000000001	0.000000002	0.000000002	0.000000002

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.000002	0.000002	0.000005	0.000005	0.000004	0.000003	0.000002	0.000002	0.000002	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001
HQ (unitless)	0.000000006	0.000000005	0.000000001	0.000000001	0.000000001	0.000000008	0.000000006	0.000000005	0.000000004	0.000000004	0.000000003	0.000000003	0.000000003	0.000000003	0.000000003

R31-45

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00002	0.00002	0.00003	0.00003	0.00004	0.00005	0.00004	0.00005	0.00003	0.00004	0.0002	0.00001	0.00001	0.00002	0.00002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000009	0.000001	0.000001	0.000001	0.000001	0.000002	0.000001	0.000002	0.000001	0.000001	0.000005	0.0000005	0.0000005	0.0000006	0.0000007
Total Intake (µg/kg/d)	0.00002	0.00002	0.00003	0.00004	0.00004	0.00005	0.00004	0.00005	0.00003	0.00004	0.0002	0.00001	0.00001	0.00002	0.00002
HQ (unitless)	0.00000006	0.00000006	0.00000008	0.00000009	0.0000001	0.0000001	0.0000001	0.0000001	0.00000009	0.0000001	0.0000005	0.00000003	0.00000004	0.00000004	0.00000005

Life stage: Child (3-13 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00009	0.000005	0.000006	0.000008	0.000009
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000007	0.0000007	0.0000009	0.000001	0.000001	0.000001	0.0000009	0.000001	0.0000008	0.000001	0.000004	0.0000003	0.0000004	0.0000004	0.0000005
Total Intake (µg/kg/d)	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00009	0.000006	0.000007	0.000008	0.00001
HQ (unitless)	0.00000003	0.00000003	0.00000004	0.00000004	0.00000005	0.00000006	0.00000005	0.00000006	0.00000004	0.00000005	0.0000002	0.00000001	0.00000002	0.00000002	0.00000002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000002	0.000002	0.000003	0.000003	0.000004	0.000005	0.000004	0.000005	0.000003	0.000004	0.00002	0.000001	0.000001	0.000002	0.000002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000003	0.0000004	0.0000004	0.0000005	0.0000005	0.0000006	0.0000005	0.0000006	0.0000004	0.0000005	0.000002	0.0000002	0.0000002	0.0000002	0.0000003
Total Intake ($\mu\text{g/kg/d}$)	0.000002	0.000003	0.000003	0.000004	0.000005	0.000005	0.000004	0.000005	0.000004	0.000005	0.00002	0.000001	0.000002	0.000002	0.000002
HQ (unitless)	0.000000006	0.000000007	0.000000008	0.000000001	0.000000001	0.000000001	0.000000001	0.000000001	0.000000009	0.000000001	0.000000005	0.000000003	0.000000004	0.000000005	0.000000006

Life stage: Adult (18-82 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000002	0.000002	0.000002	0.000002	0.000003	0.000003	0.000003	0.000003	0.000002	0.000003	0.00001	0.0000008	0.000001	0.000001	0.000001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000002	0.0000003	0.0000003	0.0000004	0.0000004	0.0000004	0.0000003	0.0000004	0.0000003	0.0000004	0.000001	0.0000001	0.0000001	0.0000002	0.0000002
Total Intake ($\mu\text{g/kg/d}$)	0.000002	0.000002	0.000002	0.000003	0.000003	0.000004	0.000003	0.000004	0.000003	0.000003	0.00001	0.000001	0.000001	0.000001	0.000002
HQ (unitless)	0.000000004	0.000000005	0.000000006	0.000000007	0.000000008	0.000000009	0.000000007	0.000000009	0.000000007	0.000000008	0.000000004	0.000000002	0.000000003	0.000000003	0.000000004

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.000003	0.000004	0.000005	0.000006	0.000007	0.000007	0.000006	0.000008	0.000005	0.000007	0.00003	0.000002	0.000002	0.000003	0.000003
HQ (unitless)	0.000000009	0.000000001	0.000000001	0.000000001	0.000000002	0.000000002	0.000000001	0.000000002	0.000000001	0.000000002	0.000000007	0.000000005	0.000000006	0.000000007	0.000000008

R46-60

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000006	0.000006	0.000008	0.000009	0.00001	0.000004	0.000005	0.00003	0.000009	0.000008	0.000007	0.000008	0.000004	0.000003	0.00001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000003	0.0000003	0.0000004	0.0000004	0.0000004	0.0000002	0.0000003	0.0000009	0.0000003	0.0000003	0.0000003	0.0000003	0.0000002	0.0000002	0.0000006
Total Intake ($\mu\text{g/kg/d}$)	0.000006	0.000006	0.000009	0.000009	0.00001	0.000005	0.000006	0.00003	0.000009	0.000008	0.000007	0.000008	0.000004	0.000003	0.00001
HQ (unitless)	0.000000002	0.000000002	0.000000002	0.000000002	0.000000003	0.000000001	0.000000001	0.000000007	0.000000002	0.000000002	0.000000002	0.000000002	0.000000001	0.000000009	0.000000003

Life stage: Child (3-13 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000003	0.000003	0.000004	0.000004	0.000005	0.000002	0.000002	0.00001	0.000004	0.000004	0.000003	0.000004	0.000002	0.000002	0.000005
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000002	0.0000002	0.0000003	0.0000003	0.0000003	0.0000002	0.0000002	0.0000006	0.0000002	0.0000002	0.0000002	0.0000002	0.0000001	0.0000001	0.0000004
Total Intake ($\mu\text{g/kg/d}$)	0.000003	0.000003	0.000004	0.000004	0.000005	0.000002	0.000003	0.00001	0.000004	0.000004	0.000003	0.000004	0.000002	0.000002	0.000006
HQ (unitless)	0.000000007	0.000000007	0.000000001	0.000000001	0.000000001	0.000000005	0.000000007	0.000000003	0.000000001	0.000000009	0.000000009	0.000000001	0.000000005	0.000000004	0.000000001

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0000006	0.0000006	0.0000008	0.0000009	0.000001	0.0000004	0.0000005	0.000003	0.0000008	0.0000008	0.0000007	0.0000008	0.0000004	0.0000003	0.000001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000001	0.0000001	0.0000001	0.0000001	0.0000002	0.00000008	0.0000001	0.0000003	0.0000001	0.0000001	0.0000001	0.0000001	0.00000007	0.00000006	0.0000002
Total Intake ($\mu\text{g/kg/d}$)	0.0000007	0.0000007	0.0000009	0.000001	0.000001	0.0000005	0.0000006	0.000003	0.000001	0.0000009	0.0000008	0.0000009	0.0000004	0.0000004	0.000001
HQ (unitless)	0.000000002	0.000000002	0.000000002	0.000000003	0.000000003	0.000000001	0.000000002	0.000000008	0.000000002	0.000000002	0.000000002	0.000000002	0.000000001	0.000000001	0.000000003

Life stage: Adult (18-82 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0000004	0.0000004	0.0000006	0.0000006	0.0000007	0.0000003	0.0000004	0.000002	0.0000006	0.0000005	0.0000005	0.0000006	0.0000003	0.0000002	0.0000008
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00000008	0.00000008	0.0000001	0.0000001	0.0000001	0.00000006	0.00000007	0.0000002	0.00000008	0.00000008	0.00000008	0.00000009	0.00000005	0.00000004	0.0000002
Total Intake ($\mu\text{g/kg/d}$)	0.0000005	0.0000005	0.0000007	0.0000007	0.0000008	0.0000004	0.0000004	0.000002	0.0000007	0.0000006	0.0000006	0.0000006	0.0000003	0.0000003	0.000001
HQ (unitless)	0.000000001	0.000000001	0.000000002	0.000000002	0.000000002	0.0000000009	0.000000001	0.000000006	0.000000002	0.000000002	0.000000001	0.000000002	0.0000000008	0.0000000007	0.000000002

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.000001	0.000001	0.000001	0.000001	0.000002	0.0000007	0.0000009	0.000005	0.000001	0.000001	0.000001	0.000001	0.000006	0.000005	0.000002
HQ (unitless)	0.000000002	0.000000002	0.000000003	0.000000004	0.000000004	0.000000002	0.000000002	0.000000001	0.000000003	0.000000003	0.000000003	0.000000003	0.000000002	0.000000001	0.000000005

R61-75

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000008	0.00001	0.00001	0.00003	0.000007	0.000005	0.000007	0.00002	0.00001	0.00001	0.000009	0.00003	0.00004	0.00004	0.00001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000004	0.0000005	0.0000006	0.0000009	0.0000003	0.0000002	0.0000003	0.0000006	0.0000005	0.0000006	0.0000003	0.000001	0.000002	0.000001	0.0000006
Total Intake (µg/kg/d)	0.000009	0.00001	0.00001	0.00003	0.000007	0.000005	0.000007	0.00002	0.00001	0.00001	0.000009	0.00003	0.00004	0.00005	0.00001
HQ (unitless)	0.00000002	0.00000003	0.00000003	0.00000008	0.00000002	0.00000001	0.00000002	0.00000004	0.00000004	0.00000003	0.00000002	0.00000007	0.0000001	0.0000001	0.00000004

Life stage: Child (3-13 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000004	0.000005	0.000005	0.00001	0.000003	0.000002	0.000003	0.000007	0.000006	0.000006	0.000004	0.00001	0.00002	0.00002	0.000007
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000003	0.0000004	0.0000004	0.0000007	0.0000002	0.0000002	0.0000002	0.0000004	0.0000004	0.0000004	0.0000002	0.0000008	0.000001	0.000001	0.0000004
Total Intake (µg/kg/d)	0.000004	0.000005	0.000005	0.00002	0.000003	0.000002	0.000003	0.000008	0.000007	0.000006	0.000004	0.00001	0.00002	0.00002	0.000007
HQ (unitless)	0.00000001	0.00000001	0.00000001	0.00000004	0.000000008	0.000000006	0.000000008	0.00000002	0.00000002	0.00000002	0.00000001	0.00000003	0.00000005	0.00000005	0.00000002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000008	0.000001	0.000001	0.000003	0.0000006	0.0000005	0.0000007	0.000002	0.000001	0.000001	0.0000009	0.000003	0.000004	0.000004	0.000001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000002	0.0000002	0.0000002	0.0000004	0.0000001	0.00000009	0.00000009	0.0000002	0.0000002	0.0000002	0.0000001	0.0000004	0.0000006	0.0000006	0.0000002
Total Intake (µg/kg/d)	0.000001	0.000001	0.000001	0.000003	0.0000008	0.0000006	0.0000008	0.000002	0.000002	0.000001	0.000001	0.000003	0.000005	0.000005	0.000002
HQ (unitless)	0.000000002	0.000000003	0.000000003	0.000000009	0.000000002	0.000000001	0.000000002	0.000000005	0.000000004	0.000000004	0.000000003	0.000000008	0.00000001	0.00000001	0.000000004

Life stage: Adult (18-82 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000006	0.0000008	0.0000008	0.000002	0.0000005	0.0000004	0.0000005	0.000001	0.000001	0.0000009	0.0000006	0.000002	0.000003	0.000003	0.000001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000001	0.0000001	0.0000001	0.0000003	0.00000009	0.00000007	0.00000007	0.0000002	0.0000001	0.0000002	0.00000009	0.0000003	0.0000004	0.0000004	0.0000002
Total Intake (µg/kg/d)	0.0000007	0.0000009	0.0000009	0.000002	0.0000005	0.0000004	0.0000005	0.000001	0.000001	0.000001	0.0000007	0.000002	0.000003	0.000004	0.000001
HQ (unitless)	0.000000002	0.000000002	0.000000002	0.000000006	0.000000001	0.000000001	0.000000001	0.000000003	0.000000003	0.000000003	0.000000002	0.000000006	0.000000009	0.000000009	0.000000003

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.000001	0.000002	0.000002	0.000005	0.000001	0.0000008	0.000001	0.000003	0.000002	0.000002	0.000001	0.000004	0.000007	0.000007	0.000002
HQ (unitless)	0.000000003	0.000000005	0.000000005	0.000000001	0.000000003	0.000000002	0.000000003	0.000000007	0.000000006	0.000000005	0.000000004	0.000000001	0.000000002	0.000000002	0.000000006

R76-D

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00001	0.000006	0.00001	0.00003	0.00002	0.000003	0.000004	0.000004	0.00003	0.00003	0.00008	0.001	0.001	0.001	0.004
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000006	0.0000003	0.0000005	0.0000008	0.0000006	0.0000001	0.0000002	0.0000002	0.0000008	0.000001	0.000002	0.00002	0.00002	0.00002	0.00006
Total Intake ($\mu\text{g/kg/d}$)	0.00001	0.000006	0.00001	0.00003	0.00002	0.000003	0.000004	0.000005	0.00003	0.00003	0.00008	0.001	0.001	0.001	0.004
HQ (unitless)	0.000000003	0.000000002	0.000000003	0.000000007	0.000000005	0.000000008	0.000000001	0.000000001	0.000000007	0.000000009	0.00000002	0.0000003	0.0000003	0.0000003	0.00001

Life stage: Child (3-13 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000005	0.000003	0.000006	0.00001	0.000008	0.000001	0.000002	0.000002	0.00001	0.00002	0.00003	0.0005	0.0006	0.0006	0.002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000004	0.0000002	0.0000003	0.0000006	0.0000004	0.0000001	0.0000001	0.0000001	0.0000006	0.0000007	0.000001	0.00002	0.00002	0.00002	0.00004
Total Intake ($\mu\text{g/kg/d}$)	0.000006	0.000003	0.000006	0.00001	0.000009	0.000001	0.000002	0.000002	0.00001	0.00002	0.00004	0.0006	0.0006	0.0006	0.002
HQ (unitless)	0.000000001	0.000000007	0.000000002	0.000000003	0.000000002	0.000000004	0.000000005	0.000000005	0.000000003	0.000000004	0.000000009	0.0000001	0.0000001	0.0000001	0.0000004

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000001	0.0000006	0.000001	0.000003	0.000002	0.0000003	0.0000004	0.0000004	0.000003	0.000003	0.000007	0.0001	0.0001	0.0001	0.0004
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000002	0.0000001	0.0000002	0.0000003	0.0000002	0.00000005	0.00000006	0.00000007	0.0000003	0.0000004	0.0000007	0.000008	0.000008	0.000008	0.00002
Total Intake ($\mu\text{g/kg/d}$)	0.000001	0.0000007	0.000001	0.000003	0.000002	0.0000004	0.0000005	0.0000005	0.000003	0.000004	0.000008	0.0001	0.0001	0.0001	0.0004
HQ (unitless)	0.000000003	0.000000002	0.000000004	0.000000007	0.000000005	0.0000000009	0.000000001	0.000000001	0.000000007	0.000000009	0.00000002	0.0000003	0.0000003	0.0000003	0.000001

Life stage: Adult (18-82 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) (µg/kg/d)	0.0000008	0.0000004	0.0000009	0.0000002	0.0000001	0.0000002	0.0000003	0.0000003	0.0000002	0.0000002	0.0000005	0.000008	0.000009	0.000009	0.00003
Inhalation Intake (I_{inhal}) (µg/kg/d)	0.0000001	0.00000008	0.0000001	0.0000002	0.0000002	0.00000004	0.00000004	0.00000005	0.0000002	0.0000003	0.0000005	0.000006	0.000006	0.000006	0.00001
Total Intake (µg/kg/d)	0.0000009	0.0000005	0.0000001	0.0000002	0.0000001	0.0000003	0.0000003	0.0000004	0.0000002	0.0000003	0.0000006	0.000009	0.000009	0.000009	0.00003
HQ (unitless)	0.000000002	0.000000001	0.000000003	0.000000005	0.000000004	0.0000000006	0.0000000008	0.0000000009	0.000000005	0.000000007	0.00000001	0.0000002	0.0000002	0.0000002	0.0000007

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Lifetime TWA daily intake (I_{lifetime}) (µg/kg/d)	0.000002	0.000001	0.000002	0.000004	0.000003	0.0000005	0.0000007	0.0000007	0.000004	0.000005	0.00001	0.0002	0.0002	0.0002	0.0006
HQ (unitless)	0.000000005	0.000000002	0.000000005	0.00000001	0.000000007	0.000000001	0.000000002	0.000000002	0.00000001	0.00000001	0.00000003	0.0000005	0.0000005	0.0000005	0.000001

E-P

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) (µg/kg/d)	0.0009	0.002	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.0001
Inhalation Intake (I_{inhal}) (µg/kg/d)	0.00002	0.00003	0.00002	0.00002	0.00002	0.00002	0.00003	0.00004	0.00004	0.00003	0.00003	0.000003
Total Intake (µg/kg/d)	0.001	0.002	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.0001
HQ (unitless)	0.000002	0.000005	0.000004	0.000003	0.000003	0.000003	0.000004	0.000006	0.000005	0.000005	0.000004	0.0000003

Life stage: Child (3-13 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) (µg/kg/d)	0.0004	0.0009	0.0006	0.0006	0.0005	0.0006	0.0007	0.001	0.0009	0.001	0.0008	0.00005
Inhalation Intake (I_{inhal}) (µg/kg/d)	0.00001	0.00002	0.00002	0.00002	0.00002	0.00001	0.00002	0.00003	0.00003	0.00002	0.00002	0.000002
Total Intake (µg/kg/d)	0.0004	0.0009	0.0007	0.0006	0.0006	0.0006	0.0007	0.001	0.001	0.001	0.0008	0.00005
HQ (unitless)	0.000001	0.000002	0.000002	0.000002	0.000001	0.000001	0.000002	0.000003	0.000002	0.000003	0.000002	0.0000001

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00009	0.0002	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.00001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000007	0.00001	0.000009	0.000008	0.000008	0.000008	0.00001	0.00001	0.00001	0.00001	0.00001	0.000001
Total Intake (µg/kg/d)	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.00001
HQ (unitless)	0.0000003	0.0000005	0.0000004	0.0000003	0.0000003	0.0000003	0.0000004	0.0000006	0.0000005	0.0000006	0.0000004	0.00000003

Life stage: Adult (18-82 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00007	0.0001	0.0001	0.00009	0.00008	0.00009	0.0001	0.0002	0.0001	0.0002	0.0001	0.000008
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000005	0.000008	0.000006	0.000006	0.000006	0.000006	0.000007	0.00001	0.000009	0.000009	0.000007	0.0000009
Total Intake (µg/kg/d)	0.00007	0.0001	0.0001	0.00009	0.00009	0.00009	0.0001	0.0002	0.0002	0.0002	0.0001	0.000009
HQ (unitless)	0.0000002	0.0000004	0.0000003	0.0000002	0.0000002	0.0000002	0.0000003	0.0000004	0.0000004	0.0000004	0.0000003	0.00000002

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.0001	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.00002
HQ (unitless)	0.0000004	0.0000007	0.0000005	0.0000005	0.0000005	0.0000005	0.0000006	0.0000009	0.0000008	0.0000008	0.0000006	0.00000005

F.2.2 Scenario 2

Adjusted TDI

	All receptors
Background adjusted tolerable daily intake (TDI _{adj}) (µg/kg/d)	396

Soil & air concentrations:

R1-15

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil concentration (µg/g) (Appendix C)	0.035	0.046	0.047	0.031	0.024	0.017	0.013	0.014	0.012	0.01	0.009	0.009	0.007	0.007	0.004
Air concentration (µg/m ³) (Appendix D)	0.000035	0.000042	0.000033	0.000029	0.000022	0.000015	0.000012	0.000017	0.000013	0.000009	0.000009	0.000008	0.000008	0.000009	0.000007

R16-30

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil concentration (µg/g) (Appendix C)	0.003	0.002	0.005	0.007	0.006	0.005	0.004	0.004	0.003	0.003	0.003	0.002	0.003	0.003	0.003
Air concentration (µg/m ³) (Appendix D)	0.000005	0.000002	0.000003	0.000004	0.000004	0.000007	0.000006	0.000006	0.000005	0.000005	0.000006	0.000005	0.000004	0.000005	0.000004

R31-45

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil concentration (µg/g) (Appendix C)	0.006	0.006	0.007	0.008	0.009	0.009	0.008	0.009	0.008	0.009	0.016	0.004	0.004	0.005	0.006
Air concentration (µg/m ³) (Appendix D)	0.000007	0.000008	0.000008	0.000009	0.00001	0.00001	0.000009	0.000009	0.000009	0.000009	0.000013	0.000005	0.000005	0.000006	0.000007

R46-60

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil concentration (µg/g) (Appendix C)	0.002	0.002	0.003	0.003	0.003	0.002	0.002	0.006	0.002	0.002	0.002	0.003	0.001	0.001	0.004
Air concentration (µg/m ³) (Appendix D)	0.000004	0.000004	0.000004	0.000004	0.000004	0.000004	0.000004	0.000007	0.000003	0.000004	0.000004	0.000005	0.000003	0.000002	0.000007

R61-75

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil concentration (µg/g) (Appendix C)	0.003	0.004	0.005	0.005	0.002	0.002	0.002	0.004	0.004	0.004	0.003	0.007	0.009	0.009	0.005
Air concentration (µg/m ³) (Appendix D)	0.000004	0.000007	0.000007	0.000006	0.000004	0.000003	0.000003	0.000005	0.000005	0.000006	0.000005	0.00001	0.00001	0.000008	0.000009

R76-D

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil concentration (µg/g) (Appendix C)	0.005	0.002	0.003	0.006	0.004	0.001	0.001	0.002	0.006	0.006	0.009	0.024	0.024	0.025	0.028
Air concentration (µg/m ³) (Appendix D)	0.000007	0.000004	0.000004	0.000007	0.000005	0.000003	0.000003	0.000005	0.000009	0.000007	0.000009	0.00002	0.00002	0.00002	0.00002

E-P

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil concentration (µg/g) (Appendix C)	0.031	0.038	0.041	0.044	0.040	0.037	0.032	0.053	0.082	0.095	0.113	0.013
Air concentration (µg/m ³) (Appendix D)	0.00002	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00004	0.00006	0.00007	0.00007	0.00001

Intakes & hazard quotients:

R1-15

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0003	0.0004	0.0004	0.0003	0.0002	0.0002	0.0001	0.0001	0.0001	0.00009	0.00008	0.00008	0.00006	0.00007	0.00004
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00003	0.00003	0.00002	0.00002	0.00002	0.00001	0.000008	0.00001	0.000009	0.000007	0.000007	0.000006	0.000006	0.000007	0.000005
Total Intake (µg/kg/d)	0.0003	0.0004	0.0005	0.0003	0.0002	0.0002	0.0001	0.0001	0.0001	0.00009	0.00009	0.00009	0.00007	0.00007	0.00004
HQ (unitless)	0.0000009	0.000001	0.000001	0.0000008	0.0000006	0.0000004	0.0000003	0.0000004	0.0000003	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000001

Life stage: Child (3-13 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0001	0.0002	0.0002	0.0001	0.0001	0.00007	0.00005	0.00006	0.00005	0.00004	0.00004	0.00004	0.00003	0.00003	0.00002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00002	0.00002	0.00002	0.00002	0.00001	0.000008	0.000006	0.000009	0.000007	0.000005	0.000005	0.000004	0.000004	0.000005	0.000004
Total Intake (µg/kg/d)	0.0002	0.0002	0.0002	0.0001	0.0001	0.00008	0.00006	0.00007	0.00006	0.00004	0.00004	0.00004	0.00003	0.00004	0.00002
HQ (unitless)	0.0000004	0.0000005	0.0000005	0.0000004	0.0000003	0.0000002	0.0000002	0.0000002	0.0000001	0.0000001	0.0000001	0.0000001	0.00000009	0.00000009	0.00000005

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00003	0.00004	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.000009	0.000008	0.000008	0.000006	0.000007	0.000004
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00001	0.00001	0.000009	0.000008	0.000006	0.000004	0.000003	0.000005	0.000003	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002
Total Intake (µg/kg/d)	0.00004	0.00005	0.00005	0.00004	0.00003	0.00002	0.00001	0.00002	0.00001	0.00001	0.00001	0.00001	0.000009	0.000009	0.000005
HQ (unitless)	0.0000001	0.0000001	0.0000001	0.00000009	0.00000007	0.00000005	0.00000004	0.00000004	0.00000004	0.00000003	0.00000003	0.00000003	0.00000002	0.00000002	0.00000001

Life stage: Adult (18-82 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00002	0.00003	0.00003	0.00002	0.00002	0.00001	0.000008	0.000009	0.000008	0.000006	0.000006	0.000006	0.000005	0.000005	0.000003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000007	0.000008	0.000006	0.000006	0.000004	0.000003	0.000002	0.000003	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000001
Total Intake (µg/kg/d)	0.00003	0.00004	0.00004	0.00003	0.00002	0.00001	0.00001	0.00001	0.00001	0.000008	0.000007	0.000007	0.000006	0.000006	0.000004
HQ (unitless)	0.00000007	0.00000009	0.00000009	0.00000006	0.00000005	0.00000004	0.00000003	0.00000003	0.00000003	0.00000002	0.00000002	0.00000002	0.00000002	0.00000002	0.00000001

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.00006	0.00007	0.00007	0.00005	0.00004	0.00003	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00007
HQ (unitless)	0.0000001	0.0000002	0.0000002	0.0000001	0.00000009	0.00000007	0.00000005	0.00000006	0.00000005	0.00000004	0.00000004	0.00000003	0.00000003	0.00000003	0.00000002

R16-30

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00003	0.00002	0.00005	0.00007	0.00006	0.00005	0.00004	0.00004	0.00003	0.00003	0.00003	0.00002	0.00002	0.00003	0.00003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000003	0.000001	0.000003	0.000003	0.000003	0.000005	0.000004	0.000004	0.000004	0.000004	0.000004	0.000003	0.000003	0.000004	0.000003
Total Intake ($\mu\text{g/kg/d}$)	0.00003	0.00002	0.00005	0.00007	0.00006	0.00005	0.00004	0.00004	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003
HQ (unitless)	0.00000008	0.00000005	0.0000001	0.0000002	0.0000001	0.0000001	0.0000001	0.0000001	0.00000008	0.00000008	0.00000008	0.00000006	0.00000007	0.00000008	0.00000007

Life stage: Child (3-13 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00001	0.000008	0.00002	0.00003	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000002	0.000001	0.000002	0.000002	0.000002	0.000003	0.000003	0.000003	0.000003	0.000003	0.000003	0.000002	0.000002	0.000003	0.000002
Total Intake ($\mu\text{g/kg/d}$)	0.00002	0.000009	0.00002	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
HQ (unitless)	0.00000004	0.00000002	0.00000006	0.00000008	0.00000007	0.00000006	0.00000005	0.00000005	0.00000004	0.00000004	0.00000004	0.00000003	0.00000003	0.00000004	0.00000004

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000003	0.000002	0.000005	0.000007	0.000006	0.000004	0.000004	0.000004	0.000003	0.000003	0.000003	0.000002	0.000002	0.000003	0.000003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000001	0.0000005	0.0000009	0.000001	0.000001	0.000002	0.000002	0.000002	0.000001	0.000001	0.000002	0.000001	0.000001	0.000001	0.000001
Total Intake ($\mu\text{g/kg/d}$)	0.000004	0.000002	0.000006	0.000008	0.000007	0.000006	0.000005	0.000005	0.000004	0.000004	0.000004	0.000003	0.000004	0.000004	0.000004
HQ (unitless)	0.00000001	0.000000006	0.00000001	0.00000002	0.00000002	0.00000002	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.000000009	0.000000009	0.00000001	0.000000009

Life stage: Adult (18-82 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000002	0.000001	0.000003	0.000005	0.000004	0.000003	0.000003	0.000003	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000009	0.0000004	0.0000007	0.0000009	0.0000007	0.0000013	0.000001	0.000001	0.000001	0.0000009	0.000001	0.0000009	0.0000009	0.000001	0.0000008
Total Intake (µg/kg/d)	0.000003	0.000002	0.000004	0.000006	0.000005	0.000005	0.000004	0.000004	0.000003	0.000003	0.000003	0.000002	0.000003	0.000003	0.000003
HQ (unitless)	0.000000007	0.000000004	0.000000001	0.000000001	0.000000001	0.000000001	0.000000009	0.000000009	0.000000008	0.000000007	0.000000007	0.000000006	0.000000006	0.000000007	0.000000007

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.000005	0.000003	0.000008	0.00001	0.000009	0.000008	0.000007	0.000007	0.000006	0.000005	0.000005	0.000004	0.000005	0.000005	0.000005
HQ (unitless)	0.00000001	0.000000008	0.000000002	0.000000003	0.000000002	0.000000002	0.000000002	0.000000002	0.000000001	0.000000001	0.000000001	0.000000001	0.000000001	0.000000001	0.000000001

R31-45

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00005	0.00005	0.00006	0.00007	0.00008	0.00008	0.00007	0.00008	0.00007	0.00008	0.0001	0.00003	0.00004	0.00005	0.00005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000005	0.000006	0.000006	0.000007	0.000007	0.000007	0.000006	0.000007	0.000006	0.000007	0.000009	0.000004	0.000004	0.000005	0.000005
Total Intake (µg/kg/d)	0.00006	0.00006	0.00007	0.00008	0.00009	0.00009	0.00008	0.00009	0.00008	0.00009	0.0002	0.00004	0.00004	0.00005	0.00006
HQ (unitless)	0.0000001	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000004	0.00000009	0.0000001	0.0000001	0.0000001

Life stage: Child (3-13 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00002	0.00003	0.00003	0.00003	0.00004	0.00004	0.00003	0.00004	0.00003	0.00004	0.00007	0.00002	0.00002	0.00002	0.00002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000004	0.000004	0.000004	0.000005	0.000005	0.000005	0.000005	0.000005	0.000004	0.000005	0.000007	0.000003	0.000003	0.000003	0.000004
Total Intake (µg/kg/d)	0.00003	0.00003	0.00003	0.00004	0.00004	0.00004	0.00004	0.00004	0.00004	0.00004	0.00007	0.00002	0.00002	0.00002	0.00003
HQ (unitless)	0.00000007	0.00000007	0.00000008	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000009	0.00000001	0.00000002	0.00000005	0.00000005	0.00000006	0.00000007

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000005	0.000005	0.000006	0.000007	0.000008	0.000008	0.000007	0.000008	0.000007	0.000008	0.00001	0.000003	0.000004	0.000004	0.000005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000002	0.000002	0.000002	0.000002	0.000003	0.000003	0.000002	0.000003	0.000002	0.000002	0.000003	0.000001	0.000001	0.000002	0.000002
Total Intake (µg/kg/d)	0.000007	0.000007	0.000008	0.00001	0.00001	0.00001	0.00001	0.00001	0.000009	0.00001	0.00002	0.000005	0.000005	0.000006	0.000007
HQ (unitless)	0.00000002	0.00000002	0.00000002	0.00000002	0.00000003	0.00000003	0.00000002	0.00000003	0.00000002	0.00000003	0.00000005	0.00000001	0.00000001	0.00000002	0.00000002

Life stage: Adult (18-82 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000004	0.000004	0.000004	0.000005	0.000006	0.000006	0.000005	0.000006	0.000005	0.000006	0.00001	0.000002	0.000003	0.000003	0.000004
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.000001	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.0000009	0.000001	0.000001	0.000001
Total Intake (µg/kg/d)	0.000005	0.000005	0.000006	0.000007	0.000007	0.000008	0.000007	0.000008	0.000007	0.000007	0.00001	0.000003	0.000004	0.000004	0.000005
HQ (unitless)	0.00000001	0.00000001	0.00000002	0.00000002	0.00000002	0.00000002	0.00000002	0.00000002	0.00000002	0.00000002	0.00000003	0.000000008	0.00000001	0.00000001	0.00000001

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.000009	0.00001	0.00001	0.00001	0.00001	0.00002	0.00001	0.00001	0.00001	0.00001	0.00003	0.000006	0.000007	0.000008	0.00001
HQ (unitless)	0.00000002	0.00000003	0.00000003	0.00000003	0.00000004	0.00000004	0.00000003	0.00000004	0.00000003	0.00000003	0.00000006	0.00000002	0.00000002	0.00000002	0.00000002

R46-60

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00002	0.00002	0.00003	0.00003	0.00003	0.00002	0.00002	0.00005	0.00002	0.00002	0.00002	0.00003	0.00001	0.00001	0.00004
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000003	0.000003	0.000003	0.000003	0.000003	0.000003	0.000003	0.000005	0.000002	0.000003	0.000003	0.000003	0.000002	0.000002	0.000005
Total Intake (µg/kg/d)	0.00002	0.00002	0.00003	0.00003	0.00003	0.00002	0.00002	0.00006	0.00002	0.00002	0.00002	0.00003	0.00001	0.00001	0.00004
HQ (unitless)	0.00000006	0.00000006	0.00000007	0.00000008	0.00000008	0.00000005	0.00000005	0.0000001	0.00000006	0.00000006	0.00000006	0.00000008	0.00000004	0.00000003	0.0000001

Life stage: Child (3-13 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000009	0.00001	0.00001	0.00001	0.00001	0.000007	0.000009	0.00002	0.000009	0.000009	0.000009	0.00001	0.000006	0.000005	0.00002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000004	0.000002	0.000002	0.000002	0.000002	0.000001	0.000001	0.000003
Total Intake ($\mu\text{g/kg/d}$)	0.00001	0.00001	0.00001	0.00001	0.00002	0.000009	0.00001	0.00003	0.00001	0.00001	0.00001	0.00001	0.000007	0.000006	0.00002
HQ (unitless)	0.00000003	0.00000003	0.00000004	0.00000004	0.00000004	0.00000002	0.00000003	0.00000007	0.00000003	0.00000003	0.00000003	0.00000004	0.00000002	0.00000002	0.00000005

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000002	0.000002	0.000003	0.000003	0.000003	0.000002	0.000002	0.000005	0.000002	0.000002	0.000002	0.000003	0.000001	0.000001	0.000004
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000002	0.0000009	0.000001	0.000001	0.000001	0.0000007	0.0000006	0.000002
Total Intake ($\mu\text{g/kg/d}$)	0.000003	0.000003	0.000004	0.000004	0.000004	0.000003	0.000003	0.000007	0.000003	0.000003	0.000003	0.000004	0.000002	0.000002	0.000006
HQ (unitless)	0.000000008	0.000000008	0.000000009	0.00000001	0.00000001	0.000000006	0.000000007	0.00000002	0.000000007	0.000000008	0.000000008	0.00000001	0.000000005	0.000000004	0.00000001

Life stage: Adult (18-82 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000001	0.000002	0.000002	0.000002	0.000002	0.000001	0.000001	0.000004	0.000001	0.000001	0.000001	0.000002	0.0000009	0.0000008	0.000003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000008	0.0000009	0.0000008	0.0000008	0.0000009	0.0000007	0.0000008	0.000001	0.0000007	0.0000008	0.0000008	0.0000009	0.0000005	0.0000004	0.000001
Total Intake ($\mu\text{g/kg/d}$)	0.000002	0.000002	0.000003	0.000003	0.000003	0.000002	0.000002	0.000005	0.000002	0.000002	0.000002	0.000003	0.000001	0.000001	0.000004
HQ (unitless)	0.000000005	0.000000006	0.000000007	0.000000007	0.000000007	0.000000005	0.000000005	0.00000001	0.000000005	0.000000006	0.000000006	0.000000007	0.000000003	0.000000003	0.00000001

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.000004	0.000004	0.000005	0.000005	0.000006	0.000003	0.000004	0.00001	0.000004	0.000004	0.000004	0.000005	0.000002	0.000002	0.000007
HQ (unitless)	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.000000008	0.000000009	0.00000002	0.00000001	0.00000001	0.00000001	0.00000001	0.000000006	0.000000005	0.00000002

R61-75

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00002	0.00004	0.00004	0.00005	0.00002	0.00002	0.00002	0.00004	0.00004	0.00004	0.00002	0.00006	0.00008	0.00008	0.00005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000003	0.000005	0.000005	0.000005	0.000003	0.000002	0.000002	0.000003	0.000004	0.000004	0.000003	0.000007	0.000007	0.000006	0.000006
Total Intake (µg/kg/d)	0.00003	0.00005	0.00005	0.00005	0.00002	0.00002	0.00002	0.00004	0.00004	0.00004	0.00003	0.00007	0.00009	0.00008	0.00005
HQ (unitless)	0.00000007	0.0000001	0.0000001	0.0000001	0.00000006	0.00000005	0.00000005	0.0000001	0.0000001	0.0000001	0.00000007	0.0000002	0.0000002	0.0000002	0.0000001

Life stage: Child (3-13 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00001	0.00002	0.00002	0.00002	0.00001	0.000008	0.000008	0.00002	0.00002	0.00002	0.00001	0.00003	0.00004	0.00004	0.00002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000002	0.000004	0.000004	0.000003	0.000002	0.000002	0.000001	0.000002	0.000003	0.000003	0.000002	0.000005	0.000005	0.000004	0.000004
Total Intake (µg/kg/d)	0.00001	0.00002	0.00002	0.00003	0.00001	0.00001	0.000009	0.00002	0.00002	0.00002	0.00001	0.00003	0.00004	0.00004	0.00003
HQ (unitless)	0.00000003	0.00000006	0.00000006	0.00000007	0.00000003	0.00000002	0.00000002	0.00000005	0.00000005	0.00000005	0.00000003	0.00000008	0.0000001	0.0000001	0.00000007

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000002	0.000004	0.000004	0.000005	0.000002	0.000002	0.000002	0.000004	0.000004	0.000004	0.000002	0.000006	0.000008	0.000008	0.000005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.000002	0.000002	0.000002	0.000001	0.0000009	0.0000008	0.000001	0.000001	0.000002	0.000001	0.000003	0.000003	0.000002	0.000002
Total Intake (µg/kg/d)	0.000004	0.000006	0.000006	0.000007	0.000003	0.000003	0.000002	0.000005	0.000005	0.000005	0.000004	0.000008	0.00001	0.00001	0.000007
HQ (unitless)	0.000000009	0.00000001	0.00000002	0.00000002	0.000000008	0.000000007	0.000000006	0.00000001	0.00000001	0.00000001	0.000000009	0.00000002	0.00000003	0.00000002	0.00000002

Life stage: Adult (18-82 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000002	0.000003	0.000003	0.000003	0.000001	0.000001	0.000001	0.000003	0.000003	0.000003	0.000002	0.000004	0.000006	0.000006	0.000003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000008	0.000001	0.000001	0.000001	0.0000008	0.0000007	0.0000005	0.0000009	0.000001	0.000001	0.0000009	0.000002	0.000002	0.000002	0.000002
Total Intake (µg/kg/d)	0.000003	0.000004	0.000004	0.000005	0.000002	0.000002	0.000002	0.000004	0.000004	0.000004	0.000003	0.000006	0.000008	0.000007	0.000005
HQ (unitless)	0.000000007	0.00000001	0.00000001	0.00000001	0.000000006	0.000000005	0.000000004	0.000000009	0.00000001	0.000000009	0.000000006	0.00000002	0.00000002	0.00000002	0.00000001

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.000005	0.000008	0.000008	0.000009	0.000004	0.000003	0.000003	0.000007	0.000007	0.000007	0.000005	0.00001	0.00001	0.00001	0.000009
HQ (unitless)	0.00000001	0.00000002	0.00000002	0.00000002	0.00000001	0.000000009	0.000000008	0.00000002	0.00000002	0.00000002	0.00000001	0.00000003	0.00000004	0.00000003	0.00000002

R76-D

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00004	0.00002	0.00003	0.00005	0.00004	0.00001	0.00001	0.00002	0.00005	0.00006	0.00009	0.0002	0.0002	0.0002	0.0003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000005	0.000003	0.000003	0.000005	0.000004	0.000002	0.000002	0.000003	0.000006	0.000005	0.000007	0.00001	0.00001	0.00002	0.00002
Total Intake ($\mu\text{g/kg/d}$)	0.00005	0.00002	0.00003	0.00006	0.00004	0.00001	0.00001	0.00002	0.00006	0.00006	0.00009	0.0002	0.0002	0.0002	0.0003
HQ (unitless)	0.0000001	0.00000006	0.00000009	0.0000001	0.0000001	0.00000003	0.00000003	0.00000005	0.0000002	0.0000002	0.0000002	0.0000006	0.0000006	0.0000006	0.0000007

Life stage: Child (3-13 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00002	0.000009	0.00001	0.00002	0.00002	0.000005	0.000005	0.000007	0.00003	0.00003	0.00004	0.0001	0.0001	0.0001	0.0001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000004	0.000002	0.000002	0.000004	0.000003	0.000001	0.000001	0.000002	0.000005	0.000004	0.000005	0.00001	0.00001	0.00001	0.00001
Total Intake ($\mu\text{g/kg/d}$)	0.00002	0.00001	0.00002	0.00003	0.00002	0.000006	0.000007	0.000009	0.00003	0.00003	0.00004	0.0001	0.0001	0.0001	0.0001
HQ (unitless)	0.00000006	0.00000003	0.00000004	0.00000007	0.00000005	0.00000002	0.00000002	0.00000002	0.00000007	0.00000007	0.0000001	0.0000003	0.0000003	0.0000003	0.0000003

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000004	0.000002	0.000003	0.000005	0.000004	0.000001	0.000001	0.000002	0.000005	0.000006	0.000008	0.00002	0.00002	0.00002	0.00003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000002	0.000001	0.000001	0.000002	0.000001	0.0000007	0.0000007	0.000001	0.000002	0.000002	0.000003	0.000005	0.000005	0.000006	0.000006
Total Intake ($\mu\text{g/kg/d}$)	0.000006	0.000003	0.000004	0.000007	0.000005	0.000002	0.000002	0.000003	0.000008	0.000007	0.00001	0.00003	0.00003	0.00003	0.00003
HQ (unitless)	0.00000001	0.000000007	0.00000001	0.00000002	0.00000001	0.000000004	0.000000005	0.000000007	0.00000002	0.00000002	0.00000003	0.00000007	0.00000007	0.00000007	0.00000008

Life stage: Adult (18-82 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000003	0.000001	0.000002	0.000004	0.000003	0.0000007	0.0000008	0.000001	0.000004	0.000004	0.000006	0.00002	0.00002	0.00002	0.00002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.0000008	0.0000008	0.000001	0.000001	0.0000005	0.0000005	0.0000009	0.000002	0.000001	0.000002	0.000004	0.000004	0.000004	0.000004
Total Intake (µg/kg/d)	0.000004	0.000002	0.000003	0.000005	0.000004	0.000001	0.000001	0.000002	0.000006	0.000005	0.000008	0.00002	0.00002	0.00002	0.00002
HQ (unitless)	0.00000001	0.000000005	0.000000008	0.00000001	0.000000009	0.000000003	0.000000003	0.000000005	0.00000001	0.00000001	0.00000002	0.00000005	0.00000005	0.00000005	0.00000006

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.000008	0.000004	0.000006	0.000009	0.000007	0.000002	0.000002	0.000003	0.00001	0.00001	0.00001	0.00004	0.00004	0.00004	0.00004
HQ (unitless)	0.00000002	0.00000001	0.00000001	0.00000002	0.00000002	0.000000006	0.000000006	0.000000009	0.00000003	0.00000003	0.00000004	0.00000009	0.00000009	0.0000001	0.0000001

E-P

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0003	0.0003	0.0004	0.0004	0.0004	0.0003	0.0003	0.0005	0.0007	0.0009	0.001	0.0001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00003	0.00005	0.00005	0.00005	0.000009
Total Intake (µg/kg/d)	0.0003	0.0004	0.0004	0.0004	0.0004	0.0004	0.0003	0.0005	0.0008	0.0009	0.001	0.0001
HQ (unitless)	0.0000007	0.0000009	0.000001	0.000001	0.000001	0.0000009	0.0000008	0.000001	0.000002	0.000002	0.000003	0.0000003

Life stage: Child (3-13 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0003	0.0004	0.0005	0.00006
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00002	0.00003	0.00003	0.00003	0.000007
Total Intake (µg/kg/d)	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0004	0.0004	0.0005	0.00006
HQ (unitless)	0.0000004	0.0000004	0.0000005	0.0000005	0.0000005	0.0000004	0.0000004	0.0000006	0.0000009	0.000001	0.000001	0.0000002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00003	0.00003	0.00004	0.00004	0.00004	0.00003	0.00003	0.00005	0.00007	0.00009	0.0001	0.00001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000007	0.000008	0.000009	0.000009	0.000009	0.000008	0.000008	0.00001	0.00002	0.00002	0.00002	0.000003
Total Intake (µg/kg/d)	0.00003	0.00004	0.00005	0.00005	0.00004	0.00004	0.00004	0.00006	0.00009	0.0001	0.0001	0.00002
HQ (unitless)	0.00000009	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.00000009	0.0000001	0.0000002	0.0000003	0.00000004

Life stage: Adult (18-82 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00002	0.00002	0.00003	0.00003	0.00003	0.00002	0.00002	0.00003	0.00005	0.00006	0.00007	0.000009
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000005	0.000006	0.000006	0.000007	0.000006	0.000006	0.000005	0.000008	0.00001	0.00001	0.00001	0.000002
Total Intake (µg/kg/d)	0.00002	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00004	0.00006	0.00007	0.00008	0.00001
HQ (unitless)	0.00000006	0.00000008	0.00000008	0.00000009	0.00000008	0.00000007	0.00000006	0.0000001	0.0000002	0.0000002	0.0000002	0.00000003

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.00005	0.00006	0.00006	0.00007	0.00006	0.00006	0.00005	0.00008	0.0001	0.0001	0.0002	0.00002
HQ (unitless)	0.0000001	0.0000001	0.0000002	0.0000002	0.0000002	0.0000001	0.0000001	0.0000002	0.0000003	0.0000004	0.0000004	0.00000005

F.3 Arsenic (As)

Equations:

Total Intake (I_{total_as})	=	$I_{ingest\_s} + I_{inhal}$
Average lifetime daily exposure for 82 year life span	=	$(I_{total(0.5-3)} \times 365 \times At_x) + (I_{total(3-13)} \times 365 \times At_x) + (I_{total(13-18)} \times 365 \times At_x) + (I_{total(18-82)} \times 365 \times At_x) / AT_{lifetime}$
HQ	=	$I_{lifetime} / TDI_{adj}$

F.3.1 Scenario 1

Adjusted TDI

	All receptors
Background adjusted tolerable daily intake (TDI_{adj}) ($\mu\text{g}/\text{kg}/\text{d}$)	0.91

Soil & air concentrations:

R1-15

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil concentration ($\mu\text{g}/\text{g}$) (Appendix C)	0.058	0.102	0.178	0.132	0.133	0.089	0.044	0.043	0.032	0.018	0.014	0.015	0.009	0.011	0.006
Air concentration ($\mu\text{g}/\text{m}^3$) (Appendix D)	0.00002	0.00003	0.00005	0.00004	0.00004	0.00003	0.00001	0.00001	0.00001	0.000007	0.000006	0.000006	0.000005	0.000005	0.000003

R16-30

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil concentration (µg/g) (Appendix C)	0.005	0.004	0.013	0.011	0.009	0.007	0.005	0.004	0.003	0.003	0.002	0.002	0.003	0.003	0.003
Air concentration (µg/m³) (Appendix D)	0.000002	0.0000007	0.000002	0.000002	0.000002	0.000004	0.000003	0.000003	0.000002	0.000002	0.000002	0.000001	0.000002	0.000002	0.000002

R31-45

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil concentration ($\mu\text{g}/\text{g}$) (Appendix C)	0.008	0.008	0.01	0.012	0.014	0.015	0.012	0.015	0.012	0.014	0.05	0.004	0.005	0.006	0.007
Air concentration ($\mu\text{g}/\text{m}^3$) (Appendix D)	0.000004	0.000005	0.000006	0.000006	0.000006	0.000007	0.000006	0.000007	0.000005	0.000006	0.00002	0.000002	0.000003	0.000003	0.000003

R46-60

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil concentration (µg/g) (Appendix C)	0.002	0.002	0.003	0.003	0.004	0.002	0.002	0.009	0.003	0.003	0.002	0.003	0.001	0.001	0.004
Air concentration (µg/m ³) (Appendix D)	0.000001	0.000001	0.000002	0.000002	0.000002	0.000001	0.000001	0.000004	0.000002	0.000001	0.000001	0.000001	0.0000009	0.0000007	0.000003

R61-75

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil concentration (µg/g) (Appendix C)	0.003	0.004	0.004	0.011	0.002	0.002	0.003	0.006	0.005	0.005	0.003	0.009	0.015	0.015	0.005
Air concentration (µg/m ³) (Appendix D)	0.000002	0.000003	0.000003	0.000004	0.000002	0.000001	0.000001	0.000003	0.000002	0.000003	0.000002	0.000005	0.000008	0.000006	0.000003

R76-D

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil concentration (µg/g) (Appendix C)	0.004	0.002	0.005	0.009	0.006	0.001	0.001	0.002	0.009	0.011	0.023	0.198	0.201	0.209	0.531
Air concentration (µg/m ³) (Appendix D)	0.000003	0.000001	0.000002	0.000004	0.000003	0.0000007	0.0000008	0.0000008	0.000004	0.000004	0.000008	0.000049	0.00005	0.00005	0.0001

E-P

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil concentration (µg/g) (Appendix C)	0.183	0.329	0.268	0.259	0.234	0.231	0.262	0.389	0.369	0.385	0.330	0.033
Air concentration (µg/m ³) (Appendix D)	0.00005	0.00007	0.00006	0.00006	0.00006	0.00006	0.00006	0.00009	0.00009	0.00009	0.00007	0.00001

Intakes & hazard quotients:

R1-15

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00002	0.00004	0.00006	0.00005	0.00005	0.00003	0.00002	0.00002	0.00001	0.000007	0.000005	0.000005	0.000003	0.000004	0.000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00001	0.00002	0.00003	0.00003	0.00003	0.00002	0.00001	0.00001	0.000008	0.000005	0.000004	0.000005	0.000004	0.000004	0.000002
Total Intake (µg/kg/d)	0.00003	0.00006	0.0001	0.00007	0.00007	0.00005	0.00003	0.00003	0.00002	0.00001	0.000009	0.00001	0.000007	0.000008	0.000004
HQ (unitless)	0.00004	0.00006	0.0001	0.00008	0.00008	0.00006	0.00003	0.00003	0.00002	0.00001	0.00001	0.00001	0.000008	0.000009	0.000004

Life stage: Child (3-13 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00001	0.00002	0.00003	0.00002	0.00002	0.00001	0.000007	0.000007	0.000005	0.000003	0.000002	0.000002	0.000002	0.000002	0.0000009
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000009	0.00001	0.00002	0.00002	0.00002	0.00001	0.000007	0.000007	0.000006	0.000004	0.000003	0.000003	0.000003	0.000003	0.000001
Total Intake (µg/kg/d)	0.00002	0.00003	0.00005	0.00004	0.00004	0.00003	0.00001	0.00001	0.00001	0.000007	0.000005	0.000006	0.000004	0.000005	0.000002
HQ (unitless)	0.00002	0.00003	0.00006	0.00004	0.00004	0.00003	0.00002	0.00002	0.00001	0.000007	0.000006	0.000006	0.000005	0.000005	0.000003

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000002	0.000004	0.000006	0.000005	0.000005	0.000003	0.000002	0.000002	0.000001	0.0000006	0.0000005	0.0000005	0.0000003	0.0000004	0.0000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000004	0.000008	0.00001	0.00001	0.00001	0.000007	0.000004	0.000004	0.000003	0.000002	0.000002	0.000002	0.000001	0.000001	0.0000007
Total Intake (µg/kg/d)	0.000007	0.00001	0.00002	0.00001	0.00001	0.00001	0.000005	0.000005	0.000004	0.000003	0.000002	0.000002	0.000002	0.000002	0.0000009
HQ (unitless)	0.000007	0.00001	0.00002	0.00002	0.00002	0.00001	0.000006	0.000006	0.000005	0.000003	0.000002	0.000002	0.000002	0.000002	0.000001

Life stage: Adult (18-82 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000001	0.000003	0.000005	0.000003	0.000003	0.000002	0.000001	0.000001	0.0000008	0.0000005	0.0000004	0.0000004	0.0000002	0.0000003	0.0000001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000003	0.000005	0.000009	0.000007	0.000007	0.000005	0.000003	0.000003	0.000002	0.000001	0.000001	0.000001	0.000001	0.000001	0.0000005
Total Intake (µg/kg/d)	0.000005	0.000008	0.00001	0.00001	0.00001	0.000007	0.000004	0.000004	0.000003	0.000002	0.000001	0.000002	0.000001	0.000001	0.0000007
HQ (unitless)	0.000005	0.000009	0.00001	0.00001	0.00001	0.000008	0.000004	0.000004	0.000003	0.000002	0.000002	0.000002	0.000001	0.000001	0.0000007

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.000007	0.00001	0.00002	0.00002	0.00002	0.00001	0.000006	0.000006	0.000005	0.000003	0.000002	0.000002	0.000002	0.000002	0.000001
HQ (unitless)	0.000008	0.00001	0.00002	0.00002	0.00002	0.00001	0.000007	0.000006	0.000005	0.000003	0.000002	0.000003	0.000002	0.000002	0.000001

R16-30

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000002	0.000002	0.000005	0.000004	0.000003	0.000002	0.000002	0.000001	0.000001	0.000001	0.0000009	0.0000008	0.000001	0.000001	0.000001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.0000005	0.000001	0.000001	0.000001	0.000003	0.000002	0.000002	0.000002	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001
Total Intake (µg/kg/d)	0.000003	0.000002	0.000006	0.000005	0.000004	0.000005	0.000004	0.000003	0.000003	0.000003	0.000002	0.000002	0.000002	0.000002	0.000002
HQ (unitless)	0.000004	0.000002	0.000006	0.000006	0.000005	0.000006	0.000004	0.000004	0.000003	0.000003	0.000002	0.000002	0.000002	0.000002	0.000003

Life stage: Child (3-13 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000009	0.0000007	0.000002	0.000002	0.000002	0.000001	0.0000008	0.0000007	0.0000006	0.0000005	0.0000004	0.0000004	0.0000005	0.0000004	0.0000005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.0000004	0.0000008	0.000001	0.0000008	0.000002	0.000002	0.000001	0.000001	0.000001	0.0000009	0.0000007	0.0000009	0.0000009	0.0000009
Total Intake (µg/kg/d)	0.000002	0.000001	0.000003	0.000003	0.000002	0.000003	0.000002	0.000002	0.000002	0.000002	0.000001	0.000001	0.000001	0.000001	0.000001
HQ (unitless)	0.000002	0.000001	0.000003	0.000003	0.000003	0.000003	0.000003	0.000002	0.000002	0.000002	0.000001	0.000001	0.000001	0.000001	0.000001

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000002	0.0000002	0.0000005	0.0000004	0.0000003	0.0000002	0.0000002	0.0000001	0.0000001	0.0000001	0.00000009	0.00000008	0.0000001	0.00000009	0.0000001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000005	0.0000002	0.0000004	0.0000005	0.0000004	0.000001	0.0000008	0.0000007	0.0000006	0.0000005	0.0000005	0.0000004	0.0000005	0.0000004	0.0000005
Total Intake (µg/kg/d)	0.0000007	0.0000003	0.0000009	0.0000009	0.0000007	0.000001	0.000001	0.0000009	0.0000007	0.0000006	0.0000005	0.0000005	0.0000006	0.0000005	0.0000006
HQ (unitless)	0.0000008	0.0000004	0.000001	0.000001	0.0000008	0.000001	0.000001	0.0000009	0.0000008	0.0000007	0.0000006	0.0000005	0.0000006	0.0000006	0.0000006

Life stage: Adult (18-82 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0000001	0.0000001	0.0000003	0.0000003	0.0000002	0.0000002	0.0000001	0.0000001	0.00000009	0.00000008	0.00000006	0.00000006	0.00000007	0.00000007	0.00000008
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000004	0.0000001	0.0000003	0.0000004	0.0000003	0.0000008	0.0000006	0.0000005	0.0000004	0.0000004	0.0000003	0.0000003	0.0000003	0.0000003	0.0000003
Total Intake ($\mu\text{g/kg/d}$)	0.0000005	0.0000002	0.0000006	0.0000006	0.0000005	0.0000009	0.0000007	0.0000006	0.0000005	0.0000005	0.0000004	0.0000003	0.0000004	0.0000004	0.0000004
HQ (unitless)	0.0000006	0.0000003	0.0000007	0.0000007	0.0000006	0.000001	0.0000008	0.0000007	0.0000006	0.0000005	0.0000004	0.0000004	0.0000004	0.0000004	0.0000004

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0000008	0.0000004	0.000001	0.000001	0.0000009	0.000001	0.000001	0.0000009	0.0000007	0.0000007	0.0000006	0.0000005	0.0000006	0.0000006	0.0000006
HQ (unitless)	0.0000008	0.0000005	0.000001	0.000001	0.0000009	0.000001	0.000001	0.000001	0.0000008	0.0000007	0.0000006	0.0000005	0.0000006	0.0000006	0.0000006

R31-45

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000003	0.000003	0.000004	0.000004	0.000005	0.000006	0.000005	0.000006	0.000004	0.000005	0.00002	0.000002	0.000002	0.000002	0.000003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000003	0.000003	0.000004	0.000005	0.000005	0.000005	0.000004	0.000005	0.000003	0.000004	0.00001	0.000002	0.000002	0.000002	0.000002
Total Intake ($\mu\text{g/kg/d}$)	0.000006	0.000006	0.000008	0.000009	0.00001	0.00001	0.000009	0.00001	0.000008	0.000009	0.00003	0.000003	0.000004	0.000004	0.000005
HQ (unitless)	0.000006	0.000007	0.000008	0.00001	0.00001	0.00001	0.000009	0.00001	0.000008	0.00001	0.00003	0.000004	0.000004	0.000005	0.000006

Life stage: Child (3-13 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000001	0.000001	0.000002	0.000002	0.000002	0.000003	0.000002	0.000003	0.000002	0.000002	0.000008	0.0000007	0.0000008	0.000001	0.000001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000002	0.000002	0.000003	0.000003	0.000003	0.000004	0.000003	0.000003	0.000002	0.000003	0.000009	0.000001	0.000001	0.000001	0.000002
Total Intake ($\mu\text{g/kg/d}$)	0.000004	0.000004	0.000005	0.000005	0.000006	0.000006	0.000005	0.000006	0.000004	0.000005	0.00002	0.000002	0.000002	0.000002	0.000003
HQ (unitless)	0.000004	0.000004	0.000005	0.000006	0.000006	0.000007	0.000005	0.000007	0.000005	0.000006	0.00002	0.000002	0.000002	0.000003	0.000003

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000003	0.0000003	0.0000004	0.0000004	0.0000005	0.0000005	0.0000004	0.0000006	0.0000004	0.0000005	0.0000002	0.0000002	0.0000002	0.0000002	0.0000003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.000001	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000001	0.000002	0.000005	0.0000006	0.0000007	0.0000008	0.0000009
Total Intake (µg/kg/d)	0.000001	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000007	0.0000008	0.0000009	0.000001	0.000001
HQ (unitless)	0.000002	0.000002	0.000002	0.000002	0.000002	0.000003	0.000002	0.000003	0.000002	0.000002	0.000007	0.0000008	0.0000009	0.000001	0.000001

Life stage: Adult (18-82 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000002	0.0000002	0.0000003	0.0000003	0.0000003	0.0000004	0.0000003	0.0000004	0.0000003	0.0000004	0.0000013	0.0000001	0.0000001	0.0000002	0.0000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000008	0.0000009	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.0000009	0.000001	0.000003	0.0000004	0.0000005	0.0000006	0.0000006
Total Intake (µg/kg/d)	0.000001	0.000001	0.000001	0.000002	0.000002	0.000002	0.000001	0.000002	0.000001	0.000001	0.000005	0.0000005	0.0000006	0.0000007	0.0000008
HQ (unitless)	0.000001	0.000001	0.000001	0.000002	0.000002	0.000002	0.000002	0.000002	0.000001	0.000002	0.000005	0.0000006	0.0000007	0.0000008	0.0000009

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.000001	0.000002	0.000002	0.000002	0.000002	0.000003	0.000002	0.000003	0.000002	0.000002	0.000007	0.0000008	0.0000009	0.000001	0.000001
HQ (unitless)	0.000002	0.000002	0.000002	0.000002	0.000003	0.000003	0.000002	0.000003	0.000002	0.000002	0.000008	0.0000009	0.000001	0.000001	0.000001

R46-60

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000008	0.0000008	0.000001	0.000001	0.000001	0.0000006	0.0000007	0.000003	0.000001	0.000001	0.0000009	0.000001	0.0000005	0.0000005	0.000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.000001	0.000001	0.000001	0.000001	0.0000007	0.0000009	0.000003	0.000001	0.000001	0.0000009	0.000001	0.0000006	0.0000005	0.000002
Total Intake (µg/kg/d)	0.000002	0.000002	0.000002	0.000002	0.000003	0.000001	0.000002	0.000006	0.000002	0.000002	0.000002	0.000002	0.000001	0.000001	0.000003
HQ (unitless)	0.000002	0.000002	0.000002	0.000003	0.000003	0.000001	0.000002	0.000007	0.000002	0.000002	0.000002	0.000002	0.000001	0.000001	0.000004

Life stage: Child (3-13 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion ($I_{\text{ingest\_s}}$) (µg/kg/d)	0.0000004	0.0000004	0.0000005	0.0000005	0.0000006	0.0000003	0.0000003	0.0000002	0.0000005	0.0000004	0.0000004	0.0000005	0.0000002	0.0000002	0.0000007
Inhalation Intake (I_{inhal}) (µg/kg/d)	0.0000007	0.0000007	0.0000009	0.0000009	0.0000001	0.0000005	0.0000007	0.0000002	0.0000008	0.0000007	0.0000006	0.0000008	0.0000005	0.0000004	0.0000001
Total Intake (µg/kg/d)	0.0000001	0.0000001	0.0000001	0.0000001	0.0000002	0.0000008	0.0000001	0.0000004	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000007	0.0000006
HQ (unitless)	0.0000001	0.0000001	0.0000001	0.0000002	0.0000002	0.0000009	0.0000001	0.0000004	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000008	0.0000006

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion ($I_{\text{ingest\_s}}$) (µg/kg/d)	0.00000008	0.00000008	0.00000001	0.00000001	0.00000001	0.00000006	0.00000007	0.00000003	0.00000001	0.00000001	0.00000009	0.00000001	0.00000005	0.00000005	0.00000001
Inhalation Intake (I_{inhal}) (µg/kg/d)	0.00000004	0.00000004	0.00000005	0.00000005	0.00000005	0.00000003	0.00000003	0.00000001	0.00000004	0.00000004	0.00000003	0.00000004	0.00000002	0.00000002	0.00000007
Total Intake (µg/kg/d)	0.00000005	0.00000005	0.00000005	0.00000006	0.00000007	0.00000003	0.00000004	0.00000001	0.00000005	0.00000005	0.00000004	0.00000005	0.00000003	0.00000002	0.00000009
HQ (unitless)	0.00000005	0.00000005	0.00000006	0.00000006	0.00000007	0.00000004	0.00000005	0.00000001	0.00000006	0.00000005	0.00000005	0.00000005	0.00000003	0.00000003	0.00000001

Life stage: Adult (18-82 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion ($I_{\text{ingest\_s}}$) (µg/kg/d)	0.00000006	0.00000006	0.00000007	0.00000008	0.00000009	0.00000004	0.00000005	0.00000002	0.00000008	0.00000007	0.00000006	0.00000007	0.00000004	0.00000003	0.00000001
Inhalation Intake (I_{inhal}) (µg/kg/d)	0.00000003	0.00000003	0.00000003	0.00000003	0.00000004	0.00000002	0.00000002	0.00000007	0.00000003	0.00000003	0.00000002	0.00000003	0.00000002	0.00000001	0.00000005
Total Intake (µg/kg/d)	0.00000003	0.00000003	0.00000004	0.00000004	0.00000005	0.00000002	0.00000003	0.00000001	0.00000004	0.00000003	0.00000003	0.00000004	0.00000002	0.00000002	0.00000006
HQ (unitless)	0.00000004	0.00000004	0.00000004	0.00000005	0.00000005	0.00000003	0.00000003	0.00000001	0.00000004	0.00000004	0.00000003	0.00000004	0.00000002	0.00000002	0.00000007

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lifetime TWA daily intake (I_{lifetime}) (µg/kg/d)	0.00000005	0.00000005	0.00000006	0.00000006	0.00000007	0.00000003	0.00000004	0.00000001	0.00000005	0.00000005	0.00000004	0.00000005	0.00000003	0.00000002	0.00000009
HQ (unitless)	0.00000005	0.00000005	0.00000006	0.00000007	0.00000008	0.00000004	0.00000005	0.00000002	0.00000006	0.00000005	0.00000005	0.00000006	0.00000003	0.00000003	0.00000001

R61-75

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000001	0.000001	0.000001	0.000004	0.0000009	0.0000007	0.0000009	0.000002	0.000002	0.000002	0.000001	0.000003	0.000005	0.000005	0.000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.000002	0.000002	0.000003	0.000001	0.0000009	0.0000009	0.000002	0.000002	0.000002	0.000001	0.000004	0.000005	0.000005	0.000002
Total Intake (µg/kg/d)	0.000003	0.000003	0.000003	0.000007	0.000002	0.000002	0.000002	0.000004	0.000004	0.000004	0.000002	0.000007	0.00001	0.00001	0.000004
HQ (unitless)	0.000003	0.000004	0.000004	0.000008	0.000002	0.000002	0.000002	0.000004	0.000004	0.000004	0.000003	0.000008	0.00001	0.00001	0.000005

Life stage: Child (3-13 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000005	0.0000007	0.0000007	0.000002	0.0000004	0.0000003	0.0000004	0.000001	0.0000009	0.0000008	0.0000005	0.000002	0.000002	0.000002	0.0000009
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.000001	0.000001	0.000002	0.0000009	0.0000006	0.0000006	0.000001	0.000001	0.000001	0.0000009	0.000003	0.000004	0.000003	0.000002
Total Intake (µg/kg/d)	0.000002	0.000002	0.000002	0.000004	0.000001	0.0000009	0.000001	0.000002	0.000002	0.000002	0.000001	0.000004	0.000006	0.000006	0.000002
HQ (unitless)	0.000002	0.000002	0.000002	0.000004	0.000001	0.000001	0.000001	0.000003	0.000002	0.000002	0.000002	0.000005	0.000007	0.000006	0.000003

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000001	0.0000001	0.0000001	0.0000004	0.00000008	0.00000007	0.00000009	0.0000002	0.0000002	0.0000002	0.0000001	0.0000003	0.0000005	0.0000005	0.0000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000005	0.0000007	0.0000007	0.000001	0.0000004	0.0000003	0.0000003	0.0000007	0.0000006	0.0000008	0.0000004	0.000001	0.000002	0.000002	0.0000008
Total Intake (µg/kg/d)	0.0000006	0.0000008	0.0000009	0.000002	0.0000005	0.0000004	0.0000004	0.0000009	0.0000008	0.0000009	0.0000006	0.000002	0.000003	0.000002	0.000001
HQ (unitless)	0.0000007	0.0000009	0.0000009	0.000002	0.0000006	0.0000004	0.0000005	0.000001	0.0000009	0.000001	0.0000006	0.000002	0.000003	0.000002	0.000001

Life stage: Adult (18-82 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00000008	0.0000001	0.0000001	0.0000003	0.00000006	0.00000005	0.00000007	0.0000002	0.0000001	0.0000001	0.00000008	0.0000002	0.0000004	0.0000004	0.0000001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000004	0.0000005	0.0000005	0.0000008	0.0000003	0.0000002	0.0000002	0.0000005	0.0000005	0.0000005	0.0000003	0.000001	0.000001	0.000001	0.0000006
Total Intake (µg/kg/d)	0.0000005	0.0000006	0.0000006	0.000001	0.0000004	0.0000003	0.0000003	0.0000007	0.0000006	0.0000007	0.0000004	0.000001	0.000002	0.000002	0.0000007
HQ (unitless)	0.0000005	0.0000007	0.0000007	0.000001	0.0000004	0.0000003	0.0000003	0.0000007	0.0000006	0.0000007	0.0000004	0.000001	0.000002	0.000002	0.0000008

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.0000007	0.0000009	0.0000009	0.0000002	0.0000005	0.0000004	0.0000004	0.0000001	0.0000009	0.0000001	0.0000006	0.0000002	0.0000003	0.0000002	0.0000001
HQ (unitless)	0.0000007	0.0000009	0.0000001	0.0000002	0.0000006	0.0000004	0.0000005	0.0000001	0.0000001	0.0000001	0.0000007	0.0000002	0.0000003	0.0000003	0.0000001

R76-D

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion ($I_{ingest\ s}$) ($\mu\text{g/kg/d}$)	0.0000001	0.0000008	0.0000002	0.0000003	0.0000002	0.0000004	0.0000005	0.0000006	0.0000003	0.0000004	0.0000008	0.0000007	0.0000007	0.0000008	0.0000002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000002	0.0000001	0.0000002	0.0000003	0.0000002	0.0000005	0.0000006	0.0000006	0.0000003	0.0000003	0.0000006	0.0000004	0.0000004	0.0000004	0.0000008
Total Intake ($\mu\text{g/kg/d}$)	0.0000003	0.0000002	0.0000003	0.0000006	0.0000004	0.0000009	0.0000001	0.0000001	0.0000006	0.0000007	0.0000001	0.0000001	0.0000001	0.0000001	0.0000003
HQ (unitless)	0.0000004	0.0000002	0.0000004	0.0000006	0.0000005	0.0000001	0.0000001	0.0000001	0.0000007	0.0000008	0.0000002	0.0000001	0.0000001	0.0000001	0.0000003

Life stage: Child (3-13 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion ($I_{ingest\ s}$) ($\mu\text{g/kg/d}$)	0.0000007	0.0000004	0.0000008	0.0000001	0.0000001	0.0000002	0.0000002	0.0000003	0.0000002	0.0000002	0.0000004	0.0000003	0.0000003	0.0000003	0.0000009
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000001	0.0000008	0.0000001	0.0000002	0.0000001	0.0000003	0.0000004	0.0000004	0.0000002	0.0000002	0.0000004	0.0000003	0.0000003	0.0000003	0.0000006
Total Intake ($\mu\text{g/kg/d}$)	0.0000002	0.0000001	0.0000002	0.0000003	0.0000002	0.0000005	0.0000007	0.0000007	0.0000003	0.0000004	0.0000008	0.0000006	0.0000006	0.0000006	0.0000001
HQ (unitless)	0.0000002	0.0000001	0.0000002	0.0000004	0.0000003	0.0000006	0.0000007	0.0000008	0.0000004	0.0000005	0.0000009	0.0000006	0.0000007	0.0000007	0.0000002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion ($I_{ingest\ s}$) ($\mu\text{g/kg/d}$)	0.00000001	0.00000008	0.00000002	0.00000003	0.00000002	0.00000004	0.00000005	0.00000006	0.00000003	0.00000004	0.00000008	0.00000007	0.00000007	0.00000007	0.00000002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00000007	0.00000004	0.00000006	0.00000001	0.00000007	0.00000002	0.00000002	0.00000002	0.00000001	0.00000001	0.00000002	0.00000001	0.00000001	0.00000001	0.00000003
Total Intake ($\mu\text{g/kg/d}$)	0.00000009	0.00000005	0.00000007	0.00000001	0.00000001	0.00000002	0.00000003	0.00000003	0.00000001	0.00000002	0.00000003	0.00000002	0.00000002	0.00000002	0.00000005
HQ (unitless)	0.0000001	0.00000005	0.00000008	0.00000001	0.00000001	0.00000002	0.00000003	0.00000003	0.00000001	0.00000002	0.00000003	0.00000002	0.00000002	0.00000002	0.00000005

Life stage: Adult (18-82 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0000001	0.00000005	0.00000001	0.00000002	0.00000002	0.000000003	0.000000004	0.000000004	0.00000002	0.00000003	0.00000006	0.0000005	0.0000005	0.0000005	0.000001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00000005	0.00000003	0.00000004	0.00000007	0.00000005	0.00000001	0.00000002	0.00000002	0.00000007	0.00000009	0.0000002	0.0000009	0.000001	0.000001	0.000002
Total Intake ($\mu\text{g/kg/d}$)	0.0000006	0.0000003	0.00000005	0.00000009	0.00000007	0.00000002	0.00000002	0.00000002	0.00000009	0.0000001	0.0000002	0.000001	0.000001	0.000002	0.000003
HQ (unitless)	0.0000007	0.0000004	0.00000006	0.0000001	0.00000008	0.00000002	0.00000002	0.00000002	0.0000001	0.0000001	0.0000002	0.000002	0.000002	0.000002	0.000004

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0000009	0.00000005	0.00000008	0.0000001	0.0000001	0.00000002	0.00000003	0.00000003	0.0000001	0.0000002	0.0000003	0.000002	0.000002	0.000002	0.000006
HQ (unitless)	0.000001	0.00000005	0.00000009	0.0000002	0.0000001	0.00000003	0.00000003	0.00000003	0.0000002	0.0000002	0.0000004	0.000003	0.000003	0.000003	0.000006

E-P

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00007	0.0001	0.0001	0.00009	0.00009	0.00008	0.0001	0.0001	0.0001	0.0001	0.0001	0.00001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00003	0.00005	0.00005	0.00005	0.00004	0.00004	0.00004	0.00006	0.00006	0.00006	0.00005	0.000009
Total Intake ($\mu\text{g/kg/d}$)	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.00002
HQ (unitless)	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.00002

Life stage: Child (3-13 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00003	0.00005	0.00004	0.00004	0.00004	0.00004	0.00004	0.00006	0.00006	0.00006	0.00005	0.000006
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00002	0.00004	0.00003	0.00003	0.00003	0.00003	0.00003	0.00005	0.00004	0.00004	0.00004	0.000006
Total Intake ($\mu\text{g/kg/d}$)	0.00005	0.00009	0.00008	0.00008	0.00007	0.00007	0.00008	0.0001	0.0001	0.0001	0.00009	0.00001
HQ (unitless)	0.00006	0.0001	0.00009	0.00008	0.00008	0.00007	0.00008	0.0001	0.0001	0.0001	0.0001	0.00001

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000007	0.00001	0.00001	0.000009	0.000008	0.000008	0.000009	0.00001	0.00001	0.00001	0.00001	0.000001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00001	0.00002	0.00002	0.00002	0.00002	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.000003
Total Intake (µg/kg/d)	0.00002	0.00003	0.00003	0.00003	0.00002	0.00002	0.00003	0.00004	0.00004	0.00004	0.00003	0.000004
HQ (unitless)	0.00002	0.00004	0.00003	0.00003	0.00003	0.00003	0.00003	0.00004	0.00004	0.00004	0.00003	0.000005

Life stage: Adult (18-82 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000005	0.000008	0.000007	0.000007	0.000006	0.000006	0.000007	0.00001	0.000009	0.00001	0.000008	0.0000008
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000009	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00001	0.000002
Total Intake (µg/kg/d)	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00003	0.00003	0.00003	0.00002	0.000003
HQ (unitless)	0.00002	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00003	0.00003	0.00003	0.00002	0.000003

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.00002	0.00004	0.00003	0.00003	0.00003	0.00003	0.00003	0.00004	0.00004	0.00004	0.00004	0.000005
HQ (unitless)	0.00002	0.00004	0.00003	0.00003	0.00003	0.00003	0.00003	0.00005	0.00005	0.00005	0.00004	0.000005

F.3.2 Scenario 2

Adjusted TDI

	All receptors
Background adjusted tolerable daily intake (TDI _{adj}) (µg/kg/d)	0.91

Soil & air concentrations:

R1-15

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil concentration (µg/g) (Appendix C)	0.11	0.161	0.195	0.321	0.135	0.075	0.051	0.054	0.044	0.031	0.027	0.027	0.02	0.021	0.012
Air concentration (µg/m ³) (Appendix D)	0.0001	0.0001	0.0001	0.0001	0.00008	0.00005	0.00004	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00003	0.00002

R16-30

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil concentration (µg/g) (Appendix C)	0.009	0.006	0.016	0.022	0.018	0.015	0.012	0.011	0.009	0.008	0.008	0.007	0.008	0.008	0.009
Air concentration (µg/m ³) (Appendix D)	0.00001	0.000006	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00001	0.00001	0.00002	0.00001	0.00001	0.00001	0.00001

R31-45

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil concentration (µg/g) (Appendix C)	0.017	0.018	0.020	0.024	0.027	0.029	0.025	0.029	0.024	0.027	0.060	0.011	0.013	0.015	0.018
Air concentration (µg/m ³) (Appendix D)	0.00002	0.00002	0.00002	0.00003	0.00003	0.00003	0.00002	0.00003	0.00002	0.00003	0.00004	0.00001	0.00002	0.00002	0.00002

R46-60

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil concentration (µg/g) (Appendix C)	0.006	0.007	0.008	0.009	0.010	0.005	0.006	0.019	0.007	0.007	0.007	0.009	0.004	0.004	0.012
Air concentration (µg/m ³) (Appendix D)	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00001	0.00001	0.00001	0.00001	0.000007	0.000006	0.00002

R61-75

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil concentration (µg/g) (Appendix C)	0.008	0.012	0.013	0.017	0.007	0.006	0.006	0.013	0.013	0.011	0.007	0.019	0.027	0.027	0.015
Air concentration (µg/m ³) (Appendix D)	0.00001	0.00002	0.00002	0.00002	0.00001	0.000009	0.000008	0.00001	0.00002	0.00002	0.00001	0.00003	0.00003	0.00002	0.00002

R76-D

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil concentration (µg/g) (Appendix C)	0.013	0.006	0.011	0.018	0.012	0.003	0.004	0.005	0.019	0.02	0.033	0.126	0.127	0.150	0.205
Air concentration (µg/m ³) (Appendix D)	0.00002	0.00001	0.00001	0.00002	0.00002	0.000008	0.000007	0.00001	0.00002	0.00002	0.00003	0.00007	0.00007	0.00008	0.00009

E-P

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil concentration (µg/g) (Appendix C)	0.286	0.528	0.855	1.326	1.895	0.934	0.431	1.112	0.302	0.329	0.369	0.046
Air concentration (µg/m ³) (Appendix D)	0.0001	0.0002	0.0002	0.0003	0.0003	0.0002	0.0001	0.0002	0.0002	0.0002	0.0002	0.00004

Intakes & hazard quotients:

R1-15

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00004	0.00006	0.00007	0.0001	0.00005	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.000007	0.000008	0.000004
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00007	0.00009	0.00007	0.00009	0.00006	0.00003	0.00003	0.00004	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001
Total Intake (µg/kg/d)	0.0001	0.0001	0.0001	0.0002	0.0001	0.00006	0.00004	0.00006	0.00004	0.00003	0.00003	0.00003	0.00002	0.00003	0.00002
HQ (unitless)	0.0001	0.0002	0.0002	0.0002	0.0001	0.00007	0.00005	0.00006	0.00005	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002

Life stage: Child (3-13 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00002	0.00003	0.00003	0.00005	0.00002	0.00001	0.000008	0.000009	0.000007	0.000005	0.000005	0.000005	0.000003	0.000003	0.000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00005	0.00006	0.00005	0.00006	0.00004	0.00002	0.00002	0.00003	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
Total Intake (µg/kg/d)	0.00007	0.00009	0.00008	0.0001	0.00006	0.00004	0.00003	0.00004	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001
HQ (unitless)	0.00008	0.0001	0.00009	0.0001	0.00007	0.00004	0.00003	0.00004	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000004	0.000006	0.000007	0.00001	0.000005	0.000003	0.000002	0.000002	0.000002	0.000001	0.000001	0.000001	0.0000007	0.0000007	0.0000004
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00003	0.00003	0.00003	0.00003	0.00002	0.00001	0.00001	0.00001	0.00001	0.000007	0.000007	0.000006	0.000006	0.000007	0.000005
Total Intake (µg/kg/d)	0.00003	0.00004	0.00003	0.00004	0.00003	0.00002	0.00001	0.00002	0.00001	0.000008	0.000008	0.000007	0.000007	0.000008	0.000006
HQ (unitless)	0.00003	0.00004	0.00004	0.00005	0.00003	0.00002	0.00001	0.00002	0.00001	0.000009	0.000009	0.000008	0.000008	0.000008	0.000006

Life stage: Adult (18-82 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000003	0.000004	0.000005	0.000008	0.000003	0.000002	0.000001	0.000001	0.000001	0.0000008	0.0000007	0.0000007	0.0000005	0.0000005	0.0000003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00002	0.00002	0.00002	0.00002	0.00001	0.000009	0.000007	0.00001	0.000007	0.000005	0.000005	0.000005	0.000004	0.000005	0.000004
Total Intake (µg/kg/d)	0.00002	0.00003	0.00002	0.00003	0.00002	0.00001	0.000008	0.00001	0.000008	0.000006	0.000006	0.000005	0.000005	0.000005	0.000004
HQ (unitless)	0.00002	0.00003	0.00003	0.00003	0.00002	0.00001	0.000009	0.00001	0.000009	0.000006	0.000006	0.000006	0.000005	0.000006	0.000004

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.00003	0.00004	0.00004	0.00005	0.00003	0.00002	0.00001	0.00002	0.00001	0.000008	0.000008	0.000007	0.000007	0.000007	0.000005
HQ (unitless)	0.00003	0.00004	0.00004	0.00005	0.00003	0.00002	0.00001	0.00002	0.00001	0.000009	0.000009	0.000008	0.000008	0.000008	0.000006

R16-30

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000003	0.000002	0.000006	0.000008	0.000007	0.000005	0.000004	0.000004	0.000003	0.000003	0.000003	0.000003	0.000003	0.000003	0.000003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00001	0.000004	0.000007	0.000009	0.000008	0.000013	0.00001	0.00001	0.00001	0.00001	0.00001	0.000009	0.000009	0.00001	0.000009
Total Intake (µg/kg/d)	0.00001	0.000006	0.00001	0.00002	0.00001	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
HQ (unitless)	0.00001	0.000007	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00002	0.00001	0.00001	0.00001	0.00001

Life stage: Child (3-13 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000001	0.000001	0.000003	0.000004	0.000003	0.000002	0.000002	0.000002	0.000002	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000007	0.000003	0.000005	0.000006	0.000006	0.00001	0.000008	0.000009	0.000007	0.000007	0.000008	0.000007	0.000006	0.000007	0.000006
Total Intake (µg/kg/d)	0.000008	0.000004	0.000008	0.00001	0.000009	0.00001	0.00001	0.00001	0.000009	0.000008	0.000009	0.000008	0.000008	0.000009	0.000008
HQ (unitless)	0.000009	0.000004	0.000008	0.00001	0.000009	0.00001	0.00001	0.00001	0.00001	0.000009	0.00001	0.000008	0.000008	0.000009	0.000008

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000003	0.0000002	0.0000006	0.0000008	0.0000006	0.0000005	0.0000004	0.0000004	0.0000003	0.0000003	0.0000003	0.0000003	0.0000003	0.0000003	0.0000003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000004	0.000002	0.000003	0.000003	0.000003	0.000005	0.000004	0.000005	0.000004	0.000004	0.000004	0.000003	0.000003	0.000004	0.000003
Total Intake (µg/kg/d)	0.000004	0.000002	0.000003	0.000004	0.000004	0.000005	0.000005	0.000005	0.000004	0.000004	0.000005	0.000004	0.000004	0.000004	0.000003
HQ (unitless)	0.000004	0.000002	0.000003	0.000005	0.000004	0.000006	0.000005	0.000005	0.000004	0.000004	0.000005	0.000004	0.000004	0.000004	0.000004

Life stage: Adult (18-82 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000002	0.0000001	0.0000004	0.0000006	0.0000005	0.0000004	0.0000003	0.0000003	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000003	0.0000001	0.0000002	0.0000002	0.0000002	0.0000004	0.0000003	0.0000003	0.0000003	0.0000003	0.0000003	0.0000003	0.0000002	0.0000002	0.0000003
Total Intake (µg/kg/d)	0.0000003	0.0000001	0.0000002	0.0000003	0.0000003	0.0000004	0.0000003	0.0000004	0.0000003	0.0000003	0.0000003	0.0000003	0.0000003	0.0000003	0.0000002
HQ (unitless)	0.0000003	0.0000001	0.0000002	0.0000003	0.0000003	0.0000004	0.0000004	0.0000004	0.0000003	0.0000003	0.0000004	0.0000003	0.0000003	0.0000003	0.0000003

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.0000004	0.0000002	0.0000003	0.0000004	0.0000004	0.0000005	0.0000004	0.0000005	0.0000004	0.0000004	0.0000004	0.0000004	0.0000004	0.0000004	0.0000003
HQ (unitless)	0.0000004	0.0000002	0.0000004	0.0000005	0.0000004	0.0000006	0.0000005	0.0000005	0.0000004	0.0000004	0.0000005	0.0000004	0.0000004	0.0000004	0.0000004

R31-45

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000006	0.0000006	0.0000007	0.0000009	0.0000001	0.0000001	0.0000009	0.0000001	0.0000009	0.0000001	0.0000002	0.0000004	0.0000005	0.0000005	0.0000006
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000001	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000003	0.0000001	0.0000001	0.0000001	0.0000001
Total Intake (µg/kg/d)	0.0000002	0.0000002	0.0000002	0.0000003	0.0000003	0.0000003	0.0000003	0.0000003	0.0000003	0.0000003	0.0000005	0.0000001	0.0000002	0.0000002	0.0000002
HQ (unitless)	0.0000002	0.0000002	0.0000003	0.0000003	0.0000003	0.0000003	0.0000003	0.0000003	0.0000003	0.0000003	0.0000005	0.0000002	0.0000002	0.0000002	0.0000002

Life stage: Child (3-13 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000003	0.0000003	0.0000003	0.0000004	0.0000004	0.0000005	0.0000004	0.0000005	0.0000004	0.0000005	0.0000001	0.0000002	0.0000002	0.0000002	0.0000003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000002	0.0000007	0.0000008	0.0000009	0.0000001
Total Intake (µg/kg/d)	0.0000001	0.0000001	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000003	0.0000009	0.0000001	0.0000001	0.0000001
HQ (unitless)	0.0000001	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000003	0.0000001	0.0000001	0.0000001	0.0000001

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0000006	0.0000006	0.0000007	0.0000009	0.0000009	0.000001	0.0000009	0.000001	0.0000009	0.000001	0.000002	0.0000004	0.0000005	0.0000005	0.0000006
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000005	0.000006	0.000006	0.000007	0.000007	0.000008	0.000007	0.000007	0.000006	0.000007	0.000010	0.000004	0.000004	0.000005	0.000005
Total Intake ($\mu\text{g/kg/d}$)	0.000006	0.000006	0.000007	0.000008	0.000008	0.000009	0.000008	0.000008	0.000007	0.000008	0.00001	0.000004	0.000005	0.000005	0.000006
HQ (unitless)	0.000007	0.000007	0.000007	0.000008	0.000009	0.00001	0.000008	0.000009	0.000008	0.000009	0.00001	0.000004	0.000005	0.000006	0.000007

Life stage: Adult (18-82 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0000004	0.0000005	0.0000005	0.0000006	0.0000007	0.0000007	0.0000006	0.0000007	0.0000006	0.0000007	0.000002	0.0000003	0.0000003	0.0000004	0.0000005
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000004	0.000004	0.000004	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000007	0.000003	0.000003	0.000003	0.000004
Total Intake ($\mu\text{g/kg/d}$)	0.000004	0.000004	0.000005	0.000005	0.000006	0.000006	0.000005	0.000006	0.000005	0.000006	0.000009	0.000003	0.000003	0.000004	0.000004
HQ (unitless)	0.000005	0.000005	0.000005	0.000006	0.000006	0.000007	0.000006	0.000006	0.000006	0.000006	0.00001	0.000003	0.000004	0.000004	0.000005

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.000006	0.000006	0.000007	0.000008	0.000008	0.000009	0.000008	0.000008	0.000007	0.000008	0.00001	0.000004	0.000005	0.000005	0.000006
HQ (unitless)	0.000007	0.000007	0.000007	0.000008	0.000009	0.00001	0.000008	0.000009	0.000008	0.000009	0.00001	0.000004	0.000005	0.000006	0.000007

R46-60

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000002	0.000002	0.000003	0.000003	0.000004	0.000002	0.000002	0.000007	0.000002	0.000003	0.000002	0.000003	0.000001	0.000001	0.000004
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000008	0.000009	0.000009	0.000009	0.000009	0.000007	0.000008	0.00002	0.000007	0.000009	0.000008	0.00001	0.000005	0.000005	0.00001
Total Intake ($\mu\text{g/kg/d}$)	0.00001	0.00001	0.00001	0.00001	0.00001	0.000009	0.00001	0.00002	0.000009	0.00001	0.00001	0.00001	0.000007	0.000006	0.00002
HQ (unitless)	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00001	0.00001	0.00001	0.00001	0.000007	0.000007	0.00002

Life stage: Child (3-13 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000001	0.000001	0.000001	0.000001	0.000002	0.0000008	0.000001	0.000003	0.000001	0.000001	0.000001	0.000001	0.0000007	0.0000006	0.000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000006	0.000006	0.000006	0.000006	0.000006	0.000005	0.000006	0.00001	0.000005	0.000006	0.000006	0.000007	0.000004	0.000003	0.000009
Total Intake (µg/kg/d)	0.000007	0.000007	0.000008	0.000008	0.000008	0.000006	0.000007	0.00001	0.000006	0.000007	0.000007	0.000008	0.000004	0.000004	0.00001
HQ (unitless)	0.000007	0.000008	0.000008	0.000008	0.000009	0.000007	0.000007	0.00002	0.000007	0.000008	0.000008	0.000009	0.000005	0.000004	0.00001

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000002	0.0000002	0.0000003	0.0000003	0.0000003	0.0000002	0.0000002	0.0000007	0.0000002	0.0000002	0.0000002	0.0000003	0.0000001	0.0000001	0.0000004
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000003	0.000003	0.000003	0.000003	0.000003	0.000003	0.000003	0.000006	0.000003	0.000003	0.000003	0.000004	0.000002	0.000002	0.000005
Total Intake (µg/kg/d)	0.000003	0.000004	0.000003	0.000004	0.000004	0.000003	0.000003	0.000006	0.000003	0.000003	0.000003	0.000004	0.000002	0.000002	0.000005
HQ (unitless)	0.000003	0.000004	0.000004	0.000004	0.000004	0.000003	0.000003	0.000007	0.000003	0.000004	0.000004	0.000004	0.000002	0.000002	0.000006

Life stage: Adult (18-82 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000002	0.0000002	0.0000002	0.0000002	0.0000003	0.0000001	0.0000002	0.0000005	0.0000002	0.0000002	0.0000002	0.0000002	0.0000001	0.00000009	0.0000003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000004	0.000002	0.000002	0.000002	0.000003	0.000001	0.000001	0.000004
Total Intake (µg/kg/d)	0.000002	0.000003	0.000002	0.000003	0.000003	0.000002	0.000002	0.000005	0.000002	0.000002	0.000002	0.000003	0.000001	0.000001	0.000004
HQ (unitless)	0.000002	0.000003	0.000003	0.000003	0.000003	0.000002	0.000002	0.000005	0.000002	0.000003	0.000003	0.000003	0.000002	0.000001	0.000004

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.000003	0.000003	0.000003	0.000003	0.000004	0.000003	0.000003	0.000006	0.000003	0.000003	0.000003	0.000004	0.000002	0.000002	0.000005
HQ (unitless)	0.000003	0.000004	0.000004	0.000004	0.000004	0.000003	0.000003	0.000007	0.000003	0.000004	0.000003	0.000004	0.000002	0.000002	0.000006

R61-75

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000003	0.000005	0.000005	0.000006	0.000002	0.000002	0.000002	0.000005	0.000005	0.000004	0.000003	0.000007	0.000001	0.000001	0.000005
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000009	0.000001	0.000001	0.000001	0.000008	0.000007	0.000006	0.000001	0.000001	0.000001	0.000001	0.000002	0.000002	0.000002	0.000002
Total Intake ($\mu\text{g/kg/d}$)	0.000001	0.000002	0.000002	0.000002	0.000001	0.000009	0.000008	0.000001	0.000002	0.000002	0.000001	0.000003	0.000003	0.000003	0.000002
HQ (unitless)	0.000001	0.000002	0.000002	0.000002	0.000001	0.000001	0.000009	0.000002	0.000002	0.000002	0.000001	0.000003	0.000003	0.000003	0.000002

Life stage: Child (3-13 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000001	0.000002	0.000002	0.000003	0.000001	0.0000009	0.0000009	0.000002	0.000002	0.000002	0.000001	0.000003	0.000005	0.000004	0.000002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000006	0.000001	0.000001	0.000001	0.000006	0.000005	0.000004	0.000007	0.000008	0.000008	0.000007	0.000001	0.000001	0.000001	0.000001
Total Intake ($\mu\text{g/kg/d}$)	0.000008	0.000001	0.000001	0.000001	0.000007	0.000006	0.000005	0.000009	0.000001	0.000001	0.000008	0.000002	0.000002	0.000002	0.000001
HQ (unitless)	0.000008	0.000001	0.000001	0.000001	0.000008	0.000006	0.000005	0.000001	0.000001	0.000001	0.000009	0.000002	0.000002	0.000002	0.000002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0000003	0.0000004	0.0000005	0.0000006	0.0000002	0.0000002	0.0000002	0.0000005	0.0000005	0.0000004	0.0000003	0.0000007	0.0000001	0.0000001	0.0000005
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000003	0.000005	0.000006	0.000005	0.000003	0.000003	0.000002	0.000004	0.000004	0.000004	0.000004	0.000007	0.000007	0.000006	0.000006
Total Intake ($\mu\text{g/kg/d}$)	0.000004	0.000006	0.000006	0.000006	0.000003	0.000003	0.000002	0.000004	0.000005	0.000005	0.000004	0.000008	0.000008	0.000007	0.000007
HQ (unitless)	0.000004	0.000006	0.000007	0.000006	0.000004	0.000003	0.000003	0.000005	0.000005	0.000005	0.000004	0.000008	0.000009	0.000008	0.000007

Life stage: Adult (18-82 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0000002	0.0000003	0.0000003	0.0000004	0.0000002	0.0000001	0.0000001	0.0000003	0.0000003	0.0000003	0.0000002	0.0000005	0.0000007	0.0000007	0.0000004
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000002	0.000004	0.000004	0.000004	0.000002	0.000002	0.000002	0.000003	0.000003	0.000003	0.000003	0.000005	0.000005	0.000004	0.000004
Total Intake ($\mu\text{g/kg/d}$)	0.000003	0.000004	0.000004	0.000004	0.000002	0.000002	0.000002	0.000003	0.000003	0.000003	0.000003	0.000005	0.000006	0.000005	0.000005
HQ (unitless)	0.000003	0.000004	0.000005	0.000004	0.000003	0.000002	0.000002	0.000003	0.000004	0.000004	0.000003	0.000006	0.000007	0.000006	0.000005

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.000003	0.000005	0.000006	0.000006	0.000003	0.000003	0.000002	0.000004	0.000004	0.000004	0.000004	0.000008	0.000008	0.000007	0.000007
HQ (unitless)	0.000004	0.000006	0.000006	0.000006	0.000004	0.000003	0.000003	0.000005	0.000005	0.000005	0.000004	0.000008	0.000009	0.000008	0.000007

R76-D

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion ($I_{ingest\ s}$) ($\mu\text{g/kg/d}$)	0.000005	0.000002	0.000004	0.000006	0.000004	0.000001	0.000001	0.000002	0.000007	0.000007	0.000001	0.000005	0.000005	0.000005	0.000007
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000001	0.000008	0.000009	0.000001	0.000001	0.000006	0.000005	0.000009	0.000002	0.000001	0.000002	0.000005	0.000005	0.000006	0.000007
Total Intake ($\mu\text{g/kg/d}$)	0.000002	0.000001	0.000001	0.000002	0.000002	0.000007	0.000007	0.000001	0.000002	0.000002	0.000003	0.000001	0.000001	0.000001	0.000001
HQ (unitless)	0.000002	0.000001	0.000001	0.000002	0.000002	0.000007	0.000007	0.000001	0.000003	0.000002	0.000004	0.000001	0.000001	0.000001	0.000002

Life stage: Child (3-13 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion ($I_{ingest\ s}$) ($\mu\text{g/kg/d}$)	0.000002	0.000001	0.000002	0.000003	0.000002	0.0000006	0.0000006	0.0000009	0.000003	0.000003	0.000005	0.000002	0.000002	0.000003	0.000003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000001	0.000006	0.000006	0.000001	0.000008	0.000004	0.000004	0.000006	0.000001	0.000001	0.000001	0.000004	0.000004	0.000004	0.000005
Total Intake ($\mu\text{g/kg/d}$)	0.000001	0.000007	0.000008	0.000001	0.000001	0.000005	0.000004	0.000007	0.000002	0.000001	0.000002	0.000006	0.000006	0.000006	0.000008
HQ (unitless)	0.000001	0.000007	0.000009	0.000001	0.000001	0.000005	0.000005	0.000008	0.000002	0.000002	0.000002	0.000006	0.000006	0.000007	0.000009

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion ($I_{ingest\ s}$) ($\mu\text{g/kg/d}$)	0.0000005	0.0000002	0.0000004	0.0000006	0.0000004	0.0000001	0.0000001	0.0000002	0.0000007	0.0000007	0.0000001	0.0000004	0.0000005	0.0000005	0.0000007
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000005	0.000003	0.000003	0.000005	0.000004	0.000002	0.000002	0.000003	0.000007	0.000006	0.000008	0.000002	0.000002	0.000002	0.000002
Total Intake ($\mu\text{g/kg/d}$)	0.000006	0.000003	0.000004	0.000006	0.000005	0.000002	0.000002	0.000004	0.000007	0.000006	0.000009	0.000002	0.000002	0.000003	0.000003
HQ (unitless)	0.000006	0.000003	0.000004	0.000007	0.000005	0.000002	0.000002	0.000004	0.000008	0.000007	0.000001	0.000003	0.000003	0.000003	0.000003

Life stage: Adult (18-82 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.0000003	0.0000002	0.0000003	0.0000005	0.0000003	0.00000009	0.0000001	0.0000001	0.0000005	0.0000005	0.0000008	0.000003	0.000003	0.000004	0.000005
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000004	0.000002	0.000002	0.000004	0.000003	0.000001	0.000001	0.000002	0.000005	0.000004	0.000005	0.00001	0.00001	0.00001	0.00002
Total Intake ($\mu\text{g/kg/d}$)	0.000004	0.000002	0.000003	0.000004	0.000003	0.000002	0.000001	0.000003	0.000005	0.000004	0.000006	0.00002	0.00002	0.00002	0.00002
HQ (unitless)	0.000004	0.000002	0.000003	0.000005	0.000004	0.000002	0.000002	0.000003	0.000006	0.000005	0.000007	0.00002	0.00002	0.00002	0.00002

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.000006	0.000003	0.000004	0.000006	0.000004	0.000002	0.000002	0.000003	0.000007	0.000006	0.000009	0.00002	0.00002	0.00003	0.00003
HQ (unitless)	0.000006	0.000003	0.000004	0.000007	0.000005	0.000002	0.000002	0.000004	0.000008	0.000007	0.000010	0.00003	0.00003	0.00003	0.00004

E-P

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.0001	0.0002	0.0003	0.0005	0.0007	0.0003	0.0002	0.0004	0.0001	0.0001	0.0001	0.00002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00008	0.0001	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0001	0.0001	0.0001	0.00003
Total Intake ($\mu\text{g/kg/d}$)	0.0002	0.0003	0.0005	0.0007	0.0009	0.0005	0.0003	0.0006	0.0002	0.0003	0.0003	0.00004
HQ (unitless)	0.0002	0.0003	0.0005	0.0007	0.001	0.0005	0.0003	0.0006	0.0003	0.0003	0.0003	0.00005

Life stage: Child (3-13 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.00005	0.00009	0.0001	0.0002	0.0003	0.0002	0.00007	0.0002	0.00005	0.00005	0.00006	0.000008
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00006	0.00008	0.0001	0.0001	0.0002	0.0001	0.00007	0.0001	0.0001	0.0001	0.0001	0.00002
Total Intake ($\mu\text{g/kg/d}$)	0.0001	0.0002	0.0003	0.0004	0.0005	0.0003	0.0001	0.0003	0.0001	0.0002	0.0002	0.00003
HQ (unitless)	0.0001	0.0002	0.0003	0.0004	0.0005	0.0003	0.0002	0.0003	0.0002	0.0002	0.0002	0.00003

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00001	0.00002	0.00003	0.00005	0.00007	0.00003	0.00002	0.00004	0.00001	0.00001	0.00001	0.000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00003	0.00004	0.00006	0.00007	0.00009	0.00006	0.00004	0.00006	0.00005	0.00005	0.00005	0.00001
Total Intake (µg/kg/d)	0.00004	0.00006	0.00009	0.0001	0.0002	0.00009	0.00005	0.0001	0.00006	0.00006	0.00006	0.00001
HQ (unitless)	0.00004	0.00007	0.0001	0.0001	0.0002	0.0001	0.00006	0.0001	0.00007	0.00007	0.00007	0.00001

Life stage: Adult (18-82 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000007	0.00001	0.00002	0.00003	0.00005	0.00002	0.00001	0.00003	0.000008	0.000008	0.000009	0.000001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00002	0.00003	0.00004	0.00005	0.00006	0.00004	0.00003	0.00005	0.00004	0.00004	0.00004	0.000007
Total Intake (µg/kg/d)	0.00003	0.00004	0.00006	0.00009	0.0001	0.00007	0.00004	0.00007	0.00004	0.00005	0.00005	0.000008
HQ (unitless)	0.00003	0.00005	0.00007	0.00009	0.0001	0.00007	0.00004	0.00008	0.00005	0.00005	0.00005	0.000009

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.00004	0.00007	0.0001	0.0001	0.0002	0.0001	0.00006	0.0001	0.00006	0.00007	0.00007	0.00001
HQ (unitless)	0.00005	0.00008	0.0001	0.0002	0.0002	0.0001	0.00006	0.0001	0.00007	0.00007	0.00007	0.00001

F.4 Cadmium (Cd)

Equations:

Total Intake (I_{total_as})	=	$I_{ingest\_s} + I_{inhal}$
Average lifetime daily exposure for 82 year life span	=	$(I_{total(0.5-3)} \times 365 \times At_x) + (I_{total(3-13)} \times 365 \times At_x) + (I_{total(13-18)} \times 365 \times At_x) + (I_{total(18-82)} \times 365 \times At_x) / AT_{lifetime}$
HQ	=	$I_{lifetime} / TDI_{adj}$

F.4.1 Scenario 1

Adjusted TDI

	All receptors
Background adjusted tolerable daily intake (TDI_{adj}) ($\mu\text{g}/\text{kg}/\text{d}$)	0.053

Soil & air concentrations:

R1-15

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil concentration ($\mu\text{g}/\text{g}$) (Appendix C)	0.0034	0.0067	0.0134	0.0092	0.01	0.0066	0.0027	0.0026	0.0019	0.001	0.0007	0.0008	0.0005	0.0006	0.0003
Air concentration ($\mu\text{g}/\text{m}^3$) (Appendix D)	0.0000008	0.000001	0.000003	0.000002	0.000002	0.000001	0.0000005	0.0000005	0.0000004	0.0000002	0.0000002	0.0000002	0.0000001	0.0000002	0.00000007

R16-30

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil concentration ($\mu\text{g}/\text{g}$) (Appendix C)	0.0003	0.0002	0.0007	0.0006	0.0005	0.0003	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001
Air concentration ($\mu\text{g}/\text{m}^3$) (Appendix D)	0.00000006	0.00000003	0.00000006	0.00000007	0.00000006	0.00000001	0.00000007	0.00000006	0.00000005	0.00000005	0.00000004	0.00000003	0.00000004	0.00000004	0.00000004

R31-45

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil concentration ($\mu\text{g}/\text{g}$) (Appendix C)	0.0004	0.0004	0.0005	0.0006	0.0007	0.0008	0.0006	0.0008	0.0006	0.0007	0.0029	0.0002	0.0002	0.0003	0.0004
Air concentration ($\mu\text{g}/\text{m}^3$) (Appendix D)	0.0000001	0.0000001	0.0000001	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000001	0.0000002	0.0000006	0.00000005	0.00000006	0.00000007	0.00000008

R46-60

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil concentration (µg/g) (Appendix C)	0.0001	0.0001	0.0001	0.0002	0.0002	0.00008	0.0001	0.0005	0.0002	0.0001	0.0001	0.0001	0.00007	0.00006	0.0002
Air concentration (µg/m ³) (Appendix D)	0.00000003	0.00000003	0.00000004	0.00000004	0.00000005	0.00000002	0.00000003	0.0000001	0.00000004	0.00000004	0.00000003	0.00000003	0.00000002	0.00000002	0.00000006

R61-75

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil concentration (µg/g) (Appendix C)	0.0002	0.0002	0.0002	0.0006	0.0001	0.0001	0.0001	0.0003	0.0003	0.0002	0.0002	0.0005	0.0008	0.0008	0.0003
Air concentration (µg/m ³) (Appendix D)	0.00000005	0.00000006	0.00000006	0.0000001	0.00000004	0.00000003	0.00000003	0.00000007	0.00000006	0.00000007	0.00000004	0.0000001	0.0000002	0.0000002	0.00000008

R76-D

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil concentration (µg/g) (Appendix C)	0.0002	0.0001	0.0002	0.0005	0.0003	0.00006	0.00008	0.00008	0.0005	0.0006	0.0013	0.0162	0.0166	0.017	0.0477
Air concentration (µg/m ³) (Appendix D)	0.00000006	0.00000003	0.00000005	0.0000001	0.00000008	0.00000002	0.00000002	0.00000002	0.0000001	0.0000001	0.0000003	0.000003	0.000003	0.000003	0.000007

E-P

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil concentration (µg/g) (Appendix C)	0.0136	0.0261	0.0197	0.0183	0.0170	0.0172	0.0214	0.0308	0.0284	0.0298	0.0240	0.0019
Air concentration (µg/m ³) (Appendix D)	0.000002	0.000004	0.000003	0.000003	0.000003	0.000003	0.000004	0.000005	0.000005	0.000005	0.000004	0.0000004

Intakes & hazard quotients:

R1-15

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00003	0.00006	0.0001	0.00008	0.00009	0.00006	0.00002	0.00002	0.00002	0.000009	0.000007	0.000007	0.000004	0.000005	0.000003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000005	0.000001	0.000002	0.000001	0.000001	0.0000009	0.0000004	0.0000004	0.0000003	0.0000001	0.0000001	0.0000001	0.00000009	0.0000001	0.00000005
Total Intake (µg/kg/d)	0.00003	0.00006	0.0001	0.00008	0.00009	0.00006	0.00003	0.00002	0.00002	0.000009	0.000007	0.000007	0.000004	0.000005	0.000003
HQ (unitless)	0.0006	0.001	0.002	0.002	0.002	0.001	0.0005	0.0005	0.0003	0.0002	0.0001	0.0001	0.00008	0.0001	0.00005

Life stage: Child (3-13 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00001	0.00003	0.00006	0.00004	0.00004	0.00003	0.00001	0.00001	0.000008	0.000004	0.000003	0.000003	0.000002	0.000002	0.000001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000004	0.0000007	0.000001	0.0000009	0.0000009	0.0000006	0.0000003	0.0000003	0.0000002	0.0000001	0.00000008	0.00000009	0.00000007	0.00000008	0.00000004
Total Intake (µg/kg/d)	0.00001	0.00003	0.00006	0.00004	0.00004	0.00003	0.00001	0.00001	0.000008	0.000004	0.000003	0.000003	0.000002	0.000002	0.000001
HQ (unitless)	0.0003	0.0005	0.001	0.0007	0.0008	0.0005	0.0002	0.0002	0.0001	0.00008	0.00006	0.00006	0.00004	0.00005	0.00002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000003	0.000006	0.00001	0.000008	0.000009	0.000006	0.000002	0.000002	0.000002	0.0000008	0.0000007	0.0000007	0.0000004	0.0000005	0.0000003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000002	0.0000004	0.0000007	0.0000005	0.0000005	0.0000003	0.0000001	0.0000001	0.0000001	0.00000005	0.00000004	0.00000005	0.00000004	0.00000004	0.00000002
Total Intake (µg/kg/d)	0.000003	0.000006	0.00001	0.000009	0.000009	0.000006	0.000003	0.000002	0.000002	0.0000009	0.0000007	0.0000007	0.0000005	0.0000005	0.0000003
HQ (unitless)	0.00006	0.0001	0.0002	0.0002	0.0002	0.0001	0.00005	0.00005	0.00003	0.00002	0.00001	0.00001	0.000008	0.00001	0.000005

Life stage: Adult (18-82 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000002	0.000004	0.000009	0.000006	0.000006	0.000004	0.000002	0.000002	0.000001	0.0000006	0.0000005	0.0000005	0.0000003	0.0000004	0.0000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000001	0.0000003	0.0000005	0.0000003	0.0000004	0.0000002	0.0000001	0.00000009	0.00000007	0.00000004	0.00000003	0.00000003	0.00000003	0.00000003	0.00000001
Total Intake (µg/kg/d)	0.000002	0.000005	0.000009	0.000006	0.000007	0.000004	0.000002	0.000002	0.000001	0.0000006	0.0000005	0.0000005	0.0000003	0.0000004	0.0000002
HQ (unitless)	0.00004	0.00009	0.0002	0.0001	0.0001	0.00008	0.00003	0.00003	0.00002	0.00001	0.000009	0.00001	0.000006	0.000007	0.000004

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.000005	0.000009	0.00002	0.00001	0.00001	0.000009	0.000004	0.000004	0.000003	0.000001	0.000001	0.000001	0.0000007	0.0000008	0.0000004
HQ (unitless)	0.00009	0.0002	0.0004	0.0002	0.0003	0.0002	0.00007	0.00007	0.00005	0.00002	0.00002	0.00002	0.00001	0.00002	0.000008

R16-30

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000002	0.000002	0.000006	0.000005	0.000004	0.000003	0.000002	0.000002	0.000002	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000004	0.00000002	0.00000004	0.00000005	0.00000004	0.00000007	0.00000005	0.00000004	0.00000004	0.00000004	0.00000003	0.00000002	0.00000003	0.00000003	0.00000003
Total Intake (µg/kg/d)	0.000002	0.000002	0.000006	0.000005	0.000004	0.000003	0.000002	0.000002	0.000002	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001
HQ (unitless)	0.00005	0.00004	0.0001	0.0001	0.00008	0.00006	0.00004	0.00004	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00003

Life stage: Child (3-13 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000001	0.000001	0.000003	0.000002	0.000002	0.000001	0.000001	0.0000009	0.0000007	0.0000006	0.0000005	0.0000005	0.0000006	0.0000005	0.0000006
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000003	0.00000002	0.00000003	0.00000004	0.00000003	0.00000005	0.00000004	0.00000003	0.00000003	0.00000003	0.00000002	0.00000002	0.00000002	0.00000002	0.00000002
Total Intake (µg/kg/d)	0.000001	0.000001	0.000003	0.000002	0.000002	0.000001	0.000001	0.0000009	0.0000007	0.0000007	0.0000005	0.0000005	0.0000006	0.0000006	0.0000006
HQ (unitless)	0.00002	0.00002	0.00006	0.00005	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.000009	0.00001	0.00001	0.00001

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000002	0.0000002	0.0000006	0.0000005	0.0000004	0.0000003	0.0000002	0.0000002	0.0000002	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000002	0.000000008	0.00000002	0.00000002	0.00000002	0.00000003	0.00000002	0.00000002	0.00000001	0.00000001	0.00000001	0.000000008	0.00000001	0.00000001	0.00000001
Total Intake (µg/kg/d)	0.0000003	0.0000002	0.0000006	0.0000005	0.0000004	0.0000003	0.0000002	0.0000002	0.0000002	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001
HQ (unitless)	0.000005	0.000004	0.000012	0.000010	0.000008	0.000006	0.000004	0.000004	0.000003	0.000003	0.000002	0.000002	0.000002	0.000002	0.000003

Life stage: Adult (18-82 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000002	0.0000002	0.0000004	0.0000004	0.0000003	0.0000002	0.0000002	0.0000001	0.0000001	0.0000001	0.00000008	0.00000007	0.00000009	0.00000008	0.00000009
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000001	0.000000006	0.00000001	0.00000001	0.00000001	0.00000002	0.00000001	0.00000001	0.00000001	0.00000001	0.000000008	0.000000006	0.000000008	0.000000008	0.000000008
Total Intake (µg/kg/d)	0.0000002	0.0000002	0.0000005	0.0000004	0.0000003	0.0000002	0.0000002	0.0000001	0.0000001	0.0000001	0.00000008	0.00000008	0.00000009	0.00000009	0.0000001
HQ (unitless)	0.000003	0.000003	0.000009	0.000007	0.000006	0.000004	0.000003	0.000003	0.000002	0.000002	0.000002	0.000001	0.000002	0.000002	0.000002

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.0000004	0.0000003	0.0000009	0.0000008	0.0000007	0.0000005	0.0000003	0.0000003	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002
HQ (unitless)	0.000007	0.000006	0.00002	0.00001	0.00001	0.000009	0.000006	0.000005	0.000005	0.000004	0.000003	0.000003	0.000004	0.000003	0.000004

R31-45

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000003	0.000004	0.000005	0.000006	0.000006	0.000007	0.000006	0.000007	0.000005	0.000007	0.00003	0.000002	0.000002	0.000003	0.000003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000008	0.00000009	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.00000009	0.0000001	0.0000004	0.00000004	0.00000004	0.00000005	0.00000006
Total Intake (µg/kg/d)	0.000004	0.000004	0.000005	0.000006	0.000007	0.000007	0.000006	0.000007	0.000005	0.000007	0.00003	0.000002	0.000002	0.000003	0.000003
HQ (unitless)	0.00007	0.00007	0.00009	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0005	0.00004	0.00004	0.00005	0.00006

Life stage: Child (3-13 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000002	0.000002	0.000002	0.000003	0.000003	0.000003	0.000003	0.000003	0.000002	0.000003	0.000012	0.0000009	0.000001	0.000001	0.000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000006	0.00000006	0.00000007	0.00000008	0.00000008	0.00000009	0.00000008	0.00000009	0.00000007	0.00000008	0.0000003	0.00000003	0.00000003	0.00000004	0.00000004
Total Intake (µg/kg/d)	0.000002	0.000002	0.000002	0.000003	0.000003	0.000003	0.000003	0.000003	0.000003	0.000003	0.00001	0.0000009	0.000001	0.000001	0.000002
HQ (unitless)	0.00003	0.00003	0.00004	0.00005	0.00006	0.00007	0.00005	0.00007	0.00005	0.00006	0.0002	0.00002	0.00002	0.00002	0.00003

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000003	0.0000004	0.0000005	0.0000005	0.0000006	0.0000007	0.0000006	0.0000007	0.0000005	0.0000006	0.0000003	0.0000002	0.0000002	0.0000003	0.0000003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000003	0.00000003	0.00000004	0.00000004	0.00000004	0.00000005	0.00000004	0.00000005	0.00000004	0.00000004	0.00000002	0.00000001	0.00000002	0.00000002	0.00000002
Total Intake (µg/kg/d)	0.0000004	0.0000004	0.0000005	0.0000006	0.0000007	0.0000008	0.0000006	0.0000008	0.0000006	0.0000007	0.0000003	0.0000002	0.0000002	0.0000003	0.0000003
HQ (unitless)	0.000007	0.000008	0.000009	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00005	0.000004	0.000004	0.000005	0.000007

Life stage: Adult (18-82 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000002	0.0000003	0.0000003	0.0000004	0.0000005	0.0000005	0.0000004	0.0000005	0.0000004	0.0000005	0.0000002	0.0000001	0.0000002	0.0000002	0.0000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000002	0.00000002	0.00000003	0.00000003	0.00000003	0.00000003	0.00000003	0.00000003	0.00000003	0.00000003	0.00000001	0.00000001	0.00000001	0.00000001	0.00000002
Total Intake (µg/kg/d)	0.0000003	0.0000003	0.0000004	0.0000004	0.0000005	0.0000006	0.0000004	0.0000006	0.0000004	0.0000005	0.0000002	0.0000001	0.0000002	0.0000002	0.0000002
HQ (unitless)	0.000005	0.000005	0.000007	0.000008	0.000009	0.00001	0.000008	0.00001	0.000008	0.000009	0.00004	0.000003	0.000003	0.000004	0.000005

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.0000005	0.0000006	0.0000007	0.0000009	0.000001	0.000001	0.0000009	0.000001	0.0000008	0.000001	0.000004	0.0000003	0.0000003	0.0000004	0.0000005
HQ (unitless)	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00008	0.000006	0.000006	0.000008	0.00001

R46-60

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000001	0.000001	0.000001	0.000001	0.000002	0.0000007	0.0000009	0.000005	0.000001	0.000001	0.000001	0.000001	0.0000006	0.0000005	0.000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000002	0.00000002	0.00000003	0.00000003	0.00000004	0.00000001	0.00000002	0.00000009	0.00000003	0.00000003	0.00000002	0.00000002	0.00000001	0.00000001	0.00000004
Total Intake (µg/kg/d)	0.000001	0.000001	0.000001	0.000001	0.000002	0.0000007	0.0000009	0.000005	0.000001	0.000001	0.000001	0.000001	0.0000007	0.0000006	0.000002
HQ (unitless)	0.00002	0.00002	0.00002	0.00003	0.00003	0.00001	0.00002	0.00009	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00004

Life stage: Child (3-13 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000005	0.0000005	0.0000006	0.0000006	0.0000008	0.0000003	0.0000004	0.000002	0.0000007	0.0000006	0.0000005	0.0000006	0.0000003	0.0000003	0.0000009
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000002	0.00000002	0.00000002	0.00000002	0.00000003	0.00000001	0.00000002	0.00000006	0.00000002	0.00000002	0.00000002	0.00000002	0.00000001	0.00000001	0.00000003
Total Intake (µg/kg/d)	0.0000005	0.0000005	0.0000006	0.0000007	0.0000008	0.0000003	0.0000004	0.000002	0.0000007	0.0000006	0.0000005	0.0000006	0.0000003	0.0000003	0.0000009
HQ (unitless)	0.000009	0.000009	0.00001	0.00001	0.00001	0.000006	0.000008	0.00004	0.00001	0.00001	0.00001	0.00001	0.000006	0.000005	0.00002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000001	0.0000001	0.0000001	0.0000001	0.0000002	0.00000007	0.00000009	0.0000005	0.0000001	0.0000001	0.0000001	0.0000001	0.00000006	0.00000005	0.0000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000000008	0.000000008	0.000000001	0.000000001	0.000000001	0.000000005	0.000000008	0.00000003	0.00000001	0.00000001	0.000000008	0.000000008	0.000000005	0.000000005	0.00000002
Total Intake (µg/kg/d)	0.0000001	0.0000001	0.0000001	0.0000001	0.0000002	0.00000008	0.0000001	0.0000005	0.0000002	0.0000001	0.0000001	0.0000001	0.00000007	0.00000006	0.0000002
HQ (unitless)	0.000002	0.000002	0.000003	0.000003	0.000003	0.000001	0.000002	0.000009	0.000003	0.000002	0.000002	0.000003	0.000001	0.000001	0.000004

Life stage: Adult (18-82 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00000007	0.00000007	0.00000009	0.0000001	0.0000001	0.00000005	0.00000006	0.0000003	0.0000001	0.00000009	0.00000008	0.00000009	0.00000004	0.00000004	0.0000001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000000006	0.000000006	0.000000008	0.000000008	0.000000010	0.000000004	0.000000006	0.00000002	0.000000008	0.000000008	0.000000006	0.000000006	0.000000004	0.000000004	0.00000001
Total Intake (µg/kg/d)	0.00000008	0.00000008	0.0000001	0.0000001	0.0000001	0.00000006	0.00000007	0.0000004	0.0000001	0.00000009	0.00000009	0.0000001	0.00000005	0.00000004	0.0000001
HQ (unitless)	0.000001	0.000001	0.000002	0.000002	0.000002	0.000001	0.000001	0.000007	0.000002	0.000002	0.000002	0.000002	0.000009	0.000008	0.000003

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.0000002	0.0000002	0.0000002	0.0000002	0.0000003	0.0000001	0.0000001	0.0000007	0.0000002	0.0000002	0.0000002	0.0000002	0.0000001	0.00000009	0.0000003
HQ (unitless)	0.000003	0.000003	0.000004	0.000004	0.000005	0.000002	0.000003	0.00001	0.000004	0.000004	0.000003	0.000004	0.000002	0.000002	0.000006

R61-75

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000001	0.000002	0.000002	0.000005	0.000001	0.0000009	0.000001	0.000003	0.000002	0.000002	0.000002	0.000004	0.000007	0.000007	0.000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000004	0.00000004	0.00000004	0.00000009	0.00000003	0.00000002	0.00000002	0.00000005	0.00000004	0.00000005	0.00000003	0.0000001	0.0000001	0.0000001	0.00000006
Total Intake (µg/kg/d)	0.000001	0.000002	0.000002	0.000005	0.000001	0.0000009	0.000001	0.000003	0.000002	0.000002	0.000002	0.000004	0.000007	0.000007	0.000003
HQ (unitless)	0.00003	0.00004	0.00004	0.0001	0.00002	0.00002	0.00002	0.00005	0.00005	0.00004	0.00003	0.00008	0.0001	0.0001	0.00005

Life stage: Child (3-13 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000006	0.0000008	0.0000009	0.000002	0.0000005	0.0000004	0.0000005	0.000001	0.000001	0.000001	0.0000007	0.000002	0.000003	0.000003	0.000001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000003	0.00000003	0.00000003	0.00000007	0.00000002	0.00000002	0.00000002	0.00000004	0.00000003	0.00000004	0.00000002	0.00000007	0.0000001	0.00000009	0.00000004
Total Intake (µg/kg/d)	0.0000007	0.0000009	0.0000009	0.000002	0.0000005	0.0000004	0.0000005	0.000001	0.000001	0.000001	0.0000007	0.000002	0.000003	0.000003	0.000001
HQ (unitless)	0.00001	0.00002	0.00002	0.00005	0.00001	0.000008	0.00001	0.00002	0.00002	0.00002	0.00001	0.00004	0.00006	0.00006	0.00002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000001	0.0000002	0.0000002	0.0000005	0.0000001	0.00000008	0.0000001	0.0000003	0.0000002	0.0000002	0.0000002	0.0000004	0.0000007	0.0000007	0.0000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000001	0.00000002	0.00000002	0.00000004	0.00000001	0.000000008	0.000000008	0.00000002	0.00000002	0.00000002	0.00000001	0.00000004	0.00000005	0.00000005	0.00000002
Total Intake (µg/kg/d)	0.0000001	0.0000002	0.0000002	0.0000005	0.0000001	0.00000009	0.0000001	0.0000003	0.0000002	0.0000002	0.0000002	0.0000005	0.0000007	0.0000007	0.0000003
HQ (unitless)	0.000003	0.000004	0.000004	0.00001	0.000002	0.000002	0.000002	0.000005	0.000005	0.000004	0.000003	0.000009	0.00001	0.00001	0.000005

Life stage: Adult (18-82 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000001	0.0000001	0.0000001	0.0000004	0.00000008	0.00000006	0.00000008	0.0000002	0.0000002	0.0000001	0.0000001	0.0000003	0.0000005	0.0000005	0.0000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000001	0.00000001	0.00000001	0.00000003	0.000000008	0.000000006	0.000000006	0.00000001	0.00000001	0.00000001	0.000000008	0.00000003	0.00000004	0.00000003	0.00000002
Total Intake (µg/kg/d)	0.0000001	0.0000001	0.0000001	0.0000004	0.00000008	0.00000007	0.00000009	0.0000002	0.0000002	0.0000002	0.0000001	0.0000003	0.0000005	0.0000005	0.0000002
HQ (unitless)	0.000002	0.000003	0.000003	0.000007	0.000002	0.000001	0.000002	0.000004	0.000003	0.000003	0.000002	0.000006	0.00001	0.00001	0.000004

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.0000002	0.0000003	0.0000003	0.0000008	0.0000002	0.0000001	0.0000002	0.0000004	0.0000004	0.0000003	0.0000002	0.0000007	0.000001	0.000001	0.0000004
HQ (unitless)	0.000004	0.000005	0.000005	0.00001	0.000003	0.000003	0.000003	0.000008	0.000007	0.000006	0.000004	0.00001	0.00002	0.00002	0.000007

R76-D

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000002	0.000001	0.000002	0.000004	0.000003	0.0000005	0.0000007	0.0000007	0.000004	0.000005	0.00001	0.0001	0.0002	0.0002	0.0004
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000004	0.00000002	0.00000004	0.00000008	0.00000006	0.00000001	0.00000001	0.00000001	0.00000007	0.00000009	0.0000002	0.000002	0.000002	0.000002	0.000005
Total Intake (µg/kg/d)	0.000002	0.000001	0.000002	0.000004	0.000003	0.0000006	0.0000007	0.0000007	0.000004	0.000005	0.00001	0.0001	0.0002	0.0002	0.0004
HQ (unitless)	0.00004	0.00002	0.00004	0.00008	0.00006	0.00001	0.00001	0.00001	0.00008	0.0001	0.0002	0.003	0.003	0.003	0.008

Life stage: Child (3-13 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion ($I_{\text{ingest s}}$) ($\mu\text{g/kg/d}$)	0.0000009	0.0000004	0.000001	0.000002	0.000001	0.0000003	0.0000003	0.0000003	0.000002	0.000002	0.000005	0.00007	0.00007	0.00007	0.0002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00000003	0.00000002	0.00000003	0.00000006	0.00000004	0.00000001	0.00000001	0.00000001	0.00000005	0.00000007	0.0000001	0.000001	0.000001	0.000001	0.000003
Total Intake ($\mu\text{g/kg/d}$)	0.0000009	0.0000005	0.000001	0.000002	0.000001	0.0000003	0.0000003	0.0000003	0.000002	0.000003	0.000005	0.00007	0.00007	0.00007	0.0002
HQ (unitless)	0.00002	0.000009	0.00002	0.00004	0.00003	0.000005	0.000006	0.000006	0.00004	0.00005	0.0001	0.001	0.001	0.001	0.004

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000002	0.00000009	0.0000002	0.0000004	0.0000003	0.00000005	0.00000007	0.00000007	0.0000004	0.0000005	0.000001	0.00001	0.00001	0.00002	0.00004
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000002	0.000000008	0.00000001	0.00000003	0.00000002	0.000000005	0.000000005	0.000000005	0.00000003	0.00000004	0.00000007	0.0000008	0.0000008	0.0000008	0.000002
Total Intake (µg/kg/d)	0.0000002	0.0000001	0.0000002	0.0000004	0.0000003	0.00000006	0.00000007	0.00000008	0.0000004	0.0000006	0.000001	0.00002	0.00002	0.00002	0.00004
HQ (unitless)	0.000004	0.000002	0.000004	0.000008	0.000006	0.000001	0.000001	0.000001	0.000008	0.00001	0.00002	0.0003	0.0003	0.0003	0.0008

Life stage: Adult (18-82 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000001	0.00000007	0.00000001	0.00000003	0.00000002	0.000000004	0.000000005	0.000000005	0.00000003	0.00000004	0.00000008	0.00001	0.00001	0.00001	0.00003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000000001	0.0000000006	0.000000001	0.000000002	0.000000002	0.0000000004	0.0000000004	0.0000000004	0.000000002	0.000000003	0.000000005	0.00000005	0.00000006	0.00000006	0.0000001
Total Intake (µg/kg/d)	0.00000001	0.000000007	0.00000002	0.00000003	0.00000002	0.000000004	0.000000005	0.000000006	0.00000003	0.00000004	0.00000009	0.00001	0.00001	0.00001	0.00003
HQ (unitless)	0.000003	0.000001	0.000003	0.000006	0.000004	0.0000008	0.000001	0.000001	0.000006	0.000008	0.00002	0.0002	0.0002	0.0002	0.0006

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.0000003	0.0000001	0.0000003	0.0000007	0.0000005	0.00000009	0.0000001	0.0000001	0.0000007	0.0000008	0.000002	0.00002	0.00002	0.00002	0.00007
HQ (unitless)	0.000005	0.000003	0.000006	0.00001	0.000009	0.000002	0.000002	0.000002	0.00001	0.00002	0.00003	0.0004	0.0004	0.0004	0.001

E-P

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0002	0.00002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000002	0.000003	0.000002	0.000002	0.000002	0.000002	0.000003	0.000004	0.000003	0.000003	0.000003	0.0000003
Total Intake (µg/kg/d)	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0002	0.00002
HQ (unitless)	0.002	0.005	0.003	0.003	0.003	0.003	0.004	0.005	0.005	0.005	0.004	0.0003

Life stage: Child (3-13 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00006	0.0001	0.00008	0.00008	0.00007	0.00007	0.00009	0.0001	0.0001	0.0001	0.0001	0.000008
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.000002	0.000002	0.000002	0.000001	0.000001	0.000002	0.000003	0.000002	0.000002	0.000002	0.0000002
Total Intake (µg/kg/d)	0.00006	0.0001	0.00008	0.00008	0.00007	0.00007	0.00009	0.0001	0.0001	0.0001	0.0001	0.000008
HQ (unitless)	0.001	0.002	0.002	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.0001

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00003	0.00003	0.00003	0.00002	0.000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000007	0.000001	0.0000009	0.0000008	0.0000008	0.0000008	0.000001	0.000001	0.000001	0.000001	0.000001	0.0000001
Total Intake (µg/kg/d)	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00003	0.00003	0.00003	0.00002	0.000002
HQ (unitless)	0.0002	0.0005	0.0003	0.0003	0.0003	0.0003	0.0004	0.0005	0.0005	0.0005	0.0004	0.00003

Life stage: Adult (18-82 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000009	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.000001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000005	0.0000008	0.0000006	0.0000006	0.0000005	0.0000006	0.0000007	0.0000009	0.0000009	0.0000009	0.0000007	0.00000007
Total Intake (µg/kg/d)	0.000009	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.000001
HQ (unitless)	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003	0.0004	0.0004	0.0004	0.0003	0.00002

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.00002	0.00004	0.00003	0.00003	0.00002	0.00002	0.00003	0.00004	0.00004	0.00004	0.00003	0.000003
HQ (unitless)	0.0004	0.0007	0.0005	0.0005	0.0004	0.0004	0.0006	0.0008	0.0007	0.0008	0.0006	0.00005

F.4.2 Scenario 2

Adjusted TDI

	All receptors
Background adjusted tolerable daily intake (TDI _{adj}) (µg/kg/d)	0.053

Soil & air concentrations:

R1-15

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil concentration (µg/g) (Appendix C)	0.03	0.049	0.067	0.139	0.048	0.020	0.013	0.014	0.012	0.008	0.007	0.007	0.005	0.005	0.003
Air concentration (µg/m ³) (Appendix D)	0.00002	0.00003	0.00003	0.00004	0.00002	0.00001	0.000009	0.00001	0.00001	0.000007	0.000006	0.000006	0.000006	0.000006	0.000005

R16-30

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil concentration (µg/g) (Appendix C)	0.002	0.001	0.004	0.005	0.004	0.004	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Air concentration (µg/m ³) (Appendix D)	0.000003	0.000001	0.000002	0.000003	0.000003	0.000005	0.000004	0.000004	0.000003	0.000003	0.000004	0.000003	0.000003	0.000003	0.000003

R31-45

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil concentration (µg/g) (Appendix C)	0.004	0.004	0.005	0.006	0.007	0.007	0.006	0.007	0.006	0.007	0.015	0.003	0.003	0.004	0.005
Air concentration (µg/m ³) (Appendix D)	0.000005	0.000005	0.000006	0.000006	0.000007	0.000007	0.000006	0.000006	0.000006	0.000006	0.000009	0.000003	0.000004	0.000004	0.000005

R46-60

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil concentration (µg/g) (Appendix C)	0.002	0.002	0.002	0.002	0.003	0.001	0.001	0.005	0.002	0.002	0.002	0.002	0.001	0.0009	0.003
Air concentration (µg/m ³) (Appendix D)	0.000003	0.000003	0.000003	0.000003	0.000003	0.000002	0.000003	0.000005	0.000002	0.000003	0.000003	0.000003	0.000002	0.000002	0.000004

R61-75

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil concentration (µg/g) (Appendix C)	0.002	0.003	0.003	0.005	0.002	0.001	0.001	0.003	0.003	0.003	0.002	0.005	0.007	0.007	0.004
Air concentration (µg/m ³) (Appendix D)	0.000003	0.000005	0.000005	0.000005	0.000003	0.000002	0.000002	0.000003	0.000004	0.000004	0.000003	0.000006	0.000007	0.000006	0.000006

R76-D

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil concentration (µg/g) (Appendix C)	0.003	0.002	0.003	0.005	0.003	0.0009	0.001	0.001	0.005	0.005	0.009	0.04	0.04	0.052	0.078
Air concentration (µg/m ³) (Appendix D)	0.000005	0.000003	0.000003	0.000005	0.000004	0.000002	0.000002	0.000003	0.000006	0.000005	0.000007	0.000019	0.00002	0.00002	0.00003

E-P

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil concentration (µg/g) (Appendix C)	0.118	0.234	0.398	0.633	0.921	0.441	0.192	0.526	0.108	0.115	0.126	0.012
Air concentration (µg/m ³) (Appendix D)	0.00003	0.00006	0.00008	0.0001	0.0001	0.00008	0.00005	0.00009	0.00005	0.00005	0.00005	0.000009

Intakes & hazard quotients:

R1-15

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0003	0.0004	0.0006	0.001	0.0004	0.0002	0.0001	0.0001	0.0001	0.00007	0.00006	0.00006	0.00005	0.00005	0.00003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00002	0.00002	0.00002	0.00003	0.00002	0.000009	0.000007	0.000009	0.000007	0.000005	0.000005	0.000004	0.000004	0.000004	0.000003
Total Intake (µg/kg/d)	0.0003	0.0005	0.0006	0.001	0.0004	0.0002	0.0001	0.0001	0.0001	0.00008	0.00007	0.00007	0.00005	0.00005	0.00003
HQ (unitless)	0.005	0.009	0.01	0.02	0.008	0.004	0.002	0.003	0.002	0.001	0.001	0.001	0.001	0.001	0.0006

Life stage: Child (3-13 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0001	0.0002	0.0003	0.0006	0.0002	0.00008	0.00006	0.00006	0.00005	0.00003	0.00003	0.00003	0.00002	0.00002	0.00001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00001	0.00002	0.00001	0.00002	0.00001	0.000006	0.000005	0.000007	0.000005	0.000003	0.000003	0.000003	0.000003	0.000003	0.000002
Total Intake (µg/kg/d)	0.0001	0.0002	0.0003	0.0006	0.0002	0.00009	0.00006	0.00006	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001
HQ (unitless)	0.003	0.004	0.005	0.01	0.004	0.002	0.001	0.001	0.001	0.0007	0.0006	0.0006	0.0005	0.0005	0.0003

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00003	0.00004	0.00006	0.0001	0.00004	0.00002	0.00001	0.00001	0.00001	0.000007	0.000006	0.000006	0.000005	0.000005	0.000003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000007	0.000008	0.000007	0.00001	0.000006	0.000003	0.000002	0.000003	0.000003	0.000002	0.000002	0.000002	0.000002	0.000002	0.000001
Total Intake (µg/kg/d)	0.00003	0.00005	0.00007	0.0001	0.00005	0.00002	0.00001	0.00002	0.00001	0.000009	0.000008	0.000008	0.000006	0.000006	0.000004
HQ (unitless)	0.0006	0.001	0.001	0.003	0.0009	0.0004	0.0003	0.0003	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.00007

Life stage: Adult (18-82 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00002	0.00003	0.00004	0.00009	0.00003	0.00001	0.000008	0.000009	0.000007	0.000005	0.000005	0.000004	0.000003	0.000003	0.000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000005	0.000006	0.000005	0.000007	0.000004	0.000002	0.000002	0.000002	0.000002	0.000001	0.000001	0.000001	0.000001	0.000001	0.0000009
Total Intake (µg/kg/d)	0.00002	0.00004	0.00005	0.0001	0.00003	0.00002	0.00001	0.00001	0.000009	0.000006	0.000006	0.000006	0.000004	0.000005	0.000003
HQ (unitless)	0.0004	0.0007	0.0009	0.002	0.0007	0.0003	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.00008	0.00009	0.00005

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.00005	0.00007	0.0001	0.0002	0.00007	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.000008	0.000009	0.000005
HQ (unitless)	0.0009	0.001	0.002	0.004	0.001	0.0006	0.0004	0.0004	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.00009

R16-30

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00002	0.00001	0.00003	0.00005	0.00004	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000002	0.000001	0.000002	0.000002	0.000002	0.000003	0.000003	0.000003	0.000002	0.000002	0.000003	0.000002	0.000002	0.000003	0.000002
Total Intake (µg/kg/d)	0.00002	0.00001	0.00004	0.00005	0.00004	0.00004	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002
HQ (unitless)	0.0004	0.0003	0.0007	0.0009	0.0008	0.0007	0.0006	0.0006	0.0004	0.0004	0.0004	0.0003	0.0004	0.0004	0.0004

Life stage: Child (3-13 yrs)	Receptor ID															
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000009	0.000006	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.000009	0.000008	0.000007	0.000008	0.000009	0.000009	
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000002	0.0000007	0.000001	0.000002	0.000001	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000001	
Total Intake (µg/kg/d)	0.00001	0.000007	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.000009	0.00001	0.00001	0.00001	
HQ (unitless)	0.0002	0.0001	0.0003	0.0004	0.0004	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000002	0.000001	0.000003	0.000005	0.000004	0.000003	0.000003	0.000003	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000009	0.0000004	0.0000006	0.0000008	0.0000007	0.000001	0.000001	0.000001	0.0000009	0.0000009	0.000001	0.0000008	0.0000008	0.0000009	0.0000008
Total Intake (µg/kg/d)	0.000003	0.000002	0.000004	0.000006	0.000005	0.000005	0.000004	0.000004	0.000003	0.000003	0.000003	0.000002	0.000003	0.000003	0.000003
HQ (unitless)	0.00005	0.00003	0.00008	0.0001	0.00009	0.00009	0.00007	0.00007	0.00006	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005

Life stage: Adult (18-82 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000001	0.0000009	0.000002	0.000003	0.000003	0.000002	0.000002	0.000002	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000006	0.0000003	0.0000005	0.0000006	0.0000005	0.0000009	0.0000007	0.0000008	0.0000007	0.0000006	0.0000007	0.0000006	0.0000006	0.0000007	0.0000006
Total Intake (µg/kg/d)	0.000002	0.000001	0.000003	0.000004	0.000003	0.000003	0.000003	0.000003	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002
HQ (unitless)	0.00004	0.00002	0.00005	0.00007	0.00006	0.00006	0.00005	0.00005	0.00004	0.00004	0.00004	0.00003	0.00003	0.00004	0.00004

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.000004	0.000002	0.000006	0.000008	0.000007	0.000006	0.000005	0.000005	0.000004	0.000004	0.000004	0.000003	0.000003	0.000004	0.000004
HQ (unitless)	0.00007	0.00004	0.0001	0.0001	0.0001	0.0001	0.00009	0.00009	0.00007	0.00007	0.00007	0.00006	0.00006	0.00007	0.00007

R31-45

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00004	0.00004	0.00005	0.00006	0.00006	0.00007	0.00006	0.00007	0.00006	0.00006	0.0001	0.00003	0.00003	0.00003	0.00004
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000004	0.000004	0.000004	0.000005	0.000005	0.000005	0.000004	0.000005	0.000004	0.000005	0.000007	0.000002	0.000003	0.000003	0.000004
Total Intake (µg/kg/d)	0.00004	0.00004	0.00005	0.00006	0.00007	0.00007	0.00006	0.00007	0.00006	0.00007	0.0001	0.00003	0.00003	0.00004	0.00004
HQ (unitless)	0.0008	0.0008	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.0005	0.0006	0.0007	0.0008

Life stage: Child (3-13 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00002	0.00002	0.00002	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00006	0.00001	0.00001	0.00002	0.00002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000003	0.000003	0.000003	0.000003	0.000003	0.000004	0.000003	0.000003	0.000003	0.000003	0.000005	0.000002	0.000002	0.000002	0.000003
Total Intake (µg/kg/d)	0.00002	0.00002	0.00002	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00007	0.00001	0.00002	0.00002	0.00002
HQ (unitless)	0.0004	0.0004	0.0005	0.0005	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.001	0.0003	0.0003	0.0003	0.0004

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000004	0.000004	0.000005	0.000005	0.000006	0.000007	0.000006	0.000007	0.000006	0.000006	0.00001	0.000003	0.000003	0.000003	0.000004
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000001	0.000001	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.0000009	0.000001	0.000001	0.000001
Total Intake ($\mu\text{g/kg/d}$)	0.000005	0.000005	0.000006	0.000007	0.000008	0.000008	0.000007	0.000008	0.000007	0.000008	0.00002	0.000003	0.000004	0.000005	0.000005
HQ (unitless)	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0001	0.0002	0.0001	0.0002	0.0003	0.00006	0.00007	0.00009	0.0001

Life stage: Adult (18-82 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000003	0.000003	0.000003	0.000004	0.000004	0.000005	0.000004	0.000005	0.000004	0.000005	0.000009	0.000002	0.000002	0.000002	0.000003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000002	0.0000006	0.0000007	0.0000008	0.000001
Total Intake ($\mu\text{g/kg/d}$)	0.000004	0.000004	0.000004	0.000005	0.000006	0.000006	0.000005	0.000006	0.000005	0.000006	0.00001	0.000002	0.000003	0.000003	0.000004
HQ (unitless)	0.00007	0.00007	0.00008	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.00005	0.00005	0.00006	0.00007

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.000007	0.000007	0.000008	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.000005	0.000005	0.000006	0.000007
HQ (unitless)	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0004	0.00009	0.0001	0.0001	0.0001

R46-60

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00001	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00004	0.00002	0.00002	0.00002	0.00002	0.000009	0.000008	0.00003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000004	0.000002	0.000002	0.000002	0.000002	0.000001	0.000001	0.000003
Total Intake ($\mu\text{g/kg/d}$)	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00002	0.00005	0.00002	0.00002	0.00002	0.00002	0.00001	0.000009	0.00003
HQ (unitless)	0.0003	0.0003	0.0004	0.0004	0.0005	0.0002	0.0003	0.0009	0.0003	0.0004	0.0003	0.0004	0.0002	0.0002	0.0006

Life stage: Child (3-13 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000007	0.000007	0.000009	0.000009	0.00001	0.000005	0.000006	0.00002	0.000007	0.000008	0.000007	0.000009	0.000004	0.000004	0.00001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.000002	0.000002	0.000002	0.000002	0.000001	0.000001	0.000003	0.000001	0.000002	0.000001	0.000002	0.0000009	0.0000008	0.000002
Total Intake (µg/kg/d)	0.000008	0.000009	0.00001	0.00001	0.00001	0.000006	0.000008	0.00002	0.000009	0.000009	0.000009	0.00001	0.000005	0.000005	0.00002
HQ (unitless)	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0004	0.0002	0.0002	0.0002	0.0002	0.0001	0.00009	0.0003

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000001	0.000002	0.000002	0.000002	0.000002	0.000001	0.000001	0.000004	0.000002	0.000002	0.000002	0.000002	0.0000009	0.0000008	0.000003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000007	0.0000008	0.0000008	0.0000008	0.0000008	0.0000007	0.0000007	0.000001	0.0000006	0.0000008	0.0000007	0.0000009	0.0000005	0.0000004	0.000001
Total Intake (µg/kg/d)	0.000002	0.000002	0.000003	0.000003	0.000003	0.000002	0.000002	0.000006	0.000002	0.000002	0.000002	0.000003	0.000001	0.000001	0.000004
HQ (unitless)	0.00004	0.00004	0.00005	0.00005	0.00006	0.00003	0.00004	0.0001	0.00004	0.00005	0.00004	0.00006	0.00003	0.00002	0.00007

Life stage: Adult (18-82 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000001	0.000001	0.000001	0.000001	0.000002	0.0000008	0.000001	0.000003	0.000001	0.000001	0.000001	0.000001	0.0000007	0.0000006	0.000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000005	0.0000006	0.0000006	0.0000006	0.0000006	0.0000005	0.0000005	0.000001	0.0000005	0.0000006	0.0000005	0.0000006	0.0000003	0.0000003	0.0000009
Total Intake (µg/kg/d)	0.000002	0.000002	0.000002	0.000002	0.000002	0.000001	0.000001	0.000004	0.000002	0.000002	0.000002	0.000002	0.000001	0.0000009	0.000003
HQ (unitless)	0.00003	0.00003	0.00004	0.00004	0.00004	0.00002	0.00003	0.00008	0.00003	0.00003	0.00003	0.00004	0.00002	0.00002	0.00005

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.000003	0.000003	0.000004	0.000004	0.000004	0.000002	0.000003	0.000008	0.000003	0.000003	0.000003	0.000004	0.000002	0.000002	0.000005
HQ (unitless)	0.00005	0.00006	0.00007	0.00007	0.00008	0.00004	0.00005	0.0001	0.00006	0.00006	0.00006	0.00007	0.00003	0.00003	0.0001

R61-75

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00002	0.00003	0.00003	0.00004	0.00002	0.00001	0.00001	0.00003	0.00003	0.00003	0.00002	0.00005	0.00006	0.00006	0.00003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000002	0.000003	0.000004	0.000003	0.000002	0.000002	0.000001	0.000002	0.000003	0.000003	0.000002	0.000005	0.000005	0.000004	0.000004
Total Intake (µg/kg/d)	0.00002	0.00003	0.00003	0.00005	0.00002	0.00001	0.00001	0.00003	0.00003	0.00003	0.00002	0.00005	0.00007	0.00007	0.00004
HQ (unitless)	0.0004	0.0006	0.0006	0.0009	0.0003	0.0003	0.0003	0.0006	0.0006	0.0005	0.0004	0.0009	0.001	0.001	0.0007

Life stage: Child (3-13 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000008	0.00001	0.00001	0.00002	0.000007	0.000006	0.000006	0.00001	0.00001	0.00001	0.000007	0.00002	0.00003	0.00003	0.00002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000002	0.000002	0.000003	0.000002	0.000001	0.000001	0.000001	0.000002	0.000002	0.000002	0.000002	0.000003	0.000003	0.000003	0.000003
Total Intake (µg/kg/d)	0.00001	0.00002	0.00002	0.00002	0.000008	0.000007	0.000007	0.00002	0.00002	0.00001	0.000009	0.00002	0.00003	0.00003	0.00002
HQ (unitless)	0.0002	0.0003	0.0003	0.0004	0.0002	0.0001	0.0001	0.0003	0.0003	0.0003	0.0002	0.0005	0.0006	0.0006	0.0003

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000002	0.000003	0.000003	0.000004	0.000001	0.000001	0.000001	0.000003	0.000003	0.000003	0.000002	0.000004	0.000006	0.000006	0.000003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000008	0.000001	0.000001	0.000001	0.0000008	0.0000006	0.0000005	0.0000009	0.000001	0.000001	0.0000009	0.000002	0.000002	0.000002	0.000002
Total Intake (µg/kg/d)	0.000003	0.000004	0.000004	0.000005	0.000002	0.000002	0.000002	0.000004	0.000004	0.000004	0.000002	0.000006	0.000008	0.000008	0.000005
HQ (unitless)	0.00005	0.00008	0.00008	0.0001	0.00004	0.00004	0.00003	0.00007	0.00008	0.00007	0.00005	0.0001	0.0002	0.0001	0.00009

Life stage: Adult (18-82 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000001	0.000002	0.000002	0.000003	0.000001	0.0000009	0.0000009	0.000002	0.000002	0.000002	0.000001	0.000003	0.000004	0.000004	0.000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000006	0.0000009	0.000001	0.0000009	0.0000005	0.0000004	0.0000004	0.0000006	0.0000007	0.0000007	0.0000006	0.000001	0.000001	0.000001	0.000001
Total Intake (µg/kg/d)	0.000002	0.000003	0.000003	0.000004	0.000002	0.000001	0.000001	0.000003	0.000003	0.000003	0.000002	0.000004	0.000006	0.000006	0.000003
HQ (unitless)	0.00003	0.00005	0.00006	0.00007	0.00003	0.00003	0.00002	0.00005	0.00005	0.00005	0.00003	0.00008	0.0001	0.0001	0.00006

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.000003	0.000005	0.000006	0.000007	0.000003	0.000002	0.000002	0.000005	0.000005	0.000005	0.000003	0.000008	0.000001	0.000001	0.000006
HQ (unitless)	0.00006	0.0001	0.0001	0.0001	0.00006	0.00005	0.00005	0.0001	0.0001	0.00009	0.00006	0.0002	0.0002	0.0002	0.0001

R76-D

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00003	0.00001	0.00002	0.00004	0.00003	0.000008	0.000009	0.00001	0.00004	0.00005	0.00008	0.0004	0.0004	0.0005	0.0007
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000003	0.000002	0.000002	0.000004	0.000003	0.000001	0.000001	0.000002	0.000005	0.000004	0.000005	0.00001	0.00001	0.00002	0.00002
Total Intake ($\mu\text{g/kg/d}$)	0.00003	0.00002	0.00003	0.00005	0.00003	0.000009	0.00001	0.00001	0.00005	0.00005	0.00008	0.0004	0.0004	0.0005	0.0007
HQ (unitless)	0.0006	0.0003	0.0005	0.0009	0.0006	0.0002	0.0002	0.0003	0.0009	0.001	0.002	0.007	0.007	0.009	0.01

Life stage: Child (3-13 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00001	0.000006	0.00001	0.00002	0.00001	0.000004	0.000004	0.000006	0.00002	0.00002	0.00004	0.0002	0.0002	0.0002	0.0003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000002	0.000001	0.000002	0.000003	0.000002	0.000001	0.0000009	0.000002	0.000003	0.000003	0.000004	0.00001	0.00001	0.00001	0.00001
Total Intake ($\mu\text{g/kg/d}$)	0.00002	0.000008	0.00001	0.00002	0.00002	0.000005	0.000005	0.000007	0.00002	0.00002	0.00004	0.0002	0.0002	0.0002	0.0003
HQ (unitless)	0.0003	0.0001	0.0002	0.0004	0.0003	0.00009	0.00009	0.0001	0.0004	0.0005	0.0008	0.003	0.003	0.004	0.006

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000003	0.000001	0.000002	0.000004	0.000003	0.0000008	0.0000009	0.000001	0.000004	0.000005	0.000008	0.00004	0.00004	0.00005	0.00007
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000001	0.0000007	0.0000008	0.000001	0.000001	0.0000005	0.0000005	0.0000008	0.000002	0.000001	0.000002	0.000005	0.000005	0.000006	0.000007
Total Intake ($\mu\text{g/kg/d}$)	0.000004	0.000002	0.000003	0.000005	0.000004	0.000001	0.000001	0.000002	0.000006	0.000006	0.00001	0.00004	0.00004	0.00005	0.00008
HQ (unitless)	0.00008	0.00004	0.00006	0.0001	0.00007	0.00002	0.00003	0.00004	0.00012	0.0001	0.0002	0.0008	0.0008	0.001	0.001

Life stage: Adult (18-82 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion ($I_{\text{ingest\_s}}$) (µg/kg/d)	0.000002	0.000001	0.000002	0.000003	0.000002	0.0000006	0.0000006	0.0000009	0.000003	0.000003	0.000006	0.00003	0.00003	0.00003	0.00005
Inhalation Intake (I_{Inhal}) (µg/kg/d)	0.0000009	0.0000005	0.0000006	0.000001	0.0000007	0.0000004	0.0000003	0.0000006	0.000001	0.000001	0.000001	0.000004	0.000004	0.000004	0.000005
Total Intake (µg/kg/d)	0.000003	0.000001	0.000002	0.000004	0.000003	0.0000009	0.000001	0.000001	0.000004	0.000004	0.000007	0.00003	0.00003	0.00004	0.00006
HQ (unitless)	0.00006	0.00003	0.00004	0.00007	0.00005	0.00002	0.00002	0.00003	0.00008	0.00008	0.0001	0.0006	0.0006	0.0007	0.001

	Receptor ID															
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D	
Lifetime TWA daily intake (lifetime) (µg/kg/d)	0.000006	0.000003	0.000004	0.000007	0.000005	0.000002	0.000002	0.000003	0.000008	0.000008	0.00001	0.00006	0.00006	0.00008	0.0001	
HQ (unitless)	0.0001	0.00005	0.00008	0.0001	0.0001	0.00003	0.00003	0.00005	0.0002	0.0002	0.0003	0.001	0.001	0.001	0.002	

E-P

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion ($I_{\text{ingest\_s}}$) (µg/kg/d)	0.001	0.002	0.004	0.006	0.008	0.004	0.002	0.005	0.001	0.001	0.001	0.0001
Inhalation Intake (I_{inhal}) (µg/kg/d)	0.00003	0.00004	0.00006	0.00008	0.0001	0.00006	0.00004	0.00007	0.00004	0.00004	0.00004	0.000007
Total Intake (µg/kg/d)	0.001	0.002	0.004	0.006	0.008	0.004	0.002	0.005	0.001	0.001	0.001	0.0001
HQ (unitless)	0.02	0.04	0.07	0.11	0.16	0.08	0.03	0.09	0.02	0.02	0.02	0.002

Life stage: Child (3-13 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion ($I_{\text{ingest\_s}}$) (µg/kg/d)	0.0005	0.001	0.002	0.003	0.004	0.002	0.0008	0.002	0.0005	0.0005	0.0005	0.00005
Inhalation Intake (I_{inhal}) (µg/kg/d)	0.00002	0.00003	0.00004	0.00006	0.00007	0.00004	0.00003	0.00005	0.00003	0.00003	0.00003	0.000005
Total Intake (µg/kg/d)	0.0005	0.001	0.002	0.003	0.004	0.002	0.0008	0.002	0.0005	0.0005	0.0006	0.00005
HQ (unitless)	0.01	0.02	0.03	0.05	0.07	0.04	0.02	0.04	0.009	0.01	0.01	0.001

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0001	0.0002	0.0004	0.0006	0.0008	0.0004	0.0002	0.0005	0.0001	0.0001	0.0001	0.00001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000009	0.00002	0.00002	0.00003	0.00004	0.00002	0.00001	0.00002	0.00001	0.00001	0.00001	0.000003
Total Intake (µg/kg/d)	0.0001	0.0002	0.0004	0.0006	0.0009	0.0004	0.0002	0.0005	0.0001	0.0001	0.0001	0.00001
HQ (unitless)	0.002	0.004	0.007	0.01	0.02	0.008	0.003	0.009	0.002	0.002	0.002	0.0002

Life stage: Adult (18-82 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00008	0.0001	0.0003	0.0004	0.0006	0.0003	0.0001	0.0003	0.00007	0.00007	0.00008	0.000008
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000007	0.00001	0.00002	0.00002	0.00003	0.00002	0.000009	0.00002	0.00001	0.00001	0.00001	0.000002
Total Intake (µg/kg/d)	0.00008	0.0002	0.0003	0.0004	0.0006	0.0003	0.0001	0.0004	0.00008	0.00008	0.00009	0.000009
HQ (unitless)	0.002	0.003	0.005	0.008	0.01	0.006	0.002	0.007	0.001	0.002	0.002	0.0002

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.0002	0.0003	0.0006	0.0009	0.001	0.0006	0.0003	0.0007	0.0002	0.0002	0.0002	0.00002
HQ (unitless)	0.003	0.006	0.01	0.02	0.02	0.01	0.005	0.01	0.003	0.003	0.003	0.0003

F.5 Chromium (Cr)

Equations:

Total Intake (I_{total_as})	=	$I_{ingest\_s} + I_{inhal}$
Average lifetime daily exposure for 82 year life span	=	$(I_{total(0.5-3)} \times 365 \times At_x) + (I_{total(3-13)} \times 365 \times At_x) + (I_{total(13-18)} \times 365 \times At_x) + (I_{total(18-82)} \times 365 \times At_x) / AT_{lifetime}$
HQ	=	$I_{lifetime} / TDI_{adj}$

F.5.1 Scenario 1

Adjusted TDI

	All receptors
Background adjusted tolerable daily intake (TDI_{adj}) ($\mu\text{g/kg/d}$)	1.6

Soil & air concentrations:

R1-15

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil concentration ($\mu\text{g/g}$) (Appendix C)	1.9	4.15	9.21	5.96	6.98	4.6	1.68	1.59	1.06	0.5	0.37	0.4	0.22	0.26	0.13
Air concentration ($\mu\text{g/m}^3$) (Appendix D)	0.0005	0.001	0.002	0.002	0.002	0.001	0.0005	0.0005	0.0004	0.0002	0.0002	0.0002	0.0001	0.0001	0.00007

R16-30

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil concentration (µg/g) (Appendix C)	0.12	0.11	0.32	0.27	0.23	0.17	0.12	0.1	0.09	0.07	0.06	0.05	0.07	0.06	0.07
Air concentration (µg/m³) (Appendix D)	0.00005	0.00002	0.00004	0.00005	0.00004	0.0001	0.00008	0.00007	0.00006	0.00005	0.00004	0.00003	0.00004	0.00004	0.00004

R31-45

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil concentration ($\mu\text{g/g}$) (Appendix C)	0.19	0.21	0.25	0.31	0.37	0.42	0.33	0.42	0.30	0.37	1.74	0.1	0.12	0.15	0.18
Air concentration ($\mu\text{g/m}^3$) (Appendix D)	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0006	0.00006	0.00006	0.00007	0.00009

R46-60

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil concentration (µg/g) (Appendix C)	0.05	0.05	0.07	0.08	0.09	0.04	0.05	0.26	0.07	0.07	0.06	0.07	0.03	0.03	0.1
Air concentration (µg/m ³) (Appendix D)	0.00004	0.00004	0.00004	0.00005	0.00005	0.00003	0.00003	0.0001	0.00004	0.00003	0.00003	0.00004	0.00002	0.00002	0.00007

R61-75

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil concentration (µg/g) (Appendix C)	0.07	0.1	0.1	0.28	0.06	0.04	0.06	0.14	0.12	0.11	0.08	0.25	0.37	0.40	0.12
Air concentration (µg/m ³) (Appendix D)	0.00005	0.00006	0.00007	0.0001	0.00004	0.00003	0.00003	0.00007	0.00006	0.00008	0.00004	0.0001	0.0002	0.0002	0.00007

R76-D

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil concentration (µg/g) (Appendix C)	0.1	0.05	0.11	0.23	0.16	0.03	0.04	0.04	0.23	0.29	0.70	12.02	12.30	12.56	37.90
Air concentration (µg/m ³) (Appendix D)	0.00007	0.00004	0.00006	0.0001	0.00007	0.00002	0.00002	0.00002	0.0001	0.0001	0.0002	0.003	0.003	0.003	0.007

E-P

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil concentration (µg/g) (Appendix C)	9.31	18.85	13.52	12.21	11.51	11.93	15.72	22.34	20.15	21.01	16.09	1.05
Air concentration (µg/m ³) (Appendix D)	0.002	0.004	0.003	0.003	0.003	0.003	0.004	0.005	0.004	0.004	0.003	0.0004

Intakes & hazard quotients:

R1-15

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.02	0.04	0.08	0.05	0.06	0.04	0.02	0.01	0.01	0.005	0.003	0.004	0.002	0.002	0.001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0004	0.0008	0.002	0.001	0.001	0.0009	0.0004	0.0004	0.0003	0.0002	0.0001	0.0001	0.00009	0.00009	0.00005
Total Intake (µg/kg/d)	0.02	0.04	0.09	0.06	0.06	0.04	0.02	0.01	0.01	0.005	0.004	0.004	0.002	0.002	0.001
HQ (unitless)	0.01	0.02	0.05	0.03	0.04	0.03	0.01	0.009	0.006	0.003	0.002	0.002	0.001	0.002	0.0008

Life stage: Child (3-13 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.008	0.02	0.04	0.02	0.03	0.02	0.007	0.007	0.004	0.002	0.002	0.002	0.0009	0.001	0.0005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0003	0.0006	0.001	0.0008	0.0009	0.0006	0.0003	0.0003	0.0002	0.0001	0.00009	0.00009	0.00006	0.00007	0.00003
Total Intake (µg/kg/d)	0.008	0.02	0.04	0.03	0.03	0.02	0.007	0.007	0.005	0.002	0.002	0.002	0.001	0.001	0.0006
HQ (unitless)	0.005	0.01	0.02	0.02	0.02	0.01	0.005	0.004	0.003	0.001	0.001	0.001	0.0006	0.0007	0.0004

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.002	0.004	0.008	0.005	0.006	0.004	0.001	0.001	0.001	0.0004	0.0003	0.0004	0.0002	0.0002	0.0001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0001	0.0003	0.0006	0.0004	0.0005	0.0003	0.0001	0.0001	0.0001	0.00006	0.00004	0.00005	0.00003	0.00003	0.00002
Total Intake (µg/kg/d)	0.002	0.004	0.009	0.006	0.007	0.004	0.002	0.002	0.001	0.0005	0.0004	0.0004	0.0002	0.0003	0.0001
HQ (unitless)	0.001	0.003	0.006	0.004	0.004	0.003	0.001	0.001	0.0007	0.0003	0.0002	0.0003	0.0001	0.0002	0.00008

Life stage: Adult (18-82 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.001	0.003	0.006	0.004	0.004	0.003	0.001	0.001	0.0007	0.0003	0.0002	0.0003	0.0001	0.0002	0.00008
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0001	0.0002	0.0004	0.0003	0.0003	0.0002	0.0001	0.0001	0.00008	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001
Total Intake (µg/kg/d)	0.001	0.003	0.006	0.004	0.005	0.003	0.001	0.001	0.0008	0.0004	0.0003	0.0003	0.0002	0.0002	0.0001
HQ (unitless)	0.0008	0.002	0.004	0.003	0.003	0.002	0.0007	0.0007	0.0005	0.0002	0.0002	0.0002	0.0001	0.0001	0.00006

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.003	0.006	0.01	0.008	0.01	0.006	0.002	0.002	0.002	0.0007	0.0005	0.0006	0.0003	0.0004	0.0002
HQ (unitless)	0.002	0.004	0.008	0.005	0.006	0.004	0.001	0.001	0.001	0.0005	0.0003	0.0004	0.0002	0.0002	0.0001

R16-30

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.001	0.001	0.003	0.002	0.002	0.002	0.001	0.0009	0.0008	0.0007	0.0005	0.0005	0.0006	0.0006	0.0007
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00003	0.00001	0.00003	0.00004	0.00003	0.00007	0.00006	0.00005	0.00004	0.00004	0.00003	0.00002	0.00003	0.00003	0.00003
Total Intake (µg/kg/d)	0.001	0.001	0.003	0.003	0.002	0.002	0.001	0.001	0.0008	0.0007	0.0006	0.0005	0.0006	0.0006	0.0007
HQ (unitless)	0.0007	0.0006	0.002	0.002	0.001	0.001	0.0007	0.0006	0.0005	0.0004	0.0004	0.0003	0.0004	0.0004	0.0004

Life stage: Child (3-13 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion ($I_{\text{ingest\_s}}$) (µg/kg/d)	0.0005	0.0004	0.001	0.001	0.0009	0.0007	0.0005	0.0004	0.0004	0.0003	0.0003	0.0002	0.0003	0.0003	0.0003
Inhalation Intake (I_{inhal}) (µg/kg/d)	0.00002	0.000009	0.00002	0.00003	0.00002	0.00005	0.00004	0.00004	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002
Total Intake (µg/kg/d)	0.0005	0.0005	0.001	0.001	0.001	0.0008	0.0005	0.0005	0.0004	0.0003	0.0003	0.0002	0.0003	0.0003	0.0003
HQ (unitless)	0.0003	0.0003	0.0008	0.0007	0.0006	0.0005	0.0003	0.0003	0.0002	0.0002	0.0002	0.0001	0.0002	0.0002	0.0002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion ($I_{\text{ingest\_s}}$) (µg/kg/d)	0.0001	0.0001	0.0003	0.0002	0.0002	0.0001	0.0001	0.00009	0.00008	0.00007	0.00005	0.00005	0.00006	0.00006	0.00007
Inhalation Intake (I_{inhal}) (µg/kg/d)	0.00001	0.000005	0.00001	0.00001	0.00001	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.000009	0.00001	0.00001	0.00001
Total Intake (µg/kg/d)	0.0001	0.0001	0.0003	0.0003	0.0002	0.0002	0.0001	0.0001	0.00009	0.00008	0.00006	0.00006	0.00007	0.00007	0.00008
HQ (unitless)	0.00008	0.00006	0.0002	0.0002	0.0001	0.0001	0.00008	0.00007	0.00006	0.00005	0.00004	0.00004	0.00004	0.00004	0.00005

Life stage: Adult (18-82 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.00008	0.00007	0.0002	0.0002	0.0001	0.0001	0.00008	0.00007	0.00005	0.00005	0.00004	0.00003	0.00004	0.00004	0.00005
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000009	0.000003	0.000007	0.00001	0.000008	0.00002	0.00001	0.00001	0.00001	0.00001	0.000007	0.000006	0.000009	0.000007	0.000008
Total Intake ($\mu\text{g/kg/d}$)	0.00009	0.00007	0.0002	0.0002	0.0002	0.0001	0.00009	0.00008	0.00007	0.00006	0.00005	0.00004	0.00005	0.00005	0.00006
HQ (unitless)	0.00005	0.00005	0.0001	0.0001	0.0001	0.00008	0.00006	0.00005	0.00004	0.00004	0.00003	0.00003	0.00003	0.00003	0.00003

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0002	0.0001	0.0004	0.0004	0.0003	0.0003	0.0002	0.0002	0.0001	0.0001	0.00009	0.00008	0.0001	0.0001	0.0001
HQ (unitless)	0.0001	0.00009	0.0003	0.0002	0.0002	0.0002	0.0001	0.0001	0.00008	0.00007	0.00006	0.00005	0.00006	0.00006	0.00007

R31-45

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.002	0.002	0.002	0.003	0.003	0.004	0.003	0.004	0.003	0.003	0.02	0.0009	0.001	0.001	0.002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00008	0.00009	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0005	0.00004	0.00005	0.00005	0.00006
Total Intake ($\mu\text{g/kg/d}$)	0.002	0.002	0.002	0.003	0.004	0.004	0.003	0.004	0.003	0.003	0.02	0.001	0.001	0.001	0.002
HQ (unitless)	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.003	0.002	0.002	0.01	0.0006	0.0007	0.0009	0.001

Life stage: Child (3-13 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.0008	0.0009	0.001	0.001	0.002	0.002	0.001	0.002	0.001	0.002	0.007	0.0004	0.0005	0.0006	0.0008
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00006	0.00006	0.00007	0.00009	0.00009	0.0001	0.00008	0.0001	0.00007	0.00008	0.00032	0.00003	0.00003	0.00004	0.00005
Total Intake ($\mu\text{g/kg/d}$)	0.0008	0.0009	0.001	0.001	0.002	0.002	0.001	0.002	0.001	0.002	0.008	0.0005	0.0005	0.0006	0.0008
HQ (unitless)	0.0005	0.0006	0.0007	0.0008	0.001	0.001	0.0009	0.001	0.0008	0.001	0.005	0.0003	0.0003	0.0004	0.0005

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0002	0.0002	0.0002	0.0003	0.0003	0.0004	0.0003	0.0004	0.0003	0.0003	0.002	0.00009	0.0001	0.0001	0.0002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00003	0.00003	0.00004	0.00005	0.00005	0.00005	0.00004	0.00005	0.00004	0.00004	0.0002	0.00002	0.00002	0.00002	0.00002
Total Intake ($\mu\text{g/kg/d}$)	0.0002	0.0002	0.0003	0.0003	0.0004	0.0004	0.0003	0.0004	0.0003	0.0004	0.002	0.0001	0.0001	0.0002	0.0002
HQ (unitless)	0.0001	0.0001	0.0002	0.0002	0.0002	0.0003	0.0002	0.0003	0.0002	0.0002	0.001	0.00007	0.00008	0.00009	0.0001

Life stage: Adult (18-82 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0001	0.0001	0.0002	0.0002	0.0002	0.0003	0.0002	0.0003	0.0002	0.0002	0.001	0.00007	0.00008	0.00009	0.0001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00002	0.00002	0.00003	0.00003	0.00003	0.00004	0.00003	0.00004	0.00003	0.00003	0.0001	0.00001	0.00001	0.00001	0.00002
Total Intake ($\mu\text{g/kg/d}$)	0.0001	0.0002	0.0002	0.0002	0.0003	0.0003	0.0002	0.0003	0.0002	0.0003	0.001	0.00008	0.00009	0.0001	0.0001
HQ (unitless)	0.00009	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0008	0.00005	0.00006	0.00007	0.00008

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0003	0.0003	0.0004	0.0005	0.0005	0.0006	0.0005	0.0006	0.0004	0.0005	0.002	0.0002	0.0002	0.0002	0.0003
HQ (unitless)	0.0002	0.0002	0.0002	0.0003	0.0003	0.0004	0.0003	0.0004	0.0003	0.0003	0.002	0.0001	0.0001	0.0001	0.0002

R46-60

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0005	0.0005	0.0007	0.0007	0.0008	0.0003	0.0004	0.002	0.0007	0.0006	0.0006	0.0006	0.0003	0.0003	0.0009
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00003	0.00003	0.00003	0.00003	0.00004	0.00002	0.00002	0.00008	0.00003	0.00002	0.00002	0.00003	0.00002	0.00001	0.00005
Total Intake ($\mu\text{g/kg/d}$)	0.0005	0.0005	0.0007	0.0008	0.0008	0.0004	0.0004	0.002	0.0007	0.0006	0.0006	0.0007	0.0003	0.0003	0.001
HQ (unitless)	0.0003	0.0003	0.0004	0.0005	0.0005	0.0002	0.0003	0.002	0.0004	0.0004	0.0004	0.0004	0.0002	0.0002	0.0006

Life stage: Child (3-13 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0002	0.0002	0.0003	0.0003	0.0004	0.0002	0.0002	0.001	0.0003	0.0003	0.0003	0.0003	0.0001	0.0001	0.0004
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00002	0.00002	0.00002	0.00002	0.00003	0.00001	0.00002	0.00005	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00004
Total Intake ($\mu\text{g/kg/d}$)	0.0002	0.0002	0.0003	0.0004	0.0004	0.0002	0.0002	0.001	0.0003	0.0003	0.0003	0.0003	0.0001	0.0001	0.0005
HQ (unitless)	0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0007	0.0002	0.0002	0.0002	0.0002	0.00009	0.00008	0.0003

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00005	0.00005	0.00006	0.00007	0.00008	0.00003	0.00004	0.0002	0.00007	0.00006	0.00006	0.00006	0.00003	0.00003	0.00009
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00001	0.000009	0.00001	0.00001	0.00001	0.000007	0.000009	0.00003	0.00001	0.000009	0.000009	0.00001	0.000006	0.000005	0.00002
Total Intake ($\mu\text{g/kg/d}$)	0.00006	0.00006	0.00008	0.00008	0.00009	0.00004	0.00005	0.0003	0.00008	0.00007	0.00007	0.00007	0.00004	0.00003	0.0001
HQ (unitless)	0.00003	0.00003	0.00005	0.00005	0.00006	0.00003	0.00003	0.0002	0.00005	0.00004	0.00004	0.00004	0.00002	0.00002	0.00007

Life stage: Adult (18-82 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00003	0.00003	0.00005	0.00005	0.00006	0.00002	0.00003	0.0002	0.00005	0.00004	0.00004	0.00004	0.00002	0.00002	0.00007
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000007	0.000007	0.000008	0.000009	0.00001	0.000005	0.000006	0.00002	0.000007	0.000006	0.000006	0.000007	0.000004	0.000004	0.00001
Total Intake ($\mu\text{g/kg/d}$)	0.00004	0.00004	0.00005	0.00006	0.00007	0.00003	0.00004	0.0002	0.00006	0.00005	0.00005	0.00005	0.00003	0.00002	0.00008
HQ (unitless)	0.00002	0.00002	0.00003	0.00004	0.00004	0.00002	0.00002	0.0001	0.00003	0.00003	0.00003	0.00003	0.00002	0.00001	0.00005

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.00008	0.00008	0.0001	0.0001	0.0001	0.00006	0.00007	0.0004	0.0001	0.0001	0.00009	0.0001	0.00005	0.00004	0.0002
HQ (unitless)	0.00005	0.00005	0.00007	0.00007	0.00008	0.00004	0.00004	0.0002	0.00007	0.00006	0.00006	0.00006	0.00003	0.00003	0.0001

R61-75

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0007	0.0009	0.0009	0.003	0.0005	0.0004	0.0005	0.001	0.001	0.001	0.0007	0.002	0.003	0.004	0.001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00004	0.00005	0.00005	0.00008	0.00003	0.00002	0.00002	0.00005	0.00005	0.00005	0.00003	0.00009	0.0001	0.0001	0.00005
Total Intake (µg/kg/d)	0.0007	0.0009	0.0009	0.003	0.0006	0.0004	0.0006	0.001	0.001	0.001	0.0007	0.002	0.004	0.004	0.001
HQ (unitless)	0.0004	0.0006	0.0006	0.002	0.0003	0.0003	0.0003	0.0009	0.0007	0.0007	0.0005	0.001	0.002	0.002	0.0007

Life stage: Child (3-13 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0003	0.0004	0.0004	0.001	0.0002	0.0002	0.0002	0.0006	0.0005	0.0005	0.0003	0.001	0.002	0.002	0.0005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00003	0.00003	0.00003	0.00006	0.00002	0.00002	0.00002	0.00004	0.00003	0.00004	0.00002	0.00006	0.0001	0.00009	0.00004
Total Intake (µg/kg/d)	0.0003	0.0004	0.0004	0.001	0.0003	0.0002	0.0003	0.0006	0.0006	0.0005	0.0003	0.001	0.002	0.002	0.0006
HQ (unitless)	0.0002	0.0003	0.0003	0.0008	0.0002	0.0001	0.0002	0.0004	0.0003	0.0003	0.0002	0.0007	0.001	0.001	0.0003

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00007	0.00009	0.00009	0.0003	0.00005	0.00004	0.00005	0.0001	0.0001	0.0001	0.00007	0.0002	0.0003	0.0004	0.0001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00001	0.00002	0.00002	0.00003	0.00001	0.000008	0.000008	0.00002	0.00002	0.00002	0.00001	0.00003	0.00005	0.00005	0.00002
Total Intake (µg/kg/d)	0.00008	0.0001	0.0001	0.0003	0.00006	0.00005	0.00006	0.0001	0.0001	0.0001	0.00008	0.0003	0.0004	0.0004	0.0001
HQ (unitless)	0.00005	0.00006	0.00007	0.0002	0.00004	0.00003	0.00004	0.00009	0.00008	0.00008	0.00005	0.0002	0.0002	0.0003	0.00008

Life stage: Adult (18-82 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00005	0.00006	0.00006	0.0002	0.00004	0.00003	0.00004	0.00009	0.00008	0.00007	0.00005	0.0002	0.0002	0.0003	0.00008
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00001	0.00001	0.00001	0.00002	0.000008	0.000006	0.000006	0.00001	0.00001	0.00001	0.000008	0.00002	0.00004	0.00003	0.00001
Total Intake (µg/kg/d)	0.00006	0.00007	0.00008	0.0002	0.00004	0.00003	0.00004	0.0001	0.00009	0.00009	0.00006	0.0002	0.0003	0.0003	0.00009
HQ (unitless)	0.00004	0.00005	0.00005	0.0001	0.00003	0.00002	0.00003	0.00007	0.00006	0.00005	0.00004	0.0001	0.0002	0.0002	0.00006

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.0001	0.0001	0.0001	0.0004	0.00009	0.00007	0.00009	0.0002	0.0002	0.0002	0.0001	0.0004	0.0005	0.0006	0.0002
HQ (unitless)	0.00007	0.00009	0.00009	0.0003	0.00005	0.00004	0.00005	0.0001	0.0001	0.0001	0.00007	0.0002	0.0003	0.0004	0.0001

R76-D

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0009	0.0005	0.001	0.002	0.001	0.0002	0.0003	0.0003	0.002	0.003	0.006	0.11	0.11	0.11	0.34
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00005	0.00003	0.00004	0.00007	0.00005	0.00001	0.00001	0.00002	0.00007	0.00009	0.0002	0.002	0.002	0.002	0.005
Total Intake ($\mu\text{g/kg/d}$)	0.001	0.0005	0.001	0.002	0.002	0.0003	0.0003	0.0004	0.002	0.003	0.007	0.11	0.11	0.12	0.35
HQ (unitless)	0.0006	0.0003	0.0006	0.001	0.0009	0.0002	0.0002	0.0002	0.001	0.002	0.004	0.07	0.07	0.07	0.22

Life stage: Child (3-13 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0004	0.0002	0.0005	0.001	0.0007	0.0001	0.0002	0.0002	0.0009	0.001	0.003	0.05	0.05	0.05	0.16
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00003	0.00002	0.00003	0.00005	0.00004	0.000009	0.000009	0.00001	0.00005	0.00006	0.0001	0.001	0.002	0.002	0.004
Total Intake ($\mu\text{g/kg/d}$)	0.0004	0.0002	0.0005	0.001	0.0007	0.0001	0.0002	0.0002	0.001	0.001	0.003	0.05	0.05	0.05	0.16
HQ (unitless)	0.0003	0.0001	0.0003	0.0006	0.0004	0.00007	0.0001	0.0001	0.0006	0.0008	0.002	0.03	0.03	0.03	0.1

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00009	0.00005	0.0001	0.0002	0.0001	0.00002	0.00003	0.00003	0.0002	0.0003	0.0006	0.01	0.01	0.01	0.03
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00002	0.00001	0.00002	0.00003	0.00002	0.000004	0.000005	0.000006	0.00003	0.00003	0.00007	0.0008	0.0008	0.0008	0.002
Total Intake ($\mu\text{g/kg/d}$)	0.0001	0.00006	0.0001	0.0002	0.0002	0.00003	0.00004	0.00004	0.0002	0.0003	0.0007	0.01	0.01	0.01	0.04
HQ (unitless)	0.00007	0.00004	0.00007	0.0001	0.0001	0.00002	0.00002	0.00003	0.0001	0.0002	0.0004	0.007	0.007	0.008	0.02

Life stage: Adult (18-82 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) (µg/kg/d)	0.00006	0.00003	0.00007	0.0001	0.0001	0.00002	0.00002	0.00002	0.0001	0.0002	0.0004	0.008	0.008	0.008	0.02
Inhalation Intake (I_{inhal}) (µg/kg/d)	0.00001	0.000007	0.00001	0.00002	0.00001	0.000003	0.000004	0.000004	0.00002	0.00002	0.00005	0.0006	0.0006	0.0006	0.001
Total Intake (µg/kg/d)	0.00008	0.00004	0.00008	0.0002	0.0001	0.00002	0.00003	0.00003	0.0002	0.0002	0.0005	0.008	0.008	0.009	0.03
HQ (unitless)	0.00005	0.00003	0.00005	0.0001	0.00007	0.00001	0.00002	0.00002	0.0001	0.0001	0.0003	0.005	0.005	0.005	0.02

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Lifetime TWA daily intake (I_{lifetime}) (µg/kg/d)	0.0002	0.00008	0.0002	0.0003	0.0002	0.00004	0.00005	0.00006	0.0003	0.0004	0.001	0.02	0.02	0.02	0.05
HQ (unitless)	0.00009	0.00005	0.0001	0.0002	0.0001	0.00002	0.00003	0.00004	0.0002	0.0003	0.0006	0.01	0.01	0.01	0.03

E-P

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.08	0.17	0.12	0.11	0.1	0.11	0.14	0.2	0.18	0.19	0.15	0.01
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.002	0.003	0.002	0.002	0.002	0.002	0.003	0.004	0.003	0.003	0.002	0.0003
Total Intake ($\mu\text{g/kg/d}$)	0.09	0.17	0.13	0.11	0.11	0.11	0.15	0.21	0.19	0.19	0.15	0.01
HQ (unitless)	0.05	0.11	0.08	0.07	0.07	0.07	0.09	0.13	0.12	0.12	0.09	0.006

Life stage: Child (3-13 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.04	0.08	0.06	0.05	0.05	0.05	0.07	0.09	0.08	0.09	0.07	0.004
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.001	0.002	0.002	0.001	0.001	0.001	0.002	0.003	0.002	0.002	0.002	0.0002
Total Intake ($\mu\text{g/kg/d}$)	0.04	0.08	0.06	0.05	0.05	0.05	0.07	0.1	0.09	0.09	0.07	0.005
HQ (unitless)	0.02	0.05	0.04	0.03	0.03	0.03	0.04	0.06	0.05	0.06	0.04	0.003

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.008	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.0009
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0006	0.001	0.0008	0.0008	0.0007	0.0007	0.0009	0.001	0.001	0.001	0.0009	0.0001
Total Intake (µg/kg/d)	0.009	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.001
HQ (unitless)	0.006	0.01	0.008	0.007	0.007	0.007	0.009	0.01	0.01	0.01	0.01	0.0007

Life stage: Adult (18-82 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.006	0.01	0.009	0.008	0.007	0.008	0.01	0.01	0.01	0.01	0.01	0.0007
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0004	0.0008	0.0006	0.0005	0.0005	0.0005	0.0007	0.0009	0.0009	0.0008	0.0006	0.00008
Total Intake (µg/kg/d)	0.006	0.01	0.009	0.008	0.008	0.008	0.01	0.02	0.01	0.01	0.01	0.0008
HQ (unitless)	0.004	0.008	0.006	0.005	0.005	0.005	0.007	0.01	0.009	0.009	0.007	0.0005

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.01	0.03	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.02	0.002
HQ (unitless)	0.008	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.0009

F.5.2 Scenario 2

Adjusted TDI

	All receptors
Background adjusted tolerable daily intake (TDI _{adj}) (µg/kg/d)	1.6

Soil & air concentrations:

R1-15

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil concentration (µg/g) (Appendix C)	0.12	0.19	0.27	0.16	0.17	0.19	0.08	0.08	0.06	0.03	0.03	0.03	0.02	0.02	0.01
Air concentration (µg/m ³) (Appendix D)	0.00009	0.0001	0.0001	0.00009	0.00008	0.00007	0.00004	0.00005	0.00004	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002

R16-30

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil concentration (µg/g) (Appendix C)	0.01	0.007	0.02	0.02	0.02	0.01	0.01	0.01	0.009	0.008	0.008	0.006	0.007	0.008	0.008
Air concentration (µg/m ³) (Appendix D)	0.00001	0.000005	0.000008	0.00001	0.000009	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001

R31-45

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil concentration (µg/g) (Appendix C)	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.02	0.03	0.08	0.01	0.01	0.01	0.02
Air concentration (µg/m ³) (Appendix D)	0.00002	0.00002	0.00002	0.00002	0.00002	0.00003	0.00002	0.00002	0.00002	0.00002	0.00004	0.00001	0.00001	0.00002	0.00002

R46-60

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil concentration (µg/g) (Appendix C)	0.006	0.006	0.008	0.008	0.009	0.005	0.005	0.02	0.007	0.006	0.006	0.008	0.004	0.003	0.01
Air concentration (µg/m ³) (Appendix D)	0.000009	0.00001	0.00001	0.00001	0.00001	0.000008	0.000009	0.00002	0.000008	0.00001	0.000009	0.00001	0.000006	0.000005	0.00002

R61-75

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil concentration (µg/g) (Appendix C)	0.008	0.01	0.01	0.02	0.006	0.005	0.005	0.01	0.01	0.01	0.007	0.02	0.03	0.03	0.01
Air concentration (µg/m ³) (Appendix D)	0.00001	0.00002	0.00002	0.00002	0.00001	0.000008	0.000007	0.00001	0.00001	0.00001	0.00001	0.00002	0.00003	0.00002	0.00002

R76-D

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil concentration (µg/g) (Appendix C)	0.01	0.006	0.01	0.02	0.01	0.003	0.004	0.005	0.02	0.02	0.04	0.24	0.24	0.24	0.26
Air concentration (µg/m ³) (Appendix D)	0.00002	0.000009	0.00001	0.00002	0.00001	0.000006	0.000006	0.00001	0.00002	0.00002	0.00003	0.00009	0.00009	0.00009	0.0001

E-P

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil concentration (µg/g) (Appendix C)	0.25	0.29	0.26	0.26	0.24	0.23	0.21	0.31	0.68	0.76	1.18	0.06
Air concentration (µg/m ³) (Appendix D)	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0003	0.0003	0.00004

Intakes & hazard quotients:

R1-15

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.001	0.002	0.002	0.001	0.002	0.002	0.0007	0.0007	0.0005	0.0003	0.0002	0.0003	0.0002	0.0002	0.0001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00006	0.00008	0.00008	0.00006	0.00006	0.00005	0.00003	0.00004	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001
Total Intake (µg/kg/d)	0.001	0.002	0.003	0.002	0.002	0.002	0.0007	0.0008	0.0005	0.0003	0.0003	0.0003	0.0002	0.0002	0.0001
HQ (unitless)	0.0007	0.001	0.002	0.001	0.001	0.001	0.0005	0.0005	0.0003	0.0002	0.0002	0.0002	0.0001	0.0001	0.00008

Life stage: Child (3-13 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0005	0.0008	0.001	0.0007	0.0007	0.0008	0.0003	0.0003	0.0002	0.0001	0.0001	0.0001	0.00009	0.00009	0.00005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00005	0.00006	0.00006	0.00005	0.00004	0.00004	0.00002	0.00003	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.000009
Total Intake (µg/kg/d)	0.0005	0.0009	0.001	0.0007	0.0007	0.0008	0.0004	0.0004	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.00006
HQ (unitless)	0.0003	0.0005	0.0007	0.0005	0.0005	0.0005	0.0002	0.0002	0.0002	0.00009	0.00008	0.00008	0.00006	0.00007	0.00004

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0001	0.0002	0.0002	0.0001	0.0001	0.0002	0.00007	0.00007	0.00005	0.00003	0.00002	0.00002	0.00002	0.00002	0.00001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00002	0.00003	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.000007	0.000006	0.000006	0.000006	0.000006	0.000004
Total Intake (µg/kg/d)	0.0001	0.0002	0.0003	0.0002	0.0002	0.0002	0.00008	0.00008	0.00006	0.00004	0.00003	0.00003	0.00002	0.00003	0.00002
HQ (unitless)	0.00008	0.0001	0.0002	0.0001	0.0001	0.0001	0.00005	0.00005	0.00004	0.00002	0.00002	0.00002	0.00001	0.00002	0.00001

Life stage: Adult (18-82 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00008	0.0001	0.0002	0.0001	0.0001	0.0001	0.00005	0.00005	0.00004	0.00002	0.00002	0.00002	0.00001	0.00001	0.000008
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.000008	0.00001	0.000007	0.000005	0.000004	0.000004	0.000004	0.000004	0.000003
Total Intake (µg/kg/d)	0.00009	0.0001	0.0002	0.0001	0.0001	0.0001	0.00006	0.00006	0.00004	0.00003	0.00002	0.00002	0.00002	0.00002	0.00001
HQ (unitless)	0.00006	0.00009	0.0001	0.00008	0.00008	0.00008	0.00004	0.00004	0.00003	0.00002	0.00001	0.00001	0.00001	0.00001	0.000007

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.0002	0.0003	0.0004	0.0002	0.0002	0.0003	0.0001	0.0001	0.00008	0.00005	0.00004	0.00004	0.00003	0.00004	0.00002
HQ (unitless)	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.00007	0.00007	0.00005	0.00003	0.00003	0.00003	0.00002	0.00002	0.00001

R16-30

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00009	0.00006	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.00008	0.00007	0.00007	0.00006	0.00007	0.00007	0.00007
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000008	0.000003	0.000006	0.000008	0.000007	0.00001	0.00001	0.00001	0.000009	0.000009	0.00001	0.000008	0.000008	0.000009	0.000007
Total Intake (µg/kg/d)	0.0001	0.00007	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.00009	0.00008	0.00008	0.00007	0.00007	0.00008	0.00008
HQ (unitless)	0.00006	0.00004	0.0001	0.0001	0.0001	0.00009	0.00007	0.00007	0.00006	0.00005	0.00005	0.00004	0.00005	0.00005	0.00005

Life stage: Child (3-13 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion ($I_{\text{ingest\_s}}$) (µg/kg/d)	0.00004	0.00003	0.00009	0.0001	0.00008	0.00006	0.00005	0.00005	0.00004	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003
Inhalation Intake (I_{inhal}) (µg/kg/d)	0.000006	0.000002	0.000004	0.000006	0.000005	0.000009	0.000007	0.000008	0.000006	0.000006	0.000007	0.000006	0.000006	0.000006	0.000005
Total Intake (µg/kg/d)	0.00005	0.00003	0.00009	0.0001	0.00009	0.00007	0.00006	0.00005	0.00004	0.00004	0.00004	0.00003	0.00004	0.00004	0.00004
HQ (unitless)	0.00003	0.00002	0.00006	0.00006	0.00005	0.00004	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000009	0.000006	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.000008	0.000007	0.000007	0.000006	0.000006	0.000007	0.000007
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000003	0.000001	0.000002	0.000003	0.000003	0.000005	0.000004	0.000004	0.000003	0.000003	0.000004	0.000003	0.000003	0.000003	0.000003
Total Intake (µg/kg/d)	0.00001	0.000007	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.000009	0.000009	0.00001	0.00001
HQ (unitless)	0.000007	0.000005	0.00001	0.00001	0.00001	0.00001	0.000009	0.000009	0.000007	0.000006	0.000006	0.000005	0.000006	0.000006	0.000006

Life stage: Adult (18-82 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000006	0.000004	0.00001	0.00001	0.00001	0.000009	0.000007	0.000007	0.000006	0.000005	0.000005	0.000004	0.000005	0.000005	0.000005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000002	0.0000009	0.000002	0.000002	0.000002	0.000003	0.000003	0.000003	0.000002	0.000002	0.000003	0.000002	0.000002	0.000002	0.000002
Total Intake (µg/kg/d)	0.000009	0.000005	0.00001	0.00002	0.00001	0.00001	0.00001	0.00001	0.000008	0.000007	0.000007	0.000006	0.000007	0.000007	0.000007
HQ (unitless)	0.000005	0.000003	0.000009	0.00001	0.000009	0.000008	0.000006	0.000006	0.000005	0.000005	0.000005	0.000004	0.000004	0.000004	0.000004

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.00002	0.00001	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
HQ (unitless)	0.00001	0.000007	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.000009	0.000009	0.000008	0.000007	0.000008	0.000008	0.000008

R31-45

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002	0.0003	0.0002	0.0002	0.0007	0.00009	0.0001	0.0001	0.0002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00003	0.000009	0.00001	0.00001	0.00001
Total Intake (µg/kg/d)	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0002	0.0003	0.0002	0.0003	0.0008	0.0001	0.0001	0.0001	0.0002
HQ (unitless)	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0005	0.00006	0.00007	0.00009	0.0001

Life stage: Child (3-13 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00007	0.00007	0.00009	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0003	0.00004	0.00005	0.00006	0.00007
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000009	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.000006	0.000007	0.000008	0.000009
Total Intake (µg/kg/d)	0.00008	0.00008	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0004	0.00005	0.00006	0.00007	0.00008
HQ (unitless)	0.00005	0.00005	0.00006	0.00007	0.00008	0.00009	0.00007	0.00009	0.00007	0.00008	0.0002	0.00003	0.00004	0.00004	0.00005

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00001	0.00002	0.00002	0.00002	0.00002	0.00003	0.00002	0.00003	0.00002	0.00002	0.00007	0.000009	0.00001	0.00001	0.00001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000005	0.000005	0.000006	0.000006	0.000007	0.000007	0.000006	0.000007	0.000006	0.000006	0.00001	0.000003	0.000004	0.000004	0.000005
Total Intake ($\mu\text{g/kg/d}$)	0.00002	0.00002	0.00002	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00008	0.00001	0.00001	0.00002	0.00002
HQ (unitless)	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00005	0.000008	0.000009	0.00001	0.00001

Life stage: Adult (18-82 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00005	0.000007	0.000008	0.000009	0.00001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000004	0.000004	0.000004	0.000004	0.000005	0.000005	0.000004	0.000005	0.000004	0.000004	0.000008	0.000002	0.000003	0.000003	0.000003
Total Intake ($\mu\text{g/kg/d}$)	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00006	0.000009	0.00001	0.00001	0.00001
HQ (unitless)	0.000009	0.000009	0.00001	0.00001	0.00001	0.00002	0.00001	0.00001	0.00001	0.00001	0.00004	0.000006	0.000006	0.000007	0.000009

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.00003	0.00003	0.00003	0.00004	0.00004	0.00005	0.00004	0.00005	0.00004	0.00004	0.0001	0.00002	0.00002	0.00002	0.00003
HQ (unitless)	0.00002	0.00002	0.00002	0.00002	0.00003	0.00003	0.00002	0.00003	0.00002	0.00003	0.00007	0.00001	0.00001	0.00001	0.00002

R46-60

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00005	0.00006	0.00007	0.00007	0.00008	0.00004	0.00005	0.0002	0.00006	0.00006	0.00006	0.00007	0.00003	0.00003	0.0001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000007	0.000008	0.000007	0.000008	0.000008	0.000006	0.000007	0.00001	0.000006	0.000007	0.000007	0.000008	0.000004	0.000004	0.00001
Total Intake ($\mu\text{g/kg/d}$)	0.00006	0.00006	0.00008	0.00008	0.00009	0.00005	0.00006	0.0002	0.00007	0.00007	0.00006	0.00008	0.00004	0.00003	0.0001
HQ (unitless)	0.00004	0.00004	0.00005	0.00005	0.00006	0.00003	0.00004	0.0001	0.00004	0.00004	0.00004	0.00005	0.00002	0.00002	0.00007

Life stage: Child (3-13 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00002	0.00003	0.00003	0.00003	0.00004	0.00002	0.00002	0.00008	0.00003	0.00003	0.00003	0.00003	0.00002	0.00001	0.00005
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000005	0.000005	0.000005	0.000005	0.000006	0.000004	0.000005	0.00001	0.000004	0.000005	0.000005	0.000006	0.000003	0.000003	0.000008
Total Intake ($\mu\text{g/kg/d}$)	0.00003	0.00003	0.00004	0.00004	0.00004	0.00002	0.00003	0.00009	0.00003	0.00003	0.00003	0.00004	0.00002	0.00002	0.00006
HQ (unitless)	0.00002	0.00002	0.00002	0.00002	0.00003	0.00001	0.00002	0.00005	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00004

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000005	0.000006	0.000007	0.000007	0.000008	0.000004	0.000005	0.00002	0.000006	0.000006	0.000006	0.000007	0.000003	0.000003	0.00001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000003	0.000003	0.000003	0.000003	0.000003	0.000002	0.000002	0.000005	0.000002	0.000003	0.000003	0.000003	0.000002	0.000001	0.000004
Total Intake ($\mu\text{g/kg/d}$)	0.000008	0.000008	0.00001	0.00001	0.00001	0.000006	0.000007	0.00002	0.000008	0.000009	0.000008	0.00001	0.000005	0.000004	0.00001
HQ (unitless)	0.000005	0.000005	0.000006	0.000006	0.000007	0.000004	0.000005	0.00001	0.000005	0.000005	0.000005	0.000006	0.000003	0.000003	0.000009

Life stage: Adult (18-82 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000004	0.000004	0.000005	0.000005	0.000006	0.000003	0.000004	0.00001	0.000004	0.000004	0.000004	0.000005	0.000002	0.000002	0.000007
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000004	0.000002	0.000002	0.000002	0.000002	0.000001	0.000001	0.000003
Total Intake ($\mu\text{g/kg/d}$)	0.000006	0.000006	0.000007	0.000007	0.000008	0.000005	0.000005	0.00002	0.000006	0.000006	0.000006	0.000007	0.000004	0.000003	0.00001
HQ (unitless)	0.000003	0.000004	0.000004	0.000005	0.000005	0.000003	0.000003	0.00001	0.000004	0.000004	0.000004	0.000005	0.000002	0.000002	0.000007

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.00001	0.00001	0.00001	0.00001	0.00001	0.000008	0.00001	0.00003	0.00001	0.00001	0.00001	0.00001	0.000006	0.000006	0.00002
HQ (unitless)	0.000006	0.000007	0.000008	0.000009	0.000009	0.000005	0.000006	0.00002	0.000007	0.000007	0.000007	0.000008	0.000004	0.000003	0.00001

R61-75

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00007	0.0001	0.0001	0.0002	0.00006	0.00005	0.00005	0.0001	0.0001	0.0001	0.00007	0.0002	0.0003	0.0003	0.0001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000008	0.00001	0.00001	0.00001	0.000007	0.000006	0.000005	0.000009	0.000009	0.00001	0.000008	0.00002	0.00002	0.00002	0.00001
Total Intake ($\mu\text{g/kg/d}$)	0.00008	0.0001	0.0001	0.0002	0.00007	0.00005	0.00005	0.0001	0.0001	0.0001	0.00008	0.0002	0.0003	0.0003	0.0001
HQ (unitless)	0.00005	0.00007	0.00008	0.0001	0.00004	0.00003	0.00003	0.00008	0.00008	0.00007	0.00005	0.0001	0.0002	0.0002	0.00009

Life stage: Child (3-13 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00003	0.00005	0.00005	0.00008	0.00003	0.00002	0.00002	0.00005	0.00005	0.00005	0.00003	0.00008	0.0001	0.0001	0.00006
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000005	0.000009	0.000009	0.000008	0.000005	0.000004	0.000004	0.000006	0.000007	0.000007	0.000006	0.00001	0.00001	0.00001	0.00001
Total Intake ($\mu\text{g/kg/d}$)	0.00004	0.00006	0.00006	0.00008	0.00003	0.00003	0.00003	0.00006	0.00006	0.00005	0.00004	0.0001	0.0001	0.0001	0.00007
HQ (unitless)	0.00002	0.00004	0.00004	0.00005	0.00002	0.00002	0.00002	0.00004	0.00004	0.00003	0.00002	0.00006	0.00008	0.00008	0.00004

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000007	0.00001	0.00001	0.00002	0.000006	0.000005	0.000005	0.00001	0.00001	0.00001	0.000007	0.00002	0.00003	0.00002	0.00001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000003	0.000004	0.000005	0.000004	0.000003	0.000002	0.000002	0.000003	0.000003	0.000004	0.000003	0.000006	0.000007	0.000006	0.000005
Total Intake ($\mu\text{g/kg/d}$)	0.00001	0.00001	0.00002	0.00002	0.000008	0.000007	0.000007	0.00001	0.00001	0.00001	0.00001	0.00002	0.00003	0.00003	0.00002
HQ (unitless)	0.000006	0.000009	0.00001	0.00001	0.000005	0.000004	0.000004	0.000009	0.000009	0.000009	0.000006	0.00002	0.00002	0.00002	0.00001

Life stage: Adult (18-82 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000005	0.000008	0.000008	0.00001	0.000004	0.000003	0.000003	0.000008	0.000008	0.000007	0.000005	0.00001	0.00002	0.00002	0.000009
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000002	0.000003	0.000003	0.000003	0.000002	0.000002	0.000001	0.000002	0.000002	0.000003	0.000002	0.000005	0.000005	0.000004	0.000004
Total Intake ($\mu\text{g/kg/d}$)	0.000007	0.00001	0.00001	0.00001	0.000006	0.000005	0.000005	0.00001	0.00001	0.00001	0.000007	0.00002	0.00002	0.00002	0.00001
HQ (unitless)	0.000004	0.000007	0.000007	0.000009	0.000004	0.000003	0.000003	0.000006	0.000006	0.000006	0.000004	0.00001	0.00001	0.00001	0.000008

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.00001	0.00002	0.00002	0.00003	0.00001	0.000009	0.000009	0.00002	0.00002	0.00002	0.00001	0.00003	0.00005	0.00004	0.00002
HQ (unitless)	0.000008	0.00001	0.00001	0.00002	0.000007	0.000006	0.000006	0.00001	0.00001	0.00001	0.000008	0.00002	0.00003	0.00003	0.00001

R76-D

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0001	0.00005	0.00009	0.0002	0.0001	0.00003	0.00003	0.00004	0.0002	0.0002	0.0003	0.002	0.002	0.002	0.002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00001	0.000007	0.000008	0.00001	0.00001	0.000005	0.000004	0.000007	0.00002	0.00001	0.00002	0.00006	0.00007	0.00007	0.00007
Total Intake ($\mu\text{g/kg/d}$)	0.0001	0.00006	0.0001	0.0002	0.0001	0.00003	0.00004	0.00005	0.0002	0.0002	0.0004	0.002	0.002	0.002	0.002
HQ (unitless)	0.00008	0.00004	0.00006	0.0001	0.00008	0.00002	0.00002	0.00003	0.0001	0.0001	0.0002	0.001	0.001	0.001	0.002

Life stage: Child (3-13 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00005	0.00002	0.00004	0.00007	0.00005	0.00001	0.00001	0.00002	0.00008	0.00008	0.0002	0.001	0.001	0.001	0.001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000009	0.000005	0.000005	0.000009	0.000007	0.000003	0.000003	0.000005	0.00001	0.00001	0.00001	0.00005	0.00005	0.00005	0.00005
Total Intake ($\mu\text{g/kg/d}$)	0.00006	0.00003	0.00005	0.00008	0.00006	0.00002	0.00002	0.00002	0.00009	0.00009	0.0002	0.001	0.001	0.001	0.001
HQ (unitless)	0.00004	0.00002	0.00003	0.00005	0.00004	0.00001	0.00001	0.00002	0.00005	0.00006	0.0001	0.0007	0.0007	0.0007	0.0007

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00001	0.000005	0.000009	0.00002	0.00001	0.000003	0.000003	0.000004	0.00002	0.00002	0.00003	0.0002	0.0002	0.0002	0.0002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000005	0.000003	0.000003	0.000005	0.000004	0.000002	0.000002	0.000003	0.000006	0.000005	0.000007	0.00002	0.00002	0.00002	0.00003
Total Intake ($\mu\text{g/kg/d}$)	0.00002	0.000008	0.00001	0.00002	0.00001	0.000004	0.000005	0.000007	0.00002	0.00002	0.00004	0.0002	0.0002	0.0002	0.0003
HQ (unitless)	0.00001	0.000005	0.000007	0.00001	0.000009	0.000003	0.000003	0.000004	0.00001	0.00001	0.00003	0.0001	0.0002	0.0002	0.0002

Life stage: Adult (18-82 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000008	0.000004	0.000006	0.00001	0.000008	0.000002	0.000002	0.000003	0.00001	0.00001	0.00002	0.0002	0.0002	0.0002	0.0002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000003	0.000002	0.000002	0.000003	0.000003	0.000001	0.000001	0.000002	0.000004	0.000004	0.000005	0.00002	0.00002	0.00002	0.00002
Total Intake ($\mu\text{g/kg/d}$)	0.00001	0.000005	0.000008	0.00001	0.00001	0.000003	0.000003	0.000005	0.00002	0.00002	0.00003	0.0002	0.0002	0.0002	0.0002
HQ (unitless)	0.000007	0.000003	0.000005	0.000009	0.000006	0.000002	0.000002	0.000003	0.00001	0.00001	0.00002	0.0001	0.0001	0.0001	0.0001

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.00002	0.00001	0.00002	0.00003	0.00002	0.000006	0.000006	0.000009	0.00003	0.00003	0.00006	0.0003	0.0003	0.0003	0.0004
HQ (unitless)	0.00001	0.000006	0.00001	0.00002	0.00001	0.000004	0.000004	0.000005	0.00002	0.00002	0.00004	0.0002	0.0002	0.0002	0.0002

E-P

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.002	0.003	0.002	0.002	0.002	0.002	0.002	0.003	0.006	0.007	0.01	0.0005
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00007	0.00008	0.00008	0.00008	0.00008	0.00008	0.00007	0.0001	0.0002	0.0002	0.0003	0.00003
Total Intake ($\mu\text{g/kg/d}$)	0.002	0.003	0.002	0.002	0.002	0.002	0.002	0.003	0.006	0.007	0.01	0.0005
HQ (unitless)	0.001	0.002	0.002	0.002	0.001	0.001	0.001	0.002	0.004	0.004	0.007	0.0003

Life stage: Child (3-13 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.001	0.001	0.001	0.001	0.001	0.001	0.0009	0.001	0.003	0.003	0.005	0.0002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00005	0.00006	0.00006	0.00006	0.00006	0.00005	0.00005	0.00007	0.0001	0.0001	0.0002	0.00002
Total Intake ($\mu\text{g/kg/d}$)	0.001	0.001	0.001	0.001	0.001	0.001	0.0009	0.001	0.003	0.003	0.005	0.0003
HQ (unitless)	0.0007	0.0008	0.0007	0.0007	0.0007	0.0006	0.0006	0.0009	0.002	0.002	0.003	0.0002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0006	0.0007	0.001	0.00005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00004	0.00006	0.00007	0.00009	0.00001
Total Intake (µg/kg/d)	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0003	0.0007	0.0007	0.001	0.00006
HQ (unitless)	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0002	0.0004	0.0005	0.0007	0.00004

Life stage: Adult (18-82 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0002	0.0004	0.0005	0.0008	0.00004
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00003	0.00005	0.00005	0.00007	0.000007
Total Intake (µg/kg/d)	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0005	0.0005	0.0008	0.00004
HQ (unitless)	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00009	0.0001	0.0003	0.0003	0.0005	0.00003

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.0004	0.0004	0.0004	0.0004	0.0004	0.0003	0.0003	0.0005	0.001	0.001	0.002	0.00008
HQ (unitless)	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0006	0.0007	0.001	0.00005

F.6 Copper (Cu)

Equations:

Total Intake (I_{total_as})	=	$I_{ingest\_s} + I_{inhal}$
Average lifetime daily exposure for 82 year life span	=	$(I_{total(0.5-3)} \times 365 \times At_x) + (I_{total(3-13)} \times 365 \times At_x) + (I_{total(13-18)} \times 365 \times At_x) + (I_{total(18-82)} \times 365 \times At_x) / AT_{lifetime}$
HQ	=	$I_{lifetime} / TDI_{adj}$

F.6.1 Scenario 1

Adjusted TDI

	All receptors
Background adjusted tolerable daily intake (TDI_{adj}) ($\mu\text{g}/\text{kg}/\text{d}$)	39

Soil & air concentrations:

R1-15

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil concentration ($\mu\text{g}/\text{g}$) (Appendix C)	0.06	0.12	0.22	0.15	0.16	0.11	0.05	0.05	0.03	0.02	0.01	0.02	0.009	0.01	0.005
Air concentration ($\mu\text{g}/\text{m}^3$) (Appendix D)	0.00002	0.00003	0.00005	0.00004	0.00004	0.00003	0.00002	0.00002	0.00001	0.000007	0.000006	0.000006	0.000005	0.000005	0.000003

R16-30

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil concentration (µg/g) (Appendix C)	0.005	0.004	0.01	0.01	0.009	0.007	0.005	0.004	0.003	0.003	0.002	0.002	0.003	0.003	0.003
Air concentration (µg/m³) (Appendix D)	0.000002	0.0000007	0.000002	0.000002	0.000002	0.000004	0.000003	0.000003	0.000002	0.000002	0.000002	0.000001	0.000002	0.000002	0.000002

R31-45

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil concentration ($\mu\text{g}/\text{g}$) (Appendix C)	0.008	0.008	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.05	0.004	0.005	0.006	0.007
Air concentration ($\mu\text{g}/\text{m}^3$) (Appendix D)	0.000004	0.000005	0.000006	0.000006	0.000006	0.000007	0.000006	0.000007	0.000005	0.000006	0.00002	0.000002	0.000003	0.000003	0.000003

R46-60

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil concentration (µg/g) (Appendix C)	0.002	0.002	0.003	0.003	0.004	0.002	0.002	0.01	0.003	0.003	0.002	0.003	0.001	0.001	0.004
Air concentration (µg/m ³) (Appendix D)	0.000001	0.000001	0.000002	0.000002	0.000002	0.000001	0.000001	0.000004	0.000002	0.000001	0.000001	0.000002	0.0000009	0.0000007	0.000003

R61-75

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil concentration (µg/g) (Appendix C)	0.003	0.004	0.004	0.01	0.002	0.002	0.003	0.006	0.005	0.005	0.003	0.009	0.01	0.02	0.005
Air concentration (µg/m ³) (Appendix D)	0.000002	0.000003	0.000003	0.000004	0.000002	0.000001	0.000001	0.000003	0.000002	0.000003	0.000002	0.000005	0.000008	0.000006	0.000003

R76-D

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil concentration (µg/g) (Appendix C)	0.004	0.002	0.005	0.009	0.006	0.001	0.001	0.002	0.009	0.01	0.02	0.25	0.26	0.27	0.72
Air concentration (µg/m ³) (Appendix D)	0.000003	0.000001	0.000002	0.000004	0.000003	0.0000007	0.0000008	0.0000008	0.000004	0.000005	0.000009	0.00006	0.00006	0.00006	0.0001

E-P

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil concentration (µg/g) (Appendix C)	0.22	0.41	0.32	0.31	0.28	0.28	0.34	0.49	0.46	0.48	0.4	0.03
Air concentration (µg/m ³) (Appendix D)	0.00006	0.00009	0.00008	0.00007	0.00007	0.00007	0.00008	0.0001	0.0001	0.0001	0.00009	0.00001

Intakes & hazard quotients:

R1-15

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0006	0.001	0.002	0.001	0.001	0.001	0.0004	0.0004	0.0003	0.0002	0.0001	0.0001	0.00008	0.0001	0.00005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00001	0.00002	0.00004	0.00003	0.00003	0.00002	0.00001	0.00001	0.000009	0.000005	0.000004	0.000005	0.000004	0.000004	0.000002
Total Intake (µg/kg/d)	0.0006	0.001	0.002	0.001	0.002	0.001	0.0004	0.0004	0.0003	0.0002	0.0001	0.0001	0.00009	0.0001	0.00005
HQ (unitless)	0.00001	0.00003	0.00005	0.00004	0.00004	0.00003	0.00001	0.00001	0.000008	0.000004	0.000003	0.000004	0.000002	0.000003	0.000001

Life stage: Child (3-13 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0003	0.0005	0.0009	0.0006	0.0007	0.0004	0.0002	0.0002	0.0001	0.00008	0.00006	0.00006	0.00004	0.00005	0.00002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000009	0.00002	0.00003	0.00002	0.00002	0.00002	0.000008	0.000008	0.000006	0.000004	0.000003	0.000003	0.000003	0.000003	0.000001
Total Intake (µg/kg/d)	0.0003	0.0005	0.0009	0.0007	0.0007	0.0005	0.0002	0.0002	0.0001	0.00008	0.00006	0.00007	0.00004	0.00005	0.00002
HQ (unitless)	0.000007	0.00001	0.00002	0.00002	0.00002	0.00001	0.000005	0.000005	0.000004	0.000002	0.000002	0.000002	0.000001	0.000001	0.0000006

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00006	0.0001	0.0002	0.0001	0.0001	0.0001	0.00004	0.00004	0.00003	0.00002	0.00001	0.00001	0.000008	0.00001	0.000005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000005	0.000009	0.00001	0.00001	0.00001	0.000008	0.000004	0.000004	0.000003	0.000002	0.000002	0.000002	0.000001	0.000001	0.0000007
Total Intake (µg/kg/d)	0.00006	0.0001	0.0002	0.0001	0.0002	0.0001	0.00005	0.00005	0.00003	0.00002	0.00001	0.00002	0.000009	0.00001	0.000006
HQ (unitless)	0.000002	0.000003	0.000005	0.000004	0.000004	0.000003	0.000001	0.000001	0.0000009	0.0000005	0.0000004	0.0000004	0.0000002	0.0000003	0.0000001

Life stage: Adult (18-82 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00004	0.00007	0.0001	0.0001	0.0001	0.00007	0.00003	0.00003	0.00002	0.00001	0.000009	0.00001	0.000006	0.000007	0.000004
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000003	0.000006	0.00001	0.000008	0.000008	0.000006	0.000003	0.000003	0.000002	0.000001	0.000001	0.000001	0.000001	0.000001	0.0000005
Total Intake (µg/kg/d)	0.00004	0.00008	0.0002	0.0001	0.0001	0.00007	0.00003	0.00003	0.00002	0.00001	0.00001	0.00001	0.000007	0.000008	0.000004
HQ (unitless)	0.000001	0.000002	0.000004	0.000003	0.000003	0.000002	0.0000009	0.0000008	0.0000006	0.0000003	0.0000003	0.0000003	0.0000002	0.0000002	0.0000001

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.00009	0.0002	0.0003	0.0002	0.0002	0.0002	0.00007	0.00007	0.00005	0.00003	0.00002	0.00002	0.00001	0.00002	0.000008
HQ (unitless)	0.000002	0.000004	0.000008	0.000006	0.000006	0.000004	0.000002	0.000002	0.000001	0.0000007	0.0000005	0.0000006	0.0000003	0.0000004	0.0000002

R16-30

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00005	0.00004	0.0001	0.0001	0.00008	0.00006	0.00004	0.00004	0.00003	0.00003	0.00002	0.00002	0.00003	0.00002	0.00003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000001	0.0000005	0.000001	0.000001	0.000001	0.000003	0.000002	0.000002	0.000002	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001
Total Intake ($\mu\text{g/kg/d}$)	0.00005	0.00004	0.0001	0.0001	0.00008	0.00006	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00003	0.00003	0.00003
HQ (unitless)	0.000001	0.000001	0.000003	0.000003	0.000002	0.000002	0.000001	0.000001	0.0000008	0.0000007	0.0000006	0.0000005	0.0000007	0.0000007	0.0000007

Life stage: Child (3-13 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00002	0.00002	0.00005	0.00005	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.000009	0.00001	0.00001	0.00001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000001	0.0000004	0.0000008	0.000001	0.0000008	0.000002	0.000002	0.000001	0.000001	0.000001	0.0000009	0.0000007	0.0000009	0.0000008	0.0000009
Total Intake ($\mu\text{g/kg/d}$)	0.00002	0.00002	0.00005	0.00005	0.00004	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
HQ (unitless)	0.0000006	0.0000005	0.000001	0.000001	0.000001	0.0000008	0.0000006	0.0000005	0.0000004	0.0000003	0.0000003	0.0000003	0.0000003	0.0000003	0.0000003

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000005	0.000004	0.00001	0.00001	0.000008	0.000006	0.000004	0.000004	0.000003	0.000003	0.000002	0.000002	0.000002	0.000002	0.000003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000005	0.0000002	0.0000004	0.0000005	0.0000004	0.000001	0.0000008	0.0000007	0.0000006	0.0000006	0.0000005	0.0000004	0.0000005	0.0000004	0.0000005
Total Intake ($\mu\text{g/kg/d}$)	0.000005	0.000004	0.00001	0.00001	0.000009	0.000007	0.000005	0.000004	0.000004	0.000003	0.000003	0.000002	0.000003	0.000003	0.000003
HQ (unitless)	0.0000001	0.0000001	0.0000003	0.0000003	0.0000002	0.0000002	0.0000001	0.0000001	0.00000009	0.00000008	0.00000007	0.00000006	0.00000008	0.00000007	0.00000008

Life stage: Adult (18-82 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000003	0.000003	0.000008	0.000007	0.000006	0.000004	0.000003	0.000003	0.000002	0.000002	0.000002	0.000001	0.000002	0.000002	0.000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000004	0.0000001	0.0000003	0.0000004	0.0000003	0.0000008	0.0000006	0.0000005	0.0000004	0.0000004	0.0000003	0.0000003	0.0000003	0.0000003	0.0000003
Total Intake (µg/kg/d)	0.000004	0.000003	0.000009	0.000007	0.000006	0.000005	0.000004	0.000003	0.000003	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002
HQ (unitless)	0.00000009	0.00000008	0.0000002	0.0000002	0.0000002	0.0000001	0.00000009	0.00000008	0.00000007	0.00000006	0.00000005	0.00000004	0.00000005	0.00000005	0.00000006

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.000007	0.000006	0.00002	0.00002	0.00001	0.00001	0.000007	0.000006	0.000005	0.000005	0.000004	0.000003	0.000004	0.000004	0.000004
HQ (unitless)	0.0000002	0.0000002	0.0000005	0.0000004	0.0000003	0.0000003	0.0000002	0.0000002	0.0000001	0.0000001	0.00000009	0.00000009	0.0000001	0.0000001	0.0000001

R31-45

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00007	0.00007	0.00009	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0005	0.00004	0.00005	0.00005	0.00007
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000003	0.000003	0.000004	0.000005	0.000005	0.000005	0.000004	0.000005	0.000004	0.000004	0.00001	0.000002	0.000002	0.000002	0.000002
Total Intake (µg/kg/d)	0.00007	0.00008	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0005	0.00004	0.00005	0.00006	0.00007
HQ (unitless)	0.000002	0.000002	0.000002	0.000003	0.000003	0.000004	0.000003	0.000004	0.000003	0.000003	0.00001	0.000001	0.000001	0.000001	0.000002

Life stage: Child (3-13 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00003	0.00003	0.00004	0.00005	0.00006	0.00007	0.00005	0.00007	0.00005	0.00006	0.0002	0.00002	0.00002	0.00002	0.00003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000002	0.000002	0.000003	0.000003	0.000003	0.000004	0.000003	0.000004	0.000003	0.000003	0.00001	0.000001	0.000001	0.000001	0.000002
Total Intake (µg/kg/d)	0.00003	0.00004	0.00004	0.00005	0.00006	0.00007	0.00006	0.00007	0.00005	0.00006	0.00023	0.00002	0.00002	0.00003	0.00003
HQ (unitless)	0.0000009	0.0000009	0.000001	0.000001	0.000002	0.000002	0.000001	0.000002	0.000001	0.000002	0.000006	0.0000005	0.0000006	0.0000007	0.0000008

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000007	0.000007	0.000009	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00005	0.000004	0.000004	0.000005	0.000006
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000001	0.000001	0.000001	0.000002	0.000002	0.000002	0.000002	0.000002	0.000001	0.000002	0.000005	0.0000006	0.0000007	0.0000008	0.0000009
Total Intake ($\mu\text{g/kg/d}$)	0.000008	0.000009	0.00001	0.00001	0.00001	0.00002	0.00001	0.00002	0.00001	0.00001	0.00005	0.000004	0.000005	0.000006	0.000007
HQ (unitless)	0.0000002	0.0000002	0.0000003	0.0000003	0.0000004	0.0000004	0.0000003	0.0000004	0.0000003	0.0000004	0.000001	0.0000001	0.0000001	0.0000002	0.0000002

Life stage: Adult (18-82 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000005	0.000005	0.000006	0.000008	0.000009	0.00001	0.000008	0.00001	0.000007	0.000009	0.00003	0.000003	0.000003	0.000004	0.000005
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000008	0.0000009	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000004	0.0000004	0.0000005	0.0000006	0.0000006
Total Intake ($\mu\text{g/kg/d}$)	0.000006	0.000006	0.000008	0.000009	0.00001	0.00001	0.000009	0.00001	0.000008	0.00001	0.00004	0.000003	0.000004	0.000004	0.000005
HQ (unitless)	0.0000001	0.0000002	0.0000002	0.0000002	0.0000003	0.0000003	0.0000002	0.0000003	0.0000002	0.0000003	0.000001	0.00000008	0.00000009	0.0000001	0.0000001

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00008	0.000006	0.000007	0.000009	0.00001
HQ (unitless)	0.0000003	0.0000003	0.0000004	0.0000005	0.0000005	0.0000006	0.0000005	0.0000006	0.0000004	0.0000005	0.000002	0.0000002	0.0000002	0.0000002	0.0000003

R46-60

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00002	0.00002	0.00003	0.00003	0.00003	0.00001	0.00002	0.00009	0.00003	0.00002	0.00002	0.00003	0.00001	0.00001	0.00004
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000001	0.000001	0.000001	0.000001	0.000001	0.0000008	0.0000009	0.000003	0.000001	0.000001	0.0000009	0.000001	0.0000006	0.0000005	0.000002
Total Intake ($\mu\text{g/kg/d}$)	0.00002	0.00002	0.00003	0.00003	0.00003	0.00002	0.00002	0.00009	0.00003	0.00003	0.00002	0.00003	0.00001	0.00001	0.00004
HQ (unitless)	0.0000005	0.0000005	0.0000007	0.0000008	0.0000009	0.0000004	0.0000005	0.000002	0.0000008	0.0000007	0.0000006	0.0000007	0.0000003	0.0000003	0.000001

Life stage: Child (3-13 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000009	0.000009	0.00001	0.00001	0.00002	0.000007	0.000008	0.00004	0.00001	0.00001	0.00001	0.00001	0.000006	0.000005	0.00002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000007	0.0000007	0.0000009	0.0000009	0.000001	0.0000005	0.0000007	0.000002	0.0000008	0.0000007	0.0000006	0.0000008	0.0000005	0.0000004	0.000001
Total Intake ($\mu\text{g/kg/d}$)	0.00001	0.00001	0.00001	0.00001	0.00002	0.000007	0.000009	0.00004	0.00001	0.00001	0.00001	0.00001	0.000006	0.000006	0.00002
HQ (unitless)	0.0000003	0.0000003	0.0000003	0.0000004	0.0000004	0.0000002	0.0000002	0.000001	0.0000004	0.0000003	0.0000003	0.0000003	0.0000002	0.0000001	0.0000005

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000002	0.000002	0.000003	0.000003	0.000003	0.000001	0.000002	0.000009	0.000003	0.000002	0.000002	0.000003	0.000001	0.000001	0.000004
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000004	0.0000004	0.0000005	0.0000005	0.0000005	0.0000003	0.0000003	0.000001	0.0000004	0.0000004	0.0000003	0.0000004	0.0000002	0.0000002	0.0000007
Total Intake ($\mu\text{g/kg/d}$)	0.000002	0.000002	0.000003	0.000003	0.000004	0.000002	0.000002	0.00001	0.000003	0.000003	0.000003	0.000003	0.000002	0.000001	0.000004
HQ (unitless)	0.00000006	0.00000006	0.00000008	0.00000008	0.0000001	0.00000004	0.00000005	0.0000002	0.00000008	0.00000007	0.00000006	0.00000007	0.00000004	0.00000003	0.0000001

Life stage: Adult (18-82 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000001	0.000001	0.000002	0.000002	0.000002	0.000001	0.000001	0.000006	0.000002	0.000002	0.000002	0.000002	0.0000009	0.0000008	0.000003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000003	0.0000003	0.0000003	0.0000003	0.0000004	0.0000002	0.0000002	0.0000007	0.0000003	0.0000003	0.0000002	0.0000003	0.0000002	0.0000001	0.0000005
Total Intake ($\mu\text{g/kg/d}$)	0.000002	0.000002	0.000002	0.000002	0.000003	0.000001	0.000002	0.000007	0.000002	0.000002	0.000002	0.000002	0.000001	0.0000009	0.000003
HQ (unitless)	0.00000004	0.00000004	0.00000005	0.00000006	0.00000007	0.00000003	0.00000004	0.0000002	0.00000006	0.00000005	0.00000005	0.00000005	0.00000003	0.00000002	0.00000008

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.000003	0.000003	0.000004	0.000005	0.000005	0.000002	0.000003	0.00001	0.000005	0.000004	0.000004	0.000004	0.000002	0.000002	0.000006
HQ (unitless)	0.00000008	0.00000009	0.0000001	0.0000001	0.0000001	0.00000006	0.00000008	0.0000004	0.0000001	0.0000001	0.00000009	0.0000001	0.00000005	0.00000005	0.0000002

R61-75

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00003	0.00004	0.00004	0.0001	0.00002	0.00002	0.00002	0.00005	0.00005	0.00004	0.00003	0.00009	0.0001	0.0001	0.00005
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000001	0.000002	0.000002	0.000003	0.000001	0.0000009	0.0000009	0.000002	0.000002	0.000002	0.000001	0.000004	0.000005	0.000005	0.000002
Total Intake ($\mu\text{g/kg/d}$)	0.00003	0.00004	0.00004	0.0001	0.00002	0.00002	0.00002	0.00006	0.00005	0.00004	0.00003	0.00009	0.0001	0.0001	0.00005
HQ (unitless)	0.0000007	0.000001	0.000001	0.000003	0.0000006	0.0000005	0.0000006	0.000001	0.000001	0.000001	0.0000008	0.000002	0.000004	0.000004	0.000001

Life stage: Child (3-13 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00001	0.00002	0.00002	0.00004	0.00001	0.000008	0.00001	0.00002	0.00002	0.00002	0.00001	0.00004	0.00006	0.00006	0.00002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000001	0.000001	0.000001	0.000002	0.0000009	0.0000006	0.0000006	0.000001	0.000001	0.000001	0.0000008	0.000003	0.000004	0.000003	0.000002
Total Intake ($\mu\text{g/kg/d}$)	0.00001	0.00002	0.00002	0.00005	0.00001	0.000008	0.00001	0.00003	0.00002	0.00002	0.00001	0.00004	0.00006	0.00007	0.00002
HQ (unitless)	0.0000003	0.0000005	0.0000005	0.0000012	0.0000003	0.0000002	0.0000003	0.0000007	0.0000006	0.0000005	0.0000004	0.000001	0.000002	0.000002	0.0000006

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000003	0.000004	0.000004	0.00001	0.000002	0.000002	0.000002	0.000005	0.000005	0.000004	0.000003	0.000008	0.00001	0.00001	0.000005
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000005	0.0000007	0.0000007	0.000001	0.0000004	0.0000003	0.0000003	0.0000007	0.0000007	0.0000008	0.0000004	0.000001	0.000002	0.000002	0.0000008
Total Intake ($\mu\text{g/kg/d}$)	0.000003	0.000004	0.000004	0.00001	0.000003	0.000002	0.000003	0.000006	0.000005	0.000005	0.000003	0.00001	0.00002	0.00002	0.000005
HQ (unitless)	0.00000008	0.0000001	0.0000001	0.0000003	0.00000007	0.00000005	0.00000007	0.0000002	0.0000001	0.0000001	0.00000009	0.0000003	0.0000004	0.0000004	0.0000001

Life stage: Adult (18-82 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000002	0.000003	0.000003	0.000007	0.000002	0.000001	0.000002	0.000004	0.000003	0.000003	0.000002	0.000006	0.000009	0.00001	0.000003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000004	0.0000005	0.0000005	0.0000008	0.0000003	0.0000002	0.0000002	0.0000005	0.0000005	0.0000006	0.0000003	0.000001	0.000001	0.000001	0.0000006
Total Intake ($\mu\text{g/kg/d}$)	0.000002	0.000003	0.000003	0.000008	0.000002	0.000001	0.000002	0.000004	0.000004	0.000003	0.000002	0.000007	0.00001	0.00001	0.000004
HQ (unitless)	0.00000006	0.00000008	0.00000008	0.0000002	0.00000005	0.00000004	0.00000005	0.0000001	0.0000001	0.00000009	0.00000006	0.0000002	0.0000003	0.0000003	0.0000001

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.000004	0.000006	0.000006	0.00002	0.000004	0.000003	0.000004	0.000009	0.000007	0.000007	0.000005	0.00001	0.00002	0.00002	0.000008
HQ (unitless)	0.0000001	0.0000002	0.0000002	0.0000004	0.00000009	0.00000007	0.00000009	0.0000002	0.0000002	0.0000002	0.0000001	0.0000004	0.0000005	0.0000006	0.0000002

R76-D

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00004	0.00002	0.00004	0.00008	0.00006	0.00001	0.00001	0.00001	0.00008	0.0001	0.0002	0.002	0.002	0.002	0.007
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000002	0.000001	0.000002	0.000003	0.000002	0.0000005	0.0000006	0.0000006	0.000003	0.000003	0.000006	0.00005	0.00005	0.00005	0.0001
Total Intake ($\mu\text{g/kg/d}$)	0.00004	0.00002	0.00004	0.00008	0.00006	0.00001	0.00001	0.00001	0.00009	0.0001	0.0002	0.002	0.002	0.002	0.007
HQ (unitless)	0.000001	0.0000005	0.000001	0.000002	0.000002	0.0000003	0.0000004	0.0000004	0.000002	0.000003	0.000006	0.00006	0.00006	0.00006	0.0002

Life stage: Child (3-13 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00002	0.000009	0.00002	0.00004	0.00003	0.000005	0.000006	0.000006	0.00004	0.00005	0.0001	0.001	0.001	0.001	0.003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000001	0.0000008	0.000001	0.000002	0.000001	0.0000003	0.0000004	0.0000004	0.000002	0.000002	0.000004	0.00003	0.00003	0.00003	0.00007
Total Intake ($\mu\text{g/kg/d}$)	0.00002	0.00001	0.00002	0.00004	0.00003	0.000005	0.000007	0.000007	0.00004	0.00005	0.0001	0.001	0.001	0.001	0.003
HQ (unitless)	0.0000005	0.0000002	0.0000005	0.000001	0.0000007	0.0000001	0.0000002	0.0000002	0.000001	0.000001	0.000003	0.00003	0.00003	0.00003	0.00008

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000004	0.000002	0.000004	0.000008	0.000006	0.000001	0.000001	0.000001	0.000008	0.00001	0.00002	0.0002	0.0002	0.0002	0.0006
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000007	0.0000004	0.0000006	0.000001	0.0000008	0.0000002	0.0000002	0.0000002	0.000001	0.000001	0.000002	0.00002	0.00002	0.00002	0.00004
Total Intake ($\mu\text{g/kg/d}$)	0.000004	0.000002	0.000005	0.000009	0.000006	0.000001	0.000002	0.000002	0.000009	0.00001	0.00002	0.0002	0.0002	0.0003	0.0007
HQ (unitless)	0.0000001	0.00000006	0.0000001	0.0000002	0.0000002	0.00000003	0.00000004	0.00000004	0.0000002	0.0000003	0.0000006	0.000006	0.000006	0.000007	0.00002

Life stage: Adult (18-82 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) (µg/kg/d)	0.000003	0.000001	0.000003	0.000006	0.000004	0.0000008	0.000001	0.000001	0.000006	0.000007	0.00002	0.0002	0.0002	0.0002	0.0005
Inhalation Intake (I_{inhal}) (µg/kg/d)	0.0000005	0.0000003	0.0000004	0.0000007	0.0000005	0.0000001	0.0000002	0.0000002	0.0000007	0.0000009	0.000002	0.00001	0.00001	0.00001	0.00003
Total Intake (µg/kg/d)	0.000003	0.000002	0.000003	0.000006	0.000005	0.0000009	0.000001	0.000001	0.000007	0.000008	0.00002	0.0002	0.0002	0.0002	0.0005
HQ (unitless)	0.00000008	0.00000004	0.00000009	0.0000002	0.0000001	0.00000002	0.00000003	0.00000003	0.0000002	0.0000002	0.0000004	0.000004	0.000005	0.000005	0.00001

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.000006	0.000003	0.000007	0.00001	0.000009	0.000002	0.000002	0.000002	0.00001	0.00002	0.00003	0.0004	0.0004	0.0004	0.001
HQ (unitless)	0.0000002	0.00000008	0.0000002	0.0000003	0.0000002	0.00000004	0.00000006	0.00000006	0.0000003	0.0000004	0.0000009	0.000009	0.000009	0.00001	0.00003

E-P

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) (µg/kg/d)	0.002	0.004	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.0003
Inhalation Intake (I_{inhal}) (µg/kg/d)	0.00004	0.00007	0.00006	0.00005	0.00005	0.00005	0.00006	0.00008	0.00008	0.00008	0.00006	0.000009
Total Intake (µg/kg/d)	0.002	0.004	0.003	0.003	0.003	0.003	0.003	0.005	0.004	0.004	0.004	0.0003
HQ (unitless)	0.00005	0.0001	0.00008	0.00007	0.00007	0.00007	0.00008	0.0001	0.0001	0.0001	0.0001	0.000008

Life stage: Child (3-13 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) (µg/kg/d)	0.0009	0.002	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.0001
Inhalation Intake (I_{inhal}) (µg/kg/d)	0.00003	0.00005	0.00004	0.00004	0.00004	0.00003	0.00004	0.00006	0.00006	0.00005	0.00004	0.000007
Total Intake (µg/kg/d)	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.0002
HQ (unitless)	0.00002	0.00005	0.00004	0.00003	0.00003	0.00003	0.00004	0.00005	0.00005	0.00005	0.00004	0.000004

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0002	0.0004	0.0003	0.0003	0.0003	0.0003	0.0003	0.0004	0.0004	0.0004	0.0004	0.00003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00002	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00003	0.00003	0.00003	0.00002	0.000003
Total Intake (µg/kg/d)	0.0002	0.0004	0.0003	0.0003	0.0003	0.0003	0.0003	0.0005	0.0004	0.0005	0.0004	0.00003
HQ (unitless)	0.000005	0.00001	0.000008	0.000008	0.000007	0.000007	0.000008	0.00001	0.00001	0.00001	0.00001	0.0000009

Life stage: Adult (18-82 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0001	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.00002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00001	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.000002
Total Intake (µg/kg/d)	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.00002
HQ (unitless)	0.000004	0.000007	0.000006	0.000005	0.000005	0.000005	0.000006	0.000009	0.000008	0.000008	0.000007	0.0000006

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.0003	0.0006	0.0005	0.0004	0.0004	0.0004	0.0005	0.0007	0.0006	0.0007	0.0006	0.00005
HQ (unitless)	0.000008	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00001	0.000001

F.6.2 Scenario 2

Adjusted TDI

	All receptors
Background adjusted tolerable daily intake (TDI _{adj}) (µg/kg/d)	39

Soil & air concentrations:

R1-15

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil concentration (µg/g) (Appendix C)	0.1	0.21	0.33	0.48	0.2	0.1	0.06	0.06	0.05	0.03	0.02	0.02	0.01	0.01	0.005
Air concentration (µg/m ³) (Appendix D)	0.00003	0.00004	0.00005	0.00009	0.00006	0.00003	0.00002	0.00002	0.00002	0.00001	0.000009	0.000006	0.000004	0.000004	0.000002

R16-30

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil concentration (µg/g) (Appendix C)	0.005	0.005	0.01	0.01	0.009	0.008	0.006	0.005	0.004	0.004	0.003	0.004	0.004	0.005	0.005
Air concentration (µg/m ³) (Appendix D)	0.000002	0.000001	0.000002	0.000002	0.000002	0.000003	0.000003	0.000003	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002

R31-45

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil concentration (µg/g) (Appendix C)	0.009	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.07	0.007	0.008	0.01	0.01
Air concentration (µg/m ³) (Appendix D)	0.000004	0.000004	0.000005	0.000006	0.000005	0.000006	0.000005	0.000006	0.000008	0.000009	0.00002	0.000003	0.000004	0.000005	0.000006

R46-60

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil concentration (µg/g) (Appendix C)	0.003	0.003	0.005	0.005	0.006	0.002	0.003	0.02	0.005	0.005	0.006	0.005	0.002	0.002	0.005
Air concentration (µg/m ³) (Appendix D)	0.000002	0.000002	0.000002	0.000002	0.000002	0.000001	0.000002	0.000005	0.000002	0.000001	0.000002	0.000003	0.000001	0.000001	0.000003

R61-75

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil concentration (µg/g) (Appendix C)	0.004	0.005	0.005	0.02	0.003	0.003	0.005	0.01	0.008	0.005	0.003	0.01	0.02	0.02	0.006
Air concentration (µg/m ³) (Appendix D)	0.000002	0.000003	0.000003	0.000007	0.000002	0.000001	0.000002	0.000004	0.000004	0.000003	0.000002	0.000004	0.000007	0.000007	0.000003

R76-D

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil concentration (µg/g) (Appendix C)	0.005	0.002	0.008	0.01	0.01	0.002	0.002	0.004	0.01	0.02	0.03	0.19	0.19	0.23	0.32
Air concentration (µg/m ³) (Appendix D)	0.000003	0.000002	0.000003	0.000006	0.000004	0.000002	0.0000008	0.000002	0.000006	0.000006	0.00001	0.00005	0.00005	0.00006	0.00008

E-P

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil concentration (µg/g) (Appendix C)	0.44	0.82	1.26	1.88	2.55	1.31	0.63	1.68	0.77	0.87	0.99	0.05
Air concentration (µg/m ³) (Appendix D)	0.0001	0.0002	0.0002	0.0003	0.0004	0.0002	0.0001	0.0003	0.0002	0.0002	0.0002	0.00002

Intakes & hazard quotients:

R1-15

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0009	0.002	0.003	0.004	0.002	0.0009	0.0005	0.0005	0.0004	0.0003	0.0002	0.0002	0.00009	0.00009	0.00005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00002	0.00003	0.00004	0.00007	0.00004	0.00002	0.00001	0.00001	0.00001	0.000008	0.000007	0.000005	0.000003	0.000003	0.000002
Total Intake (µg/kg/d)	0.0009	0.002	0.003	0.004	0.002	0.0009	0.0005	0.0005	0.0004	0.0003	0.0002	0.0002	0.00009	0.00009	0.00005
HQ (unitless)	0.00002	0.00005	0.00008	0.0001	0.00005	0.00002	0.00001	0.00001	0.00001	0.000007	0.000005	0.000005	0.000002	0.000002	0.000001

Life stage: Child (3-13 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0004	0.0009	0.001	0.002	0.0009	0.0004	0.0002	0.0002	0.0002	0.0001	0.00009	0.00009	0.00004	0.00004	0.00002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00001	0.00002	0.00003	0.00005	0.00003	0.00002	0.00001	0.00001	0.00001	0.000006	0.000005	0.000003	0.000002	0.000002	0.000001
Total Intake (µg/kg/d)	0.0004	0.0009	0.001	0.002	0.0009	0.0004	0.0003	0.0002	0.0002	0.0001	0.0001	0.00009	0.00004	0.00004	0.00002
HQ (unitless)	0.00001	0.00002	0.00004	0.00005	0.00002	0.00001	0.000007	0.000006	0.000005	0.000003	0.000002	0.000002	0.000001	0.000001	0.0000006

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00009	0.0002	0.0003	0.0004	0.0002	0.00009	0.00005	0.00005	0.00004	0.00002	0.00002	0.00002	0.000009	0.000009	0.000005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000007	0.00001	0.00001	0.00003	0.00001	0.000008	0.000005	0.000005	0.000005	0.000003	0.000003	0.000002	0.000001	0.000001	0.0000007
Total Intake (µg/kg/d)	0.0001	0.0002	0.0003	0.0005	0.0002	0.0001	0.00006	0.00006	0.00005	0.00003	0.00002	0.00002	0.00001	0.00001	0.000005
HQ (unitless)	0.000002	0.000005	0.000008	0.00001	0.000005	0.000002	0.000001	0.000001	0.000001	0.0000007	0.0000006	0.0000005	0.0000002	0.0000003	0.0000001

Life stage: Adult (18-82 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00006	0.0001	0.0002	0.0003	0.0001	0.00006	0.00004	0.00004	0.00003	0.00002	0.00001	0.00001	0.000006	0.000006	0.000003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000005	0.000008	0.00001	0.00002	0.00001	0.000006	0.000004	0.000004	0.000004	0.000002	0.000002	0.000001	0.0000008	0.0000008	0.0000005
Total Intake (µg/kg/d)	0.00007	0.0001	0.0002	0.0003	0.0001	0.00007	0.00004	0.00004	0.00003	0.00002	0.00002	0.00002	0.000007	0.000007	0.000004
HQ (unitless)	0.000002	0.000004	0.000006	0.000008	0.000004	0.000002	0.000001	0.000001	0.0000009	0.0000005	0.0000004	0.0000004	0.0000002	0.0000002	0.0000001

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.0001	0.0003	0.0005	0.0007	0.0003	0.0001	0.00008	0.00008	0.00007	0.00004	0.00003	0.00003	0.00001	0.00001	0.000008
HQ (unitless)	0.000004	0.000008	0.00001	0.00002	0.000007	0.000004	0.000002	0.000002	0.000002	0.000001	0.0000008	0.0000008	0.0000004	0.0000004	0.0000002

R16-30

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00004	0.00004	0.00009	0.0001	0.00008	0.00007	0.00005	0.00004	0.00004	0.00003	0.00003	0.00003	0.00004	0.00004	0.00005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.0000008	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000002
Total Intake (µg/kg/d)	0.00004	0.00004	0.00009	0.0001	0.00009	0.00008	0.00005	0.00005	0.00004	0.00003	0.00003	0.00004	0.00004	0.00004	0.00005
HQ (unitless)	0.000001	0.000001	0.000002	0.000003	0.000002	0.000002	0.000001	0.000001	0.000001	0.0000009	0.0000008	0.0000009	0.000001	0.000001	0.000001

Life stage: Child (3-13 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion ($I_{\text{ingest\_s}}$) (µg/kg/d)	0.00002	0.00002	0.00004	0.00005	0.00004	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002
Inhalation Intake (I_{inhal}) (µg/kg/d)	0.000001	0.0000005	0.000001	0.000001	0.000001	0.000002	0.000001	0.000001	0.000001	0.000001	0.000001	0.0000008	0.0000009	0.0000009	0.000001
Total Intake (µg/kg/d)	0.00002	0.00002	0.00004	0.00005	0.00004	0.00004	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002
HQ (unitless)	0.0000005	0.0000005	0.000001	0.000001	0.000001	0.0000009	0.0000006	0.0000006	0.0000005	0.0000004	0.0000004	0.0000004	0.0000005	0.0000005	0.0000006

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000004	0.000004	0.000009	0.00001	0.000008	0.000007	0.000005	0.000004	0.000004	0.000003	0.000003	0.000003	0.000004	0.000004	0.000005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000005	0.0000003	0.0000006	0.0000007	0.0000006	0.0000009	0.0000007	0.0000007	0.0000005	0.0000005	0.0000005	0.0000004	0.0000004	0.0000005	0.0000007
Total Intake (µg/kg/d)	0.000005	0.000004	0.000009	0.00001	0.000009	0.000008	0.000006	0.000005	0.000004	0.000004	0.000004	0.000004	0.000004	0.000005	0.000005
HQ (unitless)	0.0000001	0.0000001	0.0000002	0.0000003	0.0000002	0.0000002	0.0000001	0.0000001	0.0000001	0.00000009	0.00000009	0.0000001	0.0000001	0.0000001	0.0000001

Life stage: Adult (18-82 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000003	0.000003	0.000006	0.000007	0.000006	0.000005	0.000004	0.000003	0.000003	0.000002	0.000002	0.000002	0.000003	0.000003	0.000003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000004	0.0000002	0.0000004	0.0000005	0.0000004	0.0000007	0.0000005	0.0000005	0.0000004	0.0000004	0.0000004	0.0000003	0.0000003	0.0000004	0.0000005
Total Intake (µg/kg/d)	0.000003	0.000003	0.000007	0.000007	0.000006	0.000006	0.000004	0.000004	0.000003	0.000003	0.000003	0.000003	0.000003	0.000003	0.000004
HQ (unitless)	0.00000008	0.00000008	0.0000002	0.0000002	0.0000002	0.0000001	0.0000001	0.00000009	0.00000008	0.00000007	0.00000007	0.00000007	0.00000007	0.00000008	0.0000001

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.000007	0.000006	0.00001	0.00002	0.00001	0.00001	0.000008	0.000007	0.000006	0.000005	0.000005	0.000005	0.000006	0.000007	0.000008
HQ (unitless)	0.0000002	0.0000002	0.0000003	0.0000004	0.0000003	0.0000003	0.0000002	0.0000002	0.0000002	0.0000001	0.0000001	0.0000001	0.0000001	0.0000002	0.0000002

R31-45

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00008	0.00009	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0006	0.00006	0.00007	0.00009	0.0001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000003	0.000003	0.000004	0.000004	0.000004	0.000004	0.000004	0.000004	0.000006	0.000007	0.00001	0.000002	0.000003	0.000004	0.000005
Total Intake (µg/kg/d)	0.00008	0.00009	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0006	0.00006	0.00008	0.00009	0.0001
HQ (unitless)	0.000002	0.000002	0.000003	0.000003	0.000005	0.000005	0.000004	0.000005	0.000004	0.000005	0.00002	0.000002	0.000002	0.000002	0.000003

Life stage: Child (3-13 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00004	0.00004	0.00005	0.00006	0.00008	0.00009	0.00008	0.0001	0.00008	0.00009	0.0003	0.00003	0.00003	0.00004	0.00005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000002	0.000002	0.000003	0.000003	0.000003	0.000003	0.000003	0.000003	0.000004	0.000005	0.000008	0.000001	0.000002	0.000003	0.000003
Total Intake (µg/kg/d)	0.00004	0.00004	0.00005	0.00006	0.00008	0.00009	0.00008	0.0001	0.00008	0.0001	0.0003	0.00003	0.00004	0.00004	0.00005
HQ (unitless)	0.000001	0.000001	0.000001	0.000001	0.000002	0.000002	0.000002	0.000003	0.000002	0.000002	0.000007	0.0000008	0.0000009	0.000001	0.0000014

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000008	0.000009	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00006	0.000006	0.000007	0.000009	0.00001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.000001	0.000001	0.000002	0.000001	0.000002	0.000001	0.000002	0.000002	0.000003	0.000004	0.0000008	0.000001	0.000001	0.000002
Total Intake (µg/kg/d)	0.000009	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00006	0.000007	0.000008	0.00001	0.00001
HQ (unitless)	0.0000002	0.0000002	0.0000003	0.0000003	0.0000005	0.0000005	0.0000005	0.0000006	0.0000005	0.0000006	0.000002	0.0000002	0.0000002	0.0000003	0.0000003

Life stage: Adult (18-82 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000006	0.000006	0.000007	0.000008	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00004	0.000004	0.000005	0.000006	0.000008
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000008	0.0000008	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000002	0.000002	0.000003	0.0000005	0.0000007	0.0000009	0.000001
Total Intake (µg/kg/d)	0.000006	0.000007	0.000008	0.00001	0.00001	0.00002	0.00001	0.00002	0.00001	0.00002	0.00005	0.000005	0.000006	0.000007	0.000009
HQ (unitless)	0.0000002	0.0000002	0.0000002	0.0000002	0.0000003	0.0000004	0.0000003	0.0000004	0.0000003	0.0000004	0.000001	0.0000001	0.0000002	0.0000002	0.0000002

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.00001	0.00001	0.00002	0.00002	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00009	0.00001	0.00001	0.00001	0.00002
HQ (unitless)	0.0000003	0.0000004	0.0000004	0.0000005	0.0000007	0.0000008	0.0000007	0.0000008	0.0000007	0.0000008	0.000002	0.0000003	0.0000003	0.0000004	0.0000005

R46-60

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00003	0.00003	0.00005	0.00005	0.00005	0.00002	0.00003	0.0001	0.00004	0.00005	0.00005	0.00005	0.00002	0.00002	0.00004
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000004	0.000001	0.000001	0.000002	0.000002	0.0000008	0.000001	0.000002
Total Intake (µg/kg/d)	0.00003	0.00003	0.00005	0.00005	0.00005	0.00002	0.00003	0.0001	0.00004	0.00005	0.00005	0.00005	0.00002	0.00002	0.00004
HQ (unitless)	0.0000008	0.0000008	0.000001	0.000001	0.000001	0.0000006	0.0000007	0.000004	0.000001	0.000001	0.000001	0.000001	0.0000005	0.0000006	0.000001

Life stage: Child (3-13 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00001	0.00001	0.00002	0.00002	0.00002	0.00001	0.00001	0.00006	0.00002	0.00002	0.00002	0.00002	0.000009	0.00001	0.00002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000008	0.0000009	0.0000008	0.0000009	0.000001	0.0000008	0.0000008	0.000003	0.000001	0.0000007	0.000001	0.000001	0.0000005	0.0000007	0.000001
Total Intake (µg/kg/d)	0.00001	0.00001	0.00002	0.00002	0.00003	0.00001	0.00001	0.00007	0.00002	0.00002	0.00003	0.00002	0.000009	0.00001	0.00002
HQ (unitless)	0.0000004	0.0000004	0.0000006	0.0000006	0.0000007	0.0000003	0.0000003	0.000002	0.0000005	0.0000006	0.0000006	0.0000006	0.0000002	0.0000003	0.0000005

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000003	0.000003	0.000004	0.000005	0.000005	0.000002	0.000003	0.00001	0.000004	0.000004	0.000005	0.000005	0.000002	0.000002	0.000004
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000004	0.0000005	0.0000004	0.0000005	0.0000005	0.0000004	0.0000004	0.000001	0.0000005	0.0000004	0.0000006	0.0000007	0.0000003	0.0000004	0.0000007
Total Intake (µg/kg/d)	0.000003	0.000003	0.000005	0.000005	0.000006	0.000003	0.000003	0.00002	0.000005	0.000005	0.000006	0.000005	0.000002	0.000003	0.000005
HQ (unitless)	0.00000008	0.00000009	0.0000001	0.0000001	0.0000001	0.00000006	0.00000008	0.0000004	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.00000006	0.00000007

Life stage: Adult (18-82 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000002	0.000002	0.000003	0.000003	0.000004	0.000002	0.000002	0.00001	0.000003	0.000003	0.000004	0.000003	0.000001	0.000002	0.000003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000003	0.0000003	0.0000003	0.0000003	0.0000004	0.0000003	0.0000003	0.000001	0.0000004	0.0000003	0.0000005	0.0000005	0.0000002	0.0000003	0.0000005
Total Intake (µg/kg/d)	0.000002	0.000002	0.000003	0.000004	0.000004	0.000002	0.000002	0.00001	0.000003	0.000003	0.000004	0.000004	0.000002	0.000002	0.000003
HQ (unitless)	0.00000006	0.00000006	0.00000009	0.0000001	0.0000001	0.00000005	0.00000006	0.0000003	0.00000009	0.00000009	0.0000001	0.0000001	0.00000004	0.00000005	0.00000009

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.000005	0.000005	0.000007	0.000008	0.000008	0.000004	0.000004	0.00002	0.000007	0.000007	0.000008	0.000008	0.000003	0.000004	0.000007
HQ (unitless)	0.0000001	0.0000001	0.0000002	0.0000002	0.0000002	0.00000009	0.0000001	0.0000006	0.0000002	0.0000002	0.0000002	0.0000002	0.00000008	0.00000009	0.0000002

R61-75

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00003	0.00004	0.00004	0.0001	0.00003	0.00003	0.00004	0.00009	0.00008	0.00005	0.00003	0.0001	0.0001	0.0002	0.00005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.000002	0.000002	0.000005	0.000001	0.000001	0.000001	0.000003	0.000003	0.000002	0.000001	0.000003	0.000005	0.000005	0.000002
Total Intake (µg/kg/d)	0.00003	0.00004	0.00004	0.0001	0.00003	0.00003	0.00004	0.00009	0.00008	0.00005	0.00003	0.0001	0.0001	0.0002	0.00005
HQ (unitless)	0.0000009	0.000001	0.000001	0.000004	0.0000007	0.0000007	0.000001	0.000002	0.000002	0.000001	0.0000008	0.000003	0.000004	0.000005	0.000001

Life stage: Child (3-13 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00001	0.00002	0.00002	0.00007	0.00001	0.00001	0.00002	0.00004	0.00003	0.00002	0.00001	0.00005	0.00006	0.00009	0.00002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.000001	0.000002	0.000004	0.0000009	0.0000007	0.0000009	0.000002	0.000002	0.000001	0.0000009	0.000002	0.000004	0.000004	0.000002
Total Intake (µg/kg/d)	0.00002	0.00002	0.00002	0.00007	0.00001	0.00001	0.00002	0.00004	0.00004	0.00002	0.00002	0.00005	0.00007	0.0001	0.00003
HQ (unitless)	0.0000004	0.0000005	0.0000005	0.000002	0.0000003	0.0000003	0.0000005	0.000001	0.0000009	0.0000006	0.0000004	0.000001	0.000002	0.000002	0.0000006

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000003	0.000004	0.000004	0.00001	0.000003	0.000003	0.000004	0.000009	0.000007	0.000005	0.000003	0.00001	0.00001	0.00002	0.000005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000005	0.0000008	0.0000008	0.000002	0.0000005	0.0000004	0.0000004	0.000001	0.000001	0.0000007	0.0000005	0.000001	0.000002	0.000002	0.0000008
Total Intake (µg/kg/d)	0.000004	0.000005	0.000005	0.00002	0.000003	0.000003	0.000004	0.00001	0.000008	0.000006	0.000003	0.00001	0.00002	0.00002	0.000006
HQ (unitless)	0.00000009	0.0000001	0.0000001	0.0000004	0.00000008	0.0000001	0.0000001	0.0000003	0.0000002	0.0000001	0.00000009	0.0000003	0.0000004	0.0000006	0.0000002

Life stage: Adult (18-82 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000002	0.000003	0.000003	0.00001	0.000002	0.000002	0.000003	0.000006	0.000005	0.000003	0.000002	0.000007	0.00001	0.00001	0.000004
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000004	0.0000005	0.0000006	0.000001	0.0000003	0.0000003	0.0000003	0.0000009	0.0000008	0.0000005	0.0000003	0.0000007	0.000001	0.000001	0.0000006
Total Intake (µg/kg/d)	0.000003	0.000003	0.000003	0.00001	0.000002	0.000002	0.000003	0.000007	0.000006	0.000004	0.000003	0.000008	0.00001	0.00002	0.000004
HQ (unitless)	0.00000007	0.00000009	0.00000009	0.0000003	0.00000005	0.00000006	0.00000008	0.0000002	0.0000002	0.0000001	0.00000006	0.0000002	0.0000003	0.0000004	0.0000001

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.000005	0.000007	0.000007	0.00002	0.000004	0.000004	0.000006	0.00001	0.00001	0.000008	0.000005	0.00002	0.00002	0.00003	0.000008
HQ (unitless)	0.0000001	0.0000002	0.0000002	0.0000006	0.0000001	0.0000001	0.0000002	0.0000004	0.0000003	0.0000002	0.0000001	0.0000004	0.0000006	0.0000008	0.0000002

R76-D

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion ($I_{ingest\ s}$) ($\mu\text{g/kg/d}$)	0.00004	0.00002	0.00007	0.0001	0.00009	0.00002	0.00002	0.00003	0.0001	0.0001	0.0003	0.002	0.002	0.002	0.003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000002	0.000001	0.000002	0.000004	0.000003	0.000001	0.0000006	0.000001	0.000004	0.000004	0.000009	0.00004	0.00004	0.00005	0.00006
Total Intake ($\mu\text{g/kg/d}$)	0.00005	0.00002	0.00007	0.0001	0.0001	0.00002	0.00002	0.00003	0.0001	0.0001	0.0003	0.002	0.002	0.002	0.003
HQ (unitless)	0.000001	0.0000006	0.000002	0.000003	0.000002	0.0000006	0.0000006	0.0000009	0.000003	0.000004	0.000008	0.00005	0.00005	0.00006	0.00008

Life stage: Child (3-13 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion ($I_{ingest\ s}$) ($\mu\text{g/kg/d}$)	0.00002	0.00001	0.00003	0.00005	0.00004	0.00001	0.00001	0.00002	0.00005	0.00007	0.0001	0.0008	0.0008	0.001	0.001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000001	0.0000008	0.000002	0.000003	0.000002	0.0000009	0.0000004	0.0000009	0.000003	0.000003	0.000007	0.00003	0.00003	0.00003	0.00004
Total Intake ($\mu\text{g/kg/d}$)	0.00002	0.00001	0.00003	0.00006	0.00004	0.00001	0.00001	0.00002	0.00006	0.00007	0.0001	0.0008	0.0008	0.001	0.001
HQ (unitless)	0.0000005	0.0000003	0.0000009	0.000001	0.000001	0.0000003	0.0000003	0.0000004	0.000001	0.000002	0.000004	0.00002	0.00002	0.00003	0.00004

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion ($I_{ingest\ s}$) ($\mu\text{g/kg/d}$)	0.000004	0.000002	0.000007	0.00001	0.000009	0.000002	0.000002	0.000003	0.00001	0.00001	0.00003	0.0002	0.0002	0.0002	0.0003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000008	0.0000004	0.0000009	0.000002	0.000001	0.0000005	0.0000002	0.0000004	0.000002	0.000002	0.000003	0.00001	0.00001	0.00002	0.00002
Total Intake ($\mu\text{g/kg/d}$)	0.000005	0.000003	0.000008	0.00001	0.00001	0.000003	0.000002	0.000004	0.00001	0.00002	0.00003	0.0002	0.0002	0.0002	0.0003
HQ (unitless)	0.0000001	0.00000007	0.0000002	0.0000003	0.0000003	0.00000007	0.00000006	0.00000009	0.0000003	0.0000004	0.0000009	0.000005	0.000005	0.000006	0.000008

Life stage: Adult (18-82 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) (μg/kg/d)	0.000003	0.000002	0.000005	0.000008	0.000007	0.000002	0.000002	0.000002	0.000008	0.00001	0.00002	0.0001	0.0001	0.0001	0.0002
Inhalation Intake (I_{inhal}) (μg/kg/d)	0.0000005	0.0000003	0.0000006	0.000001	0.0000008	0.0000003	0.0000001	0.0000003	0.000001	0.000001	0.000002	0.00001	0.00001	0.00001	0.00002
Total Intake (μg/kg/d)	0.000004	0.000002	0.000006	0.000009	0.000007	0.000002	0.000002	0.000003	0.00001	0.00001	0.00002	0.0001	0.0001	0.0002	0.0002
HQ (unitless)	0.00000009	0.00000005	0.0000001	0.0000002	0.0000002	0.00000005	0.00000004	0.00000007	0.0000002	0.0000003	0.0000006	0.000003	0.000003	0.000004	0.000006

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.000007	0.000004	0.00001	0.00002	0.00001	0.000004	0.000003	0.000005	0.00002	0.00002	0.00005	0.0003	0.0003	0.0003	0.0005
HQ (unitless)	0.0000002	0.00000009	0.0000003	0.0000005	0.0000004	0.0000001	0.00000009	0.0000001	0.0000005	0.0000006	0.000001	0.000007	0.000007	0.000008	0.00001

E-P

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.004	0.007	0.01	0.02	0.02	0.01	0.006	0.02	0.007	0.008	0.009	0.0004
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00007	0.0001	0.0002	0.0002	0.0003	0.0002	0.0001	0.0002	0.0001	0.0001	0.0001	0.00001
Total Intake ($\mu\text{g/kg/d}$)	0.004	0.008	0.01	0.02	0.02	0.01	0.006	0.02	0.007	0.008	0.009	0.0004
HQ (unitless)	0.0001	0.0002	0.0003	0.0004	0.0006	0.0003	0.0002	0.0004	0.0002	0.0002	0.0002	0.00001

Life stage: Child (3-13 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.002	0.003	0.005	0.008	0.01	0.005	0.003	0.007	0.003	0.004	0.004	0.0002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00005	0.00009	0.0001	0.0002	0.0002	0.0001	0.00007	0.0001	0.00008	0.00009	0.00009	0.00001
Total Intake ($\mu\text{g/kg/d}$)	0.002	0.004	0.005	0.008	0.01	0.006	0.003	0.007	0.003	0.004	0.004	0.0002
HQ (unitless)	0.00005	0.00009	0.0001	0.0002	0.0003	0.0001	0.00007	0.0002	0.00008	0.0001	0.0001	0.000005

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0004	0.0007	0.001	0.002	0.002	0.001	0.0006	0.002	0.0007	0.0008	0.0009	0.00004
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00003	0.00005	0.00006	0.00008	0.0001	0.00006	0.00004	0.00007	0.00004	0.00005	0.00005	0.000005
Total Intake ($\mu\text{g/kg/d}$)	0.0004	0.0008	0.001	0.002	0.002	0.001	0.0006	0.002	0.0007	0.0008	0.0009	0.00005
HQ (unitless)	0.00001	0.00002	0.00003	0.00005	0.00006	0.00003	0.00002	0.00004	0.00002	0.00002	0.00002	0.000001

Life stage: Adult (18-82 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0003	0.0005	0.0008	0.001	0.002	0.0008	0.0004	0.001	0.0005	0.0006	0.0006	0.00003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00002	0.00003	0.00005	0.00006	0.00007	0.00004	0.00003	0.00005	0.00003	0.00003	0.00003	0.000004
Total Intake ($\mu\text{g/kg/d}$)	0.0003	0.0006	0.0009	0.001	0.002	0.0009	0.0004	0.001	0.0005	0.0006	0.0007	0.00003
HQ (unitless)	0.000008	0.00001	0.00002	0.00003	0.00004	0.00002	0.00001	0.00003	0.00001	0.00002	0.00002	0.0000009

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0006	0.0011	0.002	0.003	0.004	0.002	0.0009	0.002	0.001	0.001	0.001	0.00007
HQ (unitless)	0.00002	0.00003	0.00004	0.00007	0.00009	0.00005	0.00002	0.00006	0.00003	0.00003	0.00004	0.000002

F.7 Iron (Fe)

Equations:

Total Intake (I_{total_as})	=	$I_{ingest\_s} + I_{inhal}$
Average lifetime daily exposure for 82 year life span	=	$(I_{total(0.5-3)} \times 365 \times At_x) + (I_{total(3-13)} \times 365 \times At_x) + (I_{total(13-18)} \times 365 \times At_x) + (I_{total(18-82)} \times 365 \times At_x) / AT_{lifetime}$
HQ	=	$I_{lifetime} / TDI_{adj}$

F.7.1 Scenario 1

Adjusted TDI

	All receptors
Background adjusted tolerable daily intake (TDI_{adj}) ($\mu\text{g}/\text{kg}/\text{d}$)	640

Soil & air concentrations:

R1-15

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil concentration ($\mu\text{g}/\text{g}$) (Appendix C)	21.57	44.32	92.57	62.0	69.97	46.36	18.27	17.46	12.16	6.03	4.58	4.86	2.81	3.37	1.68
Air concentration ($\mu\text{g}/\text{m}^3$) (Appendix D)	0.000002	0.000004	0.000008	0.000005	0.000006	0.000004	0.000002	0.000002	0.000001	0.0000007	0.0000005	0.0000006	0.0000004	0.0000004	0.0000002

R16-30

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil concentration (µg/g) (Appendix C)	1.57	1.37	4.05	3.38	2.83	2.08	1.51	1.29	1.07	0.94	0.75	0.68	0.85	0.81	0.92
Air concentration (µg/m³) (Appendix D)	0.0000001	0.00000006	0.0000001	0.0000002	0.0000001	0.0000003	0.0000002	0.0000002	0.0000002	0.0000002	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001

R31-45

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil concentration ($\mu\text{g}/\text{g}$) (Appendix C)	2.37	2.58	3.17	3.81	4.53	5.11	4.07	5.15	3.69	4.54	19.52	1.31	1.54	1.84	2.27
Air concentration ($\mu\text{g}/\text{m}^3$) (Appendix D)	0.0000004	0.0000004	0.0000004	0.0000005	0.0000006	0.0000006	0.0000005	0.0000006	0.0000004	0.0000005	0.000002	0.0000002	0.0000002	0.0000002	0.0000003

R46-60

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil concentration (µg/g) (Appendix C)	0.66	0.67	0.89	0.99	1.13	0.49	0.60	3.12	0.96	0.85	0.78	0.87	0.43	0.38	1.29
Air concentration (µg/m ³) (Appendix D)	0.0000001	0.0000001	0.0000001	0.0000002	0.0000002	0.00000008	0.0000001	0.0000004	0.0000001	0.0000001	0.0000001	0.0000001	0.00000007	0.00000006	0.0000002

R61-75

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil concentration (µg/g) (Appendix C)	0.93	1.21	1.24	3.44	0.73	0.57	0.76	1.84	1.58	1.44	0.99	3.05	4.64	4.85	1.60
Air concentration (µg/m ³) (Appendix D)	0.0000002	0.0000002	0.0000002	0.0000004	0.0000001	0.00000009	0.0000001	0.0000002	0.0000002	0.0000002	0.0000001	0.0000004	0.0000006	0.0000006	0.0000002

R76-D

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil concentration (µg/g) (Appendix C)	1.26	0.65	1.40	2.85	2.00	0.35	0.46	0.48	2.86	3.66	8.11	116.8	119.4	122.3	357.0
Air concentration (µg/m ³) (Appendix D)	0.0000002	0.0000001	0.0000002	0.0000003	0.0000002	0.00000005	0.00000006	0.00000007	0.0000003	0.0000004	0.0000008	0.00001	0.00001	0.00001	0.00003

E-P

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil concentration (µg/g) (Appendix C)	94.1	185.4	136.9	125.6	117.2	120.2	153.2	219.6	200.2	208.7	164.0	12.1
Air concentration (µg/m ³) (Appendix D)	0.000008	0.00001	0.00001	0.00001	0.000009	0.000009	0.00001	0.00002	0.00002	0.00002	0.00001	0.000001

Intakes & hazard quotients:

R1-15

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.2	0.4	0.84	0.56	0.64	0.42	0.17	0.16	0.11	0.05	0.04	0.04	0.03	0.03	0.02
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.000003	0.000006	0.000004	0.000004	0.000003	0.000001	0.000001	0.0000009	0.0000005	0.0000004	0.0000004	0.0000003	0.0000003	0.0000001
Total Intake (µg/kg/d)	0.2	0.4	0.84	0.56	0.64	0.42	0.17	0.16	0.11	0.05	0.04	0.04	0.03	0.03	0.02
HQ (unitless)	0.0003	0.0006	0.001	0.0009	0.001	0.0007	0.0003	0.0002	0.0002	0.00009	0.00007	0.00007	0.00004	0.00005	0.00002

Life stage: Child (3-13 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.09	0.18	0.39	0.26	0.29	0.19	0.08	0.07	0.05	0.03	0.02	0.02	0.01	0.01	0.007
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.000002	0.000004	0.000003	0.000003	0.000002	0.0000009	0.0000009	0.0000007	0.0000003	0.0000003	0.0000003	0.0000002	0.0000002	0.0000001
Total Intake (µg/kg/d)	0.09	0.18	0.39	0.26	0.29	0.19	0.08	0.07	0.05	0.03	0.02	0.02	0.01	0.01	0.007
HQ (unitless)	0.0001	0.0003	0.0006	0.0004	0.0005	0.0003	0.0001	0.0001	0.00008	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.02	0.04	0.08	0.06	0.06	0.04	0.02	0.02	0.01	0.005	0.004	0.004	0.003	0.003	0.001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000005	0.000001	0.000002	0.000001	0.000002	0.000001	0.0000005	0.0000005	0.0000003	0.0000002	0.0000001	0.0000002	0.0000001	0.0000001	0.00000005
Total Intake (µg/kg/d)	0.02	0.04	0.08	0.06	0.06	0.04	0.02	0.02	0.01	0.005	0.004	0.004	0.003	0.003	0.001
HQ (unitless)	0.00003	0.00006	0.0001	0.00009	0.0001	0.00006	0.00003	0.00002	0.00002	0.000008	0.000006	0.000007	0.000004	0.000005	0.000002

Life stage: Adult (18-82 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.01	0.03	0.06	0.04	0.04	0.03	0.01	0.01	0.008	0.004	0.003	0.003	0.002	0.002	0.001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000004	0.0000008	0.000002	0.000001	0.000001	0.0000008	0.0000003	0.0000003	0.0000002	0.0000001	0.0000001	0.0000001	0.00000007	0.00000008	0.00000004
Total Intake (µg/kg/d)	0.01	0.03	0.06	0.04	0.04	0.03	0.01	0.01	0.008	0.004	0.003	0.003	0.002	0.002	0.001
HQ (unitless)	0.00002	0.00004	0.00009	0.00006	0.00007	0.00005	0.00002	0.00002	0.00001	0.000006	0.000005	0.000005	0.000003	0.000003	0.000002

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.03	0.06	0.12	0.08	0.09	0.06	0.02	0.02	0.02	0.008	0.006	0.007	0.004	0.005	0.002
HQ (unitless)	0.00005	0.00009	0.0002	0.0001	0.0001	0.0001	0.00004	0.00004	0.00003	0.00001	0.00001	0.00001	0.000006	0.000007	0.000004

R16-30

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID															
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.01	0.01	0.04	0.03	0.03	0.02	0.01	0.01	0.01	0.009	0.007	0.006	0.008	0.007	0.008	
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000001	0.00000004	0.00000009	0.0000001	0.00000009	0.0000002	0.0000002	0.0000002	0.0000001	0.0000001	0.00000009	0.00000008	0.0000001	0.00000009	0.00000009	
Total Intake (µg/kg/d)	0.01	0.01	0.04	0.03	0.03	0.02	0.01	0.01	0.01	0.009	0.007	0.006	0.008	0.007	0.008	
HQ (unitless)	0.00002	0.00002	0.00006	0.00005	0.00004	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	

Life stage: Child (3-13 yrs)	Receptor ID															
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.007	0.006	0.02	0.01	0.01	0.009	0.006	0.005	0.004	0.004	0.003	0.003	0.004	0.003	0.004	
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000007	0.00000003	0.00000007	0.00000008	0.00000007	0.0000002	0.0000001	0.0000001	0.00000009	0.00000008	0.00000007	0.00000006	0.00000007	0.00000006	0.00000007	
Total Intake (µg/kg/d)	0.007	0.006	0.02	0.01	0.01	0.009	0.006	0.005	0.004	0.004	0.003	0.003	0.004	0.003	0.004	
HQ (unitless)	0.00001	0.000009	0.00003	0.00002	0.00002	0.00001	0.00001	0.000008	0.000007	0.000006	0.000005	0.000004	0.000006	0.000005	0.000006	

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID															
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.001	0.001	0.004	0.003	0.003	0.002	0.001	0.001	0.001	0.0008	0.0007	0.0006	0.0008	0.0007	0.0008	
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000004	0.00000002	0.00000004	0.00000004	0.00000004	0.00000008	0.00000006	0.00000006	0.00000005	0.00000004	0.00000004	0.00000003	0.00000004	0.00000003	0.00000004	
Total Intake (µg/kg/d)	0.001	0.001	0.004	0.003	0.003	0.002	0.001	0.001	0.001	0.0008	0.0007	0.0006	0.0008	0.0007	0.0008	
HQ (unitless)	0.000002	0.000002	0.000006	0.000005	0.000004	0.000003	0.000002	0.000002	0.000001	0.000001	0.000001	0.000001	0.0000009	0.000001	0.000001	

Life stage: Adult (18-82 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.001	0.0009	0.003	0.002	0.002	0.001	0.001	0.0008	0.0007	0.0006	0.0005	0.0004	0.0005	0.0005	0.0006
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000003	0.00000001	0.00000003	0.00000003	0.00000003	0.00000006	0.00000005	0.00000004	0.00000003	0.00000003	0.00000003	0.00000002	0.00000003	0.00000002	0.00000003
Total Intake (µg/kg/d)	0.001	0.0009	0.003	0.002	0.002	0.001	0.001	0.0008	0.0007	0.0006	0.0005	0.0004	0.0005	0.0005	0.0006
HQ (unitless)	0.000002	0.000001	0.000004	0.000003	0.000003	0.000002	0.000002	0.000001	0.000001	0.0000009	0.0000008	0.0000007	0.0000008	0.0000008	0.0000009

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.002	0.002	0.005	0.005	0.004	0.003	0.002	0.002	0.001	0.001	0.001	0.0009	0.001	0.001	0.001
HQ (unitless)	0.000003	0.000003	0.000008	0.000007	0.000006	0.000004	0.000003	0.000003	0.000002	0.000002	0.000002	0.000001	0.000002	0.000002	0.000002

R31-45

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.02	0.02	0.03	0.03	0.04	0.05	0.04	0.05	0.03	0.04	0.18	0.01	0.01	0.02	0.02
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000003	0.0000003	0.0000003	0.0000004	0.0000004	0.0000005	0.0000004	0.0000004	0.0000003	0.0000004	0.0000001	0.0000001	0.0000001	0.0000002	0.0000002
Total Intake (µg/kg/d)	0.02	0.02	0.03	0.03	0.04	0.05	0.04	0.05	0.03	0.04	0.18	0.01	0.01	0.02	0.02
HQ (unitless)	0.00003	0.00004	0.00005	0.00005	0.00006	0.00007	0.00006	0.00007	0.00005	0.00006	0.0003	0.00002	0.00002	0.00003	0.00003

Life stage: Child (3-13 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.08	0.005	0.006	0.008	0.009
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000002	0.0000002	0.0000002	0.0000003	0.0000003	0.0000003	0.0000003	0.0000003	0.0000002	0.0000003	0.0000001	0.00000009	0.0000001	0.0000001	0.0000001
Total Intake (µg/kg/d)	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.08	0.005	0.006	0.008	0.009
HQ (unitless)	0.00002	0.00002	0.00002	0.00002	0.00003	0.00003	0.00003	0.00003	0.00002	0.00003	0.0001	0.000009	0.00001	0.00001	0.00001

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.002	0.002	0.003	0.003	0.004	0.005	0.004	0.005	0.003	0.004	0.02	0.001	0.001	0.002	0.002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00000009	0.0000001	0.0000001	0.0000001	0.0000002	0.0000002	0.0000001	0.0000002	0.0000001	0.0000001	0.0000006	0.00000005	0.00000005	0.00000006	0.00000008
Total Intake ($\mu\text{g/kg/d}$)	0.002	0.002	0.003	0.003	0.004	0.005	0.004	0.005	0.003	0.004	0.02	0.001	0.001	0.002	0.002
HQ (unitless)	0.000003	0.000004	0.000004	0.000005	0.000006	0.000007	0.000006	0.000007	0.000005	0.000006	0.00003	0.000002	0.000002	0.000003	0.000003

Life stage: Adult (18-82 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.002	0.003	0.01	0.0008	0.001	0.001	0.001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00000007	0.00000007	0.00000008	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.00000008	0.0000001	0.0000004	0.00000003	0.00000004	0.00000005	0.00000005
Total Intake ($\mu\text{g/kg/d}$)	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.002	0.003	0.01	0.0008	0.001	0.001	0.001
HQ (unitless)	0.000002	0.000003	0.000003	0.000004	0.000005	0.000005	0.000004	0.000005	0.000004	0.000005	0.00002	0.000001	0.000002	0.000002	0.000002

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.003	0.003	0.004	0.005	0.006	0.007	0.005	0.007	0.005	0.006	0.03	0.002	0.002	0.002	0.003
HQ (unitless)	0.000005	0.000005	0.000007	0.000008	0.000009	0.00001	0.000009	0.00001	0.000008	0.00001	0.00004	0.000003	0.000003	0.000004	0.000005

R46-60

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.006	0.006	0.008	0.009	0.01	0.004	0.005	0.03	0.009	0.008	0.007	0.008	0.004	0.003	0.01
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000008	0.00000008	0.0000001	0.0000001	0.0000001	0.00000006	0.00000007	0.0000003	0.00000009	0.00000008	0.00000008	0.00000009	0.00000005	0.00000004	0.0000001
Total Intake (µg/kg/d)	0.006	0.006	0.008	0.009	0.01	0.004	0.005	0.03	0.009	0.008	0.007	0.008	0.004	0.003	0.01
HQ (unitless)	0.000009	0.00001	0.00001	0.00001	0.00002	0.000007	0.000009	0.00004	0.00001	0.00001	0.00001	0.00001	0.000006	0.000005	0.00002

Life stage: Child (3-13 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.003	0.003	0.004	0.004	0.005	0.002	0.002	0.01	0.004	0.004	0.003	0.004	0.002	0.002	0.005
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00000006	0.00000006	0.00000007	0.00000008	0.00000008	0.00000004	0.00000005	0.0000002	0.00000006	0.00000006	0.00000006	0.00000006	0.00000004	0.00000003	0.0000001
Total Intake ($\mu\text{g/kg/d}$)	0.003	0.003	0.004	0.004	0.005	0.002	0.002	0.01	0.004	0.004	0.003	0.004	0.002	0.002	0.005
HQ (unitless)	0.000004	0.000004	0.000006	0.000006	0.000007	0.000003	0.000004	0.00002	0.000006	0.000006	0.000005	0.000006	0.000003	0.000002	0.000008

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0006	0.0006	0.0008	0.0009	0.001	0.0004	0.0005	0.003	0.0009	0.0008	0.0007	0.0008	0.0004	0.0003	0.001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00000003	0.00000003	0.00000004	0.00000004	0.00000004	0.00000002	0.00000003	0.00000009	0.00000003	0.00000003	0.00000003	0.00000003	0.00000002	0.00000002	0.00000005
Total Intake ($\mu\text{g/kg/d}$)	0.0006	0.0006	0.0008	0.0009	0.001	0.0004	0.0005	0.003	0.0009	0.0008	0.0007	0.0008	0.0004	0.0003	0.001
HQ (unitless)	0.0000009	0.0000009	0.000001	0.000001	0.000002	0.0000007	0.0000008	0.000004	0.000001	0.000001	0.000001	0.000001	0.000001	0.0000006	0.0000005

Life stage: Adult (18-82 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0004	0.0004	0.0006	0.0006	0.0007	0.0003	0.0004	0.002	0.0006	0.0005	0.0005	0.0006	0.0003	0.0002	0.0008
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00000002	0.00000002	0.00000003	0.00000003	0.00000003	0.00000002	0.00000002	0.00000007	0.00000002	0.00000002	0.00000002	0.00000002	0.00000001	0.00000001	0.00000004
Total Intake ($\mu\text{g/kg/d}$)	0.0004	0.0004	0.0006	0.0006	0.0007	0.0003	0.0004	0.002	0.0006	0.0005	0.0005	0.0006	0.0003	0.0002	0.0008
HQ (unitless)	0.0000007	0.0000007	0.0000009	0.000001	0.000001	0.0000005	0.0000006	0.000003	0.000001	0.0000009	0.0000008	0.0000009	0.0000004	0.0000004	0.000001

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0009	0.0009	0.001	0.001	0.002	0.0007	0.0008	0.004	0.001	0.001	0.001	0.001	0.0006	0.0005	0.002
HQ (unitless)	0.000001	0.000001	0.000002	0.000002	0.000002	0.000001	0.000001	0.000007	0.000002	0.000002	0.000002	0.000002	0.0000009	0.0000008	0.000003

R61-75

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.008	0.01	0.01	0.03	0.007	0.005	0.007	0.02	0.01	0.01	0.009	0.03	0.04	0.04	0.01
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000001	0.0000001	0.0000001	0.0000003	0.00000009	0.00000007	0.00000007	0.0000002	0.0000001	0.0000002	0.00000009	0.0000003	0.0000004	0.0000004	0.0000002
Total Intake (µg/kg/d)	0.008	0.01	0.01	0.03	0.007	0.005	0.007	0.02	0.01	0.01	0.009	0.03	0.04	0.04	0.01
HQ (unitless)	0.00001	0.00002	0.00002	0.00005	0.00001	0.000008	0.00001	0.00003	0.00002	0.00002	0.00001	0.00004	0.00007	0.00007	0.00002

Life stage: Child (3-13 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.004	0.005	0.005	0.01	0.003	0.002	0.003	0.008	0.007	0.006	0.004	0.01	0.02	0.02	0.007
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000008	0.0000001	0.0000001	0.0000002	0.00000007	0.00000005	0.00000005	0.0000001	0.0000001	0.0000001	0.00000006	0.0000002	0.0000003	0.0000003	0.0000001
Total Intake (µg/kg/d)	0.004	0.005	0.005	0.01	0.003	0.002	0.003	0.008	0.007	0.006	0.004	0.01	0.02	0.02	0.007
HQ (unitless)	0.000006	0.000008	0.000008	0.00002	0.000005	0.000004	0.000005	0.00001	0.00001	0.000009	0.000006	0.00002	0.00003	0.00003	0.00001

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0008	0.001	0.001	0.003	0.0007	0.0005	0.0007	0.002	0.001	0.001	0.0009	0.003	0.004	0.004	0.001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000004	0.00000005	0.00000005	0.0000001	0.00000004	0.00000002	0.00000003	0.00000006	0.00000005	0.00000006	0.00000003	0.0000001	0.0000002	0.0000002	0.00000006
Total Intake (µg/kg/d)	0.0008	0.001	0.001	0.003	0.0007	0.0005	0.0007	0.002	0.001	0.001	0.0009	0.003	0.004	0.004	0.001
HQ (unitless)	0.000001	0.000002	0.000002	0.000005	0.000001	0.0000008	0.000001	0.000003	0.000002	0.000002	0.000001	0.000004	0.000006	0.000007	0.000002

Life stage: Adult (18-82 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0006	0.0008	0.0008	0.002	0.0005	0.0004	0.0005	0.001	0.001	0.0009	0.0006	0.002	0.003	0.003	0.001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000003	0.00000004	0.00000004	0.00000007	0.00000003	0.00000002	0.00000002	0.00000004	0.00000004	0.00000004	0.00000002	0.00000008	0.0000001	0.0000001	0.00000004
Total Intake (µg/kg/d)	0.0006	0.0008	0.0008	0.002	0.0005	0.0004	0.0005	0.001	0.001	0.0009	0.0006	0.002	0.003	0.003	0.001
HQ (unitless)	0.0000009	0.000001	0.000001	0.000003	0.0000007	0.0000006	0.0000008	0.000002	0.000002	0.000001	0.000001	0.000003	0.000005	0.000005	0.000002

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.001	0.002	0.002	0.005	0.001	0.0008	0.001	0.002	0.002	0.002	0.001	0.004	0.006	0.006	0.002
HQ (unitless)	0.000002	0.000003	0.000003	0.000007	0.000002	0.000001	0.000002	0.000004	0.000003	0.000003	0.000002	0.000006	0.00001	0.00001	0.000003

R76-D

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.01	0.006	0.01	0.03	0.02	0.003	0.004	0.004	0.03	0.03	0.07	1.06	1.09	1.11	3.25
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000001	0.00000008	0.0000001	0.0000002	0.0000002	0.00000004	0.00000004	0.00000005	0.0000002	0.0000003	0.0000006	0.000007	0.000007	0.000007	0.00002
Total Intake (µg/kg/d)	0.01	0.006	0.01	0.03	0.02	0.003	0.004	0.004	0.03	0.03	0.07	1.06	1.09	1.11	3.25
HQ (unitless)	0.00002	0.000009	0.00002	0.00004	0.00003	0.000005	0.000007	0.000007	0.00004	0.00005	0.0001	0.002	0.002	0.002	0.005

Life stage: Child (3-13 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion ($I_{\text{ingest s}}$) ($\mu\text{g/kg/d}$)	0.005	0.003	0.006	0.01	0.008	0.001	0.002	0.002	0.01	0.02	0.03	0.49	0.5	0.51	1.49
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000001	0.00000006	0.00000009	0.0000002	0.0000001	0.00000003	0.00000003	0.00000004	0.0000002	0.0000002	0.0000004	0.000005	0.000005	0.000005	0.00001
Total Intake ($\mu\text{g/kg/d}$)	0.005	0.003	0.006	0.01	0.008	0.001	0.002	0.002	0.01	0.02	0.03	0.49	0.5	0.51	1.49
HQ (unitless)	0.000008	0.000004	0.000009	0.00002	0.00001	0.000002	0.000003	0.000003	0.00002	0.00002	0.00005	0.0008	0.0008	0.0008	0.002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.001	0.0006	0.001	0.003	0.002	0.0003	0.0004	0.0004	0.003	0.003	0.007	0.1	0.11	0.11	0.32
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000005	0.00000003	0.00000005	0.00000008	0.00000006	0.00000001	0.00000002	0.00000002	0.00000008	0.0000001	0.0000002	0.000003	0.000003	0.000003	0.000007
Total Intake (µg/kg/d)	0.001	0.0006	0.001	0.003	0.002	0.0003	0.0004	0.0004	0.003	0.003	0.007	0.1	0.11	0.11	0.32
HQ (unitless)	0.000002	0.0000009	0.000002	0.000004	0.000003	0.0000005	0.0000006	0.0000007	0.000004	0.000005	0.00001	0.0002	0.0002	0.0002	0.0005

Life stage: Adult (18-82 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0008	0.0004	0.0009	0.002	0.001	0.0002	0.0003	0.0003	0.002	0.002	0.005	0.07	0.08	0.08	0.23
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00000004	0.00000002	0.00000003	0.00000006	0.00000005	0.00000001	0.00000001	0.00000001	0.00000006	0.00000008	0.0000002	0.000002	0.000002	0.000002	0.000005
Total Intake ($\mu\text{g/kg/d}$)	0.0008	0.0004	0.0009	0.002	0.001	0.0002	0.0003	0.0003	0.002	0.002	0.005	0.07	0.08	0.08	0.23
HQ (unitless)	0.000001	0.0000007	0.000001	0.000003	0.000002	0.0000004	0.0000005	0.0000005	0.000003	0.000004	0.000008	0.0001	0.0001	0.0001	0.0004

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.002	0.0009	0.002	0.004	0.003	0.0005	0.0006	0.0006	0.004	0.005	0.01	0.16	0.16	0.16	0.48
HQ (unitless)	0.000003	0.000001	0.000003	0.000006	0.000004	0.0000007	0.000001	0.000001	0.000006	0.000008	0.00002	0.0002	0.0003	0.0003	0.0007

E-P

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.86	1.69	1.24	1.14	1.07	1.09	1.39	2.0	1.82	1.9	1.49	0.11
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000006	0.00001	0.000008	0.000007	0.000007	0.000007	0.000009	0.00001	0.00001	0.00001	0.000008	0.000001
Total Intake ($\mu\text{g/kg/d}$)	0.86	1.69	1.24	1.14	1.07	1.09	1.39	2.0	1.82	1.90	1.49	0.11
HQ (unitless)	0.001	0.003	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.002	0.0002

Life stage: Child (3-13 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.39	0.77	0.57	0.52	0.49	0.50	0.64	0.91	0.83	0.87	0.68	0.05
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000004	0.000007	0.000005	0.000005	0.000005	0.000005	0.000006	0.000009	0.000008	0.000008	0.000006	0.0000007
Total Intake ($\mu\text{g/kg/d}$)	0.39	0.77	0.57	0.52	0.49	0.5	0.64	0.91	0.83	0.87	0.68	0.05
HQ (unitless)	0.0006	0.001	0.0009	0.0008	0.0008	0.0008	0.001	0.001	0.001	0.001	0.001	0.00008

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.08	0.17	0.12	0.11	0.1	0.11	0.14	0.2	0.18	0.19	0.15	0.01
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000002	0.000004	0.000003	0.000003	0.000002	0.000002	0.000003	0.000005	0.000004	0.000004	0.000003	0.0000004
Total Intake (µg/kg/d)	0.08	0.17	0.12	0.11	0.1	0.11	0.14	0.2	0.18	0.19	0.15	0.01
HQ (unitless)	0.0001	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0002	0.00002

Life stage: Adult (18-82 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.06	0.12	0.09	0.08	0.08	0.08	0.1	0.14	0.13	0.13	0.11	0.008
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000002	0.000003	0.000002	0.000002	0.000002	0.000002	0.000002	0.000003	0.000003	0.000003	0.000002	0.0000003
Total Intake (µg/kg/d)	0.06	0.12	0.09	0.08	0.08	0.08	0.1	0.14	0.13	0.13	0.11	0.008
HQ (unitless)	0.00009	0.0002	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.00001

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.13	0.25	0.18	0.17	0.16	0.16	0.21	0.29	0.27	0.28	0.22	0.02
HQ (unitless)	0.0002	0.0004	0.0003	0.0003	0.0002	0.0003	0.0003	0.0005	0.0004	0.0004	0.0003	0.00003

F.7.2 Scenario 2

Adjusted TDI

	All receptors
Background adjusted tolerable daily intake (TDI _{adj}) (µg/kg/d)	640

Soil & air concentrations:

R1-15

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil concentration (µg/g) (Appendix C)	6.42	14.3	23.1	45.1	17.3	8.87	4.82	4.59	3.49	1.92	1.49	1.47	0.62	0.65	0.34
Air concentration (µg/m ³) (Appendix D)	0.00008	0.0001	0.0002	0.0005	0.0002	0.0001	0.00006	0.00007	0.00006	0.00003	0.00003	0.00002	0.00001	0.00001	0.000007

R16-30

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil concentration (µg/g) (Appendix C)	0.3	0.3	0.65	0.71	0.6	0.52	0.37	0.33	0.27	0.24	0.22	0.23	0.26	0.29	0.33
Air concentration (µg/m³) (Appendix D)	0.000004	0.000003	0.000005	0.000006	0.000005	0.000009	0.000008	0.000007	0.000006	0.000006	0.000005	0.000004	0.000005	0.000005	0.000006

R31-45

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil concentration (µg/g) (Appendix C)	0.58	0.63	0.77	0.89	1.31	1.46	1.24	1.53	1.22	1.48	5.12	0.44	0.52	0.63	0.78
Air concentration (µg/m ³) (Appendix D)	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00001	0.00002	0.00002	0.00003	0.00004	0.000007	0.000009	0.00001	0.00002

R46-60

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil concentration (µg/g) (Appendix C)	0.2	0.21	0.32	0.35	0.38	0.15	0.19	1.02	0.31	0.33	0.36	0.34	0.14	0.15	0.3
Air concentration (µg/m³) (Appendix D)	0.000005	0.000005	0.000005	0.000005	0.000006	0.000004	0.000004	0.000016	0.000006	0.000005	0.000006	0.000008	0.000003	0.000004	0.000007

R61-75

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil concentration (µg/g) (Appendix C)	0.23	0.3	0.3	1.07	0.18	0.19	0.28	0.64	0.54	0.35	0.22	0.74	1.05	1.49	0.36
Air concentration (µg/m ³) (Appendix D)	0.000006	0.000007	0.000007	0.00002	0.000005	0.000004	0.000004	0.00001	0.00001	0.000007	0.000004	0.00001	0.00002	0.00002	0.000008

R76-D

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil concentration (µg/g) (Appendix C)	0.31	0.16	0.5	0.89	0.67	0.15	0.16	0.23	0.91	1.11	2.4	16.7	16.9	20.5	29.1
Air concentration (µg/m ³) (Appendix D)	0.000008	0.000005	0.00001	0.00002	0.00001	0.000004	0.000002	0.000005	0.00002	0.00002	0.00004	0.0002	0.0002	0.0003	0.0004

E-P

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil concentration (µg/g) (Appendix C)	41.4	79.1	128.1	198.9	282.1	138.5	62.5	168.6	48.9	53.3	62.4	3.5
Air concentration (µg/m ³) (Appendix D)	0.0006	0.001	0.002	0.002	0.003	0.002	0.0008	0.002	0.0005	0.0005	0.0005	0.00006

Intakes & hazard quotients:

R1-15

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.06	0.1	0.2	0.4	0.2	0.08	0.04	0.04	0.03	0.02	0.01	0.01	0.006	0.006	0.003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00006	0.0001	0.0001	0.0004	0.0002	0.00008	0.00005	0.00005	0.00004	0.00002	0.00002	0.00001	0.000008	0.000008	0.000005
Total Intake (µg/kg/d)	0.06	0.13	0.21	0.41	0.16	0.08	0.04	0.04	0.03	0.02	0.01	0.01	0.006	0.006	0.003
HQ (unitless)	0.00009	0.0002	0.0003	0.0006	0.0002	0.0001	0.00007	0.00007	0.00005	0.00003	0.00002	0.00002	0.000009	0.000009	0.000005

Life stage: Child (3-13 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.03	0.06	0.1	0.19	0.07	0.04	0.02	0.02	0.01	0.008	0.006	0.006	0.003	0.003	0.001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00004	0.00008	0.0001	0.0003	0.0001	0.00006	0.00003	0.00003	0.00003	0.00002	0.00001	0.000009	0.000006	0.000006	0.000003
Total Intake (µg/kg/d)	0.03	0.06	0.1	0.19	0.07	0.04	0.02	0.02	0.01	0.008	0.006	0.006	0.003	0.003	0.001
HQ (unitless)	0.00004	0.00009	0.0002	0.0003	0.0001	0.00006	0.00003	0.00003	0.00002	0.00001	0.00001	0.00001	0.000004	0.000004	0.000002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.006	0.01	0.02	0.04	0.02	0.008	0.004	0.004	0.003	0.002	0.001	0.001	0.0006	0.0006	0.0003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00002	0.00004	0.00005	0.0001	0.00007	0.00003	0.00002	0.00002	0.00002	0.000009	0.000007	0.000005	0.000003	0.000003	0.000002
Total Intake (µg/kg/d)	0.006	0.01	0.02	0.04	0.02	0.008	0.004	0.004	0.003	0.002	0.001	0.001	0.0006	0.0006	0.0003
HQ (unitless)	0.000009	0.00002	0.00003	0.00006	0.00002	0.00001	0.000007	0.000006	0.000005	0.000003	0.000002	0.000002	0.0000009	0.0000009	0.0000005

Life stage: Adult (18-82 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.004	0.009	0.01	0.03	0.01	0.006	0.003	0.003	0.002	0.001	0.001	0.0009	0.0004	0.0004	0.0002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00001	0.00003	0.00004	0.0001	0.00005	0.00002	0.00001	0.00001	0.00001	0.000006	0.000005	0.000003	0.000002	0.000002	0.000001
Total Intake (µg/kg/d)	0.004	0.009	0.01	0.03	0.01	0.006	0.003	0.003	0.002	0.001	0.001	0.0009	0.0004	0.0004	0.0002
HQ (unitless)	0.000006	0.00001	0.00002	0.00005	0.00002	0.000009	0.000005	0.000005	0.000004	0.000002	0.000002	0.000001	0.0000006	0.0000007	0.0000003

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.009	0.02	0.03	0.06	0.02	0.01	0.006	0.006	0.005	0.003	0.002	0.002	0.0008	0.0009	0.0005
HQ (unitless)	0.00001	0.00003	0.00005	0.00009	0.00004	0.00002	0.00001	0.00001	0.000007	0.000004	0.000003	0.000003	0.000001	0.000001	0.0000007

R16-30

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.003	0.003	0.006	0.006	0.005	0.005	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.003	0.003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000003	0.000002	0.000004	0.000004	0.000004	0.000007	0.000005	0.000005	0.000004	0.000004	0.000004	0.000003	0.000004	0.000004	0.000004
Total Intake (µg/kg/d)	0.003	0.003	0.006	0.006	0.005	0.005	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.003	0.003
HQ (unitless)	0.000004	0.000004	0.000009	0.00001	0.000009	0.000007	0.000005	0.000005	0.000004	0.000003	0.000003	0.000003	0.000004	0.000004	0.000005

Life stage: Child (3-13 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.001	0.001	0.003	0.003	0.003	0.002	0.002	0.001	0.001	0.001	0.0009	0.001	0.001	0.001	0.001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000002	0.000001	0.000003	0.000003	0.000003	0.000005	0.000004	0.000004	0.000003	0.000003	0.000003	0.000002	0.000003	0.000003	0.000003
Total Intake (µg/kg/d)	0.001	0.001	0.003	0.003	0.003	0.002	0.002	0.001	0.001	0.001	0.0009	0.001	0.001	0.001	0.001
HQ (unitless)	0.000002	0.000002	0.000004	0.000005	0.000004	0.000003	0.000002	0.000002	0.000002	0.000002	0.000001	0.000002	0.000002	0.000002	0.000002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0003	0.0003	0.0006	0.0006	0.0005	0.0005	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.0000007	0.000001	0.000002	0.000001	0.000003	0.000002	0.000002	0.000002	0.000002	0.000001	0.000001	0.000001	0.000001	0.000002
Total Intake (µg/kg/d)	0.0003	0.0003	0.0006	0.0006	0.0005	0.0005	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003
HQ (unitless)	0.0000004	0.0000004	0.0000009	0.000001	0.0000008	0.0000007	0.0000005	0.0000005	0.0000004	0.0000003	0.0000003	0.0000003	0.0000003	0.0000004	0.0000005

Life stage: Adult (18-82 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0002	0.0002	0.0004	0.0005	0.0004	0.0003	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0002	0.0002	0.0002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000008	0.0000005	0.000001	0.000001	0.000001	0.000002	0.000001	0.000001	0.000001	0.000001	0.000001	0.0000009	0.000001	0.000001	0.000001
Total Intake ($\mu\text{g/kg/d}$)	0.0002	0.0002	0.0004	0.0005	0.0004	0.0003	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0002	0.0002	0.0002
HQ (unitless)	0.0000003	0.0000003	0.0000007	0.0000007	0.0000006	0.0000005	0.0000004	0.0000003	0.0000003	0.0000002	0.0000002	0.0000002	0.0000003	0.0000003	0.0000003

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0004	0.0004	0.0009	0.001	0.0008	0.0007	0.0005	0.0004	0.0004	0.0003	0.0003	0.0003	0.0003	0.0004	0.0004
HQ (unitless)	0.0000006	0.0000006	0.000001	0.000001	0.000001	0.000001	0.0000008	0.0000007	0.0000006	0.0000005	0.0000005	0.0000005	0.0000005	0.0000006	0.0000007

R31-45

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.005	0.006	0.007	0.008	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.004	0.005	0.006	0.007
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000008	0.000008	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000002	0.000002	0.000003	0.000005	0.000006	0.000008	0.000001
Total Intake ($\mu\text{g/kg/d}$)	0.005	0.006	0.007	0.008	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.004	0.005	0.006	0.007
HQ (unitless)	0.000008	0.000009	0.000001	0.000001	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000007	0.000006	0.000007	0.000009	0.000001

Life stage: Child (3-13 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.002	0.003	0.003	0.004	0.005	0.006	0.005	0.006	0.005	0.006	0.02	0.002	0.002	0.003	0.003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000005	0.000006	0.000007	0.000008	0.000008	0.000009	0.000008	0.000009	0.000001	0.000001	0.000002	0.000004	0.000005	0.000006	0.000008
Total Intake ($\mu\text{g/kg/d}$)	0.002	0.003	0.003	0.004	0.005	0.006	0.005	0.006	0.005	0.006	0.02	0.002	0.002	0.003	0.003
HQ (unitless)	0.000004	0.000004	0.000005	0.000006	0.000009	0.000001	0.000008	0.000001	0.000008	0.000001	0.000003	0.000003	0.000003	0.000004	0.000005

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0005	0.0006	0.0007	0.0008	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.0004	0.0005	0.0006	0.0007
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000003	0.000003	0.000004	0.000004	0.000004	0.000005	0.000004	0.000005	0.000006	0.000007	0.00001	0.000002	0.000002	0.000003	0.000004
Total Intake (µg/kg/d)	0.0005	0.0006	0.0007	0.0008	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.0004	0.0005	0.0006	0.0007
HQ (unitless)	0.0000008	0.0000009	0.000001	0.000001	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000007	0.0000006	0.0000007	0.0000009	0.000001

Life stage: Adult (18-82 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0004	0.0004	0.0005	0.0006	0.0008	0.0009	0.0008	0.001	0.0008	0.0009	0.003	0.0003	0.0003	0.0004	0.0005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000002	0.000002	0.000003	0.000003	0.000003	0.000003	0.000003	0.000003	0.000004	0.000005	0.000008	0.000001	0.000002	0.000002	0.000003
Total Intake (µg/kg/d)	0.0004	0.0004	0.0005	0.0006	0.0008	0.0009	0.0008	0.001	0.0008	0.001	0.003	0.0003	0.0003	0.0004	0.0005
HQ (unitless)	0.0000006	0.0000006	0.0000008	0.0000009	0.000001	0.000001	0.000001	0.000002	0.000001	0.000001	0.000005	0.0000004	0.0000005	0.0000006	0.0000008

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.0008	0.0008	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.007	0.0006	0.0007	0.0008	0.001
HQ (unitless)	0.000001	0.000001	0.000002	0.000002	0.000003	0.000003	0.000003	0.000003	0.000003	0.000003	0.00001	0.0000009	0.000001	0.000001	0.000002

R46-60

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.002	0.002	0.003	0.003	0.003	0.001	0.002	0.009	0.003	0.003	0.003	0.003	0.001	0.001	0.003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000003	0.000004	0.000004	0.000004	0.000004	0.000003	0.000003	0.00001	0.000004	0.000004	0.000005	0.000006	0.000002	0.000003	0.000005
Total Intake (µg/kg/d)	0.002	0.002	0.003	0.003	0.003	0.001	0.002	0.009	0.003	0.003	0.003	0.003	0.001	0.001	0.003
HQ (unitless)	0.000003	0.000003	0.000005	0.000005	0.000005	0.000002	0.000003	0.00001	0.000004	0.000005	0.000005	0.000005	0.000002	0.000002	0.000004

Life stage: Child (3-13 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0008	0.0009	0.001	0.001	0.002	0.0006	0.0008	0.004	0.001	0.001	0.001	0.001	0.0006	0.0006	0.001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000002	0.000003	0.000002	0.000003	0.000003	0.000002	0.000002	0.000008	0.000003	0.000003	0.000003	0.000004	0.000002	0.000002	0.000004
Total Intake ($\mu\text{g/kg/d}$)	0.0008	0.0009	0.001	0.001	0.002	0.0006	0.0008	0.004	0.001	0.001	0.001	0.001	0.0006	0.0006	0.001
HQ (unitless)	0.000001	0.000001	0.000002	0.000002	0.000002	0.000001	0.000001	0.000007	0.000002	0.000002	0.000002	0.000002	0.0000009	0.000001	0.000002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0002	0.0002	0.0003	0.0003	0.0003	0.0001	0.0002	0.0009	0.0003	0.0003	0.0003	0.0003	0.0001	0.0001	0.0003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000001	0.000001	0.000001	0.000001	0.000002	0.000001	0.000001	0.000004	0.000002	0.000001	0.000002	0.000002	0.0000009	0.000001	0.000002
Total Intake ($\mu\text{g/kg/d}$)	0.0002	0.0002	0.0003	0.0003	0.0003	0.0001	0.0002	0.0009	0.0003	0.0003	0.0003	0.0003	0.0001	0.0001	0.0003
HQ (unitless)	0.0000003	0.0000003	0.0000004	0.0000005	0.0000005	0.0000002	0.0000003	0.000001	0.0000004	0.0000005	0.0000005	0.0000005	0.0000002	0.0000002	0.0000004

Life stage: Adult (18-82 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0007	0.0002	0.0002	0.0002	0.0002	0.00009	0.0001	0.0002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000009	0.0000009	0.0000009	0.000001	0.000001	0.0000007	0.0000008	0.000003	0.000001	0.000001	0.000001	0.000002	0.0000006	0.0000007	0.000001
Total Intake ($\mu\text{g/kg/d}$)	0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0007	0.0002	0.0002	0.0002	0.0002	0.00009	0.0001	0.0002
HQ (unitless)	0.0000002	0.0000002	0.0000003	0.0000003	0.0000004	0.0000002	0.0000002	0.000001	0.0000003	0.0000003	0.0000004	0.0000003	0.0000001	0.0000002	0.0000003

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0003	0.0003	0.0004	0.0005	0.0005	0.0002	0.0003	0.001	0.0004	0.0004	0.0005	0.0005	0.0002	0.0002	0.0004
HQ (unitless)	0.0000004	0.0000004	0.0000007	0.0000007	0.0000008	0.0000003	0.0000004	0.000002	0.0000007	0.0000007	0.0000008	0.0000007	0.0000003	0.0000003	0.0000006

R61-75

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.002	0.003	0.003	0.01	0.002	0.002	0.003	0.006	0.005	0.003	0.002	0.007	0.01	0.01	0.003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000004	0.000005	0.000005	0.00002	0.000004	0.000003	0.000003	0.000009	0.000009	0.000005	0.000003	0.000008	0.00001	0.00001	0.000006
Total Intake ($\mu\text{g/kg/d}$)	0.002	0.003	0.003	0.01	0.002	0.002	0.003	0.006	0.005	0.003	0.002	0.007	0.01	0.01	0.003
HQ (unitless)	0.000003	0.000004	0.000004	0.00002	0.000003	0.000003	0.000004	0.000009	0.000008	0.000005	0.000003	0.00001	0.00001	0.00002	0.000005

Life stage: Child (3-13 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.001	0.001	0.001	0.004	0.0008	0.0008	0.001	0.003	0.002	0.001	0.0009	0.003	0.004	0.006	0.002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000003	0.000004	0.000004	0.00001	0.000003	0.000002	0.000002	0.000006	0.000006	0.000004	0.000002	0.000006	0.000009	0.00001	0.000004
Total Intake ($\mu\text{g/kg/d}$)	0.001	0.001	0.001	0.004	0.0008	0.0008	0.001	0.003	0.002	0.001	0.0009	0.003	0.004	0.006	0.002
HQ (unitless)	0.000002	0.000002	0.000002	0.000007	0.000001	0.000001	0.000002	0.000004	0.000004	0.000002	0.000001	0.000005	0.000007	0.00001	0.000002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0002	0.0003	0.0003	0.001	0.0002	0.0002	0.0003	0.0006	0.0005	0.0003	0.0002	0.0007	0.0009	0.001	0.0003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000001	0.000002	0.000002	0.000006	0.000001	0.000001	0.000001	0.000003	0.000003	0.000002	0.000001	0.000003	0.000005	0.000005	0.000002
Total Intake ($\mu\text{g/kg/d}$)	0.0002	0.0003	0.0003	0.001	0.0002	0.0002	0.0003	0.0006	0.0005	0.0003	0.0002	0.0007	0.0009	0.001	0.0003
HQ (unitless)	0.0000003	0.0000004	0.0000004	0.000002	0.0000003	0.0000003	0.0000004	0.0000009	0.0000008	0.0000005	0.0000003	0.000001	0.000001	0.000002	0.0000005

Life stage: Adult (18-82 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0001	0.0002	0.0002	0.0007	0.0001	0.0001	0.0002	0.0004	0.0003	0.0002	0.0001	0.0005	0.0007	0.001	0.0002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000001	0.000001	0.000001	0.000004	0.000001	0.0000008	0.0000009	0.000002	0.000002	0.000001	0.0000009	0.000002	0.000003	0.000004	0.000001
Total Intake ($\mu\text{g/kg/d}$)	0.0001	0.0002	0.0002	0.0007	0.0001	0.0001	0.0002	0.0004	0.0004	0.0002	0.0001	0.0005	0.0007	0.001	0.0002
HQ (unitless)	0.0000002	0.0000003	0.0000003	0.000001	0.0000002	0.0000002	0.0000003	0.0000006	0.0000005	0.0000004	0.0000002	0.0000007	0.000001	0.000001	0.0000004

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.0003	0.0004	0.0004	0.001	0.0002	0.0003	0.0004	0.0009	0.0007	0.0005	0.0003	0.001	0.001	0.002	0.0005
HQ (unitless)	0.0000005	0.0000006	0.0000006	0.000002	0.0000004	0.0000004	0.0000006	0.000001	0.000001	0.0000007	0.0000005	0.000002	0.000002	0.000003	0.0000008

R76-D

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.003	0.001	0.005	0.008	0.006	0.001	0.001	0.002	0.008	0.01	0.02	0.15	0.15	0.19	0.26
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000005	0.000003	0.000007	0.000001	0.000008	0.000003	0.000002	0.000004	0.000001	0.000001	0.000003	0.0002	0.0002	0.0002	0.0003
Total Intake ($\mu\text{g/kg/d}$)	0.003	0.001	0.005	0.008	0.006	0.001	0.001	0.002	0.008	0.01	0.02	0.15	0.15	0.19	0.26
HQ (unitless)	0.000004	0.000002	0.000007	0.000001	0.000001	0.000002	0.000002	0.000003	0.000001	0.000002	0.000003	0.0002	0.0002	0.0003	0.0004

Life stage: Child (3-13 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.001	0.0007	0.002	0.004	0.003	0.0006	0.0006	0.0009	0.004	0.005	0.01	0.07	0.07	0.09	0.12
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000004	0.000002	0.000005	0.000009	0.000006	0.000002	0.000001	0.000003	0.000001	0.000001	0.000002	0.0001	0.0001	0.0001	0.0002
Total Intake ($\mu\text{g/kg/d}$)	0.001	0.0007	0.002	0.004	0.003	0.0006	0.0006	0.0009	0.004	0.005	0.01	0.07	0.07	0.09	0.12
HQ (unitless)	0.000002	0.000001	0.000003	0.000006	0.000004	0.000001	0.000001	0.000001	0.000006	0.000007	0.00002	0.0001	0.0001	0.0001	0.0002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0003	0.0001	0.0004	0.0008	0.0006	0.0001	0.0001	0.0002	0.0008	0.001	0.002	0.01	0.02	0.02	0.03
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000002	0.000001	0.000003	0.000005	0.000003	0.000001	0.0000006	0.000001	0.000005	0.000005	0.000001	0.000006	0.000006	0.000008	0.0001
Total Intake ($\mu\text{g/kg/d}$)	0.0003	0.0001	0.0004	0.0008	0.0006	0.0001	0.0001	0.0002	0.0008	0.001	0.002	0.01	0.02	0.02	0.03
HQ (unitless)	0.0000004	0.0000002	0.0000007	0.000001	0.0000009	0.0000002	0.0000002	0.0000003	0.000001	0.000002	0.000003	0.00002	0.00002	0.00003	0.00004

Life stage: Adult (18-82 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.0002	0.0001	0.0003	0.0006	0.0004	0.0001	0.0001	0.0001	0.0006	0.0007	0.002	0.01	0.01	0.01	0.02
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000001	0.0000009	0.000002	0.000003	0.000002	0.0000008	0.0000004	0.000001	0.000004	0.000004	0.000007	0.00004	0.00004	0.00005	0.00008
Total Intake ($\mu\text{g/kg/d}$)	0.0002	0.0001	0.0003	0.0006	0.0004	0.0001	0.0001	0.0001	0.0006	0.0007	0.002	0.01	0.01	0.01	0.02
HQ (unitless)	0.0000003	0.0000002	0.0000005	0.0000009	0.0000007	0.0000002	0.0000002	0.0000002	0.0000009	0.000001	0.000002	0.00002	0.00002	0.00002	0.00003

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0004	0.0002	0.0007	0.001	0.0009	0.0002	0.0002	0.0003	0.001	0.001	0.003	0.02	0.02	0.03	0.04
HQ (unitless)	0.0000006	0.0000003	0.000001	0.000002	0.000001	0.0000003	0.0000003	0.0000005	0.000002	0.000002	0.000005	0.00004	0.00004	0.00004	0.00006

E-P

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.38	0.72	1.16	1.81	2.56	1.26	0.57	1.53	0.44	0.48	0.57	0.03
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0004	0.0007	0.001	0.002	0.002	0.001	0.0006	0.001	0.0004	0.0004	0.0004	0.00004
Total Intake ($\mu\text{g/kg/d}$)	0.38	0.72	1.17	1.81	2.57	1.26	0.57	1.53	0.44	0.48	0.57	0.03
HQ (unitless)	0.0006	0.001	0.002	0.003	0.004	0.002	0.0009	0.002	0.0007	0.0008	0.0009	0.00005

Life stage: Child (3-13 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.17	0.33	0.53	0.83	1.18	0.58	0.26	0.7	0.2	0.22	0.26	0.01
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0003	0.0005	0.0008	0.001	0.002	0.0009	0.0004	0.0009	0.0003	0.0003	0.0002	0.00003
Total Intake ($\mu\text{g/kg/d}$)	0.17	0.33	0.53	0.83	1.18	0.58	0.26	0.7	0.2	0.22	0.26	0.01
HQ (unitless)	0.0003	0.0005	0.0008	0.001	0.002	0.0009	0.0004	0.001	0.0003	0.0003	0.0004	0.00002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.04	0.07	0.11	0.18	0.25	0.12	0.06	0.15	0.04	0.05	0.06	0.003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0001	0.0003	0.0004	0.0006	0.0008	0.0005	0.0002	0.0005	0.0001	0.0001	0.0001	0.00001
Total Intake (µg/kg/d)	0.04	0.07	0.11	0.18	0.25	0.12	0.06	0.15	0.04	0.05	0.06	0.003
HQ (unitless)	0.00006	0.0001	0.0002	0.0003	0.0004	0.0002	0.00009	0.0002	0.00007	0.00007	0.00009	0.000005

Life stage: Adult (18-82 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.03	0.05	0.08	0.13	0.18	0.09	0.04	0.11	0.03	0.03	0.04	0.002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0001	0.0002	0.0003	0.0004	0.0006	0.0003	0.0002	0.0003	0.00009	0.00009	0.00009	0.00001
Total Intake (µg/kg/d)	0.03	0.05	0.08	0.13	0.18	0.09	0.04	0.11	0.03	0.03	0.04	0.002
HQ (unitless)	0.00004	0.00008	0.0001	0.0002	0.0003	0.0001	0.00006	0.0002	0.00005	0.00005	0.00006	0.000004

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.06	0.11	0.17	0.27	0.38	0.19	0.08	0.23	0.07	0.07	0.08	0.005
HQ (unitless)	0.00009	0.0002	0.0003	0.0004	0.0006	0.0003	0.0001	0.0004	0.0001	0.0001	0.0001	0.000007

F.8 Mercury (Hg)

Equations:

Total Intake (I_{total_as})	=	$I_{ingest\_s} + I_{inhal}$
Average lifetime daily exposure for 82 year life span	=	$(I_{total(0.5-3)} \times 365 \times At_x) + (I_{total(3-13)} \times 365 \times At_x) + (I_{total(13-18)} \times 365 \times At_x) + (I_{total(18-82)} \times 365 \times At_x) / AT_{lifetime}$
HQ	=	$I_{lifetime} / TDI_{adj}$

F.8.1 Scenario 1

Adjusted TDI

	All receptors
Background adjusted tolerable daily intake (TDI_{adj}) ($\mu\text{g}/\text{kg}/\text{d}$)	0.24

Soil & air concentrations:

R1-15

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil concentration ($\mu\text{g}/\text{g}$) (Appendix C)	0.007	0.02	0.04	0.02	0.03	0.02	0.007	0.006	0.004	0.002	0.001	0.002	0.0009	0.001	0.0005
Air concentration ($\mu\text{g}/\text{m}^3$) (Appendix D)	0.000002	0.000004	0.000008	0.000005	0.000006	0.000004	0.000002	0.000002	0.000001	0.0000007	0.0000005	0.0000006	0.0000004	0.0000004	0.0000002

R16-30

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil concentration ($\mu\text{g}/\text{g}$) (Appendix C)	0.0005	0.0004	0.001	0.001	0.0009	0.0007	0.0005	0.0004	0.0003	0.0003	0.0002	0.0002	0.0003	0.0003	0.0003
Air concentration ($\mu\text{g}/\text{m}^3$) (Appendix D)	0.0000001	0.00000006	0.0000001	0.0000002	0.0000001	0.0000003	0.0000002	0.0000002	0.0000002	0.0000002	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001

R31-45

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil concentration ($\mu\text{g}/\text{g}$) (Appendix C)	0.0007	0.0008	0.001	0.001	0.001	0.002	0.001	0.002	0.001	0.001	0.007	0.0004	0.0005	0.0006	0.0007
Air concentration ($\mu\text{g}/\text{m}^3$) (Appendix D)	0.0000004	0.0000004	0.0000004	0.0000005	0.0000006	0.0000006	0.0000005	0.0000006	0.0000004	0.0000005	0.000002	0.0000002	0.0000002	0.0000002	0.0000003

R46-60

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil concentration (µg/g) (Appendix C)	0.0002	0.0002	0.0003	0.0003	0.0003	0.0002	0.0002	0.001	0.0003	0.0003	0.0003	0.0003	0.0001	0.0001	0.0004
Air concentration (µg/m ³) (Appendix D)	0.0000001	0.0000001	0.0000001	0.0000002	0.0000002	0.00000008	0.0000001	0.0000004	0.0000001	0.0000001	0.0000001	0.0000001	0.00000007	0.00000006	0.0000002

R61-75

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil concentration (µg/g) (Appendix C)	0.0003	0.0004	0.0004	0.001	0.0002	0.0002	0.0002	0.0006	0.0005	0.0004	0.0003	0.001	0.001	0.002	0.0005
Air concentration (µg/m ³) (Appendix D)	0.0000002	0.0000002	0.0000002	0.0000004	0.0000001	0.00000009	0.0000001	0.0000002	0.0000002	0.0000002	0.0000001	0.0000004	0.0000006	0.0000006	0.0000002

R76-D

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil concentration (µg/g) (Appendix C)	0.0004	0.0002	0.0004	0.0009	0.0006	0.0001	0.0001	0.0002	0.0009	0.001	0.003	0.05	0.05	0.05	0.15
Air concentration (µg/m ³) (Appendix D)	0.0000002	0.0000001	0.0000002	0.0000003	0.0000002	0.00000005	0.00000006	0.00000007	0.0000003	0.0000004	0.0000008	0.00001	0.00001	0.00001	0.00003

E-P

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil concentration (µg/g) (Appendix C)	0.04	0.07	0.05	0.05	0.05	0.05	0.06	0.09	0.08	0.08	0.06	0.004
Air concentration (µg/m ³) (Appendix D)	0.000008	0.00001	0.00001	0.00001	0.000009	0.000009	0.00001	0.00002	0.00002	0.00002	0.00001	0.000001

Intakes & hazard quotients:

R1-15

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00007	0.0001	0.0003	0.0002	0.0002	0.0002	0.00006	0.00006	0.00004	0.00002	0.00001	0.00001	0.000008	0.000009	0.000005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.000003	0.000006	0.000004	0.000004	0.000003	0.000001	0.000001	0.0000009	0.0000005	0.0000004	0.0000004	0.0000003	0.0000003	0.0000001
Total Intake (µg/kg/d)	0.00007	0.0002	0.0003	0.0002	0.0003	0.0002	0.00006	0.00006	0.00004	0.00002	0.00001	0.00001	0.000008	0.00001	0.000005
HQ (unitless)	0.0003	0.0006	0.001	0.0009	0.001	0.0007	0.0003	0.0002	0.0002	0.00008	0.00006	0.00006	0.00003	0.00004	0.00002

Life stage: Child (3-13 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00003	0.00007	0.0002	0.0001	0.0001	0.00008	0.00003	0.00003	0.00002	0.000008	0.000006	0.000006	0.000004	0.000004	0.000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.000002	0.000004	0.000003	0.000003	0.000002	0.0000009	0.0000009	0.0000007	0.0000003	0.0000003	0.0000003	0.0000002	0.0000002	0.0000001
Total Intake (µg/kg/d)	0.00003	0.00007	0.0002	0.0001	0.0001	0.00008	0.00003	0.00003	0.00002	0.000008	0.000006	0.000007	0.000004	0.000004	0.000002
HQ (unitless)	0.0001	0.0003	0.0006	0.0004	0.0005	0.0003	0.0001	0.0001	0.00007	0.00004	0.00003	0.00003	0.00002	0.00002	0.000009

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000007	0.00001	0.00003	0.00002	0.00002	0.00002	0.000006	0.000006	0.000004	0.000002	0.000001	0.000001	0.0000008	0.0000009	0.0000005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000005	0.000001	0.000002	0.000001	0.000002	0.000001	0.0000005	0.0000005	0.0000003	0.0000002	0.0000001	0.0000002	0.0000001	0.0000001	0.00000005
Total Intake (µg/kg/d)	0.000007	0.00002	0.00003	0.00002	0.00003	0.00002	0.000006	0.000006	0.000004	0.000002	0.000001	0.000002	0.0000009	0.000001	0.0000005
HQ (unitless)	0.00003	0.00007	0.0001	0.00009	0.0001	0.00007	0.00003	0.00002	0.00002	0.000008	0.000006	0.000006	0.000004	0.000004	0.000002

Life stage: Adult (18-82 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000005	0.00001	0.00002	0.00002	0.00002	0.00001	0.000004	0.000004	0.000003	0.000001	0.0000009	0.000001	0.0000006	0.0000007	0.0000003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000004	0.0000008	0.000002	0.000001	0.000001	0.0000008	0.0000003	0.0000003	0.0000002	0.0000001	0.0000001	0.0000001	0.00000007	0.00000008	0.00000004
Total Intake (µg/kg/d)	0.000005	0.00001	0.00002	0.00002	0.00002	0.00001	0.000005	0.000004	0.000003	0.000001	0.000001	0.000001	0.0000006	0.0000007	0.0000004
HQ (unitless)	0.00002	0.00005	0.0001	0.00007	0.00008	0.00005	0.00002	0.00002	0.00001	0.000006	0.000004	0.000005	0.000003	0.000003	0.000002

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.00001	0.00002	0.00005	0.00003	0.00004	0.00003	0.000009	0.000009	0.000006	0.000003	0.000002	0.000002	0.000001	0.000001	0.0000007
HQ (unitless)	0.00004	0.0001	0.0002	0.0001	0.0002	0.0001	0.00004	0.00004	0.00002	0.00001	0.000009	0.000009	0.000005	0.000006	0.000003

R16-30

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000004	0.000004	0.00001	0.00001	0.000008	0.000006	0.000004	0.000004	0.000003	0.000003	0.000002	0.000002	0.000002	0.000002	0.000003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000001	0.00000004	0.00000009	0.0000001	0.00000009	0.0000002	0.0000002	0.0000002	0.0000001	0.0000001	0.00000009	0.00000008	0.0000001	0.00000009	0.00000009
Total Intake (µg/kg/d)	0.000004	0.000004	0.00001	0.00001	0.000008	0.000006	0.000004	0.000004	0.000003	0.000003	0.000002	0.000002	0.000002	0.000002	0.000003
HQ (unitless)	0.00002	0.00002	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.000009	0.000008	0.00001	0.00001	0.00001

Life stage: Child (3-13 yrs)	Receptor ID															
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000002	0.000002	0.000005	0.000004	0.000004	0.000003	0.000002	0.000002	0.000001	0.000001	0.000001	0.0000009	0.000001	0.000001	0.000001	
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000007	0.00000003	0.00000007	0.00000008	0.00000007	0.0000002	0.0000001	0.0000001	0.00000009	0.00000008	0.00000007	0.00000006	0.00000007	0.00000006	0.00000007	
Total Intake (µg/kg/d)	0.000002	0.000002	0.000005	0.000005	0.000004	0.000003	0.000002	0.000002	0.000001	0.000001	0.000001	0.0000009	0.000001	0.000001	0.000001	
HQ (unitless)	0.000009	0.000008	0.00002	0.00002	0.00002	0.00001	0.000009	0.000007	0.000006	0.000005	0.000004	0.000004	0.000005	0.000005	0.000005	

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID															
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000004	0.0000004	0.000001	0.000001	0.0000008	0.0000006	0.0000004	0.0000004	0.0000003	0.0000003	0.0000002	0.0000002	0.0000002	0.0000002	0.0000003	
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000004	0.00000002	0.00000004	0.00000004	0.00000004	0.00000008	0.00000006	0.00000006	0.00000005	0.00000004	0.00000004	0.00000003	0.00000004	0.00000003	0.00000004	
Total Intake (µg/kg/d)	0.0000005	0.0000004	0.000001	0.000001	0.0000008	0.0000007	0.0000005	0.0000004	0.0000003	0.0000003	0.0000002	0.0000002	0.0000003	0.0000003	0.0000003	
HQ (unitless)	0.000002	0.000002	0.000005	0.000004	0.000003	0.000003	0.000002	0.000002	0.000001	0.000001	0.000001	0.0000009	0.000001	0.000001	0.000001	

Life stage: Adult (18-82 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000003	0.0000003	0.0000008	0.0000007	0.0000006	0.0000004	0.0000003	0.0000003	0.0000002	0.0000002	0.0000002	0.0000001	0.0000002	0.0000002	0.0000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000003	0.00000001	0.00000003	0.00000003	0.00000003	0.00000006	0.00000005	0.00000004	0.00000003	0.00000003	0.00000003	0.00000002	0.00000003	0.00000002	0.00000003
Total Intake (µg/kg/d)	0.0000003	0.0000003	0.0000008	0.0000007	0.0000006	0.0000005	0.0000003	0.0000003	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002
HQ (unitless)	0.000001	0.000001	0.000003	0.000003	0.000003	0.000002	0.000001	0.000001	0.000001	0.0000009	0.0000007	0.0000006	0.0000008	0.0000008	0.0000009

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.0000007	0.0000006	0.000002	0.000001	0.000001	0.000001	0.0000007	0.0000006	0.0000005	0.0000004	0.0000003	0.0000003	0.0000004	0.0000004	0.0000004
HQ (unitless)	0.000003	0.000002	0.000007	0.000006	0.000005	0.000004	0.000003	0.000002	0.000002	0.000002	0.000001	0.000001	0.000002	0.000002	0.000002

R31-45

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000007	0.000007	0.000009	0.00001	0.00001	0.00001	0.00001	0.00002	0.00001	0.00001	0.00006	0.000004	0.000004	0.000005	0.000006
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000003	0.0000003	0.0000003	0.0000004	0.0000004	0.0000005	0.0000004	0.0000004	0.0000003	0.0000004	0.000001	0.0000001	0.0000001	0.0000002	0.0000002
Total Intake (µg/kg/d)	0.000007	0.000008	0.000009	0.00001	0.00001	0.00002	0.00001	0.00002	0.00001	0.00001	0.00006	0.000004	0.000004	0.000005	0.000007
HQ (unitless)	0.00003	0.00003	0.00004	0.00005	0.00006	0.00006	0.00005	0.00006	0.00005	0.00006	0.0003	0.00002	0.00002	0.00002	0.00003

Life stage: Child (3-13 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000003	0.000003	0.000004	0.000005	0.000006	0.000007	0.000005	0.000007	0.000005	0.000006	0.00003	0.000002	0.000002	0.000002	0.000003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000002	0.0000002	0.0000002	0.0000003	0.0000003	0.0000003	0.0000003	0.0000003	0.0000002	0.0000003	0.000001	0.00000009	0.0000001	0.0000001	0.0000001
Total Intake (µg/kg/d)	0.000003	0.000004	0.000004	0.000005	0.000006	0.000007	0.000006	0.000007	0.000005	0.000006	0.00003	0.000002	0.000002	0.000002	0.000003
HQ (unitless)	0.00001	0.00001	0.00002	0.00002	0.00003	0.00003	0.00002	0.00003	0.00002	0.00003	0.0001	0.000007	0.000009	0.00001	0.00001

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0000007	0.0000007	0.0000009	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000006	0.0000004	0.0000004	0.0000005	0.0000006
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00000009	0.00000001	0.00000001	0.00000001	0.00000002	0.00000002	0.00000001	0.00000002	0.00000001	0.00000001	0.00000006	0.00000005	0.00000005	0.00000006	0.00000008
Total Intake ($\mu\text{g/kg/d}$)	0.0000008	0.0000008	0.0000001	0.0000001	0.0000001	0.0000002	0.0000001	0.0000002	0.0000001	0.0000001	0.0000007	0.0000004	0.0000005	0.0000006	0.0000007
HQ (unitless)	0.000003	0.000003	0.000004	0.000005	0.000006	0.000007	0.000005	0.000007	0.000005	0.000006	0.00003	0.000002	0.000002	0.000002	0.000003

Life stage: Adult (18-82 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0000005	0.0000005	0.0000006	0.0000008	0.0000009	0.0000001	0.0000008	0.0000001	0.0000007	0.0000009	0.0000004	0.0000003	0.0000003	0.0000004	0.0000005
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00000007	0.00000007	0.00000008	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000008	0.00000001	0.00000004	0.00000003	0.00000004	0.00000005	0.00000005
Total Intake ($\mu\text{g/kg/d}$)	0.0000005	0.0000006	0.0000007	0.0000009	0.0000001	0.0000001	0.0000009	0.0000001	0.0000008	0.0000001	0.0000005	0.0000003	0.0000003	0.0000004	0.0000005
HQ (unitless)	0.000002	0.000002	0.000003	0.000004	0.000004	0.000005	0.000004	0.000005	0.000003	0.000004	0.00002	0.000001	0.000001	0.000002	0.000002

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0000001	0.0000001	0.0000001	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002	0.0000001	0.0000006	0.0000007	0.0000008	0.0000001
HQ (unitless)	0.000004	0.000005	0.000006	0.000007	0.000009	0.000001	0.000008	0.000001	0.000007	0.000009	0.000004	0.000002	0.000003	0.000003	0.000004

R46-60

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) (μg/kg/d)	0.0000002	0.0000002	0.0000003	0.0000003	0.0000003	0.0000001	0.0000002	0.0000009	0.0000003	0.0000002	0.0000002	0.0000002	0.0000001	0.0000001	0.0000004
Inhalation Intake (I_{inhal}) (μg/kg/d)	0.000000008	0.000000008	0.00000001	0.00000001	0.00000001	0.000000006	0.000000007	0.00000003	0.000000009	0.000000008	0.000000008	0.000000009	0.000000005	0.000000004	0.00000001
Total Intake (μg/kg/d)	0.0000002	0.0000002	0.0000003	0.0000003	0.0000003	0.0000001	0.0000002	0.0000009	0.0000003	0.0000002	0.0000002	0.0000003	0.0000001	0.0000001	0.0000004
HQ (unitless)	0.0000008	0.0000008	0.000001	0.000001	0.000001	0.0000006	0.0000007	0.000004	0.000001	0.000001	0.000001	0.000001	0.0000005	0.0000004	0.000002

Life stage: Child (3-13 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0000008	0.0000008	0.0000001	0.0000001	0.0000001	0.0000006	0.0000008	0.0000004	0.0000001	0.0000001	0.0000001	0.0000001	0.0000005	0.0000005	0.0000002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00000006	0.00000006	0.00000007	0.00000008	0.00000008	0.00000004	0.00000005	0.00000002	0.00000006	0.00000006	0.00000006	0.00000006	0.00000004	0.00000003	0.00000001
Total Intake ($\mu\text{g/kg/d}$)	0.0000009	0.0000009	0.0000001	0.0000001	0.0000002	0.0000007	0.0000008	0.0000004	0.0000001	0.0000001	0.0000001	0.0000001	0.0000006	0.0000005	0.0000002
HQ (unitless)	0.000004	0.000004	0.000005	0.000006	0.000006	0.000003	0.000003	0.000002	0.000005	0.000005	0.000005	0.000005	0.000002	0.000002	0.000007

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0000002	0.0000002	0.0000003	0.0000003	0.0000003	0.0000001	0.0000002	0.0000009	0.0000003	0.0000002	0.0000002	0.0000002	0.0000001	0.0000001	0.0000004
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00000003	0.00000003	0.00000004	0.00000004	0.00000004	0.00000002	0.00000003	0.00000009	0.00000003	0.00000003	0.00000003	0.00000003	0.00000002	0.00000002	0.00000005
Total Intake ($\mu\text{g/kg/d}$)	0.0000002	0.0000002	0.0000003	0.0000003	0.0000004	0.0000002	0.0000002	0.0000001	0.0000003	0.0000003	0.0000003	0.0000003	0.0000001	0.0000001	0.0000004
HQ (unitless)	0.0000009	0.0000009	0.0000001	0.0000001	0.0000001	0.0000006	0.0000008	0.0000004	0.0000001	0.0000001	0.0000001	0.0000001	0.0000001	0.0000006	0.0000005

Life stage: Adult (18-82 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0000001	0.0000001	0.0000002	0.0000002	0.0000002	0.0000001	0.0000001	0.0000006	0.0000002	0.0000002	0.0000002	0.0000002	0.00000008	0.00000007	0.0000003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00000002	0.00000002	0.00000003	0.00000003	0.00000003	0.00000002	0.00000002	0.00000007	0.00000002	0.00000002	0.00000002	0.00000002	0.00000001	0.00000001	0.00000004
Total Intake ($\mu\text{g/kg/d}$)	0.0000001	0.0000001	0.0000002	0.0000002	0.0000003	0.0000001	0.0000001	0.0000007	0.0000002	0.0000002	0.0000002	0.0000002	0.0000001	0.00000008	0.0000003
HQ (unitless)	0.0000006	0.0000006	0.0000009	0.0000009	0.0000001	0.0000005	0.0000006	0.0000003	0.0000009	0.0000008	0.0000008	0.0000008	0.0000004	0.0000003	0.0000001

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0000003	0.0000003	0.0000004	0.0000005	0.0000005	0.0000002	0.0000003	0.0000001	0.0000004	0.0000004	0.0000004	0.0000004	0.0000002	0.0000002	0.0000006
HQ (unitless)	0.0000001	0.0000001	0.0000002	0.0000002	0.0000002	0.0000009	0.0000001	0.0000006	0.0000002	0.0000002	0.0000002	0.0000002	0.0000008	0.0000007	0.0000002

R61-75

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000003	0.000003	0.000004	0.00001	0.000002	0.000002	0.000002	0.000005	0.000004	0.000004	0.000003	0.000009	0.00001	0.00001	0.000004
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000001	0.0000001	0.0000001	0.0000003	0.00000009	0.00000007	0.00000007	0.0000002	0.0000001	0.0000002	0.00000009	0.0000003	0.0000004	0.0000004	0.0000002
Total Intake ($\mu\text{g/kg/d}$)	0.000003	0.000004	0.000004	0.00001	0.000002	0.000002	0.000002	0.000005	0.000005	0.000004	0.000003	0.000009	0.00001	0.00001	0.000005
HQ (unitless)	0.00001	0.00001	0.00002	0.00004	0.000009	0.000007	0.000009	0.00002	0.00002	0.00002	0.00001	0.00004	0.00006	0.00006	0.00002

Life stage: Child (3-13 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000001	0.000002	0.000002	0.000005	0.0000009	0.0000007	0.000001	0.000002	0.000002	0.000002	0.000001	0.000004	0.000006	0.000006	0.000002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00000008	0.0000001	0.0000001	0.0000002	0.00000007	0.00000005	0.00000005	0.0000001	0.0000001	0.0000001	0.00000006	0.0000002	0.0000003	0.0000003	0.0000001
Total Intake ($\mu\text{g/kg/d}$)	0.000001	0.000002	0.000002	0.000005	0.000001	0.0000008	0.000001	0.000002	0.000002	0.000002	0.000001	0.000004	0.000006	0.000007	0.000002
HQ (unitless)	0.000005	0.000007	0.000007	0.00002	0.000004	0.000003	0.000004	0.00001	0.000009	0.000008	0.000006	0.00002	0.00003	0.00003	0.000009

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0000003	0.0000003	0.0000003	0.000001	0.0000002	0.0000002	0.0000002	0.0000005	0.0000004	0.0000004	0.0000003	0.0000009	0.000001	0.000001	0.0000004
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00000004	0.00000005	0.00000005	0.0000001	0.00000004	0.00000002	0.00000003	0.00000006	0.00000005	0.00000006	0.00000003	0.0000001	0.0000002	0.0000002	0.00000006
Total Intake ($\mu\text{g/kg/d}$)	0.0000003	0.0000004	0.0000004	0.000001	0.0000002	0.0000002	0.0000002	0.0000006	0.0000005	0.0000005	0.0000003	0.000001	0.000001	0.000002	0.0000005
HQ (unitless)	0.000001	0.000002	0.000002	0.000005	0.000001	0.0000007	0.000001	0.000002	0.000002	0.000002	0.000001	0.000004	0.000006	0.000006	0.000002

Life stage: Adult (18-82 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0000002	0.0000002	0.0000002	0.0000007	0.0000001	0.0000001	0.0000001	0.0000004	0.0000003	0.0000003	0.0000002	0.0000006	0.0000009	0.000001	0.0000003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00000003	0.00000004	0.00000004	0.00000007	0.00000003	0.00000002	0.00000002	0.00000004	0.00000004	0.00000004	0.00000002	0.00000008	0.0000001	0.0000001	0.00000004
Total Intake ($\mu\text{g/kg/d}$)	0.0000002	0.0000003	0.0000003	0.0000008	0.0000002	0.0000001	0.0000002	0.0000004	0.0000003	0.0000003	0.0000002	0.0000007	0.000001	0.000001	0.0000004
HQ (unitless)	0.0000009	0.000001	0.000001	0.000003	0.0000007	0.0000005	0.0000007	0.000002	0.000001	0.000001	0.0000009	0.000003	0.000004	0.000005	0.000001

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.0000004	0.0000006	0.0000006	0.0000002	0.0000003	0.0000003	0.0000003	0.0000008	0.0000007	0.0000007	0.0000004	0.0000001	0.0000002	0.0000002	0.0000007
HQ (unitless)	0.000002	0.000002	0.000002	0.000007	0.000001	0.000001	0.000001	0.000003	0.000003	0.000003	0.000002	0.000006	0.000009	0.000009	0.000003

R76-D

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000004	0.000002	0.000004	0.000008	0.000006	0.0000009	0.000001	0.000001	0.000008	0.000001	0.000002	0.0004	0.0004	0.0004	0.001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000001	0.00000008	0.0000001	0.0000002	0.0000002	0.00000004	0.00000004	0.00000005	0.0000002	0.0000003	0.0000006	0.000007	0.000007	0.000007	0.00002
Total Intake ($\mu\text{g/kg/d}$)	0.000004	0.000002	0.000004	0.000008	0.000006	0.0000009	0.000001	0.000001	0.000008	0.000001	0.000003	0.0004	0.0004	0.0005	0.001
HQ (unitless)	0.00002	0.000008	0.00002	0.00004	0.00002	0.000004	0.000005	0.000006	0.00003	0.00004	0.0001	0.002	0.002	0.002	0.006

Life stage: Child (3-13 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000002	0.0000008	0.000002	0.000004	0.000003	0.0000004	0.0000006	0.0000006	0.000004	0.000005	0.000001	0.0002	0.0002	0.0002	0.0006
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000001	0.00000006	0.00000009	0.0000002	0.0000001	0.00000003	0.00000003	0.00000004	0.0000002	0.0000002	0.0000004	0.000005	0.000005	0.000005	0.00001
Total Intake ($\mu\text{g/kg/d}$)	0.000002	0.0000009	0.000002	0.000004	0.000003	0.0000004	0.0000006	0.0000007	0.000004	0.000005	0.000001	0.0002	0.0002	0.0002	0.0006
HQ (unitless)	0.000007	0.000004	0.000008	0.00002	0.00001	0.000002	0.000003	0.000003	0.00002	0.00002	0.00005	0.0008	0.0009	0.0009	0.003

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0000003	0.0000002	0.0000004	0.0000008	0.0000006	0.00000009	0.0000001	0.0000001	0.0000008	0.0000001	0.000002	0.00004	0.00004	0.00004	0.0001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00000005	0.00000003	0.00000005	0.00000008	0.00000006	0.00000001	0.00000002	0.00000002	0.00000008	0.00000001	0.0000002	0.000003	0.000003	0.000003	0.000007
Total Intake ($\mu\text{g/kg/d}$)	0.0000004	0.0000002	0.0000004	0.0000009	0.0000006	0.0000001	0.0000001	0.0000002	0.0000009	0.0000001	0.000003	0.00004	0.00005	0.00005	0.0001
HQ (unitless)	0.000002	0.0000009	0.000002	0.000004	0.000003	0.0000004	0.0000006	0.0000006	0.000004	0.000005	0.00001	0.0002	0.0002	0.0002	0.0006

Life stage: Adult (18-82 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0000003	0.0000001	0.0000003	0.0000006	0.0000004	0.00000006	0.00000009	0.0000001	0.0000006	0.0000007	0.000002	0.00003	0.00003	0.00003	0.0001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00000004	0.00000002	0.00000003	0.00000006	0.00000005	0.00000001	0.00000001	0.00000001	0.00000006	0.00000008	0.0000002	0.000002	0.000002	0.000002	0.000005
Total Intake (µg/kg/d)	0.0000003	0.0000001	0.0000003	0.0000006	0.0000005	0.00000007	0.0000001	0.0000001	0.0000006	0.0000008	0.000002	0.00003	0.00003	0.00003	0.0001
HQ (unitless)	0.000001	0.0000006	0.000001	0.000003	0.000002	0.0000003	0.0000004	0.0000005	0.000003	0.000003	0.000008	0.0001	0.0001	0.0001	0.0004

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.0000006	0.0000003	0.0000006	0.000001	0.0000009	0.0000001	0.0000002	0.0000002	0.000001	0.000002	0.000004	0.00007	0.00007	0.00007	0.0002
HQ (unitless)	0.000002	0.000001	0.000003	0.000005	0.000004	0.0000006	0.0000008	0.0000009	0.000005	0.000007	0.00002	0.0003	0.0003	0.0003	0.0009

E-P

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0003	0.0007	0.0005	0.0004	0.0004	0.0004	0.0006	0.0008	0.0007	0.0008	0.0006	0.00004
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000006	0.00001	0.000008	0.000007	0.000007	0.000007	0.000009	0.00001	0.00001	0.00001	0.000008	0.000001
Total Intake (µg/kg/d)	0.0003	0.0007	0.0005	0.0004	0.0004	0.0004	0.0006	0.0008	0.0007	0.0008	0.0006	0.00004
HQ (unitless)	0.001	0.003	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.002	0.0002

Life stage: Child (3-13 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003	0.0004	0.0003	0.0003	0.0003	0.00002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000004	0.000007	0.000005	0.000005	0.000005	0.000005	0.000006	0.000009	0.000008	0.000008	0.000006	0.0000007
Total Intake (µg/kg/d)	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003	0.0004	0.0003	0.0004	0.0003	0.00002
HQ (unitless)	0.0007	0.001	0.0009	0.0009	0.0008	0.0008	0.001	0.002	0.001	0.001	0.001	0.00007

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00003	0.00007	0.00005	0.00004	0.00004	0.00004	0.00005	0.00008	0.00007	0.00007	0.00006	0.000004
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000002	0.000004	0.000003	0.000003	0.000002	0.000002	0.000003	0.000005	0.000004	0.000004	0.000003	0.0000004
Total Intake (µg/kg/d)	0.00003	0.00007	0.00005	0.00005	0.00004	0.00004	0.00006	0.00008	0.00007	0.00008	0.00006	0.000004
HQ (unitless)	0.0001	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0002	0.00002

Life stage: Adult (18-82 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00002	0.00005	0.00003	0.00003	0.00003	0.00003	0.00004	0.00006	0.00005	0.00005	0.00004	0.000003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000002	0.000003	0.000002	0.000002	0.000002	0.000002	0.000002	0.000003	0.000003	0.000003	0.000002	0.0000003
Total Intake (µg/kg/d)	0.00002	0.00005	0.00004	0.00003	0.00003	0.00003	0.00004	0.00006	0.00005	0.00006	0.00004	0.000003
HQ (unitless)	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.00001

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.00005	0.0001	0.00007	0.00007	0.00006	0.00006	0.00009	0.0001	0.0001	0.0001	0.00009	0.000006
HQ (unitless)	0.0002	0.0004	0.0003	0.0003	0.0003	0.0003	0.0004	0.0005	0.0005	0.0005	0.0004	0.00002

F.8.2 Scenario 2

Adjusted TDI

	All receptors
Background adjusted tolerable daily intake (TDI _{adj}) (µg/kg/d)	0.24

Soil & air concentrations:

R1-15

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil concentration (µg/g) (Appendix C)	0.3	0.76	1.3	3.21	1.0	0.35	0.19	0.19	0.15	0.08	0.07	0.06	0.03	0.03	0.01
Air concentration (µg/m ³) (Appendix D)	0.00008	0.0001	0.0002	0.0005	0.0002	0.0001	0.00006	0.00007	0.00006	0.00003	0.00003	0.00002	0.00001	0.00001	0.000007

R16-30

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil concentration (µg/g) (Appendix C)	0.01	0.01	0.02	0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.009	0.01	0.01	0.01	0.01
Air concentration (µg/m³) (Appendix D)	0.000004	0.000003	0.000005	0.000006	0.000005	0.000009	0.000008	0.000007	0.000006	0.000006	0.000005	0.000004	0.000005	0.000005	0.000006

R31-45

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil concentration (µg/g) (Appendix C)	0.03	0.03	0.03	0.04	0.06	0.06	0.05	0.07	0.05	0.07	0.19	0.02	0.02	0.03	0.03
Air concentration (µg/m ³) (Appendix D)	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00001	0.00002	0.00002	0.00003	0.00004	0.000007	0.000009	0.00001	0.00002

R46-60

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil concentration (µg/g) (Appendix C)	0.009	0.009	0.01	0.02	0.02	0.006	0.008	0.05	0.01	0.02	0.02	0.02	0.006	0.007	0.01
Air concentration (µg/m³) (Appendix D)	0.000005	0.000005	0.000005	0.000005	0.000006	0.000004	0.000004	0.00002	0.000006	0.000005	0.000006	0.000008	0.000003	0.000004	0.000007

R61-75

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil concentration (µg/g) (Appendix C)	0.01	0.01	0.01	0.05	0.008	0.009	0.01	0.03	0.02	0.02	0.009	0.03	0.04	0.06	0.02
Air concentration (µg/m ³) (Appendix D)	0.000006	0.000007	0.000007	0.00002	0.000005	0.000004	0.000004	0.00001	0.00001	0.000007	0.000004	0.00001	0.00002	0.00002	0.000008

R76-D

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil concentration (µg/g) (Appendix C)	0.01	0.01	0.02	0.04	0.03	0.01	0.01	0.01	0.04	0.05	0.11	0.82	0.83	1.12	1.76
Air concentration (µg/m ³) (Appendix D)	0.000008	0.000005	0.00001	0.00002	0.00001	0.000004	0.000002	0.000005	0.00002	0.00002	0.00004	0.0002	0.0002	0.0003	0.0004

E-P

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil concentration (µg/g) (Appendix C)	2.73	5.59	9.58	15.31	22.22	10.58	4.51	12.75	2.53	2.67	2.94	0.14
Air concentration (µg/m ³) (Appendix D)	0.0006	0.001	0.002	0.002	0.003	0.002	0.0008	0.002	0.0005	0.0005	0.0005	0.00006

Intakes & hazard quotients:

R1-15

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.003	0.007	0.01	0.03	0.009	0.003	0.002	0.002	0.001	0.0008	0.0006	0.0006	0.0002	0.0002	0.0001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00006	0.0001	0.0001	0.000392	0.0002	0.00008	0.00005	0.00005	0.00004	0.00002	0.00002	0.00001	0.000008	0.000008	0.000005
Total Intake (µg/kg/d)	0.003	0.007	0.01	0.03	0.009	0.003	0.002	0.002	0.001	0.0008	0.0006	0.0006	0.0002	0.0002	0.0001
HQ (unitless)	0.01	0.03	0.05	0.12	0.04	0.01	0.008	0.007	0.006	0.003	0.003	0.002	0.001	0.001	0.0005

Life stage: Child (3-13 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.001	0.003	0.005	0.01	0.004	0.001	0.0008	0.0008	0.0006	0.0003	0.0003	0.0003	0.0001	0.0001	0.00006
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00004	0.00008	0.0001	0.0003	0.0001	0.00006	0.00003	0.00003	0.00003	0.00002	0.00001	0.000009	0.000006	0.000006	0.000003
Total Intake (µg/kg/d)	0.001	0.003	0.006	0.01	0.004	0.002	0.0008	0.0008	0.0006	0.0004	0.0003	0.0003	0.0001	0.0001	0.00006
HQ (unitless)	0.005	0.01	0.02	0.06	0.02	0.006	0.003	0.003	0.003	0.002	0.001	0.001	0.0005	0.0005	0.0003

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0003	0.0007	0.001	0.003	0.0009	0.0003	0.0002	0.0002	0.0001	0.00007	0.00006	0.00006	0.00002	0.00002	0.00001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00002	0.00004	0.00005	0.0001	0.00007	0.00003	0.00002	0.00002	0.00002	0.000009	0.000007	0.000005	0.000003	0.000003	0.000002
Total Intake (µg/kg/d)	0.0003	0.0007	0.001	0.003	0.001	0.0003	0.0002	0.0002	0.0001	0.00008	0.00007	0.00006	0.00003	0.00003	0.00001
HQ (unitless)	0.001	0.003	0.005	0.01	0.004	0.001	0.0008	0.0008	0.0006	0.0003	0.0003	0.0003	0.0001	0.0001	0.00006

Life stage: Adult (18-82 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0002	0.0005	0.0008	0.002	0.0006	0.0002	0.0001	0.0001	0.00009	0.00005	0.00004	0.00004	0.00002	0.00002	0.000009
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00001	0.00003	0.00004	0.0001	0.00005	0.00002	0.00001	0.00001	0.00001	0.000006	0.000005	0.000003	0.000002	0.000002	0.000001
Total Intake (µg/kg/d)	0.0002	0.0005	0.0009	0.002	0.0007	0.0002	0.0001	0.0001	0.0001	0.00006	0.00005	0.00004	0.00002	0.00002	0.00001
HQ (unitless)	0.0009	0.002	0.004	0.009	0.003	0.001	0.0006	0.0005	0.0004	0.0002	0.0002	0.0002	0.00008	0.00008	0.00004

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.0004	0.001	0.002	0.004	0.001	0.0005	0.0003	0.0003	0.0002	0.0001	0.0001	0.00009	0.00004	0.00004	0.00002
HQ (unitless)	0.002	0.004	0.007	0.02	0.006	0.002	0.001	0.001	0.0009	0.0005	0.0004	0.0004	0.0002	0.0002	0.00008

R16-30

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.00009	0.00009	0.00009	0.0001	0.0001	0.0001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000003	0.000002	0.000004	0.000004	0.000004	0.000007	0.000005	0.000005	0.000004	0.000004	0.000004	0.000003	0.000004	0.000004	0.000004
Total Intake (µg/kg/d)	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.00009	0.00009	0.0001	0.0001	0.0001
HQ (unitless)	0.0004	0.0004	0.0009	0.001	0.0009	0.0009	0.0006	0.0006	0.0005	0.0004	0.0004	0.0004	0.0004	0.0005	0.0006

Life stage: Child (3-13 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion ($I_{\text{ingest\_s}}$) (µg/kg/d)	0.00005	0.00005	0.00009	0.0001	0.00009	0.00009	0.00007	0.00006	0.00005	0.00004	0.00004	0.00004	0.00005	0.00005	0.00006
Inhalation Intake (I_{inhal}) (µg/kg/d)	0.000002	0.000001	0.000003	0.000003	0.000003	0.000005	0.000004	0.000004	0.000003	0.000003	0.000003	0.000002	0.000003	0.000003	0.000003
Total Intake (µg/kg/d)	0.00005	0.00005	0.00009	0.0001	0.0001	0.0001	0.00007	0.00006	0.00005	0.00005	0.00004	0.00004	0.00005	0.00006	0.00006
HQ (unitless)	0.0002	0.0002	0.0004	0.0005	0.0004	0.0004	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion ($I_{\text{ingest\_s}}$) (µg/kg/d)	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.000009	0.000008	0.000009	0.00001	0.00001	0.00001
Inhalation Intake (I_{inhal}) (µg/kg/d)	0.000001	0.0000007	0.000001	0.000002	0.000001	0.000003	0.000002	0.000002	0.000002	0.000002	0.000001	0.000001	0.000001	0.000001	0.000002
Total Intake (µg/kg/d)	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
HQ (unitless)	0.00005	0.00005	0.00009	0.0001	0.00009	0.00009	0.00007	0.00006	0.00005	0.00004	0.00004	0.00004	0.00005	0.00005	0.00006

Life stage: Adult (18-82 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000007	0.000007	0.00001	0.00002	0.00001	0.00001	0.00001	0.000009	0.000007	0.000007	0.000006	0.000006	0.000007	0.000008	0.000009
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000008	0.0000005	0.000001	0.000001	0.000001	0.000002	0.000001	0.000001	0.000001	0.000001	0.000001	0.0000009	0.000001	0.000001	0.000001
Total Intake (µg/kg/d)	0.000008	0.000008	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.000009	0.000008	0.000007	0.000007	0.000008	0.000009	0.00001
HQ (unitless)	0.00003	0.00003	0.00006	0.00007	0.00006	0.00007	0.00005	0.00004	0.00004	0.00003	0.00003	0.00003	0.00003	0.00004	0.00004

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.00002	0.00002	0.00003	0.00004	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00002	0.00002	0.00002
HQ (unitless)	0.00007	0.00007	0.0001	0.0002	0.0001	0.0001	0.0001	0.00009	0.00007	0.00006	0.00006	0.00006	0.00007	0.00008	0.00009

R31-45

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0002	0.0002	0.0003	0.0003	0.0005	0.0006	0.0005	0.0006	0.0005	0.0006	0.002	0.0002	0.0002	0.0003	0.0003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000008	0.000008	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00003	0.000005	0.000006	0.000008	0.00001
Total Intake (µg/kg/d)	0.0002	0.0003	0.0003	0.0004	0.0005	0.0006	0.0005	0.0006	0.0005	0.0006	0.002	0.0002	0.0002	0.0003	0.0003
HQ (unitless)	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.003	0.002	0.003	0.007	0.0008	0.0009	0.001	0.001

Life stage: Child (3-13 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0001	0.0001	0.0001	0.0002	0.0002	0.0003	0.0002	0.0003	0.0002	0.0003	0.0008	0.00008	0.00009	0.0001	0.0001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000005	0.000006	0.000007	0.000008	0.000008	0.000009	0.000008	0.000009	0.00001	0.00001	0.00002	0.000004	0.000005	0.000006	0.000008
Total Intake (µg/kg/d)	0.0001	0.0001	0.0001	0.0002	0.0002	0.0003	0.0002	0.0003	0.0002	0.0003	0.0008	0.00008	0.0001	0.0001	0.0002
HQ (unitless)	0.0005	0.0005	0.0006	0.0007	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.0004	0.0004	0.0005	0.0006

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00002	0.00002	0.00003	0.00003	0.00005	0.00006	0.00005	0.00006	0.00005	0.00006	0.0002	0.00002	0.00002	0.00002	0.00003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000003	0.000003	0.000004	0.000004	0.000004	0.000005	0.000004	0.000005	0.000006	0.000007	0.00001	0.000002	0.000002	0.000003	0.000004
Total Intake ($\mu\text{g/kg/d}$)	0.00003	0.00003	0.00003	0.00004	0.00005	0.00006	0.00005	0.00006	0.00005	0.00007	0.0002	0.00002	0.00002	0.00003	0.00003
HQ (unitless)	0.0001	0.0001	0.0001	0.0002	0.0002	0.0003	0.0002	0.0003	0.0002	0.0003	0.0008	0.00008	0.00009	0.0001	0.0001

Life stage: Adult (18-82 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00002	0.00002	0.00002	0.00002	0.00004	0.00004	0.00003	0.00004	0.00003	0.00004	0.0001	0.00001	0.00001	0.00002	0.00002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000002	0.000002	0.000003	0.000003	0.000003	0.000003	0.000003	0.000003	0.000004	0.000005	0.000008	0.000001	0.000002	0.000002	0.000003
Total Intake ($\mu\text{g/kg/d}$)	0.00002	0.00002	0.00002	0.00003	0.00004	0.00004	0.00004	0.00005	0.00004	0.00005	0.0001	0.00001	0.00002	0.00002	0.00003
HQ (unitless)	0.00008	0.00008	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.00006	0.00007	0.00008	0.0001

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.00004	0.00004	0.00005	0.00006	0.00008	0.00009	0.00008	0.00009	0.00008	0.00009	0.0003	0.00003	0.00003	0.00004	0.00005
HQ (unitless)	0.0002	0.0002	0.0002	0.0002	0.0003	0.0004	0.0003	0.0004	0.0003	0.0004	0.001	0.0001	0.0001	0.0002	0.0002

R46-60

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00008	0.00008	0.0001	0.0001	0.0002	0.00006	0.00007	0.0004	0.0001	0.0001	0.0001	0.0001	0.00006	0.00006	0.0001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000003	0.000004	0.000004	0.000004	0.000004	0.000003	0.000003	0.00001	0.000004	0.000004	0.000005	0.000006	0.000002	0.000003	0.000005
Total Intake ($\mu\text{g/kg/d}$)	0.00008	0.00009	0.0001	0.0001	0.0002	0.00006	0.00008	0.0004	0.0001	0.0001	0.0001	0.0001	0.00006	0.00006	0.0001
HQ (unitless)	0.0003	0.0004	0.0006	0.0006	0.0007	0.0003	0.0003	0.002	0.0005	0.0006	0.0006	0.0006	0.0002	0.0003	0.0005

Life stage: Child (3-13 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.00004	0.00004	0.00006	0.00006	0.00007	0.00003	0.00003	0.0002	0.00006	0.00007	0.00007	0.00006	0.00003	0.00003	0.00006
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000002	0.000003	0.000002	0.000003	0.000003	0.000002	0.000002	0.000008	0.000003	0.000003	0.000003	0.000004	0.000002	0.000002	0.000004
Total Intake ($\mu\text{g/kg/d}$)	0.00004	0.00004	0.00006	0.00007	0.00007	0.00003	0.00004	0.0002	0.00006	0.00007	0.00007	0.00007	0.00003	0.00003	0.00006
HQ (unitless)	0.0002	0.0002	0.0003	0.0003	0.0003	0.0001	0.0001	0.0009	0.0003	0.0003	0.0003	0.0003	0.0001	0.0001	0.0002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.000008	0.000008	0.00001	0.00001	0.00002	0.000006	0.000007	0.00004	0.00001	0.00001	0.00001	0.00001	0.000006	0.000006	0.00001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000001	0.000001	0.000001	0.000001	0.000002	0.000001	0.000001	0.000004	0.000002	0.000001	0.000002	0.000002	0.0000009	0.000001	0.000002
Total Intake ($\mu\text{g/kg/d}$)	0.000009	0.000009	0.00001	0.00002	0.00002	0.000007	0.000008	0.00005	0.00001	0.00002	0.00002	0.00002	0.000006	0.000007	0.00001
HQ (unitless)	0.00004	0.00004	0.00006	0.00006	0.00007	0.00003	0.00003	0.0002	0.00006	0.00006	0.00007	0.00007	0.00003	0.00003	0.00006

Life stage: Adult (18-82 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.000006	0.000006	0.000009	0.00001	0.00001	0.000004	0.000005	0.00003	0.000009	0.00001	0.00001	0.00001	0.000004	0.000004	0.000008
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000009	0.0000009	0.0000009	0.000001	0.000001	0.0000007	0.0000008	0.000003	0.000001	0.000001	0.000001	0.000002	0.0000006	0.0000007	0.000001
Total Intake ($\mu\text{g/kg/d}$)	0.000006	0.000007	0.00001	0.00001	0.00001	0.000005	0.000006	0.00003	0.00001	0.00001	0.00001	0.00001	0.000005	0.000005	0.00001
HQ (unitless)	0.00003	0.00003	0.00004	0.00005	0.00005	0.00002	0.00002	0.0001	0.00004	0.00005	0.00005	0.00005	0.00002	0.00002	0.00004

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.00001	0.00001	0.00002	0.00002	0.00002	0.00001	0.00001	0.00007	0.00002	0.00002	0.00002	0.00002	0.000009	0.00001	0.00002
HQ (unitless)	0.00005	0.00006	0.00008	0.00009	0.0001	0.00004	0.00005	0.0003	0.00008	0.00009	0.0001	0.0001	0.00004	0.00004	0.00008

R61-75

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00009	0.0001	0.0001	0.0004	0.00007	0.00008	0.0001	0.0003	0.0002	0.0001	0.00008	0.0003	0.0004	0.0006	0.0001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000004	0.000005	0.000005	0.00002	0.000004	0.000003	0.000003	0.000009	0.000009	0.000005	0.000003	0.000008	0.00001	0.00001	0.000006
Total Intake (µg/kg/d)	0.0001	0.0001	0.0001	0.0005	0.00008	0.00008	0.0001	0.0003	0.0002	0.0001	0.00008	0.0003	0.0004	0.0006	0.0001
HQ (unitless)	0.0004	0.0005	0.0005	0.002	0.0003	0.0003	0.0005	0.001	0.001	0.0006	0.0003	0.001	0.002	0.002	0.0006

Life stage: Child (3-13 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00004	0.00005	0.00005	0.0002	0.00003	0.00004	0.00005	0.0001	0.0001	0.00006	0.00004	0.0001	0.0002	0.0003	0.00006
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000003	0.000004	0.000004	0.00001	0.000003	0.000002	0.000002	0.000006	0.000006	0.000004	0.000002	0.000006	0.000009	0.00001	0.000004
Total Intake (µg/kg/d)	0.00004	0.00006	0.00006	0.0002	0.00004	0.00004	0.00005	0.0001	0.0001	0.00007	0.00004	0.0001	0.0002	0.0003	0.00007
HQ (unitless)	0.0002	0.0002	0.0002	0.0009	0.0001	0.0002	0.0002	0.0005	0.0005	0.0003	0.0002	0.0006	0.0008	0.001	0.0003

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000009	0.00001	0.00001	0.00004	0.000007	0.000008	0.00001	0.00003	0.00002	0.00001	0.000008	0.00003	0.00004	0.00006	0.00001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.000002	0.000002	0.000006	0.000001	0.000001	0.000001	0.000003	0.000003	0.000002	0.000001	0.000003	0.000005	0.000005	0.000002
Total Intake (µg/kg/d)	0.00001	0.00001	0.00001	0.00005	0.000008	0.000009	0.00001	0.00003	0.00003	0.00002	0.000009	0.00003	0.00004	0.00006	0.00002
HQ (unitless)	0.00004	0.00006	0.00006	0.0002	0.00004	0.00004	0.00005	0.0001	0.0001	0.00007	0.00004	0.0001	0.0002	0.0003	0.00007

Life stage: Adult (18-82 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000006	0.000008	0.000008	0.00003	0.000005	0.000006	0.000008	0.00002	0.00002	0.00001	0.000006	0.00002	0.00003	0.00004	0.00001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.000001	0.000001	0.000004	0.000001	0.0000008	0.0000009	0.000002	0.000002	0.000001	0.0000009	0.000002	0.000003	0.000004	0.000001
Total Intake (µg/kg/d)	0.000008	0.00001	0.00001	0.00004	0.000006	0.000006	0.000009	0.00002	0.00002	0.00001	0.000007	0.00002	0.00003	0.00004	0.00001
HQ (unitless)	0.00003	0.00004	0.00004	0.0001	0.00003	0.00003	0.00004	0.00009	0.00008	0.00005	0.00003	0.0001	0.0001	0.0002	0.00005

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.00001	0.00002	0.00002	0.00007	0.00001	0.00001	0.00002	0.00004	0.00004	0.00002	0.00001	0.00005	0.00006	0.00009	0.00002
HQ (unitless)	0.00006	0.00008	0.00008	0.0003	0.00005	0.00005	0.00007	0.0002	0.0002	0.00009	0.00005	0.0002	0.0003	0.0004	0.00009

R76-D

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0001	0.00006	0.0002	0.0004	0.0003	0.00006	0.00006	0.0001	0.0004	0.0005	0.001	0.007	0.008	0.01	0.02
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000005	0.000003	0.000007	0.00001	0.000008	0.000003	0.000002	0.000004	0.00001	0.00001	0.00003	0.0002	0.0002	0.0002	0.0003
Total Intake ($\mu\text{g/kg/d}$)	0.0001	0.00007	0.0002	0.0004	0.0003	0.00006	0.00006	0.0001	0.0004	0.0005	0.001	0.008	0.008	0.01	0.02
HQ (unitless)	0.0005	0.0003	0.0009	0.002	0.001	0.0003	0.0003	0.0004	0.002	0.002	0.004	0.03	0.03	0.04	0.07

Life stage: Child (3-13 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00006	0.00003	0.00009	0.0002	0.0001	0.00003	0.00003	0.00004	0.0002	0.0002	0.0005	0.003	0.003	0.005	0.007
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000004	0.000002	0.000005	0.000009	0.000006	0.000002	0.000001	0.000003	0.00001	0.00001	0.00002	0.0001	0.0001	0.0001	0.0002
Total Intake ($\mu\text{g/kg/d}$)	0.00006	0.00003	0.0001	0.0002	0.0001	0.00003	0.00003	0.00005	0.0002	0.0002	0.0005	0.004	0.004	0.005	0.008
HQ (unitless)	0.0003	0.0001	0.0004	0.0007	0.0006	0.0001	0.0001	0.0002	0.0008	0.0009	0.002	0.01	0.01	0.02	0.03

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00001	0.000006	0.00002	0.00004	0.00003	0.000006	0.000006	0.00001	0.00004	0.00004	0.0001	0.0007	0.0007	0.001	0.002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000002	0.000001	0.000003	0.000005	0.000003	0.000001	0.0000006	0.000001	0.000005	0.000005	0.00001	0.00006	0.00006	0.00008	0.0001
Total Intake ($\mu\text{g/kg/d}$)	0.00001	0.000007	0.00002	0.00004	0.00003	0.000007	0.000006	0.00001	0.00004	0.00005	0.0001	0.0008	0.0008	0.001	0.002
HQ (unitless)	0.00006	0.00003	0.00009	0.0002	0.0001	0.00003	0.00003	0.00005	0.0002	0.0002	0.0004	0.003	0.003	0.004	0.007

Life stage: Adult (18-82 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) (µg/kg/d)	0.000009	0.000004	0.00001	0.00003	0.00002	0.000004	0.000004	0.000007	0.00003	0.00003	0.00007	0.0005	0.0005	0.0007	0.001
Inhalation Intake (I_{inhal}) (µg/kg/d)	0.000001	0.0000009	0.000002	0.000003	0.000002	0.0000008	0.0000004	0.000001	0.000004	0.000004	0.000007	0.00004	0.00004	0.00005	0.00008
Total Intake (µg/kg/d)	0.00001	0.000005	0.00002	0.00003	0.00002	0.000005	0.000005	0.000008	0.00003	0.00004	0.00008	0.0006	0.0006	0.0008	0.001
HQ (unitless)	0.00004	0.00002	0.00007	0.0001	0.00009	0.00002	0.00002	0.00003	0.0001	0.0002	0.0003	0.002	0.002	0.003	0.005

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.00002	0.00001	0.00003	0.00006	0.00004	0.00001	0.000009	0.00002	0.00006	0.00007	0.0002	0.001	0.001	0.002	0.002
HQ (unitless)	0.00008	0.00004	0.0001	0.0002	0.0002	0.00004	0.00004	0.00007	0.0003	0.0003	0.0006	0.005	0.005	0.007	0.01

E-P

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.02	0.05	0.09	0.14	0.2	0.1	0.04	0.12	0.02	0.02	0.03	0.001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0004	0.0007	0.001	0.002	0.002	0.001	0.0006	0.001	0.0004	0.0004	0.0004	0.00004
Total Intake ($\mu\text{g/kg/d}$)	0.03	0.05	0.09	0.14	0.2	0.1	0.04	0.12	0.02	0.02	0.03	0.001
HQ (unitless)	0.11	0.21	0.37	0.59	0.85	0.41	0.17	0.49	0.1	0.1	0.11	0.006

Life stage: Child (3-13 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.01	0.02	0.04	0.06	0.09	0.04	0.02	0.05	0.01	0.01	0.01	0.0006
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0003	0.0005	0.0008	0.001	0.002	0.0009	0.0004	0.0009	0.0003	0.0003	0.0002	0.00003
Total Intake ($\mu\text{g/kg/d}$)	0.01	0.02	0.04	0.06	0.09	0.04	0.02	0.05	0.01	0.01	0.01	0.0006
HQ (unitless)	0.05	0.1	0.17	0.27	0.39	0.19	0.08	0.23	0.04	0.05	0.05	0.003

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.002	0.005	0.009	0.01	0.02	0.009	0.004	0.01	0.002	0.002	0.003	0.0001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0001	0.0003	0.0004	0.0006	0.0008	0.0005	0.0002	0.0005	0.0001	0.0001	0.0001	0.00001
Total Intake (µg/kg/d)	0.003	0.005	0.009	0.01	0.02	0.01	0.004	0.01	0.002	0.003	0.003	0.0001
HQ (unitless)	0.01	0.02	0.04	0.06	0.09	0.04	0.02	0.05	0.01	0.01	0.01	0.0006

Life stage: Adult (18-82 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.002	0.004	0.006	0.01	0.01	0.007	0.003	0.008	0.002	0.002	0.002	0.00009
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0001	0.0002	0.0003	0.0004	0.0006	0.0003	0.0002	0.0003	0.00009	0.00009	0.00009	0.00001
Total Intake (µg/kg/d)	0.002	0.004	0.006	0.01	0.01	0.007	0.003	0.009	0.002	0.002	0.002	0.0001
HQ (unitless)	0.008	0.02	0.03	0.04	0.06	0.03	0.01	0.04	0.007	0.008	0.008	0.0004

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.004	0.008	0.01	0.02	0.03	0.01	0.006	0.02	0.004	0.004	0.004	0.0002
HQ (unitless)	0.02	0.03	0.06	0.09	0.13	0.06	0.03	0.07	0.01	0.02	0.02	0.0009

F.9 Manganese (Mn)

Equations:

Total Intake (I_{total_as})	=	$I_{ingest\_s} + I_{inhal}$
Average lifetime daily exposure for 82 year life span	=	$(I_{total(0.5-3)} \times 365 \times At_x) + (I_{total(3-13)} \times 365 \times At_x) + (I_{total(13-18)} \times 365 \times At_x) + (I_{total(18-82)} \times 365 \times At_x) / AT_{lifetime}$
HQ	=	$I_{lifetime} / TDI_{adj}$

F.9.1 Scenario 1

Adjusted TDI

	All receptors
Background adjusted tolerable daily intake (TDI_{adj}) ($\mu\text{g/kg/d}$)	6.4

Soil & air concentrations:

R1-15

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil concentration ($\mu\text{g/g}$) (Appendix C)	4.34	9.08	19.29	12.79	14.56	9.63	3.71	3.53	2.43	1.19	0.9	0.95	0.54	0.65	0.32
Air concentration ($\mu\text{g/m}^3$) (Appendix D)	0.001	0.002	0.005	0.003	0.004	0.003	0.001	0.001	0.0009	0.0005	0.0004	0.0004	0.0003	0.0003	0.0002

R16-30

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil concentration (µg/g) (Appendix C)	0.3	0.27	0.79	0.66	0.55	0.41	0.29	0.25	0.21	0.18	0.15	0.13	0.16	0.16	0.18
Air concentration (µg/m³) (Appendix D)	0.0001	0.00004	0.00009	0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.00008	0.0001	0.0001	0.0001

R31-45

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil concentration ($\mu\text{g/g}$) (Appendix C)	0.46	0.5	0.62	0.74	0.89	1.01	0.80	1.01	0.72	0.89	3.93	0.26	0.30	0.36	0.44
Air concentration ($\mu\text{g/m}^3$) (Appendix D)	0.0003	0.0003	0.0003	0.0004	0.0004	0.0005	0.0004	0.0005	0.0003	0.0004	0.001	0.0001	0.0002	0.0002	0.0002

R46-60

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil concentration (µg/g) (Appendix C)	0.13	0.13	0.18	0.19	0.22	0.09	0.12	0.61	0.19	0.17	0.15	0.17	0.08	0.07	0.25
Air concentration (µg/m ³) (Appendix D)	0.00009	0.00009	0.0001	0.0001	0.0001	0.00006	0.00008	0.0003	0.00009	0.00008	0.00008	0.00009	0.00006	0.00004	0.0002

R61-75

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil concentration (µg/g) (Appendix C)	0.18	0.24	0.24	0.68	0.14	0.11	0.15	0.36	0.31	0.28	0.19	0.6	0.9	0.95	0.31
Air concentration (µg/m ³) (Appendix D)	0.0001	0.0002	0.0002	0.0003	0.0001	0.00007	0.00007	0.0002	0.0002	0.0002	0.0001	0.0003	0.0005	0.0004	0.0002

R76-D

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil concentration (µg/g) (Appendix C)	0.25	0.13	0.27	0.56	0.39	0.07	0.09	0.09	0.56	0.71	1.62	24.5	25.1	25.7	75.7
Air concentration (µg/m ³) (Appendix D)	0.0002	0.00009	0.0001	0.0002	0.0002	0.00004	0.00005	0.00005	0.0002	0.0003	0.0006	0.006	0.006	0.006	0.01

E-P

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil concentration (µg/g) (Appendix C)	19.5	38.8	28.5	26.0	24.3	25.0	32.2	46.1	41.9	43.7	34.1	2.42
Air concentration (µg/m ³) (Appendix D)	0.005	0.008	0.006	0.006	0.006	0.006	0.007	0.01	0.009	0.009	0.007	0.0009

Intakes & hazard quotients:

R1-15

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.04	0.08	0.18	0.12	0.13	0.09	0.03	0.03	0.02	0.01	0.008	0.009	0.005	0.006	0.003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0009	0.002	0.003	0.002	0.003	0.002	0.0009	0.0009	0.0007	0.0004	0.0003	0.0003	0.0002	0.0002	0.0001
Total Intake (µg/kg/d)	0.04	0.08	0.18	0.12	0.14	0.09	0.03	0.03	0.02	0.01	0.008	0.009	0.005	0.006	0.003
HQ (unitless)	0.006	0.01	0.03	0.02	0.02	0.01	0.005	0.005	0.004	0.002	0.001	0.001	0.0008	0.001	0.0005

Life stage: Child (3-13 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.02	0.04	0.08	0.05	0.06	0.04	0.02	0.01	0.01	0.005	0.004	0.004	0.002	0.003	0.001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0007	0.001	0.002	0.002	0.002	0.001	0.0006	0.0006	0.0005	0.0003	0.0002	0.0002	0.0002	0.0002	0.00008
Total Intake (µg/kg/d)	0.02	0.04	0.08	0.06	0.06	0.04	0.02	0.02	0.01	0.005	0.004	0.004	0.002	0.003	0.001
HQ (unitless)	0.003	0.006	0.01	0.009	0.01	0.006	0.003	0.002	0.002	0.0008	0.0006	0.0007	0.0004	0.0004	0.0002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.004	0.008	0.02	0.01	0.01	0.009	0.003	0.003	0.002	0.001	0.0008	0.0009	0.0005	0.0006	0.0003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0003	0.0007	0.001	0.0009	0.001	0.0007	0.0003	0.0003	0.0002	0.0001	0.0001	0.0001	0.00008	0.00009	0.00004
Total Intake (µg/kg/d)	0.004	0.009	0.02	0.01	0.01	0.009	0.004	0.003	0.002	0.001	0.0009	0.001	0.0006	0.0007	0.0003
HQ (unitless)	0.0007	0.001	0.003	0.002	0.002	0.001	0.0006	0.0005	0.0004	0.0002	0.0001	0.0002	0.00009	0.0001	0.00005

Life stage: Adult (18-82 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.003	0.006	0.01	0.008	0.009	0.006	0.002	0.002	0.002	0.0008	0.0006	0.0006	0.0003	0.0004	0.0002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0002	0.0005	0.0009	0.0006	0.0007	0.0005	0.0002	0.0002	0.0002	0.0001	0.00008	0.00008	0.00006	0.00006	0.00003
Total Intake (µg/kg/d)	0.003	0.006	0.01	0.009	0.01	0.007	0.003	0.002	0.002	0.0009	0.0007	0.0007	0.0004	0.0005	0.0002
HQ (unitless)	0.0005	0.001	0.002	0.001	0.002	0.001	0.0004	0.0004	0.0003	0.0001	0.0001	0.0001	0.00006	0.00007	0.00004

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.006	0.01	0.03	0.02	0.02	0.01	0.005	0.005	0.003	0.002	0.001	0.001	0.0008	0.001	0.0005
HQ (unitless)	0.001	0.002	0.004	0.003	0.003	0.002	0.0008	0.0008	0.0005	0.0003	0.0002	0.0002	0.0001	0.0001	0.00007

R16-30

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.003	0.002	0.007	0.006	0.005	0.004	0.003	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00008	0.00003	0.00007	0.00009	0.00007	0.0002	0.0001	0.0001	0.0001	0.0001	0.00007	0.00006	0.00008	0.00007	0.00008
Total Intake (µg/kg/d)	0.003	0.002	0.007	0.006	0.005	0.004	0.003	0.002	0.002	0.002	0.001	0.001	0.002	0.002	0.002
HQ (unitless)	0.0004	0.0004	0.001	0.001	0.0008	0.0006	0.0004	0.0004	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003

Life stage: Child (3-13 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.001	0.001	0.003	0.003	0.002	0.002	0.001	0.001	0.0009	0.0008	0.0006	0.0005	0.0007	0.0007	0.0007
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00006	0.00002	0.00005	0.00006	0.00005	0.0001	0.0001	0.00009	0.00007	0.00007	0.00005	0.00004	0.00006	0.00005	0.00005
Total Intake (µg/kg/d)	0.001	0.001	0.003	0.003	0.002	0.002	0.001	0.001	0.0009	0.0008	0.0007	0.0006	0.0007	0.0007	0.0008
HQ (unitless)	0.0002	0.0002	0.0005	0.0004	0.0004	0.0003	0.0002	0.0002	0.0001	0.0001	0.0001	0.00009	0.0001	0.0001	0.0001

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion ($I_{\text{ingest\_s}}$) (µg/kg/d)	0.0003	0.0002	0.0007	0.0006	0.0005	0.0004	0.0003	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0002
Inhalation Intake (I_{inhal}) (µg/kg/d)	0.00003	0.00001	0.00003	0.00003	0.00003	0.00007	0.00005	0.00004	0.00004	0.00004	0.00003	0.00002	0.00003	0.00003	0.00003
Total Intake (µg/kg/d)	0.0003	0.0002	0.0007	0.0006	0.0005	0.0004	0.0003	0.0003	0.0002	0.0002	0.0002	0.0001	0.0002	0.0002	0.0002
HQ (unitless)	0.00005	0.00004	0.0001	0.0001	0.00008	0.00007	0.00005	0.00004	0.00004	0.00003	0.00002	0.00002	0.00003	0.00003	0.00003

Life stage: Adult (18-82 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0002	0.0002	0.0005	0.0004	0.0004	0.0003	0.0002	0.0002	0.0001	0.0001	0.00009	0.00008	0.0001	0.0001	0.0001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00002	0.000008	0.00002	0.00002	0.00002	0.00005	0.00004	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002
Total Intake (µg/kg/d)	0.0002	0.0002	0.0005	0.0004	0.0004	0.0003	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
HQ (unitless)	0.00003	0.00003	0.00008	0.00007	0.00006	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.0004	0.0004	0.001	0.0009	0.0008	0.0006	0.0004	0.0004	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003
HQ (unitless)	0.00007	0.00006	0.0002	0.0001	0.0001	0.0001	0.00007	0.00006	0.00005	0.00004	0.00003	0.00003	0.00004	0.00004	0.00004

R31-45

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.004	0.005	0.006	0.007	0.008	0.009	0.007	0.009	0.007	0.008	0.036	0.002	0.003	0.003	0.004
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002	0.0003	0.001	0.0001	0.0001	0.0001	0.0002
Total Intake (µg/kg/d)	0.004	0.005	0.006	0.007	0.008	0.009	0.008	0.01	0.007	0.008	0.04	0.002	0.003	0.003	0.004
HQ (unitless)	0.0007	0.0007	0.0009	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.006	0.0004	0.0004	0.0005	0.0007

Life stage: Child (3-13 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.002	0.002	0.003	0.003	0.004	0.004	0.003	0.004	0.003	0.004	0.02	0.001	0.001	0.001	0.002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0007	0.00007	0.00008	0.00009	0.0001
Total Intake (µg/kg/d)	0.002	0.002	0.003	0.003	0.004	0.004	0.004	0.004	0.003	0.004	0.02	0.001	0.001	0.002	0.002
HQ (unitless)	0.0003	0.0004	0.0004	0.0005	0.0006	0.0007	0.0006	0.0007	0.0005	0.0006	0.003	0.0002	0.0002	0.0002	0.0003

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0004	0.0004	0.0006	0.0007	0.0008	0.0009	0.0007	0.0009	0.0006	0.0008	0.004	0.0002	0.0003	0.0003	0.0004
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00007	0.00008	0.00009	0.0001	0.0001	0.0001	0.0001	0.0001	0.00009	0.0001	0.0004	0.00004	0.00004	0.00005	0.00006
Total Intake ($\mu\text{g/kg/d}$)	0.0005	0.0005	0.0006	0.0008	0.0009	0.001	0.0008	0.001	0.0007	0.0009	0.004	0.0003	0.0003	0.0004	0.0005
HQ (unitless)	0.00008	0.00008	0.0001	0.0001	0.0001	0.0002	0.0001	0.0002	0.0001	0.0001	0.0006	0.00004	0.00005	0.00006	0.00007

Life stage: Adult (18-82 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0003	0.0003	0.0004	0.0005	0.0006	0.0006	0.0005	0.0006	0.0005	0.0006	0.003	0.0002	0.0002	0.0002	0.0003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00005	0.00006	0.00007	0.00008	0.00008	0.00009	0.00007	0.00009	0.00006	0.00007	0.0003	0.00003	0.00003	0.00003	0.00004
Total Intake ($\mu\text{g/kg/d}$)	0.0003	0.0004	0.0005	0.0006	0.0007	0.0007	0.0006	0.0007	0.0005	0.0006	0.003	0.0002	0.0002	0.0003	0.0003
HQ (unitless)	0.00005	0.00006	0.00007	0.00009	0.0001	0.0001	0.00009	0.0001	0.00008	0.0001	0.0004	0.00003	0.00003	0.00004	0.00005

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0007	0.0007	0.0009	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.006	0.0004	0.0004	0.0005	0.0006
HQ (unitless)	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0009	0.00006	0.00007	0.00008	0.0001

R46-60

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.001	0.001	0.002	0.002	0.002	0.0009	0.001	0.006	0.002	0.002	0.001	0.002	0.0008	0.0007	0.002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00006	0.00006	0.00008	0.00008	0.00009	0.00005	0.00006	0.0002	0.00007	0.00006	0.00006	0.00007	0.00004	0.00003	0.0001
Total Intake ($\mu\text{g/kg/d}$)	0.001	0.001	0.002	0.002	0.002	0.0009	0.001	0.006	0.002	0.002	0.001	0.002	0.0008	0.0007	0.002
HQ (unitless)	0.0002	0.0002	0.0003	0.0003	0.0003	0.0001	0.0002	0.0009	0.0003	0.0002	0.0002	0.0003	0.0001	0.0001	0.0004

Life stage: Child (3-13 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.0005	0.0005	0.0007	0.0008	0.0009	0.0004	0.0005	0.003	0.0008	0.0007	0.0006	0.0007	0.0003	0.0003	0.001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00005	0.00004	0.00005	0.00006	0.00007	0.00003	0.00004	0.0001	0.00005	0.00004	0.00004	0.00005	0.00003	0.00002	0.00009
Total Intake ($\mu\text{g/kg/d}$)	0.0006	0.0006	0.0008	0.0009	0.001	0.0004	0.0005	0.003	0.0008	0.0007	0.0007	0.0008	0.0004	0.0003	0.001
HQ (unitless)	0.00009	0.00009	0.0001	0.0001	0.0002	0.00007	0.00008	0.0004	0.0001	0.0001	0.0001	0.0001	0.00006	0.00005	0.0002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.0001	0.0001	0.0002	0.0002	0.0002	0.00008	0.0001	0.0005	0.0002	0.0001	0.0001	0.0002	0.00007	0.00006	0.0002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00002	0.00002	0.00003	0.00003	0.00003	0.00002	0.00002	0.00007	0.00003	0.00002	0.00002	0.00003	0.00002	0.00001	0.00005
Total Intake ($\mu\text{g/kg/d}$)	0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0006	0.0002	0.0002	0.0002	0.0002	0.00009	0.00008	0.0003
HQ (unitless)	0.00002	0.00002	0.00003	0.00003	0.00004	0.00002	0.00002	0.0001	0.00003	0.00003	0.00002	0.00003	0.00001	0.00001	0.00004

Life stage: Adult (18-82 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.00008	0.00008	0.0001	0.0001	0.0001	0.00006	0.00007	0.0004	0.0001	0.0001	0.0001	0.0001	0.00005	0.00005	0.0002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00002	0.00005	0.00002	0.00002	0.00002	0.00002	0.00001	0.000009	0.00003
Total Intake ($\mu\text{g/kg/d}$)	0.0001	0.0001	0.0001	0.0001	0.0002	0.00007	0.00009	0.0004	0.0001	0.0001	0.0001	0.0001	0.00006	0.00005	0.0002
HQ (unitless)	0.00002	0.00002	0.00002	0.00002	0.00003	0.00001	0.00001	0.00007	0.00002	0.00002	0.00002	0.00002	0.00001	0.000009	0.00003

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0002	0.0002	0.0003	0.0003	0.0003	0.0001	0.0002	0.0009	0.0003	0.0002	0.0002	0.0002	0.0001	0.0001	0.0004
HQ (unitless)	0.00003	0.00003	0.00004	0.00005	0.00005	0.00002	0.00003	0.0001	0.00004	0.00004	0.00004	0.00004	0.00002	0.00002	0.00006

R61-75

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.002	0.002	0.002	0.006	0.001	0.001	0.001	0.003	0.003	0.003	0.002	0.005	0.008	0.009	0.003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00009	0.0001	0.0001	0.0002	0.00007	0.00005	0.00005	0.0001	0.0001	0.0001	0.00007	0.0002	0.0003	0.0003	0.0001
Total Intake (µg/kg/d)	0.002	0.002	0.002	0.006	0.001	0.001	0.001	0.003	0.003	0.003	0.002	0.006	0.009	0.009	0.003
HQ (unitless)	0.0003	0.0004	0.0004	0.001	0.0002	0.0002	0.0002	0.0005	0.0005	0.0004	0.0003	0.0009	0.001	0.001	0.0005

Life stage: Child (3-13 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0008	0.001	0.001	0.003	0.0006	0.0005	0.0006	0.001	0.001	0.001	0.001	0.002	0.004	0.004	0.001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00007	0.00008	0.00008	0.0001	0.00005	0.00004	0.00004	0.00009	0.00008	0.00009	0.00005	0.0002	0.0002	0.0002	0.0001
Total Intake (µg/kg/d)	0.0008	0.001	0.001	0.003	0.0006	0.0005	0.0006	0.002	0.001	0.001	0.0009	0.003	0.004	0.004	0.001
HQ (unitless)	0.0001	0.0002	0.0002	0.0005	0.0001	0.00008	0.0001	0.0002	0.0002	0.0002	0.0001	0.0004	0.0006	0.0007	0.0002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0002	0.0002	0.0002	0.0006	0.0001	0.0001	0.0001	0.0003	0.0003	0.0003	0.0002	0.0005	0.0008	0.0008	0.0003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00003	0.00004	0.00004	0.00008	0.00003	0.00002	0.00002	0.00005	0.00004	0.00005	0.00003	0.00008	0.0001	0.0001	0.00005
Total Intake (µg/kg/d)	0.0002	0.0003	0.0003	0.0007	0.0002	0.0001	0.0002	0.0004	0.0003	0.0003	0.0002	0.0006	0.0009	0.001	0.0003
HQ (unitless)	0.00003	0.00004	0.00004	0.0001	0.00002	0.00002	0.00002	0.00006	0.00005	0.00005	0.00003	0.0001	0.0001	0.0002	0.00005

Life stage: Adult (18-82 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0001	0.0002	0.0002	0.0004	0.00009	0.00007	0.00009	0.0002	0.0002	0.0002	0.0001	0.0004	0.0006	0.0006	0.0002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00002	0.00003	0.00003	0.00005	0.00002	0.00001	0.00001	0.00003	0.00003	0.00003	0.00002	0.00006	0.00009	0.00008	0.00004
Total Intake (µg/kg/d)	0.0001	0.0002	0.0002	0.0005	0.0001	0.00008	0.0001	0.0003	0.0002	0.0002	0.0001	0.0004	0.0007	0.0007	0.0002
HQ (unitless)	0.00002	0.00003	0.00003	0.00008	0.00002	0.00001	0.00002	0.00004	0.00004	0.00003	0.00002	0.00007	0.0001	0.0001	0.00004

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.0003	0.0004	0.0004	0.001	0.0002	0.0002	0.0002	0.0005	0.0005	0.0004	0.0003	0.0009	0.001	0.001	0.0005
HQ (unitless)	0.00004	0.00006	0.00006	0.0002	0.00003	0.00003	0.00003	0.00008	0.00007	0.00007	0.00004	0.0001	0.0002	0.0002	0.00007

R76-D

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.002	0.001	0.002	0.005	0.004	0.0006	0.0008	0.0009	0.005	0.006	0.01	0.22	0.23	0.23	0.69
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0001	0.00007	0.0001	0.0002	0.0001	0.00003	0.00003	0.00004	0.0002	0.0002	0.0004	0.004	0.004	0.004	0.01
Total Intake ($\mu\text{g/kg/d}$)	0.002	0.001	0.003	0.005	0.004	0.0006	0.0008	0.0009	0.005	0.007	0.02	0.23	0.23	0.24	0.7
HQ (unitless)	0.0004	0.0002	0.0004	0.0008	0.0006	0.0001	0.0001	0.0001	0.0008	0.001	0.002	0.04	0.04	0.04	0.11

Life stage: Child (3-13 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.001	0.0005	0.001	0.002	0.002	0.0003	0.0004	0.0004	0.002	0.003	0.007	0.1	0.1	0.11	0.32
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00008	0.00005	0.00007	0.0001	0.00009	0.00002	0.00002	0.00003	0.0001	0.0002	0.0003	0.003	0.003	0.003	0.008
Total Intake ($\mu\text{g/kg/d}$)	0.001	0.0006	0.001	0.002	0.002	0.0003	0.0004	0.0004	0.002	0.003	0.007	0.11	0.11	0.11	0.32
HQ (unitless)	0.0002	0.00009	0.0002	0.0004	0.0003	0.00005	0.00006	0.00007	0.0004	0.0005	0.001	0.02	0.02	0.02	0.05

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0002	0.0001	0.0002	0.0005	0.0003	0.00006	0.00008	0.00008	0.0005	0.0006	0.001	0.02	0.02	0.02	0.07
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00004	0.00002	0.00004	0.00006	0.00005	0.00001	0.00001	0.00001	0.00007	0.00008	0.0002	0.002	0.002	0.002	0.004
Total Intake ($\mu\text{g/kg/d}$)	0.0003	0.0001	0.0003	0.0006	0.0004	0.00007	0.00009	0.0001	0.0006	0.0007	0.002	0.02	0.02	0.02	0.07
HQ (unitless)	0.00004	0.00002	0.00004	0.00009	0.00006	0.00001	0.00001	0.00002	0.00009	0.0001	0.0002	0.004	0.004	0.004	0.01

Life stage: Adult (18-82 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) (µg/kg/d)	0.0002	0.00008	0.0002	0.0004	0.0003	0.00004	0.00006	0.00006	0.0004	0.0005	0.001	0.02	0.02	0.02	0.05
Inhalation Intake (I_{inhal}) (µg/kg/d)	0.00003	0.00002	0.00003	0.00005	0.00003	0.000008	0.000009	0.00001	0.00005	0.00006	0.0001	0.001	0.001	0.001	0.003
Total Intake (µg/kg/d)	0.0002	0.0001	0.0002	0.0004	0.0003	0.00005	0.00007	0.00007	0.0004	0.0005	0.001	0.02	0.02	0.02	0.05
HQ (unitless)	0.00003	0.00002	0.00003	0.00006	0.00004	0.000008	0.00001	0.00001	0.00006	0.00008	0.0002	0.003	0.003	0.003	0.008

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0004	0.0002	0.0004	0.0008	0.0006	0.0001	0.0001	0.0001	0.0008	0.001	0.002	0.03	0.04	0.04	0.11
HQ (unitless)	0.00006	0.00003	0.00006	0.0001	0.00009	0.00002	0.00002	0.00002	0.0001	0.0002	0.0004	0.005	0.005	0.006	0.02

E-P

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.18	0.35	0.26	0.24	0.22	0.23	0.29	0.42	0.38	0.4	0.31	0.02
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.004	0.006	0.005	0.004	0.004	0.004	0.005	0.007	0.007	0.007	0.005	0.0007
Total Intake ($\mu\text{g/kg/d}$)	0.18	0.36	0.26	0.24	0.23	0.23	0.3	0.43	0.39	0.4	0.32	0.02
HQ (unitless)	0.03	0.06	0.04	0.04	0.04	0.04	0.05	0.07	0.06	0.06	0.05	0.004

Life stage: Child (3-13 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.08	0.16	0.12	0.11	0.1	0.1	0.13	0.19	0.17	0.18	0.14	0.01
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.003	0.004	0.003	0.003	0.003	0.003	0.004	0.005	0.005	0.005	0.004	0.0005
Total Intake ($\mu\text{g/kg/d}$)	0.08	0.17	0.12	0.11	0.1	0.11	0.14	0.2	0.18	0.19	0.15	0.01
HQ (unitless)	0.01	0.03	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.02	0.002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.02	0.03	0.03	0.02	0.02	0.02	0.03	0.04	0.04	0.04	0.03	0.002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.002	0.002	0.0003
Total Intake (µg/kg/d)	0.02	0.04	0.03	0.02	0.02	0.02	0.03	0.04	0.04	0.04	0.03	0.002
HQ (unitless)	0.003	0.006	0.004	0.004	0.004	0.004	0.005	0.007	0.006	0.006	0.005	0.0004

Life stage: Adult (18-82 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.02	0.002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0009	0.002	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.001	0.0002
Total Intake (µg/kg/d)	0.01	0.03	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.02	0.002
HQ (unitless)	0.002	0.004	0.003	0.003	0.003	0.003	0.003	0.005	0.004	0.005	0.004	0.0003

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.03	0.05	0.04	0.04	0.03	0.03	0.04	0.06	0.06	0.06	0.05	0.003
HQ (unitless)	0.004	0.008	0.006	0.006	0.005	0.005	0.007	0.01	0.009	0.01	0.007	0.0005

F.9.2 Scenario 2

Adjusted TDI

	All receptors
Background adjusted tolerable daily intake (TDI _{adj}) (µg/kg/d)	6.4

Soil & air concentrations:

R1-15

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil concentration (µg/g) (Appendix C)	1.23	1.90	2.44	3.07	1.65	1.16	0.68	0.7	0.54	0.35	0.3	0.3	0.21	0.22	0.12
Air concentration (µg/m ³) (Appendix D)	0.0009	0.001	0.001	0.001	0.0008	0.0006	0.0004	0.0005	0.0004	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002

R16-30

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil concentration (µg/g) (Appendix C)	0.09	0.07	0.18	0.23	0.19	0.15	0.12	0.11	0.09	0.08	0.08	0.07	0.08	0.08	0.09
Air concentration (µg/m³) (Appendix D)	0.0001	0.00005	0.00009	0.0001	0.0001	0.0002	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

R31-45

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil concentration (µg/g) (Appendix C)	0.17	0.18	0.21	0.25	0.29	0.32	0.27	0.32	0.26	0.3	0.78	0.12	0.13	0.16	0.19
Air concentration (µg/m ³) (Appendix D)	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0002	0.0003	0.0002	0.0002	0.0004	0.0001	0.0001	0.0002	0.0002

R46-60

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil concentration (µg/g) (Appendix C)	0.06	0.07	0.09	0.09	0.1	0.05	0.06	0.20	0.07	0.07	0.07	0.09	0.04	0.04	0.12
Air concentration (µg/m³) (Appendix D)	0.0001	0.0001	0.0001	0.0001	0.0001	0.00009	0.0001	0.0002	0.00009	0.0001	0.0001	0.0001	0.00007	0.00006	0.0002

R61-75

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil concentration (µg/g) (Appendix C)	0.08	0.12	0.13	0.2	0.07	0.06	0.06	0.14	0.14	0.12	0.07	0.2	0.29	0.3	0.14
Air concentration (µg/m ³) (Appendix D)	0.0001	0.0002	0.0002	0.0002	0.0001	0.00009	0.00007	0.0001	0.0001	0.0001	0.0001	0.0002	0.0003	0.0002	0.0002

R76-D

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil concentration (µg/g) (Appendix C)	0.13	0.06	0.11	0.19	0.14	0.04	0.04	0.05	0.2	0.22	0.39	1.78	1.8	1.99	2.48
Air concentration (µg/m ³) (Appendix D)	0.0002	0.0001	0.0001	0.0002	0.0001	0.00007	0.00007	0.0001	0.0002	0.0002	0.0003	0.0008	0.0008	0.0008	0.001

E-P

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil concentration (µg/g) (Appendix C)	3.09	5.14	7.5	11.0	14.9	7.86	4.04	9.61	4.72	5.28	6.57	0.57
Air concentration (µg/m ³) (Appendix D)	0.001	0.002	0.002	0.002	0.003	0.002	0.001	0.002	0.002	0.002	0.002	0.0004

Intakes & hazard quotients:

R1-15

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.01	0.02	0.02	0.03	0.01	0.01	0.006	0.006	0.005	0.003	0.003	0.003	0.002	0.002	0.001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0007	0.0008	0.0008	0.0008	0.0006	0.0004	0.0003	0.0004	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001
Total Intake (µg/kg/d)	0.01	0.02	0.02	0.03	0.02	0.01	0.006	0.007	0.005	0.003	0.003	0.003	0.002	0.002	0.001
HQ (unitless)	0.002	0.003	0.004	0.004	0.002	0.002	0.001	0.001	0.0008	0.0005	0.0005	0.0005	0.0003	0.0003	0.0002

Life stage: Child (3-13 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.005	0.008	0.01	0.01	0.007	0.005	0.003	0.003	0.002	0.001	0.001	0.001	0.0009	0.0009	0.0005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0005	0.0006	0.0005	0.0006	0.0004	0.0003	0.0002	0.0003	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.00009
Total Intake (µg/kg/d)	0.006	0.009	0.01	0.01	0.007	0.005	0.003	0.003	0.002	0.002	0.001	0.001	0.001	0.001	0.0006
HQ (unitless)	0.0009	0.001	0.002	0.002	0.001	0.0008	0.0005	0.0005	0.0004	0.0003	0.0002	0.0002	0.0002	0.0002	0.00009

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.001	0.002	0.002	0.003	0.001	0.001	0.0006	0.0006	0.0005	0.0003	0.0003	0.0003	0.0002	0.0002	0.0001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0003	0.0003	0.0003	0.0003	0.0002	0.0001	0.0001	0.0001	0.0001	0.00007	0.00007	0.00006	0.00006	0.00006	0.00005
Total Intake (µg/kg/d)	0.001	0.002	0.002	0.003	0.002	0.001	0.0007	0.0008	0.0006	0.0004	0.0003	0.0003	0.0002	0.0003	0.0002
HQ (unitless)	0.0002	0.0003	0.0004	0.0005	0.0003	0.0002	0.0001	0.0001	0.00009	0.00006	0.00005	0.00005	0.00004	0.00004	0.00002

Life stage: Adult (18-82 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0008	0.001	0.002	0.002	0.001	0.0007	0.0004	0.0004	0.0003	0.0002	0.0002	0.0002	0.0001	0.0001	0.00008
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.00007	0.0001	0.00007	0.00005	0.00005	0.00004	0.00004	0.00005	0.00003
Total Intake (µg/kg/d)	0.001	0.001	0.002	0.002	0.001	0.0009	0.0005	0.0005	0.0004	0.0003	0.0002	0.0002	0.0002	0.0002	0.0001
HQ (unitless)	0.0002	0.0002	0.0003	0.0003	0.0002	0.0001	0.00008	0.00009	0.00007	0.00004	0.00004	0.00004	0.00003	0.00003	0.00002

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.002	0.003	0.004	0.004	0.002	0.002	0.001	0.001	0.0008	0.0005	0.0005	0.0005	0.0003	0.0004	0.0002
HQ (unitless)	0.0003	0.0004	0.0006	0.0007	0.0004	0.0003	0.0002	0.0002	0.0001	0.00008	0.00007	0.00007	0.00005	0.00005	0.00003

R16-30

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0009	0.0006	0.002	0.002	0.002	0.001	0.001	0.001	0.0008	0.0008	0.0007	0.0007	0.0007	0.0008	0.0008
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00009	0.00004	0.00007	0.00008	0.00007	0.0001	0.0001	0.0001	0.00009	0.00009	0.0001	0.00008	0.00008	0.00009	0.00008
Total Intake (µg/kg/d)	0.0009	0.0006	0.002	0.002	0.002	0.002	0.001	0.001	0.0009	0.0009	0.0008	0.0007	0.0008	0.0009	0.0009
HQ (unitless)	0.0001	0.0001	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

Life stage: Child (3-13 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0004	0.0003	0.0007	0.001	0.0008	0.0006	0.0005	0.0005	0.0004	0.0004	0.0003	0.0003	0.0003	0.0004	0.0004
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00006	0.00003	0.00005	0.00006	0.00005	0.00009	0.00007	0.00008	0.00007	0.00006	0.00007	0.00006	0.00006	0.00007	0.00006
Total Intake (µg/kg/d)	0.0005	0.0003	0.0008	0.001	0.0008	0.0007	0.0006	0.0006	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004
HQ (unitless)	0.00007	0.00005	0.0001	0.0002	0.0001	0.0001	0.00009	0.00009	0.00007	0.00006	0.00006	0.00006	0.00006	0.00007	0.00007

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00008	0.00006	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.00008	0.00008	0.00007	0.00006	0.00007	0.00008	0.00008
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00003	0.00001	0.00002	0.00003	0.00003	0.00005	0.00004	0.00004	0.00003	0.00003	0.00004	0.00003	0.00003	0.00003	0.00003
Total Intake (µg/kg/d)	0.0001	0.00007	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
HQ (unitless)	0.00002	0.00001	0.00003	0.00004	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00002	0.00002	0.00002

Life stage: Adult (18-82 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00006	0.00004	0.0001	0.0001	0.0001	0.0001	0.00008	0.00007	0.00006	0.00005	0.00005	0.00005	0.00005	0.00005	0.00006
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00002	0.00001	0.00002	0.00002	0.00002	0.00003	0.00003	0.00003	0.00002	0.00002	0.00003	0.00002	0.00002	0.00002	0.00002
Total Intake ($\mu\text{g/kg/d}$)	0.00008	0.00005	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.00008	0.00008	0.00008	0.00007	0.00007	0.00008	0.00008
HQ (unitless)	0.00001	0.000008	0.00002	0.00003	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0002	0.0001	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
HQ (unitless)	0.00002	0.00002	0.00004	0.00005	0.00004	0.00004	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002

R31-45

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.002	0.002	0.002	0.002	0.003	0.003	0.002	0.003	0.002	0.003	0.007	0.001	0.001	0.001	0.002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.00009	0.0001	0.0001	0.0001
Total Intake ($\mu\text{g/kg/d}$)	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.007	0.001	0.001	0.002	0.002
HQ (unitless)	0.0003	0.0003	0.0003	0.0004	0.0004	0.0005	0.0004	0.0005	0.0004	0.0005	0.001	0.0002	0.0002	0.0002	0.0003

Life stage: Child (3-13 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0007	0.0008	0.0009	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.0005	0.0006	0.0007	0.0008
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.00007	0.00007	0.00009	0.0001
Total Intake ($\mu\text{g/kg/d}$)	0.0008	0.0009	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.0005	0.0006	0.0007	0.0009
HQ (unitless)	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.00009	0.0001	0.0001	0.0001

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0002	0.0003	0.0002	0.0003	0.0007	0.0001	0.0001	0.0001	0.0002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00005	0.00005	0.00006	0.00006	0.00007	0.00007	0.00006	0.00007	0.00006	0.00007	0.0001	0.00003	0.00004	0.00004	0.00005
Total Intake ($\mu\text{g/kg/d}$)	0.0002	0.0002	0.0002	0.0003	0.0003	0.0004	0.0003	0.0004	0.0003	0.0003	0.0008	0.0001	0.0002	0.0002	0.0002
HQ (unitless)	0.00003	0.00003	0.00004	0.00005	0.00005	0.00006	0.00005	0.00006	0.00005	0.00005	0.0001	0.00002	0.00002	0.00003	0.00003

Life stage: Adult (18-82 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.00007	0.00009	0.0001	0.0001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00004	0.00004	0.00004	0.00005	0.00005	0.00005	0.00005	0.00005	0.00004	0.00005	0.00008	0.00002	0.00003	0.00003	0.00004
Total Intake ($\mu\text{g/kg/d}$)	0.0001	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002	0.0003	0.0002	0.0002	0.0006	0.0001	0.0001	0.0001	0.0002
HQ (unitless)	0.00002	0.00002	0.00003	0.00003	0.00004	0.00004	0.00003	0.00004	0.00003	0.00004	0.00009	0.00002	0.00002	0.00002	0.00002

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0003	0.0003	0.0003	0.0004	0.0005	0.0005	0.0004	0.0005	0.0004	0.0005	0.001	0.0002	0.0002	0.0003	0.0003
HQ (unitless)	0.00004	0.00005	0.00005	0.00006	0.00007	0.00008	0.00007	0.00008	0.00006	0.00007	0.0002	0.00003	0.00003	0.00004	0.00005

R46-60

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0006	0.0006	0.0008	0.0008	0.0009	0.0005	0.0005	0.002	0.0007	0.0007	0.0007	0.0008	0.0004	0.0003	0.001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00007	0.00008	0.00008	0.00008	0.00008	0.00007	0.00007	0.0001	0.00006	0.00008	0.00007	0.00009	0.00005	0.00004	0.0001
Total Intake ($\mu\text{g/kg/d}$)	0.0007	0.0007	0.0009	0.0009	0.001	0.0005	0.0006	0.002	0.0007	0.0007	0.0007	0.0009	0.0004	0.0004	0.001
HQ (unitless)	0.0001	0.0001	0.0001	0.0001	0.0002	0.00008	0.0001	0.0003	0.0001	0.0001	0.0001	0.0001	0.00006	0.00006	0.0002

Life stage: Child (3-13 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.0003	0.0003	0.0004	0.0004	0.0004	0.0002	0.0003	0.0008	0.0003	0.0003	0.0003	0.0004	0.0002	0.0002	0.0005
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00005	0.00006	0.00006	0.00006	0.00006	0.00005	0.00005	0.0001	0.00005	0.00006	0.00005	0.00006	0.00003	0.00003	0.00009
Total Intake ($\mu\text{g/kg/d}$)	0.0003	0.0003	0.0004	0.0004	0.0005	0.0003	0.0003	0.001	0.0003	0.0004	0.0004	0.0004	0.0002	0.0002	0.0006
HQ (unitless)	0.00005	0.00005	0.00006	0.00007	0.00008	0.00004	0.00005	0.0001	0.00005	0.00006	0.00006	0.00007	0.00003	0.00003	0.00009

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.00006	0.00006	0.00008	0.00008	0.00009	0.00004	0.00005	0.0002	0.00006	0.00007	0.00007	0.00008	0.00004	0.00003	0.0001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002	0.00003	0.00005	0.00002	0.00003	0.00003	0.00003	0.00002	0.00002	0.00005
Total Intake ($\mu\text{g/kg/d}$)	0.00008	0.00009	0.0001	0.0001	0.0001	0.00007	0.00008	0.0002	0.00009	0.00009	0.00009	0.0001	0.00005	0.00005	0.0002
HQ (unitless)	0.00001	0.00001	0.00002	0.00002	0.00002	0.00001	0.00001	0.00004	0.00001	0.00001	0.00001	0.00002	0.000008	0.000008	0.00002

Life stage: Adult (18-82 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.00004	0.00004	0.00006	0.00006	0.00007	0.00003	0.00004	0.0001	0.00005	0.00005	0.00005	0.00006	0.00003	0.00002	0.00008
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00004	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00003
Total Intake ($\mu\text{g/kg/d}$)	0.00006	0.00007	0.00008	0.00008	0.00009	0.00005	0.00006	0.0002	0.00006	0.00007	0.00007	0.00008	0.00004	0.00004	0.0001
HQ (unitless)	0.000009	0.00001	0.00001	0.00001	0.00001	0.000008	0.000009	0.00003	0.00001	0.00001	0.00001	0.00001	0.000006	0.000006	0.00002

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0001	0.0001	0.0001	0.0002	0.0002	0.00009	0.0001	0.0003	0.0001	0.0001	0.0001	0.0002	0.00007	0.00007	0.0002
HQ (unitless)	0.00002	0.00002	0.00002	0.00002	0.00003	0.00001	0.00002	0.00005	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00003

R61-75

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0007	0.001	0.001	0.002	0.0006	0.0005	0.0006	0.001	0.001	0.001	0.0007	0.002	0.003	0.003	0.001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00008	0.0001	0.0001	0.0001	0.00008	0.00006	0.00005	0.0001	0.0001	0.0001	0.00009	0.0002	0.0002	0.0002	0.0002
Total Intake (µg/kg/d)	0.0008	0.001	0.001	0.002	0.0007	0.0006	0.0006	0.001	0.001	0.001	0.0008	0.002	0.003	0.003	0.001
HQ (unitless)	0.0001	0.0002	0.0002	0.0003	0.0001	0.00009	0.0001	0.0002	0.0002	0.0002	0.0001	0.0003	0.0004	0.0005	0.0002

Life stage: Child (3-13 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0003	0.0005	0.0005	0.0008	0.0003	0.0002	0.0003	0.0006	0.0006	0.0005	0.0003	0.0009	0.001	0.001	0.0006
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00006	0.00009	0.0001	0.00009	0.00005	0.00004	0.00004	0.00007	0.00007	0.00007	0.00006	0.0001	0.0001	0.0001	0.0001
Total Intake (µg/kg/d)	0.0004	0.0006	0.0006	0.0009	0.0003	0.0003	0.0003	0.0007	0.0006	0.0006	0.0004	0.001	0.0013	0.001	0.0007
HQ (unitless)	0.00006	0.00009	0.0001	0.0001	0.00005	0.00004	0.00005	0.0001	0.0001	0.00009	0.00006	0.0002	0.0002	0.0002	0.0001

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00007	0.0001	0.0001	0.0002	0.00006	0.00005	0.00005	0.0001	0.0001	0.0001	0.00007	0.0002	0.0003	0.0003	0.0001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00003	0.00005	0.00005	0.00005	0.00003	0.00002	0.00002	0.00004	0.00004	0.00004	0.00003	0.00006	0.00007	0.00006	0.00006
Total Intake (µg/kg/d)	0.0001	0.0002	0.0002	0.0002	0.00009	0.00007	0.00007	0.0002	0.0002	0.0001	0.0001	0.0002	0.0003	0.0003	0.0002
HQ (unitless)	0.00002	0.00002	0.00003	0.00004	0.00001	0.00001	0.00001	0.00003	0.00002	0.00002	0.00002	0.00004	0.00005	0.00005	0.00003

Life stage: Adult (18-82 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00005	0.00008	0.00008	0.0001	0.00004	0.00004	0.00004	0.00009	0.00009	0.00007	0.00005	0.0001	0.0002	0.0002	0.00009
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00002	0.00003	0.00004	0.00003	0.00002	0.00002	0.00001	0.00003	0.00003	0.00003	0.00002	0.00005	0.00005	0.00004	0.00004
Total Intake (µg/kg/d)	0.00007	0.0001	0.0001	0.0002	0.00006	0.00005	0.00005	0.0001	0.0001	0.0001	0.00007	0.0002	0.0002	0.0002	0.0001
HQ (unitless)	0.00001	0.00002	0.00002	0.00003	0.00001	0.000008	0.000008	0.00002	0.00002	0.00002	0.00001	0.00003	0.00004	0.00004	0.00002

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.0001	0.0002	0.0002	0.0003	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	0.0003	0.0005	0.0005	0.0002
HQ (unitless)	0.00002	0.00003	0.00003	0.00005	0.00002	0.00002	0.00002	0.00003	0.00003	0.00003	0.00002	0.00005	0.00007	0.00007	0.00004

R76-D

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.001	0.0005	0.001	0.002	0.001	0.0003	0.0004	0.0005	0.002	0.002	0.004	0.02	0.02	0.02	0.02
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0001	0.00007	0.00008	0.0001	0.0001	0.00005	0.00005	0.00008	0.0002	0.0001	0.0002	0.0006	0.0006	0.0006	0.0007
Total Intake ($\mu\text{g/kg/d}$)	0.001	0.0006	0.001	0.002	0.001	0.0004	0.0004	0.0006	0.002	0.002	0.004	0.02	0.02	0.02	0.02
HQ (unitless)	0.0002	0.0001	0.0002	0.0003	0.0002	0.00006	0.00006	0.00009	0.0003	0.0003	0.0006	0.003	0.003	0.003	0.004

Life stage: Child (3-13 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0005	0.0002	0.0005	0.0008	0.0006	0.0002	0.0002	0.0002	0.0008	0.0009	0.002	0.007	0.007	0.008	0.01
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00009	0.00005	0.00006	0.0001	0.00007	0.00004	0.00003	0.00006	0.0001	0.0001	0.0001	0.0004	0.0004	0.0004	0.0005
Total Intake ($\mu\text{g/kg/d}$)	0.0006	0.0003	0.0005	0.0009	0.0006	0.0002	0.0002	0.0003	0.0009	0.001	0.002	0.008	0.008	0.009	0.01
HQ (unitless)	0.0001	0.00005	0.00008	0.0001	0.0001	0.00003	0.00003	0.00004	0.0001	0.0002	0.0003	0.001	0.001	0.001	0.002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0001	0.00005	0.0001	0.0002	0.0001	0.00003	0.00004	0.00005	0.0002	0.0002	0.0003	0.002	0.002	0.002	0.002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00005	0.00003	0.00003	0.00005	0.00004	0.00002	0.00002	0.00003	0.00006	0.00005	0.00008	0.0002	0.0002	0.0002	0.0003
Total Intake ($\mu\text{g/kg/d}$)	0.0002	0.00008	0.0001	0.0002	0.0002	0.00005	0.00005	0.00008	0.0002	0.0002	0.0004	0.002	0.002	0.002	0.002
HQ (unitless)	0.00002	0.00001	0.00002	0.00003	0.00003	0.000008	0.000008	0.00001	0.00004	0.00004	0.00007	0.0003	0.0003	0.0003	0.0004

Life stage: Adult (18-82 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00008	0.00004	0.00007	0.0001	0.00009	0.00002	0.00003	0.00003	0.0001	0.0001	0.0002	0.001	0.001	0.001	0.002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00003	0.00002	0.00002	0.00004	0.00003	0.00001	0.00001	0.00002	0.00004	0.00004	0.00005	0.0001	0.0002	0.0002	0.0002
Total Intake (µg/kg/d)	0.0001	0.00006	0.00009	0.0002	0.0001	0.00004	0.00004	0.00006	0.0002	0.0002	0.0003	0.001	0.001	0.001	0.002
HQ (unitless)	0.00002	0.000009	0.00001	0.00002	0.00002	0.000006	0.000006	0.000009	0.00003	0.00003	0.00005	0.0002	0.0002	0.0002	0.0003

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0002	0.0001	0.0002	0.0003	0.0002	0.00007	0.00007	0.0001	0.0003	0.0003	0.0006	0.003	0.003	0.003	0.004
HQ (unitless)	0.00003	0.00002	0.00003	0.00005	0.00003	0.00001	0.00001	0.00002	0.00005	0.00005	0.00009	0.0004	0.0004	0.0004	0.0006

E-P

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.03	0.05	0.07	0.1	0.14	0.07	0.04	0.09	0.04	0.05	0.06	0.005
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0008	0.001	0.001	0.002	0.002	0.001	0.001	0.002	0.002	0.002	0.002	0.0003
Total Intake ($\mu\text{g/kg/d}$)	0.03	0.05	0.07	0.1	0.14	0.07	0.04	0.09	0.04	0.05	0.06	0.006
HQ (unitless)	0.005	0.007	0.01	0.02	0.02	0.01	0.006	0.01	0.007	0.008	0.01	0.0009

Life stage: Child (3-13 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.01	0.02	0.03	0.05	0.06	0.03	0.02	0.04	0.02	0.02	0.03	0.002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0006	0.0008	0.001	0.001	0.001	0.001	0.0007	0.001	0.001	0.001	0.001	0.0002
Total Intake ($\mu\text{g/kg/d}$)	0.01	0.02	0.03	0.05	0.06	0.03	0.02	0.04	0.02	0.02	0.03	0.003
HQ (unitless)	0.002	0.003	0.005	0.007	0.01	0.005	0.003	0.006	0.003	0.004	0.004	0.0004

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.003	0.005	0.007	0.01	0.01	0.007	0.004	0.009	0.004	0.005	0.006	0.0005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0003	0.0004	0.0005	0.0007	0.0007	0.0005	0.0004	0.0006	0.0006	0.0006	0.0006	0.0001
Total Intake (µg/kg/d)	0.003	0.005	0.007	0.01	0.01	0.008	0.004	0.009	0.005	0.005	0.007	0.0006
HQ (unitless)	0.0005	0.0008	0.001	0.002	0.002	0.001	0.0006	0.001	0.0007	0.0008	0.001	0.0001

Life stage: Adult (18-82 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.002	0.003	0.005	0.007	0.01	0.005	0.003	0.006	0.003	0.003	0.004	0.0004
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0002	0.0003	0.0004	0.0005	0.0005	0.0004	0.0003	0.0004	0.0004	0.0004	0.0005	0.00007
Total Intake (µg/kg/d)	0.002	0.004	0.005	0.008	0.01	0.005	0.003	0.007	0.003	0.004	0.005	0.0004
HQ (unitless)	0.0003	0.0006	0.0008	0.001	0.002	0.0008	0.0004	0.001	0.0005	0.0006	0.0007	0.00007

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.004	0.007	0.01	0.02	0.02	0.01	0.006	0.01	0.007	0.008	0.009	0.0009
HQ (unitless)	0.0007	0.001	0.002	0.002	0.003	0.002	0.0009	0.002	0.001	0.001	0.001	0.0001

F.10 Nickel (Ni)

Equations:

Total Intake (I_{total_as})	=	$I_{ingest\_s} + I_{inhal}$
Average lifetime daily exposure for 82 year life span	=	$(I_{total(0.5-3)} \times 365 \times At_x) + (I_{total(3-13)} \times 365 \times At_x) + (I_{total(13-18)} \times 365 \times At_x) + (I_{total(18-82)} \times 365 \times At_x) / AT_{lifetime}$
HQ	=	$I_{lifetime} / TDI_{adj}$

F.10.1 Scenario 1

Adjusted TDI

	All receptors
Background adjusted tolerable daily intake (TDI_{adj}) ($\mu\text{g}/\text{kg}/\text{d}$)	1.8

Soil & air concentrations:

R1-15

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil concentration ($\mu\text{g}/\text{g}$) (Appendix C)	0.04	0.08	0.17	0.11	0.13	0.09	0.03	0.03	0.02	0.01	0.008	0.008	0.005	0.005	0.003
Air concentration ($\mu\text{g}/\text{m}^3$) (Appendix D)	0.00001	0.00002	0.00004	0.00003	0.00003	0.00002	0.00001	0.00001	0.000008	0.000004	0.000003	0.000004	0.000002	0.000003	0.000001

R16-30

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil concentration ($\mu\text{g}/\text{g}$) (Appendix C)	0.003	0.002	0.007	0.006	0.005	0.003	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.002
Air concentration ($\mu\text{g}/\text{m}^3$) (Appendix D)	0.0000009	0.0000003	0.0000008	0.000001	0.0000008	0.000002	0.000002	0.000001	0.000001	0.000001	0.0000008	0.0000007	0.0000009	0.0000008	0.0000008

R31-45

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil concentration ($\mu\text{g}/\text{g}$) (Appendix C)	0.004	0.004	0.005	0.006	0.008	0.009	0.007	0.009	0.006	0.008	0.03	0.002	0.002	0.003	0.004
Air concentration ($\mu\text{g}/\text{m}^3$) (Appendix D)	0.000002	0.000002	0.000003	0.000003	0.000003	0.000004	0.000003	0.000004	0.000003	0.000003	0.00001	0.000001	0.000001	0.000001	0.000002

R46-60

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil concentration (µg/g) (Appendix C)	0.001	0.001	0.001	0.002	0.002	0.0008	0.001	0.005	0.002	0.001	0.001	0.001	0.0007	0.0006	0.002
Air concentration (µg/m ³) (Appendix D)	0.0000007	0.0000007	0.0000009	0.0000009	0.000001	0.0000005	0.0000007	0.000002	0.0000008	0.0000007	0.0000007	0.0000008	0.0000005	0.0000004	0.000001

R61-75

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil concentration (µg/g) (Appendix C)	0.002	0.002	0.002	0.006	0.001	0.0009	0.001	0.003	0.003	0.002	0.002	0.005	0.008	0.008	0.003
Air concentration (µg/m ³) (Appendix D)	0.000001	0.000001	0.000001	0.000002	0.0000008	0.0000006	0.0000006	0.000001	0.000001	0.000001	0.0000008	0.000003	0.000004	0.000004	0.000001

R76-D

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil concentration (µg/g) (Appendix C)	0.002	0.001	0.002	0.005	0.003	0.0006	0.0007	0.0008	0.005	0.006	0.01	0.23	0.23	0.24	0.7
Air concentration (µg/m ³) (Appendix D)	0.000001	0.0000007	0.000001	0.000002	0.000001	0.0000003	0.0000004	0.0000004	0.000002	0.000002	0.000005	0.00005	0.00005	0.00005	0.0001

E-P

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil concentration (µg/g) (Appendix C)	0.18	0.36	0.26	0.23	0.22	0.23	0.30	0.42	0.38	0.4	0.31	0.02
Air concentration (µg/m ³) (Appendix D)	0.00004	0.00008	0.00006	0.00005	0.00005	0.00005	0.00007	0.00009	0.00008	0.00008	0.00006	0.000008

Intakes & hazard quotients:

R1-15

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0003	0.0007	0.002	0.001	0.001	0.0008	0.0003	0.0003	0.0002	0.00009	0.00007	0.00007	0.00004	0.00005	0.00002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000008	0.00002	0.00003	0.00002	0.00002	0.00002	0.000007	0.000007	0.000006	0.000003	0.000002	0.000003	0.000002	0.000002	0.000001
Total Intake (µg/kg/d)	0.0003	0.0007	0.002	0.001	0.001	0.0008	0.0003	0.0003	0.0002	0.00009	0.00007	0.00008	0.00004	0.00005	0.00003
HQ (unitless)	0.0002	0.0004	0.0009	0.0006	0.0007	0.0005	0.0002	0.0002	0.0001	0.00005	0.00004	0.00004	0.00002	0.00003	0.00001

Life stage: Child (3-13 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0002	0.0003	0.0007	0.0005	0.0006	0.0004	0.0001	0.0001	0.00009	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000006	0.00001	0.00002	0.00002	0.00002	0.00001	0.000005	0.000005	0.000004	0.000002	0.000002	0.000002	0.000001	0.000001	0.0000007
Total Intake (µg/kg/d)	0.0002	0.0003	0.0008	0.0005	0.0006	0.0004	0.0001	0.0001	0.00009	0.00004	0.00003	0.00004	0.00002	0.00002	0.00001
HQ (unitless)	0.00009	0.0002	0.0004	0.0003	0.0003	0.0002	0.00008	0.00007	0.00005	0.00002	0.00002	0.00002	0.00001	0.00001	0.000007

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00003	0.00007	0.0002	0.0001	0.0001	0.00008	0.00003	0.00003	0.00002	0.000009	0.000007	0.000007	0.000004	0.000005	0.000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000003	0.000006	0.00001	0.000008	0.000009	0.000006	0.000003	0.000003	0.000002	0.000001	0.0000009	0.000001	0.0000007	0.0000007	0.0000004
Total Intake (µg/kg/d)	0.00004	0.00008	0.0002	0.0001	0.0001	0.00008	0.00003	0.00003	0.00002	0.00001	0.000008	0.000008	0.000005	0.000005	0.000003
HQ (unitless)	0.00002	0.00004	0.00009	0.00006	0.00007	0.00005	0.00002	0.00002	0.00001	0.000006	0.000004	0.000005	0.000003	0.000003	0.000002

Life stage: Adult (18-82 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00002	0.00005	0.0001	0.00007	0.00008	0.00006	0.00002	0.00002	0.00001	0.000006	0.000005	0.000005	0.000003	0.000003	0.000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000002	0.000004	0.000008	0.000006	0.000006	0.000004	0.000002	0.000002	0.000001	0.0000008	0.0000006	0.0000007	0.0000005	0.0000005	0.0000003
Total Intake (µg/kg/d)	0.00003	0.00006	0.0001	0.00008	0.00009	0.00006	0.00002	0.00002	0.00001	0.000007	0.000005	0.000006	0.000003	0.000004	0.000002
HQ (unitless)	0.00001	0.00003	0.00007	0.00004	0.00005	0.00003	0.00001	0.00001	0.000008	0.000004	0.000003	0.000003	0.000002	0.000002	0.000001

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.00005	0.0001	0.0002	0.0002	0.0002	0.0001	0.00005	0.00004	0.00003	0.00001	0.00001	0.00001	0.000007	0.000008	0.000004
HQ (unitless)	0.00003	0.00006	0.0001	0.00009	0.0001	0.00007	0.00003	0.00002	0.00002	0.000008	0.000006	0.000006	0.000004	0.000004	0.000002

R16-30

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00002	0.00002	0.00006	0.00005	0.00004	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000007	0.0000002	0.0000005	0.0000007	0.0000006	0.000001	0.000001	0.000001	0.0000009	0.0000008	0.0000006	0.0000005	0.0000006	0.0000006	0.0000006
Total Intake (µg/kg/d)	0.00002	0.00002	0.00006	0.00005	0.00004	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
HQ (unitless)	0.00001	0.00001	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.000009	0.000008	0.000007	0.000006	0.000007	0.000007	0.000008

Life stage: Child (3-13 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion ($I_{\text{ingest\_s}}$) (µg/kg/d)	0.00001	0.000009	0.00003	0.00002	0.00002	0.00001	0.00001	0.000009	0.000007	0.000006	0.000005	0.000005	0.000006	0.000005	0.000006
Inhalation Intake (I_{inhal}) (µg/kg/d)	0.0000005	0.0000002	0.0000004	0.0000005	0.0000004	0.000001	0.0000008	0.0000007	0.0000006	0.0000006	0.0000004	0.0000003	0.0000005	0.0000004	0.0000004
Total Intake (µg/kg/d)	0.00001	0.000009	0.00003	0.00002	0.00002	0.00002	0.00001	0.000009	0.000008	0.000007	0.000006	0.000005	0.000006	0.000006	0.000007
HQ (unitless)	0.000006	0.000005	0.00002	0.00001	0.00001	0.000008	0.000006	0.000005	0.000004	0.000004	0.000003	0.000003	0.000003	0.000003	0.000004

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000002	0.000002	0.000006	0.000005	0.000004	0.000003	0.000002	0.000002	0.000002	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000003	0.00000009	0.0000002	0.0000003	0.0000002	0.0000005	0.0000004	0.0000004	0.0000003	0.0000003	0.0000002	0.0000002	0.0000002	0.0000002	0.0000002
Total Intake (µg/kg/d)	0.000003	0.000002	0.000006	0.000005	0.000004	0.000004	0.000003	0.000002	0.000002	0.000002	0.000001	0.000001	0.000001	0.000001	0.000002
HQ (unitless)	0.000001	0.000001	0.000003	0.000003	0.000002	0.000002	0.000001	0.000001	0.000001	0.0000009	0.0000007	0.0000006	0.0000008	0.0000008	0.0000009

Life stage: Adult (18-82 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000002	0.000001	0.000004	0.000004	0.000003	0.000002	0.000002	0.000001	0.000001	0.000001	0.0000008	0.0000007	0.0000009	0.0000008	0.000001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000002	0.00000006	0.0000001	0.0000002	0.0000002	0.0000004	0.0000003	0.0000003	0.0000002	0.0000002	0.0000002	0.0000001	0.0000002	0.0000001	0.0000002
Total Intake (µg/kg/d)	0.000002	0.000001	0.000004	0.000004	0.000003	0.000003	0.000002	0.000002	0.000001	0.000001	0.0000009	0.0000008	0.000001	0.000001	0.000001
HQ (unitless)	0.000001	0.0000008	0.000002	0.000002	0.000002	0.000001	0.000001	0.0000009	0.0000007	0.0000007	0.0000005	0.0000005	0.0000006	0.0000005	0.0000006

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.000004	0.000003	0.000009	0.000008	0.000006	0.000005	0.000004	0.000003	0.000003	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002
HQ (unitless)	0.000002	0.000002	0.000005	0.000004	0.000004	0.000003	0.000002	0.000002	0.000001	0.000001	0.000001	0.0000009	0.000001	0.000001	0.000001

R31-45

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00004	0.00004	0.00005	0.00006	0.00007	0.00008	0.00006	0.00008	0.00006	0.00007	0.0003	0.00002	0.00002	0.00003	0.00003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000002	0.000002	0.000002	0.000002	0.000002	0.000003	0.000002	0.000003	0.000002	0.000002	0.000009	0.0000008	0.0000009	0.000001	0.000001
Total Intake (µg/kg/d)	0.00004	0.00004	0.00005	0.00006	0.00007	0.00008	0.00006	0.00008	0.00006	0.00007	0.0003	0.00002	0.00002	0.00003	0.00003
HQ (unitless)	0.00002	0.00002	0.00003	0.00003	0.00004	0.00004	0.00004	0.00004	0.00003	0.00004	0.0002	0.00001	0.00001	0.00002	0.00002

Life stage: Child (3-13 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00002	0.00002	0.00002	0.00003	0.00003	0.00004	0.00003	0.00004	0.00003	0.00003	0.0001	0.000009	0.00001	0.00001	0.00002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000001	0.000001	0.000001	0.000002	0.000002	0.000002	0.000002	0.000002	0.000001	0.000002	0.000006	0.0000006	0.0000007	0.0000008	0.0000009
Total Intake (µg/kg/d)	0.00002	0.00002	0.00002	0.00003	0.00003	0.00004	0.00003	0.00004	0.00003	0.00003	0.0001	0.000009	0.00001	0.00001	0.00002
HQ (unitless)	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00002	0.00008	0.000005	0.000006	0.000007	0.000009

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000003	0.000004	0.000005	0.000006	0.000007	0.000008	0.000006	0.000008	0.000005	0.000007	0.000003	0.000002	0.000002	0.000003	0.000003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000006	0.0000006	0.0000008	0.0000009	0.0000009	0.000001	0.0000008	0.000001	0.0000007	0.0000009	0.000003	0.0000003	0.0000003	0.0000004	0.0000005
Total Intake ($\mu\text{g/kg/d}$)	0.000004	0.000004	0.000005	0.000006	0.000008	0.000009	0.000007	0.000009	0.000006	0.000008	0.000003	0.000002	0.000003	0.000003	0.000004
HQ (unitless)	0.000002	0.000002	0.000003	0.000004	0.000004	0.000005	0.000004	0.000005	0.000003	0.000004	0.000002	0.000001	0.000001	0.000002	0.000002

Life stage: Adult (18-82 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000002	0.000003	0.000003	0.000004	0.000005	0.000005	0.000004	0.000006	0.000004	0.000005	0.000002	0.000001	0.000002	0.000002	0.000002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000004	0.0000005	0.0000005	0.0000006	0.0000007	0.0000007	0.0000006	0.0000007	0.0000005	0.0000006	0.000002	0.0000002	0.0000002	0.0000003	0.0000003
Total Intake ($\mu\text{g/kg/d}$)	0.000003	0.000003	0.000004	0.000005	0.000005	0.000006	0.000005	0.000006	0.000004	0.000005	0.000002	0.000002	0.000002	0.000002	0.000003
HQ (unitless)	0.000002	0.000002	0.000002	0.000003	0.000003	0.000003	0.000003	0.000003	0.000002	0.000003	0.000001	0.0000009	0.000001	0.000001	0.000002

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.000006	0.000006	0.000008	0.000009	0.00001	0.00001	0.00001	0.00001	0.000009	0.00001	0.00005	0.000003	0.000004	0.000004	0.000005
HQ (unitless)	0.000003	0.000003	0.000004	0.000005	0.000006	0.000007	0.000005	0.000007	0.000005	0.000006	0.00003	0.000002	0.000002	0.000002	0.000003

R46-60

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00001	0.00001	0.00001	0.00001	0.00002	0.000007	0.000009	0.00005	0.00001	0.00001	0.00001	0.00001	0.000006	0.000005	0.00002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000005	0.0000005	0.0000006	0.0000007	0.0000007	0.0000004	0.0000005	0.000002	0.0000006	0.0000005	0.0000005	0.0000006	0.0000003	0.0000003	0.000001
Total Intake ($\mu\text{g/kg/d}$)	0.00001	0.00001	0.00001	0.00002	0.00002	0.000008	0.000009	0.00005	0.00001	0.00001	0.00001	0.00001	0.000007	0.000006	0.00002
HQ (unitless)	0.000006	0.000006	0.000008	0.000009	0.000010	0.000004	0.000005	0.00003	0.000008	0.000007	0.000007	0.000007	0.000004	0.000003	0.00001

Life stage: Child (3-13 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.000004	0.000004	0.000006	0.000007	0.000008	0.000003	0.000004	0.00002	0.000006	0.000006	0.000005	0.000006	0.000003	0.000002	0.000009
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000004	0.0000004	0.0000004	0.0000005	0.0000005	0.0000003	0.0000003	0.000001	0.0000004	0.0000003	0.0000003	0.0000004	0.0000002	0.0000002	0.0000007
Total Intake ($\mu\text{g/kg/d}$)	0.000005	0.000005	0.000007	0.000007	0.000008	0.000004	0.000004	0.00002	0.000007	0.000006	0.000006	0.000006	0.000003	0.000003	0.000009
HQ (unitless)	0.000003	0.000003	0.000004	0.000004	0.000005	0.000002	0.000002	0.00001	0.000004	0.000003	0.000003	0.000003	0.000002	0.000001	0.000005

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.0000009	0.000001	0.000001	0.000001	0.000002	0.0000007	0.0000009	0.000005	0.000001	0.000001	0.000001	0.000001	0.0000006	0.0000005	0.000002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000002	0.0000002	0.0000002	0.0000002	0.0000003	0.0000001	0.0000002	0.0000006	0.0000002	0.0000002	0.0000002	0.0000002	0.0000001	0.0000001	0.0000004
Total Intake ($\mu\text{g/kg/d}$)	0.000001	0.000001	0.000002	0.000002	0.000002	0.0000008	0.000001	0.000005	0.000002	0.000001	0.000001	0.000001	0.0000007	0.0000006	0.000002
HQ (unitless)	0.0000006	0.0000006	0.0000009	0.0000009	0.000001	0.0000005	0.0000006	0.000003	0.0000009	0.0000008	0.0000007	0.0000008	0.0000004	0.0000004	0.000001

Life stage: Adult (18-82 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.0000007	0.0000007	0.0000009	0.000001	0.000001	0.0000005	0.0000006	0.000003	0.000001	0.0000009	0.0000008	0.0000009	0.0000004	0.0000004	0.000001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000001	0.0000001	0.0000002	0.0000002	0.0000002	0.0000001	0.0000001	0.0000004	0.0000001	0.0000001	0.0000001	0.0000001	0.00000009	0.00000007	0.0000003
Total Intake ($\mu\text{g/kg/d}$)	0.0000008	0.0000008	0.000001	0.000001	0.000001	0.0000006	0.0000007	0.000004	0.000001	0.000001	0.000001	0.000001	0.0000005	0.0000005	0.000002
HQ (unitless)	0.0000005	0.0000005	0.0000006	0.0000007	0.0000008	0.0000003	0.0000004	0.000002	0.0000006	0.0000006	0.0000005	0.0000006	0.0000003	0.0000003	0.0000009

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.000002	0.000002	0.000002	0.000002	0.000003	0.000001	0.000001	0.000007	0.000002	0.000002	0.000002	0.000002	0.000001	0.0000009	0.000003
HQ (unitless)	0.0000009	0.0000009	0.000001	0.000001	0.000002	0.0000007	0.0000008	0.000004	0.000001	0.000001	0.000001	0.000001	0.0000006	0.0000005	0.000002

R61-75

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00001	0.00002	0.00002	0.00005	0.00001	0.000008	0.00001	0.00003	0.00002	0.00002	0.00001	0.00005	0.00007	0.00007	0.00002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000008	0.0000009	0.000001	0.000002	0.0000006	0.0000004	0.0000004	0.000001	0.0000009	0.000001	0.0000006	0.000002	0.000003	0.000003	0.000001
Total Intake (µg/kg/d)	0.00001	0.00002	0.00002	0.00005	0.00001	0.000009	0.00001	0.00003	0.00002	0.00002	0.00002	0.00005	0.00007	0.00008	0.00002
HQ (unitless)	0.000008	0.00001	0.00001	0.00003	0.000006	0.000005	0.000006	0.00002	0.00001	0.00001	0.000008	0.00003	0.00004	0.00004	0.00001

Life stage: Child (3-13 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000006	0.000008	0.000008	0.00002	0.000005	0.000004	0.000005	0.00001	0.00001	0.00001	0.000007	0.00002	0.00003	0.00003	0.00001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000005	0.0000007	0.0000007	0.000001	0.0000004	0.0000003	0.0000003	0.0000007	0.0000007	0.0000008	0.0000004	0.000001	0.000002	0.000002	0.0000008
Total Intake (µg/kg/d)	0.000007	0.000009	0.000009	0.00002	0.000005	0.000004	0.000005	0.00001	0.00001	0.00001	0.000007	0.00002	0.00003	0.00004	0.00001
HQ (unitless)	0.000004	0.000005	0.000005	0.00001	0.000003	0.000002	0.000003	0.000007	0.000006	0.000006	0.000004	0.00001	0.00002	0.00002	0.000006

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000001	0.000002	0.000002	0.000005	0.000001	0.0000008	0.000001	0.000003	0.000002	0.000002	0.000001	0.000005	0.000007	0.000007	0.000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000003	0.0000003	0.0000004	0.0000006	0.0000002	0.0000002	0.0000002	0.0000004	0.0000003	0.0000004	0.0000002	0.0000007	0.000001	0.000001	0.0000004
Total Intake (µg/kg/d)	0.000002	0.000002	0.000002	0.000006	0.000001	0.000001	0.000001	0.000003	0.000003	0.000002	0.000002	0.000005	0.000008	0.000008	0.000003
HQ (unitless)	0.0000009	0.000001	0.000001	0.000003	0.0000007	0.0000005	0.0000007	0.000002	0.000001	0.000001	0.0000009	0.000003	0.000004	0.000005	0.000001

Life stage: Adult (18-82 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.000001	0.000001	0.000001	0.000004	0.0000008	0.0000006	0.0000008	0.000002	0.000002	0.000002	0.000001	0.000003	0.000005	0.000005	0.000002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0000002	0.0000002	0.0000003	0.0000004	0.0000002	0.0000001	0.0000001	0.0000003	0.0000002	0.0000003	0.0000002	0.0000005	0.0000007	0.0000007	0.0000003
Total Intake (µg/kg/d)	0.000001	0.000002	0.000002	0.000004	0.0000009	0.0000007	0.0000009	0.000002	0.000002	0.000002	0.000001	0.000004	0.000006	0.000006	0.000002
HQ (unitless)	0.0000006	0.0000008	0.0000009	0.000002	0.0000005	0.0000004	0.0000005	0.000001	0.000001	0.000001	0.000001	0.000002	0.000003	0.000003	0.000001

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.000002	0.000003	0.000003	0.000008	0.000002	0.000001	0.000002	0.000004	0.000004	0.000004	0.000002	0.000007	0.000001	0.000001	0.000004
HQ (unitless)	0.000001	0.000002	0.000002	0.000005	0.000001	0.0000008	0.000001	0.000002	0.000002	0.000002	0.000001	0.000004	0.000006	0.000006	0.000002

R76-D

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00002	0.00001	0.00002	0.00004	0.00003	0.000005	0.000007	0.000007	0.00004	0.00005	0.0001	0.002	0.002	0.002	0.006
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.000001	0.0000005	0.0000008	0.000001	0.000001	0.0000002	0.0000003	0.0000003	0.000001	0.000002	0.000003	0.00004	0.00004	0.00004	0.0001
Total Intake ($\mu\text{g/kg/d}$)	0.00002	0.00001	0.00002	0.00004	0.00003	0.000005	0.000007	0.000007	0.00004	0.00006	0.0001	0.002	0.002	0.002	0.006
HQ (unitless)	0.00001	0.000006	0.00001	0.00002	0.00002	0.000003	0.000004	0.000004	0.00002	0.00003	0.00007	0.001	0.001	0.001	0.004

Life stage: Child (3-13 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000009	0.000004	0.000009	0.00002	0.00001	0.000002	0.000003	0.000003	0.00002	0.00003	0.00006	0.0009	0.001	0.001	0.003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000007	0.0000004	0.0000006	0.000001	0.0000007	0.0000002	0.0000002	0.0000002	0.000001	0.000001	0.000002	0.00003	0.00003	0.00003	0.00007
Total Intake ($\mu\text{g/kg/d}$)	0.000009	0.000005	0.00001	0.00002	0.00001	0.000002	0.000003	0.000004	0.00002	0.00003	0.00006	0.001	0.001	0.001	0.003
HQ (unitless)	0.000005	0.000003	0.000006	0.00001	0.000008	0.000001	0.000002	0.000002	0.00001	0.00001	0.00003	0.0005	0.0005	0.0006	0.002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.000002	0.0000009	0.000002	0.000004	0.000003	0.0000005	0.0000007	0.0000007	0.000004	0.000005	0.00001	0.0002	0.0002	0.0002	0.0006
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000004	0.0000002	0.0000003	0.0000005	0.0000004	0.00000009	0.0000001	0.0000001	0.0000005	0.0000007	0.000001	0.00001	0.00001	0.00001	0.00004
Total Intake ($\mu\text{g/kg/d}$)	0.000002	0.000001	0.000002	0.000005	0.000003	0.0000006	0.0000008	0.0000008	0.000005	0.000006	0.00001	0.0002	0.0002	0.0002	0.0007
HQ (unitless)	0.000001	0.0000006	0.000001	0.000003	0.000002	0.0000003	0.0000004	0.0000005	0.000003	0.000003	0.000008	0.0001	0.0001	0.0001	0.0004

Life stage: Adult (18-82 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.000001	0.0000007	0.000001	0.000003	0.000002	0.0000004	0.0000005	0.0000005	0.000003	0.000004	0.000009	0.0001	0.0001	0.0002	0.0005
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0000003	0.0000001	0.0000002	0.0000004	0.0000003	0.00000006	0.00000007	0.00000008	0.0000004	0.0000005	0.0000009	0.00001	0.00001	0.00001	0.00003
Total Intake ($\mu\text{g/kg/d}$)	0.000002	0.0000008	0.000002	0.000003	0.000002	0.0000004	0.0000005	0.0000006	0.000003	0.000004	0.00001	0.0002	0.0002	0.0002	0.0005
HQ (unitless)	0.0000009	0.0000005	0.0000009	0.000002	0.000001	0.0000002	0.0000003	0.0000003	0.000002	0.000002	0.000005	0.00009	0.00009	0.00009	0.0003

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.000003	0.000002	0.000003	0.000007	0.000005	0.0000008	0.000001	0.000001	0.000007	0.000009	0.00002	0.0003	0.0003	0.0003	0.001
HQ (unitless)	0.000002	0.0000009	0.000002	0.000004	0.000003	0.0000005	0.0000006	0.0000006	0.000004	0.000005	0.00001	0.0002	0.0002	0.0002	0.0005

E-P

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.002	0.003	0.002	0.002	0.002	0.002	0.003	0.004	0.003	0.004	0.003	0.0002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00003	0.00005	0.00004	0.00004	0.00004	0.00004	0.00005	0.00007	0.00006	0.00006	0.00004	0.000006
Total Intake ($\mu\text{g/kg/d}$)	0.002	0.003	0.002	0.002	0.002	0.002	0.003	0.004	0.004	0.004	0.003	0.0002
HQ (unitless)	0.0009	0.002	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.0001

Life stage: Child (3-13 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.0007	0.001	0.001	0.001	0.0009	0.0009	0.001	0.002	0.002	0.002	0.001	0.00009
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00002	0.00004	0.00003	0.00003	0.00003	0.00003	0.00003	0.00005	0.00004	0.00004	0.00003	0.000004
Total Intake ($\mu\text{g/kg/d}$)	0.0008	0.002	0.001	0.001	0.0009	0.001	0.001	0.002	0.002	0.002	0.001	0.00009
HQ (unitless)	0.0004	0.0008	0.0006	0.0006	0.0005	0.0005	0.0007	0.001	0.0009	0.0009	0.0007	0.00005

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003	0.0004	0.0003	0.0004	0.0003	0.00002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00001	0.00002	0.00002	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.000002
Total Intake (µg/kg/d)	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003	0.0004	0.0004	0.0004	0.0003	0.00002
HQ (unitless)	0.00009	0.0002	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.00001

Life stage: Adult (18-82 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0001	0.0002	0.0002	0.0001	0.0001	0.0001	0.0002	0.0003	0.0002	0.0003	0.0002	0.00001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.000008	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00001	0.000002
Total Intake (µg/kg/d)	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0002	0.00001
HQ (unitless)	0.00007	0.0001	0.0001	0.00009	0.00008	0.00009	0.0001	0.0002	0.0001	0.0002	0.0001	0.000008

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.0002	0.0005	0.0004	0.0003	0.0003	0.0003	0.0004	0.0006	0.0005	0.0006	0.0004	0.00003
HQ (unitless)	0.0001	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0002	0.00002

F.10.2 Scenario 2

Adjusted TDI

	All receptors
Background adjusted tolerable daily intake (TDI _{adj}) (µg/kg/d)	1.8

Soil & air concentrations:

R1-15

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil concentration (µg/g) (Appendix C)	0.49	0.58	0.53	0.32	0.26	0.19	0.16	0.19	0.16	0.13	0.12	0.12	0.11	0.11	0.06
Air concentration (µg/m ³) (Appendix D)	0.0006	0.0006	0.0005	0.0004	0.0003	0.0002	0.0002	0.0003	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

R16-30

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil concentration (µg/g) (Appendix C)	0.05	0.03	0.08	0.11	0.09	0.07	0.06	0.06	0.05	0.04	0.04	0.04	0.04	0.04	0.04
Air concentration (µg/m ³) (Appendix D)	0.00008	0.00003	0.00005	0.00007	0.00006	0.0001	0.00009	0.0001	0.00008	0.00008	0.00009	0.00007	0.00007	0.00008	0.00007

R31-45

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil concentration (µg/g) (Appendix C)	0.08	0.09	0.1	0.12	0.12	0.13	0.12	0.13	0.11	0.12	0.21	0.05	0.06	0.07	0.09
Air concentration (µg/m ³) (Appendix D)	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0002	0.00008	0.00009	0.0001	0.0001

R46-60

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil concentration (µg/g) (Appendix C)	0.03	0.04	0.04	0.04	0.05	0.03	0.03	0.08	0.03	0.03	0.03	0.04	0.02	0.02	0.07
Air concentration (µg/m ³) (Appendix D)	0.00006	0.00007	0.00007	0.00007	0.00007	0.00006	0.00006	0.0001	0.00005	0.00007	0.00006	0.00008	0.00004	0.00004	0.0001

R61-75

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil concentration (µg/g) (Appendix C)	0.04	0.07	0.07	0.08	0.04	0.03	0.03	0.06	0.06	0.06	0.04	0.10	0.14	0.12	0.08
Air concentration (µg/m ³) (Appendix D)	0.00007	0.0001	0.0001	0.0001	0.00007	0.00005	0.00005	0.00007	0.00008	0.00009	0.00008	0.0002	0.0002	0.0001	0.0001

R76-D

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil concentration (µg/g) (Appendix C)	0.07	0.03	0.05	0.08	0.06	0.02	0.02	0.02	0.09	0.09	0.13	0.24	0.24	0.26	0.28
Air concentration (µg/m ³) (Appendix D)	0.0001	0.00006	0.00007	0.0001	0.00008	0.00004	0.00004	0.00007	0.0001	0.0001	0.0001	0.0003	0.0003	0.0003	0.0003

E-P

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil concentration (µg/g) (Appendix C)	0.29	0.33	0.35	0.36	0.35	0.34	0.31	0.42	0.69	0.81	0.93	0.18
Air concentration (µg/m ³) (Appendix D)	0.0003	0.0004	0.0004	0.0005	0.0004	0.0004	0.0004	0.0005	0.0009	0.0009	0.0009	0.0002

Intakes & hazard quotients:

R1-15

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.004	0.005	0.005	0.003	0.002	0.002	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.0006
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0004	0.0005	0.0004	0.0003	0.0002	0.0002	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00008
Total Intake (µg/kg/d)	0.005	0.006	0.005	0.003	0.003	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.0006
HQ (unitless)	0.003	0.003	0.003	0.002	0.001	0.001	0.0009	0.001	0.0009	0.0007	0.0007	0.0007	0.0006	0.0006	0.0004

Life stage: Child (3-13 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.002	0.002	0.002	0.001	0.001	0.0008	0.0007	0.0008	0.0007	0.0006	0.0005	0.0005	0.0004	0.0005	0.0003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0003	0.0003	0.0003	0.0002	0.0002	0.0001	0.00009	0.0001	0.0001	0.00007	0.00007	0.00007	0.00007	0.00007	0.00006
Total Intake (µg/kg/d)	0.002	0.003	0.002	0.002	0.001	0.0009	0.0008	0.0009	0.0008	0.0006	0.0006	0.0006	0.0005	0.0005	0.0003
HQ (unitless)	0.001	0.002	0.001	0.0009	0.0007	0.0005	0.0004	0.0005	0.0004	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0004	0.0005	0.0005	0.0003	0.0002	0.0002	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0001	0.0002	0.0001	0.0001	0.00009	0.00006	0.00005	0.00007	0.00005	0.00004	0.00004	0.00004	0.00004	0.00004	0.00003
Total Intake (µg/kg/d)	0.0006	0.0007	0.0006	0.0004	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.00008
HQ (unitless)	0.0003	0.0004	0.0003	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.00009	0.00008	0.00008	0.00007	0.00008	0.00005

Life stage: Adult (18-82 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0003	0.0004	0.0003	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.00008	0.00008	0.00008	0.00007	0.00007	0.00004
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0001	0.0001	0.0001	0.00008	0.00006	0.00004	0.00003	0.00005	0.00004	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002
Total Intake (µg/kg/d)	0.0004	0.0005	0.0004	0.0003	0.0002	0.0002	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.00009	0.0001	0.00006
HQ (unitless)	0.0002	0.0003	0.0002	0.0002	0.0001	0.00009	0.00008	0.00009	0.00008	0.00006	0.00006	0.00006	0.00005	0.00005	0.00003

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.0008	0.0009	0.0008	0.0005	0.0004	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001
HQ (unitless)	0.0004	0.0005	0.0005	0.0003	0.0002	0.0002	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00006

R16-30

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0004	0.0002	0.0007	0.001	0.0008	0.0007	0.0006	0.0005	0.0004	0.0004	0.0004	0.0003	0.0004	0.0004	0.0004
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00006	0.00002	0.00004	0.00005	0.00004	0.00008	0.00006	0.00007	0.00006	0.00006	0.00007	0.00005	0.00005	0.00006	0.00005
Total Intake (µg/kg/d)	0.0005	0.0003	0.0007	0.001	0.0009	0.0008	0.0006	0.0006	0.0005	0.0005	0.0005	0.0004	0.0004	0.0004	0.0004
HQ (unitless)	0.0003	0.0001	0.0004	0.0006	0.0005	0.0004	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002

Life stage: Child (3-13 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion ($I_{\text{ingest\_s}}$) (µg/kg/d)	0.0002	0.0001	0.0003	0.0005	0.0004	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Inhalation Intake (I_{inhal}) (µg/kg/d)	0.00004	0.00002	0.00003	0.00004	0.00003	0.00006	0.00005	0.00005	0.00004	0.00004	0.00005	0.00004	0.00004	0.00004	0.00003
Total Intake (µg/kg/d)	0.0002	0.0001	0.0003	0.0005	0.0004	0.0004	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
HQ (unitless)	0.0001	0.00007	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00004	0.00002	0.00007	0.0001	0.00008	0.00007	0.00005	0.00005	0.00004	0.00004	0.00004	0.00003	0.00004	0.00004	0.00004
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00002	0.000009	0.00001	0.00002	0.00002	0.00003	0.00002	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002
Total Intake (µg/kg/d)	0.00006	0.00003	0.00008	0.0001	0.0001	0.0001	0.00008	0.00008	0.00006	0.00006	0.00006	0.00005	0.00005	0.00006	0.00006
HQ (unitless)	0.00003	0.00002	0.00005	0.00007	0.00005	0.00005	0.00004	0.00004	0.00004	0.00003	0.00004	0.00003	0.00003	0.00003	0.00003

Life stage: Adult (18-82 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00003	0.00002	0.00005	0.00007	0.00006	0.00005	0.00004	0.00004	0.00003	0.00003	0.00003	0.00002	0.00003	0.00003	0.00003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00001	0.000006	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.00001	0.00002	0.00001	0.00001	0.00002	0.00001
Total Intake (µg/kg/d)	0.00004	0.00002	0.00006	0.00008	0.00007	0.00007	0.00006	0.00006	0.00005	0.00004	0.00005	0.00004	0.00004	0.00004	0.00004
HQ (unitless)	0.00002	0.00001	0.00003	0.00005	0.00004	0.00004	0.00003	0.00003	0.00003	0.00002	0.00003	0.00002	0.00002	0.00002	0.00002

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.00008	0.00004	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.00009	0.00008	0.00008	0.00007	0.00007	0.00008	0.00007
HQ (unitless)	0.00004	0.00002	0.00006	0.00009	0.00008	0.00007	0.00006	0.00006	0.00005	0.00004	0.00005	0.00004	0.00004	0.00004	0.00004

R31-45

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0008	0.0008	0.0009	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.0005	0.0006	0.0007	0.0008
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00008	0.00009	0.00009	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00006	0.00006	0.00007	0.00008
Total Intake (µg/kg/d)	0.0009	0.0009	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.0006	0.0006	0.0007	0.0009
HQ (unitless)	0.0005	0.0005	0.0006	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0006	0.0007	0.0003	0.0004	0.0004	0.0005

Life stage: Child (3-13 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0004	0.0004	0.0004	0.0005	0.0005	0.0006	0.0005	0.0005	0.0005	0.0005	0.0009	0.0002	0.0003	0.0003	0.0004
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00006	0.00006	0.00007	0.00007	0.00008	0.00008	0.00007	0.00008	0.00007	0.00007	0.0001	0.00004	0.00004	0.00005	0.00006
Total Intake (µg/kg/d)	0.0004	0.0004	0.0005	0.0006	0.0006	0.0006	0.0006	0.0006	0.0005	0.0006	0.001	0.0003	0.0003	0.0004	0.0004
HQ (unitless)	0.0002	0.0002	0.0003	0.0003	0.0003	0.0004	0.0003	0.0003	0.0003	0.0003	0.0005	0.0001	0.0002	0.0002	0.0002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00008	0.00008	0.00009	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.00005	0.00006	0.00006	0.00008
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00003	0.00003	0.00003	0.00004	0.00004	0.00004	0.00004	0.00004	0.00004	0.00004	0.00005	0.00002	0.00002	0.00003	0.00003
Total Intake ($\mu\text{g/kg/d}$)	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0001	0.0002	0.0001	0.0001	0.0002	0.00007	0.00008	0.00009	0.0001
HQ (unitless)	0.00006	0.00006	0.00007	0.00008	0.00008	0.00009	0.00008	0.00009	0.00008	0.00008	0.0001	0.00004	0.00004	0.00005	0.00006

Life stage: Adult (18-82 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00005	0.00006	0.00007	0.00008	0.00008	0.00009	0.00008	0.00008	0.00007	0.00008	0.0001	0.00004	0.00004	0.00005	0.00005
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00002	0.00002	0.00002	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00004	0.00001	0.00002	0.00002	0.00002
Total Intake ($\mu\text{g/kg/d}$)	0.00008	0.00008	0.00009	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.00005	0.00006	0.00007	0.00008
HQ (unitless)	0.00004	0.00004	0.00005	0.00006	0.00006	0.00006	0.00006	0.00006	0.00005	0.00006	0.00009	0.00003	0.00003	0.00004	0.00004

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.00009	0.0001	0.0001	0.0001
HQ (unitless)	0.00008	0.00008	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.00005	0.00006	0.00007	0.00008

R46-60

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0003	0.0003	0.0004	0.0004	0.0004	0.0002	0.0003	0.0008	0.0003	0.0003	0.0003	0.0004	0.0002	0.0002	0.0006
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00005	0.00005	0.00005	0.00005	0.00005	0.00004	0.00005	0.00009	0.00004	0.00005	0.00005	0.00005	0.00003	0.00003	0.00008
Total Intake ($\mu\text{g/kg/d}$)	0.0003	0.0004	0.0004	0.0005	0.0005	0.0003	0.0003	0.0008	0.0003	0.0004	0.0003	0.0005	0.0002	0.0002	0.0007
HQ (unitless)	0.0002	0.0002	0.0002	0.0003	0.0003	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002	0.0003	0.0001	0.0001	0.0004

Life stage: Child (3-13 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0003	0.0001	0.0001	0.0001	0.0002	0.00008	0.00007	0.0003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00003	0.00004	0.00004	0.00004	0.00004	0.00003	0.00003	0.00006	0.00003	0.00004	0.00003	0.00004	0.00002	0.00002	0.00005
Total Intake ($\mu\text{g/kg/d}$)	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0004	0.0002	0.0002	0.0002	0.0002	0.0001	0.00009	0.0003
HQ (unitless)	0.00009	0.0001	0.0001	0.0001	0.0001	0.00008	0.00009	0.0002	0.00009	0.0001	0.00009	0.0001	0.00006	0.00005	0.0002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.00003	0.00003	0.00004	0.00004	0.00004	0.00002	0.00003	0.00007	0.00003	0.00003	0.00003	0.00004	0.00002	0.00002	0.00006
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00003	0.00001	0.00002	0.00002	0.00002	0.00001	0.00001	0.00003
Total Intake ($\mu\text{g/kg/d}$)	0.00005	0.00005	0.00006	0.00006	0.00006	0.00004	0.00004	0.0001	0.00004	0.00005	0.00005	0.00006	0.00003	0.00003	0.00009
HQ (unitless)	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002	0.00006	0.00002	0.00003	0.00003	0.00003	0.00002	0.00001	0.00005

Life stage: Adult (18-82 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion ($I_{\text{ingest\_s}}$) ($\mu\text{g/kg/d}$)	0.00002	0.00002	0.00003	0.00003	0.00003	0.00002	0.00002	0.00005	0.00002	0.00002	0.00002	0.00003	0.00001	0.00001	0.00004
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00001	0.00001	0.00001	0.00001	0.000008	0.000007	0.00002
Total Intake ($\mu\text{g/kg/d}$)	0.00003	0.00004	0.00004	0.00004	0.00004	0.00003	0.00003	0.00008	0.00003	0.00003	0.00003	0.00004	0.00002	0.00002	0.00006
HQ (unitless)	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00004	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00003

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.00006	0.00007	0.00007	0.00008	0.00008	0.00005	0.00006	0.0001	0.00006	0.00006	0.00006	0.00008	0.00004	0.00003	0.0001
HQ (unitless)	0.00003	0.00004	0.00004	0.00004	0.00005	0.00003	0.00003	0.00008	0.00003	0.00003	0.00003	0.00004	0.00002	0.00002	0.00006

R61-75

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0004	0.0006	0.0007	0.0007	0.0003	0.0003	0.0002	0.0006	0.0006	0.0005	0.0003	0.0009	0.001	0.001	0.0007
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00005	0.00008	0.00009	0.00007	0.00005	0.00004	0.00003	0.00005	0.00006	0.00006	0.00006	0.0001	0.0001	0.00009	0.0001
Total Intake (µg/kg/d)	0.0004	0.0007	0.0007	0.0008	0.0004	0.0003	0.0003	0.0006	0.0006	0.0006	0.0004	0.001	0.001	0.001	0.0008
HQ (unitless)	0.0002	0.0004	0.0004	0.0004	0.0002	0.0002	0.0002	0.0003	0.0004	0.0003	0.0002	0.0006	0.0008	0.0007	0.0005

Life stage: Child (3-13 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0002	0.0003	0.0003	0.0003	0.0001	0.0001	0.0001	0.0003	0.0003	0.0003	0.0002	0.0004	0.0006	0.0005	0.0003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00004	0.00006	0.00006	0.00005	0.00003	0.00003	0.00002	0.00004	0.00004	0.00005	0.00004	0.00008	0.00008	0.00007	0.00007
Total Intake (µg/kg/d)	0.0002	0.0003	0.0004	0.0004	0.0002	0.0001	0.0001	0.0003	0.0003	0.0003	0.0002	0.0005	0.0007	0.0006	0.0004
HQ (unitless)	0.0001	0.0002	0.0002	0.0002	0.0001	0.00008	0.00007	0.0002	0.0002	0.0002	0.0001	0.0003	0.0004	0.0003	0.0002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00004	0.00006	0.00006	0.00007	0.00003	0.00003	0.00002	0.00005	0.00006	0.00005	0.00003	0.00009	0.0001	0.0001	0.00007
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00002	0.00003	0.00003	0.00003	0.00002	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.00004	0.00004	0.00003	0.00004
Total Intake (µg/kg/d)	0.00006	0.00009	0.0001	0.00009	0.00005	0.00004	0.00004	0.00007	0.00008	0.00008	0.00005	0.0001	0.0002	0.0001	0.0001
HQ (unitless)	0.00003	0.00005	0.00005	0.00005	0.00003	0.00002	0.00002	0.00004	0.00004	0.00004	0.00003	0.00007	0.00009	0.00008	0.00006

Life stage: Adult (18-82 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.00003	0.00004	0.00005	0.00005	0.00002	0.00002	0.00002	0.00004	0.00004	0.00004	0.00002	0.00006	0.00009	0.00008	0.00005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00001	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00001	0.00003	0.00003	0.00002	0.00003
Total Intake (µg/kg/d)	0.00004	0.00006	0.00007	0.00007	0.00004	0.00003	0.00003	0.00005	0.00006	0.00006	0.00004	0.00009	0.0001	0.0001	0.00008
HQ (unitless)	0.00002	0.00004	0.00004	0.00004	0.00002	0.00002	0.00001	0.00003	0.00003	0.00003	0.00002	0.00005	0.00007	0.00006	0.00004

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.00007	0.0001	0.0001	0.0001	0.00006	0.00005	0.00005	0.0001	0.0001	0.0001	0.00007	0.00017	0.0002	0.0002	0.0001
HQ (unitless)	0.00004	0.00007	0.00007	0.00007	0.00004	0.00003	0.00003	0.00006	0.00006	0.00006	0.00004	0.00009	0.0001	0.0001	0.00008

R76-D

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0006	0.0003	0.0005	0.0007	0.0005	0.0002	0.0002	0.0002	0.0008	0.0008	0.001	0.002	0.002	0.002	0.003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00008	0.00005	0.00005	0.00008	0.00006	0.00003	0.00003	0.00005	0.0001	0.00008	0.0001	0.0002	0.0002	0.0002	0.0002
Total Intake ($\mu\text{g/kg/d}$)	0.0007	0.0003	0.0005	0.0008	0.0006	0.0002	0.0002	0.0003	0.0009	0.0009	0.001	0.002	0.002	0.003	0.003
HQ (unitless)	0.0004	0.0002	0.0003	0.0005	0.0003	0.0001	0.0001	0.0002	0.0005	0.0005	0.0007	0.001	0.001	0.001	0.002

Life stage: Child (3-13 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0003	0.0001	0.0002	0.0003	0.0002	0.00007	0.00008	0.0001	0.0004	0.0004	0.0005	0.001	0.001	0.001	0.001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00006	0.00003	0.00003	0.00006	0.00004	0.00002	0.00002	0.00004	0.00007	0.00006	0.00007	0.0001	0.0001	0.0002	0.0002
Total Intake ($\mu\text{g/kg/d}$)	0.0003	0.0002	0.0002	0.0004	0.0003	0.00009	0.0001	0.0001	0.0004	0.0004	0.0006	0.001	0.001	0.001	0.001
HQ (unitless)	0.0002	0.00009	0.0001	0.0002	0.0002	0.00005	0.00006	0.00008	0.0002	0.0002	0.0003	0.0006	0.0006	0.0007	0.0007

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00006	0.00003	0.00005	0.00007	0.00005	0.00001	0.00002	0.00002	0.00008	0.00008	0.0001	0.0002	0.0002	0.0002	0.0002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00003	0.00002	0.00002	0.00003	0.00002	0.00001	0.00001	0.00002	0.00004	0.00003	0.00004	0.00007	0.00007	0.00008	0.00009
Total Intake ($\mu\text{g/kg/d}$)	0.00009	0.00005	0.00006	0.0001	0.00007	0.00003	0.00003	0.00004	0.0001	0.0001	0.0002	0.0003	0.0003	0.0003	0.0003
HQ (unitless)	0.00005	0.00003	0.00003	0.00006	0.00004	0.00001	0.00002	0.00002	0.00006	0.00006	0.00008	0.0002	0.0002	0.0002	0.0002

Life stage: Adult (18-82 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00004	0.00002	0.00003	0.00005	0.00004	0.00001	0.00001	0.00002	0.00006	0.00006	0.00008	0.0002	0.0002	0.0002	0.0002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00002	0.00001	0.00001	0.00002	0.00002	0.000008	0.000008	0.00001	0.00003	0.00002	0.00003	0.00005	0.00005	0.00006	0.00006
Total Intake ($\mu\text{g/kg/d}$)	0.00007	0.00003	0.00005	0.00007	0.00005	0.00002	0.00002	0.00003	0.00008	0.00008	0.0001	0.0002	0.0002	0.0002	0.0002
HQ (unitless)	0.00004	0.00002	0.00003	0.00004	0.00003	0.00001	0.00001	0.00002	0.00005	0.00004	0.00006	0.0001	0.0001	0.0001	0.0001

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0001	0.00006	0.00008	0.0001	0.0001	0.00003	0.00004	0.00005	0.0002	0.0001	0.0002	0.0004	0.0004	0.0004	0.0004
HQ (unitless)	0.00007	0.00003	0.00005	0.00008	0.00005	0.00002	0.00002	0.00003	0.00008	0.00008	0.0001	0.0002	0.0002	0.0002	0.0002

E-P

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.004	0.006	0.007	0.008	0.002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0004	0.0007	0.0007	0.0007	0.0001
Total Intake ($\mu\text{g/kg/d}$)	0.003	0.003	0.003	0.004	0.004	0.003	0.003	0.004	0.007	0.008	0.009	0.002
HQ (unitless)	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.004	0.004	0.005	0.001

Life stage: Child (3-13 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.002	0.003	0.003	0.004	0.0007
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0005	0.0005	0.0005	0.0001
Total Intake ($\mu\text{g/kg/d}$)	0.001	0.002	0.002	0.002	0.002	0.002	0.001	0.002	0.003	0.004	0.004	0.0008
HQ (unitless)	0.0008	0.0009	0.0009	0.001	0.0009	0.0009	0.0008	0.001	0.002	0.002	0.002	0.0005

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0004	0.0006	0.0007	0.0008	0.0002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00009	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0003	0.0002	0.00005
Total Intake (µg/kg/d)	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0005	0.0009	0.001	0.001	0.0002
HQ (unitless)	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0005	0.0005	0.0006	0.0001

Life stage: Adult (18-82 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0004	0.0005	0.0006	0.0001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00007	0.00008	0.00008	0.00009	0.00009	0.00008	0.00008	0.0001	0.0002	0.0002	0.0002	0.00004
Total Intake (µg/kg/d)	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0004	0.0006	0.0007	0.0008	0.0002
HQ (unitless)	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0004	0.0004	0.00008

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.0005	0.0005	0.0006	0.0006	0.0006	0.0006	0.0005	0.0007	0.001	0.001	0.001	0.0003
HQ (unitless)	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0004	0.0006	0.0007	0.0008	0.0002

F.11 Zinc (Zn)

Equations:

Total Intake (I_{total_as})	=	$I_{ingest\_s} + I_{inhal}$
Average lifetime daily exposure for 82 year life span	=	$(I_{total(0.5-3)} \times 365 \times At_x) + (I_{total(3-13)} \times 365 \times At_x) + (I_{total(13-18)} \times 365 \times At_x) + (I_{total(18-82)} \times 365 \times At_x) / AT_{lifetime}$
HQ	=	$I_{lifetime} / TDI_{adj}$

F.11.1 Scenario 1

Adjusted TDI

	All receptors
Background adjusted tolerable daily intake (TDI_{adj}) ($\mu\text{g}/\text{kg}/\text{d}$)	320

Soil & air concentrations:

R1-15

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil concentration ($\mu\text{g}/\text{g}$) (Appendix C)	2.96	5.06	8.26	6.36	6.10	4.10	2.17	2.12	1.65	0.94	0.74	0.78	0.49	0.6	0.3
Air concentration ($\mu\text{g}/\text{m}^3$) (Appendix D)	0.0009	0.001	0.002	0.002	0.002	0.001	0.0007	0.0007	0.0006	0.0004	0.0003	0.0003	0.0003	0.0003	0.0001

R16-30

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil concentration (µg/g) (Appendix C)	0.27	0.24	0.69	0.57	0.47	0.34	0.25	0.22	0.18	0.16	0.13	0.12	0.15	0.14	0.16
Air concentration (µg/m³) (Appendix D)	0.0001	0.00004	0.00008	0.0001	0.00008	0.0002	0.0002	0.0001	0.0001	0.0001	0.00009	0.00008	0.00009	0.00009	0.00009

R31-45

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil concentration ($\mu\text{g}/\text{g}$) (Appendix C)	0.40	0.43	0.53	0.63	0.71	0.8	0.65	0.81	0.61	0.73	2.51	0.23	0.26	0.31	0.38
Air concentration ($\mu\text{g}/\text{m}^3$) (Appendix D)	0.0002	0.0002	0.0003	0.0003	0.0003	0.0004	0.0003	0.0004	0.0003	0.0003	0.0009	0.0001	0.0001	0.0002	0.0002

R46-60

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil concentration (µg/g) (Appendix C)	0.12	0.12	0.15	0.16	0.19	0.09	0.11	0.5	0.17	0.14	0.12	0.15	0.08	0.07	0.22
Air concentration (µg/m ³) (Appendix D)	0.00007	0.00008	0.00009	0.00009	0.0001	0.00006	0.00007	0.0002	0.00008	0.00007	0.00007	0.00008	0.00005	0.00004	0.0001

R61-75

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil concentration (µg/g) (Appendix C)	0.16	0.21	0.21	0.55	0.13	0.1	0.14	0.32	0.27	0.24	0.17	0.48	0.77	0.78	0.28
Air concentration (µg/m ³) (Appendix D)	0.0001	0.0001	0.0001	0.0002	0.00009	0.00006	0.00007	0.0001	0.0001	0.0002	0.00009	0.0003	0.0004	0.0003	0.0002

R76-D

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil concentration (µg/g) (Appendix C)	0.22	0.11	0.25	0.47	0.33	0.07	0.08	0.08	0.49	0.6	1.16	8.61	8.76	9.14	21.6
Air concentration (µg/m ³) (Appendix D)	0.0001	0.00008	0.0001	0.0002	0.0001	0.00004	0.00004	0.00005	0.0002	0.0002	0.0004	0.002	0.002	0.002	0.005

E-P

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil concentration (µg/g) (Appendix C)	8.52	14.73	12.55	12.4	11.09	10.75	11.55	17.54	16.98	17.77	15.81	1.69
Air concentration (µg/m ³) (Appendix D)	0.002	0.004	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.0006

Intakes & hazard quotients:

R1-15

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.03	0.05	0.08	0.06	0.06	0.04	0.02	0.02	0.02	0.009	0.007	0.007	0.004	0.005	0.003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0006	0.001	0.002	0.001	0.001	0.0009	0.0005	0.0005	0.0004	0.0003	0.0002	0.0002	0.0002	0.0002	0.0001
Total Intake (µg/kg/d)	0.03	0.05	0.08	0.06	0.06	0.04	0.02	0.02	0.02	0.009	0.007	0.007	0.005	0.006	0.003
HQ (unitless)	0.00009	0.0001	0.0002	0.0002	0.0002	0.0001	0.00006	0.00006	0.00005	0.00003	0.00002	0.00002	0.00001	0.00002	0.000009

Life stage: Child (3-13 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.01	0.02	0.03	0.03	0.03	0.02	0.009	0.009	0.007	0.004	0.003	0.003	0.002	0.003	0.001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0004	0.0007	0.001	0.0009	0.0009	0.0006	0.0004	0.0004	0.0003	0.0002	0.0002	0.0002	0.0001	0.0002	0.00007
Total Intake (µg/kg/d)	0.01	0.02	0.04	0.03	0.03	0.02	0.009	0.009	0.007	0.004	0.003	0.003	0.002	0.003	0.001
HQ (unitless)	0.00004	0.00007	0.0001	0.00009	0.00008	0.00006	0.00003	0.00003	0.00002	0.00001	0.00001	0.00001	0.000007	0.000008	0.000004

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.003	0.005	0.007	0.006	0.005	0.004	0.002	0.002	0.001	0.0008	0.0007	0.0007	0.0004	0.0005	0.0003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0002	0.0004	0.0006	0.0005	0.0005	0.0003	0.0002	0.0002	0.0002	0.0001	0.00008	0.00009	0.00007	0.00008	0.00004
Total Intake (µg/kg/d)	0.003	0.005	0.008	0.006	0.006	0.004	0.002	0.002	0.002	0.0009	0.0007	0.0008	0.0005	0.0006	0.0003
HQ (unitless)	0.000009	0.00002	0.00002	0.00002	0.00002	0.00001	0.000007	0.000007	0.000005	0.000003	0.000002	0.000002	0.000002	0.000002	0.0000009

Life stage: Adult (18-82 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.002	0.003	0.005	0.004	0.004	0.003	0.001	0.001	0.001	0.0006	0.0005	0.0005	0.0003	0.0004	0.0002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0002	0.0003	0.0004	0.0003	0.0003	0.0002	0.0001	0.0001	0.0001	0.00007	0.00006	0.00006	0.00005	0.00006	0.00003
Total Intake (µg/kg/d)	0.002	0.004	0.006	0.004	0.004	0.003	0.002	0.002	0.001	0.0007	0.0005	0.0006	0.0004	0.0004	0.0002
HQ (unitless)	0.000006	0.00001	0.00002	0.00001	0.00001	0.000009	0.000005	0.000005	0.000004	0.000002	0.000002	0.000002	0.000001	0.000001	0.0000007

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.004	0.007	0.01	0.009	0.009	0.006	0.003	0.003	0.002	0.001	0.001	0.001	0.0007	0.0009	0.0004
HQ (unitless)	0.00001	0.00002	0.00004	0.00003	0.00003	0.00002	0.00001	0.000009	0.000007	0.000004	0.000003	0.000004	0.000002	0.000003	0.000001

R16-30

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.002	0.002	0.006	0.005	0.004	0.003	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00007	0.00003	0.00006	0.00007	0.00006	0.0002	0.0001	0.0001	0.00009	0.00008	0.00007	0.00006	0.00007	0.00006	0.00007
Total Intake ($\mu\text{g/kg/d}$)	0.003	0.002	0.006	0.005	0.004	0.003	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001
HQ (unitless)	0.000008	0.000007	0.00002	0.00002	0.00001	0.00001	0.000008	0.000006	0.000005	0.000005	0.000004	0.000004	0.000004	0.000004	0.000005

Life stage: Child (3-13 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.001	0.001	0.003	0.002	0.002	0.001	0.001	0.0009	0.0007	0.0007	0.0005	0.0005	0.0006	0.0006	0.0006
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00005	0.00002	0.00004	0.00005	0.00004	0.0001	0.00008	0.00007	0.00006	0.00006	0.00005	0.00004	0.00005	0.00005	0.00005
Total Intake ($\mu\text{g/kg/d}$)	0.001	0.001	0.003	0.002	0.002	0.002	0.001	0.001	0.0008	0.0007	0.0006	0.0005	0.0007	0.0006	0.0007
HQ (unitless)	0.000004	0.000003	0.000009	0.000008	0.000006	0.000005	0.000004	0.000003	0.000003	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0002	0.0002	0.0006	0.0005	0.0004	0.0003	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00003	0.00001	0.00002	0.00003	0.00002	0.00006	0.00004	0.00004	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002
Total Intake ($\mu\text{g/kg/d}$)	0.0003	0.0002	0.0006	0.0005	0.0004	0.0004	0.0003	0.0002	0.0002	0.0002	0.0001	0.0001	0.0002	0.0001	0.0002
HQ (unitless)	0.0000008	0.0000007	0.000002	0.000002	0.000001	0.000001	0.0000008	0.0000007	0.0000006	0.0000005	0.0000004	0.0000004	0.0000005	0.0000005	0.0000005

Life stage: Adult (18-82 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0002	0.0002	0.0004	0.0004	0.0003	0.0002	0.0002	0.0001	0.0001	0.0001	0.00008	0.00008	0.00009	0.00009	0.0001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00002	0.000007	0.00002	0.00002	0.00002	0.00004	0.00003	0.00003	0.00002	0.00002	0.00002	0.00001	0.00002	0.00002	0.00002
Total Intake ($\mu\text{g/kg/d}$)	0.0002	0.0002	0.0005	0.0004	0.0003	0.0003	0.0002	0.0002	0.0001	0.0001	0.0001	0.00009	0.0001	0.0001	0.0001
HQ (unitless)	0.0000006	0.0000005	0.000001	0.000001	0.000001	0.0000008	0.0000006	0.0000005	0.0000004	0.0000004	0.0000003	0.0000003	0.0000003	0.0000003	0.0000004

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0004	0.0003	0.0009	0.0008	0.0007	0.0005	0.0004	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
HQ (unitless)	0.000001	0.000001	0.000003	0.000002	0.000002	0.000002	0.000001	0.000001	0.0000008	0.0000007	0.0000006	0.0000006	0.0000007	0.0000007	0.0000007

R31-45

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.004	0.004	0.005	0.006	0.006	0.007	0.006	0.007	0.006	0.007	0.02	0.002	0.002	0.003	0.003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002	0.0003	0.0002	0.0002	0.0006	0.00009	0.0001	0.0001	0.0001
Total Intake ($\mu\text{g/kg/d}$)	0.004	0.004	0.005	0.006	0.007	0.008	0.006	0.008	0.006	0.007	0.02	0.002	0.003	0.003	0.004
HQ (unitless)	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00007	0.000007	0.000008	0.000009	0.00001

Life stage: Child (3-13 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.01	0.0009	0.001	0.001	0.002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0005	0.00006	0.00007	0.00008	0.00009
Total Intake ($\mu\text{g/kg/d}$)	0.002	0.002	0.002	0.003	0.003	0.004	0.003	0.004	0.003	0.003	0.01	0.001	0.001	0.001	0.002
HQ (unitless)	0.000006	0.000006	0.000007	0.000009	0.00001	0.00001	0.000009	0.00001	0.000008	0.00001	0.00003	0.000003	0.000004	0.000004	0.000005

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0004	0.0004	0.0005	0.0006	0.0006	0.0007	0.0006	0.0007	0.0005	0.0007	0.0022	0.0002	0.0002	0.0003	0.0003
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00006	0.00007	0.00008	0.00009	0.00009	0.0001	0.00008	0.00009	0.00007	0.00008	0.0002	0.00003	0.00004	0.00004	0.00005
Total Intake ($\mu\text{g/kg/d}$)	0.0004	0.0005	0.0006	0.0007	0.0007	0.0008	0.0007	0.0008	0.0006	0.0007	0.002	0.0002	0.0003	0.0003	0.0004
HQ (unitless)	0.000001	0.000001	0.000002	0.000002	0.000002	0.000003	0.000002	0.000003	0.000002	0.000002	0.000008	0.0000007	0.0000009	0.000001	0.000001

Life stage: Adult (18-82 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0003	0.0003	0.0003	0.0004	0.0005	0.0005	0.0004	0.0005	0.0004	0.0005	0.002	0.0001	0.0002	0.0002	0.0002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00004	0.00005	0.00006	0.00007	0.00006	0.00007	0.00006	0.00007	0.00005	0.00006	0.0002	0.00002	0.00003	0.00003	0.00003
Total Intake ($\mu\text{g/kg/d}$)	0.0003	0.0003	0.0004	0.0005	0.0005	0.0006	0.0005	0.0006	0.0004	0.0005	0.002	0.0002	0.0002	0.0002	0.0003
HQ (unitless)	0.0000009	0.000001	0.000001	0.000001	0.000002	0.000002	0.000001	0.000002	0.000001	0.000002	0.000006	0.0000005	0.0000006	0.0000007	0.0000009

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0006	0.0006	0.0008	0.0009	0.001	0.001	0.0009	0.001	0.0009	0.001	0.004	0.0003	0.0004	0.0005	0.0006
HQ (unitless)	0.000002	0.000002	0.000002	0.000003	0.000003	0.000004	0.000003	0.000004	0.000003	0.000003	0.00001	0.000001	0.000001	0.000001	0.000002

R46-60

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.001	0.001	0.001	0.001	0.002	0.0008	0.001	0.005	0.002	0.001	0.001	0.001	0.0007	0.0006	0.002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00005	0.00006	0.00006	0.00007	0.00008	0.00004	0.00005	0.0001	0.00006	0.00005	0.00005	0.00006	0.00003	0.00003	0.0001
Total Intake ($\mu\text{g/kg/d}$)	0.001	0.001	0.001	0.002	0.002	0.0008	0.001	0.005	0.002	0.001	0.001	0.001	0.0007	0.0006	0.002
HQ (unitless)	0.000004	0.000004	0.000004	0.000005	0.000006	0.000003	0.000003	0.00001	0.000005	0.000004	0.000004	0.000004	0.000002	0.000002	0.000007

Life stage: Child (3-13 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0005	0.0005	0.0006	0.0007	0.0008	0.0004	0.0004	0.002	0.0007	0.0006	0.0005	0.0006	0.0003	0.0003	0.0009
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00004	0.00004	0.00005	0.00005	0.00006	0.00003	0.00004	0.0001	0.00004	0.00004	0.00003	0.00004	0.00002	0.00002	0.00007
Total Intake ($\mu\text{g/kg/d}$)	0.0005	0.0005	0.0007	0.0007	0.0009	0.0004	0.0005	0.002	0.0007	0.0006	0.0006	0.0007	0.0003	0.0003	0.001
HQ (unitless)	0.000002	0.000002	0.000002	0.000002	0.000003	0.000001	0.000002	0.000007	0.000002	0.000002	0.000002	0.000002	0.000001	0.000001	0.000003

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0001	0.0001	0.0001	0.0001	0.0002	0.00008	0.0001	0.0004	0.0001	0.0001	0.0001	0.0001	0.00007	0.00006	0.0002
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00002	0.00002	0.00002	0.00003	0.00003	0.00001	0.00002	0.00005	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00004
Total Intake ($\mu\text{g/kg/d}$)	0.0001	0.0001	0.0002	0.0002	0.0002	0.00009	0.0001	0.0005	0.0002	0.0001	0.0001	0.0002	0.00008	0.00007	0.0002
HQ (unitless)	0.0000004	0.0000004	0.0000005	0.0000005	0.0000006	0.0000003	0.0000004	0.000002	0.0000005	0.0000005	0.0000004	0.0000005	0.0000003	0.0000002	0.0000007

Life stage: Adult (18-82 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.00008	0.00008	0.00009	0.0001	0.0001	0.00006	0.00007	0.0003	0.0001	0.00009	0.00008	0.00009	0.00005	0.00004	0.0001
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00001	0.00001	0.00002	0.00002	0.00002	0.00001	0.00001	0.00004	0.00002	0.00001	0.00001	0.00002	0.000009	0.000007	0.00003
Total Intake ($\mu\text{g/kg/d}$)	0.00009	0.00009	0.0001	0.0001	0.0001	0.00007	0.00008	0.0004	0.0001	0.0001	0.00009	0.0001	0.00006	0.00005	0.0002
HQ (unitless)	0.0000003	0.0000003	0.0000003	0.0000004	0.0000005	0.0000002	0.0000003	0.000001	0.0000004	0.0000003	0.0000003	0.0000003	0.0000002	0.0000002	0.0000005

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0002	0.0002	0.0002	0.0002	0.0003	0.0001	0.0002	0.0007	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0003
HQ (unitless)	0.0000006	0.0000006	0.0000007	0.0000008	0.0000009	0.0000004	0.0000005	0.000002	0.0000008	0.0000007	0.0000006	0.0000007	0.0000004	0.0000003	0.000001

R61-75

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.001	0.002	0.002	0.005	0.001	0.0009	0.001	0.003	0.002	0.002	0.002	0.004	0.007	0.007	0.003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00008	0.0001	0.0001	0.0002	0.00006	0.00005	0.00005	0.0001	0.00009	0.0001	0.00006	0.0002	0.0003	0.0002	0.0001
Total Intake (µg/kg/d)	0.002	0.002	0.002	0.005	0.001	0.001	0.001	0.003	0.003	0.002	0.002	0.005	0.007	0.007	0.003
HQ (unitless)	0.000005	0.000006	0.000006	0.00002	0.000004	0.000003	0.000004	0.000009	0.000008	0.000007	0.000005	0.00001	0.00002	0.00002	0.000008

Life stage: Child (3-13 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0007	0.0009	0.0009	0.002	0.0005	0.0004	0.0006	0.001	0.001	0.001	0.0007	0.002	0.003	0.003	0.001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00005	0.00007	0.00007	0.0001	0.00005	0.00003	0.00003	0.00007	0.00007	0.00008	0.00005	0.0001	0.0002	0.0002	0.00009
Total Intake (µg/kg/d)	0.0007	0.0009	0.001	0.002	0.0006	0.0005	0.0006	0.001	0.001	0.001	0.0008	0.002	0.003	0.003	0.001
HQ (unitless)	0.000002	0.000003	0.000003	0.000008	0.000002	0.000001	0.000002	0.000004	0.000004	0.000003	0.000002	0.000007	0.00001	0.00001	0.000004

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0001	0.0002	0.0002	0.0005	0.0001	0.00009	0.0001	0.0003	0.0002	0.0002	0.0002	0.0004	0.0007	0.0007	0.0002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00003	0.00004	0.00004	0.00006	0.00002	0.00002	0.00002	0.00004	0.00003	0.00004	0.00002	0.00007	0.0001	0.00009	0.00004
Total Intake (µg/kg/d)	0.0002	0.0002	0.0002	0.0006	0.0001	0.0001	0.0001	0.0003	0.0003	0.0003	0.0002	0.0005	0.0008	0.0008	0.0003
HQ (unitless)	0.0000005	0.0000007	0.0000007	0.000002	0.0000004	0.0000003	0.0000004	0.000001	0.0000009	0.0000008	0.0000006	0.000002	0.000002	0.000002	0.0000009

Life stage: Adult (18-82 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0001	0.0001	0.0001	0.0004	0.00008	0.00007	0.00009	0.0002	0.0002	0.0002	0.0001	0.0003	0.0005	0.0005	0.0002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00002	0.00003	0.00003	0.00004	0.00002	0.00001	0.00001	0.00003	0.00002	0.00003	0.00002	0.00005	0.00008	0.00006	0.00003
Total Intake (µg/kg/d)	0.0001	0.0002	0.0002	0.0004	0.0001	0.00008	0.0001	0.0002	0.0002	0.0002	0.0001	0.0004	0.0006	0.0006	0.0002
HQ (unitless)	0.0000004	0.0000005	0.0000005	0.000001	0.0000003	0.0000002	0.0000003	0.0000007	0.0000006	0.0000006	0.0000004	0.000001	0.000002	0.000002	0.0000007

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.0002	0.0003	0.0003	0.0008	0.0002	0.0002	0.0002	0.0005	0.0004	0.0004	0.0003	0.0007	0.001	0.001	0.0004
HQ (unitless)	0.0000007	0.000001	0.000001	0.000002	0.0000006	0.0000005	0.0000006	0.000001	0.000001	0.000001	0.0000008	0.000002	0.000004	0.000004	0.000001

R76-D

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.002	0.001	0.002	0.004	0.003	0.0006	0.0007	0.0007	0.004	0.005	0.01	0.08	0.08	0.08	0.2
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0001	0.00006	0.00008	0.0001	0.0001	0.00003	0.00003	0.00003	0.0001	0.0002	0.0003	0.002	0.002	0.002	0.003
Total Intake ($\mu\text{g/kg/d}$)	0.002	0.001	0.002	0.004	0.003	0.0006	0.0008	0.0008	0.005	0.006	0.01	0.08	0.08	0.08	0.2
HQ (unitless)	0.000006	0.000003	0.000007	0.00001	0.00001	0.000002	0.000002	0.000002	0.00001	0.00002	0.00003	0.0002	0.0003	0.0003	0.0006

Life stage: Child (3-13 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0009	0.0005	0.001	0.002	0.001	0.0003	0.0003	0.0003	0.002	0.003	0.005	0.04	0.04	0.04	0.09
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00007	0.00004	0.00006	0.0001	0.00008	0.00002	0.00002	0.00002	0.0001	0.0001	0.0002	0.001	0.001	0.001	0.002
Total Intake ($\mu\text{g/kg/d}$)	0.001	0.0005	0.001	0.002	0.001	0.0003	0.0004	0.0004	0.002	0.003	0.005	0.04	0.04	0.04	0.09
HQ (unitless)	0.000003	0.000002	0.000003	0.000006	0.000005	0.0000009	0.000001	0.000001	0.000007	0.000008	0.00002	0.0001	0.0001	0.0001	0.0003

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0002	0.0001	0.0002	0.0004	0.0003	0.00006	0.00007	0.00007	0.0004	0.0005	0.001	0.008	0.008	0.008	0.02
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00004	0.00002	0.00003	0.00005	0.00004	0.00001	0.00001	0.00001	0.00005	0.00006	0.0001	0.0006	0.0006	0.0006	0.001
Total Intake ($\mu\text{g/kg/d}$)	0.0002	0.0001	0.0002	0.0005	0.0003	0.00007	0.00008	0.00009	0.0005	0.0006	0.001	0.008	0.008	0.009	0.02
HQ (unitless)	0.0000007	0.0000004	0.0000008	0.000001	0.000001	0.0000002	0.0000003	0.0000003	0.000002	0.000002	0.000004	0.00003	0.00003	0.00003	0.00006

Life stage: Adult (18-82 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0001	0.00007	0.0002	0.0003	0.0002	0.00004	0.00005	0.00005	0.0003	0.0004	0.0007	0.006	0.006	0.006	0.01
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00003	0.00002	0.00002	0.00004	0.00003	0.000007	0.000009	0.000009	0.00004	0.00005	0.00008	0.0004	0.0004	0.0005	0.0009
Total Intake ($\mu\text{g/kg/d}$)	0.0002	0.00009	0.0002	0.0003	0.0002	0.00005	0.00006	0.00006	0.0004	0.0004	0.0008	0.006	0.006	0.006	0.01
HQ (unitless)	0.0000005	0.0000003	0.0000006	0.000001	0.0000008	0.0000002	0.0000002	0.0000002	0.000001	0.000001	0.000003	0.00002	0.00002	0.00002	0.00005

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0003	0.0002	0.0004	0.0007	0.0005	0.0001	0.0001	0.0001	0.0007	0.0009	0.002	0.01	0.01	0.01	0.03
HQ (unitless)	0.000001	0.0000005	0.000001	0.000002	0.000002	0.0000003	0.0000004	0.0000004	0.000002	0.000003	0.000005	0.00004	0.00004	0.00004	0.00009

E-P

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.08	0.13	0.11	0.11	0.1	0.1	0.1	0.16	0.15	0.16	0.14	0.02
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.002	0.003	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.0005
Total Intake ($\mu\text{g/kg/d}$)	0.08	0.14	0.12	0.12	0.1	0.1	0.11	0.16	0.16	0.16	0.15	0.02
HQ (unitless)	0.0002	0.0004	0.0004	0.0004	0.0003	0.0003	0.0003	0.0005	0.0005	0.0005	0.0005	0.00005

Life stage: Child (3-13 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.04	0.06	0.05	0.05	0.05	0.04	0.05	0.07	0.07	0.07	0.07	0.007
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.001	0.002	0.002	0.002	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.0003
Total Intake ($\mu\text{g/kg/d}$)	0.04	0.06	0.05	0.05	0.05	0.05	0.05	0.08	0.07	0.08	0.07	0.007
HQ (unitless)	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.00002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.008	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0006	0.001	0.0008	0.0008	0.0008	0.0007	0.0008	0.001	0.001	0.001	0.001	0.0002
Total Intake (µg/kg/d)	0.008	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.002
HQ (unitless)	0.00003	0.00004	0.00004	0.00004	0.00003	0.00003	0.00003	0.00005	0.00005	0.00005	0.00005	0.000005

Life stage: Adult (18-82 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.005	0.009	0.008	0.008	0.007	0.007	0.007	0.01	0.01	0.01	0.01	0.001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0004	0.0007	0.0006	0.0006	0.0005	0.0005	0.0006	0.0008	0.0008	0.0008	0.0007	0.0001
Total Intake (µg/kg/d)	0.006	0.01	0.009	0.009	0.008	0.007	0.008	0.01	0.01	0.01	0.01	0.001
HQ (unitless)	0.00002	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00004	0.00004	0.00004	0.00003	0.000004

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.002
HQ (unitless)	0.00004	0.00006	0.00006	0.00005	0.00005	0.00005	0.00005	0.00008	0.00007	0.00008	0.00007	0.000008

F.11.2 Scenario 2

Adjusted TDI

	All receptors
Background adjusted tolerable daily intake (TDI _{adj}) (µg/kg/d)	320

Soil & air concentrations:

R1-15

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil concentration (µg/g) (Appendix C)	3.96	7.31	10.61	19.4	7.56	3.76	2.29	2.25	1.8	1.1	0.9	0.89	0.49	0.52	0.29
Air concentration (µg/m ³) (Appendix D)	0.002	0.003	0.003	0.005	0.003	0.002	0.001	0.001	0.001	0.0006	0.0006	0.0005	0.0004	0.0005	0.0003

R16-30

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil concentration (µg/g) (Appendix C)	0.24	0.2	0.47	0.58	0.49	0.38	0.29	0.27	0.22	0.2	0.19	0.18	0.2	0.22	0.24
Air concentration (µg/m ³) (Appendix D)	0.0002	0.0001	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002

R31-45

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil concentration (µg/g) (Appendix C)	0.43	0.46	0.55	0.64	0.83	0.92	0.79	0.94	0.76	0.89	2.57	0.31	0.36	0.43	0.52
Air concentration (µg/m ³) (Appendix D)	0.0004	0.0004	0.0004	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0006	0.001	0.0003	0.0003	0.0004

R46-60

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil concentration (µg/g) (Appendix C)	0.16	0.17	0.23	0.25	0.27	0.12	0.15	0.62	0.21	0.21	0.23	0.24	0.1	0.11	0.27
Air concentration (µg/m ³) (Appendix D)	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0004	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0003

R61-75

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil concentration (µg/g) (Appendix C)	0.19	0.27	0.28	0.62	0.15	0.15	0.18	0.41	0.37	0.28	0.18	0.53	0.74	0.9	0.33
Air concentration (µg/m ³) (Appendix D)	0.0002	0.0003	0.0004	0.0005	0.0002	0.0002	0.0001	0.0003	0.0003	0.0003	0.0002	0.0004	0.0006	0.0005	0.0004

R76-D

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil concentration (µg/g) (Appendix C)	0.28	0.14	0.32	0.56	0.41	0.1	0.11	0.15	0.57	0.66	1.3	7.05	7.12	8.66	12.23
Air concentration (µg/m ³) (Appendix D)	0.0003	0.0002	0.0002	0.0004	0.0003	0.0001	0.0001	0.0002	0.0005	0.0004	0.0008	0.003	0.003	0.003	0.004

E-P

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil concentration (µg/g) (Appendix C)	17.48	33.28	53.92	83.60	118.5	58.35	26.51	70.84	20.42	22.40	25.26	1.85
Air concentration (µg/m ³) (Appendix D)	0.005	0.007	0.01	0.01	0.02	0.01	0.006	0.01	0.006	0.007	0.007	0.001

Intakes & hazard quotients:

R1-15

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.04	0.07	0.1	0.18	0.07	0.03	0.02	0.02	0.02	0.01	0.008	0.008	0.004	0.005	0.003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.002	0.002	0.002	0.003	0.002	0.001	0.0008	0.0009	0.0008	0.0005	0.0004	0.0004	0.0003	0.0003	0.0002
Total Intake (µg/kg/d)	0.04	0.07	0.1	0.18	0.07	0.04	0.02	0.02	0.02	0.01	0.009	0.008	0.005	0.005	0.003
HQ (unitless)	0.0001	0.0002	0.0003	0.0006	0.0002	0.0001	0.00007	0.00007	0.00005	0.00003	0.00003	0.00003	0.00001	0.00002	0.000009

Life stage: Child (3-13 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.02	0.03	0.04	0.08	0.03	0.02	0.01	0.009	0.007	0.005	0.004	0.004	0.002	0.002	0.001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.001	0.001	0.001	0.002	0.001	0.0008	0.0005	0.0006	0.0005	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002
Total Intake (µg/kg/d)	0.02	0.03	0.05	0.08	0.03	0.02	0.01	0.01	0.008	0.005	0.004	0.004	0.002	0.002	0.001
HQ (unitless)	0.00006	0.0001	0.0001	0.0003	0.0001	0.00005	0.00003	0.00003	0.00003	0.00002	0.00001	0.00001	0.000007	0.000008	0.000004

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.004	0.007	0.009	0.02	0.007	0.003	0.002	0.002	0.002	0.001	0.0008	0.0008	0.0004	0.0005	0.0003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0006	0.0007	0.0008	0.001	0.0007	0.0004	0.0003	0.0003	0.0003	0.0002	0.0002	0.0001	0.0001	0.0001	0.00009
Total Intake (µg/kg/d)	0.004	0.007	0.01	0.02	0.007	0.004	0.002	0.002	0.002	0.001	0.001	0.0009	0.0006	0.0006	0.0003
HQ (unitless)	0.00001	0.00002	0.00003	0.00006	0.00002	0.00001	0.000007	0.000007	0.000006	0.000004	0.000003	0.000003	0.000002	0.000002	0.000001

Life stage: Adult (18-82 yrs)	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.003	0.005	0.007	0.01	0.005	0.002	0.001	0.001	0.001	0.0007	0.0006	0.0006	0.0003	0.0003	0.0002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0004	0.0005	0.0005	0.0009	0.0005	0.0003	0.0002	0.0002	0.0002	0.0001	0.0001	0.00009	0.00008	0.00009	0.00006
Total Intake (µg/kg/d)	0.003	0.005	0.007	0.01	0.005	0.003	0.002	0.002	0.001	0.0008	0.0007	0.0007	0.0004	0.0004	0.0002
HQ (unitless)	0.000009	0.00002	0.00002	0.00004	0.00002	0.000008	0.000005	0.000005	0.000004	0.000003	0.000002	0.000002	0.000001	0.000001	0.0000008

	Receptor ID														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.006	0.01	0.01	0.03	0.01	0.005	0.003	0.003	0.003	0.002	0.001	0.001	0.0008	0.0008	0.0005
HQ (unitless)	0.00002	0.00003	0.00005	0.00008	0.00003	0.00002	0.00001	0.00001	0.000008	0.000005	0.000004	0.000004	0.000002	0.000003	0.000001

R16-30

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.002	0.002	0.004	0.005	0.004	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0002	0.00008	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
Total Intake (µg/kg/d)	0.002	0.002	0.004	0.005	0.005	0.004	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.002
HQ (unitless)	0.000007	0.000006	0.00001	0.00002	0.00001	0.00001	0.000009	0.000008	0.000007	0.000006	0.000006	0.000006	0.000006	0.000007	0.000007

Life stage: Child (3-13 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.001	0.0008	0.002	0.002	0.002	0.002	0.001	0.001	0.0009	0.0008	0.0008	0.0008	0.0008	0.0009	0.001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0001	0.00005	0.0001	0.0001	0.0001	0.0002	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Total Intake (µg/kg/d)	0.001	0.0009	0.002	0.003	0.002	0.002	0.001	0.001	0.001	0.001	0.0009	0.0009	0.0009	0.001	0.001
HQ (unitless)	0.000003	0.000003	0.000006	0.000008	0.000007	0.000006	0.000004	0.000004	0.000003	0.000003	0.000003	0.000003	0.000003	0.000003	0.000003

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0002	0.0002	0.0004	0.0005	0.0004	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00006	0.00003	0.00005	0.00007	0.00006	0.00009	0.00007	0.00008	0.00007	0.00006	0.00007	0.00006	0.00006	0.00006	0.00006
Total Intake (µg/kg/d)	0.0003	0.0002	0.0005	0.0006	0.0005	0.0004	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003
HQ (unitless)	0.0000008	0.0000006	0.000001	0.000002	0.000002	0.000001	0.000001	0.000001	0.0000008	0.0000008	0.0000007	0.0000007	0.0000007	0.0000008	0.0000009

Life stage: Adult (18-82 yrs)	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0002	0.0001	0.0003	0.0004	0.0003	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00004	0.00002	0.00004	0.00005	0.00004	0.00006	0.00005	0.00006	0.00005	0.00005	0.00005	0.00004	0.00004	0.00004	0.00004
Total Intake (µg/kg/d)	0.0002	0.0001	0.0003	0.0004	0.0004	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
HQ (unitless)	0.0000006	0.0000005	0.000001	0.000001	0.000001	0.000001	0.0000007	0.0000007	0.0000006	0.0000005	0.0000005	0.0000005	0.0000005	0.0000006	0.0000006

	Receptor ID														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.0004	0.0003	0.0007	0.0008	0.0007	0.0006	0.0005	0.0004	0.0004	0.0003	0.0003	0.0003	0.0003	0.0004	0.0004
HQ (unitless)	0.000001	0.0000009	0.000002	0.000003	0.000002	0.000002	0.000001	0.000001	0.000001	0.000001	0.000001	0.0000009	0.000001	0.000001	0.000001

R31-45

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.004	0.004	0.005	0.006	0.008	0.008	0.007	0.009	0.007	0.008	0.02	0.003	0.003	0.004	0.005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0003	0.0003	0.0003	0.0004	0.0004	0.0004	0.0003	0.0004	0.0004	0.0004	0.0007	0.0002	0.0002	0.0003	0.0003
Total Intake (µg/kg/d)	0.004	0.004	0.005	0.006	0.008	0.009	0.007	0.009	0.007	0.009	0.02	0.003	0.004	0.004	0.005
HQ (unitless)	0.00001	0.00001	0.00002	0.00002	0.00002	0.00003	0.00002	0.00003	0.00002	0.00003	0.00008	0.000009	0.00001	0.00001	0.00002

Life stage: Child (3-13 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.002	0.002	0.002	0.003	0.003	0.004	0.003	0.004	0.003	0.004	0.01	0.001	0.002	0.002	0.002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0002	0.0003	0.0003	0.0003	0.0005	0.0001	0.0002	0.0002	0.0002
Total Intake (µg/kg/d)	0.002	0.002	0.003	0.003	0.004	0.004	0.004	0.004	0.003	0.004	0.01	0.001	0.002	0.002	0.002
HQ (unitless)	0.000006	0.000007	0.000008	0.000009	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00003	0.000004	0.000005	0.000006	0.000007

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0004	0.0004	0.0005	0.0006	0.0007	0.0008	0.0007	0.0008	0.0007	0.0008	0.002	0.0003	0.0003	0.0004	0.0005
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0003	0.00007	0.00008	0.0001	0.0001
Total Intake (µg/kg/d)	0.0005	0.0005	0.0006	0.0007	0.0009	0.001	0.0008	0.001	0.0008	0.001	0.003	0.0003	0.0004	0.0005	0.0006
HQ (unitless)	0.000002	0.000002	0.000002	0.000002	0.000003	0.000003	0.000003	0.000003	0.000003	0.000003	0.000008	0.000001	0.000001	0.000002	0.000002

Life stage: Adult (18-82 yrs)	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0003	0.0003	0.0004	0.0004	0.0005	0.0006	0.0005	0.0006	0.0005	0.0006	0.002	0.0002	0.0002	0.0003	0.0003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00007	0.00007	0.00008	0.0001	0.0001	0.0001	0.00009	0.0001	0.0001	0.0001	0.0002	0.00005	0.00006	0.00007	0.00008
Total Intake (µg/kg/d)	0.0003	0.0004	0.0004	0.0005	0.0006	0.0007	0.0006	0.0007	0.0006	0.0007	0.002	0.0002	0.0003	0.0003	0.0004
HQ (unitless)	0.000001	0.000001	0.000001	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	0.000006	0.0000008	0.0000009	0.000001	0.000001

	Receptor ID														
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.0007	0.0007	0.0008	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.004	0.0005	0.0006	0.0007	0.0008
HQ (unitless)	0.000002	0.000002	0.000003	0.000003	0.000004	0.000004	0.000004	0.000004	0.000004	0.000004	0.00001	0.000002	0.000002	0.000002	0.000003

R46-60

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.001	0.002	0.002	0.002	0.002	0.001	0.001	0.006	0.002	0.002	0.002	0.002	0.0009	0.001	0.002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0001	0.0002	0.0001	0.0001	0.0002	0.0001	0.0001	0.0003	0.0001	0.0001	0.0002	0.0002	0.00009	0.00009	0.0002
Total Intake (µg/kg/d)	0.002	0.002	0.002	0.002	0.003	0.001	0.001	0.006	0.002	0.002	0.002	0.002	0.001	0.001	0.003
HQ (unitless)	0.000005	0.000005	0.000007	0.000007	0.000008	0.000004	0.000005	0.00002	0.000006	0.000007	0.000007	0.000007	0.000003	0.000003	0.000009

Life stage: Child (3-13 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0007	0.0007	0.001	0.001	0.001	0.0005	0.0006	0.003	0.0009	0.0009	0.0009	0.001	0.0004	0.0004	0.001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0001	0.0001	0.0001	0.0001	0.0001	0.00009	0.0001	0.0002	0.00009	0.0001	0.0001	0.0001	0.00006	0.00006	0.0002
Total Intake (µg/kg/d)	0.0008	0.0008	0.001	0.001	0.001	0.0006	0.0007	0.003	0.0009	0.001	0.001	0.001	0.0005	0.0005	0.001
HQ (unitless)	0.000002	0.000003	0.000003	0.000004	0.000004	0.000002	0.000002	0.000009	0.000003	0.000003	0.000003	0.000004	0.000002	0.000002	0.000004

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0001	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0006	0.0002	0.0002	0.0002	0.0002	0.00009	0.00009	0.0002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00005	0.00006	0.00005	0.00005	0.00006	0.00005	0.00005	0.0001	0.00005	0.00005	0.00006	0.00006	0.00003	0.00003	0.00009
Total Intake (µg/kg/d)	0.0002	0.0002	0.0003	0.0003	0.0003	0.0002	0.0002	0.0007	0.0002	0.0002	0.0003	0.0003	0.0001	0.0001	0.0003
HQ (unitless)	0.0000006	0.0000007	0.0000008	0.0000009	0.0000009	0.0000005	0.0000006	0.000002	0.0000007	0.0000008	0.0000008	0.0000009	0.0000004	0.0000004	0.000001

Life stage: Adult (18-82 yrs)	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0001	0.0001	0.0001	0.0002	0.0002	0.00008	0.0001	0.0004	0.0001	0.0001	0.0001	0.0002	0.00007	0.00007	0.0002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00004	0.00004	0.00004	0.00004	0.00004	0.00003	0.00004	0.00008	0.00003	0.00004	0.00004	0.00005	0.00002	0.00002	0.00006
Total Intake (µg/kg/d)	0.0001	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0005	0.0002	0.0002	0.0002	0.0002	0.00009	0.00009	0.0002
HQ (unitless)	0.0000004	0.0000005	0.0000006	0.0000006	0.0000007	0.0000003	0.0000004	0.000002	0.0000005	0.0000005	0.0000006	0.0000006	0.0000003	0.0000003	0.0000008

	Receptor ID														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.0003	0.0003	0.0004	0.0004	0.0004	0.0002	0.0002	0.0009	0.0003	0.0003	0.0004	0.0004	0.0002	0.0002	0.0005
HQ (unitless)	0.0000008	0.0000009	0.000001	0.000001	0.000001	0.0000006	0.0000008	0.000003	0.000001	0.000001	0.000001	0.000001	0.0000005	0.0000005	0.000001

R61-75

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.002	0.002	0.003	0.006	0.001	0.001	0.002	0.004	0.003	0.003	0.002	0.005	0.007	0.008	0.003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0002	0.0002	0.0003	0.0003	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0003	0.0004	0.0004	0.0003
Total Intake (µg/kg/d)	0.002	0.003	0.003	0.006	0.002	0.001	0.002	0.004	0.004	0.003	0.002	0.005	0.007	0.009	0.003
HQ (unitless)	0.000006	0.000008	0.000009	0.00002	0.000005	0.000004	0.000005	0.00001	0.00001	0.000009	0.000006	0.00002	0.00002	0.00003	0.00001

Life stage: Child (3-13 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0008	0.001	0.001	0.003	0.0006	0.0006	0.0008	0.002	0.002	0.001	0.0007	0.002	0.003	0.004	0.001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0001	0.0002	0.0002	0.0002	0.0001	0.00008	0.00007	0.0002	0.0002	0.0001	0.0001	0.0002	0.0003	0.0003	0.0002
Total Intake (µg/kg/d)	0.0009	0.001	0.001	0.003	0.0007	0.0007	0.0008	0.002	0.002	0.001	0.0009	0.002	0.003	0.004	0.002
HQ (unitless)	0.000003	0.000004	0.000004	0.000009	0.000002	0.000002	0.000003	0.000006	0.000005	0.000004	0.000003	0.000008	0.00001	0.00001	0.000005

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0002	0.0002	0.0003	0.0006	0.0001	0.0001	0.0002	0.0004	0.0003	0.0003	0.0002	0.0005	0.0007	0.0008	0.0003
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00006	0.00009	0.0001	0.0001	0.00005	0.00004	0.00004	0.00008	0.00008	0.00007	0.00006	0.0001	0.0002	0.0001	0.0001
Total Intake (µg/kg/d)	0.0002	0.0003	0.0004	0.0007	0.0002	0.0002	0.0002	0.0004	0.0004	0.0003	0.0002	0.0006	0.0008	0.0009	0.0004
HQ (unitless)	0.0000007	0.000001	0.000001	0.000002	0.0000006	0.0000005	0.0000006	0.000001	0.000001	0.000001	0.0000007	0.000002	0.000003	0.000003	0.000001

Life stage: Adult (18-82 yrs)	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.0001	0.0002	0.0002	0.0004	0.0001	0.00009	0.0001	0.0003	0.0002	0.0002	0.0001	0.0003	0.0005	0.0006	0.0002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.00004	0.00006	0.00007	0.00009	0.00004	0.00003	0.00003	0.00006	0.00006	0.00005	0.00004	0.00008	0.0001	0.0001	0.00008
Total Intake (µg/kg/d)	0.0002	0.0002	0.0003	0.0005	0.0001	0.0001	0.0001	0.0003	0.0003	0.0002	0.0002	0.0004	0.0006	0.0007	0.0003
HQ (unitless)	0.0000005	0.0000007	0.0000008	0.000002	0.0000004	0.0000004	0.0000005	0.000001	0.0000009	0.0000007	0.0000005	0.000001	0.000002	0.000002	0.0000009

	Receptor ID														
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Lifetime TWA daily intake ($I_{lifetime}$) ($\mu\text{g/kg/d}$)	0.0003	0.0004	0.0005	0.0009	0.0003	0.0002	0.0003	0.0006	0.0006	0.0004	0.0003	0.0008	0.001	0.001	0.0005
HQ (unitless)	0.000001	0.000001	0.000001	0.000003	0.0000008	0.0000007	0.0000009	0.000002	0.000002	0.000001	0.0000009	0.000003	0.000004	0.000004	0.000002

R76-D

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.003	0.001	0.003	0.005	0.004	0.0009	0.001	0.001	0.005	0.006	0.01	0.06	0.06	0.08	0.11
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0002	0.0001	0.0002	0.0003	0.0002	0.0001	0.00008	0.0001	0.0003	0.0003	0.0006	0.002	0.002	0.002	0.003
Total Intake ($\mu\text{g/kg/d}$)	0.003	0.001	0.003	0.005	0.004	0.001	0.001	0.002	0.006	0.006	0.01	0.07	0.07	0.08	0.11
HQ (unitless)	0.000009	0.000004	0.000001	0.000002	0.000001	0.000003	0.000003	0.000005	0.00002	0.00002	0.00004	0.0002	0.0002	0.0003	0.0004

Life stage: Child (3-13 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.001	0.0006	0.001	0.002	0.002	0.0004	0.0005	0.0006	0.002	0.003	0.005	0.03	0.03	0.04	0.05
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.0002	0.00009	0.0001	0.0002	0.0002	0.00008	0.00006	0.0001	0.0002	0.0002	0.0004	0.001	0.001	0.002	0.002
Total Intake ($\mu\text{g/kg/d}$)	0.001	0.0007	0.001	0.003	0.002	0.0005	0.0005	0.0007	0.003	0.003	0.006	0.03	0.03	0.04	0.05
HQ (unitless)	0.000004	0.000002	0.000005	0.000008	0.000006	0.000002	0.000002	0.000002	0.000008	0.000009	0.00002	0.0001	0.0001	0.0001	0.0002

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0003	0.0001	0.0003	0.0005	0.0004	0.00009	0.0001	0.0001	0.0005	0.0006	0.001	0.006	0.006	0.008	0.01
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00009	0.00005	0.00007	0.0001	0.00009	0.00004	0.00003	0.00005	0.0001	0.0001	0.0002	0.0007	0.0007	0.0008	0.001
Total Intake ($\mu\text{g/kg/d}$)	0.0003	0.0002	0.0004	0.0006	0.0005	0.0001	0.0001	0.0002	0.0006	0.0007	0.001	0.007	0.007	0.009	0.01
HQ (unitless)	0.000001	0.0000005	0.000001	0.000002	0.000001	0.0000004	0.0000004	0.0000006	0.000002	0.000002	0.000004	0.00002	0.00002	0.00003	0.00004

Life stage: Adult (18-82 yrs)	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.0002	0.00009	0.0002	0.0004	0.0003	0.00007	0.00007	0.0001	0.0004	0.0004	0.0008	0.005	0.005	0.006	0.008
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.00007	0.00004	0.00005	0.00008	0.00006	0.00003	0.00002	0.00004	0.00009	0.00008	0.0001	0.0005	0.0005	0.0006	0.0007
Total Intake ($\mu\text{g/kg/d}$)	0.0002	0.0001	0.0003	0.0004	0.0003	0.00009	0.00009	0.0001	0.0005	0.0005	0.001	0.005	0.005	0.006	0.009
HQ (unitless)	0.0000008	0.0000004	0.0000008	0.000001	0.000001	0.0000003	0.0000003	0.0000004	0.000001	0.000002	0.000003	0.00002	0.00002	0.00002	0.00003

	Receptor ID														
	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
Lifetime TWA daily intake (I_{lifetime}) ($\mu\text{g/kg/d}$)	0.0005	0.0002	0.0005	0.0009	0.0006	0.0002	0.0002	0.0003	0.0009	0.001	0.002	0.01	0.01	0.01	0.02
HQ (unitless)	0.000001	0.0000007	0.000002	0.000003	0.000002	0.0000005	0.0000005	0.0000008	0.000003	0.000003	0.000006	0.00003	0.00003	0.00004	0.00005

E-P

Life stage: Infant/ Toddler (0.5-3 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.16	0.3	0.49	0.76	1.08	0.53	0.24	0.64	0.19	0.2	0.23	0.02
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.003	0.005	0.008	0.01	0.01	0.008	0.004	0.009	0.005	0.005	0.005	0.0007
Total Intake ($\mu\text{g/kg/d}$)	0.16	0.31	0.5	0.77	1.09	0.54	0.25	0.65	0.19	0.21	0.23	0.02
HQ (unitless)	0.0005	0.001	0.002	0.002	0.003	0.002	0.0008	0.002	0.0006	0.0007	0.0007	0.00005

Life stage: Child (3-13 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I_{ingest_s}) ($\mu\text{g/kg/d}$)	0.07	0.14	0.22	0.35	0.49	0.24	0.11	0.3	0.09	0.09	0.11	0.008
Inhalation Intake (I_{inhal}) ($\mu\text{g/kg/d}$)	0.002	0.004	0.005	0.007	0.009	0.006	0.003	0.006	0.003	0.003	0.003	0.0005
Total Intake ($\mu\text{g/kg/d}$)	0.08	0.14	0.23	0.36	0.5	0.25	0.11	0.3	0.09	0.1	0.11	0.008
HQ (unitless)	0.0002	0.0004	0.0007	0.001	0.002	0.0008	0.0004	0.0009	0.0003	0.0003	0.0003	0.00003

Life stage: Adolescent/ Adult (13-18 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.02	0.03	0.05	0.07	0.11	0.05	0.02	0.06	0.02	0.02	0.02	0.002
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.001	0.002	0.003	0.004	0.005	0.003	0.002	0.003	0.002	0.002	0.002	0.0003
Total Intake (µg/kg/d)	0.02	0.03	0.05	0.08	0.11	0.06	0.03	0.07	0.02	0.02	0.02	0.002
HQ (unitless)	0.00005	0.0001	0.0002	0.0002	0.0003	0.0002	0.00008	0.0002	0.00006	0.00007	0.00008	0.000006

Life stage: Adult (18-82 yrs)	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Soil Ingestion (I _{ingest_s}) (µg/kg/d)	0.01	0.02	0.03	0.05	0.08	0.04	0.02	0.05	0.01	0.01	0.02	0.001
Inhalation Intake (I _{inhal}) (µg/kg/d)	0.0009	0.001	0.002	0.003	0.003	0.002	0.001	0.002	0.001	0.001	0.001	0.0002
Total Intake (µg/kg/d)	0.01	0.02	0.04	0.06	0.08	0.04	0.02	0.05	0.01	0.02	0.02	0.001
HQ (unitless)	0.00004	0.00007	0.0001	0.0002	0.0002	0.0001	0.00006	0.0001	0.00004	0.00005	0.00005	0.000004

	Receptor ID											
	E	F	G	H	I	J	K	L	M	N	O	P
Lifetime TWA daily intake (I _{lifetime}) (µg/kg/d)	0.02	0.05	0.07	0.12	0.16	0.08	0.04	0.1	0.03	0.03	0.04	0.003
HQ (unitless)	0.00008	0.0001	0.0002	0.0004	0.0005	0.0003	0.0001	0.0003	0.00009	0.0001	0.0001	0.000009

F.12 Chronic combined HI

District/Area	D5a	D5a	D5a	D5a	D5a	D5a	D5b	D5b	D5b	D5b	D5b	Other - close	D4	D2	Other- far
Receptor ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
HI Scenario 1 (existing North Mine)	0.003	0.006	0.013	0.009	0.01	0.007	0.003	0.002	0.002	0.0008	0.0006	0.0006	0.0004	0.0004	0.0002
HI Scenario 2 (Proposed North Mine)	0.004	0.007	0.011	0.024	0.008	0.003	0.002	0.002	0.002	0.001	0.0008	0.0008	0.0005	0.0005	0.0003

District/Area	Other- far	Other- far	Other- far	Other- far	Other- far	D4	D4	D3	D3	D3	D1	D7	Other - near Rasp	D7	D6
Receptor ID	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
HI Scenario 1 (existing North Mine)	0.0002	0.0002	0.0005	0.0004	0.0003	0.0003	0.0002	0.0002	0.0001	0.0001	0.0001	0.00009	0.0001	0.0001	0.0001
HI Scenario 2 (Proposed North Mine)	0.0002	0.0002	0.0004	0.0005	0.0004	0.0004	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002

District/Area	Other - near Rasp				Other - close				D5b	D5b	Other - close	D6	D6	D6	D6
Receptor ID	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
HI Scenario 1 (existing North Mine)	0.0003	0.0003	0.0004	0.0005	0.0006	0.0007	0.0005	0.0007	0.0005	0.0006	0.003	0.0002	0.0002	0.0002	0.0003
HI Scenario 2 (Proposed North Mine)	0.0004	0.0005	0.0005	0.0006	0.0008	0.0008	0.0007	0.0008	0.0007	0.0008	0.002	0.0003	0.0003	0.0004	0.0005

District/Area	D7	D7	D7	D6	D6	D8	D7	D9	D9	D10	D10	D6	D8	D8	D2
Receptor ID	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
HI Scenario 1 (existing North Mine)	0.00009	0.00009	0.0001	0.0001	0.0001	0.00006	0.00008	0.0004	0.0001	0.0001	0.0001	0.0001	0.00006	0.00005	0.0002
HI Scenario 2 (Proposed North Mine)	0.0002	0.0002	0.0002	0.0002	0.0003	0.0001	0.0002	0.0006	0.0002	0.0002	0.0002	0.0003	0.0001	0.0001	0.0003

District/Area	D1	D3	D3	D9	D1	D7	D10	D6	D6	D4	Other- far	Other - near Rasp	Other - close	D2	
Receptor ID	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
HI Scenario 1 (existing North Mine)	0.0001	0.0002	0.0002	0.0004	0.0001	0.00007	0.0001	0.0002	0.0002	0.0002	0.0001	0.0004	0.0006	0.0006	0.0002
HI Scenario 2 (Proposed North Mine)	0.0002	0.0003	0.0003	0.0006	0.0002	0.0002	0.0002	0.0004	0.0004	0.0003	0.0002	0.0005	0.0007	0.0008	0.0004

District/Area	D3	D1	D6	D9	D9	D8	D10	D10	D5b	D5b	D9	PBH Residences			
Receptor ID	76	77	78	79	80	81	82	83	84	85	86	A	B	C	D
HI Scenario 1 (existing North Mine)	0.0002	0.00009	0.0002	0.0004	0.0003	0.00004	0.00006	0.00006	0.0004	0.0005	0.001	0.02	0.02	0.02	0.05
HI Scenario 2 (Proposed North Mine)	0.0003	0.0002	0.0003	0.0005	0.0004	0.0001	0.0001	0.0002	0.0006	0.0006	0.001	0.007	0.007	0.009	0.01

District/Area	PBH Residences											
Receptor ID	E	F	G	H	I	J	K	L	M	N	O	P
HI Scenario 1 (existing North Mine)	0.01	0.03	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.02	0.002
HI Scenario 2 (Proposed North Mine)	0.02	0.04	0.07	0.11	0.16	0.08	0.03	0.09	0.02	0.02	0.02	0.002

Appendix G: Calculated cancer risks

District/ Area	Receptor	Annual avg Cd in PM ₁₀ (µg/m ³)		Cd Unit risk [µg/m ³] ⁻¹	Cd cancer risk		Annual avg Ni in PM ₁₀ (µg/m ³)		Ni Unit risk [µg/m ³] ⁻¹	Ni cancer risk		Summed cancer risk (Cd & Ni)	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5a	1	0.0000008	0.00002	0.0018	1.4 x 10 ⁻⁹	4.5 x 10 ⁻⁸	0.00001	0.0006	0.00038	4.0 x 10 ⁻⁹	2.1 x 10 ⁻⁷	5.4 x 10 ⁻⁹	2.5 x 10 ⁻⁷
D5a	2	0.000001	0.00003	0.0018	2.5 x 10 ⁻⁹	5.6 x 10 ⁻⁸	0.00002	0.0006	0.00038	8.2 x 10 ⁻⁹	2.5 x 10 ⁻⁷	1.1 x 10 ⁻⁸	3.0 x 10 ⁻⁷
D5a	3	0.000003	0.00003	0.0018	4.7 x 10 ⁻⁹	4.8 x 10 ⁻⁸	0.00004	0.0005	0.00038	1.6 x 10 ⁻⁸	1.9 x 10 ⁻⁷	2.1 x 10 ⁻⁸	2.4 x 10 ⁻⁷
D5a	4	0.000002	0.00004	0.0018	3.1 x 10 ⁻⁹	6.9 x 10 ⁻⁸	0.00003	0.0004	0.00038	1.1 x 10 ⁻⁸	1.6 x 10 ⁻⁷	1.4 x 10 ⁻⁸	2.3 x 10 ⁻⁷
D5a	5	0.000002	0.00002	0.0018	3.3 x 10 ⁻⁹	3.9 x 10 ⁻⁸	0.00003	0.0003	0.00038	1.3 x 10 ⁻⁸	1.2 x 10 ⁻⁷	1.6 x 10 ⁻⁸	1.6 x 10 ⁻⁷
D5a	6	0.000001	0.00001	0.0018	2.1 x 10 ⁻⁹	2.2 x 10 ⁻⁸	0.00002	0.0002	0.00038	8.7 x 10 ⁻⁹	8.1 x 10 ⁻⁸	1.1 x 10 ⁻⁸	1.0 x 10 ⁻⁷
D5b	7	0.0000005	0.000009	0.0018	9.2 x 10 ⁻¹⁰	1.7 x 10 ⁻⁸	0.00001	0.0002	0.00038	3.8 x 10 ⁻⁹	6.6 x 10 ⁻⁸	4.7 x 10 ⁻⁹	8.3 x 10 ⁻⁸
D5b	8	0.0000005	0.00001	0.0018	8.8 x 10 ⁻¹⁰	2.3 x 10 ⁻⁸	0.00001	0.0003	0.00038	3.8 x 10 ⁻⁹	9.9 x 10 ⁻⁸	4.7 x 10 ⁻⁹	1.2 x 10 ⁻⁷
D5b	9	0.0000004	0.00001	0.0018	6.7 x 10 ⁻¹⁰	1.7 x 10 ⁻⁸	0.000008	0.0002	0.00038	2.9 x 10 ⁻⁹	7.3 x 10 ⁻⁸	3.6 x 10 ⁻⁹	9.0 x 10 ⁻⁸
D5b	10	0.0000002	0.000007	0.0018	3.6 x 10 ⁻¹⁰	1.2 x 10 ⁻⁸	0.000004	0.0001	0.00038	1.6 x 10 ⁻⁹	5.4 x 10 ⁻⁸	1.9 x 10 ⁻⁹	6.6 x 10 ⁻⁸
D5b	11	0.0000002	0.000006	0.0018	2.9 x 10 ⁻¹⁰	1.2 x 10 ⁻⁸	0.000003	0.0001	0.00038	1.2 x 10 ⁻⁹	5.3 x 10 ⁻⁸	1.5 x 10 ⁻⁹	6.4 x 10 ⁻⁸
Other - close	12	0.0000002	0.000006	0.0018	3.1 x 10 ⁻¹⁰	1.1 x 10 ⁻⁸	0.000004	0.0001	0.00038	1.3 x 10 ⁻⁹	5.0 x 10 ⁻⁸	1.7 x 10 ⁻⁹	6.1 x 10 ⁻⁸
D4	13	0.0000001	0.000006	0.0018	2.3 x 10 ⁻¹⁰	1.0 x 10 ⁻⁸	0.000002	0.0001	0.00038	9.4 x 10 ⁻¹⁰	5.0 x 10 ⁻⁸	1.2 x 10 ⁻⁹	6.0 x 10 ⁻⁸
D2	14	0.0000002	0.000006	0.0018	2.7 x 10 ⁻¹⁰	1.1 x 10 ⁻⁸	0.000003	0.0001	0.00038	9.7 x 10 ⁻¹⁰	5.5 x 10 ⁻⁸	1.2 x 10 ⁻⁹	6.6 x 10 ⁻⁸
Other- far	15	0.00000007	0.000005	0.0018	1.3 x 10 ⁻¹⁰	8.4 x 10 ⁻⁹	0.000001	0.0001	0.00038	5.1 x 10 ⁻¹⁰	4.2 x 10 ⁻⁸	6.3 x 10 ⁻¹⁰	5.0 x 10 ⁻⁸
Other- far	16	0.00000006	0.000003	0.0018	1.1 x 10 ⁻¹⁰	5.8 x 10 ⁻⁹	0.0000009	0.00008	0.00038	3.5 x 10 ⁻¹⁰	2.9 x 10 ⁻⁸	4.6 x 10 ⁻¹⁰	3.5 x 10 ⁻⁸
Other- far	17	0.00000003	0.000001	0.0018	5.4 x 10 ⁻¹¹	2.5 x 10 ⁻⁹	0.0000003	0.00003	0.00038	1.3 x 10 ⁻¹⁰	1.2 x 10 ⁻⁸	1.8 x 10 ⁻¹⁰	1.5 x 10 ⁻⁸
Other- far	18	0.00000006	0.000002	0.0018	1.1 x 10 ⁻¹⁰	4.2 x 10 ⁻⁹	0.0000008	0.00005	0.00038	2.9 x 10 ⁻¹⁰	2.1 x 10 ⁻⁸	3.9 x 10 ⁻¹⁰	2.5 x 10 ⁻⁸
Other- far	19	0.00000007	0.000003	0.0018	1.3 x 10 ⁻¹⁰	5.4 x 10 ⁻⁹	0.000001	0.00007	0.00038	3.7 x 10 ⁻¹⁰	2.7 x 10 ⁻⁸	4.9 x 10 ⁻¹⁰	3.2 x 10 ⁻⁸
Other- far	20	0.00000006	0.000003	0.0018	1.1 x 10 ⁻¹⁰	4.7 x 10 ⁻⁹	0.0000008	0.00006	0.00038	3.0 x 10 ⁻¹⁰	2.3 x 10 ⁻⁸	4.0 x 10 ⁻¹⁰	2.8 x 10 ⁻⁸
D4	21	0.0000001	0.000005	0.0018	1.8 x 10 ⁻¹⁰	8.2 x 10 ⁻⁹	0.000002	0.0001	0.00038	7.6 x 10 ⁻¹⁰	4.0 x 10 ⁻⁸	9.4 x 10 ⁻¹⁰	4.9 x 10 ⁻⁸
D4	22	0.00000007	0.000004	0.0018	1.3 x 10 ⁻¹⁰	6.8 x 10 ⁻⁹	0.000002	0.00009	0.00038	5.9 x 10 ⁻¹⁰	3.4 x 10 ⁻⁸	7.1 x 10 ⁻¹⁰	4.1 x 10 ⁻⁸
D3	23	0.00000006	0.000004	0.0018	1.1 x 10 ⁻¹⁰	7.5 x 10 ⁻⁹	0.000001	0.0001	0.00038	5.1 x 10 ⁻¹⁰	3.7 x 10 ⁻⁸	6.2 x 10 ⁻¹⁰	4.5 x 10 ⁻⁸
D3	24	0.00000005	0.000003	0.0018	9.0 x 10 ⁻¹¹	6.2 x 10 ⁻⁹	0.000001	0.00008	0.00038	4.5 x 10 ⁻¹⁰	3.1 x 10 ⁻⁸	5.4 x 10 ⁻¹⁰	3.7 x 10 ⁻⁸
D3	25	0.00000005	0.000003	0.0018	9.0 x 10 ⁻¹¹	6.0 x 10 ⁻⁹	0.000001	0.00008	0.00038	4.1 x 10 ⁻¹⁰	2.9 x 10 ⁻⁸	5.0 x 10 ⁻¹⁰	3.5 x 10 ⁻⁸
D1	26	0.00000004	0.000004	0.0018	7.2 x 10 ⁻¹¹	7.0 x 10 ⁻⁹	0.0000008	0.00009	0.00038	3.0 x 10 ⁻¹⁰	3.5 x 10 ⁻⁸	3.7 x 10 ⁻¹⁰	4.2 x 10 ⁻⁸
D7	27	0.00000003	0.000003	0.0018	5.4 x 10 ⁻¹¹	5.6 x 10 ⁻⁹	0.0000007	0.00007	0.00038	2.5 x 10 ⁻¹⁰	2.8 x 10 ⁻⁸	3.1 x 10 ⁻¹⁰	3.4 x 10 ⁻⁸
Other - near Rasp	28	0.00000004	0.000003	0.0018	7.2 x 10 ⁻¹¹	5.5 x 10 ⁻⁹	0.0000009	0.00007	0.00038	3.3 x 10 ⁻¹⁰	2.7 x 10 ⁻⁸	4.1 x 10 ⁻¹⁰	3.3 x 10 ⁻⁸
D7	29	0.00000004	0.000003	0.0018	7.2 x 10 ⁻¹¹	6.2 x 10 ⁻⁹	0.0000008	0.00008	0.00038	2.9 x 10 ⁻¹⁰	3.1 x 10 ⁻⁸	3.6 x 10 ⁻¹⁰	3.7 x 10 ⁻⁸
D6	30	0.00000004	0.000003	0.0018	7.2 x 10 ⁻¹¹	5.2 x 10 ⁻⁹	0.0000008	0.00007	0.00038	3.2 x 10 ⁻¹⁰	2.6 x 10 ⁻⁸	3.9 x 10 ⁻¹⁰	3.1 x 10 ⁻⁸
Other - near Rasp	31	0.0000001	0.000005	0.0018	2.0 x 10 ⁻¹⁰	8.9 x 10 ⁻⁹	0.000002	0.0001	0.00038	8.4 x 10 ⁻¹⁰	4.4 x 10 ⁻⁸	1.0 x 10 ⁻⁹	5.3 x 10 ⁻⁸
Other - near Rasp	32	0.0000001	0.000005	0.0018	2.2 x 10 ⁻¹⁰	9.3 x 10 ⁻⁹	0.000002	0.0001	0.00038	9.1 x 10 ⁻¹⁰	4.5 x 10 ⁻⁸	1.1 x 10 ⁻⁹	5.5 x 10 ⁻⁸
Other - near Rasp	33	0.0000001	0.000006	0.0018	2.5 x 10 ⁻¹⁰	1.0 x 10 ⁻⁸	0.000003	0.0001	0.00038	1.1 x 10 ⁻⁹	4.9 x 10 ⁻⁸	1.3 x 10 ⁻⁹	5.9 x 10 ⁻⁸
Other - near Rasp	34	0.0000002	0.000006	0.0018	2.9 x 10 ⁻¹⁰	1.1 x 10 ⁻⁸	0.000003	0.0001	0.00038	1.3 x 10 ⁻⁹	5.4 x 10 ⁻⁸	1.5 x 10 ⁻⁹	6.5 x 10 ⁻⁸
Other - close	35	0.0000002	0.000007	0.0018	2.9 x 10 ⁻¹⁰	1.2 x 10 ⁻⁸	0.000003	0.0002	0.00038	1.3 x 10 ⁻⁹	5.8 x 10 ⁻⁸	1.6 x 10 ⁻⁹	7.0 x 10 ⁻⁸
Other - close	36	0.0000002	0.000007	0.0018	3.2 x 10 ⁻¹⁰	1.3 x 10 ⁻⁸	0.000004	0.0002	0.00038	1.4 x 10 ⁻⁹	6.1 x 10 ⁻⁸	1.7 x 10 ⁻⁹	7.4 x 10 ⁻⁸
Other - close	37	0.0000002	0.000006	0.0018	2.7 x 10 ⁻¹⁰	1.1 x 10 ⁻⁸	0.000003	0.0001	0.00038	1.2 x 10 ⁻⁹	5.4 x 10 ⁻⁸	1.4 x 10 ⁻⁹	6.5 x 10 ⁻⁸
Other - close	38	0.0000002	0.000006	0.0018	3.2 x 10 ⁻¹⁰	1.2 x 10 ⁻⁸	0.000004	0.0001	0.00038	1.4 x 10 ⁻⁹	5.6 x 10 ⁻⁸	1.7 x 10 ⁻⁹	6.8 x 10 ⁻⁸

District/ Area	Receptor	Annual avg Cd in PM ₁₀ (µg/m ³)		Cd Unit risk [µg/m ³] ⁻¹	Cd cancer risk		Annual avg Ni in PM ₁₀ (µg/m ³)		Ni Unit risk [µg/m ³] ⁻¹	Ni cancer risk		Summed cancer risk (Cd & Ni)	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D5b	39	0.0000001	0.000006	0.0018	2.3 x 10 ⁻¹⁰	1.1 x 10 ⁻⁸	0.000003	0.0001	0.00038	1.0 x 10 ⁻⁹	5.0 x 10 ⁻⁸	1.3 x 10 ⁻⁹	6.1 x 10 ⁻⁸
D5b	40	0.0000002	0.000006	0.0018	2.9 x 10 ⁻¹⁰	1.1 x 10 ⁻⁸	0.000003	0.0001	0.00038	1.2 x 10 ⁻⁹	5.3 x 10 ⁻⁸	1.5 x 10 ⁻⁹	6.4 x 10 ⁻⁸
Other - close	41	0.0000006	0.000009	0.0018	1.0 x 10 ⁻⁹	1.7 x 10 ⁻⁸	0.00001	0.0002	0.00038	4.6 x 10 ⁻⁹	7.4 x 10 ⁻⁸	5.6 x 10 ⁻⁹	9.0 x 10 ⁻⁸
D6	42	0.00000005	0.000003	0.0018	9.0 x 10 ⁻¹¹	6.0 x 10 ⁻⁹	0.000001	0.00008	0.00038	4.3 x 10 ⁻¹⁰	3.0 x 10 ⁻⁸	5.2 x 10 ⁻¹⁰	3.6 x 10 ⁻⁸
D6	43	0.00000006	0.000004	0.0018	1.1 x 10 ⁻¹⁰	6.7 x 10 ⁻⁹	0.000001	0.00009	0.00038	4.9 x 10 ⁻¹⁰	3.3 x 10 ⁻⁸	5.9 x 10 ⁻¹⁰	3.9 x 10 ⁻⁸
D6	44	0.00000007	0.000004	0.0018	1.3 x 10 ⁻¹⁰	7.6 x 10 ⁻⁹	0.000001	0.0001	0.00038	5.6 x 10 ⁻¹⁰	3.7 x 10 ⁻⁸	6.8 x 10 ⁻¹⁰	4.5 x 10 ⁻⁸
D6	45	0.00000008	0.000005	0.0018	1.4 x 10 ⁻¹⁰	8.9 x 10 ⁻⁹	0.000002	0.0001	0.00038	6.7 x 10 ⁻¹⁰	4.3 x 10 ⁻⁸	8.1 x 10 ⁻¹⁰	5.1 x 10 ⁻⁸
D7	46	0.00000003	0.000003	0.0018	5.4 x 10 ⁻¹¹	4.9 x 10 ⁻⁹	0.0000007	0.00006	0.00038	2.7 x 10 ⁻¹⁰	2.4 x 10 ⁻⁸	3.3 x 10 ⁻¹⁰	2.9 x 10 ⁻⁸
D7	47	0.00000003	0.000003	0.0018	5.4 x 10 ⁻¹¹	5.4 x 10 ⁻⁹	0.0000007	0.00007	0.00038	2.7 x 10 ⁻¹⁰	2.7 x 10 ⁻⁸	3.2 x 10 ⁻¹⁰	3.2 x 10 ⁻⁸
D7	48	0.00000004	0.000003	0.0018	7.2 x 10 ⁻¹¹	5.3 x 10 ⁻⁹	0.0000009	0.00007	0.00038	3.2 x 10 ⁻¹⁰	2.6 x 10 ⁻⁸	4.0 x 10 ⁻¹⁰	3.2 x 10 ⁻⁸
D6	49	0.00000004	0.000003	0.0018	7.2 x 10 ⁻¹¹	5.3 x 10 ⁻⁹	0.0000009	0.00007	0.00038	3.5 x 10 ⁻¹⁰	2.6 x 10 ⁻⁸	4.2 x 10 ⁻¹⁰	3.2 x 10 ⁻⁸
D6	50	0.00000005	0.000003	0.0018	9.0 x 10 ⁻¹¹	5.4 x 10 ⁻⁹	0.000001	0.00007	0.00038	3.9 x 10 ⁻¹⁰	2.7 x 10 ⁻⁸	4.8 x 10 ⁻¹⁰	3.2 x 10 ⁻⁸
D8	51	0.00000002	0.000002	0.0018	3.6 x 10 ⁻¹¹	4.4 x 10 ⁻⁹	0.0000005	0.00006	0.00038	2.0 x 10 ⁻¹⁰	2.2 x 10 ⁻⁸	2.3 x 10 ⁻¹⁰	2.6 x 10 ⁻⁸
D7	52	0.00000003	0.000003	0.0018	5.4 x 10 ⁻¹¹	4.8 x 10 ⁻⁹	0.0000007	0.00006	0.00038	2.5 x 10 ⁻¹⁰	2.4 x 10 ⁻⁸	3.0 x 10 ⁻¹⁰	2.9 x 10 ⁻⁸
D9	53	0.0000001	0.000005	0.0018	2.2 x 10 ⁻¹⁰	9.5 x 10 ⁻⁹	0.000002	0.0001	0.00038	7.9 x 10 ⁻¹⁰	4.5 x 10 ⁻⁸	1.0 x 10 ⁻⁹	5.4 x 10 ⁻⁸
D9	54	0.00000004	0.000002	0.0018	7.2 x 10 ⁻¹¹	4.3 x 10 ⁻⁹	0.0000008	0.00005	0.00038	2.9 x 10 ⁻¹⁰	2.1 x 10 ⁻⁸	3.6 x 10 ⁻¹⁰	2.5 x 10 ⁻⁸
D10	55	0.00000004	0.000003	0.0018	7.2 x 10 ⁻¹¹	5.4 x 10 ⁻⁹	0.0000007	0.00007	0.00038	2.5 x 10 ⁻¹⁰	2.7 x 10 ⁻⁸	3.3 x 10 ⁻¹⁰	3.2 x 10 ⁻⁸
D10	56	0.00000003	0.000003	0.0018	5.4 x 10 ⁻¹¹	4.9 x 10 ⁻⁹	0.0000007	0.00006	0.00038	2.5 x 10 ⁻¹⁰	2.4 x 10 ⁻⁸	3.0 x 10 ⁻¹⁰	2.9 x 10 ⁻⁸
D6	57	0.00000003	0.000003	0.0018	5.4 x 10 ⁻¹¹	5.9 x 10 ⁻⁹	0.0000008	0.00008	0.00038	2.9 x 10 ⁻¹⁰	2.9 x 10 ⁻⁸	3.4 x 10 ⁻¹⁰	3.5 x 10 ⁻⁸
D8	58	0.00000002	0.000002	0.0018	3.6 x 10 ⁻¹¹	3.2 x 10 ⁻⁹	0.0000005	0.00004	0.00038	1.7 x 10 ⁻¹⁰	1.6 x 10 ⁻⁸	2.1 x 10 ⁻¹⁰	1.9 x 10 ⁻⁸
D8	59	0.00000002	0.000002	0.0018	3.6 x 10 ⁻¹¹	2.9 x 10 ⁻⁹	0.0000004	0.00004	0.00038	1.4 x 10 ⁻¹⁰	1.4 x 10 ⁻⁸	1.8 x 10 ⁻¹⁰	1.7 x 10 ⁻⁸
D2	60	0.00000006	0.000004	0.0018	1.1 x 10 ⁻¹⁰	8.0 x 10 ⁻⁹	0.000001	0.0001	0.00038	5.2 x 10 ⁻¹⁰	4.0 x 10 ⁻⁸	6.2 x 10 ⁻¹⁰	4.8 x 10 ⁻⁸
D1	61	0.00000005	0.000003	0.0018	9.0 x 10 ⁻¹¹	5.3 x 10 ⁻⁹	0.000001	0.00007	0.00038	4.0 x 10 ⁻¹⁰	2.6 x 10 ⁻⁸	4.9 x 10 ⁻¹⁰	3.2 x 10 ⁻⁸
D3	62	0.00000006	0.000005	0.0018	1.1 x 10 ⁻¹⁰	8.5 x 10 ⁻⁹	0.000001	0.0001	0.00038	4.8 x 10 ⁻¹⁰	4.2 x 10 ⁻⁸	5.9 x 10 ⁻¹⁰	5.1 x 10 ⁻⁸
D3	63	0.00000006	0.000005	0.0018	1.1 x 10 ⁻¹⁰	9.1 x 10 ⁻⁹	0.000001	0.0001	0.00038	5.0 x 10 ⁻¹⁰	4.5 x 10 ⁻⁸	6.1 x 10 ⁻¹⁰	5.4 x 10 ⁻⁸
D9	64	0.0000001	0.000005	0.0018	2.3 x 10 ⁻¹⁰	8.4 x 10 ⁻⁹	0.000002	0.0001	0.00038	8.7 x 10 ⁻¹⁰	3.7 x 10 ⁻⁸	1.1 x 10 ⁻⁹	4.6 x 10 ⁻⁸
D1	65	0.00000004	0.000003	0.0018	7.2 x 10 ⁻¹¹	5.1 x 10 ⁻⁹	0.0000008	0.00007	0.00038	3.1 x 10 ⁻¹⁰	2.5 x 10 ⁻⁸	3.8 x 10 ⁻¹⁰	3.0 x 10 ⁻⁸
D7	66	0.00000003	0.000002	0.0018	5.4 x 10 ⁻¹¹	4.2 x 10 ⁻⁹	0.0000006	0.00005	0.00038	2.2 x 10 ⁻¹⁰	2.1 x 10 ⁻⁸	2.7 x 10 ⁻¹⁰	2.5 x 10 ⁻⁸
D10	67	0.00000003	0.000002	0.0018	5.4 x 10 ⁻¹¹	3.5 x 10 ⁻⁹	0.0000006	0.00005	0.00038	2.3 x 10 ⁻¹⁰	1.7 x 10 ⁻⁸	2.8 x 10 ⁻¹⁰	2.1 x 10 ⁻⁸
D6	68	0.00000007	0.000003	0.0018	1.3 x 10 ⁻¹⁰	6.1 x 10 ⁻⁹	0.000001	0.00007	0.00038	5.4 x 10 ⁻¹⁰	2.8 x 10 ⁻⁸	6.7 x 10 ⁻¹⁰	3.4 x 10 ⁻⁸
D6	69	0.00000006	0.000004	0.0018	1.1 x 10 ⁻¹⁰	6.8 x 10 ⁻⁹	0.000001	0.00008	0.00038	4.8 x 10 ⁻¹⁰	3.2 x 10 ⁻⁸	5.9 x 10 ⁻¹⁰	3.9 x 10 ⁻⁸
D4	70	0.00000007	0.000004	0.0018	1.3 x 10 ⁻¹⁰	6.8 x 10 ⁻⁹	0.000001	0.00009	0.00038	5.6 x 10 ⁻¹⁰	3.4 x 10 ⁻⁸	6.9 x 10 ⁻¹⁰	4.1 x 10 ⁻⁸
Other- far	71	0.00000004	0.000003	0.0018	7.2 x 10 ⁻¹¹	5.8 x 10 ⁻⁹	0.0000008	0.00008	0.00038	3.0 x 10 ⁻¹⁰	2.9 x 10 ⁻⁸	3.8 x 10 ⁻¹⁰	3.5 x 10 ⁻⁸
Other - near Rasp	72	0.0000001	0.000006	0.0018	2.5 x 10 ⁻¹⁰	1.2 x 10 ⁻⁸	0.000003	0.0002	0.00038	9.6 x 10 ⁻¹⁰	5.8 x 10 ⁻⁸	1.2 x 10 ⁻⁹	6.9 x 10 ⁻⁸
Other - near Rasp	73	0.0000002	0.000007	0.0018	3.4 x 10 ⁻¹⁰	1.2 x 10 ⁻⁸	0.000004	0.0002	0.00038	1.5 x 10 ⁻⁹	5.8 x 10 ⁻⁸	1.8 x 10 ⁻⁹	7.0 x 10 ⁻⁸
Other - close	74	0.0000002	0.000006	0.0018	3.1 x 10 ⁻¹⁰	1.0 x 10 ⁻⁸	0.000004	0.0001	0.00038	1.3 x 10 ⁻⁹	4.8 x 10 ⁻⁸	1.6 x 10 ⁻⁹	5.9 x 10 ⁻⁸
D2	75	0.00000008	0.000006	0.0018	1.4 x 10 ⁻¹⁰	1.0 x 10 ⁻⁸	0.000001	0.0001	0.00038	5.6 x 10 ⁻¹⁰	5.2 x 10 ⁻⁸	7.1 x 10 ⁻¹⁰	6.2 x 10 ⁻⁸
D3	76	0.00000006	0.000005	0.0018	1.1 x 10 ⁻¹⁰	8.6 x 10 ⁻⁹	0.000001	0.0001	0.00038	5.0 x 10 ⁻¹⁰	4.3 x 10 ⁻⁸	6.1 x 10 ⁻¹⁰	5.2 x 10 ⁻⁸
D1	77	0.00000003	0.000003	0.0018	5.4 x 10 ⁻¹¹	4.8 x 10 ⁻⁹	0.0000007	0.00006	0.00038	2.8 x 10 ⁻¹⁰	2.4 x 10 ⁻⁸	3.4 x 10 ⁻¹⁰	2.9 x 10 ⁻⁸
D6	78	0.00000005	0.000003	0.0018	9.0 x 10 ⁻¹¹	5.3 x 10 ⁻⁹	0.000001	0.00007	0.00038	4.3 x 10 ⁻¹⁰	2.5 x 10 ⁻⁸	5.2 x 10 ⁻¹⁰	3.0 x 10 ⁻⁸
D9	79	0.0000001	0.000005	0.0018	2.0 x 10 ⁻¹⁰	9.2 x 10 ⁻⁹	0.000002	0.0001	0.00038	7.3 x 10 ⁻¹⁰	4.3 x 10 ⁻⁸	9.3 x 10 ⁻¹⁰	5.2 x 10 ⁻⁸

District/ Area	Receptor	Annual avg Cd in PM ₁₀ (µg/m ³)		Cd Unit risk [µg/m ³] ⁻¹	Cd cancer risk		Annual avg Ni in PM ₁₀ (µg/m ³)		Ni Unit risk [µg/m ³] ⁻¹	Ni cancer risk		Summed cancer risk (Cd & Ni)	
		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)		Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)	Scenario 1: Existing Nth Mine (without bckgnd)	Scenario 2: Proposed Nth Mine (no bckgnd)
D9	80	0.00000008	0.000004	0.0018	1.4 x 10 ⁻¹⁰	6.7 x 10 ⁻⁹	0.000001	0.00008	0.00038	5.5 x 10 ⁻¹⁰	3.2 x 10 ⁻⁸	7.0 x 10 ⁻¹⁰	3.9 x 10 ⁻⁸
D8	81	0.00000002	0.000002	0.0018	3.6 x 10 ⁻¹¹	3.4 x 10 ⁻⁹	0.0000003	0.00004	0.00038	1.3 x 10 ⁻¹⁰	1.7 x 10 ⁻⁸	1.6 x 10 ⁻¹⁰	2.0 x 10 ⁻⁸
D10	82	0.00000002	0.000002	0.0018	3.6 x 10 ⁻¹¹	3.2 x 10 ⁻⁹	0.0000004	0.00004	0.00038	1.4 x 10 ⁻¹⁰	1.6 x 10 ⁻⁸	1.8 x 10 ⁻¹⁰	2.0 x 10 ⁻⁸
D10	83	0.00000002	0.000003	0.0018	3.6 x 10 ⁻¹¹	5.6 x 10 ⁻⁹	0.0000004	0.00007	0.00038	1.6 x 10 ⁻¹⁰	2.8 x 10 ⁻⁸	2.0 x 10 ⁻¹⁰	3.3 x 10 ⁻⁸
D5b	84	0.0000001	0.000006	0.0018	1.8 x 10 ⁻¹⁰	1.1 x 10 ⁻⁸	0.000002	0.0001	0.00038	7.5 x 10 ⁻¹⁰	5.3 x 10 ⁻⁸	9.3 x 10 ⁻¹⁰	6.5 x 10 ⁻⁸
D5b	85	0.0000001	0.000005	0.0018	2.3 x 10 ⁻¹⁰	9.4 x 10 ⁻⁹	0.000002	0.0001	0.00038	9.3 x 10 ⁻¹⁰	4.3 x 10 ⁻⁸	1.2 x 10 ⁻⁹	5.2 x 10 ⁻⁸
D9	86	0.0000003	0.000007	0.0018	4.9 x 10 ⁻¹⁰	1.3 x 10 ⁻⁸	0.000005	0.0001	0.00038	1.8 x 10 ⁻⁹	5.4 x 10 ⁻⁸	2.3 x 10 ⁻⁹	6.7 x 10 ⁻⁸
PBH Residences	A	0.000003	0.00002	0.0018	5.0 x 10 ⁻⁹	3.5 x 10 ⁻⁸	0.00005	0.0003	0.00038	2.0 x 10 ⁻⁸	1.0 x 10 ⁻⁷	2.5 x 10 ⁻⁸	1.4 x 10 ⁻⁷
PBH Residences	B	0.000003	0.00002	0.0018	5.1 x 10 ⁻⁹	3.5 x 10 ⁻⁸	0.00005	0.0003	0.00038	2.1 x 10 ⁻⁸	1.0 x 10 ⁻⁷	2.6 x 10 ⁻⁸	1.4 x 10 ⁻⁷
PBH Residences	C	0.000003	0.00002	0.0018	5.1 x 10 ⁻⁹	4.0 x 10 ⁻⁸	0.00005	0.0003	0.00038	2.1 x 10 ⁻⁸	1.1 x 10 ⁻⁷	2.6 x 10 ⁻⁸	1.5 x 10 ⁻⁷
PBH Residences	D	0.000007	0.00003	0.0018	1.2 x 10 ⁻⁸	5.0 x 10 ⁻⁸	0.0001	0.0003	0.00038	5.2 x 10 ⁻⁸	1.2 x 10 ⁻⁷	6.4 x 10 ⁻⁸	1.7 x 10 ⁻⁷
PBH Residences	E	0.000002	0.00003	0.0018	4.5 x 10 ⁻⁹	6.3 x 10 ⁻⁸	0.00004	0.0003	0.00038	1.6 x 10 ⁻⁸	1.3 x 10 ⁻⁷	2.1 x 10 ⁻⁸	1.9 x 10 ⁻⁷
PBH Residences	F	0.000004	0.00006	0.0018	7.7 x 10 ⁻⁹	1.0 x 10 ⁻⁷	0.00008	0.0004	0.00038	2.9 x 10 ⁻⁸	1.6 x 10 ⁻⁷	3.6 x 10 ⁻⁸	2.6 x 10 ⁻⁷
PBH Residences	G	0.000003	0.00008	0.0018	5.9 x 10 ⁻⁹	1.5 x 10 ⁻⁷	0.00006	0.0004	0.00038	2.2 x 10 ⁻⁸	1.7 x 10 ⁻⁷	2.7 x 10 ⁻⁸	3.1 x 10 ⁻⁷
PBH Residences	H	0.000003	0.0001	0.0018	5.5 x 10 ⁻⁹	2.0 x 10 ⁻⁷	0.00005	0.0005	0.00038	2.0 x 10 ⁻⁸	1.8 x 10 ⁻⁷	2.6 x 10 ⁻⁸	3.8 x 10 ⁻⁷
PBH Residences	I	0.000003	0.0001	0.0018	5.1 x 10 ⁻⁹	2.5 x 10 ⁻⁷	0.00005	0.0004	0.00038	1.9 x 10 ⁻⁸	1.7 x 10 ⁻⁷	2.4 x 10 ⁻⁸	4.2 x 10 ⁻⁷
PBH Residences	J	0.000003	0.00008	0.0018	5.1 x 10 ⁻⁹	1.5 x 10 ⁻⁷	0.00005	0.0004	0.00038	1.9 x 10 ⁻⁸	1.6 x 10 ⁻⁷	2.4 x 10 ⁻⁸	3.2 x 10 ⁻⁷
PBH Residences	K	0.000004	0.00005	0.0018	6.6 x 10 ⁻⁹	8.7 x 10 ⁻⁸	0.00007	0.0004	0.00038	2.5 x 10 ⁻⁸	1.5 x 10 ⁻⁷	3.1 x 10 ⁻⁸	2.4 x 10 ⁻⁷
PBH Residences	L	0.000005	0.00009	0.0018	8.8 x 10 ⁻⁹	1.6 x 10 ⁻⁷	0.00009	0.0005	0.00038	3.5 x 10 ⁻⁸	2.1 x 10 ⁻⁷	4.4 x 10 ⁻⁸	3.7 x 10 ⁻⁷
PBH Residences	M	0.000005	0.00005	0.0018	8.2 x 10 ⁻⁹	9.3 x 10 ⁻⁸	0.00008	0.0009	0.00038	3.2 x 10 ⁻⁸	3.4 x 10 ⁻⁷	4.0 x 10 ⁻⁸	4.3 x 10 ⁻⁷
PBH Residences	N	0.000005	0.00005	0.0018	8.4 x 10 ⁻⁹	9.4 x 10 ⁻⁸	0.00008	0.0009	0.00038	3.1 x 10 ⁻⁸	3.5 x 10 ⁻⁷	3.9 x 10 ⁻⁸	4.5 x 10 ⁻⁷
PBH Residences	O	0.000004	0.00005	0.0018	6.7 x 10 ⁻⁹	9.1 x 10 ⁻⁸	0.00006	0.0009	0.00038	2.3 x 10 ⁻⁸	3.5 x 10 ⁻⁷	3.0 x 10 ⁻⁸	4.4 x 10 ⁻⁷
D5b	P	0.0000004	0.000009	0.0018	6.7 x 10 ⁻¹⁰	1.7 x 10 ⁻⁸	0.000008	0.0002	0.00038	3.1 x 10 ⁻⁹	7.2 x 10 ⁻⁸	3.7 x 10 ⁻⁹	8.9 x 10 ⁻⁸

Appendix H: Bioaccessibility concepts

Inorganic substances (i.e. metals) occur in soil as a complex mixture of solid phase compounds of varying particle size and morphology. These compounds may include discrete mineral phases, co-precipitated and sorbed species associated with soil minerals or organic matter, and dissolved species that may be complexed by a variety of organic and inorganic ligands (Noller et al. 2017, Ruby et al. 1999). A substance's dissolution properties (and, hence, its bioavailability) is therefore largely dependent on the nature of associations within/between these phases. The bioaccessible fraction of a given compound can vary considerably between different soils and chemicals.

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 the media consists of two major processes:

- **Bioaccessibility:** This is the amount of contaminant released from the media (e.g. during digestion in the gastrointestinal tract) that is available to be absorbed into the systemic circulation. The solubility of the substance in gastrointestinal media markedly influences its bioaccessibility.
- **Absorption:** Usually only part of the bioaccessible fraction 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 a degree of desorption or dissociation from the medium in which it is present is required, the degree that this can occur is termed the substance's bioaccessibility from the medium (UK EA 2002b). For soil, therefore, the bioaccessible fraction represents the amount of contaminant partitioned from the soil that is available for absorption.

Estimates of bioaccessibility and overall bioavailability (i.e. bioaccessibility plus absorption) can be determined from experimental studies: *in vitro* systems mimicking biological conditions for bioaccessibility and *in vivo* (whole animal) models for bioavailability (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. Two such tests which have recently been used to test bioaccessibility of lead in Broken Hill soils and/or dust include the US EPA *in vitro* bioaccessibility (IVBA) assay (US EPA 2007b, 2017) and the Physiologically Based Extraction Test (PBET) (Ruby et al. 1996).

IVBA

The IVBA is a simplified form of the PBET, in which 1g of the test substrate is placed into a bottle with 100mL of buffered extraction fluid (pH 1.5) mimicking fasted human stomach conditions and rotated at 37±2°C for one hour. The supernatant is separated from the sample by filtration and analysed for lead. US EPA (2007b) have validated the results of the IVBA by fitting the *in vitro* results for 19 test materials (mainly collected from mining and milling sites) to the *in vivo* data for juvenile swine using linear regression. The 19 samples tested ranged from 1,200 – 14,000 mg/kg lead (US EPA 2009b). The resulting linear correlation is described as follows:

$$\text{RBA} = 0.878 \times \text{IVBA} - 0.028 \quad (r^2 = 0.924).$$

Where RBA is the relative bioavailability (i.e. bioaccessibility) to a soluble form of lead such as is found in diet or water (e.g. lead acetate), and IVBA is the *in vitro* bioaccessibility result. To convert RBA or bioaccessibility to an absolute bioavailability, the RBA results must be adjusted for the fraction of soluble lead (such as is in diet or water) which is absorbed. This is considered to be 50% in children (US EPA 1999b, ATSDR 2007a).

Within test variability of the IVBA protocol has been assessed at the University of Colorado with 75 and 83 replicate analyses on each of two standard reference materials over several years. The mean within-laboratory coefficient of variation for both standards was 7%. An inter-laboratory comparison (4 participating laboratories) of performance of the IVBA revealed inter-laboratory coefficients of variation from 1.5 – 6.9% for 17 of 19 samples, and for the remaining two samples it was 18.6% and 29.7% (US EPA 2009b).

It is noted the above test does not include a phase mimicking the milieu of the small intestine and so is not reflective of the physiological conditions affecting the location where absorption actually occurs. The validation did not include non-mine impacted soils that may contain lead in highly soluble forms (enHealth 2012b). Juhasz et al. (2009) found the correlation between the IVBA test and soluble forms of lead (e.g. Pb acetate) was relatively poor because the extract test will solubilise approximately 100% of the Pb and ignores the subsequent precipitation and decrease in absorption that is expected to occur in the higher pH environment of the small intestine. However for highly soluble forms of lead, the *in vitro* bioaccessibility correlated well with *in vivo* bioavailability when an intestinal digestion extract was included.

The IVBA assay has recently been used by Yang and Cattle (2015) to determine the bioaccessibility of lead in over 50 topsoil and subsoil samples collected from earthen footpaths, nature strips, parks or vacant land in Broken Hill. Pb bioaccessibility in Broken Hill topsoil (containing 41 – 6,211 mg/kg Pb) measured by IVBA ranged from 23.7 to 89.3%, with an average of about 60% (Yang and Cattle 2015).

PBET

The physiologically based extraction test (PBET) is a two-stage digestion system using various enzymes to simulate the leaching of a solid matrix in the human stomach and small intestine under fed and fasting conditions. The PBET was designed around paediatric GI tract parameters for a 2-3 year old child. The analytical sequence includes a 1-hour gastric phase extraction and a 2-hour intestinal phase. In a recent application of the technique (Noller et al. 2017), an average pH representing the fasted, semi-fed, and full-fed states of the stomach and the near neutral pH of the intestine was selected to provide an intermediate between fasting and fed states. This represents a more realistic exposure scenario of daily life rather than the more conservative assumption that exposure only occurs during the fasted state (Noller et al. 2017).

PBET validation has been undertaken for lead (1,388 – 10,230 mg/kg) and arsenic (170 – 3,900 mg/kg) using *in vivo* oral bioavailability studies in rats, rabbits or monkeys (Ruby et al. 1996). On entering the small intestinal phase, solubilised Pb decreased by $74 \pm 18\%$, 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 yields 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 lead and arsenic in mine waste from a Queensland mining operation and it has been applied in assessment of heavy metals (including lead) at the Leichhardt River in Queensland (Noller et al. 2009) and in recently published health risk assessment of lead in Mount Isa (Noller et al. 2017). Noller et al. (2017) measured the rat *in vitro* bioavailability of Pb in 10 samples of soil/dust collected in Mount Isa, and found all of these to be <5% bioavailable. 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. Noller et al. (2017) advocate that their study indirectly confirms that use of gastric-only bioaccessibility data over-predicts Pb bioavailability in children.

The PBET test was used to test the bioaccessibility of surface dust (duplicate samples from 5 locations) and mine ore (duplicates from 4 locations) collected from the Rasp Mine site in Broken Hill. The results are reported in Toxikos (2010). Pb bioaccessibility in surface dust ranged from 3.7 – 14.6% (average 7.3%) and in mine ore it was 0.9 – 2.1% (average 1.4%).

Appendix I: Calculation of lead deposition from ‘other’ sources

As indicated in Section 3.4, in addition to existing soil lead concentrations, lead deposition from sources other than the existing or Proposed Mine has also been included in BPb modelling of Scenarios 1 and 3. Lead deposition from other sources was calculated by ToxConsult as per e-mail instructions received from PEL on 01/06/2017 (see also Table 3.4.3, reproduced as Table I.1 below).

- First, the modelled annual Pb deposition rate for the existing North Mine (Column B in Table I.1) was subtracted from the 2016 measured deposition rate at the monitoring station closest to the receptor of interest, as provided by PEL (2017b) (which includes all existing sources of Pb in Broken Hill) (Column A in Table I.1). The result represents the calculated Pb deposition from sources other than the North Mine (Column C in Table I.1). Relevant monitoring locations were those in closest proximity to the relevant receptors, as instructed by PEL (2017b).
- The left-over deposition (representing all Pb sources other than the existing North Mine, see Column C in Table I.1) was then added to the modelled deposition from the North Mine Proposal from Scenario 2 (the Proposed North Mine) to generate Pb deposition for Scenario 3.
- The resulting Pb deposition rates were then converted to soil Pb concentrations after 15 years of deposition as per Section 2.6. Both the estimated annual deposition rates for each Scenario, as well as the estimated soil concentrations from 15 years of Pb deposition at each relevant receptor are provided in Table C.1.1 in Appendix C.
- The soil Pb concentrations in Appendix C from 15 years of Pb deposition were added to assumed existing soil Pb concentrations (summarised in Table 3.4.2) for use in the IEUBK modelling. The final soil concentrations used in the modelling for each Scenario at each relevant receptor are provided in Table C.1.2 in Appendix C.

Table I.1: Calculation of Pb deposition from sources other than the North Mine

District/ Area ^a	Receptor ^b	Relevant monitoring location for Pb deposition ^c	A: 2016 measured Pb deposition at monitoring location (g/m ² /yr) ^d	B: Modelled existing Pb deposition (g/m ² /yr)	C: Calculated Pb deposition from sources other than North Mine (Column A MINUS B) (g/m ² /yr)
D1	26	DG5	0.110	0.00015	0.110
D2	14	DG7	0.134	0.00067	0.133
D3	23	DG5	0.110	0.00025	0.110
D4	13	DG5	0.110	0.00054	0.109
D5a	1	LP17	0.107	0.0035	0.104
	4	LP17	0.107	0.0072	0.100
	D5a_median	-	0.107 ^e	-	0.099 ^e
D5b	7	LP22	0.042	0.0024	0.039
D6	45	DG6	0.029	0.00043	0.029
D7	48	DG1	0.042	0.00017	0.042
D8	51	DG1	0.042	0.0001	0.042
D9	86	LP22	0.042	0.0013	0.040
D10	56	DG2	0.027	0.00014	0.027
Other - near Rasp	73	DG6	0.029	0.0028	0.086
Other - close	41	DG4	0.089	0.00086	0.029
Other - far	19	LP15	0.032	0.00066	0.031
PBH Residences	A	LP22	0.042	0.0093	0.032
	I	LP22	0.042	0.0126	0.029
	PBH residences_ median	-	0.042 ^e	-	0.029 ^e

- = D5a_median and PBH residences_median are hypothetical receptors chosen by ToxConsult for BPb modelling to provide a representative receptor for the districts/areas in which the highest Pb deposition from the Proposal are predicted to occur. As these are hypothetical receptors, there is no modelled existing Pb deposition at these locations. The Pb deposition from sources other than the North Mine for these receptors was calculated as the median in the relevant district/area (Column C). The measured Pb deposition was assumed to be the same as that of other receptors in the district/area.

^a Refer to Figure 3.5.1 for locations of districts/areas.

^b Representative receptors as per highlighted receptors in Table 3.5.1 and are the receptors where maximum lead deposition is predicted to occur (PEL 2017b).

^c Relevant monitoring locations are those in closest proximity to the relevant receptor, as per e-mail instructions received from PEL on 01/06/2017.

^d 2016 measured Pb deposition from PEL (2017b) spreadsheet entitled "21310 Predictions at mon locations - Pb update 5-6-17". Values presented to three decimal places to be able to show the slight difference between Column A and Column C.

^e The hypothetical median receptors in the D5a and PBH residences group were not modelled by PEL (2017a, b). Pb deposition from sources other than the North Mine was assumed to be equal to the median of all receptors within D5a or PBH residences modelled by PEL (2017b). This was 0.099 g/m²/yr for D5a and 0.029 g/m²/yr for PBH residences. The 2016 measured Pb deposition was assumed to be the same as that of other receptors in the district/area.

Appendix 3

Noise Impact Assessment

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13 July 2017

MAC160242LR1_Broken Hill North

Attention: Mitchell Bland
RW Corkery & Co Pty Limited
62 Hill Street
ORANGE NSW 2800

Dear Mitchell,

Response to EPA Submissions: Noise Impact Assessment – Broken Hill North Mine.

Muller Acoustic Consulting Pty Ltd (MAC) have completed this letter report to address several comments raised by the Environment Protection Authority (EPA) in relation to the Noise Impact Assessment (NIA) prepared for the proposed recommencement of the Broken Hill North Mine Project, Broken Hill, NSW (the 'project').

Question 1 : Construction noise criteria are incorrectly derived from the interim construction noise guideline.

The assessment compared construction noise levels to noise management levels derived following the interim construction noise guideline. The guideline states that it does not apply to construction associated with mining, and the proponent has not explained why the guideline should apply in this case.

The highest predicted construction noise level (Leq(15min) 38 dBA) for the project is the same as the maximum operational noise level. This indicates that all feasible and reasonable mitigation measures will be needed, for both construction and operational noise, in an attempt to meet any revised project specific noise level (see point 2).

Construction activities for the project should be assessed against the project specific noise level determined in accordance with the NSW Industrial Noise Policy.

Response 1:

It is acknowledged that generally the Industrial Noise Policy should be adopted when assessing construction activities from extractive industry, especially when the activities undertaken are similar in nature to that of operational noise emissions.

Notwithstanding, construction noise criteria were derived from the Interim Construction Noise Guideline (ICNG) which is considered standard practice when assessing atypical extractive industry construction tasks. This was reiterated in Section 6.3 of the Operational Noise Assessment which is reproduced below:

'Construction activities within the project site include the establishment of an internal haul road, and refurbishment of the infrastructure office, store, workshop, change house and magazine.

Noise associated with construction activities for extractive industries are often assessed as operational noise, as the emissions from plant and associated construction equipment are similar. Notwithstanding, it is evident that construction tasks on the project site are unique and clearly related to construction of buildings and infrastructure.'

There are multiple precedence such as, Northparkes Mine, Balranald Mineral Sands, Dubbo Zirconia Project, Cobbora Coal Mine (and possibly hundreds of other similar noise assessments) where this method has been adopted for similar extraction sites and is re-iterated within the Secretary's Environmental Assessment Requirements that states:

'if a claim is made for specific construction noise criteria for certain activities, then this claim must be justified and accompanied by an assessment of the likely construction noise impacts of these activities under the Interim Construction Noise Guideline.'

Noise levels from construction adopted a worst case simultaneous operation of three construction fleets at the Paste Fill Plant, Haul Road and Magazine/Evaporation Ponds all adopting an LAeq sound power level of 110dBA, this is a combined sound power level of 115dBA. It has been confirmed by the proponent that construction activities will not occur on simultaneously and each component will only occur for several days to two weeks in duration.

The noise model for the project was reinstated to reflect a more realistic account of construction activities, and results of the construction noise modelling for the haul road (the closest construction activity to receivers) identified noise level of between 26dBA to 37dBA at Receiver 1. With the higher level (37dBA) anticipated to occur for no more than two days during construction. This is below the NML of 40dBA for the project.

Question 2 : Two background noise logger measurements appear to be on the North mine site

Background noise levels for loggers identified in the NIA as L2 and L3 appear to have been established on the mining lease contrary to the NSW Industrial Noise Policy and have potentially been affected by mining activities related to land preparation, exploration, truck movements and a mechanics garage, adversely influencing background noise levels.

It is also noted that these two loggers have logged higher background levels than logger L1 which appears to be located at the actual residential sensitive receptors.

To exclude potential noise from existing operations at the North mine, data from logger 1, further from the site, could be utilised where a rating background level of 30 dBA was measured for all assessment periods (day, evening and night).

A rating background level of 30 dBA would result in project specific noise levels of LAeq(15min) 35 dBA at all times of day. The assessment has predicted operational noise levels up to LAeq(15min) 38 dBA at sensitive receiver locations, which would mean all feasible and reasonable mitigation measures need to be considered and applied.

Rating background levels identified in the noise impact assessment (N/A4) should be justified or based on measurements at logger 1.

Response 2:

Noise loggers L2 and L3 were set up on the North Mine Site for security purposes at the same offset from the Barrier Highway as the residences across the road. As a result, the measured background noise levels are consistent with those that that would apply to residences impacted by traffic on the Barrier Highway.

The ambient noise levels excluded any influence from the project site, as the site is currently not operational and no project sources were present during the background noise monitoring survey. Intermittent traffic was noted as the dominant source and influenced the day and evening RBLs for relevant catchments where L2 and L3 were positioned. This can clearly be identified when comparing corresponding LAeq noise levels for each day and evening assessment period both in the summary of results and the logger charts.

Logger L1 was situated within the rear yard (northern side) of 642 Beryl Street, Broken Hill. The RBL at L1 is relatively low as it is shielded to Barrier Highway traffic by 300m of intervening residential housing. It is not considered representative to adopt RBLs from this location for receivers fronting the Barrier Highway.

Receivers in NC4, in particular those fronting the Barrier Highway are exposed to significant amounts of intermittent traffic that is consistent along the highway past NC3 and NC4 and NC5. Notwithstanding, noise predictions identify that operations at NC4 achieve even the conservative criteria of 35 dBA.

Therefore, the RBLs adopted in the Noise Impact Assessment report are considered very representative of the noise catchments and are applicable to the project.

Question 3 : Feasible and reasonable mitigation measures to be considered

If background levels at L2 and L3 cannot be justified all feasible and reasonable mitigation measures must be considered to meet the revised project specific noise criteria and any subsequent exceedances of the criteria addressed consistent with the Department of Planning and Environment's voluntary land acquisition and mitigation policy.

The NIA has not recommended any noise mitigation measures or best practice methods for the proponent to consider in an environment where compliance at some receptors is marginal. The proponent should demonstrate that they have implemented all feasible and reasonable mitigation measures in attempting to meet any revised project specific noise level.

If background levels cannot be justified all feasible and reasonable mitigation measures must be considered to meet the revised project specific noise criteria and any subsequent exceedances of the criteria addressed consistent with the Department of Planning and Environment's voluntary land acquisition and mitigation policy.

Response 3:

Adopted RBLs for the project are justified and subsequent PSNLs were demonstrated to be satisfied. It is reiterated, that as stated in the NIA modelling results are a worst case and assume simultaneous operation of all plant at maximum capacity/power. Notwithstanding, several noise controls have been implemented at the project site and include:

- Implementation of a dedicated haul road that is positioned adjacent to a noise bund specifically designed to reduce line of site to receivers and to avoid traversing elevated positions within the site;
- The site proposes to avoid operating the crushing plant at night and will also restrict offsite transportation. This is considered a key reasonable and feasible measure that should be acknowledged. This initiative avoids key night periods where these acoustically significant sources will not operate during inversion meteorological conditions; and

- The crushing plant is proposed to be fully enclosed and this will provide a significant attenuation from this key noise source on site (not proposed at the time of the original noise assessment).

The project proposes to implement a noise management plan for the site that outlines key management and control strategies to reduce emissions further to the community, additionally, provides a method for managing and community concerns regarding noise if they arise.

Question 4 : Class G inversions need to included in the NIA

The assessment did not explain how the significance of inversion conditions was determined, but modelled F class as "worst case". Broken Hill is in an arid area, so G class inversion conditions should have been modelled. We expect that would increase predicted noise levels by about 4 dBA. All feasible and reasonable mitigation measures need to be applied in an effort to meet the project specific noise level.

The noise model for the project should be updated to include G class inversion conditions.

Response 4:

The noise model was reinstated for G Class inversion conditions, as stated in the noise assessment report, the modelling software used ISO9613 and Concawe algorithms. **Table 1** (see below) presents the results of operational project noise emissions under G Class inversions.

Question 5: Existing activities at the mine need to be included in the NIA

Response 5:

There were no activities occurring on the project site during the noise monitoring.

Question 6: Justification of modelled truck movements needs to be provided

Appendix C of the assessment indicates that two stationary haul trucks were placed: one in the Cosmopolitan Open Cut, and one on a former tailings storage facility. It appears that no moving trucks were included in the model. Both modelled locations appear to be further away or more shielded from

receivers than the proposed haul road. The proponent should better explain how truck movements were modelled on the site.

Justification should be provided in detail about how truck movements were modelled on site.

Response 6:

Two moving sources (line sources/strings) were included within the model as shown in Appendix C. The moving sources were representative of an internal haul truck and an offsite road truck.

The noise model for the assessment has been revised to include an additional line source that represents hauling from the tailings harvesting area to the ROM pad and the two stationary truck sources were deleted from the model. The sound power levels of the haul truck and off-site road truck are 108 dBA and 102 dBA respectively.

Results of the revised noise model using a G Class inversion and inclusion of the enclosed crushing plant are provided in **Table 1**. Enclosing the crushing plant provides an approximate noise reduction of between 6 dB to 8 dB. All remaining sources modelled remain consistent with those listed in Table 11 of the Noise Impact Assessment report. Results of the revised noise model identify that emissions from the project remain below the PSNLs at all assessed receivers.

Table 1 Predicted Operational Noise Levels, dBA LAeq(15min)

Noise Catchment	Period ¹	Prediction for Calm	Predictions for Worst Case Meteorology ²	PSNL
NC1	Day	37	N/A	38
	Evening	37	N/A	38
	Night	<30	34	35
NC2	Day	36	N/A	38
	Evening	36	N/A	38
	Night	<30	34	35
NC3	Day	30	N/A	36
	Evening	30	N/A	36
	Night	<30	30	35
NC4	Day	31	N/A	36
	Evening	31	N/A	36
	Night	<30	33	35
NC5	Day	<30	N/A	36
	Evening	<30	N/A	36
	Night	<30	<30	35
NC6	Day	<30	N/A	35
	Evening	<30	N/A	35
	Night	<30	<30	35
NC7	Day	<30	N/A	35
	Evening	<30	N/A	35
	Night	<30	<30	35
NC8	Day	<30	N/A	35
	Evening	<30	N/A	35
	Night	<30	<30	35
NC9	Day	<30	N/A	35
	Evening	<30	N/A	35
	Night	<30	<30	35

Note 1: Day period is 7am to 6pm, evening is 6pm to 10pm, night period is 10pm to 7am.

Note 2: Based on G Class Stability inversion meteorological conditions using ISO9613.

Summary

We trust this letter report addresses the current outstanding requirements. If you have any questions please contact the undersigned.

Yours sincerely



Oliver Muller
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Appendix 4

Review of Blasting Impacts

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TO: MITCHELL BLAND, PRINCIPAL ENVIRONMENTAL CONSULTANT, RW CORKERY & CO
GEOFF HENDER, DEPUTY GENERAL MANAGER - BROKEN HILL OPERATIONS

FROM: MIKE HUMPHREYS, PRINCIPAL D&B ENGINEER, PRISM MINING PTY LTD

SUBJECT: BROKEN HILL NORTH MINE BLAST VIBRATION REVIEW, APRIL 2017 (DRAFT)

DATE: 4TH MAY 2017

REVIEW OF BLASTING IMPACTS FROM THE PROPOSED PERILYA BROKEN HILL NORTH MINE (OVERPRESSURE AND GROUND VIBRATION)

SUMMARY

The following review of blasting impacts at the Perilya Broken Hill North Mine has been prepared in response to a request for additional information by the NSW EPA. The main points and findings are as follows:

- i. This review is based on proposed mining methods for the project and available monitored ground vibration data from similar (local) blasting operations. For detailed general information regarding the background and operation of the North Mine, refer to the Environmental Impact Statement prepared by RW Corkery & Co, February 2017.
- ii. Proposed blasting methods will include development blasting (access tunnels), cut and fill production blasting, and long-hole stope blasting. The significantly larger scale of stope blasting operations presents the greatest potential for ground vibration impact, and has therefore been used for "worst-case" analysis.
- iii. Given that there is to be no surface blasting at the North Mine, blast overpressure impacts are not considered applicable. Overpressure monitoring, carried out for initial blasting (approved for exploration) should be used to demonstrate that overpressure impacts are not applicable.
- iv. Based on available historical North Mine data, preliminary limiting ground vibration site constants have been selected for this assessment ($K=2500$, $a=-1.6$). Given the high level of variability of ground vibration from blasting, these preliminary site constants should be validated (and adjusted as required) using monitored data from initial (approved) exploration blasting, as it takes place, and then throughout the life of mine.
- v. Looking at the proposed scale of stope blasting, the applicable maximum charge (assuming hole-by-hole firing with fully charged blastholes), and the range of distances from sensitive

receptors (private residences), potential ground vibration impacts have been assessed. Two critical modelling locations were selected, being the current permanent North Mine Monitor and a 'modelling point' at the nearest residence. A permanent blast monitor should also be installed at that second modelling location. Indicative ground vibration outcomes suggest that impacts will largely be determined by blasting at closer distances to these locations.

- vi. Distances between stope blasts and the two selected locations vary between 344m (minimum) to over 1700m (point-to-point slope distance). Based on selected site constants, full scale stope blasting (without additional controls) could be expected to generate ground vibration levels greater than 5mm/s (PVS PPV) within 500m of sensitive receptors, and exceed 3mm/s PVS PPV within 700m.
- vii. Where the ground vibration impact from full scale stope blasting is likely to approach or exceed compliance limits, strategies for managing such impact have been suggested (referred to as "close proximity blasting"). These strategies (such as decking and timing adjustments) will need to be adopted as ongoing blast monitoring and assessment deems necessary. Compliance with a 3mm/s ground vibration constraint may not be practical at closest distances.
- viii. Smaller scale cut & fill production blasts and development blasts are not considered to be critical, unless fired as part of a multi-blast event, and will then need to be assessed on a case-by-case basis as combined events. Critical blasts should not be fired as part of multi-blast firings if this is likely to generate reinforced ground vibration outcomes. Long duration blast events should be considered carefully as they are highly perceptible to near neighbours, even at low peak ground vibration levels.
- ix. Where possible, stope blasting should commence at distances that provide a high degree of confidence that compliant ground vibration outcomes at sensitive locations can be achieved. Data collected from these blasts can then be used to validate closer (more critical) blasts. Compliant blasts should be assessed to determine whether they would remain compliant at minimum distances and, if not, modifications to designs and processes implemented.
- x. The need for an ongoing and controlled design-implementation-review process is evident and should be integrated with existing planning, operational and environmental management systems. Data should be validated by review of records (planned versus actual) and maintained in a format (database or spreadsheet) that facilitates the analysis and comparison of blasts (and vibration impacts) on an ongoing basis. Ground vibration waveforms should be reviewed and stored, not just peak vibration levels.

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1. MINING METHODS

Blasting methods to be employed at the Perilya Broken Hill North Mine will include development blasting (access tunnels), cut and fill production blasting, and long-hole stope blasting, as illustrated below:

Figure 1.1 - Illustration of long-hole stoping and cut and fill mining methods showing generalised blasthole layout (source EIS, RW Corkery & Co, February 2017).

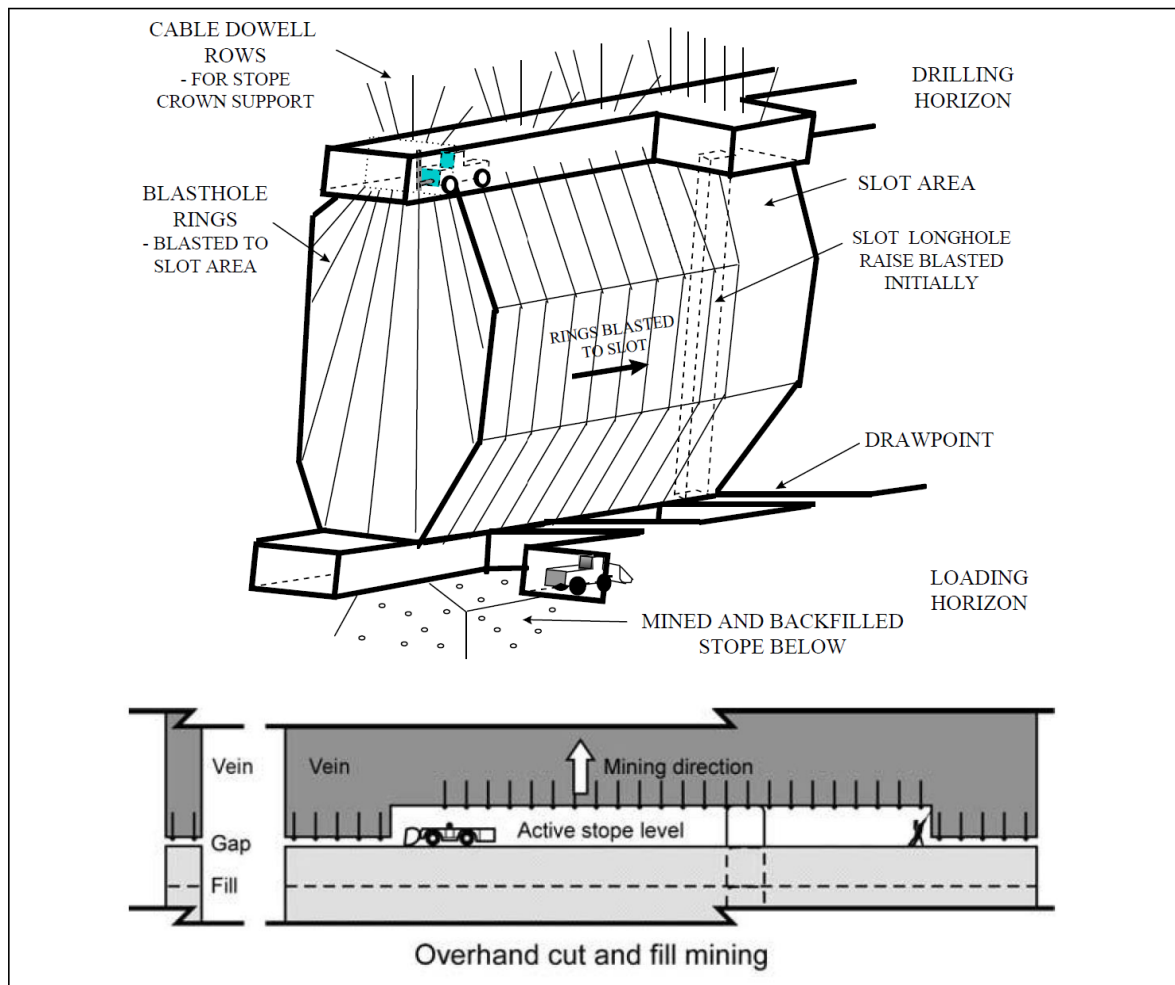


Table 1.1: Proposed blast parameters used to estimate ground vibration outcomes at residential locations adjacent to North Mine (source Perilya Broken Hill Ltd).

Parameter	Development blasting*	Cut & fill production blasting*	Long hole stope production blasting*
Blasthole diameter (mm)	45	45	76
Range of blasthole length (m)	0.5 to 3.5	0.5 to 3.5	1 to 21
Range of charge mass per blasthole (kg)	1 to 6	1 to 6	5 to 105
Maximum instantaneous charge mass (kg)	2 to 24 (2 to 4 holes per delay)	2 to 24 (2 to 4 holes per delay)	105 (hole-by-hole firing)

* Given the difference in the scale of blasting across different mining methods, parameters for long-hole stope blasting will be used as a “worst case” for ground vibration calculations.

2. OVERPRESSURE IMPACT

Given that there is to be no surface blasting at the North Mine, blast overpressure impacts are not considered applicable. The closest distance from underground blasting to surface has been estimated to be greater than 350m, by indirect route to the portal within the Cosmopolitan Open Cut, or to via surface ventilation shafts. In most cases this distance is significantly greater.

While overpressure is commonly monitored with ground vibration at surface locations, it is not usually an applicable impact from underground blasting, with the exception of blasting close to portals or openings at surface. Surface “overpressure results” from underground blasts are generally due to wind levels recorded at the time of the blast event, or structural and/or microphone movement in response to ground vibration (none of which should be considered blast overpressure).

In the case of the North Mine, openings from the underground workings to the surface include (i) the Cosmopolitan Portal; (ii) the Lower Portal (an opening within the base of the Cosmopolitan Open Cut); and (iii) No 2 Shaft ventilation rise.

In all cases blasting would be more than 350m, by indirect route, to any surface opening. Blasting in the vicinity of the No 2 Shaft ventilation rise would be at depths of more than 350m below surface. Perilya have also advised that the lower portal will be sealed prior to all blasts.

Overpressure monitoring, carried out for initial blasting (approved for exploration) should be used to demonstrate that overpressure impacts are not applicable.

3. GROUND VIBRATION IMPACT

Blast induced ground vibration levels are commonly estimated using the standard equation:

$$PVS = K \times SD^a$$

Where:

PVS = peak vector sum vibration (mm/s),

K = K-factor site constant (typically falling between 500 to 5000),

a = exponent site constant (typically -1.4 to -1.6),

SD = scaled distance (m/sqrt.MIC) = D/(sqrt(MIC)),

D = distance between the blast and monitoring location or point of interest (m),

MIC = maximum instantaneous charge (kg per blasthole, deck or delay interval as appropriate[#]).

Note[#]: A consistent method of calculating MIC must be used when comparing trends in vibration for ‘similar’ blasts.

3.1 Site constants (K, a)

Determination of appropriate site constants (K and a) when commencing operations can be difficult, as these parameters reflect the variability of explosive performance in a heterogeneous rock mass, where blast geometry, firing sequence, intervening geological conditions and ground response all affect vibration outcomes. Preliminary site constants can be developed using historically available local data, as illustrated by previous North Mine operations (2007 to 2008), recent South Mine operations (2016), and other local operations. This has been presented in scaled form in Figures 3.1, 3.2, and 3.3 (peak vector vibration versus scaled distance), with respect to the minimum expected scaled distance for the proposed North Mine (SD=34 at an MIC=105kg and distance=344m) and the standard EPA-imposed ground vibration limit of 5mm/s.

Points to note, and conclusions, from the available data are as follows:

- Historical North Mine data represents the only data set for blasts fired at the North Mine location and monitored at an applicable monitoring point (ie the North Mine Monitor).
- There is no local data available at, or below, the minimum scaled distance applicable between the North Mine and the North Mine Monitor for stope blasting at this stage. Initial blasting (approved for exploration) should be monitored to provide data at closer proximity using intermediate monitors.
- The data sets are historical and have not been filtered or validated, hence are indicative. They have been used to illustrate a potential range in outcomes, scaled to account for varying distance and instantaneous charge mass. A wide range of variation is clearly evident in all data sets, but given all results are below the standard EPA-imposed 5mm/s limit it is likely that much of the data represents the outcomes from blasts which were not treated as “vibration critical”, and therefore had not been subject to specific controls to manage vibration.
- A site specific exponent (a factor) has not been determined, and will need to be developed once approved initial blasting commences. The value $a=-1.6$ has been selected at this stage as it is quite typical. Determination of the exponent is best determined using at least three monitors in a straight line from the blast. With the location of a fixed monitor, an additional two portable monitors would be useful for this (and other applications mentioned later).
- An initial (indicative) K-factor of 2500 has been selected as a starting point, given it represents the upper limit of the most applicable data set available (Figure 3.1). This should be considered a starting point, to be refined as blast monitoring allows. Until then, a lower K-factor is not justified.

Figure 3.1: Historical North Mine Stope Blast Data 2007-2008 (source Perilya Broken Hill Ltd).

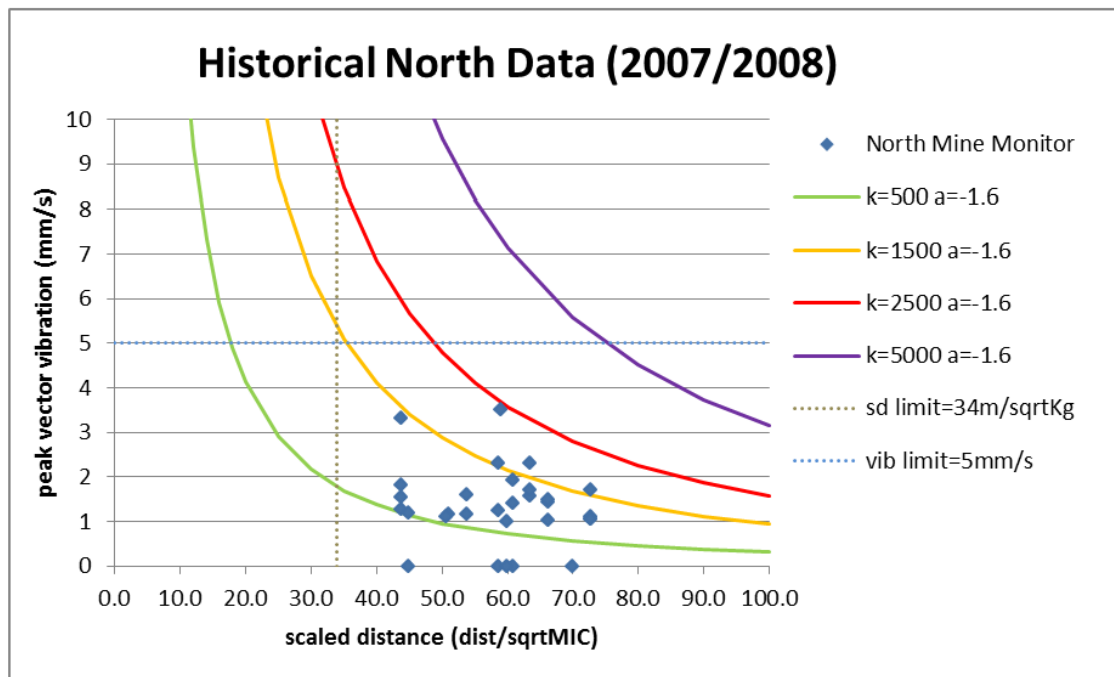


Figure 3.2: Recent South Mine Stope Blast Data 2016 (source Perilya Broken Hill Ltd).

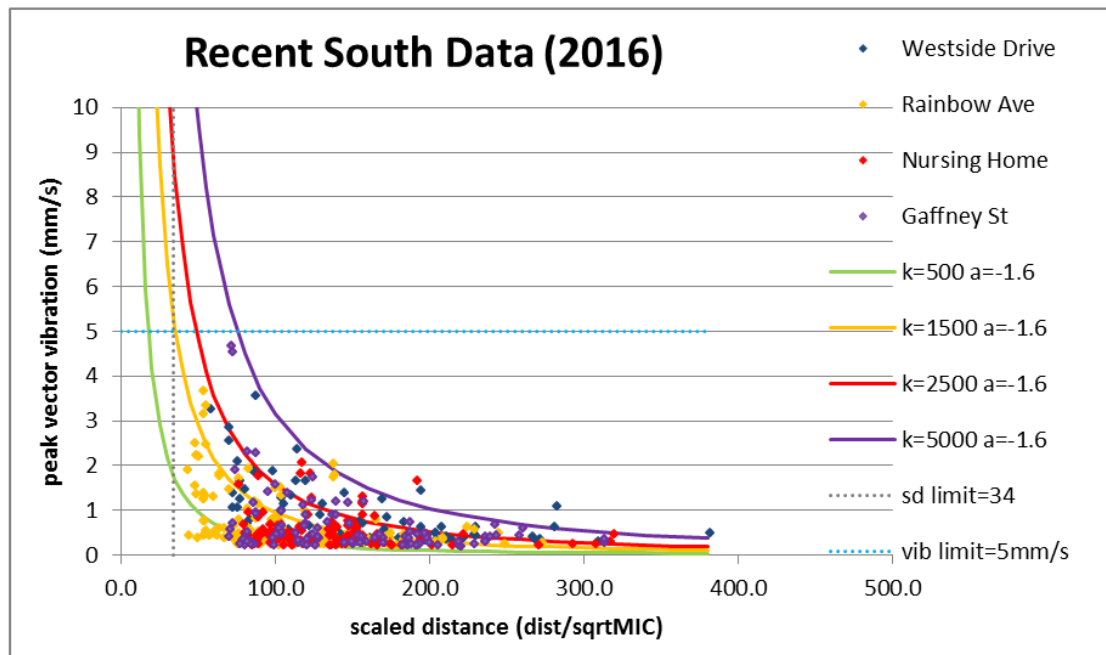
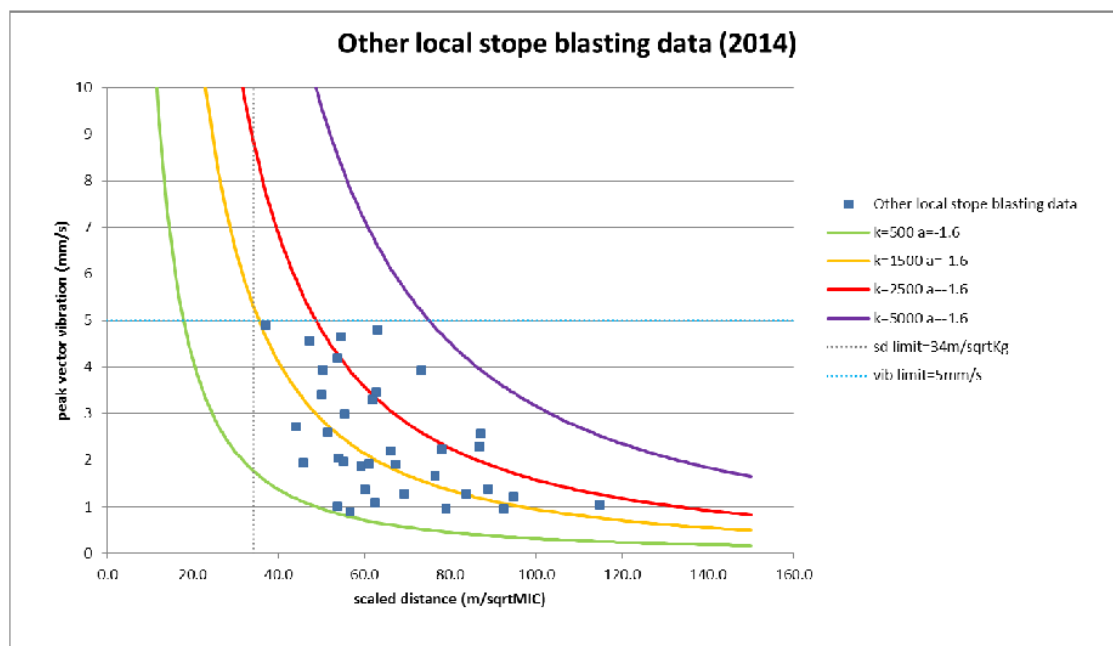


Figure 3.3: Other Local Stope Blast Data 2014 (source Prism Mining Ltd).



3.2 Scaled distance (distance and maximum charge)

The range in distance between stope blasts and nearest neighbours is illustrated in Figure 3.4 (plan) and Figure 3.5 (long section). Minimum and maximum distances from the North Mine Monitor and nearest private residence are presented in Table 3.1 with respect to a proposed mining schedule (2017 to 2024), and Table 3.2 with respect to the range in slope distances between proposed stopes and the nearest sensitive location.

Figure 3.4 shows the monitoring and modelling points with respect to operations and nearest private residences. The identified modelling point represents the closest private residence to blasting and a new monitoring point should be established here. A monitoring point is also located at Junction Circle, but is closer than private residences and should be used for data validation rather than compliance. The North Mine Monitoring Point may be considered representative of locations close to the Mine Site entrance.

Table 3.1 shows indicative vibration outcomes at the two most critical locations, based on $K=2500$, $a=-1.6$ and maximum charge of 105kg. For vibration outcomes greater than 5mm/s and between 5mm/s and 3mm/s, limiting maximum charge mass is also indicated. Limiting charge mass has been classified as falling between 105kg (full column) and 50kg (decked) or as falling below 50kg (multiple decks). Note that multiple deck blasting may be impractical to charge (particularly in up-holes), and/or sequence effectively for both blast performance and vibration control.

Table 3.2 shows indicative ground vibration outcomes at distances ranging from 344m to 1750m, to illustrate the potential extent of close proximity blasting issues (based on $K=2500$, $a=-1.6$ and maximum charge of 105kg). Again, limiting charge mass is indicated where full-column charging is not justified.

Figure 3.4: Plan showing stope locations with respect to monitors and private residences.



2017		2018		2019		2020	
1H	2H	1H	2H	1H	2H	1H	2H
2021		2022		2023		2024	
1H	2H	1H	2H	1H	2H	1H	2H

Figure 3.5: Long section showing stope locations with respect to open cut and shafts.

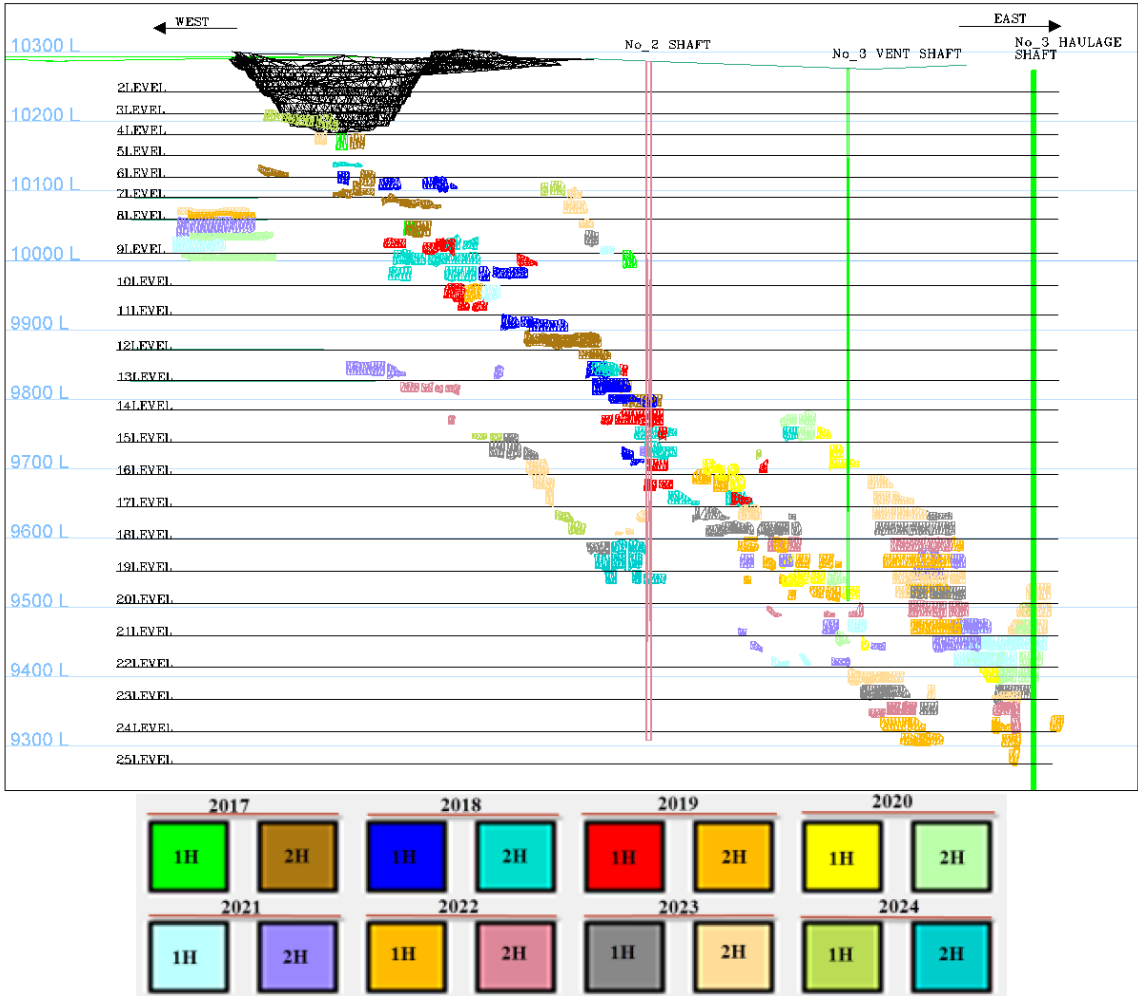


Table 3.1: Minimum and maximum distances between stope blasts and nearest residential locations, with respect to a proposed mining schedule (2017 to 2024).

year	First half / second half		Distance to Modelling Point (m)	pvs (mm/s)	MIC Limit (kg) for 5mm/s	MIC Limit (kg) for 3mm/s	Distance to North Mine Monitor (m)	pvs (mm/s)	MIC Limit (kg) for 5mm/s	MIC Limit (kg) for 3mm/s
2017	1H	MIN	500.2	4.97		55.9	560.0	4.15		70.0
	1H	MAX	890.5	1.97			627.3	3.46		87.9
2017	2H	MIN	404.3	6.99	69.1	36.5	560.0	4.15		70.0
	2H	MAX	979.5	1.70			726.6	2.73		
2018	1H	MIN	512.9	4.77		58.7	559.3	4.16		69.9
	1H	MAX	1009.4	1.62			765.4	2.52		
2018	2H	MIN	497.9	5.01	104.8	55.4	552.1	4.24		68.1
	2H	MAX	1183.8	1.25			895.0	1.96		
2019	1H	MIN	568.9	4.04		72.3	528.3	4.55		62.3
	1H	MAX	1171.9	1.27			891.2	1.97		
2019	2H	MIN	377.9	7.78	60.4	31.9	610.8	3.61		83.3
	2H	MAX	1496.3	0.86			1136.1	1.34		
2020	1H	MIN	1100.8	1.41			831.5	2.20		
	1H	MAX	1628.2	0.75			1277.7	1.11		
2020	2H	MIN	387.1	7.49	63.4	33.5	608.9	3.63		82.8
	2H	MAX	1703.3	0.70			1322.3	1.05		
2021	1H	MIN	363.5	8.28	55.9	29.5	601.4	3.70		80.8
	1H	MAX	1660.4	0.73			1283.0	1.10		
2021	2H	MIN	353.1	8.68	52.7	27.8	593.9	3.78		78.8
	2H	MAX	1575.9	0.79			1226.1	1.18		
2022	1H	MIN	1206.9	1.21			922.8	1.87		
	1H	MAX	1719.8	0.69			1378.9	0.98		
2022	2H	MIN	692.7	2.95			621.1	3.51		86.2
	2H	MAX	1697.3	0.70			1351.7	1.01		
2023	1H	MIN	811.5	2.29			588.0	3.84		77.2
	1H	MAX	1716.2	0.69			1338.6	1.03		
2023	2H	MIN	343.9	9.05	50.0	26.4	588.3	3.83		77.3
	2H	MAX	1674.6	0.72			1323.3	1.05		
2024	1H	MIN	425.7	6.43	76.6	40.5	586.9	3.85		76.9
	1H	MAX	1646.6	0.74			1253.5	1.14		
2024	2H	MIN	1050.1	1.52			835.8	2.19		
	2H	MAX	1154.0	1.30			906.7	1.92		
Max charge length = 21m @ 76mm dia; MIC = 105kg (ANFO)										
Min distance = 344m										
K-factor=2500			PVS greater than 5mm/s				Max charge between 105kg and 50kg			
Exponent a=-1.6			PVS between 3mm/s and 5mm/s				Max charge less than 50kg			

Table 3.2: Ground vibration outcomes and limiting maximum charge with respect to distance from sensitive receptors.

k	2500		
a	-1.6	PVS1	PVS2
MIC	105	5	3
Distance to Sensitive Receptor (m)	pvs (mm/s)	MIC Limit (kg) for 5mm/s	MIC Limit (kg) for 3mm/s
344.0	9.04	50.1	26.4
400.0	7.11	67.7	35.7
450.0	5.89	85.6	45.2
500.0	4.97		55.8
550.0	4.27		67.6
600.0	3.71		80.4
650.0	3.27		94.4
700.0	2.90		
750.0	2.60		
800.0	2.34		
850.0	2.13		
900.0	1.94		
950.0	1.78		
1000.0	1.64		
1050.0	1.52		
1100.0	1.41		
1150.0	1.31		
1200.0	1.23		
1250.0	1.15		
1300.0	1.08		
1350.0	1.01		
1400.0	0.96		
1450.0	0.91		
1500.0	0.86		
1550.0	0.81		
1600.0	0.77		
1650.0	0.74		
1700.0	0.70		
1750.0	0.67		
Max charge = 105kg (ANFO) at length=21m, diameter=76mm)			
K-factor=2500		Exponent a=-1.6	
Min distance = 344m			
PVS greater than 5mm/s			
PVS between 3mm/s and 5mm/s			
Max charge between 105kg and 50kg			
Max charge less than 50kg			

4. CONTROLLING BLAST VIBRATION

The following blast design limitations and process control requirements should be considered based on the standard EPA-imposed peak ground vibration limit of 5mm/s (peak vector ppv) at private residential locations, for at least 95% of blasts. However, I am advised that the EPA are considering a limit of 3mm/s (peak vector ppv) at private residential locations, for at least 95% of blasts, and some additional commentary is included in the event that this lower limit is implemented.

- The standard peak vector ppv limit of 5mm/s (for 95% of blasts) should be considered appropriate given the widespread application of this limit in Australia and NSW, and given the need to operate at relatively close proximity with limited site operational data currently available. While the ANZECC blasting guideline references a long-term goal of <2mm/s at sensitive receptors, it is not (to my knowledge) typically applied as a consent condition; it would realistically require long-term site experience to achieve when blasting in close proximity to sensitive receptors; and could be unachievable for many operations at the distances within which the North Mine must operate. I understand the history upon which the EPA would consider a goal of <3mm/s at sensitive receptors to be “appropriate to mitigate unreasonable vibration impacts”, but it is important to note that a lower peak vibration limit will not necessarily result in desirable outcomes. Most likely it will result in slower-timed, longer duration, more perceptible blast events that will result in complaints regardless of peak vibration levels. Alternatively, the scale of blasting can be reduced to achieve lower vibration levels, requiring a significant increase in the number of blast events “experienced” by near neighbours, and possibly impacting production levels to the point of being uneconomic. Unreasonable vibration impacts are, of course, to be avoided as much as possible, but a wider scope that looks at the extent to which that impact is perceived, and how often, should apply rather than just a peak vector outcome.
- Proposed “standard” stope blasting methods may not be appropriate within 500m of private residences where vibration limits of 5mm/s apply, and modified “close proximity” blast designs could be required (see Figures 4.1 and 4.2). If a lower design target of 3mm/s is applied then close proximity stope blasting designs could be required at distances up to 700m and may not be fully effective at distances below 500m. Strategies for close proximity blasting should incorporate a range of design and implementation options (detailed later), but need to be selected on the basis of maintaining effective blast performance and production output. Given that close proximity blasts may necessarily be of a smaller scale to standard production blasts, the scheduling of these events will need to be carefully considered in order to avoid production bottle-necks.
- Smaller scale cut & fill production blasts and development blasts are not considered to be critical, unless fired as part of a multi-blast event, and will then need to be assessed on a case-by-case basis as combined events.
- All blasting should be treated as critical, with appropriate design, implementation and review procedures, good record keeping and communication etc, under applicable management systems (blasting & environmental). It is particularly important that any differences between “as designed” and “as built” are identified, in order that blasting outcomes can be properly assessed. However, where critical “close proximity” blasts are identified, some additional levels of control are often warranted. Current processes/systems should be reviewed and additional requirements identified where appropriate. This can be in the form of management sign-off, peer-review of designs, supervision and audit of processes, and reconciliation of records etc.

- Initial blasting, to be carried out under the current exploration approval, should be well monitored in order to validate (or otherwise) preliminary site constants. Ideally, up to 2 portable monitors should be placed at intermediate distances between the blast and the applicable fixed compliance monitor, to provide data that will refine the site exponent and K-factor. It would be preferable that initial blasting is not carried out at minimum distances from private residences, and a portable monitor placed at the minimum distance from the blast (350m) as a check on likely future levels. The portable monitors can also be used in the event of complaints, to quantify the levels at which these are occurring, and to identify anomalous results.
- Waveforms should be reviewed for all initial blasts (and on an ongoing basis) to identify root causes of peak vibration results and validate the data (i.e. the monitors are working correctly). For example, peak vibration(s) may coincide with firing the first hole in the first ring; the first hole in every ring; sympathetic detonation of multiple holes; excessive confinement due to excessive burden; vibration reinforcement due to timing; vibration build-up over the duration of the blast due to ground response; or the firing of multiple blast events simultaneously; etc. Identification of these causes allows appropriate design modification(s) and process changes to be made.
- “Close proximity” blasting, specifically within 500m of residences for a 5mm/s limit, or within 700m for a 3mm/s limit, should be carried out with the following considerations:
 - Do previous (similar) blasts suggest that the blast in question will be compliant? If not, then what changes can be made?
 - Is it practical to reduce maximum charge mass using decked charges (down holes are easier than up-holes), reduced blasthole diameter, reduced bench height, reduced explosive density?
 - Can we reduce overall blast size (and associated duration) by reducing the number of rings fired, to reduce the potential for build-up of vibration? This needs to be validated by reviewing monitored waveforms.
 - Ensure appropriate confinement/relief using tightly controlled burdens and spacing between holes and rings (QA/QC), and subsequent charging and timing to suit. Control charge mass and firing sequence with appropriate communication of design information, supervision of operations, record keeping, reconciliation and feedback to production teams.
 - Avoidance of simultaneous multi-blast events that have a potential for higher (reinforced) vibration outcomes.
 - Avoidance of long-duration blast events which can be very perceptible, even at low vibration levels.
 - Selection of blast firing times that minimise the exposure of nearest neighbours.
 - Pre-emptive monitoring at nearest locations (using a portable monitor) rather than waiting for a complaint to identify most sensitive residences.
 - Modified designs will ideally be trialled at distances greater than minimum, in order to validate potential outcomes at lower risk. Compliant ground vibration outcomes from these blasts must be assessed for compliance at minimum distances (see Figure 4.3).
- Ongoing blasting to be carried out in response to actual outcomes, with site models reviewed regularly, impacts minimised where possible, and communication maintained with neighbours.

Figure 4.1: Plan showing location of stope blasts at distances <500m, 500m to 700m and >700m from nearest private residences.

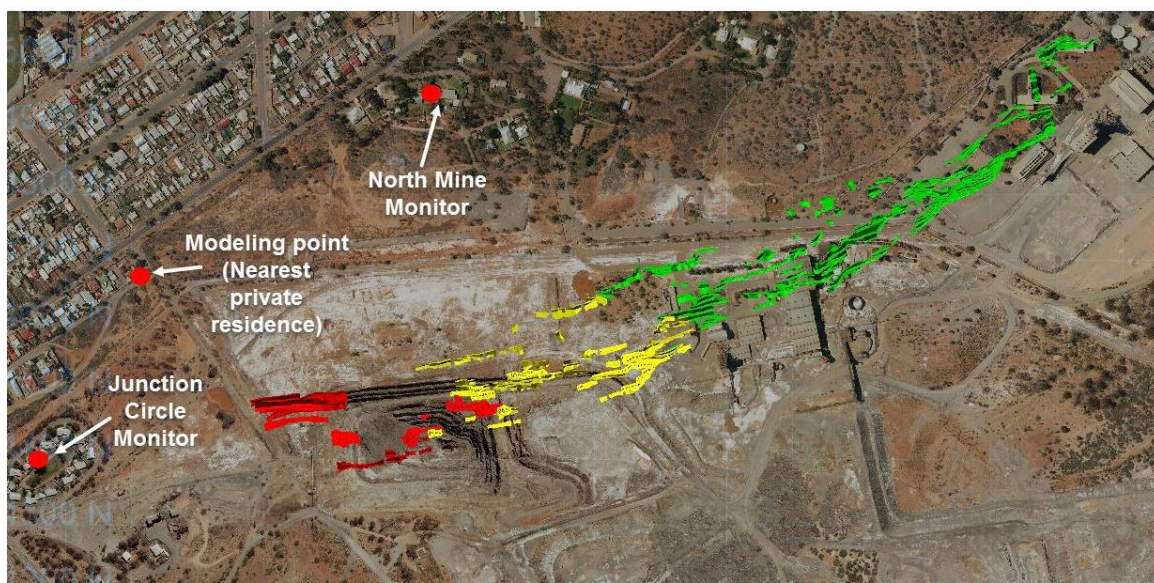


Figure 4.2: Long section showing location of stope blasts at distances <500m, 500m to 700m and >700m from nearest private residences.

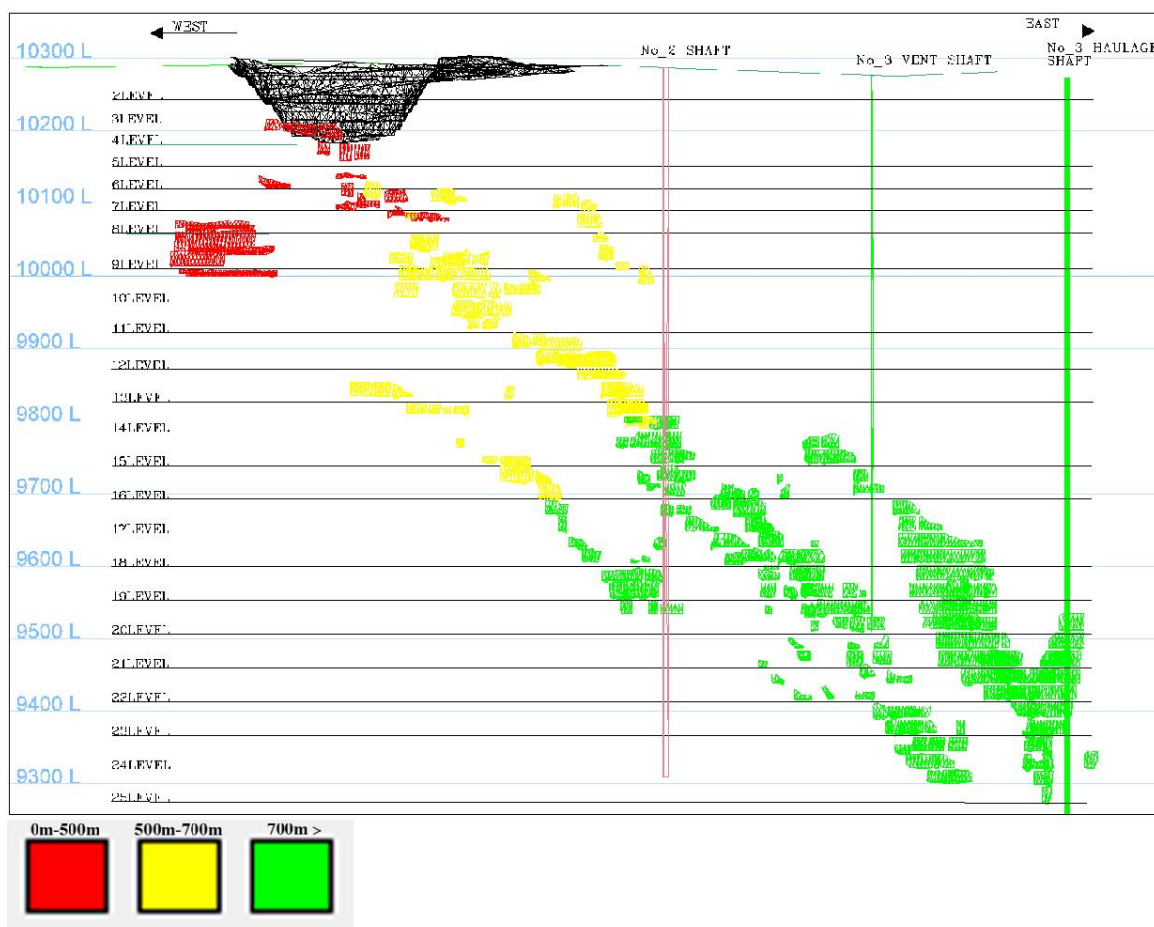
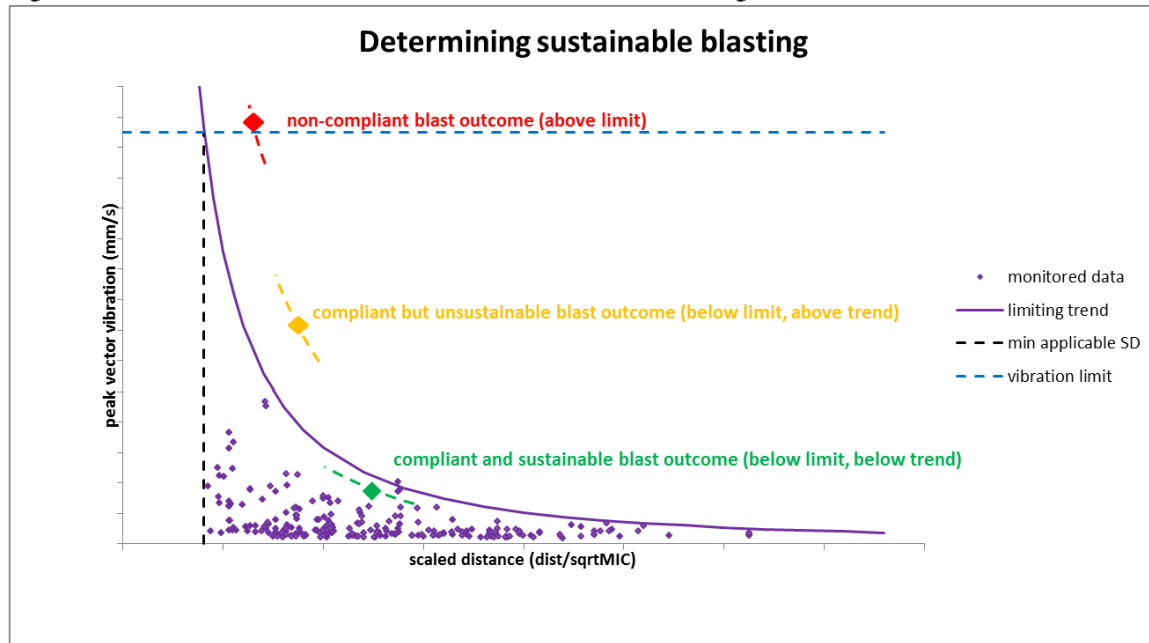


Figure 4.3: Illustration of sustainable and unsustainable blasting outcomes.



5. RECOMMENDATIONS

Given the potential for a high level of variability in the performance of underground stope blasts, it is recommended that approved exploration blasting is used to develop site-specific vibration trends, in order to maintain compliant ground vibration outcomes at nearby residential neighbours.

Some mining areas are significantly closer to nearby residences than others, with a higher potential for associated ground vibration impact. This must be taken into account and requires a high level of control over design, implementation, data collection, and vibration assessment processes.

The need for an ongoing and controlled blasting process is evident and should be integrated with planning, operational and environmental management systems. Close proximity blasting at closer distances to sensitive receptors will require modifications to standard stope blast designs.

Overpressure impacts at nearby private residences should not be applicable, given that there is to be no surface (or near-surface) blasting. This can be demonstrated by monitoring preliminary blasts.

Graphical comparison of scaled data (peak vibration versus scaled distance) should be conducted on a blast-by-blast basis for similar shots, to identify ongoing trends and changes in trend. Blast vibration waveforms should be reviewed (not just peak vibration results). Note that local geological structure, the presence of fill and/or voids, blast orientation and firing sequence can have had a strong influence on peak vibration outcomes.

In addition to fixed monitors required for compliance monitoring at identified locations, additional portable monitors should be utilised to refine site models, validate unexpected results and respond to complaints.

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