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US EPA RECORDS CENTER REGION 5
1007454

RZ2.R05033.01.ID.021

ATKEARNEY

July 16, 1996

Mr. William Buller
US Environmental Protection Agency
Region 5 - DRE-8J
77 W. Jackson Boulevard
Chicago, IL 60604

P.3.2

Reference: EPA Contract No. 68-W4-0006; REPA Work Assignment No. R05033; EPA ID No. IND044587848, Former Franklin Power Products/ Amphenol Facility, Franklin, Indiana; Review of Report of Additional Corrective Measures Studies for the Former Amphenol Facility; Task 02 Deliverable

Dear Mr. Buller:

Please find enclosed A.T. Kearney's review comments covering the Report of Additional Corrective Measures Studies for the Former Amphenol Facility (the Report). This review was completed by comparing the Work Plan submitted by Amphenol on February 9, 1996, and your responses and modifications dated March 12, 1996 against the Report submitted in June of 1996. In addition, please find a diskette enclosed which contains this review in WordPerfect 6.0 format.

In general, the investigation of the Forsythe Street area near the Former Amphenol facility was completed in conformance with the requirements included in your March 12, 1996 letter. It appears that the constituent concentrations have decreased significantly both near Forsythe Street and at MW-12 on the facility. However, it does not appear that Amphenol has fully justified their recommended corrective measure, which consists only of continued monitoring.

In addition, the evaluation and information presented regarding the ICM is still not adequate since the ICM has not yet been proven to be effective. Despite the evidence that sufficient reduction of the potentiometric surface to prevent contaminated groundwater inflow to the storm sewer is not occurring, Amphenol contends that the system is operating as desired. As it appears that contaminated groundwater may be entering the storm sewer during certain periods of time, Specific Comment 5 suggests that surface water samples be collected downstream of the storm sewer outlet during periods when the contaminated groundwater is entering the sewer.

Also, the Hurricane Creek investigation has not been adequately completed. Amphenol's contention is that a visual inspection of Hurricane Creek was performed and was deemed as adequate to evaluate the potential for contaminant loading of the sediment and to define the interconnection between the Unit B and C aquifers and the creek. However, A.T. Kearney feels that more investigation of Hurricane Creek may be warranted. Specifically, multiple discharge measurements can be taken along the reach of the creek to determine whether Hurricane Creek is a gaining or loosing stream (i.e., to determine whether groundwater is impacting the sediments and surface waters). In addition, sampling of sediments was to occur during periods of low or no flow. However, Amphenol states that no flow conditions never exist, and the creek has therefore not been sampled. The lack of no flow condition should not preclude sampling during low flow conditions. As indicated in Specific Comment 1, you may wish to further evaluate Amphenol's activities with respect to Hurricane Creek in the interest of determining whether they must be instructed to perform these additional investigative activities.

Please feel free to contact me or the A.T. Kearney Work Assignment Manager, Mr. John Koehnen, at 312/223-6253, if you have any questions.

Sincerely,

for P.B.D.

Patricia Brown-Derocher
Regional Manager

cc: F. Norling, EPA Region 5, w/o att.
W. Jordan, Central Files
J. Koehnen
A. Williams

FRANKLIN POWER PRODUCTS/AMPHENOL FACILITY
FRANKLIN , INDIANA
CORRECTIVE ACTION REVIEW AND FIELD OVERSIGHT
IND044587848

REVIEW COMMENTS ON REPORT OF ADDITIONAL CORRECTIVE MEASURES STUDIES FOR THE FORMER AMPHENOL FACILITY

Submitted to:

Mr. William Buller
Work Assignment Manager
US Environmental Protection Agency
Region 5
77 W. Jackson DRE-8J
Chicago, Illinois 60604

Submitted by:

A.T. Kearney, Inc.
222 W. Adams Street
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EPA Work Assignment No.	**: R05033**
Contract No.	**: 68-W4-0006**
A.T. Kearney WAM	**: John Koehnen**
Telephone No.	**: (312)223-6253**
EPA WAM	**: Mr. William Buller**
Telephone No.	**: (312)886-4568**

July 16, 1996

FRANKLIN POWER PRODUCTS/AMPHENOL FACILITY
FRANKLIN, INDIANA
REPORT OF ADDITIONAL CORRECTIVE MEASURES STUDIES
FOR THE FORMER AMPHENOL FACILITY
DATED JUNE 1996

GENERAL COMMENTS

1. The Report of Additional Corrective Measures Studies (CMS) for the Former Amphenol Facility (hereinafter referred to as the Report) states that this document is intended to be an Addendum to the original CMS Report and refers to historical information contained in the original CMS Report. For clarity to all readers, revise the title of this Report to include the fact that it is an addendum to the original (e.g., "Addendum Report of Additional Corrective Measures Studies for the Former Amphenol Facility").

2. The Report attempts to prove that natural mechanisms are having a significant impact in the reduction of volatile organic constituent (VOC) concentrations, specifically tetrachloroethylene (PCE), trichloroethylene (TCE), trichloroethane (TCA). Sections 3.6, 6.2.2, 7.2.1, and 9.2 indicate that contaminant levels in the groundwater in Operable Area 3 have decreased significantly since 1993 and that the plume is expected to dissipate with time. Sections 7.2.1 and 9.2 indicate that the decreasing contaminant levels may be the result of natural attenuation mechanisms, perhaps including some combination of volatilization, dilution and biodegradation. While is does appear that there has been a reduction in VOC concentrations in groundwater in the northern part of Forsythe Street, based upon the historical constituent concentrations versus those recently identified, the Report does not provide adequate information to demonstrate that downgradient migration of VOC contamination at levels of concern is still not occurring. The Report also does not provide adequate justification for the assertion that biodegradation and/or natural attenuation of VOCs is occurring within the plume. Since the occurrence of natural reduction in the concentration of VOCs in the groundwater in Operable Unit 3 is Amphenol's primary justification for not conducting active corrective measures in the area, provision of adequate back-up data within the Report is crucial.

   Revise the Report to present the results of groundwater flow modeling (using site-specific data on aquifer characteristics and groundwater gradients) to demonstrate that the rate and direction of plume migration will not result in a risk to human or ecological receptors via discharge of contaminated groundwater to water supply wells or to Hurricane Creek.

   In addition, provide a fate and transport evaluation of the amount and rate of natural degradation of VOC constituents in groundwater. Compare the types and

FRANKLIN POWER PRODUCTS/AMPHENOL FACILITY
FRANKLIN , INDIANA
REPORT OF ADDITIONAL CORRECTIVE MEASURES STUDIES
FOR THE FORMER AMPHENOL FACILITY
DATED JUNE 1996

SPECIFIC COMMENTS

1.0 INTRODUCTION (Page 1)

1. The first paragraph states that the investigation of Hurricane Creek was to be carried out under low flow or no flow conditions. Subsequent discussion indicates that the stream has not, and is not expected to, dry up to allow for the required investigation. However, it is possible that there will be, or has been, a period of low flow when the depositional patterns and strata which may be relevant to this investigation will be/has been available for visual analysis and potential sampling. This investigative option is not discussed in the Report, nor are recommendations made which will address this issue now or in the future. Revise the Report to provide additional information about how and when the activities described in the Supplemental Work Plan for the Hurricane Creek Investigation will be completed.

3.0 RESULTS OF ADDITIONAL FIELD WORK (Pages 6 to 13)

3.4 HURRICANE CREEK SURVEY (TASK 6) (Pages 9 and 10)

2. The statement made in the last paragraph of this section is, while potentially accurate, inappropriate. The ICM has not been operated to its design capacity and as such has also not been proven to be effective under all operating and field conditions in lowering the groundwater level sufficiently to eliminate the introduction of contaminated groundwater into the storm sewer invert. This statement should either be revised to be accurate or eliminated from this section.

5.0 INTERIM CORRECTIVE MEASURES (Pages 13 to 17)

5.2 SYSTEM INFORMATION (page 14)

3. The wording in this section is somewhat vague and infers that changes may have been made to the system which have altered the potential capacity of the ICM. This is noted in the second paragraph with the use of the words "initially" and "were". In addition, Section 5.4, third paragraph indicates that the pump at RW-1 was replaced, but the Report does not provide design or capacity specifications of the new pump. Revise the Report to include the current specifications of the ICM equipment and/or

sampling, with analysis for VOCs, will be required during periods when the ICM fails to maintain the potentiometric surface below the storm sewer invert. Revise the Report to include a plan for collecting surface water samples downstream of the storm sewer outlet during periods when groundwater level monitoring shows that the potentiometric surface in the vicinity of the ICM pumping wells is above the storm sewer invert.

10.0 FINAL RECOMMENDATIONS (pages 24 and 25)

6. The second to the last paragraph indicates that appropriate institutional controls are also recommended. However the appropriate controls have not been identified. In addition, if Alternative 2 is ultimately chosen, institutional controls would be warranted until such time that the necessary information is developed to demonstrate to public agencies and residents that impacts to ground water are decreasing and that any environmental risks are being minimized (as per Section 7.2.3). Revise the Report to include additional details on the anticipated institutional controls.

7. The Report states that VOC contamination in the soils is below the ARAR concentrations. Based upon this Report it appears that this information is correct. However, the recent investigation identified other constituents, namely arsenic and beryllium, which were detected at levels exceeding ARARs. The significance of these findings is not discussed in this Report nor are any further investigations discussed. Revise the Report to provide a discussion of the significance of these findings and offer information on the source(s) of the elevated concentrations of arsenic and beryllium.

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D.3.1

RZ2-R05033.01-ID-008

AT KEARNEY

November 10, 1995

Mr. William Buller
U.S. Environmental Protection Agency
Region 5 - HRE-8J
77 W. Jackson Boulevard
Chicago, IL 60604

Reference: EPA Contract No. 68-W4-0006; REPA Work Assignment No. R05033; Corrective Measures Study Report; EPA ID No. IND044587848; Former Franklin Power Products/Amphenol, Franklin, Indiana; Review Comments for the Revised Corrective Measures Study Report (September 1995); Revised Task 02 Deliverable

Dear Mr. Buller:

Please find enclosed A.T. Kearney's revised review of the September 1995 Corrective Measures Study (CMS) Report for the above-referenced facility. This review report is focused differently than the deliverable submitted by A.T. Kearney on October 19, 1995, as requested by the EPA Work Assignment Manager (EWAM), Mr. William Buller. Accompanying this review is a 3.5" diskette containing the comments in Word Perfect 5.1 format.

This technical adequacy review, which was prepared using relevant EPA guidance, focused on ensuring that U.S. EPA Region 5's initial comments submitted to the facility August 15, 1995 were adequately addressed in the Revised CMS Report. Each response has been reviewed and each instance where a comment was not responded to adequately has been identified and a recommended facility response provided.

As discussed in the Kearney Team's October 19, 1995 deliverable, the initial review did not focus on the Forsythe Street area (Area 3) VOC contamination of soils and groundwater resulting from releases from the sanitary sewer system, since it was our understanding that EPA Region 5 would be developing responses to the facility on this matter. In addition, also based on our original understanding, the first review identified primarily key issues/deficiencies for which corrections were deemed necessary. Both of these issues have been addressed in detail in this deliverable.

There is one additional issue we would like to bring to your attention. Specific Comment 12 has not been addressed by the facility. It is true that investigation of potential air impacts is included in Section III of the Administrative Order of Consent (AOC). However, Amphenol contends that Section VII does not specify that the facility conduct air monitoring. Since A.T. Kearney does not have a copy of the AOC, it is our recommendation that your general council be consulted to determine the enforceability of Specific Comment 12.

Please contact me at 312/223-7088 or the Kearney Work Assignment Manager, Mr. John Koehnen, at 312/223-6253, if you have any questions.

Sincerely,

Patricia Brown Derocher

Patricia Brown-Derocher
Regional Manager

Enclosures

cc: F. Norling, EPA Region 5
W. Jordan, Central Files
J. Koehnen
A. Williams
T. Lentzen, M&E

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FRANKLIN POWER PRODUCTS/AMPHENOL COMPANY
FRANKLIN, INDIANA
EPA I.D. NO. IND044587848

REVISED REVIEW COMMENTS FOR CORRECTIVE MEASURES STUDY

Submitted to:

Mr. William Buller
Regional Project Officer
U.S. Environmental Protection Agency
Region 5
77 W. Jackson HRE-8J
Chicago, Illinois 60604

Submitted by:

A.T. Kearney, Inc.
222 W. Adams Street
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EPA Work Assignment No.	: R05033
Contract No.	: 68-W4-0006
A.T. Kearney WAM	: John Koehnen
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November 10, 1995

Therefore, Amphenol must provide a system that is always effective in accomplishing this task rather than one that can be adjusted if certain conditions are not present. This may be accomplished using increased pumping rates, additional recovery wells, etc. Revise the CMS Report to include provisions to ensure that this system will be effective in capturing groundwater and controlling the groundwater flow and elevations under all conditions expected to occur.

General Comment 2: This comment has not been adequately addressed in the Revised CMS Report. The CMS Report does not include the following information as requested:

- The results of any inspections of the sanitary sewer located at Forsythe Street;
- The results of the July 1995 metals analysis;
- The metals concentrations of the discharge waste; and,
- The flow capacity of the city sewer system.

Revise the CMS Report to include all of this information. In addition, reference applicable Tables, Figures or Appendices which support the data. Note that although the facility's response indicates that metals analysis was included in the report, the results could not be located. As discussed in the beginning of these comments, the facility's revisions to the CMS Report shall highlight the revised text in order to facilitate review of the response to comments.

General Comment 3: This comment has not been adequately addressed in the Revised CMS Report. The data show that the sanitary sewer line released VOCs into the environment, which have been identified in off-site wells above MCLs. The impacted off-site areas are residential. At this time, the data and resulting conclusion appear clear. While there may be data gaps which need to be filled, sufficient information exists for remedial alternatives to be proposed and/or implemented. The specific information needs required to effectively install and operate these remedial measures must be identified. Revise the CMS Report to provide for the initiation of corrective measures related to Area 3 and propose specific procedures for collecting any additional required information.

General Comment 7: This comment has not been adequately addressed in the Revised CMS Report. The information presented in the Response to EPA Comments is sufficient to justify the facility's conclusion that the inorganic constituents are naturally occurring and therefore do not require remediation. However, this information is not adequately presented in the CMS Report itself. Revise the CMS Report to include this information and all available information from the RFI Report. This is important since these documents are often assessed separately and must be as complete as possible to ensure that adequate information is available to review and assess the information presented.

Furthermore, the facility's response did not include the requested table showing maximum, minimum, and average concentrations and appropriate depth increments for both background and impacted areas. Revise the CMS Report to include this table.

General Comment 8: This comment has been partially addressed in the revised CMS Report. However, it is recommended that Unit D also be monitored on a periodic basis, in conjunction with the ongoing groundwater monitoring. Revise the CMS Report to include periodic monitoring of the Unit D aquifer.

General Comment 9: No response or acknowledgement to General Comment 9 was provided. The use of drilling methods that, if possible, do not include the use of drilling fluids during well installation must be provided for. Revise the CMS Report to state that drilling fluid will not be used. Alternatively, if the facility determines that the use of drilling fluids is absolutely necessary, revise the CMS Report to fully justify the use of such fluids and describe how the impact of the fluids will be monitored and accounted for.

sampling to be performed was not included as requested. Revise the CMS Report to include additional information on the potential groundwater/surface water interaction and describe additional sampling to be performed.

Specific Comment 7: This comment has not been adequately addressed in the Revised CMS Report. Although the Response to EPA Comments indicates that there is no indication of the presence of surface soil contamination, the only basis for this conclusion is an hNU head space analysis from the top interval of a single boring. This is insufficient evidence that there is no surficial soil contamination.

Revise the CMS Report to provide more rigorous analytical evidence that no surficial soil contamination exists and define the subsurface source of the PCE. Also, ensure that all applicable background data necessary to evaluate the nature and extent of this area of contamination is included in the CMS Report, including information on the hNU readings taken, the depths at which they were obtained and how concentrations increased with depth. Alternatively, if surficial soil contamination is found to exist, revise the CMS Report to delineate the nature and extent of this contamination and discuss the impact of this contamination on human health and the environment.

Specific Comment 8: This comment has been partially addressed in the Revised CMS Report. The CMS Report still requires additional supporting documentation. Information should be presented to identify the specific metals included with the statement that "all" metal concentrations are consistent with background concentrations. Also, identify the concentration of those metal constituents which are above ARARS, yet consistent with background concentrations. In general, Section 3.8, the Summary section, should include more detail to actually summarize the data and information used to make the decisions and recommendations found in the CMS Report. Revise the CMS Report as necessary to better summarize the available data and/or identify the data gaps noted.

Specific Comment 9: This comment has been partially addressed in the Revised CMS Report. As requested, the last sentence in the third paragraph of Section 5.1 has been deleted and the response indicates that the source of contamination will be defined following the installation of monitoring wells. At this time, it is known that

details provided in the Response to EPA Comments are included in the CMS Report.

Specific Comment 14: This comment has been adequately addressed in the revised CMS Report.

Specific Comment 15: This comment has not been adequately addressed in the Revised CMS Report. Revise the CMS Report to include a summary of the information reportedly presented in Section 7.5 of the RFI Report, which adequately supports the conclusion that corrective action is not needed at Area 3. In addition, the copy of the RFI Report used for this review ends with Section 6. Clarify this discrepancy and ensure that all other revisions to the CMS Report which relate to activities and (potential) contamination and risks at Area 3 are reviewed when addressing this comment.

Specific Comment 16: This comment has not been adequately addressed in the Revised CMS Report. As discussed above for General Comment 3, it has not been adequately substantiated that groundwater extraction and treatment, or other remedial measures, are not warranted at Area 3. Revise the CMS Report to remove this statement.

Specific Comment 17: This comment has not been adequately addressed in the Revised CMS Report. The response indicates that an analysis was performed and that there is little opportunity for VOCs to accumulate. However, this analysis was not presented or summarized in the CMS Report. Revise the CMS Report to present this analysis in its entirety. In addition, risk based numbers are not affected by the conclusion that there is little opportunity for something to occur since risk calculations include measurement of the likelihood of occurrence. Revise the CMS Report to correct this language.

Additionally, the scenarios presented which would reportedly preclude VOCs, both as groundwater and/or soil gas/vapors, from infiltrating the basements of residences along Forsythe Street are not adequate. Concrete and cinder blocks are not impermeable barriers to VOCs, nor do they prohibit groundwater infiltration during times of high water levels. In addition, seasonably high groundwater table elevations may result in the groundwater being closer to the base elevations of the basement. Therefore, it has not been adequately proven that VOCs will not have an impact upon residents along Forsythe Street. Re-evaluate the response to this comment and provide

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RZ2-R05033.01-ID-008

AT KEARNEY

October 19, 1995

Mr. William Buller
U.S. Environmental Protection Agency
Region V - HRE-8J
77 W. Jackson Boulevard
Chicago, IL 60604

Reference: EPA Contract No. 68-W4-0006; REPA Work Assignment No. R05033; Corrective Measures Study Report; EPA ID No. IND044587848, Former Franklin Power Products/Amphenol, Franklin, Indiana; Review Comments for the Revised Corrective Measures Study Report (September 1995); Task 02 Deliverable

Dear Mr. Buller:

Please find enclosed A.T. Kearney's review of the September 1995 Corrective Measures Study (CMS) Report for the above-referenced facility. As you requested, the review contains comments formatted to correspond to EPA Region 5's initial comments on the Draft CMS Report. Where appropriate, additional information and/or comments are provided to assist in preparing a final Notice of Deficiencies. Accompanying this review is a diskette containing the comments in Word Perfect 5.1 format.

This technical adequacy review has been prepared by the A.T. Kearney Team using relevant EPA guidance. The review focussed on ensuring that EPA Region 5's initial comments submitted to the facility August 15, 1995, were adequately addressed in the Revised CMS Report. As you requested, the Kearney Team has not focussed on the Forsythe Street area (Area 3) VOC contamination of soils and groundwater resulting from releases from the sanitary sewer system, since you are developing responses to the facility on this matter. The Kearney Team concurs with you that the facility's responses regarding this area are not adequate. Additionally, we suggest that a meeting be requested between the facility, their contractor, EPA Region 5 and the Kearney Team to discuss this matter prior to initiating the penalty phase.

Please contact me at 312/223-7088 or the A.T. Kearney Work Assignment Manager, Mr. John Koehnen, at 312/223-6253, if you have any questions.

Sincerely,

Patricia Brown-Derocher

Patricia Brown-Derocher
Regional Manager

cc: F. Norling, EPA Region 5
W. Jordan, Central Files
A. Williams
J. Koehnen
T. Lentzen, M&E

REVIEW COMMENTS FOR
REVISED CORRECTIVE MEASURES STUDY

FRANKLIN POWER PRODUCTS/AMPHENOL COMPANY
FRANKLIN, INDIANA
EPA I.D. NO. IND044587848

Submitted to:

Mr. Bill Buller
U.S. Environmental Protection Agency
Region 5
77 W. Jackson HRE-8J
Chicago, Illinois 60604

Submitted by:

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October 19, 1995

Specific Comment 19: This comment has been adequately addressed in the revised CMS Report. However, it is still recommended that the use of horizontal SVE be evaluated since it may not be as intrusive as assumed and during the installation both the SVE and AS system may be installed in the same ditch.

Specific Comment 20: This comment has been adequately addressed in the revised CMS Report.

Specific Comment 21: This comment has been adequately addressed in the revised CMS Report.

FRANKLIN POWER PRODUCTS/AMPHENOL FACILITY
FRANKLIN , INDIANA
CORRECTIVE ACTION REVIEW AND FIELD OVERSIGHT
IND044587848

REVIEW COMMENTS ON REVISED CMS REPORT DATED SEPTEMBER 1995

Submitted to:

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77 W. Jackson HRE-8J
Chicago, Illinois 60604

Submitted by:

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October 16, 1995

The soil analytical data for the naturally occurring inorganics were provided to M&E in a summary table format. Information concerning sampling locations, data quality, and data qualifier descriptions was not included in the data summary table. M&E assumed that the data were of appropriate quality for use in the risk assessment, and that the types of qualifiers used to describe some of the data were as defined in the U.S. EPA's Contract Laboratory Program (CLP). Exhibit 5-4 of RAGS (U.S. EPA, 1989) was used to determine which data with qualifiers should be used in the risk assessment. Based on Exhibit 5-4 of RAGS, all data were used to determine exposure concentrations for the elements of (potential) concern. It should be noted here that the data with qualifiers indicated uncertainties in concentrations but not in identification.

The uncertainties which may have an impact on the estimates of exposure concentration are identified below:

- Use of subsurface soil samples most often at depths greater than six feet bgs to represent potential concentrations of chemicals of concern related to site history;
- Lack of information concerning soil boring locations which would be helpful to identify problem areas or "hotspots"; and
- Use of the data with qualifiers which indicate that the reported concentrations may be estimates.

Exposure Assumptions

A residential land-use scenario featuring an adult and a child resident is used to characterize potential future activities and exposure assumptions for the site. In such a scenario, exposure is assumed to occur through:

- Soil ingestion;
- Dermal contact with soil; and
- Inhalation of airborne particulates from soil.

The potential exposure to the adult receptor is examined from the perspective of a chronically exposed future resident who lives on-site for a total of 30 years. The child receptor is evaluated based on a six year period, or subchronic exposure duration. Table 1 provides the exposure assumptions.

In order to "bracket" the uncertainty associated with an estimate of exposure concentrations, three different concentration estimates are used for the risk evaluations:

- maximum concentration;
- average concentration; and
- 95 percent upper confidence level (UCL) (U.S. EPA, 1992b).

related 95% UCL beryllium concentration of 1.3 mg/kg is higher than the background maximum beryllium concentration of 0.7 mg/kg.

Site Maximum vs. Background Maximum

For this comparison, the maximum concentrations of both the site-related and background constituents were used in conjunction with RME assumptions (Table 1). Overall, the results indicated that site-related maximum concentrations were associated with higher risks than background maximum concentrations.

For the residential adult, the site-related total risk was 2E-05, and the total hazard was 0.4. Background total risk was slightly lower at 8E-06, and total hazard was 0.1. For the residential child, the site-related total risk was 3E-05, and the total hazard was 1.0. Background total risk was slightly lower at 1E-05, and total hazard was 0.4.

Ingestion of arsenic and beryllium in soil were associated with the excess carcinogenic risk, as shown in Tables 2 and 4 of Attachment 1 of Appendix A. Maximum concentrations for these chemicals are provided in Table 2. The site-related maximum arsenic concentration of 9.5 mg/kg is higher than the background maximum concentration of 4.1 mg/kg. In addition, the site-related maximum beryllium concentration of 1.6 mg/kg is higher than the background maximum beryllium concentration of 0.7 mg/kg.

Site Average vs. Background Average

For this comparison, the average value was used as the exposure concentration for site-related and background constituents in conjunction with central tendency exposure assumptions (Table 1). Overall, the results indicated that the average concentration values for site-related and background concentrations were associated with very similar risks.

For the residential adult, the site-related total risk was 7E-07, and the total hazard was 0.04. Background total risk was slightly lower at 1E-06, and total hazard was 0.03. For the residential child, the site-related total risk was 4E-06, and the total hazard was 0.2. Background total risk was 5E-06, and total hazard was 0.1.

Ingestion of arsenic and beryllium was associated with the excess carcinogenic risk, as shown in Tables 3 and 5 in Attachment 1 of Appendix A. Exposure concentrations for these chemicals are provided in Table 2. The site-related average arsenic concentration is 2.4 mg/kg and the background average concentration is 2.9 mg/kg. Also, the site-related average beryllium concentration is 0.4 mg/kg and the background average beryllium concentration is 0.6 mg/kg.

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U.S. EPA. 1995. U.S. Environmental Protection Agency. Region 9 Preliminary Remediation Goals (PRGs) First Half 1995, February 1995.

TABLES

Table 2 Summary of Comparison of Concentrations Between Site–Specific and Background Data and USEPA Region IX PRGs

INORGANIC	COMPARISON OF CONCENTRATIONS (MG/KG)						USEPA REGION IX RESIDENTIAL PRG (a) (MG/KG)
	AVERAGE		MAXIMUM		95% UCL		
	Site–specific	Background	Site–specific	Background	Site–specific	Background	
Aluminum	3994.2	6273.3	18200.0	15200.0	6393.7	2.1E+10	77000
Antimony	2.6	ND	12.4	ND	6.6	ND	31
Arsenic	2.4	2.9	9.5	4.1	5.8	10.34	0.32
Barium	18.4	38.5	115.0	83.1	46.5	6.6E+08	5300
Beryllium	0.4	0.6	1.6	0.7	1.3	0.94	0.14
Cadmium	0.4	ND	13.2	ND	0.8	ND	38
Calcium	73231.9	36226.7	163000.0	66900.0	294215.8	2.5E+13	NA
Chromium	5.1	8.3	19.4	20.7	15.6	1.6E+15	210 (total), 30 (Cr 6+)
Cobalt	2.2	3.6	11.2	5.4	5.8	29.4	NA
Copper	111.2	10.4	1970.0	14.0	108.2	68.7	2800
Cyanide (total)	1.9	ND	21.6	ND	2.4	ND	1300
Iron	7467.2	10320.0	23000.0	20100.0	10910.9	5.1E+06	NA
Lead	8.0	9.3	52.9	16.5	14.5	470.2	400
Magnesium	24701.7	13606.7	59900.0	20100.0	44119.9	3.6E+07	NA
Manganese	290.4	240.3	1000.0	350.0	445.9	1484.8	380
Mercury	0.1	ND	2.3	ND	0.1	ND	23
Nickel	8.7	10.2	38.3	17.1	14.8	778.4	1500
Potassium	370.7	586.0	1470.0	1120.0	803.7	2.0E+05	NA
Selenium	0.1	ND	0.4	ND	0.3	ND	380
Silver	0.4	ND	1.8	ND	1.1	ND	380
Sodium	56.8	72.8	281.0	117.0	144.1	681.7	NA
Thallium	0.1	ND	0.4	ND	0.3	ND	6.1
Vanadium	7.8	13.1	33.8	27.8	14.8	1.9E+05	540
Zinc	36.8	39.6	91.0	77.3	44.8	15732.9	23000

NA – Not Applicable
ND – Not Detected
PRG – Preliminary Remediation Goal
(a) USEPA Region IX Preliminary Remediation Goals (PRGs) First Half 1995, February 1, 1995.

Table 4 Summary of Risk and Hazard Calculations for the Former Amphenol Site

RESIDENTIAL ADULT (LONG TERM)		SITE-SPECIFIC 95% UCL		BACKGROUND MAXIMUM	
Matrix	Route	Risk	Hazard	Risk	Hazard
SOIL	Ingestion	9E-06	8E-02	6E-06	6E-02
	Dermal	2E-06	4E-02	1E-06	5E-02
	Inhalation	8E-07	9E-03	9E-07	8E-03
Total		1E-05	1E-01	8E-06	1E-01
RESIDENTIAL CHILD (SHORT TERM)		SITE-SPECIFIC 95% UCL		BACKGROUND MAXIMUM	
Matrix	Route	Risk	Hazard	Risk	Hazard
SOIL	Ingestion	2E-05	6E-01	1E-05	5E-01
	Dermal	7E-07	5E-02	4E-07	7E-02
	Inhalation	7E-07	4E-02	8E-07	3E-02
Total		2E-05	7E-01	1E-05	6E-01
RESIDENTIAL ADULT (LONG TERM)		SITE-SPECIFIC MAXIMUM		BACKGROUND MAXIMUM	
Matrix	Route	Risk	Hazard	Risk	Hazard
SOIL	Ingestion	1E-05	3E-01	6E-06	6E-02
	Dermal	3E-06	1E-01	1E-06	5E-02
	Inhalation	1E-06	2E-02	9E-07	8E-03
Total		2E-05	4E-01	8E-06	1E-01
RESIDENTIAL CHILD (SHORT TERM)		SITE-SPECIFIC MAXIMUM		BACKGROUND MAXIMUM	
Matrix	Route	Risk	Hazard	Risk	Hazard
SOIL	Ingestion	3E-05	1E+00	1E-05	3E-01
	Dermal	1E-06	1E-01	4E-07	7E-02
	Inhalation	1E-06	9E-02	8E-07	3E-02
Total		3E-05	1E+00	1E-05	4E-01
RESIDENTIAL ADULT (LONG TERM)		SITE-SPECIFIC AVERAGE		BACKGROUND AVERAGE	
Matrix	Route	Risk	Hazard	Risk	Hazard
SOIL	Ingestion	6E-07	2E-02	7E-07	2E-02
	Dermal	1E-07	1E-02	2E-07	1E-02
	Inhalation	6E-08	4E-03	8E-08	4E-03
Total		7E-07	4E-02	1E-06	3E-02
RESIDENTIAL CHILD (SHORT TERM)		SITE-SPECIFIC AVERAGE		BACKGROUND AVERAGE	
Matrix	Route	Risk	Hazard	Risk	Hazard
SOIL	Ingestion	3E-06	1E-01	4E-06	1E-01
	Dermal	2E-07	1E-02	2E-07	2E-02
	Inhalation	2E-07	2E-02	3E-07	1E-02
Total		4E-06	2E-01	5E-06	1E-01

APPENDIX A

INGESTION OF CHEMICALS IN SOIL – HYPOTHETICAL FUTURE ADULT RESIDENTIAL HAZARD – 95% UCL

ANALYTE	CS (MG/KG)	IR (MG/DAY)	CF (KG/MG)	FI (UNITLESS)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	6.39E+03	100	1.0E-06	1.0	350	30	70	10950	8.76E-03	1.00E+00	8.76E-03
Antimony	6.55E+00	100	1.0E-06	1.0	350	30	70	10950	8.97E-06	4.00E-04	2.24E-02
Arsenic	5.76E+00	100	1.0E-06	1.0	350	30	70	10950	7.89E-06	3.00E-04	2.63E-02
Barium	4.65E+01	100	1.0E-06	1.0	350	30	70	10950	6.36E-05	7.00E-02	9.09E-04
Beryllium	1.28E+00	100	1.0E-06	1.0	350	30	70	10950	1.75E-06	5.00E-03	3.50E-04
Cadmium	7.58E-01	100	1.0E-06	1.0	350	30	70	10950	1.04E-06	5.00E-04	2.08E-03
Calcium	2.94E+05	100	1.0E-06	1.0	350	30	70	10950	4.03E-01	NA	ND
Chromium	1.56E+01	100	1.0E-06	1.0	350	30	70	10950	2.14E-05	5.00E-03	4.28E-03
Cobalt	5.77E+00	100	1.0E-06	1.0	350	30	70	10950	7.91E-06	NA	ND
Copper	1.08E+02	100	1.0E-06	1.0	350	30	70	10950	1.48E-04	4.00E-02	3.71E-03
Cyanide (total)	2.39E+00	100	1.0E-06	1.0	350	30	70	10950	3.27E-06	2.00E-02	1.64E-04
Iron	1.09E+04	100	1.0E-06	1.0	350	30	70	10950	1.49E-02	NA	ND
Lead	1.45E+01	100	1.0E-06	1.0	350	30	70	10950	1.99E-05	NA	ND
Magnesium	4.41E+04	100	1.0E-06	1.0	350	30	70	10950	6.04E-02	NA	ND
Manganese	4.46E+02	100	1.0E-06	1.0	350	30	70	10950	6.11E-04	1.40E-01	4.36E-03
Mercury	1.06E-01	100	1.0E-06	1.0	350	30	70	10950	1.45E-07	3.00E-04	4.84E-04
Nickel	1.48E+01	100	1.0E-06	1.0	350	30	70	10950	2.02E-05	2.00E-02	1.01E-03
Potassium	8.04E+02	100	1.0E-06	1.0	350	30	70	10950	1.10E-03	NA	ND
Selenium	2.69E-01	100	1.0E-06	1.0	350	30	70	10950	3.69E-07	5.00E-03	7.37E-05
Silver	1.09E+00	100	1.0E-06	1.0	350	30	70	10950	1.49E-06	5.00E-03	2.98E-04
Sodium	1.44E+02	100	1.0E-06	1.0	350	30	70	10950	1.97E-04	NA	ND
Thallium	2.87E-01	100	1.0E-06	1.0	350	30	70	10950	3.93E-07	8.00E-05	4.91E-03
Vanadium	1.48E+01	100	1.0E-06	1.0	350	30	70	10950	2.03E-05	7.00E-03	2.89E-03
Zinc	4.48E+01	100	1.0E-06	1.0	350	30	70	10950	6.14E-05	3.00E-01	2.05E-04

NA/ND – Not available/ Not determined

TOTAL HAZARD 8.32E-02

DERMAL CONTACT WITH CHEMICALS IN SOIL – HYPOTHETICAL FUTURE ADULT RESIDENTIAL HAZARD – 95% UCL

ANALYTE	CS (MG/KG)	CF (KG/MG)	SA (CM2/EVENT)	AF (MG/CM2)	ABS (UNITLESS)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	6.39E+03	1.0E-06	5800	1.00	0.001	350	30	70	10950	5.08E-04	2.00E-01	2.54E-03
Antimony	6.55E+00	1.0E-06	5800	1.00	0.001	350	30	70	10950	5.20E-07	2.40E-04	2.17E-03
Arsenic	5.76E+00	1.0E-06	5800	1.00	0.001	350	30	70	10950	4.58E-07	2.85E-04	1.61E-03
Barium	4.65E+01	1.0E-06	5800	1.00	0.001	350	30	70	10950	3.69E-06	3.50E-03	1.05E-03
Beryllium	1.28E+00	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.02E-07	5.00E-04	2.03E-04
Cadmium	7.58E-01	1.0E-06	5800	1.00	0.001	350	30	70	10950	6.02E-08	3.50E-05	1.72E-03
Calcium	2.94E+05	1.0E-06	5800	1.00	0.001	350	30	70	10950	2.34E-02 NA		ND
Chromium	1.56E+01	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.24E-06	2.50E-03	4.96E-04
Cobalt	5.77E+00	1.0E-06	5800	1.00	0.001	350	30	70	10950	4.59E-07 NA		ND
Copper	1.08E+02	1.0E-06	5800	1.00	0.001	350	30	70	10950	8.60E-06	3.96E-02	2.17E-04
Cyanide (total)	2.39E+00	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.90E-07	1.40E-02	1.36E-05
Iron	1.09E+04	1.0E-06	5800	1.00	0.001	350	30	70	10950	8.67E-04 NA		ND
Lead	1.45E+01	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.15E-06 NA		ND
Magnesium	4.41E+04	1.0E-06	5800	1.00	0.001	350	30	70	10950	3.51E-03 NA		ND
Manganese	4.46E+02	1.0E-06	5800	1.00	0.001	350	30	70	10950	3.54E-05	5.60E-03	6.33E-03
Mercury	1.06E-01	1.0E-06	5800	1.00	0.001	350	30	70	10950	8.43E-09	4.50E-05	1.87E-04
Nickel	1.48E+01	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.17E-06	2.00E-03	5.87E-04
Potassium	8.04E+02	1.0E-06	5800	1.00	0.001	350	30	70	10950	6.39E-05 NA		ND
Selenium	2.69E-01	1.0E-06	5800	1.00	0.001	350	30	70	10950	2.14E-08	4.85E-03	4.41E-06
Silver	1.09E+00	1.0E-06	5800	1.00	0.001	350	30	70	10950	8.65E-08	5.00E-04	1.73E-04
Sodium	1.44E+02	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.15E-05 NA		ND
Thallium	2.87E-01	1.0E-06	5800	1.00	0.001	350	30	70	10950	2.28E-08	8.00E-06	2.85E-03
Vanadium	1.48E+01	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.18E-06	7.00E-05	1.68E-02
Zinc	4.48E+01	1.0E-06	5800	1.00	0.001	350	30	70	10950	3.56E-06	9.00E-02	3.96E-05

NA/ND – Not available / Not determined

TOTAL HAZARD 3.70E-02

INHALATION OF FUGITIVE DUSTS FROM SOIL – HYPOTHETICAL FUTURE ADULT RESIDENTIAL LONG TERM HAZARD – 95% UCL

ANALYTE	CA (MG/M3)	IR (M3/HR)	ET (HR/DAY)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	4.50E-05	0.83	24	350	30	70	10950	1.23E-05 NA		ND
Antimony	4.61E-08	0.83	24	350	30	70	10950	1.26E-08 NA		ND
Arsenic	4.06E-08	0.83	24	350	30	70	10950	1.11E-08 NA		ND
Barium	3.27E-07	0.83	24	350	30	70	10950	8.93E-08	1.00E-04	8.93E-04
Beryllium	9.01E-09	0.83	24	350	30	70	10950	2.46E-09 NA		ND
Cadmium	5.34E-09	0.83	24	350	30	70	10950	1.46E-09 NA		ND
Calcium	2.07E-03	0.83	24	350	30	70	10950	5.66E-04 NA		ND
Chromium	1.10E-07	0.83	24	350	30	70	10950	3.00E-08 NA		ND
Cobalt	4.07E-08	0.83	24	350	30	70	10950	1.11E-08 NA		ND
Copper	7.62E-07	0.83	24	350	30	70	10950	2.08E-07 NA		ND
Cyanide (total)	1.68E-08	0.83	24	350	30	70	10950	4.60E-09 NA		ND
Iron	7.69E-05	0.83	24	350	30	70	10950	2.10E-05 NA		ND
Lead	1.02E-07	0.83	24	350	30	70	10950	2.79E-08 NA		ND
Magnesium	3.11E-04	0.83	24	350	30	70	10950	8.48E-05 NA		ND
Manganese	3.14E-06	0.83	24	350	30	70	10950	8.57E-07	1.00E-04	8.57E-03
Mercury	7.47E-10	0.83	24	350	30	70	10950	2.04E-10	8.60E-05	2.37E-06
Nickel	1.04E-07	0.83	24	350	30	70	10950	2.84E-08 NA		ND
Potassium	5.66E-06	0.83	24	350	30	70	10950	1.55E-06 NA		ND
Selenium	1.90E-09	0.83	24	350	30	70	10950	5.17E-10 NA		ND
Silver	7.67E-09	0.83	24	350	30	70	10950	2.09E-09 NA		ND
Sodium	1.02E-06	0.83	24	350	30	70	10950	2.77E-07 NA		ND
Thallium	2.02E-09	0.83	24	350	30	70	10950	5.51E-10 NA		ND
Vanadium	1.04E-07	0.83	24	350	30	70	10950	2.84E-08 NA		ND
Zinc	3.16E-07	0.83	24	350	30	70	10950	8.62E-08 NA		ND
									TOTAL HAZARD	9.47E-03

NA/ND – Not available/ Not determined

INGESTION OF CHEMICALS IN SOIL – HYPOTHETICAL FUTURE CHILD RESIDENTIAL HAZARD – 95% UCL

ANALYTE	CS (MG/KG)	IR (MG/DAY)	CF (KG/MG)	FI (UNITLESS)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	6.39E+03	200	1.0E-06	1.0	350	6	15	2190	8.17E-02 NA		ND
Antimony	6.55E+00	200	1.0E-06	1.0	350	6	15	2190	8.37E-05	4.00E-04	2.09E-01
Arsenic	5.76E+00	200	1.0E-06	1.0	350	6	15	2190	7.36E-05	3.00E-04	2.45E-01
Barium	4.65E+01	200	1.0E-06	1.0	350	6	15	2190	5.94E-04	7.00E-02	8.49E-03
Beryllium	1.28E+00	200	1.0E-06	1.0	350	6	15	2190	1.63E-05	5.00E-03	3.27E-03
Cadmium	7.58E-01	200	1.0E-06	1.0	350	6	15	2190	9.69E-06 NA		ND
Calcium	2.94E+05	200	1.0E-06	1.0	350	6	15	2190	3.76E+00 NA		ND
Chromium	1.56E+01	200	1.0E-06	1.0	350	6	15	2190	2.00E-04	2.00E-02	9.98E-03
Cobalt	5.77E+00	200	1.0E-06	1.0	350	6	15	2190	7.38E-05 NA		ND
Copper	1.08E+02	200	1.0E-06	1.0	350	6	15	2190	1.38E-03 NA		ND
Cyanide (total)	2.39E+00	200	1.0E-06	1.0	350	6	15	2190	3.06E-05	2.00E-02	1.53E-03
Iron	1.09E+04	200	1.0E-06	1.0	350	6	15	2190	1.39E-01 NA		ND
Lead	1.45E+01	200	1.0E-06	1.0	350	6	15	2190	1.86E-04 NA		ND
Magnesium	4.41E+04	200	1.0E-06	1.0	350	6	15	2190	5.64E-01 NA		ND
Manganese	4.46E+02	200	1.0E-06	1.0	350	6	15	2190	5.70E-03	1.40E-01	4.07E-02
Mercury	1.06E-01	200	1.0E-06	1.0	350	6	15	2190	1.36E-06	3.00E-04	4.52E-03
Nickel	1.48E+01	200	1.0E-06	1.0	350	6	15	2190	1.89E-04	2.00E-02	9.44E-03
Potassium	8.04E+02	200	1.0E-06	1.0	350	6	15	2190	1.03E-02 NA		ND
Selenium	2.69E-01	200	1.0E-06	1.0	350	6	15	2190	3.44E-06	5.00E-03	6.88E-04
Silver	1.09E+00	200	1.0E-06	1.0	350	6	15	2190	1.39E-05	5.00E-03	2.79E-03
Sodium	1.44E+02	200	1.0E-06	1.0	350	6	15	2190	1.84E-03 NA		ND
Thallium	2.87E-01	200	1.0E-06	1.0	350	6	15	2190	3.67E-06	8.00E-04	4.58E-03
Vanadium	1.48E+01	200	1.0E-06	1.0	350	6	15	2190	1.89E-04	7.00E-03	2.70E-02
Zinc	4.48E+01	200	1.0E-06	1.0	350	6	15	2190	5.73E-04	3.00E-01	1.91E-03

NA/ND – Not available/ Not determined

TOTAL HAZARD 5.70E-01

DERMAL CONTACT WITH CHEMICALS IN SOIL – HYPOTHETICAL FUTURE CHILD RESIDENTIAL HAZARD – 95% UCL

ANALYTE	CS (MG/KG)	CF (KG/MG)	SA (CM2/EVENT)	AF (MG/CM2)	ABS (UNITLESS)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	6.39E+03	1.0E-06	2010	1.00	0.001	350	6	15	2190	8.22E-04 NA		ND
Antimony	6.55E+00	1.0E-06	2010	1.00	0.001	350	6	15	2190	8.42E-07	2.40E-04	3.51E-03
Arsenic	5.76E+00	1.0E-06	2010	1.00	0.001	350	6	15	2190	7.40E-07	2.85E-04	2.60E-03
Barium	4.65E+01	1.0E-06	2010	1.00	0.001	350	6	15	2190	5.97E-06	3.50E-03	1.71E-03
Beryllium	1.28E+00	1.0E-06	2010	1.00	0.001	350	6	15	2190	1.64E-07	5.00E-04	3.28E-04
Cadmium	7.58E-01	1.0E-06	2010	1.00	0.001	350	6	15	2190	9.74E-08 NA		ND
Calcium	2.94E+05	1.0E-06	2010	1.00	0.001	350	6	15	2190	3.78E-02 NA		ND
Chromium	1.56E+01	1.0E-06	2010	1.00	0.001	350	6	15	2190	2.01E-06	1.00E-02	2.01E-04
Cobalt	5.77E+00	1.0E-06	2010	1.00	0.001	350	6	15	2190	7.42E-07 NA		ND
Copper	1.08E+02	1.0E-06	2010	1.00	0.001	350	6	15	2190	1.39E-05 NA		ND
Cyanide (total)	2.39E+00	1.0E-06	2010	1.00	0.001	350	6	15	2190	3.07E-07	1.40E-02	2.19E-05
Iron	1.09E+04	1.0E-06	2010	1.00	0.001	350	6	15	2190	1.40E-03 NA		ND
Lead	1.45E+01	1.0E-06	2010	1.00	0.001	350	6	15	2190	1.87E-06 NA		ND
Magnesium	4.41E+04	1.0E-06	2010	1.00	0.001	350	6	15	2190	5.67E-03 NA		ND
Manganese	4.46E+02	1.0E-06	2010	1.00	0.001	350	6	15	2190	5.73E-05	5.60E-03	1.02E-02
Mercury	1.06E-01	1.0E-06	2010	1.00	0.001	350	6	15	2190	1.36E-08	4.50E-05	3.03E-04
Nickel	1.48E+01	1.0E-06	2010	1.00	0.001	350	6	15	2190	1.90E-06	2.00E-03	9.49E-04
Potassium	8.04E+02	1.0E-06	2010	1.00	0.001	350	6	15	2190	1.03E-04 NA		ND
Selenium	2.69E-01	1.0E-06	2010	1.00	0.001	350	6	15	2190	3.46E-08	4.85E-03	7.13E-06
Silver	1.09E+00	1.0E-06	2010	1.00	0.001	350	6	15	2190	1.40E-07	5.00E-04	2.80E-04
Sodium	1.44E+02	1.0E-06	2010	1.00	0.001	350	6	15	2190	1.85E-05 NA		ND
Thallium	2.87E-01	1.0E-06	2010	1.00	0.001	350	6	15	2190	3.68E-08	8.00E-05	4.60E-04
Vanadium	1.48E+01	1.0E-06	2010	1.00	0.001	350	6	15	2190	1.90E-06	7.00E-05	2.72E-02
Zinc	4.48E+01	1.0E-06	2010	1.00	0.001	350	6	15	2190	5.76E-06	9.00E-02	6.40E-05

NA/ND – Not available / Not determined

TOTAL HAZARD 4.78E-02

INHALATION OF FUGITIVE DUSTS FROM SOIL – HYPOTHETICAL FUTURE ADULT RESIDENTIAL SHORT TERM HAZARD – 95% UCL

ANALYTE	CA (MG/M3)	IR (M3/HR)	ET (HR/DAY)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	4.50E-05	0.83	24	350	6	15	2190	5.74E-05 NA		ND
Antimony	4.61E-08	0.83	24	350	6	15	2190	5.88E-08 NA		ND
Arsenic	4.06E-08	0.83	24	350	6	15	2190	5.17E-08 NA		ND
Barium	3.27E-07	0.83	24	350	6	15	2190	4.17E-07	1.00E-03	4.17E-04
Beryllium	9.01E-09	0.83	24	350	6	15	2190	1.15E-08 NA		ND
Cadmium	5.34E-09	0.83	24	350	6	15	2190	6.80E-09 NA		ND
Calcium	2.07E-03	0.83	24	350	6	15	2190	2.64E-03 NA		ND
Chromium	1.10E-07	0.83	24	350	6	15	2190	1.40E-07 NA		ND
Cobalt	4.07E-08	0.83	24	350	6	15	2190	5.18E-08 NA		ND
Copper	7.62E-07	0.83	24	350	6	15	2190	9.71E-07 NA		ND
Cyanide (total)	1.68E-08	0.83	24	350	6	15	2190	2.14E-08 NA		ND
Iron	7.69E-05	0.83	24	350	6	15	2190	9.79E-05 NA		ND
Lead	1.02E-07	0.83	24	350	6	15	2190	1.30E-07 NA		ND
Magnesium	3.11E-04	0.83	24	350	6	15	2190	3.96E-04 NA		ND
Manganese	3.14E-06	0.83	24	350	6	15	2190	4.00E-06	1.00E-04	4.00E-02
Mercury	7.47E-10	0.83	24	350	6	15	2190	9.52E-10	8.60E-05	1.11E-05
Nickel	1.04E-07	0.83	24	350	6	15	2190	1.32E-07 NA		ND
Potassium	5.66E-06	0.83	24	350	6	15	2190	7.21E-06 NA		ND
Selenium	1.90E-09	0.83	24	350	6	15	2190	2.41E-09 NA		ND
Silver	7.67E-09	0.83	24	350	6	15	2190	9.77E-09 NA		ND
Sodium	1.02E-06	0.83	24	350	6	15	2190	1.29E-06 NA		ND
Thallium	2.02E-09	0.83	24	350	6	15	2190	2.57E-09 NA		ND
Vanadium	1.04E-07	0.83	24	350	6	15	2190	1.33E-07 NA		ND
Zinc	3.16E-07	0.83	24	350	6	15	2190	4.02E-07 NA		ND

NA/ND – Not available/ Not determined

TOTAL HAZARD 4.04E-02

INGESTION OF CHEMICALS IN SOIL – HYPOTHETICAL FUTURE ADULT RESIDENTIAL HAZARD – SITE MAXIMUM

ANALYTE	CS (MG/KG)	IR (MG/DAY)	CF (KG/MG)	FI (UNITLESS)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	1.82E+04	100	1.0E-06	1.0	350	30	70	10950	2.49E-02	1.00E+00	2.49E-02
Antimony	1.24E+01	100	1.0E-06	1.0	350	30	70	10950	1.70E-05	4.00E-04	4.25E-02
Arsenic	9.50E+00	100	1.0E-06	1.0	350	30	70	10950	1.30E-05	3.00E-04	4.34E-02
Barium	1.15E+02	100	1.0E-06	1.0	350	30	70	10950	1.58E-04	7.00E-02	2.25E-03
Beryllium	1.60E+00	100	1.0E-06	1.0	350	30	70	10950	2.19E-06	5.00E-03	4.38E-04
Cadmium	1.32E+01	100	1.0E-06	1.0	350	30	70	10950	1.81E-05	5.00E-04	3.62E-02
Calcium	1.63E+05	100	1.0E-06	1.0	350	30	70	10950	2.23E-01 NA		ND
Chromium	1.94E+01	100	1.0E-06	1.0	350	30	70	10950	2.66E-05	5.00E-03	5.32E-03
Cobalt	1.12E+01	100	1.0E-06	1.0	350	30	70	10950	1.53E-05 NA		ND
Copper	1.97E+03	100	1.0E-06	1.0	350	30	70	10950	2.70E-03	4.00E-02	6.75E-02
Cyanide (total)	2.16E+01	100	1.0E-06	1.0	350	30	70	10950	2.96E-05	2.00E-02	1.48E-03
Iron	2.30E+04	100	1.0E-06	1.0	350	30	70	10950	3.15E-02 NA		ND
Lead	5.29E+01	100	1.0E-06	1.0	350	30	70	10950	7.25E-05 NA		ND
Magnesium	5.99E+04	100	1.0E-06	1.0	350	30	70	10950	8.21E-02 NA		ND
Manganese	1.00E+03	100	1.0E-06	1.0	350	30	70	10950	1.37E-03	1.40E-01	9.78E-03
Mercury	2.30E+00	100	1.0E-06	1.0	350	30	70	10950	3.15E-06	3.00E-04	1.05E-02
Nickel	3.83E+01	100	1.0E-06	1.0	350	30	70	10950	5.25E-05	2.00E-02	2.62E-03
Potassium	1.47E+03	100	1.0E-06	1.0	350	30	70	10950	2.01E-03 NA		ND
Selenium	4.40E-01	100	1.0E-06	1.0	350	30	70	10950	6.03E-07	5.00E-03	1.21E-04
Silver	1.80E+00	100	1.0E-06	1.0	350	30	70	10950	2.47E-06	5.00E-03	4.93E-04
Sodium	2.81E+02	100	1.0E-06	1.0	350	30	70	10950	3.85E-04 NA		ND
Thallium	4.20E-01	100	1.0E-06	1.0	350	30	70	10950	5.75E-07	8.00E-05	7.19E-03
Vanadium	3.38E+01	100	1.0E-06	1.0	350	30	70	10950	4.63E-05	7.00E-03	6.61E-03
Zinc	9.10E+01	100	1.0E-06	1.0	350	30	70	10950	1.25E-04	3.00E-01	4.16E-04

NA/ND – Not available/ Not determined

TOTAL HAZARD 2.62E-01

DERMAL CONTACT WITH CHEMICALS IN SOIL – HYPOTHETICAL FUTURE ADULT RESIDENTIAL HAZARD – SITE MAXIMUM

ANALYTE	CS (MG/KG)	CF (KG/MG)	SA (CM2/EVENT)	AF (MG/CM2)	ABS (UNITLESS)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	1.82E+04	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.45E-03	2.00E-01	7.23E-03
Antimony	1.24E+01	1.0E-06	5800	1.00	0.001	350	30	70	10950	9.85E-07	2.40E-04	4.11E-03
Arsenic	9.50E+00	1.0E-06	5800	1.00	0.001	350	30	70	10950	7.55E-07	2.85E-04	2.65E-03
Barium	1.15E+02	1.0E-06	5800	1.00	0.001	350	30	70	10950	9.14E-06	3.50E-03	2.61E-03
Beryllium	1.60E+00	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.27E-07	5.00E-04	2.54E-04
Cadmium	1.32E+01	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.05E-06	3.50E-05	3.00E-02
Calcium	1.63E+05	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.30E-02	NA	ND
Chromium	1.94E+01	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.54E-06	2.50E-03	6.17E-04
Cobalt	1.12E+01	1.0E-06	5800	1.00	0.001	350	30	70	10950	8.90E-07	NA	ND
Copper	1.97E+03	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.57E-04	3.96E-02	3.95E-03
Cyanide (total)	2.16E+01	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.72E-06	1.40E-02	1.23E-04
Iron	2.30E+04	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.83E-03	NA	ND
Lead	5.29E+01	1.0E-06	5800	1.00	0.001	350	30	70	10950	4.20E-06	NA	ND
Magnesium	5.99E+04	1.0E-06	5800	1.00	0.001	350	30	70	10950	4.76E-03	NA	ND
Manganese	1.00E+03	1.0E-06	5800	1.00	0.001	350	30	70	10950	7.95E-05	5.60E-03	1.42E-02
Mercury	2.30E+00	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.83E-07	4.50E-05	4.06E-03
Nickel	3.83E+01	1.0E-06	5800	1.00	0.001	350	30	70	10950	3.04E-06	2.00E-03	1.52E-03
Potassium	1.47E+03	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.17E-04	NA	ND
Selenium	4.40E-01	1.0E-06	5800	1.00	0.001	350	30	70	10950	3.50E-08	4.85E-03	7.21E-06
Silver	1.80E+00	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.43E-07	5.00E-04	2.86E-04
Sodium	2.81E+02	1.0E-06	5800	1.00	0.001	350	30	70	10950	2.23E-05	NA	ND
Thallium	4.20E-01	1.0E-06	5800	1.00	0.001	350	30	70	10950	3.34E-08	8.00E-06	4.17E-03
Vanadium	3.38E+01	1.0E-06	5800	1.00	0.001	350	30	70	10950	2.69E-06	7.00E-05	3.84E-02
Zinc	9.10E+01	1.0E-06	5800	1.00	0.001	350	30	70	10950	7.23E-06	9.00E-02	8.03E-05

NA/ND – Not available / Not determined

TOTAL HAZARD 1.14E-01

INHALATION OF FUGITIVE DUSTS FROM SOIL – HYPOTHETICAL FUTURE ADULT RESIDENTIAL LONG TERM HAZARD – SITE MAXIMUM

ANALYTE	CA (MG/M3)	IR (M3/HR)	ET (HR/DAY)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	1.28E-04	0.83	24	350	30	70	10950	3.50E-05 NA		ND
Antimony	8.74E-08	0.83	24	350	30	70	10950	2.38E-08 NA		ND
Arsenic	6.69E-08	0.83	24	350	30	70	10950	1.83E-08 NA		ND
Barium	8.10E-07	0.83	24	350	30	70	10950	2.21E-07	1.00E-04	2.21E-03
Beryllium	1.13E-08	0.83	24	350	30	70	10950	3.08E-09 NA		ND
Cadmium	9.30E-08	0.83	24	350	30	70	10950	2.54E-08 NA		ND
Calcium	1.15E-03	0.83	24	350	30	70	10950	3.13E-04 NA		ND
Chromium	1.37E-07	0.83	24	350	30	70	10950	3.73E-08 NA		ND
Cobalt	7.89E-08	0.83	24	350	30	70	10950	2.15E-08 NA		ND
Copper	1.39E-05	0.83	24	350	30	70	10950	3.79E-06 NA		ND
Cyanide (total)	1.52E-07	0.83	24	350	30	70	10950	4.15E-08 NA		ND
Iron	1.62E-04	0.83	24	350	30	70	10950	4.42E-05 NA		ND
Lead	3.73E-07	0.83	24	350	30	70	10950	1.02E-07 NA		ND
Magnesium	4.22E-04	0.83	24	350	30	70	10950	1.15E-04 NA		ND
Manganese	7.05E-06	0.83	24	350	30	70	10950	1.92E-06	1.00E-04	1.92E-02
Mercury	1.62E-08	0.83	24	350	30	70	10950	4.42E-09	8.60E-05	5.14E-05
Nickel	2.70E-07	0.83	24	350	30	70	10950	7.36E-08 NA		ND
Potassium	1.04E-05	0.83	24	350	30	70	10950	2.83E-06 NA		ND
Selenium	3.10E-09	0.83	24	350	30	70	10950	8.46E-10 NA		ND
Silver	1.27E-08	0.83	24	350	30	70	10950	3.46E-09 NA		ND
Sodium	1.98E-06	0.83	24	350	30	70	10950	5.40E-07 NA		ND
Thallium	2.96E-09	0.83	24	350	30	70	10950	8.07E-10 NA		ND
Vanadium	2.38E-07	0.83	24	350	30	70	10950	6.50E-08 NA		ND
Zinc	6.41E-07	0.83	24	350	30	70	10950	1.75E-07 NA		ND
									TOTAL HAZARD	2.15E-02

NA/ND – Not available/ Not determined

INGESTION OF CHEMICALS IN SOIL – HYPOTHETICAL FUTURE CHILD RESIDENTIAL HAZARD – SITE MAXIMUM

ANALYTE	CS (MG/KG)	IR (MG/DAY)	CF (KG/MG)	FI (UNITLESS)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	1.82E+04	200	1.0E-06	1.0	350	6	15	2190	2.33E-01 NA		ND
Antimony	1.24E+01	200	1.0E-06	1.0	350	6	15	2190	1.59E-04	4.00E-04	3.96E-01
Arsenic	9.50E+00	200	1.0E-06	1.0	350	6	15	2190	1.21E-04	3.00E-04	4.05E-01
Barium	1.15E+02	200	1.0E-06	1.0	350	6	15	2190	1.47E-03	7.00E-02	2.10E-02
Beryllium	1.60E+00	200	1.0E-06	1.0	350	6	15	2190	2.05E-05	5.00E-03	4.09E-03
Cadmium	1.32E+01	200	1.0E-06	1.0	350	6	15	2190	1.69E-04 NA		ND
Calcium	1.63E+05	200	1.0E-06	1.0	350	6	15	2190	2.08E+00 NA		ND
Chromium	1.94E+01	200	1.0E-06	1.0	350	6	15	2190	2.48E-04	2.00E-02	1.24E-02
Cobalt	1.12E+01	200	1.0E-06	1.0	350	6	15	2190	1.43E-04 NA		ND
Copper	1.97E+03	200	1.0E-06	1.0	350	6	15	2190	2.52E-02 NA		ND
Cyanide (total)	2.16E+01	200	1.0E-06	1.0	350	6	15	2190	2.76E-04	2.00E-02	1.38E-02
Iron	2.30E+04	200	1.0E-06	1.0	350	6	15	2190	2.94E-01 NA		ND
Lead	5.29E+01	200	1.0E-06	1.0	350	6	15	2190	6.76E-04 NA		ND
Magnesium	5.99E+04	200	1.0E-06	1.0	350	6	15	2190	7.66E-01 NA		ND
Manganese	1.00E+03	200	1.0E-06	1.0	350	6	15	2190	1.28E-02	1.40E-01	9.13E-02
Mercury	2.30E+00	200	1.0E-06	1.0	350	6	15	2190	2.94E-05	3.00E-04	9.80E-02
Nickel	3.83E+01	200	1.0E-06	1.0	350	6	15	2190	4.90E-04	2.00E-02	2.45E-02
Potassium	1.47E+03	200	1.0E-06	1.0	350	6	15	2190	1.88E-02 NA		ND
Selenium	4.40E-01	200	1.0E-06	1.0	350	6	15	2190	5.63E-06	5.00E-03	1.13E-03
Silver	1.80E+00	200	1.0E-06	1.0	350	6	15	2190	2.30E-05	5.00E-03	4.60E-03
Sodium	2.81E+02	200	1.0E-06	1.0	350	6	15	2190	3.59E-03 NA		ND
Thallium	4.20E-01	200	1.0E-06	1.0	350	6	15	2190	5.37E-06	8.00E-04	6.71E-03
Vanadium	3.38E+01	200	1.0E-06	1.0	350	6	15	2190	4.32E-04	7.00E-03	6.17E-02
Zinc	9.10E+01	200	1.0E-06	1.0	350	6	15	2190	1.16E-03	3.00E-01	3.88E-03

NA/ND – Not available/ Not determined

TOTAL HAZARD 1.14E+00

DERMAL CONTACT WITH CHEMICALS IN SOIL – HYPOTHETICAL FUTURE CHILD RESIDENTIAL HAZARD – SITE MAXIMUM

ANALYTE	CS (MG/KG)	CF (KG/MG)	SA (CM2/EVENT)	AF (MG/CM2)	ABS (UNITLESS)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	1.82E+04	1.0E-06	2010	1.00	0.001	350	6	15	2190	2.34E-03 NA		ND
Antimony	1.24E+01	1.0E-06	2010	1.00	0.001	350	6	15	2190	1.59E-06	2.40E-04	6.64E-03
Arsenic	9.50E+00	1.0E-06	2010	1.00	0.001	350	6	15	2190	1.22E-06	2.85E-04	4.28E-03
Barium	1.15E+02	1.0E-06	2010	1.00	0.001	350	6	15	2190	1.48E-05	3.50E-03	4.22E-03
Beryllium	1.60E+00	1.0E-06	2010	1.00	0.001	350	6	15	2190	2.06E-07	5.00E-04	4.11E-04
Cadmium	1.32E+01	1.0E-06	2010	1.00	0.001	350	6	15	2190	1.70E-06 NA		ND
Calcium	1.63E+05	1.0E-06	2010	1.00	0.001	350	6	15	2190	2.09E-02 NA		ND
Chromium	1.94E+01	1.0E-06	2010	1.00	0.001	350	6	15	2190	2.49E-06	1.00E-02	2.49E-04
Cobalt	1.12E+01	1.0E-06	2010	1.00	0.001	350	6	15	2190	1.44E-06 NA		ND
Copper	1.97E+03	1.0E-06	2010	1.00	0.001	350	6	15	2190	2.53E-04 NA		ND
Cyanide (total)	2.16E+01	1.0E-06	2010	1.00	0.001	350	6	15	2190	2.78E-06	1.40E-02	1.98E-04
Iron	2.30E+04	1.0E-06	2010	1.00	0.001	350	6	15	2190	2.96E-03 NA		ND
Lead	5.29E+01	1.0E-06	2010	1.00	0.001	350	6	15	2190	6.80E-06 NA		ND
Magnesium	5.99E+04	1.0E-06	2010	1.00	0.001	350	6	15	2190	7.70E-03 NA		ND
Manganese	1.00E+03	1.0E-06	2010	1.00	0.001	350	6	15	2190	1.28E-04	5.60E-03	2.29E-02
Mercury	2.30E+00	1.0E-06	2010	1.00	0.001	350	6	15	2190	2.96E-07	4.50E-05	6.57E-03
Nickel	3.83E+01	1.0E-06	2010	1.00	0.001	350	6	15	2190	4.92E-06	2.00E-03	2.46E-03
Potassium	1.47E+03	1.0E-06	2010	1.00	0.001	350	6	15	2190	1.89E-04 NA		ND
Selenium	4.40E-01	1.0E-06	2010	1.00	0.001	350	6	15	2190	5.65E-08	4.85E-03	1.17E-05
Silver	1.80E+00	1.0E-06	2010	1.00	0.001	350	6	15	2190	2.31E-07	5.00E-04	4.63E-04
Sodium	2.81E+02	1.0E-06	2010	1.00	0.001	350	6	15	2190	3.61E-05 NA		ND
Thallium	4.20E-01	1.0E-06	2010	1.00	0.001	350	6	15	2190	5.40E-08	8.00E-05	6.75E-04
Vanadium	3.38E+01	1.0E-06	2010	1.00	0.001	350	6	15	2190	4.34E-06	7.00E-05	6.20E-02
Zinc	9.10E+01	1.0E-06	2010	1.00	0.001	350	6	15	2190	1.17E-05	9.00E-02	1.30E-04

NA/ND – Not available / Not determined

TOTAL HAZARD 1.11E-01

INHALATION OF FUGITIVE DUSTS FROM SOIL – HYPOTHETICAL FUTURE ADULT RESIDENTIAL SHORT TERM HAZARD – SITE MAXIMUM

ANALYTE	CA (MG/M3)	IR (M3/HR)	ET (HR/DAY)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	1.28E-04	0.83	24	350	6	15	2190	1.63E-04 NA		ND
Antimony	8.74E-08	0.83	24	350	6	15	2190	1.11E-07 NA		ND
Arsenic	6.69E-08	0.83	24	350	6	15	2190	8.52E-08 NA		ND
Barium	8.10E-07	0.83	24	350	6	15	2190	1.03E-06	1.00E-03	1.03E-03
Beryllium	1.13E-08	0.83	24	350	6	15	2190	1.44E-08 NA		ND
Cadmium	9.30E-08	0.83	24	350	6	15	2190	1.18E-07 NA		ND
Calcium	1.15E-03	0.83	24	350	6	15	2190	1.46E-03 NA		ND
Chromium	1.37E-07	0.83	24	350	6	15	2190	1.74E-07 NA		ND
Cobalt	7.89E-08	0.83	24	350	6	15	2190	1.00E-07 NA		ND
Copper	1.39E-05	0.83	24	350	6	15	2190	1.77E-05 NA		ND
Cyanide (total)	1.52E-07	0.83	24	350	6	15	2190	1.94E-07 NA		ND
Iron	1.62E-04	0.83	24	350	6	15	2190	2.06E-04 NA		ND
Lead	3.73E-07	0.83	24	350	6	15	2190	4.75E-07 NA		ND
Magnesium	4.22E-04	0.83	24	350	6	15	2190	5.37E-04 NA		ND
Manganese	7.05E-06	0.83	24	350	6	15	2190	8.97E-06	1.00E-04	8.97E-02
Mercury	1.62E-08	0.83	24	350	6	15	2190	2.06E-08	8.60E-05	2.40E-04
Nickel	2.70E-07	0.83	24	350	6	15	2190	3.44E-07 NA		ND
Potassium	1.04E-05	0.83	24	350	6	15	2190	1.32E-05 NA		ND
Selenium	3.10E-09	0.83	24	350	6	15	2190	3.95E-09 NA		ND
Silver	1.27E-08	0.83	24	350	6	15	2190	1.61E-08 NA		ND
Sodium	1.98E-06	0.83	24	350	6	15	2190	2.52E-06 NA		ND
Thallium	2.96E-09	0.83	24	350	6	15	2190	3.77E-09 NA		ND
Vanadium	2.38E-07	0.83	24	350	6	15	2190	3.03E-07 NA		ND
Zinc	6.41E-07	0.83	24	350	6	15	2190	8.16E-07 NA		ND

NA/ND – Not available/ Not determined

TOTAL HAZARD 9.10E-02

INGESTION OF CHEMICALS IN SOIL – HYPOTHETICAL FUTURE ADULT RESIDENTIAL HAZARD – AVERAGE CONCENTRATION

ANALYTE	CS (MG/KG)	IR (MG/DAY)	CF (KG/MG)	FI (UNITLESS)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	3.99E+03	50	1.0E-06	1.0	350	9	70	3285	2.74E-03	1.00E+00	2.74E-03
Antimony	2.60E+00	50	1.0E-06	1.0	350	9	70	3285	1.78E-06	4.00E-04	4.46E-03
Arsenic	2.41E+00	50	1.0E-06	1.0	350	9	70	3285	1.65E-06	3.00E-04	5.51E-03
Barium	1.84E+01	50	1.0E-06	1.0	350	9	70	3285	1.26E-05	7.00E-02	1.80E-04
Beryllium	4.48E-01	50	1.0E-06	1.0	350	9	70	3285	3.07E-07	5.00E-03	6.14E-05
Cadmium	4.28E-01	50	1.0E-06	1.0	350	9	70	3285	2.93E-07	5.00E-04	5.87E-04
Calcium	7.32E+04	50	1.0E-06	1.0	350	9	70	3285	5.02E-02 NA		ND
Chromium	5.08E+00	50	1.0E-06	1.0	350	9	70	3285	3.48E-06	5.00E-03	6.96E-04
Cobalt	2.18E+00	50	1.0E-06	1.0	350	9	70	3285	1.50E-06 NA		ND
Copper	1.11E+02	50	1.0E-06	1.0	350	9	70	3285	7.62E-05	4.00E-02	1.90E-03
Cyanide (total)	1.91E+00	50	1.0E-06	1.0	350	9	70	3285	1.31E-06	2.00E-02	6.53E-05
Iron	7.47E+03	50	1.0E-06	1.0	350	9	70	3285	5.11E-03 NA		ND
Lead	7.97E+00	50	1.0E-06	1.0	350	9	70	3285	5.46E-06 NA		ND
Magnesium	2.47E+04	50	1.0E-06	1.0	350	9	70	3285	1.69E-02 NA		ND
Manganese	2.90E+02	50	1.0E-06	1.0	350	9	70	3285	1.99E-04	1.40E-01	1.42E-03
Mercury	6.89E-02	50	1.0E-06	1.0	350	9	70	3285	4.72E-08	3.00E-04	1.57E-04
Nickel	8.73E+00	50	1.0E-06	1.0	350	9	70	3285	5.98E-06	2.00E-02	2.99E-04
Potassium	3.71E+02	50	1.0E-06	1.0	350	9	70	3285	2.54E-04 NA		ND
Selenium	1.26E-01	50	1.0E-06	1.0	350	9	70	3285	8.61E-08	5.00E-03	1.72E-05
Silver	4.22E-01	50	1.0E-06	1.0	350	9	70	3285	2.89E-07	5.00E-03	5.78E-05
Sodium	5.68E+01	50	1.0E-06	1.0	350	9	70	3285	3.89E-05 NA		ND
Thallium	1.40E-01	50	1.0E-06	1.0	350	9	70	3285	9.60E-08	8.00E-05	1.20E-03
Vanadium	7.84E+00	50	1.0E-06	1.0	350	9	70	3285	5.37E-06	7.00E-03	7.67E-04
Zinc	3.68E+01	50	1.0E-06	1.0	350	9	70	3285	2.52E-05	3.00E-01	8.40E-05

NA/ND – Not available/ Not determined

TOTAL HAZARD 2.02E-02

DERMAL CONTACT WITH CHEMICALS IN SOIL – HYPOTHETICAL FUTURE ADULT RESIDENTIAL HAZARD – SITE AVERAGE CONCENTRATION

ANALYTE	CS (MG/KG)	CF (KG/MG)	SA (CM2/EVENT)	AF (MG/CM2)	ABS (UNITLESS)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	3.99E+03	1.0E-06	5000	1.00	0.001	234	9	70	3285	1.83E-04	2.00E-01	9.15E-04
Antimony	2.60E+00	1.0E-06	5000	1.00	0.001	234	9	70	3285	1.19E-07	2.40E-04	4.97E-04
Arsenic	2.41E+00	1.0E-06	5000	1.00	0.001	234	9	70	3285	1.10E-07	2.85E-04	3.87E-04
Barium	1.84E+01	1.0E-06	5000	1.00	0.001	234	9	70	3285	8.45E-07	3.50E-03	2.41E-04
Beryllium	4.48E-01	1.0E-06	5000	1.00	0.001	234	9	70	3285	2.05E-08	5.00E-04	4.10E-05
Cadmium	4.28E-01	1.0E-06	5000	1.00	0.001	234	9	70	3285	1.96E-08	3.50E-05	5.60E-04
Calcium	7.32E+04	1.0E-06	5000	1.00	0.001	234	9	70	3285	3.35E-03 NA		ND
Chromium	5.08E+00	1.0E-06	5000	1.00	0.001	234	9	70	3285	2.33E-07	2.50E-03	9.31E-05
Cobalt	2.18E+00	1.0E-06	5000	1.00	0.001	234	9	70	3285	1.00E-07 NA		ND
Copper	1.11E+02	1.0E-06	5000	1.00	0.001	234	9	70	3285	5.09E-06	3.96E-02	1.29E-04
Cyanide (total)	1.91E+00	1.0E-06	5000	1.00	0.001	234	9	70	3285	8.73E-08	1.40E-02	6.24E-06
Iron	7.47E+03	1.0E-06	5000	1.00	0.001	234	9	70	3285	3.42E-04 NA		ND
Lead	7.97E+00	1.0E-06	5000	1.00	0.001	234	9	70	3285	3.65E-07 NA		ND
Magnesium	2.47E+04	1.0E-06	5000	1.00	0.001	234	9	70	3285	1.13E-03 NA		ND
Manganese	2.90E+02	1.0E-06	5000	1.00	0.001	234	9	70	3285	1.33E-05	5.60E-03	2.37E-03
Mercury	6.89E-02	1.0E-06	5000	1.00	0.001	234	9	70	3285	3.16E-09	4.50E-05	7.01E-05
Nickel	8.73E+00	1.0E-06	5000	1.00	0.001	234	9	70	3285	4.00E-07	2.00E-03	2.00E-04
Potassium	3.71E+02	1.0E-06	5000	1.00	0.001	234	9	70	3285	1.70E-05 NA		ND
Selenium	1.26E-01	1.0E-06	5000	1.00	0.001	234	9	70	3285	5.76E-09	4.85E-03	1.19E-06
Silver	4.22E-01	1.0E-06	5000	1.00	0.001	234	9	70	3285	1.93E-08	5.00E-04	3.86E-05
Sodium	5.68E+01	1.0E-06	5000	1.00	0.001	234	9	70	3285	2.60E-06 NA		ND
Thallium	1.40E-01	1.0E-06	5000	1.00	0.001	234	9	70	3285	6.42E-09	8.00E-06	8.02E-04
Vanadium	7.84E+00	1.0E-06	5000	1.00	0.001	234	9	70	3285	3.59E-07	7.00E-05	5.13E-03
Zinc	3.68E+01	1.0E-06	5000	1.00	0.001	234	9	70	3285	1.69E-06	9.00E-02	1.87E-05

NA/ND – Not available / Not determined

TOTAL HAZARD 1.15E-02

INHALATION OF FUGITIVE DUSTS FROM SOIL – HYPOTHETICAL FUTURE ADULT RESIDENTIAL LONG TERM HAZARD – SITE AVERAGE CONCENTRATION

ANALYTE	CA (MG/M3)	IR (M3/HR)	ET (HR/DAY)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	2.81E-05	0.83	24	234	9	70	3285	5.13E-06	NA	ND
Antimony	1.83E-08	0.83	24	234	9	70	3285	3.35E-09	NA	ND
Arsenic	1.70E-08	0.83	24	234	9	70	3285	3.10E-09	NA	ND
Barium	1.30E-07	0.83	24	234	9	70	3285	2.37E-08	1.00E-04	2.37E-04
Beryllium	3.16E-09	0.83	24	234	9	70	3285	5.76E-10	NA	ND
Cadmium	3.02E-09	0.83	24	234	9	70	3285	5.51E-10	NA	ND
Calcium	5.16E-04	0.83	24	234	9	70	3285	9.41E-05	NA	ND
Chromium	3.58E-08	0.83	24	234	9	70	3285	6.53E-09	NA	ND
Cobalt	1.54E-08	0.83	24	234	9	70	3285	2.81E-09	NA	ND
Copper	7.84E-07	0.83	24	234	9	70	3285	1.43E-07	NA	ND
Cyanide (total)	1.34E-08	0.83	24	234	9	70	3285	2.45E-09	NA	ND
Iron	5.26E-05	0.83	24	234	9	70	3285	9.60E-06	NA	ND
Lead	5.61E-08	0.83	24	234	9	70	3285	1.02E-08	NA	ND
Magnesium	1.74E-04	0.83	24	234	9	70	3285	3.17E-05	NA	ND
Manganese	2.05E-06	0.83	24	234	9	70	3285	3.73E-07	1.00E-04	3.73E-03
Mercury	4.86E-10	0.83	24	234	9	70	3285	8.86E-11	8.60E-05	1.03E-06
Nickel	6.15E-08	0.83	24	234	9	70	3285	1.12E-08	NA	ND
Potassium	2.61E-06	0.83	24	234	9	70	3285	4.76E-07	NA	ND
Selenium	8.86E-10	0.83	24	234	9	70	3285	1.62E-10	NA	ND
Silver	2.97E-09	0.83	24	234	9	70	3285	5.42E-10	NA	ND
Sodium	4.00E-07	0.83	24	234	9	70	3285	7.30E-08	NA	ND
Thallium	9.87E-10	0.83	24	234	9	70	3285	1.80E-10	NA	ND
Vanadium	5.52E-08	0.83	24	234	9	70	3285	1.01E-08	NA	ND
Zinc	2.59E-07	0.83	24	234	9	70	3285	4.73E-08	NA	ND
									TOTAL HAZARD	3.97E-03

NA/ND – Not available/ Not determined

INGESTION OF CHEMICALS IN SOIL – HYPOTHETICAL FUTURE CHILD RESIDENTIAL HAZARD – AVERAGE CONCENTRATION

ANALYTE	CS (MG/KG)	IR (MG/DAY)	CF (KG/MG)	FI (UNITLESS)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	3.99E+03	100	1.0E-06	1.0	350	6	15	2190	2.55E-02 NA		ND
Antimony	2.60E+00	100	1.0E-06	1.0	350	6	15	2190	1.66E-05	4.00E-04	4.16E-02
Arsenic	2.41E+00	100	1.0E-06	1.0	350	6	15	2190	1.54E-05	3.00E-04	5.14E-02
Barium	1.84E+01	100	1.0E-06	1.0	350	6	15	2190	1.18E-04	7.00E-02	1.68E-03
Beryllium	4.48E-01	100	1.0E-06	1.0	350	6	15	2190	2.86E-06	5.00E-03	5.73E-04
Cadmium	4.28E-01	100	1.0E-06	1.0	350	6	15	2190	2.74E-06 NA		ND
Calcium	7.32E+04	100	1.0E-06	1.0	350	6	15	2190	4.68E-01 NA		ND
Chromium	5.08E+00	100	1.0E-06	1.0	350	6	15	2190	3.25E-05	2.00E-02	1.62E-03
Cobalt	2.18E+00	100	1.0E-06	1.0	350	6	15	2190	1.40E-05 NA		ND
Copper	1.11E+02	100	1.0E-06	1.0	350	6	15	2190	7.11E-04 NA		ND
Cyanide (total)	1.91E+00	100	1.0E-06	1.0	350	6	15	2190	1.22E-05	2.00E-02	6.10E-04
Iron	7.47E+03	100	1.0E-06	1.0	350	6	15	2190	4.77E-02 NA		ND
Lead	7.97E+00	100	1.0E-06	1.0	350	6	15	2190	5.09E-05 NA		ND
Magnesium	2.47E+04	100	1.0E-06	1.0	350	6	15	2190	1.58E-01 NA		ND
Manganese	2.90E+02	100	1.0E-06	1.0	350	6	15	2190	1.86E-03	1.40E-01	1.33E-02
Mercury	6.89E-02	100	1.0E-06	1.0	350	6	15	2190	4.41E-07	3.00E-04	1.47E-03
Nickel	8.73E+00	100	1.0E-06	1.0	350	6	15	2190	5.58E-05	2.00E-02	2.79E-03
Potassium	3.71E+02	100	1.0E-06	1.0	350	6	15	2190	2.37E-03 NA		ND
Selenium	1.26E-01	100	1.0E-06	1.0	350	6	15	2190	8.04E-07	5.00E-03	1.61E-04
Silver	4.22E-01	100	1.0E-06	1.0	350	6	15	2190	2.70E-06	5.00E-03	5.39E-04
Sodium	5.68E+01	100	1.0E-06	1.0	350	6	15	2190	3.63E-04 NA		ND
Thallium	1.40E-01	100	1.0E-06	1.0	350	6	15	2190	8.96E-07	8.00E-04	1.12E-03
Vanadium	7.84E+00	100	1.0E-06	1.0	350	6	15	2190	5.01E-05	7.00E-03	7.16E-03
Zinc	3.68E+01	100	1.0E-06	1.0	350	6	15	2190	2.35E-04	3.00E-01	7.84E-04

NA/ND – Not available/ Not determined

TOTAL HAZARD 1.25E-01

DERMAL CONTACT WITH CHEMICALS IN SOIL – HYPOTHETICAL FUTURE CHILD RESIDENTIAL HAZARD – AVERAGE CONCENTRATION

ANALYTE	CS (MG/KG)	CF (KG/MG)	SA (CM2/EVENT)	AF (MG/CM2)	ABS (UNITLESS)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	3.99E+03	1.0E-06	1750	1.00	0.001	234	6	15	2190	2.99E-04 NA		ND
Antimony	2.60E+00	1.0E-06	1750	1.00	0.001	234	6	15	2190	1.95E-07	2.40E-04	8.11E-04
Arsenic	2.41E+00	1.0E-06	1750	1.00	0.001	234	6	15	2190	1.80E-07	2.85E-04	6.33E-04
Barium	1.84E+01	1.0E-06	1750	1.00	0.001	234	6	15	2190	1.38E-06	3.50E-03	3.94E-04
Beryllium	4.48E-01	1.0E-06	1750	1.00	0.001	234	6	15	2190	3.35E-08	5.00E-04	6.70E-05
Cadmium	4.28E-01	1.0E-06	1750	1.00	0.001	234	6	15	2190	3.20E-08 NA		ND
Calcium	7.32E+04	1.0E-06	1750	1.00	0.001	234	6	15	2190	5.48E-03 NA		ND
Chromium	5.08E+00	1.0E-06	1750	1.00	0.001	234	6	15	2190	3.80E-07	1.00E-02	3.80E-05
Cobalt	2.18E+00	1.0E-06	1750	1.00	0.001	234	6	15	2190	1.63E-07 NA		ND
Copper	1.11E+02	1.0E-06	1750	1.00	0.001	234	6	15	2190	8.32E-06 NA		ND
Cyanide (total)	1.91E+00	1.0E-06	1750	1.00	0.001	234	6	15	2190	1.43E-07	1.40E-02	1.02E-05
Iron	7.47E+03	1.0E-06	1750	1.00	0.001	234	6	15	2190	5.59E-04 NA		ND
Lead	7.97E+00	1.0E-06	1750	1.00	0.001	234	6	15	2190	5.96E-07 NA		ND
Magnesium	2.47E+04	1.0E-06	1750	1.00	0.001	234	6	15	2190	1.85E-03 NA		ND
Manganese	2.90E+02	1.0E-06	1750	1.00	0.001	234	6	15	2190	2.17E-05	5.60E-03	3.88E-03
Mercury	6.89E-02	1.0E-06	1750	1.00	0.001	234	6	15	2190	5.16E-09	4.50E-05	1.15E-04
Nickel	8.73E+00	1.0E-06	1750	1.00	0.001	234	6	15	2190	6.53E-07	2.00E-03	3.27E-04
Potassium	3.71E+02	1.0E-06	1750	1.00	0.001	234	6	15	2190	2.77E-05 NA		ND
Selenium	1.26E-01	1.0E-06	1750	1.00	0.001	234	6	15	2190	9.40E-09	4.85E-03	1.94E-06
Silver	4.22E-01	1.0E-06	1750	1.00	0.001	234	6	15	2190	3.15E-08	5.00E-04	6.31E-05
Sodium	5.68E+01	1.0E-06	1750	1.00	0.001	234	6	15	2190	4.25E-06 NA		ND
Thallium	1.40E-01	1.0E-06	1750	1.00	0.001	234	6	15	2190	1.05E-08	8.00E-05	1.31E-04
Vanadium	7.84E+00	1.0E-06	1750	1.00	0.001	234	6	15	2190	5.86E-07	7.00E-05	8.37E-03
Zinc	3.68E+01	1.0E-06	1750	1.00	0.001	234	6	15	2190	2.75E-06	9.00E-02	3.06E-05

NA/ND – Not available / Not determined

TOTAL HAZARD 1.49E-02

INHALATION OF FUGITIVE DUSTS FROM SOIL – HYPOTHETICAL FUTURE CHILD RESIDENTIAL SHORT TERM HAZARD – SITE AVERAGE CONCENTRATION

ANALYTE	CA (MG/M3)	IR (M3/HR)	ET (HR/DAY)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	2.81E-05	0.83	24	234	6	15	2190	2.40E-05	NA	ND
Antimony	1.83E-08	0.83	24	234	6	15	2190	1.56E-08	NA	ND
Arsenic	1.70E-08	0.83	24	234	6	15	2190	1.45E-08	NA	ND
Barium	1.30E-07	0.83	24	234	6	15	2190	1.11E-07	1.00E-03	1.11E-04
Beryllium	3.16E-09	0.83	24	234	6	15	2190	2.69E-09	NA	ND
Cadmium	3.02E-09	0.83	24	234	6	15	2190	2.57E-09	NA	ND
Calcium	5.16E-04	0.83	24	234	6	15	2190	4.39E-04	NA	ND
Chromium	3.58E-08	0.83	24	234	6	15	2190	3.05E-08	NA	ND
Cobalt	1.54E-08	0.83	24	234	6	15	2190	1.31E-08	NA	ND
Copper	7.84E-07	0.83	24	234	6	15	2190	6.67E-07	NA	ND
Cyanide (total)	1.34E-08	0.83	24	234	6	15	2190	1.14E-08	NA	ND
Iron	5.26E-05	0.83	24	234	6	15	2190	4.48E-05	NA	ND
Lead	5.61E-08	0.83	24	234	6	15	2190	4.78E-08	NA	ND
Magnesium	1.74E-04	0.83	24	234	6	15	2190	1.48E-04	NA	ND
Manganese	2.05E-06	0.83	24	234	6	15	2190	1.74E-06	1.00E-04	1.74E-02
Mercury	4.86E-10	0.83	24	234	6	15	2190	4.13E-10	8.60E-05	4.81E-06
Nickel	6.15E-08	0.83	24	234	6	15	2190	5.24E-08	NA	ND
Potassium	2.61E-06	0.83	24	234	6	15	2190	2.22E-06	NA	ND
Selenium	8.86E-10	0.83	24	234	6	15	2190	7.54E-10	NA	ND
Silver	2.97E-09	0.83	24	234	6	15	2190	2.53E-09	NA	ND
Sodium	4.00E-07	0.83	24	234	6	15	2190	3.41E-07	NA	ND
Thallium	9.87E-10	0.83	24	234	6	15	2190	8.40E-10	NA	ND
Vanadium	5.52E-08	0.83	24	234	6	15	2190	4.70E-08	NA	ND
Zinc	2.59E-07	0.83	24	234	6	15	2190	2.21E-07	NA	ND

NA/ND – Not available/ Not determined

TOTAL HAZARD **1.75E-02**

INGESTION OF CHEMICALS IN SOIL – HYPOTHETICAL FUTURE ADULT RESIDENTIAL HAZARD – MAXIMUM BACKGROUND DATA

ANALYTE	CS (MG/KG)	IR (MG/DAY)	CF (KG/MG)	FI (UNITLESS)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	1.52E+04	100	1.0E-06	1.0	350	30	70	10950	2.08E-02	1.00E+00	2.08E-02
Arsenic	4.10E+00	100	1.0E-06	1.0	350	30	70	10950	5.62E-06	3.00E-04	1.87E-02
Barium	8.31E+01	100	1.0E-06	1.0	350	30	70	10950	1.14E-04	7.00E-02	1.63E-03
Beryllium	6.90E-01	100	1.0E-06	1.0	350	30	70	10950	9.45E-07	5.00E-03	1.89E-04
Calcium	6.69E+04	100	1.0E-06	1.0	350	30	70	10950	9.16E-02	NA	ND
Chromium	2.07E+01	100	1.0E-06	1.0	350	30	70	10950	2.84E-05	5.00E-03	5.67E-03
Cobalt	5.40E+00	100	1.0E-06	1.0	350	30	70	10950	7.40E-06	NA	ND
Copper	1.40E+01	100	1.0E-06	1.0	350	30	70	10950	1.92E-05	4.00E-02	4.79E-04
Iron	2.01E+04	100	1.0E-06	1.0	350	30	70	10950	2.75E-02	NA	ND
Lead	1.65E+01	100	1.0E-06	1.0	350	30	70	10950	2.26E-05	NA	ND
Magnesium	2.01E+04	100	1.0E-06	1.0	350	30	70	10950	2.75E-02	NA	ND
Manganese	3.50E+02	100	1.0E-06	1.0	350	30	70	10950	4.79E-04	1.40E-01	3.42E-03
Nickel	1.71E+01	100	1.0E-06	1.0	350	30	70	10950	2.34E-05	2.00E-02	1.17E-03
Potassium	1.12E+03	100	1.0E-06	1.0	350	30	70	10950	1.53E-03	NA	ND
Sodium	1.17E+02	100	1.0E-06	1.0	350	30	70	10950	1.60E-04	NA	ND
Vanadium	2.78E+01	100	1.0E-06	1.0	350	30	70	10950	3.81E-05	7.00E-03	5.44E-03
Zinc	7.73E+01	100	1.0E-06	1.0	350	30	70	10950	1.06E-04	3.00E-01	3.53E-04

NA/ND – Not available/ Not determined

TOTAL HAZARD 5.79E-02

DERMAL CONTACT WITH CHEMICALS IN SOIL – HYPOTHETICAL FUTURE ADULT RESIDENTIAL HAZARD – MAXIMUM BACKGROUND DATA

ANALYTE	CS (MG/KG)	CF (KG/MG)	SA (CM2/EVENT)	AF (MG/CM2)	ABS (UNITLESS)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	1.52E+04	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.21E-03	2.00E-01	6.04E-03
Arsenic	4.10E+00	1.0E-06	5800	1.00	0.001	350	30	70	10950	3.26E-07	2.85E-04	1.14E-03
Barium	8.31E+01	1.0E-06	5800	1.00	0.001	350	30	70	10950	6.60E-06	3.50E-03	1.89E-03
Beryllium	6.90E-01	1.0E-06	5800	1.00	0.001	350	30	70	10950	5.48E-08	5.00E-04	1.10E-04
Calcium	6.69E+04	1.0E-06	5800	1.00	0.001	350	30	70	10950	5.32E-03	NA	ND
Chromium	2.07E+01	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.64E-06	2.50E-03	6.58E-04
Cobalt	5.40E+00	1.0E-06	5800	1.00	0.001	350	30	70	10950	4.29E-07	NA	ND
Copper	1.40E+01	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.11E-06	3.96E-02	2.81E-05
Iron	2.01E+04	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.60E-03	NA	ND
Lead	1.65E+01	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.31E-06	NA	ND
Magnesium	2.01E+04	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.60E-03	NA	ND
Manganese	3.50E+02	1.0E-06	5800	1.00	0.001	350	30	70	10950	2.78E-05	5.60E-03	4.97E-03
Nickel	1.71E+01	1.0E-06	5800	1.00	0.001	350	30	70	10950	1.36E-06	2.00E-03	6.79E-04
Potassium	1.12E+03	1.0E-06	5800	1.00	0.001	350	30	70	10950	8.90E-05	NA	ND
Sodium	1.17E+02	1.0E-06	5800	1.00	0.001	350	30	70	10950	9.30E-06	NA	ND
Vanadium	2.78E+01	1.0E-06	5800	1.00	0.001	350	30	70	10950	2.21E-06	7.00E-05	3.16E-02
Zinc	7.73E+01	1.0E-06	5800	1.00	0.001	350	30	70	10950	6.14E-06	9.00E-02	6.82E-05

NA/ND – Not available / Not determined

TOTAL HAZARD 4.71E-02

INHALATION OF FUGITIVE DUSTS FROM SOIL – HYPOTHETICAL FUTURE ADULT RESIDENTIAL LONG TERM HAZARD – MAXIMUM BACKGROUND DATA

ANALYTE	CA (MG/M3)	IR (M3/HR)	ET (HR/DAY)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	1.07E-04	0.83	24	350	30	70	10950	2.92E-05	NA	ND
Arsenic	2.89E-08	0.83	24	350	30	70	10950	7.88E-09	NA	ND
Barium	5.85E-07	0.83	24	350	30	70	10950	1.60E-07	1.00E-04	1.60E-03
Beryllium	4.86E-09	0.83	24	350	30	70	10950	1.33E-09	NA	ND
Calcium	4.71E-04	0.83	24	350	30	70	10950	1.29E-04	NA	ND
Chromium	1.46E-07	0.83	24	350	30	70	10950	3.98E-08	NA	ND
Cobalt	3.80E-08	0.83	24	350	30	70	10950	1.04E-08	NA	ND
Copper	9.86E-08	0.83	24	350	30	70	10950	2.69E-08	NA	ND
Iron	1.42E-04	0.83	24	350	30	70	10950	3.86E-05	NA	ND
Lead	1.16E-07	0.83	24	350	30	70	10950	3.17E-08	NA	ND
Magnesium	1.42E-04	0.83	24	350	30	70	10950	3.86E-05	NA	ND
Manganese	2.47E-06	0.83	24	350	30	70	10950	6.73E-07	1.00E-04	6.73E-03
Nickel	1.20E-07	0.83	24	350	30	70	10950	3.29E-08	NA	ND
Potassium	7.89E-06	0.83	24	350	30	70	10950	2.15E-06	NA	ND
Sodium	8.24E-07	0.83	24	350	30	70	10950	2.25E-07	NA	ND
Vanadium	1.96E-07	0.83	24	350	30	70	10950	5.34E-08	NA	ND
Zinc	5.45E-07	0.83	24	350	30	70	10950	1.49E-07	NA	ND

NA/ND – Not available/ Not determined

TOTAL HAZARD 8.33E-03

INGESTION OF CHEMICALS IN SOIL – HYPOTHETICAL FUTURE CHILD RESIDENTIAL HAZARD – MAXIMUM BACKGROUND DATA

ANALYTE	CS (MG/KG)	IR (MG/DAY)	CF (KG/MG)	FI (UNITLESS)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	1.52E+04	200	1.0E-06	1.0	350	6	15	2190	1.94E-01	NA	ND
Arsenic	4.10E+00	200	1.0E-06	1.0	350	6	15	2190	5.24E-05	3.00E-04	1.75E-01
Barium	8.31E+01	200	1.0E-06	1.0	350	6	15	2190	1.06E-03	7.00E-02	1.52E-02
Beryllium	6.90E-01	200	1.0E-06	1.0	350	6	15	2190	8.82E-06	5.00E-03	1.76E-03
Calcium	6.69E+04	200	1.0E-06	1.0	350	6	15	2190	8.55E-01	NA	ND
Chromium	2.07E+01	200	1.0E-06	1.0	350	6	15	2190	2.65E-04	2.00E-02	1.32E-02
Cobalt	5.40E+00	200	1.0E-06	1.0	350	6	15	2190	6.90E-05	NA	ND
Copper	1.40E+01	200	1.0E-06	1.0	350	6	15	2190	1.79E-04	NA	ND
Iron	2.01E+04	200	1.0E-06	1.0	350	6	15	2190	2.57E-01	NA	ND
Lead	1.65E+01	200	1.0E-06	1.0	350	6	15	2190	2.11E-04	NA	ND
Magnesium	2.01E+04	200	1.0E-06	1.0	350	6	15	2190	2.57E-01	NA	ND
Manganese	3.50E+02	200	1.0E-06	1.0	350	6	15	2190	4.47E-03	1.40E-01	3.20E-02
Nickel	1.71E+01	200	1.0E-06	1.0	350	6	15	2190	2.19E-04	2.00E-02	1.09E-02
Potassium	1.12E+03	200	1.0E-06	1.0	350	6	15	2190	1.43E-02	NA	ND
Sodium	1.17E+02	200	1.0E-06	1.0	350	6	15	2190	1.50E-03	NA	ND
Vanadium	2.78E+01	200	1.0E-06	1.0	350	6	15	2190	3.55E-04	7.00E-03	5.08E-02
Zinc	7.73E+01	200	1.0E-06	1.0	350	6	15	2190	9.88E-04	3.00E-01	3.29E-03

NA/ND – Not available/ Not determined

TOTAL HAZARD 3.02E-01

DERMAL CONTACT WITH CHEMICALS IN SOIL – HYPOTHETICAL FUTURE CHILD RESIDENTIAL HAZARD – MAXIMUM BACKGROUND DATA

ANALYTE	CS (MG/KG)	CF (KG/MG)	SA (CM2/EVENT)	AF (MG/CM2)	ABS (UNITLESS)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	1.52E+04	1.0E−06	2010	1.00	0.001	350	6	15	2190	1.95E−03	NA	ND
Arsenic	4.10E+00	1.0E−06	2010	1.00	0.001	350	6	15	2190	5.27E−07	2.85E−04	1.85E−03
Barium	8.31E+01	1.0E−06	2010	1.00	0.001	350	6	15	2190	1.07E−05	3.50E−03	3.05E−03
Beryllium	6.90E−01	1.0E−06	2010	1.00	0.001	350	6	15	2190	8.87E−08	5.00E−04	1.77E−04
Calcium	6.69E+04	1.0E−06	2010	1.00	0.001	350	6	15	2190	8.60E−03	NA	ND
Chromium	2.07E+01	1.0E−06	2010	1.00	0.001	350	6	15	2190	2.66E−06	1.00E−02	2.66E−04
Cobalt	5.40E+00	1.0E−06	2010	1.00	0.001	350	6	15	2190	6.94E−07	NA	ND
Copper	1.40E+01	1.0E−06	2010	1.00	0.001	350	6	15	2190	1.80E−06	NA	ND
Iron	2.01E+04	1.0E−06	2010	1.00	0.001	350	6	15	2190	2.58E−03	NA	ND
Lead	1.65E+01	1.0E−06	2010	1.00	0.001	350	6	15	2190	2.12E−06	NA	ND
Magnesium	2.01E+04	1.0E−06	2010	1.00	0.001	350	6	15	2190	2.58E−03	NA	ND
Manganese	3.50E+02	1.0E−06	2010	1.00	0.001	350	6	15	2190	4.50E−05	5.60E−03	8.03E−03
Nickel	1.71E+01	1.0E−06	2010	1.00	0.001	350	6	15	2190	2.20E−06	2.00E−03	1.10E−03
Potassium	1.12E+03	1.0E−06	2010	1.00	0.001	350	6	15	2190	1.44E−04	NA	ND
Sodium	1.17E+02	1.0E−06	2010	1.00	0.001	350	6	15	2190	1.50E−05	NA	ND
Vanadium	2.78E+01	1.0E−06	2010	1.00	0.001	350	6	15	2190	3.57E−06	7.00E−05	5.10E−02
Zinc	7.73E+01	1.0E−06	2010	1.00	0.001	350	6	15	2190	9.93E−06	9.00E−02	1.10E−04

NA/ND – Not available / Not determined

TOTAL HAZARD 6.56E−02

INHALATION OF FUGITIVE DUSTS FROM SOIL – HYPOTHETICAL FUTURE ADULT RESIDENTIAL SHORT TERM HAZARD – MAXIMUM BACKGROUND DATA

ANALYTE	CA (MG/M3)	IR (M3/HR)	ET (HR/DAY)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	1.07E-04	0.83	24	350	6	15	2190	1.36E-04	NA	ND
Arsenic	2.89E-08	0.83	24	350	6	15	2190	3.68E-08	NA	ND
Barium	5.85E-07	0.83	24	350	6	15	2190	7.46E-07	1.00E-03	7.46E-04
Beryllium	4.86E-09	0.83	24	350	6	15	2190	6.19E-09	NA	ND
Calcium	4.71E-04	0.83	24	350	6	15	2190	6.00E-04	NA	ND
Chromium	1.46E-07	0.83	24	350	6	15	2190	1.86E-07	NA	ND
Cobalt	3.80E-08	0.83	24	350	6	15	2190	4.84E-08	NA	ND
Copper	9.86E-08	0.83	24	350	6	15	2190	1.26E-07	NA	ND
Iron	1.42E-04	0.83	24	350	6	15	2190	1.80E-04	NA	ND
Lead	1.16E-07	0.83	24	350	6	15	2190	1.48E-07	NA	ND
Magnesium	1.42E-04	0.83	24	350	6	15	2190	1.80E-04	NA	ND
Manganese	2.47E-06	0.83	24	350	6	15	2190	3.14E-06	1.00E-04	3.14E-02
Nickel	1.20E-07	0.83	24	350	6	15	2190	1.53E-07	NA	ND
Potassium	7.89E-06	0.83	24	350	6	15	2190	1.00E-05	NA	ND
Sodium	8.24E-07	0.83	24	350	6	15	2190	1.05E-06	NA	ND
Vanadium	1.96E-07	0.83	24	350	6	15	2190	2.49E-07	NA	ND
Zinc	5.45E-07	0.83	24	350	6	15	2190	6.93E-07	NA	ND

NA/ND – Not available/ Not determined

TOTAL HAZARD 3.21E-02

INGESTION OF CHEMICALS IN SOIL – HYPOTHETICAL FUTURE ADULT RESIDENTIAL HAZARD – AVERAGE BACKGROUND DATA

ANALYTE	CS (MG/KG)	IR (MG/DAY)	CF (KG/MG)	FI (UNITLESS)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	6.27E+03	50	1.0E-06	1.0	350	9	70	3285	4.30E-03	1.00E+00	4.30E-03
Arsenic	2.87E+00	50	1.0E-06	1.0	350	9	70	3285	1.96E-06	3.00E-04	6.54E-03
Barium	3.85E+01	50	1.0E-06	1.0	350	9	70	3285	2.64E-05	7.00E-02	3.77E-04
Beryllium	6.13E-01	50	1.0E-06	1.0	350	9	70	3285	4.20E-07	5.00E-03	8.40E-05
Calcium	3.62E+04	50	1.0E-06	1.0	350	9	70	3285	2.48E-02 NA		ND
Chromium	8.30E+00	50	1.0E-06	1.0	350	9	70	3285	5.68E-06	5.00E-03	1.14E-03
Cobalt	3.63E+00	50	1.0E-06	1.0	350	9	70	3285	2.49E-06 NA		ND
Copper	1.04E+01	50	1.0E-06	1.0	350	9	70	3285	7.10E-06	4.00E-02	1.78E-04
Iron	1.03E+04	50	1.0E-06	1.0	350	9	70	3285	7.07E-03 NA		ND
Lead	9.30E+00	50	1.0E-06	1.0	350	9	70	3285	6.37E-06 NA		ND
Magnesium	1.36E+04	50	1.0E-06	1.0	350	9	70	3285	9.32E-03 NA		ND
Manganese	2.40E+02	50	1.0E-06	1.0	350	9	70	3285	1.65E-04	1.40E-01	1.18E-03
Nickel	1.02E+01	50	1.0E-06	1.0	350	9	70	3285	6.99E-06	2.00E-02	3.49E-04
Potassium	5.86E+02	50	1.0E-06	1.0	350	9	70	3285	4.01E-04 NA		ND
Sodium	7.28E+01	50	1.0E-06	1.0	350	9	70	3285	4.99E-05 NA		ND
Vanadium	1.31E+01	50	1.0E-06	1.0	350	9	70	3285	8.95E-06	7.00E-03	1.28E-03
Zinc	3.96E+01	50	1.0E-06	1.0	350	9	70	3285	2.71E-05	3.00E-01	9.04E-05

NA/ND – Not available/ Not determined

TOTAL HAZARD 1.55E-02

DERMAL CONTACT WITH CHEMICALS IN SOIL – HYPOTHETICAL FUTURE ADULT RESIDENTIAL HAZARD – AVERAGE BACKGROUND DATA

ANALYTE	CS (MG/KG)	CF (KG/MG)	SA (CM2/EVENT)	AF (MG/CM2)	ABS (UNITLESS)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	6.27E+03	1.0E-06	5000	1.00	0.001	234	9	70	3285	2.87E-04	2.00E-01	1.44E-03
Arsenic	2.87E+00	1.0E-06	5000	1.00	0.001	234	9	70	3285	1.31E-07	2.85E-04	4.61E-04
Barium	3.85E+01	1.0E-06	5000	1.00	0.001	234	9	70	3285	1.76E-06	3.50E-03	5.04E-04
Beryllium	6.13E-01	1.0E-06	5000	1.00	0.001	234	9	70	3285	2.81E-08	5.00E-04	5.62E-05
Calcium	3.62E+04	1.0E-06	5000	1.00	0.001	234	9	70	3285	1.66E-03 NA		ND
Chromium	8.30E+00	1.0E-06	5000	1.00	0.001	234	9	70	3285	3.80E-07	2.50E-03	1.52E-04
Cobalt	3.63E+00	1.0E-06	5000	1.00	0.001	234	9	70	3285	1.66E-07 NA		ND
Copper	1.04E+01	1.0E-06	5000	1.00	0.001	234	9	70	3285	4.75E-07	3.96E-02	1.20E-05
Iron	1.03E+04	1.0E-06	5000	1.00	0.001	234	9	70	3285	4.73E-04 NA		ND
Lead	9.30E+00	1.0E-06	5000	1.00	0.001	234	9	70	3285	4.26E-07 NA		ND
Magnesium	1.36E+04	1.0E-06	5000	1.00	0.001	234	9	70	3285	6.23E-04 NA		ND
Manganese	2.40E+02	1.0E-06	5000	1.00	0.001	234	9	70	3285	1.10E-05	5.60E-03	1.97E-03
Nickel	1.02E+01	1.0E-06	5000	1.00	0.001	234	9	70	3285	4.67E-07	2.00E-03	2.34E-04
Potassium	5.86E+02	1.0E-06	5000	1.00	0.001	234	9	70	3285	2.68E-05 NA		ND
Sodium	7.28E+01	1.0E-06	5000	1.00	0.001	234	9	70	3285	3.34E-06 NA		ND
Vanadium	1.31E+01	1.0E-06	5000	1.00	0.001	234	9	70	3285	5.98E-07	7.00E-05	8.55E-03
Zinc	3.96E+01	1.0E-06	5000	1.00	0.001	234	9	70	3285	1.81E-06	9.00E-02	2.01E-05

NA/ND – Not available / Not determined

TOTAL HAZARD 1.34E-02

INHALATION OF FUGITIVE DUSTS FROM SOIL – HYPOTHETICAL FUTURE ADULT RESIDENTIAL LONG TERM HAZARD – AVERAGE BACKGROUND DATA

ANALYTE	CA (MG/M3)	IR (M3/HR)	ET (HR/DAY)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	4.42E-05	0.83	24	234	9	70	3285	8.06E-06 NA		ND
Arsenic	2.02E-08	0.83	24	234	9	70	3285	3.68E-09 NA		ND
Barium	2.71E-07	0.83	24	234	9	70	3285	4.95E-08	1.00E-04	4.95E-04
Beryllium	4.32E-09	0.83	24	234	9	70	3285	7.88E-10 NA		ND
Calcium	2.55E-04	0.83	24	234	9	70	3285	4.66E-05 NA		ND
Chromium	5.85E-08	0.83	24	234	9	70	3285	1.07E-08 NA		ND
Cobalt	2.56E-08	0.83	24	234	9	70	3285	4.67E-09 NA		ND
Copper	7.30E-08	0.83	24	234	9	70	3285	1.33E-08 NA		ND
Iron	7.27E-05	0.83	24	234	9	70	3285	1.33E-05 NA		ND
Lead	6.55E-08	0.83	24	234	9	70	3285	1.20E-08 NA		ND
Magnesium	9.59E-05	0.83	24	234	9	70	3285	1.75E-05 NA		ND
Manganese	1.69E-06	0.83	24	234	9	70	3285	3.09E-07	1.00E-04	3.09E-03
Nickel	7.19E-08	0.83	24	234	9	70	3285	1.31E-08 NA		ND
Potassium	4.13E-06	0.83	24	234	9	70	3285	7.53E-07 NA		ND
Sodium	5.13E-07	0.83	24	234	9	70	3285	9.36E-08 NA		ND
Vanadium	9.21E-08	0.83	24	234	9	70	3285	1.68E-08 NA		ND
Zinc	2.79E-07	0.83	24	234	9	70	3285	5.09E-08 NA		ND

NA/ND – Not available/ Not determined

TOTAL HAZARD 3.58E-03

INGESTION OF CHEMICALS IN SOIL – HYPOTHETICAL FUTURE CHILD RESIDENTIAL HAZARD – AVERAGE BACKGROUND DATA

ANALYTE	CS (MG/KG)	IR (MG/DAY)	CF (KG/MG)	FI (UNITLESS)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	6.27E+03	100	1.0E-06	1.0	350	6	15	2190	4.01E-02 NA		ND
Arsenic	2.87E+00	100	1.0E-06	1.0	350	6	15	2190	1.83E-05	3.00E-04	6.11E-02
Barium	3.85E+01	100	1.0E-06	1.0	350	6	15	2190	2.46E-04	7.00E-02	3.52E-03
Beryllium	6.13E-01	100	1.0E-06	1.0	350	6	15	2190	3.92E-06	5.00E-03	7.84E-04
Calcium	3.62E+04	100	1.0E-06	1.0	350	6	15	2190	2.32E-01 NA		ND
Chromium	8.30E+00	100	1.0E-06	1.0	350	6	15	2190	5.31E-05	2.00E-02	2.65E-03
Cobalt	3.63E+00	100	1.0E-06	1.0	350	6	15	2190	2.32E-05 NA		ND
Copper	1.04E+01	100	1.0E-06	1.0	350	6	15	2190	6.63E-05 NA		ND
Iron	1.03E+04	100	1.0E-06	1.0	350	6	15	2190	6.60E-02 NA		ND
Lead	9.30E+00	100	1.0E-06	1.0	350	6	15	2190	5.95E-05 NA		ND
Magnesium	1.36E+04	100	1.0E-06	1.0	350	6	15	2190	8.70E-02 NA		ND
Manganese	2.40E+02	100	1.0E-06	1.0	350	6	15	2190	1.54E-03	1.40E-01	1.10E-02
Nickel	1.02E+01	100	1.0E-06	1.0	350	6	15	2190	6.52E-05	2.00E-02	3.26E-03
Potassium	5.86E+02	100	1.0E-06	1.0	350	6	15	2190	3.75E-03 NA		ND
Sodium	7.28E+01	100	1.0E-06	1.0	350	6	15	2190	4.66E-04 NA		ND
Vanadium	1.31E+01	100	1.0E-06	1.0	350	6	15	2190	8.35E-05	7.00E-03	1.19E-02
Zinc	3.96E+01	100	1.0E-06	1.0	350	6	15	2190	2.53E-04	3.00E-01	8.44E-04

NA/ND – Not available/ Not determined

TOTAL HAZARD 9.51E-02

DERMAL CONTACT WITH CHEMICALS IN SOIL – HYPOTHETICAL FUTURE CHILD RESIDENTIAL HAZARD – AVERAGE BACKGROUND DATA

ANALYTE	CS (MG/KG)	CF (KG/MG)	SA (CM2/EVENT)	AF (MG/CM2)	ABS (UNITLESS)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	6.27E+03	1.0E-06	1750	1.00	0.001	234	6	15	2190	4.69E-04	NA	ND
Arsenic	2.87E+00	1.0E-06	1750	1.00	0.001	234	6	15	2190	2.14E-07	2.85E-04	7.52E-04
Barium	3.85E+01	1.0E-06	1750	1.00	0.001	234	6	15	2190	2.88E-06	3.50E-03	8.23E-04
Beryllium	6.13E-01	1.0E-06	1750	1.00	0.001	234	6	15	2190	4.59E-08	5.00E-04	9.17E-05
Calcium	3.62E+04	1.0E-06	1750	1.00	0.001	234	6	15	2190	2.71E-03	NA	ND
Chromium	8.30E+00	1.0E-06	1750	1.00	0.001	234	6	15	2190	6.21E-07	1.00E-02	6.21E-05
Cobalt	3.63E+00	1.0E-06	1750	1.00	0.001	234	6	15	2190	2.72E-07	NA	ND
Copper	1.04E+01	1.0E-06	1750	1.00	0.001	234	6	15	2190	7.75E-07	NA	ND
Iron	1.03E+04	1.0E-06	1750	1.00	0.001	234	6	15	2190	7.72E-04	NA	ND
Lead	9.30E+00	1.0E-06	1750	1.00	0.001	234	6	15	2190	6.96E-07	NA	ND
Magnesium	1.36E+04	1.0E-06	1750	1.00	0.001	234	6	15	2190	1.02E-03	NA	ND
Manganese	2.40E+02	1.0E-06	1750	1.00	0.001	234	6	15	2190	1.80E-05	5.60E-03	3.21E-03
Nickel	1.02E+01	1.0E-06	1750	1.00	0.001	234	6	15	2190	7.63E-07	2.00E-03	3.81E-04
Potassium	5.86E+02	1.0E-06	1750	1.00	0.001	234	6	15	2190	4.38E-05	NA	ND
Sodium	7.28E+01	1.0E-06	1750	1.00	0.001	234	6	15	2190	5.45E-06	NA	ND
Vanadium	1.31E+01	1.0E-06	1750	1.00	0.001	234	6	15	2190	9.77E-07	7.00E-05	1.40E-02
Zinc	3.96E+01	1.0E-06	1750	1.00	0.001	234	6	15	2190	2.96E-06	9.00E-02	3.29E-05

NA/ND – Not available / Not determined

TOTAL HAZARD 1.93E-02

INHALATION OF FUGITIVE DUSTS FROM SOIL – HYPOTHETICAL FUTURE ADULT RESIDENTIAL SHORT TERM HAZARD – AVERAGE BACKGROUND DATA

ANALYTE	CA (MG/M3)	IR (M3/HR)	ET (HR/DAY)	EF (DAY/YR)	ED (YR)	BW (KG)	AT (DAYS)	INTAKE (MG/KG/DAY)	RfD (MG/KG/DAY)	HAZARD
Aluminum	4.42E-05	0.83	24	234	6	15	2190	3.76E-05	NA	ND
Arsenic	2.02E-08	0.83	24	234	6	15	2190	1.72E-08	NA	ND
Barium	2.71E-07	0.83	24	234	6	15	2190	2.31E-07	1.00E-03	2.31E-04
Beryllium	4.32E-09	0.83	24	234	6	15	2190	3.68E-09	NA	ND
Calcium	2.55E-04	0.83	24	234	6	15	2190	2.17E-04	NA	ND
Chromium	5.85E-08	0.83	24	234	6	15	2190	4.98E-08	NA	ND
Cobalt	2.56E-08	0.83	24	234	6	15	2190	2.18E-08	NA	ND
Copper	7.30E-08	0.83	24	234	6	15	2190	6.22E-08	NA	ND
Iron	7.27E-05	0.83	24	234	6	15	2190	6.19E-05	NA	ND
Lead	6.55E-08	0.83	24	234	6	15	2190	5.58E-08	NA	ND
Magnesium	9.59E-05	0.83	24	234	6	15	2190	8.16E-05	NA	ND
Manganese	1.69E-06	0.83	24	234	6	15	2190	1.44E-06	1.00E-04	1.44E-02
Nickel	7.19E-08	0.83	24	234	6	15	2190	6.12E-08	NA	ND
Potassium	4.13E-06	0.83	24	234	6	15	2190	3.51E-06	NA	ND
Sodium	5.13E-07	0.83	24	234	6	15	2190	4.37E-07	NA	ND
Vanadium	9.21E-08	0.83	24	234	6	15	2190	7.84E-08	NA	ND
Zinc	2.79E-07	0.83	24	234	6	15	2190	2.38E-07	NA	ND

NA/ND – Not available/ Not determined

TOTAL HAZARD 1.46E-02

ATTACHMENT 1

TABLE 1 SUMMARY OF RISKS/HAZARDS ASSOCIATED WITH DAILY EXPOSURE TO THE LEVELS OF CONSTITUENTS OF CONCERN IN THE SOIL AT THE FORMER AMPHENOL SITE – RME SITE 95% UCL

CHILD RISK

CHEMICAL	EXPOSURE PATHWAYS SOIL INGESTION	INHALATION	DERMAL	TOTAL
Aluminum	ND	ND	ND	ND
Antimony	ND	ND	ND	ND
Arsenic	1.14E-05	2.21E-07	1.20E-07	1.17E-05
Barium	ND	ND	ND	ND
Beryllium	6.02E-06	8.26E-09	6.05E-07	6.64E-06
Cadmium	ND	3.55E-09	ND	3.55E-09
Calcium	ND	ND	ND	ND
Chromium	ND	5.04E-07	ND	5.04E-07
Cobalt	ND	ND	ND	ND
Copper	ND	ND	ND	ND
Cyanide (total)	ND	ND	ND	ND
Iron	ND	ND	ND	ND
Lead	ND	ND	ND	ND
Magnesium	ND	ND	ND	ND
Manganese	ND	ND	ND	ND
Mercury	ND	ND	ND	ND
Nickel	ND	9.54E-09	ND	9.54E-09
Potassium	ND	ND	ND	ND
Selenium	ND	ND	ND	ND
Silver	ND	ND	ND	ND
Sodium	ND	ND	ND	ND
Thallium	ND	ND	ND	ND
Vanadium	ND	ND	ND	ND
Zinc	ND	ND	ND	ND
TOTAL	1.74E-05	7.47E-07	7.25E-07	1.89E-05

CHILD HAZARD

CHEMICAL	EXPOSURE PATHWAYS SOIL INGESTION	INHALATION	DERMAL	TOTAL
Aluminum	ND	ND	ND	ND
Antimony	2.09E-01	ND	3.51E-03	2.13E-01
Arsenic	2.45E-01	ND	2.60E-03	2.48E-01
Barium	8.49E-03	4.17E-04	1.71E-03	1.06E-02
Beryllium	3.27E-03	ND	3.28E-04	3.60E-03
Cadmium	ND	ND	ND	ND
Calcium	ND	ND	ND	ND
Chromium	9.98E-03	ND	2.01E-04	1.02E-02
Cobalt	ND	ND	ND	ND
Copper	ND	ND	ND	ND
Cyanide (total)	1.53E-03	ND	2.19E-05	1.55E-03
Iron	ND	ND	ND	ND
Lead	ND	ND	ND	ND
Magnesium	ND	ND	ND	ND
Manganese	4.07E-02	4.00E-02	1.02E-02	9.10E-02
Mercury	4.52E-03	1.11E-05	3.03E-04	4.83E-03
Nickel	9.44E-03	ND	9.49E-04	1.04E-02
Potassium	ND	ND	ND	ND
Selenium	6.88E-04	ND	7.13E-06	6.95E-04
Silver	2.79E-03	ND	2.80E-04	3.06E-03
Sodium	ND	ND	ND	ND
Thallium	4.58E-03	ND	4.60E-04	5.04E-03
Vanadium	2.70E-02	ND	2.72E-02	5.42E-02
Zinc	1.91E-03	ND	6.40E-05	1.97E-03
TOTAL	5.70E-01	4.04E-02	4.78E-02	6.58E-01

NA/ND – Not applicable/Not determined

TABLE 2 SUMMARY OF RISKS/HAZARDS ASSOCIATED WITH DAILY EXPOSURE TO THE LEVELS OF CONSTITUENTS OF CONCERN IN THE SOIL AT THE FORMER AMPHENOL SITE – RME SITE MAXIMUM CONCENTRATIONS

CHILD RISK

CHEMICAL	EXPOSURE PATHWAYS SOIL INGESTION	INHALATION	DERMAL	TOTAL
Aluminum	ND	ND	ND	ND
Antimony	ND	ND	ND	ND
Arsenic	1.87E-05	3.65E-07	1.98E-07	1.93E-05
Barium	ND	ND	ND	ND
Beryllium	7.54E-06	1.03E-08	7.58E-07	8.31E-06
Cadmium	ND	6.19E-08	ND	6.19E-08
Calcium	ND	ND	ND	ND
Chromium	ND	6.27E-07	ND	6.27E-07
Cobalt	ND	ND	ND	ND
Copper	ND	ND	ND	ND
Cyanide (total)	ND	ND	ND	ND
Iron	ND	ND	ND	ND
Lead	ND	ND	ND	ND
Magnesium	ND	ND	ND	ND
Manganese	ND	ND	ND	ND
Mercury	ND	ND	ND	ND
Nickel	ND	2.47E-08	ND	2.47E-08
Potassium	ND	ND	ND	ND
Selenium	ND	ND	ND	ND
Silver	ND	ND	ND	ND
Sodium	ND	ND	ND	ND
Thallium	ND	ND	ND	ND
Vanadium	ND	ND	ND	ND
Zinc	ND	ND	ND	ND
TOTAL	2.63E-05	1.09E-06	9.55E-07	2.83E-05

CHILD HAZARD

CHEMICAL	EXPOSURE PATHWAYS SOIL INGESTION	INHALATION	DERMAL	TOTAL
Aluminum	ND	ND	ND	ND
Antimony	3.96E-01	ND	6.64E-03	4.03E-01
Arsenic	4.05E-01	ND	4.28E-03	4.09E-01
Barium	2.10E-02	1.03E-03	4.22E-03	2.63E-02
Beryllium	4.09E-03	ND	4.11E-04	4.50E-03
Cadmium	ND	ND	ND	ND
Calcium	ND	ND	ND	ND
Chromium	1.24E-02	ND	2.49E-04	1.27E-02
Cobalt	ND	ND	ND	ND
Copper	ND	ND	ND	ND
Cyanide (total)	1.38E-02	ND	1.98E-04	1.40E-02
Iron	ND	ND	ND	ND
Lead	ND	ND	ND	ND
Magnesium	ND	ND	ND	ND
Manganese	9.13E-02	8.97E-02	2.29E-02	2.04E-01
Mercury	9.80E-02	2.40E-04	6.57E-03	1.05E-01
Nickel	2.45E-02	ND	2.46E-03	2.69E-02
Potassium	ND	ND	ND	ND
Selenium	1.13E-03	ND	1.17E-05	1.14E-03
Silver	4.60E-03	ND	4.63E-04	5.07E-03
Sodium	ND	ND	ND	ND
Thallium	6.71E-03	ND	6.75E-04	7.39E-03
Vanadium	6.17E-02	ND	6.20E-02	1.24E-01
Zinc	3.88E-03	ND	1.30E-04	4.01E-03
TOTAL	1.14E+00	9.10E-02	1.11E-01	1.35E+00

NA/ND – Not applicable/Not determined

TABLE 3 SUMMARY OF RISKS/HAZARDS ASSOCIATED WITH DAILY EXPOSURE TO THE LEVELS OF CONSTITUENTS OF CONCERN IN THE SOIL AT THE FORMER AMPHENOL SITE – CTE SITE AVERAGE CONCENTRATIONS

CHILD RISK

CHEMICAL	EXPOSURE PATHWAYS SOIL INGESTION	INHALATION	DERMAL	TOTAL
Aluminum	ND	ND	ND	ND
Antimony	ND	ND	ND	ND
Arsenic	2.38E-06	6.20E-08	2.92E-08	2.47E-06
Barium	ND	ND	ND	ND
Beryllium	1.06E-06	1.94E-09	1.24E-07	1.18E-06
Cadmium	ND	1.34E-09	ND	1.34E-09
Calcium	ND	ND	ND	ND
Chromium	ND	1.10E-07	ND	1.10E-07
Cobalt	ND	ND	ND	ND
Copper	ND	ND	ND	ND
Cyanide (total)	ND	ND	ND	ND
Iron	ND	ND	ND	ND
Lead	ND	ND	ND	ND
Magnesium	ND	ND	ND	ND
Manganese	ND	ND	ND	ND
Mercury	ND	ND	ND	ND
Nickel	ND	3.77E-09	ND	3.77E-09
Potassium	ND	ND	ND	ND
Selenium	ND	ND	ND	ND
Silver	ND	ND	ND	ND
Sodium	ND	ND	ND	ND
Thallium	ND	ND	ND	ND
Vanadium	ND	ND	ND	ND
Zinc	ND	ND	ND	ND
TOTAL	3.43E-06	1.79E-07	1.53E-07	3.77E-06

CHILD HAZARD

CHEMICAL	EXPOSURE PATHWAYS SOIL INGESTION	INHALATION	DERMAL	TOTAL
Aluminum	ND	ND	ND	ND
Antimony	4.16E-02	ND	8.11E-04	4.24E-02
Arsenic	5.14E-02	ND	6.33E-04	5.20E-02
Barium	1.68E-03	1.11E-04	3.94E-04	2.19E-03
Beryllium	5.73E-04	ND	6.70E-05	6.40E-04
Cadmium	ND	ND	ND	ND
Calcium	ND	ND	ND	ND
Chromium	1.62E-03	ND	3.80E-05	1.66E-03
Cobalt	ND	ND	ND	ND
Copper	ND	ND	ND	ND
Cyanide (total)	6.10E-04	ND	1.02E-05	6.20E-04
Iron	ND	ND	ND	ND
Lead	ND	ND	ND	ND
Magnesium	ND	ND	ND	ND
Manganese	1.33E-02	1.74E-02	3.88E-03	3.46E-02
Mercury	1.47E-03	4.81E-06	1.15E-04	1.59E-03
Nickel	2.79E-03	ND	3.27E-04	3.12E-03
Potassium	ND	ND	ND	ND
Selenium	1.61E-04	ND	1.94E-06	1.63E-04
Silver	5.39E-04	ND	6.31E-05	6.02E-04
Sodium	ND	ND	ND	ND
Thallium	1.12E-03	ND	1.31E-04	1.25E-03
Vanadium	7.16E-03	ND	8.37E-03	1.55E-02
Zinc	7.84E-04	ND	3.06E-05	8.15E-04
TOTAL	1.25E-01	1.75E-02	1.49E-02	1.57E-01

NA/ND – Not applicable/Not determined

TABLE 4 SUMMARY OF RISKS/HAZARDS ASSOCIATED WITH DAILY EXPOSURE TO THE LEVELS OF CONSTITUENTS OF CONCERN IN THE SOIL AT THE FORMER AMPHENOL SITE – RME MAXIMUM BACKGROUND CONCENTRATIONS

CHILD RISK

CHEMICAL	EXPOSURE PATHWAYS SOIL INGESTION	INHALATION	DERMAL	TOTAL
Aluminum	ND	ND	ND	ND
Arsenic	8.09E-06	1.58E-07	8.53E-08	8.33E-06
Barium	ND	ND	ND	ND
Beryllium	3.25E-06	4.46E-09	3.27E-07	3.58E-06
Calcium	ND	ND	ND	ND
Chromium	ND	6.69E-07	ND	6.69E-07
Cobalt	ND	ND	ND	ND
Copper	ND	ND	ND	ND
Iron	ND	ND	ND	ND
Lead	ND	ND	ND	ND
Magnesium	ND	ND	ND	ND
Manganese	ND	ND	ND	ND
Nickel	ND	1.10E-08	ND	1.10E-08
Potassium	ND	ND	ND	ND
Sodium	ND	ND	ND	ND
Vanadium	ND	ND	ND	ND
Zinc	ND	ND	ND	ND
TOTAL	1.13E-05	8.42E-07	4.12E-07	1.26E-05

CHILD HAZARD

CHEMICAL	EXPOSURE PATHWAYS SOIL INGESTION	INHALATION	DERMAL	TOTAL
Aluminum	ND	ND	ND	ND
Arsenic	1.75E-01	ND	1.85E-03	1.77E-01
Barium	1.52E-02	7.46E-04	3.05E-03	1.90E-02
Beryllium	1.76E-03	ND	1.77E-04	1.94E-03
Calcium	ND	ND	ND	ND
Chromium	1.32E-02	ND	2.66E-04	1.35E-02
Cobalt	ND	ND	ND	ND
Copper	ND	ND	ND	ND
Iron	ND	ND	ND	ND
Lead	ND	ND	ND	ND
Magnesium	ND	ND	ND	ND
Manganese	3.20E-02	3.14E-02	8.03E-03	7.14E-02
Nickel	1.09E-02	ND	1.10E-03	1.20E-02
Potassium	ND	ND	ND	ND
Sodium	ND	ND	ND	ND
Vanadium	5.08E-02	ND	5.10E-02	1.02E-01
Zinc	3.29E-03	ND	1.10E-04	3.40E-03
TOTAL	3.02E-01	3.21E-02	6.56E-02	4.00E-01

NA/ND – Not applicable/Not determined

TABLE 5 SUMMARY OF RISKS/HAZARDS ASSOCIATED WITH DAILY EXPOSURE TO THE LEVELS OF CONSTITUENTS OF CONCERN IN THE SOIL AT THE FORMER AMPHENOL SITE – CTE AVERAGE BACKGROUND CONCENTRATIONS

CHILD RISK

CHEMICAL	EXPOSURE PATHWAYS SOIL INGESTION	INHALATION	DERMAL	TOTAL
Aluminum	ND	ND	ND	ND
Arsenic	2.83E-06	7.37E-08	3.47E-08	2.94E-06
Barium	ND	ND	ND	ND
Beryllium	1.45E-06	2.65E-09	1.69E-07	1.62E-06
Calcium	ND	ND	ND	ND
Chromium	ND	1.79E-07	ND	1.79E-07
Cobalt	ND	ND	ND	ND
Copper	ND	ND	ND	ND
Iron	ND	ND	ND	ND
Lead	ND	ND	ND	ND
Magnesium	ND	ND	ND	ND
Manganese	ND	ND	ND	ND
Nickel	ND	4.40E-09	ND	4.40E-09
Potassium	ND	ND	ND	ND
Sodium	ND	ND	ND	ND
Vanadium	ND	ND	ND	ND
Zinc	ND	ND	ND	ND
TOTAL	4.27E-06	2.60E-07	2.04E-07	4.74E-06

CHILD HAZARD

CHEMICAL	EXPOSURE PATHWAYS SOIL INGESTION	INHALATION	DERMAL	TOTAL
Aluminum	ND	ND	ND	ND
Arsenic	6.11E-02	ND	7.52E-04	6.18E-02
Barium	3.52E-03	2.31E-04	8.23E-04	4.57E-03
Beryllium	7.84E-04	ND	9.17E-05	8.76E-04
Calcium	ND	ND	ND	ND
Chromium	2.65E-03	ND	6.21E-05	2.72E-03
Cobalt	ND	ND	ND	ND
Copper	ND	ND	ND	ND
Iron	ND	ND	ND	ND
Lead	ND	ND	ND	ND
Magnesium	ND	ND	ND	ND
Manganese	1.10E-02	1.44E-02	3.21E-03	2.86E-02
Nickel	3.26E-03	ND	3.81E-04	3.64E-03
Potassium	ND	ND	ND	ND
Sodium	ND	ND	ND	ND
Vanadium	1.19E-02	ND	1.40E-02	2.59E-02
Zinc	8.44E-04	ND	3.29E-05	8.77E-04
TOTAL	9.51E-02	1.46E-02	1.93E-02	1.29E-01

NA/ND – Not applicable/Not determined