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Addendum - Human Health Risk Evaluation

for

Post-Removal Soil Site 8 - Abandoned Chemical Disposal Pit

Former
Naval Surface Warfare Center
White Oak
Silver Spring, Maryland

Engineering Field Activity Chesapeake
Naval Facilities Engineering Command
Contract Number N62472-90-D-1298
Contract Task Order 0298

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ADDENDUM - HUMAN HEALTH RISK EVALUATION FOR POST-REMOVAL SOIL SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT

FORMER
NAVAL SURFACE WARFARE CENTER
WHITE OAK
SILVER SPRING, MARYLAND

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

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ADDENDUM - HUMAN HEALTH RISK EVALUATION FOR POST-REMOVAL SOIL SITE 8 – ABANDONED CHEMCIAL DISPOSAL PIT NSWC - WHITE OAK, SILVER SPRING, MARYLAND

This report presents the results of the human health risk assessment (HHRA) for post-removal soil and groundwater at Site 8, the Abandoned Chemical Disposal Pit, located in NSWC, White Oak. The risk assessment is an addendum to the risk assessment for Site 8 presented in the RCRA Facility Investigation (RFI) for Sites 2,3,4,7,8,9 and Paint Branch (TtNUS, Inc, October 2000) and follows the methodologies presented in Section 2 and Section 8 of the RFI. This evaluation was performed to account for the removal actions that occurred at the disposal area/pit of Site 8 and reported in the Post Removal Action Report for Removal Action at Sites 8,9, and 11 (TtNUS, Inc., July 2000).

The HHRA for Site 8 consists of the five components used in the risk assessment process. These include: (1) Data Evaluation; (2) Exposure Assessment; (3) Toxicity Assessment; (4) Risk Characterization, and (5) Uncertainty Analysis. Sections 2.8.1 through 2.8.5 of the RFI contain detailed discussions of the general methodologies followed for each component of the HHRA and Section 8.5 of the RFI discusses these components as they apply to Site 8. The following sections discuss these components as they apply to this addendum.

1.0 DATA EVALUATION

The data evaluation section is primarily concerned with the selection of potential contaminants of concern (PCOCs) that are representative of the type and magnitude of potential human health effects. The PCOC screening process involves the comparison of maximum site concentrations to risk-based screening levels and other health-based standards. A brief discussion of data usability is also provided in the following section.

1.1 Data Usability

This section addresses the usability of the post-excavation soil data and soil data from the 1999 RFI for risk assessment purposes. Post-excavation confirmation data (including one clean fill sample) and data collected during the 1998/1999 RFI (Tetra Tech NUS, Inc., September 1999) were used to evaluate risks for Site 8. Validated historical data collected by Brown & Root Environmental in March, April, and June 1995 for the Design Verification Study were also used to assess risks from exposure to soil at Site 8, if applicable. Data collected in Design Verification Study from the disposal pit area (locations SB03, SB07, and SB08) were not used in the risk assessment since the soil from these locations has been removed. Of the post-removal confirmation samples, only data from the secondary and tertiary

excavations were used. The list of samples used in this evaluation are presented in the footnotes to Table 1 and the validated analytical data are provided in Appendix A.

All analytical data used in the quantitative estimation of potential risks were subjected to data validation. Only data of adequate quality, current and historical, were used in the risk evaluation. A discussion of data validation protocol followed for data generated for the NSWC-White Oak is provided in the Master Quality Assurance Project Plan QAPP (B&R Environmental, 1998). Analytical data qualified as estimated and data qualified for blank contamination (considered as non-detects) were used in the risk assessment. When determining exposure concentrations via statistical procedures, chemicals were conservatively assumed to be present at a concentration equal to one-half the sample-specific quantitation limit.

1.2 Selection of Potential Contaminants of Concern (PCOCs)

The selection of PCOCs is a qualitative screening process limiting the number of chemicals that are quantitatively evaluated in a risk assessment to those site-related constituents that dominate overall potential risks. In this evaluation, a chemical is selected as a PCOC and retained for further risk evaluation if the maximum detected concentration exceeds the PCOC screening level, and, for inorganics, if the chemical is determined to be present at concentrations above background. The PCOC screening levels are based on USEPA Region III Risk-Based Concentrations (RBCs) (USEPA, October 2000) for residential land use and correspond to a systemic hazard quotient of 0.1 (for noncarcinogens) or a lifetime cancer risk of 1E-6 (for carcinogens). The Region III RBCs were developed using protective default exposure scenarios suggested by USEPA (USEPA, 1991) and the most currently available reference doses and cancer slope factors (USEPA, 2000).

Frequency of detection is used to exclude chemicals when data sets of 20 samples or greater are available. Generally, a detection rate of 5 percent or less justifies elimination of the chemical from further consideration provided that the concentrations detected are not representative of a "hot spot" area. Chemicals eliminated from further evaluation at this step are assumed to present minimal risks to potential human receptors.

The essential nutrients calcium, magnesium, potassium, and sodium are not identified as PCOCs. These inorganic chemicals are naturally abundant in environmental matrices and are only toxic at high doses.

Inorganic constituents found at concentrations indicative of background levels are not considered to be site-related contaminants and are not retained as PCOCs. Site-specific background data are used to determine whether detected chemicals are present at naturally occurring levels. The chemical concentrations in soil and groundwater were compared to Base-wide background concentrations by the Wilcoxon Rank Sum Test at the 80 percent confidence level. If the Wilcoxon test determined that the

concentration of an inorganic constituent was significantly greater than background and the concentration was greater than its residential RBC, that chemical was retained as a PCOC. The inorganic chemicals in post-removal soil samples at Site 8 found to be within naturally occurring levels by the Wilcoxon Rank Sum Test were aluminum, arsenic, barium, cadmium, chromium, cobalt, copper, iron, lead, magnesium, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc (Table 1). As shown in Table 2, the concentrations of aluminum, barium, beryllium, calcium, iron, lead, magnesium, manganese, nickel, sodium, and thallium were determined to be within naturally occurring levels in groundwater.

Chemicals eliminated from further evaluation at this step are assumed to present minimal risks to potential human receptors and are not considered further in the risk assessment.

1.2.1 Identification of PCOCs in Post-Removal Surface/Subsurface Soil Samples

The list of PCOCs for surface and subsurface soil at Site 8 was developed from a combined data set which consists of the following: five soil samples collected in the Design Verification Study in 1995, twelve soil samples collected in the 1998/1999 RFI, twelve post-removal samples, and one clean fill sample. A list of the specific surface and subsurface soil samples is presented in the footnotes to Table 1 and the analytical data for the samples are provided in Appendix A. PCOCs for surface soil/subsurface soil are those chemicals reported at maximum concentrations greater than screening levels based on USEPA Region III RBCs for residential soil ingestion and basewide background levels for inorganics.

The following chemicals were retained as PCOCs in post-removal surface/subsurface soil:

- Aroclor-1260
- Inorganics – antimony, manganese, mercury

A summary of the PCOC selection process for soil is presented in Table 1.

1.2.2 Identification of PCOCs in Groundwater

The selection of PCOCs for groundwater at Site 8 was presented in Section 8.5.1 of the RFI.

The following chemicals were selected as PCOCs for groundwater:

- VOCs - 1,1,2-trichloroethane, chloroform, vinyl chloride
- Inorganics – arsenic, chromium, vanadium

Note that several inorganics (i.e., aluminum, cadmium, iron, and thallium) were selected as PCOCs for groundwater in the RFI but were not selected as PCOCs in this Addendum. These constituents were reevaluated in the Addendum because they were identified as drivers of noncarcinogenic risk in the RFI based on maximum concentrations in unfiltered samples, mainly samples 8GW350001 and 8GW360001. However, these samples were highly turbid having turbidity readings greater than 1,000 NTU. Therefore, the filtered samples from these locations were used for screening and risk evaluation in this Addendum. During the screening process, the concentrations of these constituents were compared to Base-wide background concentrations by the Wilcoxon Rank Sum Test at the 80 percent confidence level, as described previously, and the concentrations were found to be within naturally occurring levels. Consequently, aluminum, cadmium, iron, and thallium were not selected as PCOCs for groundwater in the Addendum. It should also be noted that thallium had been qualified "B" in data validation in groundwater samples collected at other sites during the RFI because of laboratory contamination and that the qualified concentrations were greater than those detected at Site 8. Therefore, it is likely that the presence of thallium in groundwater samples is due to laboratory contamination. Cadmium was not detected in any filtered samples and, therefore, is not included in Table 2.

A summary of the PCOC selection process for groundwater is presented in Table 2.

2.0 EXPOSURE ASSESSMENT

A human health exposure assessment defines and evaluates, quantitatively or qualitatively, the type or magnitude of human exposure to PCOCs identified in environmental media at a site under investigation. The exposure assessment for this addendum employs the methodologies described in Sections 2.8.2 and 8.5.2 of the RFI. As identified in Section 2.8.2, the potential human receptors evaluated for exposure to contaminated media at Site 8 include: full time workers, maintenance/utility workers, construction workers, adult recreational users, adolescent trespassers, day care center children, and child and adult residents. Pathway-specific information for these receptors, such as the values of exposure parameters used to quantify exposure, are presented in Tables 4.1 through 4.19 provided in Appendix B. The values of the exposure parameters presented in these tables are identical to the values employed in the RFI with the exception of the soil-to-skin adherence factors and dermal absorption factors used to evaluate risks for dermal contact with soil. The values of these factors have been updated to reflect recent USEPA guidance provided in Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance, Dermal Risk Assessment) (USEPA, 2000).

The exposure point concentration (EPC), which is calculated for PCOCs only, is a reasonable maximum estimate of the chemical concentration that is likely to be contacted over time and is used to calculate estimated exposure intakes. The 95 percent upper confidence limit (UCL), which is based on the distribution of a data set, is considered to be the best estimate of the exposure concentration for data sets

with 10 or more samples. The methodology for calculating the 95% UCLs is presented in Section 2.8.2.3 of the RFI. The 95 percent UCL is used as the exposure point concentration for surface/subsurface soil for this addendum. Fewer than 10 samples were collected for groundwater. Therefore, the exposure point concentration for groundwater is defined as the maximum detection for the RME and the arithmetic mean (if less than the maximum) is used for the CTE. The EPCs for the chemicals identified as PCOCs in post-removal soil and groundwater at Site 8 are presented in Tables 3.1 and 3.2 in Appendix B.

3.0 TOXICITY ASSESSMENT

The toxicity assessment for NSWC, White Oak is presented in Section 2.8.3 of the RFI.

4.0 RISK CHARACTERIZATION

This section provides the methodologies and results for the characterization of the potential human health risks associated with the potential exposure to post-removal soil and groundwater at Site 8.

Quantitative estimates of risk are calculated using intake and toxicity values according to risk assessment methods outlined in current USEPA guidance (USEPA, 1989). Lifetime cancer risks are expressed in the form of dimensionless probabilities, referred to as Incremental Cancer Risks (ICRs) which are derived using published cancer slope factors (CSFs). Noncarcinogenic risk estimates are presented in the form of Hazard Quotients (HQs) that are derived using published reference doses (RfDs).

ICR estimates are generated for each PCOC using estimated exposure intakes and published CSFs, as follows:

$$ICR = (\text{Estimated Exposure Intake})(CSF)$$

The ICRs for all PCOCs in an exposure scenario are summed to give a cumulative ICR. An ICR of 1×10^{-6} indicates that the exposed receptor has a one-in-one-million chance of developing cancer under the defined exposure scenario. Alternatively, such a risk may be interpreted as representing one additional case of cancer in an exposed population of one million persons.

Noncarcinogenic risks are assessed using the concept of HQs and Hazard Indices (HIs). The HQ for a PCOC is the ratio of the estimated intake to the RfD, as follows:

$$HQ = (\text{Estimated Exposure Intake}) \ / \ (RfD)$$

An HI is generated by summing the individual HQs for all of the PCOCs. It should be noted that HI is not a mathematical prediction of the severity of toxic effects and therefore is not a true "risk"; it is simply a numerical indicator of the possibility of the occurrence of noncarcinogenic (threshold) effects.

The calculations of the ICRs and HQs for all receptors and exposure routes are provided in the RAGS Part D tables presented in Appendix B (Tables 7.1 through 7.19 present risk assessment calculations of the HQs and Tables 8.1 through 8.19 present the calculations of the ICRs). Results of the risk characterization for Site 8 are discussed in Section 4.2.

4.1 Comparison of Quantitative Risk Estimates to Benchmarks

In order to interpret the quantitative risks and to aid risk managers in determining the need for remediation at a site, quantitative risk estimates are compared to typical benchmarks. The USEPA has defined the range of $1x10^{-6}$ to $1x10^{-4}$ as the ICR "target range" for most hazardous waste facilities addressed under CERCLA. Cumulative ICRs greater than $1x10^{-4}$ generally will indicate that some degree of remediation is required, while ICRs below $1x10^{-6}$ normally will not result in remedial efforts. Whenever ICRs fall between $1x10^{-4}$ and $1x10^{-6}$, decisions for remediation will be made on a case-specific basis. Individual chemicals contributing significantly to risks above the target range are considered to be chemicals of concern.

An HI exceeding unity (1.0) indicates that there may be potential noncarcinogenic health risks associated with exposure. If an HI exceeds unity, target organ effects from individual PCOCs contributing to the risk are considered. Only those chemicals that impact the same target organ(s) or exhibit similar critical effect(s) will be regarded as truly additive. Thus, PCOCs contributing to an HI greater than 1.0 on the basis of a single target organ/effect are considered to be chemicals of concern.

4.2 Risk Characterization Results

This section summarizes of the results of the risk characterization for post-removal conditions at Site 8. Potential risks for the reasonable maximum exposure (RME) are summarized in Table 3 and risks for the central tendency exposure (CTE) are presented in Table 4. Chemical specific-risks and total risks are presented in Tables 9.1 through 9.8 in Appendix B. A discussion of the estimated noncarcinogenic and carcinogenic risks is provided in the remainder of this section.

4.2.1 Noncarcinogenic Risks

Exposure to Surface/Subsurface Soil

Estimated HIs from exposure to combined surface/subsurface post-removal soil at Site 8 are presented in Tables 3 and 4. The cumulative HIs (the sum of Hazard Quotients for each COPC) for all receptors are less than the USEPA target of unity (1) for noncarcinogenic health effects. Therefore, no adverse noncarcinogenic health effects are expected from exposure to post-removal soil at Site 8 under the RME and CTE exposure conditions specified in the RFI and in Appendix B of this addendum.

Exposure to Groundwater

Noncarcinogenic risks from exposure to groundwater are discussed in Section 8.5.3.1 of the RFI and presented in Tables 3 and 4 of this addendum. As indicated in the tables, HIs for the hypothetical future adult and child resident are 1.5 and 5.4, respectively, for the RME, and 0.35 and 1.4, respectively, for the CTE. Most of this risk is the result of exposure to groundwater. The HIs for the CTE are less than unity on a target organ basis. The HIs for the child and adult resident exceed unity for the RME. However, none of the target organ HIs for the adult resident exceed unity. Therefore, no adverse health effects are anticipated for this receptor under the conditions assumed for the RME. The HI for the child resident is primarily associated with exposure to chloroform by inhalation of vapors emitted from groundwater into indoor air and exposure to arsenic by ingestion of groundwater.

It should be noted that the risks from exposure to arsenic in groundwater were based mainly on the maximum concentration (5.3 µg/L) detected in unfiltered Sample 8GW350001 in which the turbidity readings were greater than 1000 NTU, indicating the presence of soil particulates in this sample. Arsenic was not detected in filtered sample 8GW350001-F collected at the same location or in any other filtered samples. Consequently, it is likely that the HQ for arsenic in groundwater is overestimated because it was not present in the dissolved phase. In addition, the maximum concentration of arsenic is less than the current MCL (50 µg/L) and the recently proposed MCL (10 µg/L).

The risks from exposure to chloroform in indoor air were not based on actual air concentrations but were estimated based on air concentrations calculated by the Johnson and Ettinger/ASTM E 1739-95 Model described in Section 2.8.2.4.7 of the RFI. Because site-specific values of several input parameters to the model (e.g., capillary zone thickness, soil air content) are not known, model default values were used to calculate the exposure point air concentrations. These default values are generally conservative and tend to overestimate air concentrations. Therefore, risks from inhalation of chloroform are likely overestimated. In addition, the maximum concentration of chloroform in groundwater (7.2 µg/L) is an order of magnitude less than the MCL (80 µg/L).

Furthermore, the groundwater risks are based on the assumption that groundwater is used as a source of domestic water, which is unlikely since the area around the NSWC-White Oak uses a public water supply. In addition, because less than 10 groundwater samples were collected at Site 8, the risks for groundwater were calculated using maximum concentrations.

4.2.2 Carcinogenic Risks

Exposure to Surface/Subsurface Soil

Estimated cancer risks (ICRs) from exposure to soil at Site 8 are presented in Tables 3 and 4. The cumulative cancer risks for all potential receptors from exposure to surface/subsurface soil are less than $1.0x10^{-6}$. As indicated previously, cancer risks less than $1.0x10^{-6}$ are considered acceptable and generally do not require remediation.

Exposure to Groundwater

As indicated in Table 3, the cumulative ICRs for residential exposures (adult + child = $1.4x10^{-4}$) exceeds the USEPA's target range of $1.0x10^{-6}$ to $1.0x10^{-4}$ for the RME. These elevated carcinogenic risks are primarily the result of exposure to 1,1,2-trichloroethane, chloroform, vinyl chloride, and arsenic in groundwater. The primary contributor to the overall risk is arsenic in groundwater which comprises approximately 75 percent of the total cancer risk. However, as noted above, the risks from arsenic are based on the maximum concentration which was detected in a sample having very high turbidity readings and arsenic was not detected in the filtered sample collected from the same location. If arsenic had not been selected as a PCOC, the total residential ICR from exposure to groundwater at Site 8 would be within the USEPA's target range. Furthermore, the carcinogenicity of arsenic via ingestion has not been confirmed by the available data. However, the USEPA unit risk factor for ingestion was used for all oral and dermal exposures to arsenic. Therefore, the carcinogenic risks associated with the ingestion of arsenic in groundwater may be overestimated. It should also be noted that the maximum concentrations of 1,1,2-trichloroethane, chloroform, vinyl chloride, and arsenic were less than the current MCLs for these constituents. In addition, the patterns in the detections of these constituents indicate that there is no discernible plume at the Site.

The ICRs for the CTE (Table 4) were within or less than the USEPA's target range for all receptors evaluated.

5.0 UNCERTAINTY ANALYSIS

General uncertainties associated with the risk assessment for Site 8 are discussed in Sections 2.8.5 and 8.5.4 of the RFI. Uncertainties associated with the calculation of risk in this addendum are addressed in Sections 4.2.1 and 4.2.2 above.

Some uncertainty associated with the identification of metals as PCOCs still exists. A statistical analysis (Wilcoxon Rank-Sum Test) of site metal concentrations compared to site-specific background concentrations is conducted to determine if site concentrations are significantly greater than the background concentrations. If they are significantly greater than background, and the maximum detected concentrations are greater than the screening level, i.e., one-tenth the RBC for noncarcinogens and the RBC for carcinogens, they are identified as PCOCs. If the site concentration is not significantly greater than the background concentration, the metal is not identified as a PCOC, even if its maximum concentration is greater than the screening level. The statistical analysis accounts for the variability in concentrations. However, at times, a review of the data may suggest that certain metals should be identified as PCOCs even when the statistical analysis indicates otherwise.

A review of the Site 8 metals data indicates that antimony, cadmium, chromium, iron, manganese, mercury, nickel, and thallium have maximum detected concentrations greater than the upper confidence limit of the mean (UCL) of the site-specific background concentrations and greater than their respective screening levels (Table 5). However, only the Site 8 UCL concentrations for manganese, nickel, and thallium are greater than the UCL of the site-specific background concentrations and their respective screening levels (Table 6). In the risk assessment, antimony, manganese and mercury wee retained as PCOCs. Thallium was not retained because its frequency of detection was less than five percent. Nickel would be identified as an additional PCOC, but it is only detected in one sample at a concentration greater than its screening level. Therefore, nickel would have little impact on the total hazard index. Overall, it is appropriate to identify only antimony, manganese, and mercury as the only inorganic PCOCs in this risk assessment.

With regard to protection of groundwater, only arsenic, chromium, and manganese are present in soil with maximum detected concentrations greater than the soil screening level for protection of groundwater associated with a dilution-attenuation factor (DAF) of 20 (Table 7). The Site 8 UCL concentrations for chromium and manganese are less than their groundwater protection screening levels (Table 8). Moreover, arsenic and chromium are not significantly greater than background. Based on this evaluation, it is unlikely that the concentrations of these metals in soil pose any adverse impacts to groundwater.

6.0 SUMMARY AND CONCLUSIONS

This addendum to the risk assessment for Site 8 was performed to evaluate potential risks for exposure to post-removal soil at the site. For completeness, this addendum also includes the risk assessment for groundwater presented in the RFI. Potential receptors include full time workers, maintenance/utility workers, construction workers, adult recreational users, adolescent trespassers, day care center children, and hypothetical child and adult residents. The receptors were evaluated for exposure to soil by dermal contact and ingestion and for exposure to air assumed to be impacted by vapors of volatile organic chemicals (VOCs) emitted from groundwater. Future residents were also evaluated for exposure to groundwater by ingestion, inhalation, and dermal contact.

The list of COCs for the Site 8 addendum includes the following:

- Surface/subsurface soil - Aroclor-1260, antimony, manganese, and mercury.
- Groundwater PCOCs – 1,1,2-trichloroethane, chloroform, vinyl chloride, arsenic, chromium, and vanadium

Quantitative estimates of noncarcinogenic and carcinogenic risks (HIs and ICRs, respectively) were developed for the potential receptors.

The cumulative ICRs and HIs from exposure to surface/subsurface soil for all receptors were less than the USEPA target levels, i.e., ICRs were less than 1.0×10^{-6} for carcinogens and HIs were less than unity for noncarcinogens.

For groundwater, cumulative HI for the child resident exceeds unity and the cumulative ICR for future residents (adult + child) exceeds 1.0×10^{-4}, the upper limit of the USEPA target risk range. The elevated HIs for these receptors are associated with exposure to chloroform vapors emitted from groundwater into indoor air and to arsenic by ingestion in groundwater. The elevated carcinogenic risks are primarily the result of exposure to arsenic by ingestion of groundwater which accounts for 75 percent of the total cancer risk. However, as discussed previously, there is considerable uncertainty associated the groundwater risks. Risks from exposure to arsenic in groundwater were based on the maximum concentration from an unfiltered sample with very high turbidity and the maximum concentration of arsenic is less than the current and the recently proposed MCLs. The inhalation risk from chloroform was derived from a model using conservative default parameters. Furthermore, the groundwater risks are based on the assumption that groundwater is used as a source of domestic water, which is unlikely since the area around the NSWC-White Oak uses a public water supply. In addition, the maximum concentrations of the risk drivers in groundwater, 1,1,2-trichloroethane, chloroform, vinyl chloride, and arsenic, are less than the current MCLs

for these constituents and the locations of the detections of these constituents indicate that there is no discernible plume at the Site.

In summary, no significant potential health hazards were found to be associated with exposure to post-removal surface and subsurface soil at Site 8. Elevated risks were estimated for potential future residential use of groundwater although the maximum concentrations of the constituents identified as risk drivers are less than MCLs. However, there is considerable uncertainty in the risks calculated for exposure to groundwater. The uncertainties may result in an overestimation of the potential risks.

TABLE 1

OCCURRENCE, DISTRIBUTION, AND SELECTION OF POTENTIAL CONSTITUENTS OF CONCERN - POST-REMOVAL SURFACE/SUBSURFACE SOIL
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface / Subsurface Soil
Exposure Point: Entire Site

CAS Number	Chemical	Minimum Concentration	Minimum Qualifier	Maximum Concentration(1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Nondetects(2)	Concentration Used for Screening(3)	Background Value(4)	Risk-Based Residential PCOC Screening Level(5)		PCOC Flag	Rationale for Contaminant Deletion or Selection(6)
67-64-1	Acetone	0.00525	J	0.16	J	mg/kg	8SS1030100	3/30	0.011 - 0.013	0.16	NA	780	N	No	BSL
75-09-2	Methylene Chloride	0.00245	J	0.105		mg/kg	DP-08-8R	12/29	0.003 - 0.042	0.105	NA	85	C	No	BSL
108-88-3	Toluene	0.001	J	0.004	J	mg/kg	8SS1030100	3/30	0.005 - 0.013	0.004	NA	1600	N	No	BSL
79-01-6	Trichloroethene	0.002	J	0.006	J	mg/kg	08-SB04-1112	2/29	0.005 - 0.064	0.006	NA	58	C	No	BSL
117-81-7	Bis(2-Ethylhexyl)phthalate	0.0425	J	0.237	J	mg/kg	DP-08-4R	7/29	0.35 - 0.44	0.237	NA	46	C	No	BSL
84-74-2	Di-n-butyl phthalate	0.17	J	0.484		mg/kg	DP-08-13RR	2/29	0.35 - 0.44	0.484	NA	780	N	No	BSL
206-44-0	Fluoranthene	0.072	J	0.072	J	mg/kg	8SS1000100	1/29	0.35 - 0.44	0.072	NA	310	N	No	BSL, FREQ
129-00-0	Pyrene	0.07	J	0.07	J	mg/kg	8SS1000100	1/29	0.35 - 0.44	0.07	NA	230	N	No	BSL, FREQ
72-54-8	4,4'-DDD	0.013		0.013		mg/kg	8SS1010100	1/8	0.0001 - 0.42	0.013	NA	2.7	C	No	BSL
72-55-9	4,4'-DDE	0.00049	J	0.00068	J	mg/kg	8SU1030200-D	1/6	0.00038 - 0.42	0.00068	NA	1.9	C	No	BSL
5103-71-9	alpha-Chlordane	0.0007	J	0.0026		mg/kg	8SU1040200	8/11	0.0018 - 0.002	0.0026	NA	1.8(7)	C	No	BSL
11096-82-5	Aroclor-1260	0.002	J	0.42		mg/kg	8SS1000100	6/11	0.039 - 4.2	0.42	NA	0.32	C	Yes	ASL
60-57-1	Dieldrin	0.0066	J	0.0066	J	mg/kg	8SS1000100	1/12	0.00019 - 0.42	0.0066	NA	0.04	C	No	BSL
72-20-8	Endrin	0.00005	J	0.00063	J	mg/kg	8SS1000100	3/11	0.0035 - 0.42	0.00063	NA	2.3	N	No	BSL
72-43-5	Methoxychlor	0.00036	J	0.00067	J	mg/kg	8SU1000200	2/11	0.018 - 2.1	0.00067	NA	39	N	No	BSL
319-85-7	beta-BHC	0.00016	J	0.00016	J	mg/kg	8SU1030200-D	1/9	0.0018 - 0.21	0.00016	NA	0.35	C	No	BSL
7429-90-5	Aluminum	638		17900	J	mg/kg	8SU1030200-D	30/30	---	17900	NA	7800	N	No	BKG
7440-36-0	Antimony	0.257		4.69		mg/kg	DP-08-5R	7/17	0.216 - 0.4	4.69	NA	3.1	N	Yes	ASL
7440-38-2	Arsenic	0.28	L	8.1		mg/kg	8SS1010100	16/30	0.19 - 7.9	8.1	NA	0.43	C	No	BKG

TABLE 1

OCCURRENCE, DISTRIBUTION, AND SELECTION OF POTENTIAL CONSTITUENTS OF CONCERN - POST-REMOVAL SURFACE/SUBSURFACE SOIL
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface / Subsurface Soil
Exposure Point: Entire Site

CAS Number	Chemical	Minimum Concentration	Minimum Qualifier	Maximum Concentration(1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Nondetects(2)	Concentration Used for Screening(3)	Background Value(4)	Risk-Based Residential PCOC Screening Level(5)		PCOC Flag	Rationale for Contaminant Deletion or Selection(6)
7440-39-3	Barium	2.47		235		mg/kg	DP-08-11R	29/30	4.8 - 4.8	235	NA	550	N	No	BKG
7440-41-7	Beryllium	0.097		2.5		mg/kg	08-SB04-1112	15/29	0.01 - 0.66	2.5	NA	16		No	BSL
7440-43-9	Cadmium	0.374		10		mg/kg	DP-08-8R	11/30	0.04 - 1.4	10	NA	7.8	N	No	BKG
7440-70-2	Calcium	43.8		238000	J	mg/kg	8SS1000100	28/30	39.1 - 58.2	238000	NA	NA		No	NUT
7440-47-3	Chromium	2.52		77.6		mg/kg	8SU1000200	30/30	---	77.6	NA	23(8)	N	No	BKG
18540-29-9	Hexavalent Chromium	0.62		1.1		mg/kg	8SU1020200	3/3	---	1.1	NA	23	N	No	BSL
7440-48-4	Cobalt	0.21		48.7		mg/kg	8SU1000200	24/30	0.11 - 1.2	48.7	NA	470	N	No	BSL, BKG
7440-50-8	Copper	1.16		96.3		mg/kg	DP-08-10RR	29/30	16.3 - 16.3	96.3	NA	310	N	No	BSL, BKG
57-12-5	Cyanide	0.17		0.17		mg/kg	8SS1040100	1/29	0.14 - 1.2	0.17	NA	160	N	No	BSL, FREQ
7439-89-6	Iron	1040		36500	J	mg/kg	08-SB02-1618	30/30	---	36500	NA	2300	N	No	BKG
7439-92-1	Lead	1.4	J	40.9	K	mg/kg	8SS1010100	30/30	---	40.9	NA	400(9)		No	BSL, BKG
7439-95-4	Magnesium	15.4		97600		mg/kg	8SU1000200	30/30	---	97600	NA	NA		No	NUT, BKG
7439-96-5	Manganese	4.31		1440	J	mg/kg	08-SB02-1618	30/30	---	1440	NA	160(10)	N	Yes	ASL
7439-97-6	Mercury	0.06	L	5.1	L	mg/kg	8SS1010100	18/30	0.046 - 0.34	5.1	NA	2.3(11)	N	Yes	ASL
7440-02-0	Nickel	0.134		892		mg/kg	8SU1000200	26/30	0.108 - 0.115	892	NA	160	N	No	BKG
7440-09-7	Potassium	29.6		1920		mg/kg	08-SB02-1618	30/30	---	1920	NA	NA		No	NUT, BKG
7782-49-2	Selenium	0.271		8.4		mg/kg	8SS1010100	10/30	0.219 - 1.3	8.4	NA	39	N	No	BSL, BKG
7440-23-5	Sodium	19.8		83.2		mg/kg	08-SB02-1618	19/30	17 - 111	83.2	NA	NA		No	NUT, BKG
7440-28-0	Thallium	0.567		0.567		mg/kg	DP-08-10RR	1/29	0.216 - 1.9	0.567	NA	0.55	N	No	BKG, FREQ

TABLE 1

OCCURRENCE, DISTRIBUTION, AND SELECTION OF POTENTIAL CONSTITUENTS OF CONCERN - POST-REMOVAL SURFACE/SUBSURFACE SOIL
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface / Subsurface Soil
Exposure Point: Entire Site

CAS Number	Chemical	Minimum Concentration	Minimum Qualifier	Maximum Concentration(1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Nondetects(2)	Concentration Used for Screening(3)	Background Value(4)	Risk-Based Residential PCOC Screening Level(5)		PCOC Flag	Rationale for Contaminant Deletion or Selection(6)
7440-62-2	Vanadium	5.7		47.8		mg/kg	8SU1020200	30/30	---	47.8	NA	55	N	No	BSL, BKG
7440-66-6	Zinc	1.07		102		mg/kg	8SS1020100	30/30	---	102	NA	2300	N	No	BSL, BKG

Shaded cells indicate that the maximum concentration exceeds the specified criterion or constituent has been selected as a PCOC.

Footnotes:

1 Sample and duplicate are counted as two separate samples when determining the minimum and maximum detected concentrations.
2 Values presented are sample-specific quantitation limits.
3 The maximum detected concentration is used for screening purposes.
4 To determine whether metal concentrations are within background levels, a comparison of site concentrations with Base-wide background data was made by means of the Wilcoxon Rank Sum Test. If the Wilcoxon Test determined that a constituent concentration was not significanty different from background, that chemical was not selected as a PCOC.
5 The risk-based soil COPC screening level for residential land use is presented. The value is based on a target hazard quotient of 0.1 for noncarcinogens (denoted with a "N" flag) or an incremental cancer risk of 1E-6 for carcinogens (denoted with a "C" flag) (USEPA, Region III, September 2001).
6 The chemical is selected as a PCOC if the maximum detected concentration exceeds the risk-based PCOC screening level and facility-wide background levels.
7 alpha-Chordane as Chlordane.
8 Chromium as hexavalent chromium.
9 OSWER soil screening level for residential land use (USEPA, July 1994)
10 Manganese-Nonfood
11 Mercury as Mercuric Chloride

Rationale Codes:
For Selection as a PCOC:
ASL = Above PCOC Screening Level

For Elimination as a PCOC:
BKG = Within background levels
BSL = Below PCOC Screening Level
FREQ = Frequency
NUT = Essential Nutrient

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
C = Carcinogen
J = Estimated Value
K = Value Estimated with a High Bias
L = Value Estimated with a Low Bias
N = Noncarcinogen
NA = Not Applicable/Not Available.
PCOC = Potential Constituent of Concern

Associated Samples:

08-SB01-1416	8SS1020100	8SU1030200-AVG	DP-08-13RR
08-SB02-1618	8SS1030100	8SU1030200-D	DP-08-15R
08-SB04-1112	8SS1040100	8SU1040200	DP-08-3R
08-SB05-1618	8SS1050100	8SU1050200	DP-08-4R
08-SB06-1216	8SU1000200	CLEAN FILL	DP-08-5R
8SS1000100	8SU1010200	DP-08-10RR	DP-08-6R
8SS1010100	8SU1020200	DP-08-11R	DP-08-7R
	8SU1030200	DP-08-12R	DP-08-8R
			DP-08-9R

TABLE 2

OCCURRENCE, DISTRIBUTION, AND SELECTION OF POTENTIAL CONSTITUENTS OF CONCERN - GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Groundwater

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency (1)	Range of Nondetects (2)	Concentration Used for Screening (3)	Background Value (4)	Risk-Based PCOC Screening Level (5)		Potential ARAR/ TBC Value	Potential ARAR/ TBC Source	PCOC Flag	Rationale for Contaminant Deletion or Selection (6)
79-00-5	1,1,2-Trichloroethane	0.42	J	1.7		µg/L	8GW360001	3/6	1	1.7	NA	0.19	N	5	FED-MCL	Yes	ASL
67-66-3	Chloroform	0.95	J	7.2		µg/L	8GWB10001	5/6	1	7.2	NA	0.15	C	80	FED-MCL	Yes	ASL
108-88-3	Toluene	0.65	J	0.65	J	µg/L	8GW330001	1/6	1	0.65	NA	75	C	1000	FED-MCL	No	BSL
75-01-4	Vinyl Chloride	0.92	J	0.92	J	µg/L	8GW360001	1/6	1	0.92	NA	0.019	N	2	FED-MCL	Yes	ASL
1330-20-7	Xylenes, Total	1		1		µg/L	8GW330001	1/6	1	1	NA	1200	C	10000	FED-MCL	No	BSL
117-81-7	Bis(2-Ethylhexyl)phthalate	1.6	J	1.8	J	µg/L	8GW360001	2/6	5	1.8	NA	4.8	C	6	FED-MCL	No	BSL
84-66-2	Diethyl Phthalate	1.6	J	1.6	J	µg/L	8GWB10001	1/6	5	1.6	NA	2900	N	NA	NA	No	BSL
7429-90-5	Aluminum	194		194		µg/L	8GW360001	1/6	12.7 - 33.6	194	NA	3700	C	50-200 (7)	FED-MCL	No	BSL, BKG
7440-38-2	Arsenic	1.5		5.3		µg/L	8GW350001	4/6	1.5	5.3	NA	0.045	N	50	FED-MCL	Yes	ASL
7440-39-3	Barium	16.3		563		µg/L	8GW360001	6/6	---	563	NA	260	C	2000	FED-MCL	No	BKG
7440-41-7	Beryllium	7		7		µg/L	8GW360001	1/6	0.1 - 3.5	7	NA	7.3	C	4	FED-MCL	No	BSL, BKG
7440-70-2	Calcium	1940		25600		µg/L	8GW360001	6/6	---	25600	NA	NA	N	NA	NA	No	NUT, BKG
7440-47-3	Chromium	15		211		µg/L	8GW330001	5/6	2.3	211	NA	11 (8)	C	100	FED-MCL	Yes	ASL
7440-48-4	Cobalt	8.6		57.2		µg/L	8GW340001	6/6	---	57.2	NA	220	C	NA	NA	No	BSL
7440-50-8	Copper	28.4		93.1		µg/L	8GW360001	4/6	6.9 - 7.4	93.1	NA	150	N	1300	FED-MCL	No	BSL
7439-89-6	Iron	801	J	5360	J	µg/L	8GW360001	2/6	17.6 - 212	5360	NA	1100	N	300 (7)	FED-MCL	No	BKG
7439-92-1	Lead	5		22.8		µg/L	8GW360001	4/6	1	22.8	NA	15	N	15	FED-AL	No	BKG
7439-95-4	Magnesium	1330		14300		µg/L	8GW360001	6/6	---	14300	NA	NA	C	NA	NA	No	NUT, BKG
7439-96-5	Manganese	43.6	J	1480	J	µg/L	8GW360001	6/6	---	1480	NA	73 (9)	N	50 (7)	FED-MCL	No	BKG
7439-97-6	Mercury	0.28		0.28		µg/L	8GW360001	1/6	0.2	0.28	NA	1.1 (10)	C	2	FED-MCL	No	BSL
7440-02-0	Nickel	14.1		179		µg/L	8GW360001	5/6	7.5	179	NA	73	C	100	FED-MCL	No	BKG
7440-09-7	Potassium	1200		12500		µg/L	8GW360001	6/6	---	12500	NA	NA	N	NA	NA	No	NUT
7440-23-5	Sodium	3970		7960		µg/L	8GW360001	6/6	---	7960	NA	NA	C	NA	NA	No	NUT, BKG
7440-28-0	Thallium	4.2		4.2		µg/L	8GW340001	1/6	2.9	4.2	NA	0.26	N	2	FED-MCL	No	BKG
7440-62-2	Vanadium	16.5		40		µg/L	8GW350001	4/6	2.1	40	NA	26		NA	NA	Yes	ASL
7440-66-6	Zinc	20.9		178		µg/L	8GW360001	6/6	---	178	NA	1100	N	5000 (7)	FED-MCL	No	BSL

TABLE 2

OCCURRENCE, DISTRIBUTION, AND SELECTION OF POTENTIAL CONSTITUENTS OF CONCERN - GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Groundwater

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency (1)	Range of Nondetects (2)	Concentration Used for Screening (3)	Background Value (4)	Risk-Based PCOC Screening Level (5)	Potential ARAR/ TBC Value	Potential ARAR/ TBC Source	PCOC Flag	Rationale for Contaminant Deletion or Selection (6)

Associated Samples:
8GW330001
8GW340001
8GW350001
8GW360001
8GW530001
8GWB10001

Footnotes:
1 Sample and duplicate are counted as two separate samples when determining the minimum and maximum detected concentrations.
2 Values presented are sample-specific quantitation limits.
3 The maximum detected concentration is used for screening purposes.
4 To determine whether metal concentrations are within background levels, a comparison of site concentratior with Base-wide background data was made by means of the Wilcoxon Rank Sum Test. If the Wilcoxon Test determined that a constituent concentration was not significanty different from background, that chemical was not selected as a PCOC.
5 The risk-based soil PCOC screening level for residential tap water use is presented. The value is based on a target hazard quotient of 0.1 for noncarcinogens (denoted with a "N" flag) or an incremental cancer risk of 1E-6 for carcinogens (denoted with a "C" flag) (USEPA, Region III, September 2001).
6 The chemical is selected as a PCOC if the maximum detected concentration exceeds the risk-based PCOC screening level and facility-wide background levels.
7 Secondary MCL, based on aesthetic water quality (i.e., color, odor, taste, etc.).
8 Hexavalent Chromium
9 Manganese-Nonfood
10 Mercury as Mercuric Chloride

Shaded cells indicate that the maximum concentration exceeds the specified criterion. or that a constituent has been selected as a PCOC.

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
C = Carcinogen
PCOC = Potential Constituent of Concern
FED-AL = Federal Action Level (USEPA, October. 1996)
FED-MCL = Federal Maximum Contaminant Level (USEPA, October 1996)
J = Estimated Value
K = Value Estimated with a High Bias
L = Value Estimated with a Low Bias
N = Nocarcinogen
NA = Not Applicable/Not Available.

Rationale Codes:
For Selection as a PCOC:
ASL = Above PCOC Screening Level

For Elimination as a PCOC:
BKG = Within background levels
BSL = Below PCOC Screening Level
NUT = Essential Nutrient

TABLE 3
CUMULATIVE RISK SUMMARY - REASONABLE MAXIMUM EXPOSURE
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT - POST-REMOVAL SOIL
NSWC - WHITE OAK, SILVER SPRING, MARYLAND

HAZARD INDEX[1]

Exposure Route	Full Time Worker	Maintenance/Utility Worker	Construction Worker	Adult Recreational User	Adolescent Trespasser	Day Care Center Child	Future Adult Resident	Future Child Resident
Ingestion of Groundwater							6.8E-01	1.6E+00
Dermal Contact with Groundwater		3.4E-03	1.7E-02				2.3E-02	3.2E-02
Inhalation of Volatiles from Groundwater While Showering							6.0E-01	2.8E+00
Inhalation of Volatiles from Groundwater by Vapor Intrusion - Indoors	8.7E-02					1.9E-01	1.2E-01	3.4E-01
Inhalation of Volatiles from Groundwater - Outdoors	2.1E-04	3.0E-05	2.9E-04				2.9E-04	8.2E-04
Incidental Ingestion of Surface/Subsurface Soil	4.6E-02	6.7E-03	1.6E-01	3.0E-03	1.6E-02	2.2E-01	6.5E-02	6.0E-01
Dermal Contact with Surface/Subsurface Soil	6.8E-03	1.5E-03	7.4E-03	1.9E-03	3.6E-03	5.3E-02	9.6E-03	5.0E-02
Total Hazard Index	**1.4E-01**	**1.2E-02**	**1.8E-01**	**4.8E-03**	**1.9E-02**	**4.6E-01**	**1.5E+00**	**5.4E+00**

INCREMENTAL CANCER RISK[1]

Ingestion of Groundwater							8.2E-05	5.1E-05
Dermal Contact with Groundwater		7.8E-08	1.6E-08				6.8E-07	3.5E-07
Inhalation of Volatiles from Groundwater While Showering							1.7E-06	2.0E-06
Inhalation of Volatiles from Groundwater by Vapor Intrusion - Indoors	2.5E-07					1.5E-07	3.4E-07	2.6E-07
Inhalation of Volatiles from Groundwater - Outdoors	6.1E-10	8.7E-11	3.4E-11				8.2E-10	6.2E-10
Incidental Ingestion of Surface/Subsurface Soil	2.1E-07	3.0E-08	2.9E-08	1.6E-08	2.8E-08	2.3E-07	2.8E-07	6.6E-07
Dermal Contact with Surface/Subsurface Soil	8.0E-08	1.7E-08	3.4E-09	2.6E-08	1.7E-08	1.5E-07	1.1E-07	1.4E-07
Total Cancer Risk	**5.4E-07**	**1.3E-07**	**4.8E-08**	**4.2E-08**	**4.5E-08**	**5.3E-07**	**8.5E-05**	**5.5E-05**
						Total Lifetime Residential Cancer Risk (Adult + Child) =	**1.40E-04**	

Blank spaces indicate that the speciified exposure route is not applicable for this receptor.
1 Chemical-specific risks presented in Appendix B

TABLE 4

CUMULATIVE RISK SUMMARY - CENTRAL TENDENCY EXPOSURE (CTE)
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT - POST-REMOVAL SOIL
NSWC - WHITE OAK, SILVER SPRING, MARYLAND

HAZARD INDEX[1]

Exposure Route	Full Time Worker	Maintenance/Utility Worker	Construction Worker	Adult Recreational User	Adolescent Trespasser	Day Care Center Child	Future Adult Resident	Future Child Resident
Ingestion of Groundwater							1.6E-01	5.5E-01
Dermal Contact with Groundwater		8.1E-04	8.1E-03				4.5E-03	7.2E-03
Inhalation of Volatiles from Groundwater While Showering							1.1E-01	5.3E-01
Inhalation of Volatiles from Groundwater by Vapor Intrusion - Indoors	2.0E-02					4.4E-02	4.2E-02	1.2E-01
Inhalation of Volatiles from Groundwater - Outdoors	4.7E-05	3.9E-06	7.4E-05				1.0E-04	2.8E-04
Incidental Ingestion of Surface/Subsurface Soil	2.0E-02	1.7E-03	8.0E-02	7.4E-04	3.9E-03	9.4E-02	2.2E-02	2.0E-01
Dermal Contact with Surface/Subsurface Soil	6.0E-04	2.5E-04	2.5E-03	1.2E-04	2.4E-04	6.2E-03	9.1E-04	6.6E-03
Total Hazard Index	**4.0E-02**	**2.7E-03**	**9.0E-02**	**8.6E-04**	**4.2E-03**	**1.4E-01**	**3.5E-01**	**1.4E+00**

INCREMENTAL CANCER RISK[1]

Ingestion of Groundwater							6.0E-06	6.2E-06
Dermal Contact with Groundwater		7.8E-09	8.7E-09				5.0E-08	3.6E-08
Inhalation of Volatiles from Groundwater While Showering							9.1E-08	1.3E-07
Inhalation of Volatiles from Groundwater by Vapor Intrusion - Indoors	2.1E-08					1.7E-08	3.4E-08	3.1E-08
Inhalation of Volatiles from Groundwater - Outdoors	5.0E-11	4.1E-12	8.7E-12				8.2E-11	7.3E-11
Incidental Ingestion of Surface/Subsurface Soil	3.3E-08	2.7E-09	1.4E-08	1.2E-09	7.1E-09	5.1E-08	2.7E-08	7.3E-08
Dermal Contact with Surface/Subsurface Soil	2.5E-09	1.0E-09	1.1E-09	5.2E-10	1.1E-09	8.7E-09	3.0E-09	6.2E-09
Total Cancer Risk	**5.6E-08**	**1.2E-08**	**2.4E-08**	**1.7E-09**	**8.2E-09**	**7.8E-08**	**6.2E-06**	**6.5E-06**
						Total Lifetime Residential Cancer Risk (Adult + Child) =	**1.30E-05**	

Blank spaces indicate that the speciified exposure route is not applicable for this receptor.

1 Chemical-specific risks presented in Appendix B

TABLE 5

COMPARISON OF MAXIMUM DETECTED CONCENTRATION TO RBCs AND BACKGROUND UCL
SITE 8 - ABANDON CHEMICAL DISPOSAL PIT - POST REMOVAL SOIL
NSWC - WHITE OAK, SILVER SPRING, MARYLAND

Inorganic	Maximum Concentration	Background UCL		Risk-Based PCOC Screening Level(1)	Maximum Greater Than Background (2)	Maximum Greater Than Screening Level	Retained For Further Evaluation? (3)
		Surface Soil	Subsurface Soil				
Aluminum	17900	14953	20961	7800 N	No	Yes	No
Antimony	4.69	ND	0.42	3.1 N	Yes	Yes	Yes
Arsenic	8.1	5.11	12.15	0.43 C	No	Yes	No
Barium	235	59.5	40.09	550 N	Yes	No	No
Beryllium	2.5	0.19	2.37	16 N	Yes	No	No
Cadmium	10	ND	0.179	7.8 N	Yes	Yes	Yes
Calcium	238000	1040	247	NA	Yes	No	No
Chromium(4)	77.6	29.35	41.05	23 N	Yes	Yes	Yes
Hexavalent Chromium	1.1	ND	ND	23 N	Yes	No	No
Cobalt	48.7	11.81	16.6	470 N	Yes	No	No
Copper	96.3	11.52	21.62	310 N	Yes	No	No
Cyanide	0.17	ND	ND	160 N	Yes	No	No
Iron	36500	18946	28681	2300 N	Yes	Yes	Yes
Lead	40.9	60.2	21.23	400	No	No	No
Magnesium	97600	1183	2987	NA	Yes	No	No
Manganese	1440	490	503	160 N	Yes	Yes	Yes
Mercury	5.1	0.142	0.051	2.3 N	Yes	Yes	Yes
Nickel	892	14.56	13.84	160 N	Yes	Yes	Yes
Potassium	1920	845	2792	NA	No	No	No
Selenium	8.4	0.68	2.73	39 N	Yes	No	No
Sodium	83.2	ND	69.4	NA	Yes	No	No
Thallium	0.567	ND	ND	0.55 N	Yes	Yes	Yes
Vanadium	47.8	30.08	44.31	55 N	Yes	No	No
Zinc	102	30.67	84.2	2300 N	Yes	No	No

Notes:
1 - USEPA Region 3 RBC Table, September 25, 2001 (CR = 1E-6, HI = 0.1).
2 - The higher of the surface and subsurface soil background concentration is used in comparison.
3 - Chemical is retained for further evaluation if the maximum detected concentration exceeded both the background UCL concentration and the RBC.
4 - RBC is for hexavalent chromium.
Shading indicates that the maximum detected concentration was greater than the background concentration and/or RBC.

TABLE 6

COMPARISON OF UCL TO RBCs AND BACKGROUND UCL
SITE 8 - ABANDON CHEMICAL DISPOSAL PIT - POST REMOVAL SOIL
NSWC - WHITE OAK, SILVER SPRING, MARYLAND

Inorganic	UCL	Background UCL		Risk-Based PCOC Screening Level(1)	UCL Greater Than Background (2)	UCL Greater Than Screening Level	Retained For Further Evaluation?(3)
		Surface Soil	Subsurface Soil				
Aluminum	11008	14953	20961	7800 N	No	Yes	No
Antimony	0.479	ND	0.42	3.1 N	Yes	No	No
Arsenic	4.21	5.11	12.15	0.43 C	No	Yes	No
Barium	85.0	59.5	40.09	550 N	Yes	No	No
Beryllium	0.984	0.19	2.37	16 N	No	No	No
Cadmium	7.50	ND	0.179	7.8 N	Yes	No	No
Calcium	5075	1040	247	NA	Yes	No	No
Chromium(4)	17.6	29.35	41.05	23 N	No	No	No
Hexavalent Chromium	1.1	ND	ND	23 N	Yes	No	No
Cobalt	47.5	11.81	16.6	470 N	Yes	No	No
Copper	26.3	11.52	21.62	310 N	Yes	No	No
Cyanide	0.583	ND	ND	160 N	Yes	No	No
Iron	16769	18946	28681	2300 N	No	Yes	No
Lead	13.2	60.2	21.23	400	No	No	No
Magnesium	10026	1183	2987	NA	Yes	No	No
Manganese	709	490	503	160 N	Yes	Yes	Yes
Mercury	0.987	0.142	0.051	2.3 N	Yes	No	No
Nickel	195	14.56	13.84	160 N	Yes	Yes	Yes
Potassium	706	845	2792	NA	No	No	No
Selenium	0.696	0.68	2.73	39 N	No	No	No
Sodium	37.7	ND	69.4	NA	No	No	No
Thallium	0.653	ND	ND	0.55 N	Yes	Yes	Yes
Vanadium	25.2	30.08	44.31	55 N	No	No	No
Zinc	47.7	30.67	84.2	2300 N	No	No	No

Notes:
1 - USEPA Region 3 RBC Table, September 25, 2001 (CR = 1E-6, HI = 0.1).
2 - The higher of the surface and subsurface soil background concentration is used in comparison.
3 - Chemical is retained for further evaluation if the UCL exceeded both the background UCL concentration and the RBC.
4 - RBC is for hexavalent chromium.
Shading indicates that the UCL was greater than the background concentration and/or RBC.

TABLE 7

COMPARISON OF MAXIMUM DETECTED CONCENTRATION TO SSLs AND BACKGROUND UCL
SITE 8 - ABANDON CHEMICAL DISPOSAL PIT - POST REMOVAL SOIL
NSWC - WHITE OAK, SILVER SPRING, MARYLAND

Inorganic	Maximum Concentration	Background UCL		Soil Screening Levels(1)		Detected in Groundwater?
		Surface Soil	Subsurface Soil	DAF 1	DAF 20	
Aluminum	17900	14953	20961	NA	NA	Yes
Antimony	4.69	ND	0.42	0.66	13	No
Arsenic	8.1	5.11	12.15	0.0013	0.026	Yes
Barium	235	59.5	40.09	110	2100	Yes
Beryllium	2.5	0.19	2.37	58	1200	Yes
Cadmium	10	ND	0.179	1.4	27	No
Calcium	238000	1040	247	NA	NA	Yes
Chromium	77.6	29.35	41.05	2.1	42	Yes
Hexavalent Chromium	1.1	ND	ND	2.1	42	No
Cobalt	48.7	11.81	16.6	NA	NA	Yes
Copper	96.3	11.52	21.62	530	11000	Yes
Cyanide,	0.17	ND	ND	2	40	No
Iron	36500	18946	28681	NA	NA	Yes
Lead	40.9	60.2	21.23	NA	NA	Yes
Magnesium	97600	1183	2987	NA	NA	Yes
Manganese	1440	490	503	48	950	Yes
Mercury	5.1	0.142	0.051	NA	NA	Yes
Nickel	892	14.56	13.84	NA	NA	Yes
Potassium	1920	845	2792	NA	NA	Yes
Selenium	8.4	0.68	2.73	0.95	19	No
Sodium	83.2	ND	69.4	NA	NA	Yes
Thallium	0.567	ND	ND	0.18	3.6	Yes
Vanadium	47.8	30.08	44.31	260	5100	Yes
Zinc	102	30.67	84.2	680	14000	Yes

Notes:
1 - Soil Screening Levels for Inhalation U.S. EPA, May 1996. Soil Screening Guidance.
Shading indicates that the maximum detected concentration was greater than the background concentration and/or SSL.

TABLE 8

COMPARISON OF UCL TO SSLs AND BACKGROUND UCL
SITE 8 - ABANDON CHEMICAL DISPOSAL PIT - POST REMOVAL SOIL
NSWC - WHITE OAK, SILVER SPRING, MARYLAND

Inorganic	UCL	Background UCL		Soil Screening Levels(1)		Detected in Groundwater?
		Surface Soil	Subsurface Soil	DAF 1	DAF 20	
Aluminum	11008	14953	20961	NA	NA	Yes
Antimony	0.479	ND	0.42	0.66	13	No
Arsenic	4.21	5.11	12.15	0.0013	0.026	Yes
Barium	85.0	59.5	40.09	110	2100	Yes
Beryllium	0.984	0.19	2.37	58	1200	Yes
Cadmium	7.50	ND	0.179	1.4	27	No
Calcium	5075	1040	247	NA	NA	Yes
Chromium	17.6	29.35	41.05	2.1	42	Yes
Hexavalent Chromium	1.1	ND	ND	2.1	42	No
Cobalt	47.5	11.81	16.6	NA	NA	Yes
Copper	26.3	11.52	21.62	530	11000	Yes
Cyanide	0.583	ND	ND	2	40	No
Iron	16769	18946	28681	NA	NA	Yes
Lead	13.2	60.2	21.23	NA	NA	Yes
Magnesium	10026	1183	2987	NA	NA	Yes
Manganese	709	490	503	48	950	Yes
Mercury	0.987	0.142	0.051	NA	NA	Yes
Nickel	195	14.56	13.84	NA	NA	Yes
Potassium	706	845	2792	NA	NA	Yes
Selenium	0.696	0.68	2.73	0.95	19	No
Sodium	37.7	ND	69.4	NA	NA	Yes
Thallium	0.653	ND	ND	0.18	3.6	Yes
Vanadium	25.2	30.08	44.31	260	5100	Yes
Zinc	47.7	30.67	84.2	680	14000	Yes

Notes:
1 - Soil Screening Levels for Inhalation U.S. EPA, May 1996. Soil Screening Guidance.
Shading indicates that the UCL was greater than the background concentration and/or SSL.

APPENDIX A

POST-REMOVAL SOIL ANALYTICAL RESULTS

POST-REMOVAL SOIL SAMPLES
SITE 8
ABANDONED CHEMICAL DISPOSAL PIT
FORMER NSWC WHITE OAK, SILVER SPRING, MARYLAND

Parameter	DP01-08-03R (mg/kg)		DP01-08-04R (mg/kg)		DP01-08-05R (mg/kg)		DP01-08-06R (mg/kg)		DP01-08-07R (mg/kg)		DP01-08-08R (mg/kg)	
Inorganics												
Mercury	9.90E-02		2.76E-01		1.68E+00		8.80E-01		7.64E-01		5.81E-01	
Silver	1.15E-01	U	1.16E-01	U	1.18E-01	U	1.13E-01	U	1.13E-01	U	1.14E-01	U
Aluminum	8.04E+02		1.33E+03		2.92E+03		2.40E+03		1.15E+03		3.02E+03	
Arsenic	3.46E-01	U	3.50E-01		9.01E-01		4.18E-01		6.84E+00		9.29E-01	
Barium	2.47E+00		1.38E+01		1.70E+01		5.93E+01		1.66E+02		6.73E+01	
Beryllium	1.91E-01		1.51E-01		1.87E-01		2.97E-01		1.43E-01		2.03E-01	
Calcium	1.01E+02		1.15E+02		1.19E+02		1.28E+02		8.73E+01		1.74E+02	
Cadmium	3.74E-01		6.23E+00		3.81E+00		7.15E+00		5.27E+00		1.00E+01	
Cobalt	1.15E-01	U	1.16E-01	U	2.10E-01		1.46E+00		2.47E+00		5.62E+00	
Chromium	6.64E+00		5.17E+00		6.17E+00		1.56E+01		4.58E+00		7.48E+00	
Copper	8.86E+00		1.43E+01		3.59E+01		5.27E+01		1.80E+01		1.77E+01	
Iron	2.16E+03		1.05E+04		1.24E+04		1.59E+04		5.62E+03		7.71E+03	
Potassium	4.75E+01		3.80E+01		9.14E+01		5.06E+01		3.42E+01		1.10E+02	
Magnesium	2.84E+01		2.83E+01		6.92E+01		1.91E+01		2.09E+01		8.81E+01	
Manganese	1.38E+01		4.68E+01		5.14E+01		1.10E+02		9.18E+01		2.27E+02	
Sodium	3.16E+01		4.26E+01		4.69E+01		4.03E+01		3.44E+01		3.56E+01	
Nickel	1.15E-01	U	2.03E-01		8.76E-01		1.35E+01		3.89E-01		8.56E-01	
Lead	4.10E+00		2.12E+00		3.30E+00		4.31E+00		3.15E+00		5.65E+00	
Antimony	2.57E-01		4.64E-01		4.69E+00		3.66E-01		2.26E-01	U	4.54E-01	
Selenium	2.31E-01	U	5.23E-01		7.17E-01		6.96E-01		2.71E-01		4.00E-01	
Thallium	2.31E-01	U	2.32E-01	U	2.37E-01	U	2.26E-01	U	2.26E-01	U	2.29E-01	
Vanadium	1.06E+01		1.31E+01		1.31E+01		2.31E+01		9.69E+00		1.51E+01	
Zinc	1.49E+00		7.49E+00		7.65E+00		9.48E+00		1.12E+01		7.57E+00	
Cyanide	1.15E+00	U	1.16E+00	U	1.18E+00	U	1.13E+00	U	1.13E+00	U	1.14E+00	U
Volatile Organics												
1,1,2-Trichloroethane (TCA)	6.00E-03	U	6.00E-03	U	6.00E-03	U	6.00E-03	U	6.00E-03	U	6.00E-03	U
Toluene	6.00E-03	U	6.00E-03	U	1.00E-03	J	6.00E-03	U	6.00E-03	U	6.00E-03	U
Chloroform	6.00E-03	U	6.00E-03	U	6.00E-03	U	6.00E-03	U	6.00E-03	U	6.00E-03	U
Tetrachloroethene (PCE)	6.00E-03	U	6.00E-03	U	6.00E-03	U	6.00E-03	U	6.00E-03	U	6.00E-03	U
Methylene chloride	6.00E-03	U	5.80E-02	B	8.30E-02	B	1.70E-02	B	6.00E-02	B	1.05E-01	B
Trichloroethene (TCE)	6.00E-03	U	6.00E-03	U	6.00E-03	U	6.00E-03	U	6.00E-03	U	6.00E-03	U
Acetone	1.20E-02	U	1.20E-02	U	1.20E-02	U	1.10E-02	U	1.10E-02	U	1.10E-02	U

POST-REMOVAL SOIL SAMPLES
SITE 8
ABANDONED CHEMICAL DISPOSAL PIT
FORMER NSWC WHITE OAK, SILVER SPRING, MARYLAND

Parameter	DP01-08-03R (mg/kg)		DP01-08-04R (mg/kg)		DP01-08-05R (mg/kg)		DP01-08-06R (mg/kg)		DP01-08-07R (mg/kg)		DP01-08-08R (mg/kg)	
Semivolatile Organics												
2-Methylnapthalene	3.83E-01	U	3.83E-01	U	3.89E-01	U	3.73E-01	U	3.73E-01	U	3.76E-01	U
Acenapthene	3.83E-01	U	3.83E-01	U	3.89E-01	U	3.73E-01	U	3.73E-01	U	3.76E-01	U
Anthrecene	3.83E-01	U	3.83E-01	U	3.89E-01	U	3.73E-01	U	3.73E-01	U	3.76E-01	U
Benzo(a)anthracene	3.83E-01	U	3.83E-01	U	3.89E-01	U	3.73E-01	U	3.73E-01	U	3.76E-01	U
Benzo(a)pyrene	1.02E-01	U	1.02E-01	U	1.04E-01	U	9.94E-02	U	9.94E-02	U	1.00E-01	U
Benzo(b)fluoranthene	3.83E-01	U	3.83E-01	U	3.89E-01	U	3.73E-01	U	3.73E-01	U	3.76E-01	U
Benzo(g,h,i)perylene	3.83E-01	U	3.83E-01	U	3.89E-01	U	3.73E-01	U	3.73E-01	U	3.76E-01	U
Benzo(k)fluoranthene	3.83E-01	U	3.83E-01	U	3.89E-01	U	3.73E-01	U	3.73E-01	U	3.76E-01	U
Chrysene	3.83E-01	U	3.83E-01	U	3.89E-01	U	3.73E-01	U	3.73E-01	U	3.76E-01	U
di-n-Butylphthalate	3.83E-01	U	3.83E-01	U	3.89E-01	U	3.73E-01	U	3.73E-01	U	3.76E-01	U
Dibenzofuran	3.83E-01	U	3.83E-01	U	3.89E-01	U	3.73E-01	U	3.73E-01	U	3.76E-01	U
Dibenz(a,h)anthracene	3.83E-01	U	3.83E-01	U	3.89E-01	U	3.73E-01	U	3.73E-01	U	3.76E-01	U
Fluoranthene	3.83E-01	U	3.83E-01	U	3.89E-01	U	3.73E-01	U	3.73E-01	U	3.76E-01	U
Fluorene	3.83E-01	U	3.83E-01	U	3.89E-01	U	3.73E-01	U	3.73E-01	U	3.76E-01	U
Indeno(1,2,3-cd)pyrene	3.83E-01	U	3.83E-01	U	3.89E-01	U	3.73E-01	U	3.73E-01	U	3.76E-01	U
Naphtalene	3.83E-01	U	3.83E-01	U	3.89E-01	U	3.73E-01	U	3.73E-01	U	3.76E-01	U
n-nitrosodiphenylamine	2.32E-01	U	2.32E-01	U	2.36E-01	U	2.26E-01	U	2.26E-01	U	2.28E-01	U
Phenanthrene	3.83E-01	U	3.83E-01	U	3.89E-01	U	3.73E-01	U	3.73E-01	U	3.76E-01	U
Pyrene	3.83E-01	U	3.83E-01	U	3.89E-01	U	3.73E-01	U	3.73E-01	U	3.76E-01	U
bis(2-Ethylhexyl)phthalate	2.03E-01	J	2.37E-01	J	2.14E-01	J	3.73E-01	U	4.25E-02	J	3.76E-01	U

NA - Not Analyzed/Not Applicable
Shaded values exceed Preliminary Remediation Goal
B - Indicates that compound was found in the associated blank.
J - An estimated value, below method detection limit.
UCL - Upper Confidence Limit.

POST-REMOVAL SOIL SAMPLES
SITE 8
ABANDONED CHEMICAL DISPOSAL PIT
FORMER NSWC WHITE OAK, SILVER SPRING, MARYLAND

Parameter	DP01-08-09R (mg/kg)		DP01-08-11R (mg/kg)		DP01-08-12R (mg/kg)		DP01-08-15R (mg/kg)		DP01-08-10RR (mg/kg)		DP01-08-13RR (mg/kg)	
Inorganics												
Mercury	2.49E+00		3.92E-01		6.71E-01		4.11E-01		0.053		4.60E-02	
Silver	1.16E-01	U	1.08E-01	U	1.15E-01	U	1.16E-01	U	0.107	U	1.10E-01	U
Aluminum	4.91E+03		1.46E+03		6.38E+02		2.93E+03		4.44E+03		1.58E+03	
Arsenic	1.89E+00		3.54E-01		3.46E-01	U	2.32E+00		3.20E-01	U	3.28E-01	U
Barium	1.29E+02		2.35E+02		3.97E+01		1.89E+01		3.72E+01		6.46E+00	
Beryllium	2.69E-01		1.70E-01		9.70E-02		1.56E-01		3.15E-01		1.70E-01	
Calcium	2.24E+02		8.88E+01		1.49E+02		2.16E+02		1.24E+02		4.38E+01	
Cadmium	4.98E-01		5.40E-02	U	1.31E+00		8.98E-01		5.30E-02	U	5.50E-02	U
Cobalt	2.92E-01		2.50E+00		1.15E-01	U	1.16E-01	U	4.91E+00		1.10E-01	U
Chromium	1.83E+01		4.95E+00		2.52E+00		6.52E+00		1.34E+01		5.03E+00	
Copper	1.76E+01		2.66E+01		1.16E+00		2.53E+00		9.63E+01		6.30E+00	
Iron	1.39E+04		1.00E+04		1.04E+03		3.94E+03		3.17E+04		5.05E+03	
Potassium	1.67E+02		2.96E+01		5.36E+01		1.37E+02		3.24E+01		6.39E+01	
Magnesium	1.35E+02		1.54E+01		3.05E+01		1.17E+02		1.61E+01		6.20E+01	
Manganese	1.42E+02		1.24E+02		4.31E+00		1.15E+01		3.87E+02		1.42E+01	
Sodium	4.99E+01		3.46E+01		3.23E+01		3.67E+01		3.21E+01		1.98E+01	
Nickel	8.56E-01		1.08E-01	U	1.15E-01	U	4.89E-01		1.34E-01		1.10E-01	U
Lead	9.60E+00		2.70E+00		2.28E+00		3.53E+00		6.21E+00		5.28E+00	
Antimony	4.11E-01		2.16E-01	U	2.31E-01	U	2.32E-01	U	5.25E-01		2.19E-01	U
Selenium	9.14E-01		5.05E-01		2.31E-01	U	3.35E-01		9.57E-01		2.19E-01	U
Thallium	2.31E-01	U	2.16E-01	U	2.31E-01	U	2.32E-01	U	5.67E-01		2.19E-01	U
Vanadium	2.44E+01		1.03E+01		1.09E+01		1.49E+01		1.83E+01		1.24E+01	
Zinc	7.79E+00		1.85E+00		1.07E+00		3.84E+00		3.63E+00		1.30E+00	
Cyanide	1.16E+00	U	1.08E+00	U	1.15E+00	U	1.16E+00	U	1.07E+00	U	1.10E+00	U
Volatile Organics												
1,1,2-Trichloroethane (TCA)	6.00E-03	U	5.00E-03	U	6.00E-03	U	6.00E-03	U	0.00535	U	0.0055	U
Toluene	6.00E-03	U	5.00E-03	U	6.00E-03	U	6.00E-03	U	0.00535	U	0.0055	U
Chloroform	6.00E-03	U	5.00E-03	U	6.00E-03	U	6.00E-03	U	0.00535	U	0.0055	U
Tetrachloroethene (PCE)	6.00E-03	U	5.00E-03	U	6.00E-03	U	6.00E-03	U	0.00535	U	0.0055	U
Methylene chloride	6.00E-02	B	2.30E-02	B	4.00E-02	B	6.30E-02	B	3.53E-03	B	2.45E-03	J
Trichloroethene (TCE)	6.00E-03	U	5.00E-03	U	6.00E-03	U	6.00E-03	U	0.00535	U	0.0055	U
Acetone	1.20E-02	U	1.10E-02	U	1.20E-02	U	1.20E-02	U	0.00525	J	1.10E-02	U

POST-REMOVAL SOIL SAMPLES
SITE 8
ABANDONED CHEMICAL DISPOSAL PIT
FORMER NSWC WHITE OAK, SILVER SPRING, MARYLAND

Parameter	DP01-08-09R (mg/kg)		DP01-08-11R (mg/kg)		DP01-08-12R (mg/kg)		DP01-08-15R (mg/kg)		DP01-08-10RR (mg/kg)		DP01-08-13RR (mg/kg)	
Semivolatile Organics												
2-Methylnapthalene	3.83E-01	U	3.56E-01	U	3.80E-01	U	3.83E-01	U	3.53E-01	U	3.63E-01	U
Acenapthene	3.83E-01	U	3.56E-01	U	3.80E-01	U	3.83E-01	U	3.53E-01	U	3.63E-01	U
Anthrecene	3.83E-01	U	3.56E-01	U	3.80E-01	U	3.83E-01	U	3.53E-01	U	3.63E-01	U
Benzo(a)anthracene	3.83E-01	U	3.56E-01	U	3.80E-01	U	3.83E-01	U	3.53E-01	U	3.63E-01	U
Benzo(a)pyrene	1.02E-01	U	9.50E-02	U	1.01E-01	U	1.02E-01	U	9.42E-02	U	9.68E-02	U
Benzo(b)fluoranthene	3.83E-01	U	3.56E-01	U	3.80E-01	U	3.83E-01	U	3.53E-01	U	3.63E-01	U
Benzo(g,h,i)perylene	3.83E-01	U	3.56E-01	U	3.80E-01	U	3.83E-01	U	3.53E-01	U	3.63E-01	U
Benzo(k)fluoranthene	3.83E-01	U	3.56E-01	U	3.80E-01	U	3.83E-01	U	3.53E-01	U	3.63E-01	U
Chrysene	3.83E-01	U	3.56E-01	U	3.80E-01	U	3.83E-01	U	3.53E-01	U	3.63E-01	U
di-n-Butylphthalate	3.83E-01	U	3.56E-01	U	3.80E-01	U	3.83E-01	U	1.70E-01	J	4.84E-01	
Dibenzofuran	3.83E-01	U	3.56E-01	U	3.80E-01	U	3.83E-01	U	3.53E-01	U	3.63E-01	U
Dibenz(a,h)anthracene	3.83E-01	U	3.56E-01	U	3.80E-01	U	3.83E-01	U	3.53E-01	U	3.63E-01	U
Fluoranthene	3.83E-01	U	3.56E-01	U	3.80E-01	U	3.83E-01	U	3.53E-01	U	3.63E-01	U
Fluorene	3.83E-01	U	3.56E-01	U	3.80E-01	U	3.83E-01	U	3.53E-01	U	3.63E-01	U
Indeno(1,2,3-cd)pyrene	3.83E-01	U	3.56E-01	U	3.80E-01	U	3.83E-01	U	3.53E-01	U	3.63E-01	U
Naphtalene	3.83E-01	U	3.56E-01	U	3.80E-01	U	3.83E-01	U	3.53E-01	U	3.63E-01	U
n-nitrosodiphenylamine	2.32E-01	U	2.16E-01	U	2.30E-01	U	2.32E-01	U	2.14E-01	U	2.20E-01	U
Phenanthrene	3.83E-01	U	3.56E-01	U	3.80E-01	U	3.83E-01	U	3.53E-01	U	3.63E-01	U
Pyrene	3.83E-01	U	3.56E-01	U	3.80E-01	U	3.83E-01	U	3.53E-01	U	3.63E-01	U
bis(2-Ethylhexyl)phthalate	1.54E-01	J	1.03E-01	J	3.80E-01	U	5.53E-02	J	3.53E-01	U	3.63E-01	U

NA - Not Analyzed/Not Applica
Shaded values exceed Prelimi
B - Indicates that compound w
associated blank.
J - An estimated value, below
UCL - Upper Confidence Limit

NSWC WHITE OAK
SUMMARY OF POSITIVE ANALYTICAL RESULTS FOR SURFACE SOIL

SAMPLE I.D.:	8SS1000100	8SS1010100	8SS1020100	8SS1030100	8SS1040100	8SS1050100	Clean Fill
LOCATION:	8SB100	8SB101	8SB102	8SB103	8SB104	8SB105	Borrow 1
SAMPLE DATE:	1/4/99	1/4/99	1/4/99	1/4/99	1/4/99	1/4/99	11/1/96
DEPTH INTERVAL (FEET):	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	
VALIDATION STATUS:	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED
INORGANICS (mg/kg)							
ALUMINUM	2430 J	5620 J	6350 J	8260 J	6480 J	8760 J	11200 E
ARSENIC	2.5 B	8.1	2.1 B	3.0 B	2.6 B	3.4 B	1.1
BARIUM	15.0	49.3	28.6	53.8	50.3	66.1	38.1
CADMIUM	0.26 B	1.4	0.05 U	0.05 U	0.05 U	0.05 U	0.53
CALCIUM	238000 J	2830 J	841 J	615 J	1220 J	1310 J	165
CHROMIUM	16.2	10.0	8.7	10.7	8.7	11.2	9.5
COBALT	7.4 K	5.2	2.1	5.5	6.7	7.8	1.2 U
COPPER	12.5 K	9.9	5.3	7.3	6.6	5.7	7
CYANIDE	0.15 U	0.18 U	0.16 U	0.17 U	0.17	0.18 U	NA
IRON	9320	9420	7810	13500	7580	9340	8770
LEAD	13.0 K	40.9 K	10.9 K	22.9 K	30.4 K	35.1 K	7.8
MAGNESIUM	20800	913	436	599	553	870	432
MANGANESE	227	368	177	508	641	827	56.3
MERCURY	0.19 L	5.1 L	0.06 UL	0.10 L	0.14 L	0.08 L	0.11 U
NICKEL	109	9.4	3.7	6.6	5.2	10.8	2.8
POTASSIUM	400	459	258	350	320	318	375
SELENIUM	0.62 UL	8.4	0.67 UL	0.71 UL	0.72 UL	0.74 UL	0.55 U
SODIUM	55.9 L	24.4	19.7 U	21.0 U	21.3 U	21.7 U	111 U
VANADIUM	8.0	18.2	15.5	17.7	17.4	21.2	20.4
ZINC	37.2	45.1	102	22.0	33.7	29.0	11.1
SEMIVOLATILES (µg/kg)							
FLUORANTHENE	72 J	440 U	400 U	420 U	430 U	430 U	
PYRENE	70 J	440 U	400 U	420 U	430 U	430 U	
VOLATILES (µg/kg)							
ACETONE	11 UJ	13 UJ	12 UJ	160 J	13 UJ	13 U	22
METHYLENE CHLORIDE	58	24 B	9 B	33 B	29 B	4 B	
TOLUENE	11 U	13 U	12 U	4 J	13 U	13 U	2.4 J
PESTICIDES/PCBs (µg/kg)							
4,4'-DDD	3.7 U	13	0.073 R	420 U	0.098 R	4.4 U	
ALPHA-CHLORDANE	1.8 U	0.70 J	1.9 J	2.6 J	1.8 J	2.2	
AROCLOR-1260	420	92	5.1 R	4200 U	8.0 J	23 J	
DIELDRIN	6.6 J	1.0 B	4.0 U	420 U	4.3 U	4.4 U	
ENDRIN	0.63 J	4.4 U	4.0 U	420 U	4.3 U	4.4 U	

SITE 8
NSWC WHITE OAK
SUMMARY OF POSITIVE ANALYTICAL RESULTS FOR SUBSURFACE SOIL

SAMPLE I.D.:	8SU1000200	8SU1010200	8SU1020200	8SU1030200	8SU1030200-D	8SU1040200
LOCATION:	8SB100	8SB101	8SB102	8SB103	8SB103	8SB104
SAMPLE DATE:	1/4/99	1/4/99	1/4/99	1/4/99	1/4/99	1/4/99
DEPTH INTERVAL (FEET):	1 - 1.5	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4
VALIDATION STATUS:	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED
INORGANICS (mg/kg)						
ALUMINUM	2690 J	15800 J	16600 J	9910 J	17900 J	15800 J
ARSENIC	0.86 B	5.8	5.5	3.7 B	4.5	4.5
BARIUM	3.2 K	55.5	39.3	28.4	39.8	33.5
BERYLLIUM	0.01 U	0.12 B	0.10 B	0.01 U	0.01 U	0.01 U
CALCIUM	31400 J	294 J	403 J	205 J	218 J	178 J
CHROMIUM	77.6	25.0	25.0	15.1	23.5	22.4
COBALT	48.7	5.6	2.3	3.3	4.1	3.5
COPPER	14.1	9.7	9.3	6.6	9.4	9.7
IRON	16800	22100	22500	16500	21200	23500
LEAD	1.4 J	11.2 K	10.4 K	8.3 K	10.3 K	9.9 K
MAGNESIUM	97600	966	472	413	701	968
MANGANESE	433	141	40.6	74.8	91.5	74.3
MERCURY	0.05 UL	0.06 UL	0.06 L	0.06 UL	0.09 L	0.06 UL
NICKEL	892	8.5	4.3	3.1	5.7	6.9
POTASSIUM	87.8	590	529	366	630	611
SODIUM	36.6 L	20.3 U	20.5 U	19.6 U	19.9 U	19.6 U
VANADIUM	5.7	34.5	47.8	29.3	41.7	38.9
ZINC	22.4	24.5	27.4	13.6	21.0	20.6
VOLATILES (ug/kg)						
ACETONE	47 J	12 UJ	12 UJ	12 U	12 UJ	12 UJ
METHYLENE CHLORIDE	11 U	12 U	33 B	55	19 B	19 B
TRICHLOROETHENE	11 U	12 U	12 U	12 U	12 U	12 U
PESTICIDES/PCBs (ug/kg)						
4,4'-DDE	0.28 R	0.075 R	0.045 R	0.49 J	0.68 J	0.50 B
ALPHA-CHLORDANE	1.8 U	2.0 U	1.6 J	1.2 J	3.1 R	2.6
AROCLOR-1260	15 J	41 U	41 U	39 U	40 U	2.0 J
BETA-BHC	1.8 U	2.0 U	2.1 U	2.0 U	0.16 J	2.0 U
ENDRIN	3.5 U	4.1 U	0.064 J	3.9 U	0.19 R	0.13 R
METHOXYCHLOR	0.67 J	0.36 J	0.18 R	20 U	20 U	20 U
MISCELLANEOUS PARAMETERS						
BOD-5DAY (TOTAL) **mg/kg**	N/A	50 L	35 L	N/A	N/A	N/A
HEXAVALENT CHROMIUM **mg/kg**	N/A	0.62	1.1	N/A	N/A	N/A
PH	N/A	4.6	5	N/A	N/A	N/A

S[illegible]8

NSWC [illegible]TE OAK

SUMMARY OF POSITIVE ANALYTICAL RESULTS FOR SUBSURFACE SOIL

SAMPLE I.D.:		8SU1000200	8SU1010200	8SU1020200	8SU1030200	8SU1030200-D	8SU1040200
LOCATION:		8SB100	8SB101	8SB102	8SB103	8SB103	8SB104
SAMPLE DATE:		1/4/99	1/4/99	1/4/99	1/4/99	1/4/99	1/4/99
DEPTH INTERVAL (FEET):		1 - 1.5	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4
VALIDATION STATUS:		VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED
TOTAL KJELDAHL NITROGEN	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL ORGANIC CARBON	mg/kg	N/A	2500	1300	N/A	N/A	N/A

SITE 8
NSWC WHITE OAK
SUMMARY OF POSITIVE ANALYTICAL RESULTS FOR SUBSURFACE SOIL

SAMPLE I.D.:	8SU1050200	08-SB01-1416	08-SB02-1618	08-SB04-1112	08-SB05-1618	08-SB06-1216
LOCATION:	8SB105	08SB01	08SB02	08SB04	08SB05	08SB06
SAMPLE DATE:	1/4/99	3/24/95	3/23/95	3/24/95	3/23/95	3/23/95
DEPTH INTERVAL (FEET):	2 - 4	14-16	16-18	11-12	16-18	12-16
VALIDATION STATUS:	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED
INORGANICS (mg/kg)						
ALUMINUM	13600 J	4630	13600	3560	8690	5200
ARSENIC	3.3 B	1.2 B	0.36 L	7.9 B	0.19 UL	0.28 L
BARIUM	34.1	12.7	22.0	4.8 B	30.0	4.0
BERYLLIUM	0.01 U	0.66 B	1.0 L	2.5	0.46 L	0.13 UL
CALCIUM	242 J	39.1 B	58.2 B	101 L	93.0	79.6
CHROMIUM	17.0	11.9	12.3	7.1	13.7	5.7
COBALT	4.7	14.5	29.3	7.0	11.5	8.7
COPPER	8.2	45.7	42.9	16.3 B	36.8	16.8
IRON	19700	19200 J	36500 J	10600 J	27400 J	15400 J
LEAD	9.3 K	5.1 J	4.5 J	9.3 J	3.3 J	4.9 J
MAGNESIUM	1060	880	2600	237	2190	498 L
MANGANESE	82.0	956	1440 J	320	559 J	460 J
MERCURY	0.06 UL	0.55	0.10 B	0.34 B	0.12 B	0.08 B
NICKEL	7.4	8.4	19.8	2.8	52.7	4.20
POTASSIUM	520	630	1920	130	1700	300
SODIUM	30.8	17.5 U	83.2	17.0 U	36.9	24.6
VANADIUM	30.5	27.9	25.6	14.0	28.6	16.9
ZINC	21.7	42.6 J	71.5	39.7 J	60.2	10.3
VOLATILES (ug/kg)						
ACETONE	12 UJ	12 U	11 U	11 U	11 U	11 U
METHYLENE CHLORIDE	42 B	12 U	3 B	11 U	4 B	5 B
TRICHLOROETHENE	12 U	2 J	11 U	6 J	11 U	11 U
PESTICIDES/PCBs (ug/kg)						
4,4'-DDE	0.38 B	N/A	N/A	N/A	N/A	N/A
ALPHA-CHLORDANE	0.19 R	N/A	N/A	N/A	N/A	N/A
AROCLOR-1260	40 U	N/A	N/A	N/A	N/A	N/A
BETA-BHC	2.0 U	N/A	N/A	N/A	N/A	N/A
ENDRIN	0.050 J	N/A	N/A	N/A	N/A	N/A
METHOXYCHLOR	20 U	N/A	N/A	N/A	N/A	N/A
MISCELLANEOUS PARAMETERS						
BOD-5DAY (TOTAL) **mg/kg**	24 UL	N/A	N/A	N/A	N/A	N/A
HEXAVALENT CHROMIUM **mg/kg**	0.98	N/A	N/A	N/A	N/A	N/A
PH	4.9	N/A	5.01	4.53	4.83	5.03

NSWC W TE OAK

SUMMARY OF POSITIVE ANALYTICAL RESULTS FOR SUBSURFACE SOIL

SAMPLE I.D.:		8SU1050200	08-SB01-1416	08-SB02-1618	08-SB04-1112	08-SB05-1618	08-SB06-1216
LOCATION:		8SB105	08SB01	08SB02	08SB04	08SB05	08SB06
SAMPLE DATE:		1/4/99	3/24/95	3/23/95	3/24/95	3/23/95	3/23/95
DEPTH INTERVAL (FEET):		2 - 4	14-16	16-18	11-12	16-18	12-16
VALIDATION STATUS:		VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED
TOTAL KJELDAHL NITROGEN	mg/kg	N/A	9.18	7.74 B	26.9	16.2 B	8.92 B
TOTAL ORGANIC CARBON	mg/kg	700	N/A	N/A	N/A	N/A	N/A

TABLE M-1

SITE 8
NSWC WHITE OAK
SILVER SPRING, MARYLAND
SUMMARY OF ANALYTICAL RESULTS FOR SURFACE SOIL

SAMPLE I.D.:	8SS1000100	8SS1010100	8SS1020100	8SS1030100	8SS1040100	8SS1050100
LOCATION:	8SB100	8SB101	8SB102	8SB103	8SB104	8SB105
SAMPLE DATE:	01/04/99	01/04/99	01/04/99	01/04/99	01/04/99	01/04/99
DEPTH INTERVAL (FEET):	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
VALIDATION STATUS:	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED
INORGANICS (mg/kg)						
ALUMINUM	2430 J	5620 J	6350 J	8260 J	6480 J	8760 J
ANTIMONY	0.62 UR	0.74 UR	0.67 UR	0.71 UR	0.72 UR	0.74 UR
ARSENIC	2.5 B	8.1	2.1 B	3.0 B	2.6 B	3.4 B
BARIUM	15.0	49.3	28.6	53.8	50.3	66.1
BERYLLIUM	0.15 B	0.02 U	0.01 U	0.17 B	0.03 B	0.11 B
CADMIUM	0.26 B	1.4	0.05 U	0.05 U	0.05 U	0.05 U
CALCIUM	238000 J	2830 J	841 J	615 J	1220 J	1310 J
CHROMIUM	16.2	10.0	8.7	10.7	8.7	11.2
COBALT	7.4 K	5.2	2.1	5.5	6.7	7.8
COPPER	12.5 K	9.9	5.3	7.3	6.6	5.7
CYANIDE	0.15 U	0.18 U	0.16 U	0.17 U	0.17	0.18 U
IRON	9320	9420	7810	13500	7580	9340
LEAD	13.0 K	40.9 K	10.9 K	22.9 K	30.4 K	35.1 K
MAGNESIUM	20800	913	436	599	553	870
MANGANESE	227	368	177	508	641	827
MERCURY	0.19 L	5.1 L	0.06 UL	0.10 L	0.14 L	0.08 L
NICKEL	109	9.4	3.7	6.6	5.2	10.8
POTASSIUM	400	459	258	350	320	318
SELENIUM	0.62 UL	8.4	0.67 UL	0.71 UL	0.72 UL	0.74 UL
SILVER	0.15 U	0.89 B	0.17 U	0.18 U	0.18 U	0.18 U
SODIUM	55.9 L	24.4	19.7 U	21.0 U	21.3 U	21.7 U
THALLIUM	1.4 B	1.5 U	1.3 U	1.4 U	1.4 U	1.5 U
VANADIUM	8.0	18.2	15.5	17.7	17.4	21.2
ZINC	37.2	45.1	102	22.0	33.7	29.0
SEMIVOLATILES (ug/kg)						
1,2,4-TRICHLOROBENZENE	360 U	440 U	400 U	420 U	430 U	430 U
1,2-DICHLOROBENZENE	360 U	440 U	400 U	420 U	430 U	430 U
1,3-DICHLOROBENZENE	360 U	440 U	400 U	420 U	430 U	430 U
1,4-DICHLOROBENZENE	360 U	440 U	400 U	420 U	430 U	430 U
2,2'-OXYBIS(1-CHLOROPROPANE)	360 U	440 U	400 U	420 U	430 U	430 U
2,4,5-TRICHLOROPHENOL	880 U	1100 U	970 U	1000 U	1000 U	1000 U
2,4,6-TRICHLOROPHENOL	360 U	440 U	400 U	420 U	430 U	430 U
2,4-DICHLOROPHENOL	360 U	440 U	400 U	420 U	430 U	430 U
2,4-DIMETHYLPHENOL	360 U	440 U	400 U	420 U	430 U	430 U
2,4-DINITROPHENOL	880 U	1100 U	970 U	1000 U	1000 U	1000 U
2,4-DINITROTOLUENE	360 U	440 U	400 U	420 U	430 U	430 U
2,6-DINITROTOLUENE	360 U	440 U	400 U	420 U	430 U	430 U
2-CHLORONAPHTHALENE	360 U	440 U	400 U	420 U	430 U	430 U

TABLE M-1

SITE 8
NSWC WHITE OAK
SILVER SPRING, MARYLAND
SUMMARY OF ANALYTICAL RESULTS FOR SURFACE SOIL

SAMPLE I.D.:	8SS1000100	8SS1010100	8SS1020100	8SS1030100	8SS1040100	8SS1050100
LOCATION:	8SB100	8SB101	8SB102	8SB103	8SB104	8SB105
SAMPLE DATE:	01/04/99	01/04/99	01/04/99	01/04/99	01/04/99	01/04/99
DEPTH INTERVAL (FEET):	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
VALIDATION STATUS:	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED
2-CHLOROPHENOL	360 U	440 U	400 U	420 U	430 U	430 U
2-METHYLNAPHTHALENE	360 U	440 U	400 U	420 U	430 U	430 U
2-METHYLPHENOL	360 U	440 U	400 U	420 U	430 U	430 U
2-NITROANILINE	880 U	1100 U	970 U	1000 U	1000 U	1000 U
2-NITROPHENOL	360 U	440 U	400 U	420 U	430 U	430 U
3,3'-DICHLOROBENZIDINE	360 U	440 U	400 U	420 U	430 U	430 U
3-NITROANILINE	880 U	1100 U	970 U	1000 U	1000 U	1000 U
4,6-DINITRO-2-METHYLPHENOL	880 U	1100 U	970 U	1000 U	1000 U	1000 U
4-BROMOPHENYL PHENYL ETHER	360 U	440 U	400 U	420 U	430 U	430 U
4-CHLORO-3-METHYLPHENOL	360 U	440 U	400 U	420 U	430 U	430 U
4-CHLOROANILINE	360 U	440 U	400 U	420 U	430 U	430 U
4-CHLOROPHENYL PHENYL ETHER	360 U	440 U	400 U	420 U	430 U	430 U
4-METHYLPHENOL	360 U	440 U	400 U	420 U	430 U	430 U
4-NITROANILINE	880 U	1100 U	970 U	1000 U	1000 U	1000 U
4-NITROPHENOL	880 U	1100 U	970 U	1000 U	1000 U	1000 U
ACENAPHTHENE	360 U	440 U	400 U	420 U	430 U	430 U
ACENAPHTHYLENE	360 U	440 U	400 U	420 U	430 U	430 U
ANTHRACENE	360 U	440 U	400 U	420 U	430 U	430 U
BENZO(A)ANTHRACENE	360 U	440 U	400 U	420 U	430 U	430 U
BENZO(A)PYRENE	360 U	440 U	400 U	420 U	430 U	430 U
BENZO(B)FLUORANTHENE	360 U	440 U	400 U	420 U	430 U	430 U
BENZO(G,H,I)PERYLENE	360 U	440 U	400 U	420 U	430 U	430 U
BENZO(K)FLUORANTHENE	360 U	440 U	400 U	420 U	430 U	430 U
BIS(2-CHLOROETHOXY)METHANE	360 U	440 U	400 U	420 U	430 U	430 U
BIS(2-CHLOROETHYL)ETHER	360 U	440 U	400 U	420 U	430 U	430 U
BIS(2-ETHYLHEXYL)PHTHALATE	360 U	440 U	400 U	420 U	430 U	430 U
BUTYLBENZYL PHTHALATE	360 U	440 U	400 U	420 U	430 U	430 U
CARBAZOLE	360 U	440 U	400 U	420 U	430 U	430 U
CHRYSENE	360 U	440 U	400 U	420 U	430 U	430 U
DI-N-BUTYL PHTHALATE	360 U	440 U	400 U	420 U	430 U	430 U
DI-N-OCTYL PHTHALATE	360 U	440 U	400 U	420 U	430 U	430 U
DIBENZO(A,H)ANTHRACENE	360 U	440 U	400 U	420 U	430 U	430 U
DIBENZOFURAN	360 U	440 U	400 U	420 U	430 U	430 U
DIETHYL PHTHALATE	360 U	440 U	400 U	420 U	430 U	430 U
DIMETHYL PHTHALATE	360 U	440 U	400 U	420 U	430 U	430 U
FLUORANTHENE	72 J	440 U	400 U	420 U	430 U	430 U
FLUORENE	360 U	440 U	400 U	420 U	430 U	430 U
HEXACHLOROBENZENE	360 U	440 U	400 U	420 U	430 U	430 U
HEXACHLOROBUTADIENE	360 U	440 U	400 U	420 U	430 U	430 U

TABLE M-1

SITE 8
NSWC WHITE OAK
SILVER SPRING, MARYLAND
SUMMARY OF ANALYTICAL RESULTS FOR SURFACE SOIL

SAMPLE I.D.:	8SS1000100	8SS1010100	8SS1020100	8SS1030100	8SS1040100	8SS1050100
LOCATION:	8SB100	8SB101	8SB102	8SB103	8SB104	8SB105
SAMPLE DATE:	01/04/99	01/04/99	01/04/99	01/04/99	01/04/99	01/04/99
DEPTH INTERVAL (FEET):	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
VALIDATION STATUS:	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED
HEXACHLOROCYCLOPENTADIENE	360 U	440 U	400 U	420 U	430 U	430 U
HEXACHLOROETHANE	360 U	440 U	400 U	420 U	430 U	430 U
INDENO(1,2,3-CD)PYRENE	360 U	440 U	400 U	420 U	430 U	430 U
ISOPHORONE	360 U	440 U	400 U	420 U	430 U	430 U
N-NITROSO-DI-N-PROPYLAMINE	360 U	440 U	400 U	420 U	430 U	430 U
N-NITROSODIPHENYLAMINE	360 U	440 U	400 U	420 U	430 U	430 U
NAPHTHALENE	360 U	440 U	400 U	420 U	430 U	430 U
NITROBENZENE	360 U	440 U	400 U	420 U	430 U	430 U
PENTACHLOROPHENOL	880 U	1100 U	970 U	1000 U	1000 U	1000 U
PHENANTHRENE	360 U	440 U	400 U	420 U	430 U	430 U
PHENOL	360 U	440 U	400 U	420 U	430 U	430 U
PYRENE	70 J	440 U	400 U	420 U	430 U	430 U
VOLATILES (ug/kg)						
1,1,1-TRICHLOROETHANE	11 U	13 U	12 U	64 U	13 U	13 U
1,1,2,2-TETRACHLOROETHANE	11 U	13 U	12 U	64 U	13 U	13 U
1,1,2-TRICHLOROETHANE	11 U	13 U	12 U	64 U	13 U	13 U
1,1-DICHLOROETHANE	11 U	13 U	12 U	64 U	13 U	13 U
1,1-DICHLOROETHENE	11 U	13 U	12 U	64 U	13 U	13 U
1,2-DICHLOROETHANE	11 U	13 U	12 U	64 U	13 U	13 U
1,2-DICHLOROETHENE (TOTAL)	11 U	13 U	12 U	64 U	13 U	13 U
1,2-DICHLOROPROPANE	11 U	13 U	12 U	64 U	13 U	13 U
2-BUTANONE	11 U	13 U	12 U	64 U	13 U	13 U
2-HEXANONE	11 U	13 U	12 U	64 U	13 U	13 U
4-METHYL-2-PENTANONE	11 U	13 U	12 U	64 U	13 U	13 U
ACETONE	11 UJ	13 UJ	12 UJ	160 J	13 UJ	13 U
BENZENE	11 U	13 U	12 U	64 U	13 U	13 U
BROMODICHLOROMETHANE	11 U	13 U	12 U	64 U	13 U	13 U
BROMOFORM	11 U	13 U	12 U	64 U	13 U	13 U
BROMOMETHANE	11 U	13 U	12 U	8 B	13 U	4 B
CARBON DISULFIDE	11 U	13 U	12 U	64 U	13 U	13 U
CARBON TETRACHLORIDE	11 U	13 U	12 U	64 U	13 U	13 U
CHLOROBENZENE	11 U	13 U	12 U	64 U	13 U	13 U
CHLORODIBROMOMETHANE	11 U	13 U	12 U	64 U	13 U	13 U
CHLOROETHANE	11 U	13 U	12 U	64 U	13 U	13 U
CHLOROFORM	11 U	13 U	12 U	3 B	13 U	13 U
CHLOROMETHANE	11 U	13 U	12 U	64 U	13 U	13 U
CIS-1,3-DICHLOROPROPENE	11 U	13 U	12 U	64 U	13 U	13 U
ETHYLBENZENE	11 U	13 U	12 U	64 U	13 U	13 U
METHYLENE CHLORIDE	58	24	9 B	33 B	29 B	4 B

TABLE M-1

SITE 8
NSWC WHITE OAK
SILVER SPRING, MARYLAND
SUMMARY OF ANALYTICAL RESULTS FOR SURFACE SOIL

SAMPLE I.D.:	8SS1000100	8SS1010100	8SS1020100	8SS1030100	8SS1040100	8SS1050100
LOCATION:	8SB100	8SB101	8SB102	8SB103	8SB104	8SB105
SAMPLE DATE:	01/04/99	01/04/99	01/04/99	01/04/99	01/04/99	01/04/99
DEPTH INTERVAL (FEET):	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
VALIDATION STATUS:	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED
STYRENE	11 U	13 U	12 U	64 U	13 U	13 U
TETRACHLOROETHENE	11 U	13 U	12 U	64 U	13 U	13 U
TOLUENE	11 U	13 U	12 U	4 J	13 U	13 U
TRANS-1,3-DICHLOROPROPENE	11 U	13 U	12 U	64 U	13 U	13 U
TRICHLOROETHENE	11 U	13 U	12 U	64 U	13 U	13 U
VINYL CHLORIDE	11 U	13 U	12 U	64 U	13 U	13 U
XYLENES, TOTAL	11 U	13 U	12 U	64 U	13 U	13 U
PESTICIDES/PCBs (ug/kg)						
4,4'-DDD	3.7 U	13	0.073 R	420 U	0.098 R	4.4 U
4,4'-DDE	2.9 R	2.2 B	0.19 R	420 U	1.3 R	2.0 B
4,4'-DDT	1.9 R	4.4 U	4.0 U	420 U	4.3 U	4.4 U
ALDRIN	1.8 U	0.067 R	0.076 R	210 U	0.082 R	0.074 B
ALPHA-BHC	1.8 U	2.2 U	2.0 U	210 U	2.1 U	0.085 R
ALPHA-CHLORDANE	1.8 U	0.70 J	1.9 J	2.6 J	1.8 J	2.2
AROCLOR-1016	37 U	44 U	40 U	4200 U	43 U	44 U
AROCLOR-1221	73 U	88 U	79 U	8400 U	86 U	87 U
AROCLOR-1232	37 U	44 U	40 U	4200 U	43 U	44 U
AROCLOR-1242	37 U	44 U	40 U	4200 U	43 U	44 U
AROCLOR-1248	37 U	44 U	40 U	4200 U	43 U	44 U
AROCLOR-1254	37 U	44 U	40 U	4200 U	43 U	44 U
AROCLOR-1260	420	92	5.1 R	4200 U	8.0 J	23 J
BETA-BHC	1.8 U	0.067 R	2.0 U	210 U	0.089 R	0.090 R
DELTA-BHC	1.8 U	2.2 U	0.039 R	210 U	0.024 R	2.2 U
DIELDRIN	6.6 J	1.0 B	4.0 U	420 U	4.3 U	4.4 U
ENDOSULFAN I	1.8 U	2.2 U	2.0 U	210 U	2.1 U	2.2 U
ENDOSULFAN II	3.7 U	4.4 U	4.0 U	420 U	4.3 U	4.4 U
ENDOSULFAN SULFATE	5.8 R	0.76 R	4.0 U	420 U	4.3 U	4.4 U
ENDRIN	0.63 J	4.4 U	4.0 U	420 U	4.3 U	4.4 U
ENDRIN ALDEHYDE	1.1 R	4.4 U	4.0 U	420 U	4.3 U	4.4 U
ENDRIN KETONE	3.7 U	4.4 U	4.0 U	420 U	4.3 U	4.4 U
GAMMA-BHC (LINDANE)	1.8 U	2.2 U	2.0 U	210 U	2.1 U	2.2 U
GAMMA-CHLORDANE	3.2 R	0.37 R	0.21 R	210 U	0.098 B	0.19 B
HEPTACHLOR	0.053 R	0.13 R	0.077 R	210 U	2.1 U	2.2 U
HEPTACHLOR EPOXIDE	0.054 R	0.051 R	0.033 R	210 U	0.10 R	0.11 R
METHOXYCHLOR	18 U	22 U	20 U	2100 U	21 U	22 U
TOXAPHENE	180 U	220 U	200 U	21000 U	210 U	220 U

TABLE M-2

SITE 8
NSWC WHITE OAK
SILVER SPRING, MARYLAND
SUMMARY OF ANALYTICAL RESULTS FOR SUBSURFACE SOIL

SAMPLE I.D.:	08-SB01-1416	08-SB02-1618	08-SB04-1112	08-SB05-1618	08-SB06-1216	8SU1000200	8SU1010200
LOCATION:	08SB01	08SB02	08SB04	08SB05	08SB06	8SB100	8SB101
SAMPLE DATE:	03/24/95	03/23/95	03/24/95	03/23/95	03/23/95	01/04/99	01/04/99
DEPTH INTERVAL (FEET):	14-16	16-18	11-12	16-18	12-16	1-1.5	2-4
ASSOCIATED DUPLICATE:							
VALIDATION STATUS:	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED
INORGANICS (mg/kg)							
ALUMINUM	4630	13600	3560	8690	5200	2690 J	15800 J
ANTIMONY	0.4 B	0.24 UL	0.25 UL	0.24 UL	0.24 UL	0.60 UR	0.69 UR
ARSENIC	1.2 B	0.36 L	7.9 B	0.19 UL	0.28 L	0.86 B	5.8
BARIUM	12.7	22.0	4.8 B	30.0	4.0	3.2 K	55.5
BERYLLIUM	0.66 B	1.0 L	2.5	0.46 L	0.13 UL	0.01 U	0.12 B
CADMIUM	1.4 B	0.50 U	0.76 B	0.51 U	0.49 U	0.04 UL	0.05 U
CALCIUM	39.1 B	58.2 B	101 L	93.0	79.6	31400 J	294 J
CHROMIUM	11.9	12.3	7.1	13.7	5.7	77.6	25.0
COBALT	14.5	29.3	7.0	11.5	8.7	48.7	5.6
COPPER	45.7	42.9	16.3 B	36.8	16.8	14.1	9.7
CYANIDE	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	0.14 U	0.17 U
IRON	19200 J	36500 J	10600 J	27400 J	15400 J	16800	22100
LEAD	5.1 J	4.5 J	9.3 J	3.3 J	4.9 J	1.4 J	11.2 K
MAGNESIUM	880	2600	237	2190	498 L	97600	966
MANGANESE	956	1440 J	320	559 J	460 J	433	141
MERCURY	0.55	0.10 B	0.34 B	0.12 B	0.08 B	0.05 UL	0.06 UL
NICKEL	8.4	19.8	2.8	52.7	4.20	892	8.5
POTASSIUM	630	1920	130	1700	300	87.8	590
SELENIUM	0.32 UL	0.31 UL	0.31 UL	0.31 UL	0.30 UL	0.60 UL	1.3 B
SILVER	0.08 UJ	0.08 U	0.08 UJ	0.08 U	0.08 U	0.15 U	0.17 U
SODIUM	17.5 U	83.2	17.0 U	36.9	24.6	36.6 L	20.3 U
THALLIUM	0.28 U	0.26 U	0.27 UL	0.26 U	0.26 U	1.2 B	1.8 B
VANADIUM	27.9	25.6	14.0	28.6	16.9	5.7	34.5
ZINC	42.6 J	71.5	39.7 J	60.2	10.3	22.4	24.5
SEMIVOLATILES (ug/kg)							
1,2,4-TRICHLOROBENZENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
1,2-DICHLOROBENZENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
1,3-DICHLOROBENZENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
1,4-DICHLOROBENZENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
2,2'-OXYBIS(1-CHLOROPROPANE)	380 U	370 U	370 U	370 U	360 U	350 U	410 U
2,4,5-TRICHLOROPHENOL	960 U	920 U	930 U	920 U	900 U	850 U	980 U
2,4,6-TRICHLOROPHENOL	380 U	370 U	370 U	370 U	360 U	350 U	410 U
2,4-DICHLOROPHENOL	380 U	370 U	370 U	370 U	360 U	350 U	410 U
2,4-DIMETHYLPHENOL	380 U	370 U	370 U	370 U	360 U	350 U	41[illegible]
2[illegible]ITROPHENOL	960 U	920 U	930 U	920 U	900 U	850 U	9[illegible]
2,[illegible]ITROTOLUENE	380 U	370 U	370 U	370 U	360 U	350 U	41[illegible]

TABLE M-2

SITE 8
NSWC WHITE OAK
SILVER SPRING, MARYLAND
SUMMARY OF ANALYTICAL RESULTS FOR SUBSURFACE SOIL

SAMPLE I.D.:	08-SB01-1416	08-SB02-1618	08-SB04-1112	08-SB05-1618	08-SB06-1216	8SU1000200	8SU1010200
LOCATION:	08SB01	08SB02	08SB04	08SB05	08SB06	8SB100	8SB101
SAMPLE DATE:	03/24/95	03/23/95	03/24/95	03/23/95	03/23/95	01/04/99	01/04/99
DEPTH INTERVAL (FEET):	14-16	16-18	11-12	16-18	12-16	1-1.5	2-4
ASSOCIATED DUPLICATE:							
VALIDATION STATUS:	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED
2,6-DINITROTOLUENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
2-CHLORONAPHTHALENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
2-CHLOROPHENOL	380 U	370 U	370 U	370 U	360 U	350 U	410 U
2-METHYLNAPHTHALENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
2-METHYLPHENOL	380 U	370 U	370 U	370 U	360 U	350 U	410 U
2-NITROANILINE	960 U	920 U	930 U	920 U	900 U	850 U	980 U
2-NITROPHENOL	380 U	370 U	370 U	370 U	360 U	350 U	410 U
3,3'-DICHLOROBENZIDINE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
3-NITROANILINE	960 U	920 U	930 U	920 U	900 U	850 U	980 U
4,6-DINITRO-2-METHYLPHENOL	960 U	920 U	930 U	920 U	900 U	850 U	980 U
4-BROMOPHENYL PHENYL ETHER	380 U	370 U	370 U	370 U	360 U	350 U	410 U
4-CHLORO-3-METHYLPHENOL	380 U	370 U	370 U	370 U	360 U	350 U	410 U
4-CHLOROANILINE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
4-CHLOROPHENYL PHENYL ETHER	380 U	370 U	370 U	370 U	360 U	350 U	410 U
4-METHYLPHENOL	380 U	370 U	370 U	370 U	360 U	350 U	410 U
4-NITROANILINE	960 U	920 U	930 U	920 U	900 U	850 U	980 U
4-NITROPHENOL	960 U	920 U	930 U	920 U	900 U	850 U	980 U
ACENAPHTHENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
ACENAPHTHYLENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
ANTHRACENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
BENZO(A)ANTHRACENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
BENZO(A)PYRENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
BENZO(B)FLUORANTHENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
BENZO(G,H,I)PERYLENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
BENZO(K)FLUORANTHENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
BIS(2-CHLOROETHOXY)METHANE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
BIS(2-CHLOROETHYL)ETHER	380 U	370 U	370 U	370 U	360 U	350 U	410 U
BIS(2-ETHYLHEXYL)PHTHALATE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
BUTYLBENZYL PHTHALATE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
CARBAZOLE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
CHRYSENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
DI-N-BUTYL PHTHALATE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
DI-N-OCTYL PHTHALATE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
DIBENZO(A,H)ANTHRACENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
DIBENZOFURAN	380 U	370 U	370 U	370 U	360 U	350 U	410 U
DI[illegible]L PHTHALATE	380 U	370 U	370 U	370 U	360 U	350 U	41[illegible]
DI[illegible]YL PHTHALATE	380 U	370 U	370 U	370 U	360 U	350 U	4[illegible]

TABLE M-2

SITE 8
NSWC WHITE OAK
SILVER SPRING, MARYLAND
SUMMARY OF ANALYTICAL RESULTS FOR SUBSURFACE SOIL

SAMPLE I.D.:	08-SB01-1416	08-SB02-1618	08-SB04-1112	08-SB05-1618	08-SB06-1216	8SU1000200	8SU1010200
LOCATION:	08SB01	08SB02	08SB04	08SB05	08SB06	8SB100	8SB101
SAMPLE DATE:	03/24/95	03/23/95	03/24/95	03/23/95	03/23/95	01/04/99	01/04/99
DEPTH INTERVAL (FEET):	14-16	16-18	11-12	16-18	12-16	1-1.5	2-4
ASSOCIATED DUPLICATE:							
VALIDATION STATUS:	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED
FLUORANTHENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
FLUORENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
HEXACHLOROBENZENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
HEXACHLOROBUTADIENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
HEXACHLOROCYCLOPENTADIENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
HEXACHLOROETHANE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
INDENO(1,2,3-CD)PYRENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
ISOPHORONE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
N-NITROSO-DI-N-PROPYLAMINE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
N-NITROSODIPHENYLAMINE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
NAPHTHALENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
NITROBENZENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
PENTACHLOROPHENOL	960 U	920 U	930 U	920 U	900 U	850 U	980 U
PHENANTHRENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
PHENOL	380 U	370 U	370 U	370 U	360 U	350 U	410 U
PYRENE	380 U	370 U	370 U	370 U	360 U	350 U	410 U
VOLATILES (ug/kg)							
1,1,1-TRICHLOROETHANE	12 U	11 U	11 U	11 U	11 U	11 U	12 U
1,1,2,2-TETRACHLOROETHANE	12 U	11 U	11 U	11 U	11 U	11 U	12 U
1,1,2-TRICHLOROETHANE	12 U	11 U	11 U	11 U	11 U	11 U	12 U
1,1-DICHLOROETHANE	12 U	11 U	11 U	11 U	11 U	11 U	12 U
1,1-DICHLOROETHENE	12 U	11 U	11 U	11 U	11 U	11 U	12 U
1,2-DICHLOROETHANE	12 U	11 U	11 U	11 U	11 U	11 U	12 U
1,2-DICHLOROETHENE (TOTAL)	12 U	11 U	11 U	11 U	11 U	11 U	12 U
1,2-DICHLOROPROPANE	12 U	11 U	11 U	11 U	11 U	11 U	12 U
2-BUTANONE	12 U	11 U	11 U	11 U	11 U	11 U	12 U
2-HEXANONE	12 U	11 U	11 U	11 U	11 U	11 U	12 U
4-METHYL-2-PENTANONE	12 U	11 U	11 U	11 U	11 U	11 U	12 U
ACETONE	12 U	11 U	11 U	11 U	11 U	47 J	12 UJ
BENZENE	12 U	11 U	11 U	11 U	11 U	11 U	12 U
BROMODICHLOROMETHANE	12 U	11 U	11 U	11 U	11 U	11 U	12 U
BROMOFORM	12 U	11 U	11 U	11 U	11 U	11 U	12 U
BROMOMETHANE	12 U	11 U	11 U	11 U	11 U	11 U	1 B
CARBON DISULFIDE	12 U	11 U	11 U	11 U	11 U	11 U	12 U
CARBON TETRACHLORIDE	12 U	11 U	11 U	11 U	11 U	11 U	12 U
CH[illegible]OBENZENE	12 U	11 U	11 U	11 U	11 U	11 U	1[illegible]
CI[illegible]ODIBROMOMETHANE	0	0	0	0	0	11 U	12[illegible]

TABLE M-2

SITE 8
NSWC WHITE OAK
SILVER SPRING, MARYLAND
SUMMARY OF ANALYTICAL RESULTS FOR SUBSURFACE SOIL

SAMPLE I.D.:	08-SB01-1416	08-SB02-1618	08-SB04-1112	08-SB05-1618	08-SB06-1216	8SU1000200	8SU1010200
LOCATION:	08SB01	08SB02	08SB04	08SB05	08SB06	8SB100	8SB101
SAMPLE DATE:	03/24/95	03/23/95	03/24/95	03/23/95	03/23/95	01/04/99	01/04/99
DEPTH INTERVAL (FEET):	14-16	16-18	11-12	16-18	12-16	1-1.5	2-4
ASSOCIATED DUPLICATE:							
VALIDATION STATUS:	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED
CHLOROETHANE	12 U	11 U	11 U	11 U	11 U	11 U	12 U
CHLOROFORM	12 U	11 U	11 U	11 U	11 U	11 U	12 U
CHLOROMETHANE	12 U	11 U	11 U	11 U	11 U	11 U	12 U
CIS-1,3-DICHLOROPROPENE	12 U	11 U	11 U	11 U	11 U	11 U	12 U
ETHYLBENZENE	12 U	11 U	11 U	11 U	11 U	11 U	12 U
METHYLENE CHLORIDE	12 U	3 B	11 U	4 B	5 B	11 U	12 U
STYRENE	12 U	11 U	11 U	11 U	11 U	11 U	12 U
TETRACHLOROETHENE	12 U	11 U	11 U	11 U	11 U	11 U	12 U
TOLUENE	12 U	11 U	11 U	11 U	11 U	11 U	12 U
TRANS-1,3-DICHLOROPROPENE	12 U	11 U	11 U	11 U	11 U	11 U	12 U
TRICHLOROETHENE	2 J	11 U	6 J	11 U	11 U	11 U	12 U
VINYL CHLORIDE	12 U	11 U	11 U	11 U	11 U	11 U	12 U
XYLENES, TOTAL	12 U	11 U	11 U	11 U	11 U	11 U	12 U
PESTICIDES/PCBs (ug/kg)							
4,4'-DDD	N/A	N/A	N/A	N/A	N/A	3.5 U	0.14 B
4,4'-DDE	N/A	N/A	N/A	N/A	N/A	0.28 R	0.075 R
4,4'-DDT	N/A	N/A	N/A	N/A	N/A	3.5 U	4.1 U
ALDRIN	N/A	N/A	N/A	N/A	N/A	0.082 R	0.12 B
ALPHA-BHC	N/A	N/A	N/A	N/A	N/A	1.8 U	2.0 U
ALPHA-CHLORDANE	N/A	N/A	N/A	N/A	N/A	1.8 U	2.0 U
AROCLOR-1016	N/A	N/A	N/A	N/A	N/A	35 U	41 U
AROCLOR-1221	N/A	N/A	N/A	N/A	N/A	70 U	82 U
AROCLOR-1232	N/A	N/A	N/A	N/A	N/A	35 U	41 U
AROCLOR-1242	N/A	N/A	N/A	N/A	N/A	35 U	41 U
AROCLOR-1248	N/A	N/A	N/A	N/A	N/A	35 U	41 U
AROCLOR-1254	N/A	N/A	N/A	N/A	N/A	35 U	41 U
AROCLOR-1260	N/A	N/A	N/A	N/A	N/A	15 J	41 U
BETA-BHC	N/A	N/A	N/A	N/A	N/A	1.8 U	2.0 U
DELTA-BHC	N/A	N/A	N/A	N/A	N/A	1.8 U	2.0 U
DIELDRIN	N/A	N/A	N/A	N/A	N/A	0.19 B	4.1 U
ENDOSULFAN I	N/A	N/A	N/A	N/A	N/A	0.024 R	2.0 U
ENDOSULFAN II	N/A	N/A	N/A	N/A	N/A	3.5 U	4.1 U
ENDOSULFAN SULFATE	N/A	N/A	N/A	N/A	N/A	0.14 R	4.1 U
ENDRIN	N/A	N/A	N/A	N/A	N/A	3.5 U	4.1 U
ENDRIN ALDEHYDE	N/A	N/A	N/A	N/A	N/A	3.5 U	4.1 U
EN[illegible]N KETONE	N/A	N/A	N/A	N/A	N/A	3.5 U	4[illegible]
G[illegible]-BHC (LINDANE)	N/A	N/A	N/A	N/A	N/A	1.8 U	[illegible]

TABLE M-2

SITE 8
NSWC WHITE OAK
SILVER SPRING, MARYLAND
SUMMARY OF ANALYTICAL RESULTS FOR SUBSURFACE SOIL

SAMPLE I.D.:	08-SB01-1416	08-SB02-1618	08-SB04-1112	08-SB05-1618	08-SB06-1216	8SU1000200	8SU1010200
LOCATION:	08SB01	08SB02	08SB04	08SB05	08SB06	8SB100	8SB101
SAMPLE DATE:	03/24/95	03/23/95	03/24/95	03/23/95	03/23/95	01/04/99	01/04/99
DEPTH INTERVAL (FEET):	14-16	16-18	11-12	16-18	12-16	1-1.5	2-4
ASSOCIATED DUPLICATE:							
VALIDATION STATUS:	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED
GAMMA-CHLORDANE	N/A	N/A	N/A	N/A	N/A	0.037 R	2.0 U
HEPTACHLOR	N/A	N/A	N/A	N/A	N/A	0.060 R	0.13 R
HEPTACHLOR EPOXIDE	N/A	N/A	N/A	N/A	N/A	1.8 U	2.0 U
METHOXYCHLOR	N/A	N/A	N/A	N/A	N/A	0.67 J	0.36 J
TOXAPHENE	N/A	N/A	N/A	N/A	N/A	180 U	200 U
EXPLOSIVES (ug/kg)							
1,3,5-TRINITROBENZENE	40.2 UJ	40.2 UJ	40.2 UJ	40.2 U	40.2 U	N/A	N/A
1,3-DINITROBENZENE	37.21 UJ	37.21 UJ	37.21 UJ	37.21 U	37.21 U	N/A	N/A
2,4,6-TRINITROTOLUENE	35.59 UJ	35.59 UJ	35.59 UJ	35.59 U	35.59 U	N/A	N/A
2,4-DINITROTOLUENE	51.57 UJ	51.57 UJ	51.57 UJ	51.57 U	51.57 U	N/A	N/A
2,6-DINITROTOLUENE	47.65 UJ	47.65 UJ	47.65 UJ	47.65 U	47.65 U	N/A	N/A
2-AMINO-4,6-DINITROTOLUENE	46.67 UJ	46.67 UJ	46.67 UJ	46.67 U	46.67 U	N/A	N/A
2-NITROTOLUENE	81.39 UJ	81.39 UJ	81.39 UJ	81.39 U	81.39 U	N/A	N/A
3-NITROTOLUENE	81.79 UJ	81.79 UJ	81.79 UJ	81.79 U	81.79 U	N/A	N/A
4-AMINO-2,6-DINITROTOLUENE	40.85 UJ	40.85 UJ	40.85 UJ	40.85 U	40.85 U	N/A	N/A
4-NITROTOLUENE	87.25 UJ	87.25 UJ	87.25 UJ	87.25 U	87.25 U	N/A	N/A
HMX	70.49 UJ	70.49 UJ	70.49 UJ	70.49 U	70.49 U	N/A	N/A
NITROBENZENE	35.21 UJ	35.21 UJ	35.21 UJ	35.21 U	35.21 U	N/A	N/A
RDX	50.9 UJ	50.9 UJ	50.9 UJ	50.9 U	50.9 U	N/A	N/A
TETRYL	162.65 UJ	162.65 UJ	162.65 UJ	162.65 U	162.65 U	N/A	N/A
MISCELLANEOUS PARAMETERS							
ACID-INSOLUBLE SULFIDE mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	50 U
BOD-5DAY (TOTAL) mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	50 L
CHEMICAL OXYGEN DEMAND mg/L	N/A	N/A	N/A	N/A	N/A	N/A	10 U
FERROUS IRON mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	0.25 UL
HEXAVALENT CHROMIUM mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	0.62
PH	N/A	5.01	4.53	4.83	5.03	N/A	4.6
TOTAL KJELDAHL NITROGEN mg/kg	9.18	7.74 B	26.9	16.2 B	8.92 B	N/A	N/A
TOTAL ORGANIC CARBON mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	2500

TABLE M-2

SITE 8
NSWC WHITE OAK
SILVER SPRING, MARYLAND
SUMMARY OF ANALYTICAL RESULTS FOR SUBSURFACE SOIL

SAMPLE I.D.:	8SU1020200	8SU1030200	8SU1030200-D	8SU1040200	8SU1050200
LOCATION:	8SB102	8SB103	8SB103	8SB104	8SB105
SAMPLE DATE:	01/04/99	01/04/99	01/04/99	01/04/99	01/04/99
DEPTH INTERVAL (FEET):	2-4	2-4	2-4	2-4	2-4
ASSOCIATED DUPLICATE:		8SU1030200-D	8SU1030200		
VALIDATION STATUS:	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED
INORGANICS (mg/kg)					
ALUMINUM	16600 J	9910 J	17900 J	15800 J	13600 J
ANTIMONY	0.69 UR	0.67 UR	0.67 UR	0.67 UR	0.68 UR
ARSENIC	5.5	3.7 B	4.5	4.5	3.3 B
BARIUM	39.3	28.4	39.8	33.5	34.1
BERYLLIUM	0.10 B	0.01 U	0.01 U	0.01 U	0.01 U
CADMIUM	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
CALCIUM	403 J	205 J	218 J	178 J	242 J
CHROMIUM	25.0	15.1	23.5	22.4	17.0
COBALT	2.3	3.3	4.1	3.5	4.7
COPPER	9.3	6.6	9.4	9.7	8.2
CYANIDE	0.17 U	0.16 U	0.16 U	0.16 U	0.16 U
IRON	22500	16500	21200	23500	19700
LEAD	10.4 K	8.3 K	10.3 K	9.9 K	9.3 K
MAGNESIUM	472	413	701	968	1060
MANGANESE	40.6	74.8	91.5	74.3	82.0
MERCURY	0.06 L	0.06 UL	0.09 L	0.06 UL	0.06 UL
NICKEL	4.3	3.1	5.7	6.9	7.4
POTASSIUM	529	366	630	611	520
SELENIUM	0.69 UL	0.89 B	0.67 UL	1.0 B	0.68 UL
SILVER	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U
SODIUM	20.5 U	19.6 U	19.9 U	19.6 U	30.8
THALLIUM	1.5 B	1.9 B	1.4 B	1.6 B	1.4 U
VANADIUM	47.8	29.3	41.7	38.9	30.5
ZINC	27.4	13.6	21.0	20.6	21.7
SEMIVOLATILES (ug/kg)					
1,2,4-TRICHLOROBENZENE	410 U	390 U	400 U	390 U	400 U
1,2-DICHLOROBENZENE	410 U	390 U	400 U	390 U	400 U
1,3-DICHLOROBENZENE	410 U	390 U	400 U	390 U	400 U
1,4-DICHLOROBENZENE	410 U	390 U	400 U	390 U	400 U
2,2'-OXYBIS(1-CHLOROPROPANE)	410 U	390 U	400 U	390 U	400 U
2,4,5-TRICHLOROPHENOL	990 U	950 U	960 U	950 U	980 U
2,4,6-TRICHLOROPHENOL	410 U	390 U	400 U	390 U	400 U
2,4-DICHLOROPHENOL	410 U	390 U	400 U	390 U	400 U
2,4-DIMETHYLPHENOL	410 U	390 U	400 U	390 U	400 U
2,4-DINITROPHENOL	990 U	950 U	960 U	950 U	980 U
2,4-DINITROTOLUENE	410 U	390 U	400 U	390 U	400 U

TABLE M-2

SITE 8
NSWC WHITE OAK
SILVER SPRING, MARYLAND
SUMMARY OF ANALYTICAL RESULTS FOR SUBSURFACE SOIL

SAMPLE I.D.:	8SU1020200	8SU1030200	8SU1030200-D	8SU1040200	8SU1050200
LOCATION:	8SB102	8SB103	8SB103	8SB104	8SB105
SAMPLE DATE:	01/04/99	01/04/99	01/04/99	01/04/99	01/04/99
DEPTH INTERVAL (FEET):	2-4	2-4	2-4	2-4	2-4
ASSOCIATED DUPLICATE:		8SU1030200-D	8SU1030200		
VALIDATION STATUS:	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED
2,6-DINITROTOLUENE	410 U	390 U	400 U	390 U	400 U
2-CHLORONAPHTHALENE	410 U	390 U	400 U	390 U	400 U
2-CHLOROPHENOL	410 U	390 U	400 U	390 U	400 U
2-METHYLNAPHTHALENE	410 U	390 U	400 U	390 U	400 U
2-METHYLPHENOL	410 U	390 U	400 U	390 U	400 U
2-NITROANILINE	990 U	950 U	960 U	950 U	980 U
2-NITROPHENOL	410 U	390 U	400 U	390 U	400 U
3,3'-DICHLOROBENZIDINE	410 U	390 U	400 U	390 U	400 U
3-NITROANILINE	990 U	950 U	960 U	950 U	980 U
4,6-DINITRO-2-METHYLPHENOL	990 U	950 U	960 U	950 U	980 U
4-BROMOPHENYL PHENYL ETHER	410 U	390 U	400 U	390 U	400 U
4-CHLORO-3-METHYLPHENOL	410 U	390 U	400 U	390 U	400 U
4-CHLOROANILINE	410 U	390 U	400 U	390 U	400 U
4-CHLOROPHENYL PHENYL ETHER	410 U	390 U	400 U	390 U	400 U
4-METHYLPHENOL	410 U	390 U	400 U	390 U	400 U
4-NITROANILINE	990 U	950 U	960 U	950 U	980 U
4-NITROPHENOL	990 U	950 U	960 U	950 U	980 U
ACENAPHTHENE	410 U	390 U	400 U	390 U	400 U
ACENAPHTHYLENE	410 U	390 U	400 U	390 U	400 U
ANTHRACENE	410 U	390 U	400 U	390 U	400 U
BENZO(A)ANTHRACENE	410 U	390 U	400 U	390 U	400 U
BENZO(A)PYRENE	410 U	390 U	400 U	390 U	400 U
BENZO(B)FLUORANTHENE	410 U	390 U	400 U	390 U	400 U
BENZO(G,H,I)PERYLENE	410 U	390 U	400 U	390 U	400 U
BENZO(K)FLUORANTHENE	410 U	390 U	400 U	390 U	400 U
BIS(2-CHLOROETHOXY)METHANE	410 U	390 U	400 U	390 U	400 U
BIS(2-CHLOROETHYL)ETHER	410 U	390 U	400 U	390 U	400 U
BIS(2-ETHYLHEXYL)PHTHALATE	410 U	390 U	400 U	390 U	400 U
BUTYLBENZYL PHTHALATE	410 U	390 U	400 U	390 U	400 U
CARBAZOLE	410 U	390 U	400 U	390 U	400 U
CHRYSENE	410 U	390 U	400 U	390 U	400 U
DI-N-BUTYL PHTHALATE	410 U	390 U	400 U	390 U	400 U
DI-N-OCTYL PHTHALATE	410 U	390 U	400 U	390 U	400 U
DIBENZO(A,H)ANTHRACENE	410 U	390 U	400 U	390 U	400 U
DIBENZOFURAN	410 U	390 U	400 U	390 U	400 U
DIETHYL PHTHALATE	410 U	390 U	400 U	390 U	400 U
DIMETHYL PHTHALATE	410 U	390 U	400 U	390 U	400 U

TABLE M-2

SITE 8
NSWC WHITE OAK
SILVER SPRING, MARYLAND
SUMMARY OF ANALYTICAL RESULTS FOR SUBSURFACE SOIL

SAMPLE I.D.:	8SU1020200	8SU1030200	8SU1030200-D	8SU1040200	8SU1050200
LOCATION:	8SB102	8SB103	8SB103	8SB104	8SB105
SAMPLE DATE:	01/04/99	01/04/99	01/04/99	01/04/99	01/04/99
DEPTH INTERVAL (FEET):	2-4	2-4	2-4	2-4	2-4
ASSOCIATED DUPLICATE:		8SU1030200-D	8SU1030200		
VALIDATION STATUS:	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED
FLUORANTHENE	410 U	390 U	400 U	390 U	400 U
FLUORENE	410 U	390 U	400 U	390 U	400 U
HEXACHLOROBENZENE	410 U	390 U	400 U	390 U	400 U
HEXACHLOROBUTADIENE	410 U	390 U	400 U	390 U	400 U
HEXACHLOROCYCLOPENTADIENE	410 U	390 U	400 U	390 U	400 U
HEXACHLOROETHANE	410 U	390 U	400 U	390 U	400 U
INDENO(1,2,3-CD)PYRENE	410 U	390 U	400 U	390 U	400 U
ISOPHORONE	410 U	390 U	400 U	390 U	400 U
N-NITROSO-DI-N-PROPYLAMINE	410 U	390 U	400 U	390 U	400 U
N-NITROSODIPHENYLAMINE	410 U	390 U	400 U	390 U	400 U
NAPHTHALENE	410 U	390 U	400 U	390 U	400 U
NITROBENZENE	410 U	390 U	400 U	390 U	400 U
PENTACHLOROPHENOL	990 U	950 U	960 U	950 U	980 U
PHENANTHRENE	410 U	390 U	400 U	390 U	400 U
PHENOL	410 U	390 U	400 U	390 U	400 U
PYRENE	410 U	390 U	400 U	390 U	400 U
VOLATILES (ug/kg)					
1,1,1-TRICHLOROETHANE	12 U	12 U	12 U	12 U	12 U
1,1,2,2-TETRACHLOROETHANE	12 U	12 U	12 U	12 U	12 U
1,1,2-TRICHLOROETHANE	12 U	12 U	12 U	12 U	12 U
1,1-DICHLOROETHANE	12 U	12 U	12 U	12 U	12 U
1,1-DICHLOROETHENE	12 U	12 U	12 U	12 U	12 U
1,2-DICHLOROETHANE	12 U	12 U	12 U	12 U	12 U
1,2-DICHLOROETHENE (TOTAL)	12 U	12 U	12 U	12 U	12 U
1,2-DICHLOROPROPANE	12 U	12 U	12 U	12 U	12 U
2-BUTANONE	12 U	12 U	12 U	12 U	12 U
2-HEXANONE	12 U	12 U	12 U	12 U	12 U
4-METHYL-2-PENTANONE	12 U	12 U	12 U	12 U	12 U
ACETONE	12 UJ	12 U	12 UJ	12 UJ	12 UJ
BENZENE	12 U	12 UJ	12 U	12 U	12 U
BROMODICHLOROMETHANE	12 U	12 U	12 U	12 U	12 U
BROMOFORM	12 U	12 U	12 U	12 U	12 U
BROMOMETHANE	12 U	12 U	12 U	12 U	12 U
CARBON DISULFIDE	12 U	12 U	12 U	12 U	12 U
CARBON TETRACHLORIDE	12 U	12 U	12 U	12 U	12 U
CHLOROBENZENE	12 U	12 U	12 U	12 U	12 U
CHLORODIBROMOMETHANE	12 U	12 U	12 U	12 U	12 U

TABLE M-2

SITE 8
NSWC WHITE OAK
SILVER SPRING, MARYLAND
SUMMARY OF ANALYTICAL RESULTS FOR SUBSURFACE SOIL

SAMPLE I.D.:	8SU1020200	8SU1030200	8SU1030200-D	8SU1040200	8SU1050200
LOCATION:	8SB102	8SB103	8SB103	8SB104	8SB105
SAMPLE DATE:	01/04/99	01/04/99	01/04/99	01/04/99	01/04/99
DEPTH INTERVAL (FEET):	2-4	2-4	2-4	2-4	2-4
ASSOCIATED DUPLICATE:		8SU1030200-D	8SU1030200		
VALIDATION STATUS:	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED
CHLOROETHANE	12 U	12 U	12 U	12 U	12 U
CHLOROFORM	12 U	12 U	12 U	12 U	0.4 B
CHLOROMETHANE	12 U	12 U	12 U	12 U	12 U
CIS-1,3-DICHLOROPROPENE	12 U	12 U	12 U	12 U	12 U
ETHYLBENZENE	12 U	12 U	12 U	12 U	12 U
METHYLENE CHLORIDE	33 B	55	19 B	19 B	42 B
STYRENE	12 U	12 U	12 U	12 U	12 U
TETRACHLOROETHENE	12 U	12 U	12 U	12 U	12 U
TOLUENE	12 U	12 U	12 U	12 U	12 U
TRANS-1,3-DICHLOROPROPENE	12 U	12 U	12 U	12 U	12 U
TRICHLOROETHENE	12 U	12 U	12 U	12 U	12 U
VINYL CHLORIDE	12 U	12 U	12 U	12 U	12 U
XYLENES, TOTAL	12 U	12 U	12 U	12 U	12 U
PESTICIDES/PCBs (ug/kg)					
4,4'-DDD	0.10 B	0.13 R	0.34 R	0.12 B	0.061 R
4,4'-DDE	0.045 R	0.49 J	0.68 J	0.50 B	0.38 B
4,4'-DDT	4.1 U	3.9 U	4.0 U	4.0 U	4.0 U
ALDRIN	0.048 R	0.056 R	0.19 R	0.051 R	0.064 B
ALPHA-BHC	2.1 U	2.0 U	0.022 R	2.0 U	0.026 R
ALPHA-CHLORDANE	1.6 J	1.2 J	3.1 R	2.6	0.19 R
AROCLOR-1016	41 U	39 U	40 U	40 U	40 U
AROCLOR-1221	82 U	79 U	80 U	79 U	81 U
AROCLOR-1232	41 U	39 U	40 U	40 U	40 U
AROCLOR-1242	41 U	39 U	40 U	40 U	40 U
AROCLOR-1248	41 U	39 U	40 U	40 U	40 U
AROCLOR-1254	41 U	39 U	40 U	40 U	40 U
AROCLOR-1260	41 U	39 U	40 U	2.0 J	40 U
BETA-BHC	2.1 U	2.0 U	0.16 J	2.0 U	2.0 U
DELTA-BHC	2.1 U	2.0 U	0.029 R	2.0 U	0.041 R
DIELDRIN	4.1 U	3.9 U	4.0 U	4.0 U	4.0 U
ENDOSULFAN I	2.1 U	2.0 U	2.0 U	2.0 U	2.0 U
ENDOSULFAN II	4.1 U	3.9 U	4.0 U	4.0 U	4.0 U
ENDOSULFAN SULFATE	4.1 U	3.9 U	4.0 U	4.0 U	4.0 U
ENDRIN	0.064 J	3.9 U	0.19 R	0.13 R	0.050 J
ENDRIN ALDEHYDE	4.1 U	3.9 U	4.0 U	4.0 U	4.0 U
ENDRIN KETONE	4.1 U	3.9 U	4.0 U	4.0 U	4.0 U
GAMMA-BHC (LINDANE)	2.1 U	2.0 U	2.0 U	2.0 U	0.040 R

TABLE M-2

SITE 8
NSWC WHITE OAK
SILVER SPRING, MARYLAND
SUMMARY OF ANALYTICAL RESULTS FOR SUBSURFACE SOIL

SAMPLE I.D.:	8SU1020200	8SU1030200	8SU1030200-D	8SU1040200	8SU1050200
LOCATION:	8SB102	8SB103	8SB103	8SB104	8SB105
SAMPLE DATE:	01/04/99	01/04/99	01/04/99	01/04/99	01/04/99
DEPTH INTERVAL (FEET):	2-4	2-4	2-4	2-4	2-4
ASSOCIATED DUPLICATE:		8SU1030200-D	8SU1030200		
VALIDATION STATUS:	VALIDATED	VALIDATED	VALIDATED	VALIDATED	VALIDATED
GAMMA-CHLORDANE	0.037 R	2.0 U	2.0 U	0.067 B	2.0 U
HEPTACHLOR	0.061 R	2.0 U	2.0 U	2.0 U	0.11 R
HEPTACHLOR EPOXIDE	0.043 R	0.032 R	0.094 R	0.16 R	2.0 U
METHOXYCHLOR	0.18 R	20 U	20 U	20 U	20 U
TOXAPHENE	210 U	200 U	200 U	200 U	200 U
EXPLOSIVES (ug/kg)					
1,3,5-TRINITROBENZENE	N/A	N/A	N/A	N/A	N/A
1,3-DINITROBENZENE	N/A	N/A	N/A	N/A	N/A
2,4,6-TRINITROTOLUENE	N/A	N/A	N/A	N/A	N/A
2,4-DINITROTOLUENE	N/A	N/A	N/A	N/A	N/A
2,6-DINITROTOLUENE	N/A	N/A	N/A	N/A	N/A
2-AMINO-4,6-DINITROTOLUENE	N/A	N/A	N/A	N/A	N/A
2-NITROTOLUENE	N/A	N/A	N/A	N/A	N/A
3-NITROTOLUENE	N/A	N/A	N/A	N/A	N/A
4-AMINO-2,6-DINITROTOLUENE	N/A	N/A	N/A	N/A	N/A
4-NITROTOLUENE	N/A	N/A	N/A	N/A	N/A
HMX	N/A	N/A	N/A	N/A	N/A
NITROBENZENE	N/A	N/A	N/A	N/A	N/A
RDX	N/A	N/A	N/A	N/A	N/A
TETRYL	N/A	N/A	N/A	N/A	N/A
MISCELLANEOUS PARAMETERS					
ACID-INSOLUBLE SULFIDE mg/kg	50 U	N/A	N/A	N/A	50 U
BOD-5DAY (TOTAL) mg/kg	35 L	N/A	N/A	N/A	24 UL
CHEMICAL OXYGEN DEMAND mg/L	10 U	N/A	N/A	N/A	10 U
FERROUS IRON mg/kg	0.25 UL	N/A	N/A	N/A	0.24 UL
HEXAVALENT CHROMIUM mg/kg	1.1	N/A	N/A	N/A	0.98
PH	5	N/A	N/A	N/A	4.9
TOTAL KJELDAHL NITROGEN mg/kg	N/A	N/A	N/A	N/A	N/A
TOTAL ORGANIC CARBON mg/kg	1300	N/A	N/A	N/A	700

White Oak
Site 8
Wilcoxon Rank-Sum Comparisons to Background

Metal	Rank Sum SITE8 (Wrs)	Critical Wrs	Rank Sum BACK	U	Z	p-level	Z adjusted	p-level	Valid N SITE8	Valid N BACK	Site 8 above Background?
ALUMINUM	664	892	714	136	-3.461	0.001	-3.461	0.001	32	20	No
ANTIMONY	**853.5**	**849**	**472.5**	**263**	**0.916**	**0.359**	**0.917**	**0.359**	**31**	**20**	**Yes**
ARSENIC	668.5	892	709.5	141	-3.376	0.001	-3.376	0.001	32	20	No
BARIUM	776	892	602	248	-1.354	0.176	-1.354	0.176	32	20	No
BERYLLIUM	**903**	**849**	**423**	**213**	**1.871**	**0.061**	**1.883**	**0.060**	**31**	**20**	**Yes**
CADMIUM	856	892	522	312	0.150	0.880	0.151	0.880	32	20	No
CALCIUM	**974.5**	**892**	**403.5**	**194**	**2.379**	**0.017**	**2.379**	**0.017**	**32**	**20**	**Yes**
CHROMIUM	690	892	688	162	-2.972	0.003	-2.972	0.003	32	20	No
COBALT	811	892	567	283	-0.696	0.486	-0.696	0.486	32	20	No
COPPER	867	892	511	301	0.357	0.721	0.357	0.721	32	20	No
IRON	752.5	892	625.5	225	-1.796	0.072	-1.796	0.072	32	20	No
LEAD	644.5	892	733.5	117	-3.828	0.000	-3.828	0.000	32	20	No
MAGNESIUM	739	892	639	211	-2.050	0.040	-2.050	0.040	32	20	No
MANGANESE	**910.5**	**892**	**467.5**	**258**	**1.176**	**0.240**	**1.176**	**0.240**	**32**	**20**	**Yes**
MERCURY	**975**	**892**	**403**	**193**	**2.389**	**0.017**	**2.400**	**0.016**	**32**	**20**	**Yes**
NICKEL	749	892	629	221	-1.862	0.063	-1.862	0.063	32	20	No
POTASSIUM	710	892	668	182	-2.596	0.009	-2.596	0.009	32	20	No
SELENIUM	792	892	586	264	-1.053	0.292	-1.054	0.292	32	20	No
SILVER	573	849	753	77	-4.495	0.000	-4.572	0.000	31	20	No
SODIUM	801	892	577	273	-0.884	0.377	-0.884	0.377	32	20	No
THALLIUM	796	849	530	300	-0.193	0.847	-0.193	0.847	31	20	No
VANADIUM	692	892	686	164	-2.934	0.003	-2.934	0.003	32	20	No
ZINC	782.5	892	595.5	255	-1.232	0.218	-1.232	0.218	32	20	No

White Oak
Site 8
Dissolved Inorganic - COPC
Wilcoxon Rank-Sum Comaprisons of Upgradient to Downgradient Data

METAL	Rank Sum DOWN	Rank Sum UP	U	Z	p-level	Z adjusted	p-level	Valid N DOWN	Valid N UP	DOWNGRADIENT ABOVE UPGRADIENT
ALUMINUM, FLITERED	27.0	51.0	6	-1.922	0.055	-1.922	0.055	6	6	NO
IRON, FILTERED	40.5	37.5	17	0.240	0.810	0.241	0.810	6	6	NO
THALLIUM, FILTERED	27.0	51.0	6	-1.922	0.055	-2.138	0.033	6	6	NO

APPENDIX B

RAGS-PART D TABLES AND
RISK ASSESSMENT SUPPORT DOCUMENTATION

SITE 8 - TABLE 1

SELECTION OF EXPOSURE PATHWAYS
NSWC-WHITE OAK, SILVER SPRING, MARYLAND
PAGE 1 OF 2

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Subsurface Soil(1)	Subsurface Soil	Entire Site	Maintenance/Utility/ Construction Workers	Adult	Ingestion	On-site	Quant(2)	Excavation/construction or intrusive activities may occur at the site.
						Dermal	On-site	Quant	Excavation/construction or intrusive activities may occur at the site.
		Air	Vapors and Particulates in Air - Entire Site	Maintenance/Utility/ Construction Workers	Adult	Inhalation	On-site	Qual(3)	Exposure is evaluated qualitatively by a comparison of site data to USEPA Generic SSLs (4)for transfers from soil to air.
	Surface Soil	Surface Soil	Entire Site	All Potential Receptors, i.e., Workers, Recreational Users, Trespassers, Day Care Center Children, and Future Residents	Adult, Child, Adolescent	Ingestion	On-site	Quant(2)	Exposure to surface soil may occur if potential receptors are exposed during typical receptor-related activities, such as digging and playing.
						Dermal	On-site	Quant(2)	Exposure to surface soil may occur if potential receptors are exposed during typical receptor-related activities, such as digging and playing.
		Air	Vapors and Particulates in Air - Entire Site	All Potential Receptors, i.e., Workers, Recreational Users, Trespassers, Day Care Center Children, and Future Residents	Adult, Child, Adolescent	Inhalation	On-site	Qual(3)	Exposure is evaluated qualitatively by a comparison of site data to USEPA Generic SSLs (4)for transfers from soil to air.
	Groundwater	Groundwater	Surficial Aquifer	Maintenance/Utility/ Construction Workers	Adult	Ingestion	On-site	None	Minimal exposure is anticipated.
						Dermal	On-site	Quant	Excavation/construction or intrusive activities may occur at the site.
				Full-time Employees, Recreational Users, Trespassers, Day Care Center Children	Adult, Child, Adolescent	Ingestion	On-site	None	Surficial aquifer is not expected to be used as a domestic water supply.
						Dermal	On-site	None	Surficial aquifer is not expected to be used as a domestic water supply.
				Residents	Adult and Child	Ingestion	On-site	Quant	Although it is unlikely that shallow groundwater at the site would be used as a domestic water supply. This scenario is included to aid in future risk management decisions.
						Dermal	On-site	Quant	Although it is unlikely that shallow groundwater at the site would be used as a domestic water supply. This scenario is included to aid in future risk management decisions.
		Air	Vapors	Maintenance/Utility/ Construction Workers	Adult	Inhalation	Outdoor On-site	Quant	Workers may be exposed to volatile organic compounds volatilizing from groundwater into outdoor ambient air.
				Full-time Workers	Adult	Inhalation	Indoor and Outdoor On-site	Quant	Workers may be exposed to volatile organic compounds volatilizing from groundwater into indoor and outdoor ambient air.
				Recreational Users	Adult	Inhalation	Outdoor On-site	None	Exposure of recreational users to vapors from groundwater is expected to be minimal.
				Trespassers	Adolescent	Inhalation	Outdoor On-site	None	Exposure of trespassers to vapors from groundwater is expected to be minimal.
				Day Care Center Children	Child	Inhalation	Indoor On-site	Quant	Children may be exposed to volatile organic compounds volatilizing from groundwater into indoor ambient air.
				Residents	Adult and Child	Inhalation	Indoor and Outdoor On-site	Quant	Future residents may be exposed to volatile organic compounds volatilizing from groundwater into indoor and outdoor ambient air and while bathing or showering.

SITE 8 - TABLE 1

SELECTION OF EXPOSURE PATHWAYS
NSWC-WHITE OAK, SILVER SPRING, MARYLAND
PAGE 2 OF 2

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Surface Water	Surface Water	Surface Water	All Potential Receptors	Adult, Child, Adolescent	Ingestion	On-site	None	Surface water is not present at this site.
						Dermal	On-site	None	Surface water is not present at this site.
		Air	Vapors from Surface Water	All Potential Receptors	Adult, Child, Adolescent	Inhalation	On-site	None	Minimal exposure is anticipated.
	Sediment	Sediment	Sediment	All Potential Receptors	Adult, Child, Adolescent	Ingestion	On-site	None	Surface water / sediment is not present at this site.
						Dermal	On-site	None	Surface water / sediment is not present at this site.

Footnotes:

1 Subsurface soil is defined as soil collected from depths greater than 0.5 feet below ground surface (bgs).

2 Quantitative.

3 Qualitative.

4 Soil Screening Levels (USEPA, May 1996).

TABLE 2.1

OCCURRENCE, DISTRIBUTION, AND SELECTION OF POTENTIAL CONSTITUENTS OF CONCERN - POST-REMOVAL SURFACE/SUBSURFACE SOIL
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface / Subsurface Soil
Exposure Point: Entire Site

CAS Number	Chemical	Minimum Concentration	Minimum Qualifier	Maximum Concentration(1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Nondetects(2)	Concentration Used for Screening(3)	Background Value(4)	Risk-Based Residential PCOC Screening Level(5)		PCOC Flag	Rationale for Contaminant Deletion or Selection(6)
67-64-1	Acetone	0.00525	J	0.16	J	mg/kg	8SS1030100	3/30	0.011 - 0.013	0.16	NA	780	N	No	BSL
75-09-2	Methylene Chloride	0.00245	J	0.105		mg/kg	DP-08-8R	12/29	0.003 - 0.042	0.105	NA	85	C	No	BSL
108-88-3	Toluene	0.001	J	0.004	J	mg/kg	8SS1030100	3/30	0.005 - 0.013	0.004	NA	1600	N	No	BSL
79-01-6	Trichloroethene	0.002	J	0.006	J	mg/kg	08-SB04-1112	2/29	0.005 - 0.064	0.006	NA	58	C	No	BSL
117-81-7	Bis(2-Ethylhexyl)phthalate	0.0425	J	0.237	J	mg/kg	DP-08-4R	7/29	0.35 - 0.44	0.237	NA	46	C	No	BSL
84-74-2	Di-n-butyl phthalate	0.17	J	0.484		mg/kg	DP-08-13RR	2/29	0.35 - 0.44	0.484	NA	780	N	No	BSL
206-44-0	Fluoranthene	0.072	J	0.072	J	mg/kg	8SS1000100	1/29	0.35 - 0.44	0.072	NA	310	N	No	BSL, FREQ
129-00-0	Pyrene	0.07	J	0.07	J	mg/kg	8SS1000100	1/29	0.35 - 0.44	0.07	NA	230	N	No	BSL, FREQ
72-54-8	4,4'-DDD	0.013		0.013		mg/kg	8SS1010100	1/8	0.0001 - 0.42	0.013	NA	2.7	C	No	BSL
72-55-9	4,4'-DDE	0.00049	J	0.00068	J	mg/kg	8SU1030200-D	1/6	0.00038 - 0.42	0.00068	NA	1.9	C	No	BSL
5103-71-9	alpha-Chlordane	0.0007	J	0.0026		mg/kg	8SU1040200	8/11	0.0018 - 0.002	0.0026	NA	1.8(7)	C	No	BSL
11096-82-5	**Aroclor-1260**	0.002	J	0.42		mg/kg	8SS1000100	6/11	0.039 - 4.2	0.42	NA	**0.32**	C	Yes	ASL
60-57-1	Dieldrin	0.0066	J	0.0066	J	mg/kg	8SS1000100	1/12	0.00019 - 0.42	0.0066	NA	0.04	C	No	BSL
72-20-8	Endrin	0.00005	J	0.00063	J	mg/kg	8SS1000100	3/11	0.0035 - 0.42	0.00063	NA	2.3	N	No	BSL
72-43-5	Methoxychlor	0.00036	J	0.00067	J	mg/kg	8SU1000200	2/11	0.018 - 2.1	0.00067	NA	39	N	No	BSL
319-85-7	beta-BHC	0.00016	J	0.00016	J	mg/kg	8SU1030200-D	1/9	0.0018 - 0.21	0.00016	NA	0.35	C	No	BSL
7429-90-5	Aluminum	638		17900	J	mg/kg	8SU1030200-D	30/30	---	17900	NA	**7800**	N	No	BKG
7440-36-0	**Antimony**	0.257		4.69		mg/kg	DP-08-5R	7/17	0.216 - 0.4	4.69	NA	**3.1**	N	Yes	ASL
7440-38-2	Arsenic	0.28	L	8.1		mg/kg	8SS1010100	16/30	0.19 - 7.9	8.1	NA	**0.43**	C	No	BKG

TABLE 2.1

OCCURRENCE, DISTRIBUTION, AND SELECTION OF POTENTIAL CONSTITUENTS OF CONCERN - POST-REMOVAL SURFACE/SUBSURFACE SOIL
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface / Subsurface Soil
Exposure Point: Entire Site

CAS Number	Chemical	Minimum Concentration	Minimum Qualifier	Maximum Concentration(1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Nondetects(2)	Concentration Used for Screening(3)	Background Value(4)	Risk-Based Residential PCOC Screening Level(5)		PCOC Flag	Rationale for Contaminant Deletion or Selection(6)
7440-39-3	Barium	2.47		235		mg/kg	DP-08-11R	29/30	4.8 - 4.8	235	NA	550	N	No	BKG
7440-41-7	Beryllium	0.097		2.5		mg/kg	08-SB04-1112	15/29	0.01 - 0.66	2.5	NA	16		No	BSL
7440-43-9	Cadmium	0.374		10		mg/kg	DP-08-8R	11/30	0.04 - 1.4	10	NA	7.8	N	No	BKG
7440-70-2	Calcium	43.8		238000	J	mg/kg	8SS1000100	28/30	39.1 - 58.2	238000	NA	NA		No	NUT
7440-47-3	Chromium	2.52		77.6		mg/kg	8SU1000200	30/30	---	77.6	NA	23(8)	N	No	BKG
18540-29-9	Hexavalent Chromium	0.62		1.1		mg/kg	8SU1020200	3/3	---	1.1	NA	23	N	No	BSL
7440-48-4	Cobalt	0.21		48.7		mg/kg	8SU1000200	24/30	0.11 - 1.2	48.7	NA	470	N	No	BSL, BKG
7440-50-8	Copper	1.16		96.3		mg/kg	DP-08-10RR	29/30	16.3 - 16.3	96.3	NA	310	N	No	BSL, BKG
57-12-5	Cyanide	0.17		0.17		mg/kg	8SS1040100	1/29	0.14 - 1.2	0.17	NA	160	N	No	BSL, FREQ
7439-89-6	Iron	1040		36500	J	mg/kg	08-SB02-1618	30/30	---	36500	NA	2300	N	No	BKG
7439-92-1	Lead	1.4	J	40.9	K	mg/kg	8SS1010100	30/30	---	40.9	NA	400(9)		No	BSL. BKG
7439-95-4	Magnesium	15.4		97600		mg/kg	8SU1000200	30/30	---	97600	NA	NA		No	NUT, BKG
7439-96-5	Manganese	4.31		1440	J	mg/kg	08-SB02-1618	30/30	---	1440	NA	160(10)	N	Yes	ASL
7439-97-6	Mercury	0.06	L	5.1	L	mg/kg	8SS1010100	18/30	0.046 - 0.34	5.1	NA	2.3(11)	N	Yes	ASL
7440-02-0	Nickel	0.134		892		mg/kg	8SU1000200	26/30	0.108 - 0.115	892	NA	160	N	No	BKG
7440-09-7	Potassium	29.6		1920		mg/kg	08-SB02-1618	30/30	---	1920	NA	NA		No	NUT, BKG
7782-49-2	Selenium	0.271		8.4		mg/kg	8SS1010100	10/30	0.219 - 1.3	8.4	NA	39	N	No	BSL, BKG
7440-23-5	Sodium	19.8		83.2		mg/kg	08-SB02-1618	19/30	17 - 111	83.2	NA	NA		No	NUT, BKG
7440-28-0	Thallium	0.567		0.567		mg/kg	DP-08-10RR	1/29	0.216 - 1.9	0.567	NA	0.55	N	No	BKG, FREQ

TABLE 2.1

OCCURRENCE, DISTRIBUTION, AND SELECTION OF POTENTIAL CONSTITUENTS OF CONCERN - POST-REMOVAL SURFACE/SUBSURFACE SOIL
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface / Subsurface Soil
Exposure Point: Entire Site

CAS Number	Chemical	Minimum Concentration	Minimum Qualifier	Maximum Concentration(1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Nondetects(2)	Concentration Used for Screening(3)	Background Value(4)	Risk-Based Residential PCOC Screening Level(5)		PCOC Flag	Rationale for Contaminant Deletion or Selection(6)
7440-62-2	Vanadium	5.7		47.8		mg/kg	8SU1020200	30/30	---	47.8	NA	55	N	No	BSL, BKG
7440-66-6	Zinc	1.07		102		mg/kg	8SS1020100	30/30	---	102	NA	2300	N	No	BSL, BKG

Shaded cells indicate that the maximum concentration exceeds the specified criterion or constituent has been selected as a PCOC.

Footnotes:

1 Sample and duplicate are counted as two separate samples when determining the minimum and maximum detected concentrations.
2 Values presented are sample-specific quantitation limits.
3 The maximum detected concentration is used for screening purposes.
4 To determine whether metal concentrations are within background levels, a comparison of site concentrations with Base-wide background data was made by means of the Wilcoxon Rank Sum Test. If the Wilcoxon Test determined that a constituent concentration was not significanty different from background, that chemical was not selected as a PCOC.
5 The risk-based soil COPC screening level for residential land use is presented. The value is based on a target hazard quotient of 0.1 for noncarcinogens (denoted with a "N" flag) or an incremental cancer risk of 1E-6 for carcinogens (denoted with a "C" flag) (USEPA, Region III, September 2001).
6 The chemical is selected as a PCOC if the maximum detected concentration exceeds the risk-based PCOC screening level and facility-wide background levels.
7 alpha-Chordane as Chlordane.
8 Chromium as hexavalent chromium.
9 OSWER soil screening level for residential land use (USEPA, July 1994)
10 Manganese-Nonfood
11 Mercury as Mercuric Chloride

Rationale Codes:
For Selection as a PCOC:
ASL = Above PCOC Screening Level

For Elimination as a PCOC:
BKG = Within background levels
BSL = Below PCOC Screening Level
FREQ = Frequency
NUT = Essential Nutrient

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
C = Carcinogen
J = Estimated Value
K = Value Estimated with a High Bias
L = Value Estimated with a Low Bias
N = Noncarcinogen
NA = Not Applicable/Not Available.
PCOC = Potential Constituent of Concern

TABLE 2.1

OCCURRENCE, DISTRIBUTION, AND SELECTION OF POTENTIAL CONSTITUENTS OF CONCERN - POST-REMOVAL SURFACE/SUBSURFACE SOIL
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface / Subsurface Soil
Exposure Point: Entire Site

CAS Number	Chemical	Minimum Concentration	Minimum Qualifier	Maximum Concentration(1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Nondetects(2)	Concentration Used for Screening(3)	Background Value(4)	Risk-Based Residential PCOC Screening Level(5)	PCOC Flag	Rationale for Contaminant Deletion or Selection(6)

Associated Samples:

08-SB01-1416	8SS1020100	8SU1030200-AVG	DP-08-13RR
08-SB02-1618	8SS1030100	8SU1030200-D	DP-08-15R
08-SB04-1112	8SS1040100	8SU1040200	DP-08-3R
08-SB05-1618	8SS1050100	8SU1050200	DP-08-4R
08-SB06-1216	8SU1000200	CLEAN FILL	DP-08-5R
8SS1000100	8SU1010200	DP-08-10RR	DP-08-6R
8SS1010100	8SU1020200	DP-08-11R	DP-08-7R
	8SU1030200	DP-08-12R	DP-08-8R
			DP-08-9R

TABLE 2.2

OCCURRENCE, DISTRIBUTION, AND SELECTION OF POTENTIAL CONSTITUENTS OF CONCERN - GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Groundwater

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency (1)	Range of Nondetects (2)	Concentration Used for Screening (3)	Background Value (4)	Risk-Based PCOC Screening Level (5)		Potential ARAR/ TBC Value	Potential ARAR/ TBC Source	PCOC Flag	Rationale for Contaminant Deletion or Selection (6)
79-00-5	1,1,2-Trichloroethane	0.42	J	1.7		µg/L	8GW360001	3/6	1	1.7	NA	0.19	N	5	FED-MCL	Yes	ASL
67-66-3	Chloroform	0.95	J	7.2		µg/L	8GWB10001	5/6	1	7.2	NA	0.15	C	80	FED-MCL	Yes	ASL
108-88-3	Toluene	0.65	J	0.65	J	µg/L	8GW330001	1/6	1	0.65	NA	75	C	1000	FED-MCL	No	BSL
75-01-4	Vinyl Chloride	0.92	J	0.92	J	µg/L	8GW360001	1/6	1	0.92	NA	0.019	N	2	FED-MCL	Yes	ASL
1330-20-7	Xylenes, Total	1		1		µg/L	8GW330001	1/6	1	1	NA	1200	C	10000	FED-MCL	No	BSL
117-81-7	Bis(2-Ethylhexyl)phthalate	1.6	J	1.8	J	µg/L	8GW360001	2/6	5	1.8	NA	4.8	C	6	FED-MCL	No	BSL
84-66-2	Diethyl Phthalate	1.6	J	1.6	J	µg/L	8GWB10001	1/6	5	1.6	NA	2900	N	NA	NA	No	BSL
7429-90-5	Aluminum	194		194		µg/L	8GW360001	1/6	12.7 - 33.6	194	NA	3700	C	50-200 (7)	FED-MCL	No	BSL, BKG
7440-38-2	Arsenic	1.5		5.3		µg/L	8GW350001	4/6	1.5	5.3	NA	0.045	N	50	FED-MCL	Yes	ASL
7440-39-3	Barium	16.3		563		µg/L	8GW360001	6/6	---	563	NA	260	C	2000	FED-MCL	No	BKG
7440-41-7	Beryllium	7		7		µg/L	8GW360001	1/6	0.1 - 3.5	7	NA	7.3	C	4	FED-MCL	No	BSL, BKG
7440-70-2	Calcium	1940		25600		µg/L	8GW360001	6/6	---	25600	NA	NA	N	NA	NA	No	NUT, BKG
7440-47-3	Chromium	15		211		µg/L	8GW330001	5/6	2.3	211	NA	11 (8)	C	100	FED-MCL	Yes	ASL
7440-48-4	Cobalt	8.6		57.2		µg/L	8GW340001	6/6	---	57.2	NA	220	C	NA	NA	No	BSL
7440-50-8	Copper	28.4		93.1		µg/L	8GW360001	4/6	6.9 - 7.4	93.1	NA	150	N	1300	FED-MCL	No	BSL
7439-89-6	Iron	801	J	5360	J	µg/L	8GW360001	2/6	17.6 - 212	5360	NA	1100	N	300 (7)	FED-MCL	No	BKG
7439-92-1	Lead	5		22.8		µg/L	8GW360001	4/6	1	22.8	NA	15	N	15	FED-AL	No	BKG
7439-95-4	Magnesium	1330		14300		µg/L	8GW360001	6/6	---	14300	NA	NA	C	NA	NA	No	NUT, BKG
7439-96-5	Manganese	43.6	J	1480	J	µg/L	8GW360001	6/6	---	1480	NA	73 (9)	N	50 (7)	FED-MCL	No	BKG
7439-97-6	Mercury	0.28		0.28		µg/L	8GW360001	1/6	0.2	0.28	NA	1.1 (10)	C	2	FED-MCL	No	BSL
7440-02-0	Nickel	14.1		179		µg/L	8GW360001	5/6	7.5	179	NA	73	C	NA	FED-MCL	No	BKG
7440-09-7	Potassium	1200		12500		µg/L	8GW360001	6/6	---	12500	NA	NA	N	NA	NA	No	NUT
7440-23-5	Sodium	3970		7960		µg/L	8GW360001	6/6	---	7960	NA	NA	C	NA	NA	No	NUT, BKG
7440-28-0	Thallium	4.2		4.2		µg/L	8GW340001	1/6	2.9	4.2	NA	0.26	N	2	FED-MCL	No	BKG
7440-62-2	Vanadium	16.5		40		µg/L	8GW350001	4/6	2.1	40	NA	26		NA	NA	Yes	ASL
7440-66-6	Zinc	20.9		178		µg/L	8GW360001	6/6	---	178	NA	1100	N	5000 (7)	FED-MCL	No	BSL

TABLE 2.2

OCCURRENCE, DISTRIBUTION, AND SELECTION OF POTENTIAL CONSTITUENTS OF CONCERN - GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Groundwater

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency (1)	Range of Nondetects (2)	Concentration Used for Screening (3)	Background Value (4)	Risk-Based PCOC Screening Level (5)	Potential ARAR/ TBC Value	Potential ARAR/ TBC Source	PCOC Flag	Rationale for Contaminant Deletion or Selection (6)

Associated Samples:
8GW330001
8GW340001
8GW350001
8GW360001
8GW530001
8GWB10001

Footnotes:
1 Sample and duplicate are counted as two separate samples when determining the minimum and maximum detected concentrations.
2 Values presented are sample-specific quantitation limits.
3 The maximum detected concentration is used for screening purposes.
4 To determine whether metal concentrations are within background levels, a comparison of site concentrations with Base-wide background data was made by means of the Wilcoxon Rank Sum Test. If the Wilcoxon Test determined that a constituent concentration was not significanty different from background, that chemical was not selected as a PCOC.
5 The risk-based soil PCOC screening level for residential tap water use is presented. The value is based on a target hazard quotient of 0.1 for noncarcinogens (denoted with a "N" flag) or an incremental cancer risk of 1E-6 for carcinogens (denoted with a "C" flag) (USEPA, Region III, September 2001).
6 The chemical is selected as a PCOC if the maximum detected concentration exceeds the risk-based PCOC screening level and facility-wide background levels.
7 Secondary MCL, based on aesthetic water quality (i.e., color, odor, taste, etc.).
8 Hexavalent Chromium
9 Manganese-Nonfood
10 Mercury as Mercuric Chloride

Shaded cells indicate that the maximum concentration exceeds the specified criterion, or that a constituent has been selected as a PCOC.

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
C = Carcinogen
PCOC = Potential Constituent of Concern
FED-AL = Federal Action Level (USEPA, October. 1996)
FED-MCL = Federal Maximum Contaminant Level (USEPA, October 1996)
J = Estimated Value
K = Value Estimated with a High Bias
L = Value Estimated with a Low Bias
N = Nocarcinogen
NA = Not Applicable/Not Available.

Rationale Codes:
For Selection as a PCOC:
ASL = Above PCOC Screening Level

For Elimination as a PCOC:
BKG = Within background levels
BSL = Below PCOC Screening Level
NUT = Essential Nutrient

TABLE 3.1
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY - SURFACE / SUBSURFACE SOIL
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Surface / Subsurface Soil
Exposure Point: Surface / Surbsurface Soil

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Aroclor-1260	mg/kg	6.20E-02	NA	4.20E-01		mg/kg	3.00E-01	95% UCL-T	W - Test (1)	3.00E-01	95% UCL-T	W - Test (1)
Antimony	mg/kg	4.90E-01	NA	4.69E+00		mg/kg	7.28E-01	95% UCL-T	W - Test (1)	7.28E-01	95% UCL-T	W - Test (1)
Manganese	mg/kg	2.87E+02	NA	1.44E+03	J	mg/kg	8.34E+02	95% UCL-T	W - Test (1)	8.34E+02	95% UCL-T	W - Test (1)
Mercury	mg/kg	5.10E-01	NA	5.10E+00	L	mg/kg	1.08E+00	95% UCL-T	W - Test (1)	1.08E+00	95% UCL-T	W - Test (1)

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

(1) Shapiro-Wilk W Test indicates data are log-normally distributed.

SITE 8 - TABLE 3.2
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY - GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Groundwater

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,1,2-Trichloroethane	mg/L	7.67E-04	NA	1.70E-03		mg/L	1.70E-03	Maximum	N<10(1)	7.67E-04	Average	N<10(1)
Chloroform	mg/L	3.69E-03	NA	7.20E-03		mg/L	7.20E-03	Maximum	N<10(1)	3.69E-03	Average	N<10(1)
Vinyl Chloride	mg/L	5.70E-04	NA	9.20E-04	J	mg/L	9.20E-04	Maximum	N<10(1)	5.70E-04	Average	N<10(1)
Arsenic	mg/L	2.80E-03	NA	5.30E-03		mg/L	5.30E-03	Maximum	N<10(1)	2.80E-03	Average	N<10(1)
Chromium	mg/L	6.42E-02	NA	2.11E-01		mg/L	2.11E-01	Maximum	N<10(1)	6.42E-02	Average	N<10(1)
Vanadium	mg/L	1.92E-02	NA	4.00E-02		mg/L	4.00E-02	Maximum	N<10(1)	1.92E-02	Average	N<10(1)

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

(1) Less than 10 groundwater samples collected. Therefore, maximum concentration is used as the exposure point concentration for the RME and the average concentration is used for the CTE.

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD	Oral RfD Units	Oral to Dermal Adjustment Factor(1)	Adjusted Dermal RfD(2)	Dermal RfD Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ(3)
1,1,2-Trichloroethane	chronic	4.0E-03	mg/kg-day	1	4.00E-03	mg/kg-day	Liver	1,000	IRIS	09/25/01
Chloroform	chronic	1.0E-02	mg/kg-day	1	1.00E-02	mg/kg-day	Liver	1,000	IRIS	09/25/01
Vinyl Chloride	chronic	3.0E-03	mg/kg-day	1	3.00E-03	mg/kg-day	Liver	300	IRIS	09/25/01
Antimony	chronic	4.0E-04	mg/kg-day	0.15	6.00E-05	mg/kg-day	Lifespan	1,000	IRIS	09/25/01
Arsenic	chronic	3.0E-04	mg/kg-day	1	3.00E-04	mg/kg-day	Skin, Vascular	3	IRIS	09/25/01
Chromium	chronic	1.5E+00	mg/kg-day	0.025	3.75E-02	mg/kg-day	NOAEL	1,000	IRIS	09/25/01
Manganese	chronic	2.0E-02	mg/kg-day	0.04	8.00E-04	mg/kg-day	CNS	1	IRIS	09/25/01
Mercury	chronic	3.0E-04	mg/kg-day	0.07	2.10E-05	mg/kg-day	CNS	1,000	IRIS	09/25/01
Vanadium	chronic	7.0E-03	mg/kg-day	0.026	1.82E-04	mg/kg-day	NOEL	100	HEAST	07/97

(1) USEPA, 2000).
(2) RfD dermal = RfDoral x (Oral to Dermal Adjustment Factor)
(3) Dates of IRIS, HEAST, or NCEA
(4) Developed by USEPA Region III based weighted average of RfDs of thallium compounds listed in IRIS.

Notes: RfD = Reference dose
CNS = Central Nervous System
IRIS = Integrated Risk Information System, on-line database search (USEPA, accessed online)
HEAST = Health Effects Assessment Summary Tables (USEPA, July 1997)
NA = Not applicable since an oral RfD is not available for this compound data
NOAEL = No Observed Adverse Effect Level

TABLE 5-2
NON-CANCER TOXICITY DATA -- INHALATION
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Chemical of Potential Concern	Chronic/ Subchronic	Value Inhalation RfC	Units	Adjusted Inhalation RfD	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfC:RfD: Target Organ	Date
Chloroform	Chronic	3.0E-01	$\mu g/m^3$	8.6E-05	mg/kg-day	Liver		NCEA	9/25/01
Vinyl Chloirde	Chronic	1.0E+02	$\mu g/m^3$	2.8E-02	mg/kg-day	Liver	30	IRIS	9/25/01

NCEA = USEPA National Center for Environmental Assessment (USEPA Region 3 RBC Table, September, 2001)

TABLE 6-2

CANCER TOXICITY DATA -- INHALATION

SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT

NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Chemical of Potential Concern	Unit Risk	Units	Adjustment	Inhalation Cancer Slope Factor	Units	Weight of Evidence/ Cancer Guideline Description	Source	Date
1,1,2-Trichloroethane	1.6E-05	$(\mu g/m^3)^{-1}$	3.5E+03	5.60E-02	$(mg/kg\text{-}day)^{-1}$	C	IRIS	9/25/01
Chloroform	2.3E-05	$(\mu g/m^3)^{-1}$	3.5E+03	8.10E-02	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	9/25/01
Vinyl Chloride (adult)	4.4E-06	$(\mu g/m^3)^{-1}$	3.5E+03	1.50E-02	$(mg/kg\text{-}day)^{-1}$	A	HEAST	07/97
Vinyl Chloride (early life)	8.8E-06	$(\mu g/m^3)^{-1}$	3.5E+03	3.00E-02	$(mg/kg\text{-}day)^{-1}$	A	HEAST	07/97
Aroclor-1260	5.7E-04	$(\mu g/m^3)^{-1}$	3.5E+03	2.00E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	9/25/01
Arsenic	4.3E-03	$(\mu g/m^3)^{-1}$	3.5E+03	1.51E+01	$(mg/kg\text{-}day)^{-1}$	A	IRIS	9/25/01

IRIS = Integrated Risk Information System

HEAST= Health Effects Assessment Summary Tables

EPA Group:

A - Human carcinogen

B1 - Probable human carcinogen - indicates that limited human data are available

B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans

C - Possible human carcinogen

D - Not classifiable as a human carcinogen

E - Evidence of noncarcinogenicity

TABLE 6-1
CANCER TOXICITY DATA -- ORAL/DERMAL
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Chemical of Potential Concern	Oral CSF	Oral to Dermal Adjustment Factor(1)	Adjusted Dermal Cancer Slope Factor(2)	Units	Weight of Evidence/ Cancer Guideline Description	Source	Date(3)
1,1,2-Trichloroethane	5.7E-02	1	5.70E-02	$(mg/kg\text{-}day)^{-1}$	C	IRIS	9/25/01
Chloroform	6.1E-03	1	6.10E-03	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	9/25/01
Vinyl Chloride (adult)	7.2E-01	1	7.20E-01	$(mg/kg\text{-}day)^{-1}$	A	IRIS	07/97
Vinyl Chloride (early life)	1.4E+00	1	1.40E+00	$(mg/kg\text{-}day)^{-1}$	A	IRIS	07/97
Aroclor-1260	2.0E+00	1	2.00E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	9/25/01
Arsenic	1.5E+00	1	1.50E+00	$(mg/kg\text{-}day)^{-1}$	A-inhalation	IRIS	9/25/01

(1) USEPA, 2000).
(2) CSFdermal = CSForal/(Oral to Dermal Adjustment Factor)
(3) Dates of IRIS, HEAST, or NCEA.

Notes:
CSF = Cancer Slope Factor
IRIS = Integrated Risk Information System, on-line database search (USEPA, accessed online)
HEAST = Health Effects Assessment Summary Tables (USEPA, July 1997)
NCEA = USEPA National Center for Environmental Assessment
(USEPA Region III RBC Table, September 2001)
NA = Not Applicable since oral CSF is not available

EPA Group:
A - Human carcinogen
B1 - Probable human carcinogen - indicates that limited human data ar available
B2 - Probable human carcinogen - indicates sufficient evidence in anim inadequate or no evidence in humans
C - Possible human carcinogen
D - Not classifiable as a human carcinogen
E - Evidence of noncarcinogenicity

SITE 8 - TABLE 4.1

VALUES USED FOR DAILY INTAKE CALCULATIONS
EXPOSURE OF FULL TIME WORKERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Full Time Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cs	Chemical Concentration in Soil	(mg/kg)	95% UCL	EPA 1993a	95%UCL	EPA 1993a	Chronic Daily Intake (CDI) (mg/kg-day) =
	IRs	Ingestion Rate of Soil	(mg/day)	100	EPA 1993a	50	EPA 1993a	Cs x IRs x EF x ED / BW x AT x CF
	EF	Exposure Frequency	(days/year)	250	EPA 1993a	219	EPA 1993a	
	FI	Fraction Ingested	(unitless)	1	Professional Judgement	1	Professional Judgement	
	ED	Exposure Duration	(years)	25	EPA 1993a	9	EPA 1993a	
	CF	Conversion Factor	(mg/kg)	1.00E+06	EPA 1989a	1.00E+06	EPA 1989a	
	BW	Body Weight	(kg)	70	EPA 1989a	70	EPA 1989a	
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25,550	EPA 1989a	
	AT-N	Averaging Time (Noncancer)	(days)	9,125	EPA 1989a	3,285	EPA 1989a	
Dermal	Cs	Chemical Concentration in Soil	(mg/kg)	95%UCL	EPA 1993a	95%UCL	EPA 1993a	Chronic Daily Intake (CDI) (mg/kg-day) =
	AF	Soil to Skin Adherence Factor	(mg/cm^2)	0.2	EPA 2000	0.02	EPA 2000	Cs x SA x ABS x AF x EF x ED / BW x AT x CF
	SA	Skin Surface Area	(cm^2)	3160	EPA 1997a	3160	EPA 1997a	
	ABS	Absorption Factor	(unitless)	chemical-specific	EPA 1995b	chemical-specific	EPA 1995b	
	EF	Exposure Frequency	(days/year)	250	EPA 1993a	219	EPA 1993a	
	ED	Exposure Duration	(years)	25	EPA 1993a	9	EPA 1993a	
	CF	Conversion Factor	(mg/kg)	1.00E+06	EPA 1989a	1.00E+06	EPA 1989a	
	BW	Body Weight	(kg)	70	EPA 1989a	70	EPA 1989a	
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25,550	EPA 1989a	
	AT-N	Averaging Time (Noncancer)	(days)	9,125	EPA 1989a	3,285	EPA 1989a	

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME	3.49E-07	Cancer Ingestion Intake - CTE	5.51E-08
Noncancer Ingestion Intake - RME	9.78E-07	Noncancer Ingestion Intake - CTE	4.29E-07
Cancer Dermal Intake - RME	2.21E-06	Cancer Dermal Intake - CTE	6.96E-08
Noncancer Dermal Intake - RME	6.18E-06	Noncancer Dermal Intake - CTE	5.42E-07

SITE 8 - TABLE 7.1. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF FULL TIME WORKERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Full Time Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	2.9E-07	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	7.1E-07	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	1.8E-03
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	8.2E-04	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	4.1E-02
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	1.1E-06	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	3.5E-03
	(total)												4.6E-02
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	4.5E-09	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	7.5E-05
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	5.2E-06	mg/kg-day	8.00E-04	mg/kg-day	NA	NA	6.4E-03
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	6.7E-09	mg/kg-day	2.10E-05	mg/kg-day	NA	NA	3.2E-04
	(total)												6.8E-03
												Total Hazard Index Across All Exposure Routes/Pathways	**5.3E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06

Metals - 0.001

SITE 8 - TABLE 8.1. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF CANCER RISKS
EXPOSURE OF FULL TIME WORKERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Full Time Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.0E-07	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	2.1E-07
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	2.5E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	2.9E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	3.8E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										2.1E-07
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	4.0E-08	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	8.0E-08
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	1.6E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	1.8E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	2.4E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										8.0E-08
										Total Risk Across All Exposure Routes/Pathways	**2.9E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06
Metals - 0.001

SITE 8 - TABLE 7.1a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF FULL TIME WORKERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Full Time Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.3E-07	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	3.1E-07	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	7.8E-04
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	3.6E-04	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	1.8E-02
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	4.6E-07	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	1.5E-03
	(total)												2.0E-02
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	9.8E-09	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	3.9E-10	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	6.6E-06
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	4.5E-07	mg/kg-day	8.00E-04	mg/kg-day	NA	NA	5.6E-04
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	5.8E-10	mg/kg-day	2.10E-05	mg/kg-day	NA	NA	2.8E-05
	(total)												6.0E-04
												Total Hazard Index Across All Exposure Routes/Pathways	**2.1E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06

Metals - 0.001

SITE 8 - TABLE 8.1a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF CANCER RISKS
EXPOSURE OF FULL TIME WORKERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Full Time Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.7E-08	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	3.3E-08
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	4.0E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	4.6E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	5.9E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										3.3E-08
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.3E-09	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	2.5E-09
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	5.1E-11	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	5.8E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	7.5E-11	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										2.5E-09
										Total Risk Across All Exposure Routes/Pathways	**3.6E-08**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06
Metals - 0.001

SITE 8 - TABLE 4.2

VALUES USED FOR DAILY INTAKE CALCULATIONS
EXPOSURE OF ADULT RECREATIONAL USERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Adult Recreational User
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cs	Chemical Concentration in Soil	(mg/kg)	95% UCL	EPA 1993a	95%UCL	EPA 1993a	EPA 1993a
	IRs	Ingestion Rate of Soil	(mg/day)	100	EPA 1993a	50	EPA 1993a	EPA 1993a
	EF	Exposure Frequency	(days/year)	16	Professional Judgement	8	Professional Judgement	Professional Judgement
	FI	Fraction Ingested	(unitless)	1	Professional Judgement	1	Professional Judgement	Professional Judgement
	ED	Exposure Duration	(years)	30	EPA 1993a	9	EPA 1993a	EPA 1993a
	CF	Conversion Factor	(mg/kg)	1.00E+06	EPA 1989a	1.00E+06	EPA 1989a	EPA 1989a
	BW	Body Weight	(kg)	70	EPA 1989a	70	EPA 1989a	EPA 1989a
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25,550	EPA 1989a	EPA 1989a
	AT-N	Averaging Time (Noncancer)	(days)	10,950	EPA 1989a	3,285	EPA 1989a	EPA 1989a
Dermal	Cs	Chemical Concentration in Soil	(mg/kg)	95%UCL	EPA 1993a	95%UCL	EPA 1993a	EPA 1993a
	AF	Soil to Skin Adherence Factor	(mg/cm^2)	0.3	EPA 2000	0.04	EPA 2000	EPA 1993a
	SA	Skin Surface Area	(cm^2)	9000	EPA 1997a	9000	EPA 1997a	EPA 1997a
	ABS	Absorption Factor	(unitless)	chemical-specific	EPA 1995b	chemical-specific	EPA 1995b	EPA 1995b
	EF	Exposure Frequency	(days/year)	16	Professional Judgement	8	Professional Judgement	Professional Judgement
	ED	Exposure Duration	(years)	30	EPA 1993a	9	EPA 1993a	EPA 1993a
	CF	Conversion Factor	(mg/kg)	1.00E+06	EPA 1989a	1.00E+06	EPA 1989a	EPA 1989a
	BW	Body Weight	(kg)	70	EPA 1989a	70	EPA 1989a	EPA 1989a
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25,550	EPA 1989a	EPA 1989a
	AT-N	Averaging Time (Noncancer)	(days)	10,950	EPA 1989a	3,285	EPA 1989a	EPA 1989a

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME	2.68E-08	Cancer Ingestion Intake - CTE	2.01E-09
Noncancer Ingestion Intake - RME	6.26E-08	Noncancer Ingestion Intake - CTE	1.57E-08
Cancer Dermal Intake - RME	7.25E-07	Cancer Dermal Intake - CTE	1.45E-08
Noncancer Dermal Intake - RME	1.69E-06	Noncancer Dermal Intake - CTE	1.13E-07

SITE 8 - TABLE 7.2, REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF ADULT RECREATIONAL USERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Adult Recreational User
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.9E-08	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	4.6E-08	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	1.1E-04
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	5.2E-05	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	2.6E-03
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	6.8E-08	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	2.3E-04
	(total)												3.0E-03
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	3.0E-08	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	1.2E-09	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	2.1E-05
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	1.4E-06	mg/kg-day	8.00E-04	mg/kg-day	NA	NA	1.8E-03
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	1.8E-09	mg/kg-day	2.10E-05	mg/kg-day	NA	NA	8.7E-05
	(total)												1.9E-03
												Total Hazard Index Across All Exposure Routes/Pathways	**4.8E-03**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06

Metals - 0.001

SITE 8 - TABLE 8.2. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF CANCER RISKS
EXPOSURE OF ADULT RECREATIONAL USERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Adult Recreational User
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	8.1E-09	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-08
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	2.0E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	2.2E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	2.9E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										1.6E-08
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.3E-08	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	2.6E-08
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	5.3E-10	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	6.0E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	7.8E-10	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										2.6E-08
										Total Risk Across All Exposure Routes/Pathways	**4.2E-08**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06
Metals - 0.001

SITE 8 - TABLE 7.2a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF ADULT RECREATIONAL USERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Adult Recreational User
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	4.7E-09	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	1.1E-08	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	2.8E-05
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	1.3E-05	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	6.5E-04
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	1.7E-08	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	5.6E-05
	(total)												7.4E-04
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	2.0E-09	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	8.2E-11	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	1.4E-06
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	9.4E-08	mg/kg-day	8.00E-04	mg/kg-day	NA	NA	1.2E-04
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	1.2E-10	mg/kg-day	2.10E-05	mg/kg-day	NA	NA	5.8E-06
	(total)												1.2E-04
												Total Hazard Index Across All Exposure Routes/Pathways	**8.6E-04**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06

Metals - 0.001

SITE 8 - TABLE 8.2a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF CANCER RISKS
EXPOSURE OF ADULT RECREATIONAL USERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Adult Recreational User
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	6.0E-10	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-09
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	1.5E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	1.7E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	2.2E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										1.2E-09
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	2.6E-10	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	5.2E-10
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	1.1E-11	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	1.2E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	1.6E-11	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										5.2E-10
										Total Risk Across All Exposure Routes/Pathways	**1.7E-09**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06
Metals - 0.001

SITE 8 - TABLE 4.3

VALUES USED FOR DAILY INTAKE CALCULATIONS
EXPOSURE OF ADOLESCENT TRESPASSERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Adolescent Trespasser
Receptor Age: 7-16 Years

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cs	Chemical Concentration in Soil	(mg/kg)	95% UCL	EPA 1993a	95%UCL	EPA 1993a	EPA 1993a
	IRs	Ingestion Rate of Soil	(mg/day)	100	EPA 1993a	50	EPA 1993a	EPA 1993a
	EF	Exposure Frequency	(days/year)	52	Professional Judgement	26	Professional Judgement	Professional Judgement
	FI	Fraction Ingested	(unitless)	1	Professional Judgement	1	Professional Judgement	Professional Judgement
	ED	Exposure Duration	(years)	10	Professional Judgement	10	Professional Judgement	EPA 1993a
	CF	Conversion Factor	(mg/kg)	1.00E+06	EPA 1989a	1.00E+06	EPA 1989a	EPA 1989a
	BW	Body Weight	(kg)	43	EPA 1997a	43	EPA 1997a	EPA 1989a
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25,550	EPA 1989a	EPA 1989a
	AT-N	Averaging Time (Noncancer)	(days)	3,650	EPA 1989a	3,650	EPA 1989a	EPA 1989a
Dermal	Cs	Chemical Concentration in Soil	(mg/kg)	95%UCL	EPA 1993a	95%UCL	EPA 1993a	EPA 1993a
	AF	Soil to Skin Adherence Factor	(mg/cm^2)	0.3	EPA 2000	0.04	EPA 2000	EPA 1993a
	SA	Skin Surface Area	(cm^2)	3263	EPA 1997a	3263	EPA 1997a	EPA 1997a
	ABS	Absorption Factor	(unitless)	chemical-specific	EPA 1995b	chemical-specific	EPA 1995b	EPA 1995b
	EF	Exposure Frequency	(days/year)	52	Professional Judgement	26	Professional Judgement	Professional Judgement
	ED	Exposure Duration	(years)	10	Professional Judgement	10	Professional Judgement	EPA 1993a
	CF	Conversion Factor	(mg/kg)	1.00E+06	EPA 1989a	1.00E+06	EPA 1989a	EPA 1989a
	BW	Body Weight	(kg)	43	EPA 1997a	43	EPA 1997a	EPA 1989a
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25,550	EPA 1989a	EPA 1989a
	AT-N	Averaging Time (Noncancer)	(days)	3,650	EPA 1989a	3,650	EPA 1989a	EPA 1989a

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME	4.73E-08	Cancer Ingestion Intake - CTE	1.18E-08
Noncancer Ingestion Intake - RME	3.31E-07	Noncancer Ingestion Intake - CTE	8.28E-08
Cancer Dermal Intake - RME	4.63E-07	Cancer Dermal Intake - CTE	3.09E-08
Noncancer Dermal Intake - RME	3.24E-06	Noncancer Dermal Intake - CTE	2.16E-07

SITE 8 - TABLE 7.3. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF ADOLESCENT TRESPASSERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Adolescent Trespasser
Receptor Age: 7-16 Years

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	9.9E-08	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	2.4E-07	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	6.0E-04
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	2.8E-04	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	1.4E-02
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	3.6E-07	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	1.2E-03
	(total)												1.6E-02
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	5.8E-08	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	2.4E-09	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	3.9E-05
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	2.7E-06	mg/kg-day	8.00E-04	mg/kg-day	NA	NA	3.4E-03
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	3.5E-09	mg/kg-day	2.10E-05	mg/kg-day	NA	NA	1.7E-04
	(total)												3.6E-03
												Total Hazard Index Across All Exposure Routes/Pathways	**1.9E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06

Metals - 0.001

SITE 8 - TABLE 8.3. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF CANCER RISKS
EXPOSURE OF ADOLESCENT TRESPASSERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Adolescent Trespasser
Receptor Age: 7-16 Years

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.4E-08	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	2.8E-08
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	3.4E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	3.9E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	5.1E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										2.8E-08
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	8.3E-09	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-08
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	3.4E-10	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	3.9E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	5.0E-10	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										1.7E-08
										Total Risk Across All Exposure Routes/Pathways	**4.5E-08**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06
Metals - 0.001

SITE 8 - TABLE 7.3a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF ADOLESCENT TRESPASSERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Adolescent Trespasser
Receptor Age: 7-16 Years

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	2.5E-08	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	6.0E-08	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	1.5E-04
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	6.9E-05	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	3.5E-03
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	8.9E-08	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	3.0E-04
	(total)												3.9E-03
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	3.9E-09	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	1.6E-10	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	2.6E-06
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	1.8E-07	mg/kg-day	8.00E-04	mg/kg-day	NA	NA	2.3E-04
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	2.3E-10	mg/kg-day	2.10E-05	mg/kg-day	NA	NA	1.1E-05
	(total)												2.4E-04

Total Hazard Index Across All Exposure Routes/Pathways **4.1E-03**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06

Metals - 0.001

SITE 8 - TABLE 8.3a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF CANCER RISKS
EXPOSURE OF ADOLESCENT TRESPASSERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Adolescent Trespasser
Receptor Age: 7-16 Years

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	3.5E-09	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	7.1E-09
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	8.6E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	9.9E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	1.3E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										7.1E-09
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	5.6E-10	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-09
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	2.2E-11	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	2.6E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	3.3E-11	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										1.1E-09
										Total Risk Across All Exposure Routes/Pathways	**8.2E-09**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06
Metals - 0.001

SITE 8 - TABLE 4.4

VALUES USED FOR DAILY INTAKE CALCULATIONS
EXPOSURE OF DAY CARE CENTER CHILDREN TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Day Care Child
Receptor Age: Child (0-6 Years)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cs	Chemical Concentration in Soil	(mg/kg)	95% UCL	EPA 1993a	95%UCL	EPA 1993a	EPA 1993a
	IRs	Ingestion Rate of Soil	(mg/day)	200	EPA 1993a	100	EPA 1993a	EPA 1993a
	EF	Exposure Frequency	(days/year)	250	EPA 1993a	219	EPA 1993a	Professional Judgement
	FI	Fraction Ingested	(unitless)	0.5	Professional Judgement	0.5	Professional Judgement	Professional Judgement
	ED	Exposure Duration	(years)	6	Professional Judgement	3	Professional Judgement	EPA 1993a
	CF	Conversion Factor	(mg/kg)	1.00E+06	EPA 1989a	1.00E+06	EPA 1989a	EPA 1989a
	BW	Body Weight	(kg)	15	EPA 1989a	15	EPA 1989a	EPA 1989a
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25550	EPA 1989a	EPA 1989a
	AT-N	Averaging Time (Noncancer)	(days)	2,190	EPA 1989a	1095	EPA 1989a	EPA 1989a
Dermal	Cs	Chemical Concentration in Soil	(mg/kg)	95%UCL	EPA 1993a	95%UCL	EPA 1993a	EPA 1993a
	AF	Soil to Skin Adherence Factor	(mg/cm^2)	0.3	EPA 2000	0.04	EPA 2000	EPA 1993a
	SA	Skin Surface Area	(cm^2)	3506	EPA 1997a	3506	EPA 1997a	EPA 1997a
	ABS	Absorption Factor	(unitless)	chemical-specific	EPA 1995b	chemical-specific	EPA 1995b	EPA 1995b
	EF	Exposure Frequency	(days/year)	250	EPA 1993a	219	EPA 1993a	Professional Judgement
	ED	Exposure Duration	(years)	6	Professional Judgement	3	Professional Judgement	EPA 1993a
	CF	Conversion Factor	(mg/kg)	1.00E+06	EPA 1989a	1.00E+06	EPA 1989a	EPA 1989a
	BW	Body Weight	(kg)	15	EPA 1989a	15	EPA 1989a	EPA 1989a
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25550	EPA 1989a	EPA 1989a
	AT-N	Averaging Time (Noncancer)	(days)	2,190	EPA 1989a	1095	EPA 1989a	EPA 1989a

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME	3.91E-07	Cancer Ingestion Intake - CTE	8.57E-08
Noncancer Ingestion Intake - RME	4.57E-06	Noncancer Ingestion Intake - CTE	2.00E-06
Cancer Dermal Intake - RME	4.12E-06	Cancer Dermal Intake - CTE	2.40E-07
Noncancer Dermal Intake - RME	4.80E-05	Noncancer Dermal Intake - CTE	5.61E-06

SITE 8 - TABLE 7.4. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF DAY CARE CENTER CHILDREN TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Day Care Child
Receptor Age: Child (0-6 Years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.4E-06	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	3.3E-06	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	8.3E-03
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	3.8E-03	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	1.9E-01
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	4.9E-06	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	1.6E-02
	(total)												2.2E-01
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	8.6E-07	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	3.5E-08	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	5.8E-04
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	4.0E-05	mg/kg-day	8.00E-04	mg/kg-day	NA	NA	5.0E-02
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	5.2E-08	mg/kg-day	2.10E-05	mg/kg-day	NA	NA	2.5E-03
	(total)												5.3E-02

Total Hazard Index Across All Exposure Routes/Pathways **2.7E-01**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06

Metals - 0.001

SITE 8 - TABLE 8.4. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF CANCER RISKS
EXPOSURE OF DAY CARE CENTER CHILDREN TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Day Care Child
Receptor Age: Child (0-6 Years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.2E-07	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	2.3E-07
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	2.8E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	3.3E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	4.2E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										2.3E-07
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	7.4E-08	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-07
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	3.0E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	3.4E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	4.4E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										1.5E-07
										Total Risk Across All Exposure Routes/Pathways	**3.8E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06
Metals - 0.001

SITE 8 - TABLE 7.4a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF DAY CARE CENTER CHILDREN TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Day Care Child
Receptor Age: Child (0-6 Years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	6.0E-07	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	1.5E-06	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	3.6E-03
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	1.7E-03	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	8.3E-02
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	2.2E-06	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	7.2E-03
	(total)												9.4E-02
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.0E-07	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	4.1E-09	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	6.8E-05
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	4.7E-06	mg/kg-day	8.00E-04	mg/kg-day	NA	NA	5.8E-03
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	6.1E-09	mg/kg-day	2.10E-05	mg/kg-day	NA	NA	2.9E-04
	(total)												6.2E-03
												Total Hazard Index Across All Exposure Routes/Pathways	**1.0E-01**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06
Metals - 0.001

SITE 8 - TABLE 8.4a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF CANCER RISKS
EXPOSURE OF DAY CARE CENTER CHILDREN TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Day Care Child
Receptor Age: Child (0-6 Years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	2.6E-08	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	5.1E-08
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	6.2E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	7.1E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	9.2E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										5.1E-08
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	4.3E-09	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	8.7E-09
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	1.8E-10	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	2.0E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	2.6E-10	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										8.7E-09
										Total Risk Across All Exposure Routes/Pathways	**6.0E-08**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06
Metals - 0.001

SITE 8 - TABLE 4.5

VALUES USED FOR DAILY INTAKE CALCULATIONS
EXPOSURE OF FUTURE ADULT RESIDENTS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cs	Chemical Concentration in Soil	(mg/kg)	95% UCL	EPA 1993a	95%UCL	EPA 1993a	Chronic Daily Intake (CDI) (mg/kg-day) =
	IRs	Ingestion Rate of Soil	(mg/day)	100	EPA 1993a	50	EPA 1993a	Cs x IRs x EF x ED / BW x AT x CF
	EF	Exposure Frequency	(days/year)	350	EPA 1993a	234	EPA 1993a	
	FI	Fraction Ingested	(unitless)	1	Professional Judgement	1	Professional Judgement	
	ED	Exposure Duration	(years)	24	EPA 1993a	7	EPA 1993a	
	CF	Conversion Factor	(mg/kg)	1.00E+06	EPA 1989a	1.00E+06	EPA 1989a	
	BW	Body Weight	(kg)	70	EPA 1989a	70	EPA 1989a	
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25,550	EPA 1989a	
	AT-N	Averaging Time (Noncancer)	(days)	8,760	EPA 1989a	2,555	EPA 1989a	
Dermal	Cs	Chemical Concentration in Soil	(mg/kg)	95%UCL	EPA 1993a	95%UCL	EPA 1993a	Chronic Daily Intake (CDI) (mg/kg-day) =
	AF	Soil to Skin Adherence Factor	(mg/cm^2)	0.07	EPA 2000	0.01	EPA 2000	Cs x SA x ABS x AF x EF x ED / BW x AT x CF
	SA	Skin Surface Area	(cm^2)	9000	EPA 1997a	9000	EPA 1997a	
	ABS	Absorption Factor	(unitless)	chemical-specific	EPA 1995b	chemical-specific	EPA 1995b	
	EF	Exposure Frequency	(days/year)	350	EPA 1993a	234	EPA 1993a	
	ED	Exposure Duration	(years)	24	EPA 1993a	7	EPA 1993a	
	CF	Conversion Factor	(mg/kg)	1.00E+06	EPA 1989a	1.00E+06	EPA 1989a	
	BW	Body Weight	(kg)	70	EPA 1989a	70	EPA 1989a	
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25,550	EPA 1989a	
	AT-N	Averaging Time (Noncancer)	(days)	8,760	EPA 1989a	2,555	EPA 1989a	

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME	4.70E-07	Cancer Ingestion Intake - CTE	4.58E-08
Noncancer Ingestion Intake - RME	1.37E-06	Noncancer Ingestion Intake - CTE	4.58E-07
Cancer Dermal Intake - RME	2.96E-06	Cancer Dermal Intake - CTE	8.24E-08
Noncancer Dermal Intake - RME	8.63E-06	Noncancer Dermal Intake - CTE	8.24E-07

SITE 8 - TABLE 7.5. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF FUTURE ADULT RESIDENTS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	4.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	1.0E-06	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	2.5E-03
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	1.1E-03	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	5.7E-02
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	1.5E-06	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	4.9E-03
	(total)												6.5E-02
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.6E-07	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	6.3E-09	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	1.0E-04
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	7.2E-06	mg/kg-day	8.00E-04	mg/kg-day	NA	NA	9.0E-03
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	9.3E-09	mg/kg-day	2.10E-05	mg/kg-day	NA	NA	4.4E-04
	(total)												9.5E-03

Total Hazard Index Across All Exposure Routes/Pathways **7.4E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06

Metals - 0.001

SITE 8 - TABLE 8.5. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF CANCER RISKS
EXPOSURE OF FUTURE ADULT RESIDENTS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.4E-07	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	2.8E-07
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	3.4E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	3.9E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	5.1E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										2.8E-07
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	5.3E-08	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-07
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	2.2E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	2.5E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	3.2E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										1.1E-07
										Total Risk Across All Exposure Routes/Pathways	**3.9E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06
Metals - 0.001

SITE 8 - TABLE 7.5a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF FUTURE ADULT RESIDENTS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.4E-07	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	3.3E-07	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	8.3E-04
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	3.8E-04	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	1.9E-02
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	4.9E-07	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	1.6E-03
	(total)												2.2E-02
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.5E-08	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	6.0E-10	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	1.0E-05
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	6.9E-07	mg/kg-day	8.00E-04	mg/kg-day	NA	NA	8.6E-04
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	8.9E-10	mg/kg-day	2.10E-05	mg/kg-day	NA	NA	4.2E-05
	(total)												9.1E-04

Total Hazard Index Across All Exposure Routes/Pathways **2.2E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06

Metals - 0.001

SITE 8 - TABLE 8.5a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF CANCER RISKS
EXPOSURE OF FUTURE ADULT RESIDENTS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.4E-08	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	2.7E-08
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	3.3E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	3.8E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	4.9E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										2.7E-08
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.5E-09	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	3.0E-09
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	6.0E-11	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	6.9E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	8.9E-11	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										3.0E-09
										Total Risk Across All Exposure Routes/Pathways	**3.0E-08**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06
Metals - 0.001

SITE 8 - TABLE 4.6

VALUES USED FOR DAILY INTAKE CALCULATIONS
EXPOSURE OF FUTURE CHILD RESIDENTS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Resident
Receptor Age: Child (0-6 Years)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cs	Chemical Concentration in Soil	(mg/kg)	95% UCL	EPA 1993a	95%UCL	EPA 1993a	Chronic Daily Intake (CDI) (mg/kg-day) =
	IRs	Ingestion Rate of Soil	(mg/day)	200	EPA 1993a	100	EPA 1993a	Cs x IRs x EF x ED
	EF	Exposure Frequency	(days/year)	350	EPA 1993a	234	EPA 1993a	BW x AT x CF
	FI	Fraction Ingested	(unitless)	1	Professional Judgement	1	Professional Judgement	
	ED	Exposure Duration	(years)	6	EPA 1993a	2	EPA 1993a	
	CF	Conversion Factor	(mg/kg)	1.00E+06	EPA 1989a	1.00E+06	EPA 1989a	
	BW	Body Weight	(kg)	15	EPA 1989a	15	EPA 1989a	
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25,550	EPA 1989a	
	AT-N	Averaging Time (Noncancer)	(days)	2,190	EPA 1989a	730	EPA 1989a	
Dermal	Cs	Chemical Concentration in Soil	(mg/kg)	95%UCL	EPA 1993a	95%UCL	EPA 1993a	Chronic Daily Intake (CDI) (mg/kg-day) =
	AF	Soil to Skin Adherence Factor	(mg/cm^2)	0.2	EPA 2000	0.04	EPA 2000	Cs x SA x ABS x AF x EF x ED
	SA	Skin Surface Area	(cm^2)	3506	EPA 1997a	3506	EPA 1997a	BW x AT x CF
	ABS	Absorption Factor	(unitless)	chemical-specific	EPA 1995b	chemical-specific	EPA 1995b	
	EF	Exposure Frequency	(days/year)	350	EPA 1993a	234	EPA 1993a	
	ED	Exposure Duration	(years)	6	EPA 1993a	2	EPA 1993a	
	CF	Conversion Factor	(mg/kg)	1.00E+06	EPA 1989a	1.00E+06	EPA 1989a	
	BW	Body Weight	(kg)	15	EPA 1989a	15	EPA 1989a	
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25,550	EPA 1989a	
	AT-N	Averaging Time (Noncancer)	(days)	2,190	EPA 1989a	730	EPA 1989a	

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME	1.10E-06	Cancer Ingestion Intake - CTE	1.22E-07
Noncancer Ingestion Intake - RME	1.28E-05	Noncancer Ingestion Intake - CTE	4.27E-06
Cancer Dermal Intake - RME	3.84E-06	Cancer Dermal Intake - CTE	1.71E-07
Noncancer Dermal Intake - RME	4.48E-05	Noncancer Dermal Intake - CTE	5.99E-06

SITE 8 - TABLE 7.6. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF FUTURE CHILD RESIDENTS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Resident
Receptor Age: Child (0-6 Years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	3.8E-06	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	9.3E-06	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	2.3E-02
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	1.1E-02	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	5.3E-01
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	1.4E-05	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	4.6E-02
	(total)												6.0E-01
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	8.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	3.3E-08	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	5.4E-04
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	3.7E-05	mg/kg-day	8.00E-04	mg/kg-day	NA	NA	4.7E-02
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	4.8E-08	mg/kg-day	2.10E-05	mg/kg-day	NA	NA	2.3E-03
	(total)												5.0E-02
												Total Hazard Index Across All Exposure Routes/Pathways	**6.5E-01**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06

Metals - 0.001

SITE 8 - TABLE 8.6. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF CANCER RISKS
EXPOSURE OF FUTURE CHILD RESIDENTS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Resident
Receptor Age: Child (0-6 Years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	3.3E-07	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	6.6E-07
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	8.0E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	9.1E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	1.2E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										6.6E-07
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	6.9E-08	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-07
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	2.8E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	3.2E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	4.1E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										1.4E-07
										Total Risk Across All Exposure Routes/Pathways	**8.0E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06
Metals - 0.001

SITE 8 - TABLE 7.6a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF FUTURE CHILD RESIDENTS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Resident
Receptor Age: Child (0-6 Years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.3E-06	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	3.1E-06	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	7.8E-03
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	3.6E-03	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	1.8E-01
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	4.6E-06	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	1.5E-02
	(total)												2.0E-01
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	4.4E-09	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	7.3E-05
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	5.0E-06	mg/kg-day	8.00E-04	mg/kg-day	NA	NA	6.2E-03
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	6.5E-09	mg/kg-day	2.10E-05	mg/kg-day	NA	NA	3.1E-04
	(total)												6.6E-03
												Total Hazard Index Across All Exposure Routes/Pathways	**2.1E-01**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06

Metals - 0.001

SITE 8 - TABLE 8.6a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF CANCER RISKS
EXPOSURE OF FUTURE CHILD RESIDENTS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Resident
Receptor Age: Child (0-6 Years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	3.7E-08	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	7.3E-08
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	8.9E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	1.0E-04	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	1.3E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										7.3E-08
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	3.1E-09	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	6.2E-09
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	1.2E-10	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	1.4E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	1.8E-10	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										6.2E-09
										Total Risk Across All Exposure Routes/Pathways	**7.9E-08**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06
Metals - 0.001

SITE 8 - TABLE 4.7

VALUES USED FOR DAILY INTAKE CALCULATIONS
EXPOSURE OF MAINTENANCE / UTILITY WORKERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Maintenance / Utility Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cs	Chemical Concentration in Soil	(mg/kg)	95% UCL	EPA 1993a	95%UCL	EPA 1993a	EPA 1993a
	IRs	Ingestion Rate of Soil	(mg/day)	100	EPA 1993a	50	EPA 1993a	EPA 1993a
	EF	Exposure Frequency	(days/year)	36	Professional Judgement	18	Professional Judgement	Professional Judgement
	FI	Fraction Ingested	(unitless)	1	Professional Judgement	1	Professional Judgement	Professional Judgement
	ED	Exposure Duration	(years)	25	EPA 1993a	9	EPA 1993a	EPA 1993a
	CF	Conversion Factor	(mg/kg)	1.00E+06	EPA 1989a	1.00E+06	EPA 1989a	EPA 1989a
	BW	Body Weight	(kg)	70	EPA 1989a	70	EPA 1989a	EPA 1989a
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25,550	EPA 1989a	EPA 1989a
	AT-N	Averaging Time (Noncancer)	(days)	9,125	EPA 1989a	3,285	EPA 1989a	EPA 1989a
Dermal	Cs	Chemical Concentration in Soil	(mg/kg)	95%UCL	EPA 1993a	95%UCL	EPA 1993a	EPA 1993a
	AF	Soil to Skin Adherence Factor	(mg/cm^2)	0.3	EPA 2000	0.1	EPA 2000	EPA 1993a
	SA	Skin Surface Area	(cm^2)	3160	EPA 1997a	3160	EPA 1997a	EPA 1997a
	ABS	Absorption Factor	(unitless)	chemical-specific	EPA 1995b	chemical-specific	EPA 1995b	EPA 1995b
	EF	Exposure Frequency	(days/year)	36	Professional Judgement	18	Professional Judgement	Professional Judgement
	ED	Exposure Duration	(years)	25	EPA 1993a	9	EPA 1993a	EPA 1993a
	CF	Conversion Factor	(mg/kg)	1.00E+06	EPA 1989a	1.00E+06	EPA 1989a	EPA 1989a
	BW	Body Weight	(kg)	70	EPA 1989a	70	EPA 1989a	EPA 1989a
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25,550	EPA 1989a	EPA 1989a
	AT-N	Averaging Time (Noncancer)	(days)	9,125	EPA 1989a	3,285	EPA 1989a	EPA 1989a

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME	5.03E-08	Cancer Ingestion Intake - CTE	4.53E-09
Noncancer Ingestion Intake - RME	1.41E-07	Noncancer Ingestion Intake - CTE	3.52E-08
Cancer Dermal Intake - RME	4.77E-07	Cancer Dermal Intake - CTE	2.86E-08
Noncancer Dermal Intake - RME	1.34E-06	Noncancer Dermal Intake - CTE	2.23E-07

SITE 8 - TABLE 7.7. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF MAINTENANCE / UTILITY WORKERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Maintenance / Utility Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	4.2E-08	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	1.0E-07	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	2.6E-04
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	1.2E-04	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	5.9E-03
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	1.5E-07	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	5.1E-04
	(total)												6.6E-03
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	2.4E-08	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	9.7E-10	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	1.6E-05
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	1.1E-06	mg/kg-day	8.00E-04	mg/kg-day	NA	NA	1.4E-03
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	1.4E-09	mg/kg-day	2.10E-05	mg/kg-day	NA	NA	6.9E-05
	(total)												1.5E-03
												Total Hazard Index Across All Exposure Routes/Pathways	**8.1E-03**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06

Metals - 0.001

SITE 8 - TABLE 8.7. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF CANCER RISKS
EXPOSURE OF MAINTENANCE / UTILITY WORKERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Maintenance / Utility Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.5E-08	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	3.0E-08
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	3.7E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	4.2E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	5.4E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										3.0E-08
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	8.6E-09	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-08
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	3.5E-10	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	4.0E-07	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	5.1E-10	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										1.7E-08
										Total Risk Across All Exposure Routes/Pathways	**4.7E-08**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06
Metals - 0.001

SITE 8 - TABLE 7.7a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF MAINTENANCE / UTILITY WORKERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Maintenance / Utility Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.1E-08	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	2.6E-08	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	6.4E-05
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	2.9E-05	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	1.5E-03
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	3.8E-08	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	1.3E-04
	(total)												1.7E-03
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	4.0E-09	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	1.6E-10	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	2.7E-06
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	1.9E-07	mg/kg-day	8.00E-04	mg/kg-day	NA	NA	2.3E-04
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	2.4E-10	mg/kg-day	2.10E-05	mg/kg-day	NA	NA	1.1E-05
	(total)												2.5E-04
												Total Hazard Index Across All Exposure Routes/Pathways	**1.9E-03**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06
Metals - 0.001

SITE 8 - TABLE 8.7a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF CANCER RISKS
EXPOSURE OF MAINTENANCE / UTILITY WORKERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Maintenance / Utility Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.4E-09	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	2.7E-09
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	3.3E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	3.8E-06	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	4.9E-09	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										2.7E-09
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	5.2E-10	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	1.0E-09
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	2.1E-11	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	2.4E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	3.1E-11	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										1.0E-09
										Total Risk Across All Exposure Routes/Pathways	**3.7E-09**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06
Metals - 0.001

SITE 8 - TABLE 4.8

VALUES USED FOR DAILY INTAKE CALCULATIONS
EXPOSURE OF CONSTRUCTION WORKERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cs	Chemical Concentration in Soil	(mg/kg)	95% UCL	EPA 1993a	95%UCL	EPA 1993a	EPA 1993a
	IRs	Ingestion Rate of Soil	(mg/day)	480	EPA 1993a	240	EPA 1993a	EPA 1993a
	EF	Exposure Frequency	(days/year)	180	Professional Judgement	180	Professional Judgement	Professional Judgement
	FI	Fraction Ingested	(unitless)	1	Professional Judgement	1	Professional Judgement	Professional Judgement
	ED	Exposure Duration	(years)	1	Professional Judgement	1	Professional Judgement	EPA 1993a
	CF	Conversion Factor	(mg/kg)	1.00E+06	EPA 1989a	1.00E+06	EPA 1989a	EPA 1989a
	BW	Body Weight	(kg)	70	EPA 1989a	70	EPA 1989a	EPA 1989a
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25,550	EPA 1989a	EPA 1989a
	AT-N	Averaging Time (Noncancer)	(days)	365	EPA 1989a	365	EPA 1989a	EPA 1989a
Dermal	Cs	Chemical Concentration in Soil	(mg/kg)	95%UCL	EPA 1993a	95%UCL	EPA 1993a	EPA 1993a
	AF	Soil to Skin Adherence Factor	(mg/cm^2)	0.3	EPA 2000	0.1	EPA 2000	EPA 1993a
	SA	Skin Surface Area	(cm^2)	3160	EPA 1997a	3160	EPA 1997a	EPA 1997a
	ABS	Absorption Factor	(unitless)	chemical-specific	EPA 1995b	chemical-specific	EPA 1995b	EPA 1995b
	EF	Exposure Frequency	(days/year)	180	Professional Judgement	180	Professional Judgement	Professional Judgement
	ED	Exposure Duration	(years)	1	Professional Judgement	1	Professional Judgement	EPA 1993a
	CF	Conversion Factor	(mg/kg)	1.00E+06	EPA 1989a	1.00E+06	EPA 1989a	EPA 1989a
	BW	Body Weight	(kg)	70	EPA 1989a	70	EPA 1989a	EPA 1989a
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25,550	EPA 1989a	EPA 1989a
	AT-N	Averaging Time (Noncancer)	(days)	365	EPA 1989a	365	EPA 1989a	EPA 1989a

Daily Intake Calculations

Ingestion Intake = (IR x Fi x EF x ED x CF) / (BW x AT)
Dermal Intake = (CF x SA x AF x ABS x EF x ED) / (BW x AT)

Cancer Ingestion Intake - RME	4.83E-08	Cancer Ingestion Intake - CTE	2.42E-08
Noncancer Ingestion Intake - RME	3.38E-06	Noncancer Ingestion Intake - CTE	1.69E-06
Cancer Dermal Intake - RME	9.54E-08	Cancer Dermal Intake - CTE	3.18E-08
Noncancer Dermal Intake - RME	6.68E-06	Noncancer Dermal Intake - CTE	2.23E-06

SITE 8 - TABLE 7.8. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF CONSTRUCTION WORKERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.0E-06	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	2.5E-06	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	6.2E-03
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	2.8E-03	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	1.4E-01
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	3.6E-06	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	1.2E-02
	(total)												1.6E-01
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.2E-07	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	4.9E-09	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	8.1E-05
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	5.6E-06	mg/kg-day	8.00E-04	mg/kg-day	NA	NA	7.0E-03
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	7.2E-09	mg/kg-day	2.10E-05	mg/kg-day	NA	NA	3.4E-04
	(total)												7.4E-03
												Total Hazard Index Across All Exposure Routes/Pathways	**1.7E-01**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06

Metals - 0.001

SITE 8 - TABLE 8.8. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF CANCER RISKS
EXPOSURE OF CONSTRUCTION WORKERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.4E-08	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	2.9E-08
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	3.5E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	4.0E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	5.2E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										2.9E-08
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	1.7E-09	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	3.4E-09
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	6.9E-11	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	8.0E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	1.0E-10	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										3.4E-09
										Total Risk Across All Exposure Routes/Pathways	**3.2E-08**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06
Metals - 0.001

SITE 8 - TABLE 7.8a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF CONSTRUCTION WORKERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	5.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	1.2E-06	mg/kg-day	4.00E-04	mg/kg-day	NA	NA	3.1E-03
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	1.4E-03	mg/kg-day	2.00E-02	mg/kg-day	NA	NA	7.1E-02
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	1.8E-06	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	6.1E-03
	(total)												8.0E-02
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	4.0E-08	mg/kg-day		mg/kg-day	NA	NA	
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	1.6E-09	mg/kg-day	6.00E-05	mg/kg-day	NA	NA	2.7E-05
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	1.9E-06	mg/kg-day	8.00E-04	mg/kg-day	NA	NA	2.3E-03
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	2.4E-09	mg/kg-day	2.10E-05	mg/kg-day	NA	NA	1.1E-04
	(total)												2.5E-03

Total Hazard Index Across All Exposure Routes/Pathways **8.2E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06

Metals - 0.001

SITE 8 - TABLE 8.8a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF CANCER RISKS
EXPOSURE OF CONSTRUCTION WORKERS TO SURFACE / SUBSURFACE SOIL BASED ON POST-REMOVAL SOIL DATA
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Surface / Subsurface Soil
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	7.2E-09	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-08
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	1.8E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	2.0E-05	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	2.6E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										1.4E-08
Dermal	Aroclor-1260	3.00E-01	mg/kg	3.00E-01	mg/kg	M	5.7E-10	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-09
	Antimony	7.28E-01	mg/kg	7.28E-01	mg/kg	M	2.3E-11	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Manganese	8.34E+02	mg/kg	8.34E+02	mg/kg	M	2.7E-08	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	Mercury	1.08E+00	mg/kg	1.08E+00	mg/kg	M	3.4E-11	mg/kg-day		$(mg/kg\text{-}day)^{-1}$	
	(total)										1.1E-09
										Total Risk Across All Exposure Routes/Pathways	**1.6E-08**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Dermal Absorption Fraction (ABS)(USEPA, 2000):

PCBs - 0.06
Metals - 0.001

SITE 8 - TABLE 4.9

VALUES USED FOR DAILY INTAKE CALCULATIONS
EXPOSURE OF MAINTENANCE / UTILITY WORKERS TO GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Surficial Aquifer
Receptor Population: Maintenance / Utility Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Dermal	Cw	Chemical Concentration in Water	(mg/L)	95%UCL	EPA 1993a	95%UCL	EPA 1993a	Dermally Absorbed Dose =
	A	Skin Surface Area	(cm^2)	9,000	EPA 1997a	9,000	EPA 1997a	DAevent x EV x EF x ED x A / BW x AT
	Kp	Permeability Constant	(cm/hr)	Chemical-specific	EPA 1992d	Chemical-specific	EPA 1992d	
	EV	Event Frequency	(events/day)	1	Professional judgement	1	Professional Judgement	
	EF	Exposure Frequency	(days/year)	36	Professional judgement	18	Professional Judgement	DAevent = Constants x Kp x Cw x tevent
	ED	Exposure Duration	(years)	25	EPA 1993a	9	EPA 1993a	
	BW	Body Weight	(kg)	70	EPA 1989a	70	EPA 1989a	
	tevent	Duration of Event	(hr/event)	1	Professional judgement	1	Professional Judgement	
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25,550	EPA 1989a	
	AT-N	Averaging Time (Noncancer)	(days)	9,125	EPA 1989a	3,285	EPA 1989a	
Inhalation	Cair	Chemical Concentration in Air	(mg/m^3)	Derived	EPA 1989a	Derived	EPA 1989a	Chronic Daily Intake (CDI) (mg/kg-day)=
	IRa	Inhalation Rate of volatiles	(m^3/hr)	2.5	EPA 1989a	2.5	EPA 1989a	Cair x IRa x ET x EF x ED / BW x AT
	EF	Exposure Frequency	(days/year)	36	Professional judgement	18	Professional Judgement	
	ED	Exposure Duration	(years)	25	EPA 1993a	9	EPA 1993a	
	ET	Exposure Time	(hr/day)	8	Professional judgement	4	Professional Judgement	
	BW	Body Weight	(kg)	70	EPA 1989a	70	EPA 1989a	
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25550	EPA 1989a	
	AT-N	Averaging Time (Noncancer)	(days)	9,125	EPA 1989a	3285	EPA 1989a	

Daily Intake Calculations
Inhalation Intake = (IRa x ET x EF x ED) / (BW x AT)
Dermal Intake = (A x EV x ED x EF) / (BW x AT)

Cancer Dermal Intake(RME) = 4.53E+00
Noncancer Dermal Intake(RME) = 1.27E+01

Cancer Dermal Intake(CTE) = 8.15E-01
Noncancer Dermal Intake(CTE) = 6.34E+00

Cancer Inhalation Intake(RME) = 1.01E-02
Noncancer Inhalation Intake(RME) = 2.82E-02

Cancer Inhalation Intake(CTE) = 9.06E-04
Noncancer Inhalation Intake(CTE) = 7.05E-03

CALCULATION OF DAevent - EXPOSURES THROUGH DERMAL CONTACT WITH GROUNDWATER
REASONABLE MAXIMUM EXPOSURE (RME) EXPOSURE OF MAINTENANCE / UTILITY WORKERS TO GROUNDWATER

SITE NAME: SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
LOCATION: NSWC-WHITE OAK SILVER SPRING, MARYLAND
DATE: 10/29/01

REFERENCES: EPA, DECEMBER 1989 AND JANUARY 1992

DERMAL CONTACT: DAD = (DAevent x EV x ED x EF x A)/(BW x AT)

WHERE: DAD = DERMALLY ABSORBED DOSE (MG/KG/DAY)
DAevent = ABSORBED DOSE PER EVENT (MG/CM^2/EVENT)
A = SKIN SURFACE AREA AVAILABLE FOR CONTACT(CM^2)
EV = EVENT FREQUENCY (EVENTS/DAY)
ED = EXPOSURE DURATION (YEARS)
EF = EXPOSURE FREQUENCY (DAYS/YEAR)
BW = BODY WEIGHT(KG)
AT = AVERAGING TIME (DAYS)

FOR INORGANICS: DAevent = Kp x C x tevent x CF

FOR ORGANICS: IF tevent < t*, DAevent = 2Kp x C x CF x (6T x tevent/3.141592654)$^{0.5}$
IF tevent > t*, DAevent = Kp x C x CF x ((tevent/(1 + B)) + (2T x ((1+3B)/(1 + B))))

WHERE: Kp = PERMEABILITY COEFFICIENT FROM WATER (CM/HR)
C = CONCENTRATION OF CHEMICAL IN WATER (MG/L)
tevent = DURATION OF EVENT (HR/EVENT)
CF = CONVERSION FACTOR (1L/1000 CM^3)
t* = TIME IT TAKES TO REACH STEADY-STATE (HOUR/EVENT)
T = LAG TIME (HOUR/EVENT)
B = BUNGE MODEL CONSTANT (DIMENSIONLESS)

CHEMICAL	GW CONC. (mg/L)		ORGANIC OR INORGANIC?		t* (HR)	tevent	T (HR)		Kp (CM/HR)		B	DAevent
1,1,2-Trichloroethane	1.70E-03		o		1.40E+00	1.00E+00	5.70E-01		8.40E-03		1.10E-02	2.98E-08
Chloroform	7.20E-03		o		1.10E+00	1.00E+00	4.70E-01		8.90E-03		9.30E-03	1.21E-07
Vinyl Chloride	9.20E-04		o		5.10E-01	1.00E+00	2.10E-01		7.30E-03		2.30E-03	9.53E-09
Arsenic	5.30E-03		i			1.00E+00			1.00E-03			5.30E-09
Chromium	2.11E-01		i			1.00E+00			2.00E-03			4.22E-07
Vanadium	4.00E-02		i			1.00E+00			1.00E-03			4.00E-08

SITE 8 - TABLE 7.9. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF MAINTENANCE / UTILITY WORKERS TO GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Surficial Aquifer
Receptor Population: Maintenance / Utility Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2-Trichloroethane	1.70E-03	mg/L	8.86E-09	mg/m^3	R	2.5E-10	mg/kg-day		mg/kg-day	NA	NA	
	Chloroform	7.20E-03	mg/L	9.20E-08	mg/m^3	R	2.6E-09	mg/kg-day	8.60E-05	mg/kg-day	NA	NA	3.0E-05
	Vinyl Chloride	9.20E-04	mg/L	4.97E-08	mg/m^3	R	1.4E-09	mg/kg-day	2.80E-02	mg/kg-day	NA	NA	5.0E-08
	(total)												3.0E-05
Dermal	1,1,2-Trichloroethane	1.70E-03	mg/L	1.70E-03	mg/L	M	3.8E-07	mg/kg-day	4.00E-03	mg/kg-day	NA	NA	9.4E-05
	Chloroform	7.20E-03	mg/L	7.20E-03	mg/L	M	1.5E-06	mg/kg-day	1.00E-02	mg/kg-day	NA	NA	1.5E-04
	Vinyl Chloride	9.20E-04	mg/L	9.20E-04	mg/L	M	1.2E-07	mg/kg-day	3.00E-03	mg/kg-day	NA	NA	4.0E-05
	Arsenic	5.30E-03	mg/L	5.30E-03	mg/L	M	6.7E-08	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	2.2E-04
	Chromium	2.11E-01	mg/L	2.11E-01	mg/L	M	5.4E-06	mg/kg-day	3.75E-02	mg/kg-day	NA	NA	1.4E-04
	Vanadium	4.00E-02	mg/L	4.00E-02	mg/L	M	5.1E-07	mg/kg-day	1.82E-04	mg/kg-day	NA	NA	2.8E-03
	(total)												3.4E-03
												Total Hazard Index Across All Exposure Routes/Pathways	**3.5E-03**

(1) . Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

SITE 8 - TABLE 8.9. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF CANCER RISKS
EXPOSURE OF MAINTENANCE / UTILITY WORKERS TO GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Surficial Aquifer
Receptor Population: Maintenance / Utility Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2-Trichloroethane	1.70E-03	mg/L	8.86E-09	mg/m^3	R	8.9E-11	mg/kg-day	5.60E-02	$(mg/kg\text{-}day)^{-1}$	5.0E-12
	Chloroform	7.20E-03	mg/L	9.20E-08	mg/m^3	R	9.3E-10	mg/kg-day	8.10E-02	$(mg/kg\text{-}day)^{-1}$	7.5E-11
	Vinyl Chloride	9.20E-04	mg/L	4.97E-08	mg/m^3	R	5.0E-10	mg/kg-day	1.50E-02	$(mg/kg\text{-}day)^{-1}$	7.5E-12
	(total)										8.7E-11
Dermal	1,1,2-Trichloroethane	1.70E-03	mg/L	1.70E-03	mg/L	M	1.3E-07	mg/kg-day	5.70E-02	$(mg/kg\text{-}day)^{-1}$	7.7E-09
	Chloroform	7.20E-03	mg/L	7.20E-03	mg/L	M	5.5E-07	mg/kg-day	6.10E-03	$(mg/kg\text{-}day)^{-1}$	3.4E-09
	Vinyl Chloride	9.20E-04	mg/L	9.20E-04	mg/L	M	4.3E-08	mg/kg-day	7.20E-01	$(mg/kg\text{-}day)^{-1}$	3.1E-08
	Arsenic	5.30E-03	mg/L	5.30E-03	mg/L	M	2.4E-08	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	3.6E-08
	(total)										7.8E-08
										Total Risk Across All Exposure Routes/Pathways	**7.8E-08**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

CALCULATION OF DAevent - EXPOSURES THROUGH DERMAL CONTACT WITH GROUNDWATER
CENTRAL TENDENCY EXPOSURE (CTE) EXPOSURE OF MAINTENANCE / UTILITY WORKERS TO GROUNDWATER

SITE NAME: SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
LOCATION: NSWC-WHITE OAK SILVER SPRING, MARYLAND
DATE: 10/29/01

REFERENCES: EPA, DECEMBER 1989 AND JANUARY 1992

DERMAL CONTACT: DAD = (DAevent x EV x ED x EF x A)/(BW x AT)

WHERE: DAD = DERMALLY ABSORBED DOSE (MG/KG/DAY)
DAevent = ABSORBED DOSE PER EVENT (MG/CM^2/EVENT)
A = SKIN SURFACE AREA AVAILABLE FOR CONTACT(CM^2)
EV = EVENT FREQUENCY (EVENTS/DAY)
ED = EXPOSURE DURATION (YEARS)
EF = EXPOSURE FREQUENCY (DAYS/YEAR)
BW = BODY WEIGHT(KG)
AT = AVERAGING TIME (DAYS)

FOR INORGANICS: DAevent = Kp x C x tevent x CF

FOR ORGANICS: IF tevent < t*, DAevent = 2Kp x C x CF x (6T x tevent/3.141592654)$^{0.5}$
IF tevent > t*, DAevent = Kp x C x CF x ((tevent/(1 + B)) + (2T x ((1+3B)/(1 + B))))

WHERE: Kp = PERMEABILITY COEFFICIENT FROM WATER (CM/HR)
C = CONCENTRATION OF CHEMICAL IN WATER (MG/L)
tevent = DURATION OF EVENT (HR/EVENT)
CF = CONVERSION FACTOR (1L/1000 CM^3)
t* = TIME IT TAKES TO REACH STEADY-STATE (HOUR/EVENT)
T = LAG TIME (HOUR/EVENT)
B = BUNGE MODEL CONSTANT (DIMENSIONLESS)

CHEMICAL	GW CONC. (mg/L)		ORGANIC OR INORGANIC?		t* (HR)	tevent	T (HR)		Kp (CM/HR)		B	DAevent
1,1,2-Trichloroethane	7.67E-04		o		1.40E+00	1.00E+00	5.70E-01		8.40E-03		1.10E-02	1.34E-08
Chloroform	3.69E-03		o		1.10E+00	1.00E+00	4.70E-01		8.90E-03		9.30E-03	6.23E-08
Vinyl Chloride	5.70E-04		o		5.10E-01	1.00E+00	2.10E-01		7.30E-03		2.30E-03	5.90E-09
Arsenic	2.80E-03		i			1.00E+00			1.00E-03			2.80E-09
Cadmium			i			1.00E+00			1.00E-03			0.00E+00
Chromium	6.42E-02		i			1.00E+00			2.00E-03			1.28E-07
Vanadium	1.92E-02		i			1.00E+00			1.00E-03			1.92E-08

SITE 8 - TABLE 7.9a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF MAINTENANCE / UTILITY WORKERS TO GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Surficial Aquifer
Receptor Population: Maintenance / Utility Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2-Trichloroethane	7.67E-04	mg/L	3.99E-09	mg/m^3	R	2.8E-11	mg/kg-day		mg/kg-day	NA	NA	
	Chloroform	3.69E-03	mg/L	4.72E-08	mg/m^3	R	3.3E-10	mg/kg-day	8.60E-05	mg/kg-day	NA	NA	3.9E-06
	Vinyl Chloride	5.70E-04	mg/L	3.08E-08	mg/m^3	R	2.2E-10	mg/kg-day	2.80E-02	mg/kg-day	NA	NA	7.7E-09
	(total)												3.9E-06
Dermal	1,1,2-Trichloroethane	7.67E-04	mg/L	7.67E-04	mg/L	M	8.5E-08	mg/kg-day	4.00E-03	mg/kg-day	NA	NA	2.1E-05
	Chloroform	3.69E-03	mg/L	3.69E-03	mg/L	M	3.9E-07	mg/kg-day	1.00E-02	mg/kg-day	NA	NA	3.9E-05
	Vinyl Chloride	5.70E-04	mg/L	5.70E-04	mg/L	M	3.7E-08	mg/kg-day	3.00E-03	mg/kg-day	NA	NA	1.2E-05
	Arsenic	2.80E-03	mg/L	2.80E-03	mg/L	M	1.8E-08	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	5.9E-05
	Chromium	6.42E-02	mg/L	6.42E-02	mg/L	M	8.1E-07	mg/kg-day	3.75E-02	mg/kg-day	NA	NA	2.2E-05
	Vanadium	1.92E-02	mg/L	1.92E-02	mg/L	M	1.2E-07	mg/kg-day	1.82E-04	mg/kg-day	NA	NA	6.7E-04
	(total)												8.2E-04

Total Hazard Index Across All Exposure Routes/Pathways **8.3E-04**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

SITE 8 - TABLE 8.9a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF CANCER RISKS
EXPOSURE OF MAINTENANCE / UTILITY WORKERS TO GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Surficial Aquifer
Receptor Population: Maintenance / Utility Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2-Trichloroethane	7.67E-04	mg/L	3.99E-09	mg/m^3	R	3.6E-12	mg/kg-day	5.60E-02	$(mg/kg\text{-}day)^{-1}$	2.0E-13
	Chloroform	3.69E-03	mg/L	4.72E-08	mg/m^3	R	4.3E-11	mg/kg-day	8.10E-02	$(mg/kg\text{-}day)^{-1}$	3.5E-12
	Vinyl Chloride	5.70E-04	mg/L	3.08E-08	mg/m^3	R	2.8E-11	mg/kg-day	1.50E-02	$(mg/kg\text{-}day)^{-1}$	4.2E-13
	(total)										4.1E-12
Dermal	1,1,2-Trichloroethane	7.67E-04	mg/L	7.67E-04	mg/L	M	1.1E-08	mg/kg-day	5.70E-02	$(mg/kg\text{-}day)^{-1}$	6.2E-10
	Chloroform	3.69E-03	mg/L	3.69E-03	mg/L	M	5.1E-08	mg/kg-day	6.10E-03	$(mg/kg\text{-}day)^{-1}$	3.1E-10
	Vinyl Chloride	5.70E-04	mg/L	5.70E-04	mg/L	M	4.8E-09	mg/kg-day	7.20E-01	$(mg/kg\text{-}day)^{-1}$	3.5E-09
	Arsenic	2.80E-03	mg/L	2.80E-03	mg/L	M	2.3E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	3.4E-09
	(total)										7.8E-09
										Total Risk Across All Exposure Routes/Pathways	**7.8E-09**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

SITE 8 - TABLE 4.10

VALUES USED FOR DAILY INTAKE CALCULATIONS
EXPOSURE OF CONSTRUCTION WORKERS TO GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Surficial Aquifer
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Dermal	Cw	Chemical Concentration in Water	(mg/L)	95%UCL	EPA 1993a	95%UCL	EPA 1993a	Dermally Absorbed Dose =
	A	Skin Surface Area	(cm^2)	9,000	EPA 1997a	9,000	EPA 1997a	DAevent x EV x EF x ED x A
	Kp	Permeability Constant	(cm/hr)	Chemical-specific	EPA 1992d	Chemical-specific	EPA 1992d	BW x AT
	EV	Event Frequency	(events/day)	1	Professional judgement	1	Professional Judgement	
	EF	Exposure Frequency	(days/year)	180	Professional judgement	180	Professional Judgement	DAevent = Constants x Kp x Cw x tevent
	ED	Exposure Duration	(years)	1	EPA 1993a	1	EPA 1993a	
	BW	Body Weight	(kg)	70	EPA 1989a	70	EPA 1989a	
	tevent	Duration of Event	(hr/event)	1	Professional judgement	1	Professional Judgement	
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25,550	EPA 1989a	
	AT-N	Averaging Time (Noncancer)	(days)	365	EPA 1989a	365	EPA 1989a	
Inhalation	Cair	Chemical Concentration in Air	(mg/m^3)	Derived	EPA 1989a	Derived	EPA 1989a	Chronic Daily Intake (CDI) (mg/kg-day)=
	IRa	Inhalation Rate of volatiles	(m^3/hr)	4.8	EPA 1989a	4.8	EPA 1989a	Cair x IRa x ET x EF x ED
	EF	Exposure Frequency	(days/year)	180	Professional judgement	180	Professional Judgement	BW x AT
	ED	Exposure Duration	(years)	1	EPA 1993a	1	EPA 1993a	
	ET	Exposure Time	(hr/day)	8	Professional judgement	4	Professional Judgement	
	BW	Body Weight	(kg)	70	EPA 1989a	70	EPA 1989a	
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25550	EPA 1989a	
	AT-N	Averaging Time (Noncancer)	(days)	365	EPA 1989a	365	EPA 1989a	

Daily Intake Calculations
Inhalation Intake = (IRa x ET x EF x ED) / (BW x AT)
Dermal Intake = (A x EV x ED x EF) / (BW x AT)

Cancer Dermal Intake(RME) = 9.06E-01
Noncancer Dermal Intake(RME) = 6.34E+01

Cancer Dermal Intake(CTE) = 9.06E-01
Noncancer Dermal Intake(CTE) = 6.34E+01

Cancer Inhalation Intake(RME) = 3.86E-03
Noncancer Inhalation Intake(RME) = 2.71E-01

Cancer Inhalation Intake(CTE) = 1.93E-03
Noncancer Inhalation Intake(CTE) = 1.35E-01

CALCULATION OF DAevent - EXPOSURES THROUGH DERMAL CONTACT WITH GROUNDWATER
REASONABLE MAXIMUM EXPOSURE (RME) EXPOSURE OF CONSTRUCTION WORKERS TO GROUNDWATER

SITE NAME: SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
LOCATION: NSWC-WHITE OAK SILVER SPRING, MARYLAND
DATE: 10/29/01

REFERENCES: EPA, DECEMBER 1989 AND JANUARY 1992

DERMAL CONTACT: DAD = (DAevent x EV x ED x EF x A)/(BW x AT)

WHERE: DAD = DERMALLY ABSORBED DOSE (MG/KG/DAY)
DAevent = ABSORBED DOSE PER EVENT (MG/CM^2/EVENT)
A = SKIN SURFACE AREA AVAILABLE FOR CONTACT(CM^2)
EV = EVENT FREQUENCY (EVENTS/DAY)
ED = EXPOSURE DURATION (YEARS)
EF = EXPOSURE FREQUENCY (DAYS/YEAR)
BW = BODY WEIGHT(KG)
AT = AVERAGING TIME (DAYS)

FOR INORGANICS: DAevent = Kp x C x tevent x CF

FOR ORGANICS: IF tevent < t*, DAevent = 2Kp x C x CF x (6T x tevent/3.141592654)$^{0.5}$
IF tevent > t*, DAevent = Kp x C x CF x ((tevent/(1 + B)) + (2T x ((1+3B)/(1 + B))))

WHERE: Kp = PERMEABILITY COEFFICIENT FROM WATER (CM/HR)
C = CONCENTRATION OF CHEMICAL IN WATER (MG/L)
tevent = DURATION OF EVENT (HR/EVENT)
CF = CONVERSION FACTOR (1L/1000 CM^3)
t* = TIME IT TAKES TO REACH STEADY-STATE (HOUR/EVENT)
T = LAG TIME (HOUR/EVENT)
B = BUNGE MODEL CONSTANT (DIMENSIONLESS)

CHEMICAL	GW CONC. (mg/L)		ORGANIC OR INORGANIC?		t* (HR)	tevent	T (HR)		Kp (CM/HR)		B	DAevent
1,1,2-Trichloroethane	1.70E-03		o		1.40E+00	1.00E+00	5.70E-01		8.40E-03		1.10E-02	2.98E-08
Chloroform	7.20E-03		o		1.10E+00	1.00E+00	4.70E-01		8.90E-03		9.30E-03	1.21E-07
Vinyl Chloride	9.20E-04		o		5.10E-01	1.00E+00	2.10E-01		7.30E-03		2.30E-03	9.53E-09
Arsenic	5.30E-03		i			1.00E+00			1.00E-03			5.30E-09
Chromium	2.11E-01		i			1.00E+00			2.00E-03			4.22E-07
Vanadium	4.00E-02		i			1.00E+00			1.00E-03			4.00E-08

SITE 8 - TABLE 7.10. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF CONSTRUCTION WORKERS TO GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Surficial Aquifer
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2-Trichloroethane	1.70E-03	mg/L	8.86E-09	mg/m^3	R	2.4E-09	mg/kg-day		mg/kg-day	NA	NA	
	Chloroform	7.20E-03	mg/L	9.20E-08	mg/m^3	R	2.5E-08	mg/kg-day	8.60E-05	mg/kg-day	NA	NA	2.9E-04
	Vinyl Chloride	9.20E-04	mg/L	4.97E-08	mg/m^3	R	1.3E-08	mg/kg-day	2.80E-02	mg/kg-day	NA	NA	4.8E-07
	(total)												2.9E-04
Dermal	1,1,2-Trichloroethane	1.70E-03	mg/L	1.70E-03	mg/L	M	1.9E-06	mg/kg-day	4.00E-03	mg/kg-day	NA	NA	4.7E-04
	Chloroform	7.20E-03	mg/L	7.20E-03	mg/L	M	7.7E-06	mg/kg-day	1.00E-02	mg/kg-day	NA	NA	7.7E-04
	Vinyl Chloride	9.20E-04	mg/L	9.20E-04	mg/L	M	6.0E-07	mg/kg-day	3.00E-03	mg/kg-day	NA	NA	2.0E-04
	Arsenic	5.30E-03	mg/L	5.30E-03	mg/L	M	3.4E-07	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	1.1E-03
	Chromium	2.11E-01	mg/L	2.11E-01	mg/L	M	2.7E-05	mg/kg-day	3.75E-02	mg/kg-day	NA	NA	7.1E-04
	Vanadium	4.00E-02	mg/L	4.00E-02	mg/L	M	2.5E-06	mg/kg-day	1.82E-04	mg/kg-day	NA	NA	1.4E-02
	(total)												1.7E-02

Total Hazard Index Across All Exposure Routes/Pathways **1.8E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

SITE 8 - TABLE 8.10. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF CANCER RISKS
EXPOSURE OF CONSTRUCTION WORKERS TO GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Surficial Aquifer
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2-Trichloroethane	1.70E-03	mg/L	8.86E-09	mg/m^3	R	3.4E-11	mg/kg-day	5.60E-02	$(mg/kg\text{-}day)^{-1}$	1.9E-12
	Chloroform	7.20E-03	mg/L	9.20E-08	mg/m^3	R	3.6E-10	mg/kg-day	8.10E-02	$(mg/kg\text{-}day)^{-1}$	2.9E-11
	Vinyl Chloride	9.20E-04	mg/L	4.97E-08	mg/m^3	R	1.9E-10	mg/kg-day	1.50E-02	$(mg/kg\text{-}day)^{-1}$	2.9E-12
	(total)										3.4E-11
Dermal	1,1,2-Trichloroethane	1.70E-03	mg/L	1.70E-03	mg/L	M	2.7E-08	mg/kg-day	5.70E-02	$(mg/kg\text{-}day)^{-1}$	1.5E-09
	Chloroform	7.20E-03	mg/L	7.20E-03	mg/L	M	1.1E-07	mg/kg-day	6.10E-03	$(mg/kg\text{-}day)^{-1}$	6.7E-10
	Vinyl Chloride	9.20E-04	mg/L	9.20E-04	mg/L	M	8.6E-09	mg/kg-day	7.20E-01	$(mg/kg\text{-}day)^{-1}$	6.2E-09
	Arsenic	5.30E-03	mg/L	5.30E-03	mg/L	M	4.8E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	7.2E-09
	(total)										1.6E-08
										Total Risk Across All Exposure Routes/Pathways	**1.6E-08**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

CALCULATION OF DAevent - EXPOSURES THROUGH DERMAL CONTACT WITH GROUNDWATER
CENTRAL TENDENCY EXPOSURE (CTE) EXPOSURE OF CONSTRUCTION WORKERS TO GROUNDWATER

SITE NAME: **SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT**
LOCATION: **NSWC-WHITE OAK SILVER SPRING, MARYLAND**
DATE: **10/29/01**

REFERENCES: EPA, DECEMBER 1989 AND JANUARY 1992

DERMAL CONTACT: DAD = (DAevent x EV x ED x EF x A)/(BW x AT)

WHERE: DAD = DERMALLY ABSORBED DOSE (MG/KG/DAY)
DAevent = ABSORBED DOSE PER EVENT (MG/CM^2/EVENT)
A = SKIN SURFACE AREA AVAILABLE FOR CONTACT(CM^2)
EV = EVENT FREQUENCY (EVENTS/DAY)
ED = EXPOSURE DURATION (YEARS)
EF = EXPOSURE FREQUENCY (DAYS/YEAR)
BW = BODY WEIGHT(KG)
AT = AVERAGING TIME (DAYS)

FOR INORGANICS: DAevent = Kp x C x tevent x CF

FOR ORGANICS: IF tevent < t*, DAevent = 2Kp x C x CF x (6T x tevent/3.141592654)$^{0.5}$
IF tevent > t*, DAevent = Kp x C x CF x ((tevent/(1 + B)) + (2T x ((1+3B)/(1 + B))))

WHERE: Kp = PERMEABILITY COEFFICIENT FROM WATER (CM/HR)
C = CONCENTRATION OF CHEMICAL IN WATER (MG/L)
tevent = DURATION OF EVENT (HR/EVENT)
CF = CONVERSION FACTOR (1L/1000 CM^3)
t* = TIME IT TAKES TO REACH STEADY-STATE (HOUR/EVENT)
T = LAG TIME (HOUR/EVENT)
B = BUNGE MODEL CONSTANT (DIMENSIONLESS)

CHEMICAL	GW CONC. (mg/L)		ORGANIC OR INORGANIC?		t* (HR)	tevent	T (HR)		Kp (CM/HR)		B	DAevent
1,1,2-Trichloroethane	7.67E-04		o		1.40E+00	1.00E+00	5.70E-01		8.40E-03		1.10E-02	1.34E-08
Chloroform	3.69E-03		o		1.10E+00	1.00E+00	4.70E-01		8.90E-03		9.30E-03	6.23E-08
Vinyl Chloride	5.70E-04		o		5.10E-01	1.00E+00	2.10E-01		7.30E-03		2.30E-03	5.90E-09
Arsenic	2.80E-03		i			1.00E+00			1.00E-03			2.80E-09
Chromium	6.42E-02		i			1.00E+00			2.00E-03			1.28E-07
Vanadium	1.92E-02		i			1.00E+00			1.00E-03			1.92E-08

SITE 8 - TABLE 7.10a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF CONSTRUCTION WORKERS TO GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Surficial Aquifer
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2-Trichloroethane	7.67E-04	mg/L	3.99E-09	mg/m^3	R	5.4E-10	mg/kg-day		mg/kg-day	NA	NA	
	Chloroform	3.69E-03	mg/L	4.72E-08	mg/m^3	R	6.4E-09	mg/kg-day	8.60E-05	mg/kg-day	NA	NA	7.4E-05
	Vinyl Chloride	5.70E-04	mg/L	3.08E-08	mg/m^3	R	4.2E-09	mg/kg-day	2.80E-02	mg/kg-day	NA	NA	1.5E-07
	(total)												7.4E-05
Dermal	1,1,2-Trichloroethane	7.67E-04	mg/L	7.67E-04	mg/L	M	8.5E-07	mg/kg-day	4.00E-03	mg/kg-day	NA	NA	2.1E-04
	Chloroform	3.69E-03	mg/L	3.69E-03	mg/L	M	3.9E-06	mg/kg-day	1.00E-02	mg/kg-day	NA	NA	3.9E-04
	Vinyl Chloride	5.70E-04	mg/L	5.70E-04	mg/L	M	3.7E-07	mg/kg-day	3.00E-03	mg/kg-day	NA	NA	1.2E-04
	Arsenic	2.80E-03	mg/L	2.80E-03	mg/L	M	1.8E-07	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	5.9E-04
	Chromium	6.42E-02	mg/L	6.42E-02	mg/L	M	8.1E-06	mg/kg-day	3.75E-02	mg/kg-day	NA	NA	2.2E-04
	Vanadium	1.92E-02	mg/L	1.92E-02	mg/L	M	1.2E-06	mg/kg-day	1.82E-04	mg/kg-day	NA	NA	6.7E-03
	(total)												8.2E-03
												Total Hazard Index Across All Exposure Routes/Pathways	**8.3E-03**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

SITE 8 - TABLE 8.10a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF CANCER RISKS
EXPOSURE OF CONSTRUCTION WORKERS TO GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Surficial Aquifer
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2-Trichloroethane	7.67E-04	mg/L	3.99E-09	mg/m^3	R	7.7E-12	mg/kg-day	5.60E-02	$(mg/kg\text{-}day)^{-1}$	4.3E-13
	Chloroform	3.69E-03	mg/L	4.72E-08	mg/m^3	R	9.1E-11	mg/kg-day	8.10E-02	$(mg/kg\text{-}day)^{-1}$	7.4E-12
	Vinyl Chloride	5.70E-04	mg/L	3.08E-08	mg/m^3	R	5.9E-11	mg/kg-day	1.50E-02	$(mg/kg\text{-}day)^{-1}$	8.9E-13
	(total)										8.7E-12
Dermal	1,1,2-Trichloroethane	7.67E-04	mg/L	7.67E-04	mg/L	M	1.2E-08	mg/kg-day	5.70E-02	$(mg/kg\text{-}day)^{-1}$	6.9E-10
	Chloroform	3.69E-03	mg/L	3.69E-03	mg/L	M	5.6E-08	mg/kg-day	6.10E-03	$(mg/kg\text{-}day)^{-1}$	3.4E-10
	Vinyl Chloride	5.70E-04	mg/L	5.70E-04	mg/L	M	5.3E-09	mg/kg-day	7.20E-01	$(mg/kg\text{-}day)^{-1}$	3.8E-09
	Arsenic	2.80E-03	mg/L	2.80E-03	mg/L	M	2.5E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	3.8E-09
	(total)										8.7E-09
										Total Risk Across All Exposure Routes/Pathways	**8.7E-09**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

SITE 8 - TABLE 4.11

VALUES USED FOR DAILY INTAKE CALCULATIONS
EXPOSURE OF FUTURE ADULT RESIDENTS TO GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Tap Water
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cw	Chemical Concentration in Water	(mg/L)	95%UCL	EPA 1993a	95%UCL	EPA 1993a	Chronic Daily Intake (CDI) (mg/kg-day)=
	IRw	Ingestion Rate of Water	(L/day)	2	EPA 1993a	1.4	EPA 1993a	Cw x IRw x EF x ED / BW x AT
	EF	Exposure Frequency	(days/year)	350	EPA 1993a	234	EPA 1993a	
	ED	Exposure Duration	(years)	24	EPA 1993a	7	EPA 1993a	
	BW	Body Weight	(kg)	70	EPA 1989a	70	EPA 1989a	
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25550	EPA 1989a	
	AT-N	Averaging Time (Noncancer)	(days)	8,760	EPA 1989a	2,555	EPA 1989a	
Dermal	Cw	Chemical Concentration in Water	(mg/L)	95%UCL	EPA 1993a	95%UCL	EPA 1993a	Dermally Absorbed Dose =
	SA	Skin Surface Area	(cm^2)	23,000	EPA 1997a	20,000	EPA 1997a	DAevent x EV x EF x ED x A / BW x AT
	Kp	Permeability Constant	(cm/hr)	Chemical-specific	EPA 1992d	Chemical-specific	EPA 1992d	
	EV	Event Frequency	(events/day)	1	Professional judgement	1	Professional Judgement	
	EF	Exposure Frequency	(days/year)	350	EPA 1993a	234	EPA 1993a	DAevent = Constants x Kp x Cw x tevent
	ED	Exposure Duration	(years)	24	EPA 1993a	7	EPA 1993a	
	BW	Body Weight	(kg)	70	EPA 1989a	70	EPA 1989a	
	tevent	Duration of Event	(hr/event)	0.25	EPA 1992d	0.167	EPA 1992d	
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25,550	EPA 1989a	
	AT-N	Averaging Time (Noncancer)	(days)	8,760	EPA 1989a	2,555	EPA 1989a	
Inhalation	S	Volatile Chemical Generation Rate	(ug/m^3-min shower)	Derived	Foster&Chrostowski 1987	Derived	Foster & Chrostowski 1987	Chronic Daily Intake (CDI) (mg/kg-day)=
	IRsh	Inhalation Rate of volatiles in shower	(L/min)	10	EPA 1991	10	EPA 1991	S x IRsh x K x EF x ED / BW x AT x Ra x CF
	EF	Exposure Frequency	(days/year)	350	EPA 1993a	234	EPA 1993a	
	K	Masss Transfer Coefficient	(min)	Derived	Foster&Chrostowski 1987	Derived	Foster & Chrostowski 1987	K = Ds + exp(-Ra x Dt)/Ra - [exp(Ra) x (Ds-Dt)]/Ra
	ED	Exposure Duration	(years)	24	EPA 1993a	7	EPA 1993a	
	BW	Body Weight	(kg)	70	EPA 1989a	70	EPA 1989a	
	Ra	Air Exchange Rate	(min^{-1})	0.025	Foster&Chrostowski 1987	0.025	Foster & Chrostowski 1987	
	Ds	Shower Duration	(min)	15	EPA 1992d	10	EPA 1992d	
	Dt	Total Time in Bathroom	(min)	20	Professional judgement	15	Professional Judgement	
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25550	EPA 1989a	
	AT-N	Averaging Time (Noncancer)	(days)	8,760	EPA 1989a	2,555	EPA 1989a	

Daily Intake Calculations

Ingestion Intake = (IRgw x EF x ED) / (BW x AT)
Dermal Intake = (A x EV x ED x EF) / (BW x AT)

Cancer Ingestion Intake(RME) = 9.39E-03
Noncancer Ingestion Intake(RME) = 2.74E-02

Cancer Ingestion Intake(CTE) = 1.28E-03
Noncancer Ingestion Intake(CTE) = 1.28E-02

Cancer Dermal Intake(RME) = 1.08E+02
Noncancer Dermal Intake(RME) = 3.15E+02

Cancer Dermal Intake(CTE) = 1.83E+01
Noncancer Dermal Intake(CTE) = 1.83E+02

CALCULATION OF DAevent - EXPOSURES THROUGH DERMAL CONTACT WITH GROUNDWATER
REASONABLE MAXIMUM EXPOSURE (RME) EXPOSURE OF FUTURE ADULT RESIDENTS TO GROUNDWATER

SITE NAME: SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
LOCATION: NSWC-WHITE OAK SILVER SPRING, MARYLAND
DATE: 10/29/01

REFERENCES: EPA, DECEMBER 1989 AND JANUARY 1992

DERMAL CONTACT: DAD = (DAevent x EV x ED x EF x A)/(BW x AT)

WHERE: DAD = DERMALLY ABSORBED DOSE (MG/KG/DAY)
DAevent = ABSORBED DOSE PER EVENT (MG/CM^2/EVENT)
A = SKIN SURFACE AREA AVAILABLE FOR CONTACT(CM^2)
EV = EVENT FREQUENCY (EVENTS/DAY)
ED = EXPOSURE DURATION (YEARS)
EF = EXPOSURE FREQUENCY (DAYS/YEAR)
BW = BODY WEIGHT(KG)
AT = AVERAGING TIME (DAYS)

FOR INORGANICS: DAevent = Kp x C x tevent x CF

FOR ORGANICS: IF tevent < t*, DAevent = 2Kp x C x CF x (6T x tevent/3.141592654)$^{0.5}$
IF tevent > t*, DAevent = Kp x C x CF x ((tevent/(1 + B)) + (2T x ((1+3B)/(1 + B))))

WHERE: Kp = PERMEABILITY COEFFICIENT FROM WATER (CM/HR)
C = CONCENTRATION OF CHEMICAL IN WATER (MG/L)
tevent = DURATION OF EVENT (HR/EVENT)
CF = CONVERSION FACTOR (1L/1000 CM^3)
t* = TIME IT TAKES TO REACH STEADY-STATE (HOUR/EVENT)
T = LAG TIME (HOUR/EVENT)
B = BUNGE MODEL CONSTANT (DIMENSIONLESS)

CHEMICAL	GW CONC. (mg/L)		ORGANIC OR INORGANIC?		t* (HR)	tevent	T (HR)		Kp (CM/HR)		B	DAevent
1,1,2-Trichloroethane	1.70E-03		o		1.40E+00	2.50E-01	5.70E-01		8.40E-03		1.10E-02	1.49E-08
Chloroform	7.20E-03		o		1.10E+00	2.50E-01	4.70E-01		8.90E-03		9.30E-03	6.07E-08
Vinyl Chloride	9.20E-04		o		5.10E-01	2.50E-01	2.10E-01		7.30E-03		2.30E-03	4.25E-09
Arsenic	5.30E-03		i			2.50E-01			1.00E-03			1.33E-09
Chromium	2.11E-01		i			2.50E-01			2.00E-03			1.06E-07
Vanadium	4.00E-02		i			2.50E-01			1.00E-03			1.00E-08

SITE 8 - TABLE 7.11. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF FUTURE ADULT RESIDENTS TO GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Tap Water
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	1,1,2-Trichloroethane	1.70E-03	mg/L	1.70E-03	mg/L	M	4.7E-05	mg/kg-day	4.00E-03	mg/kg-day	NA	NA	1.2E-02
	Chloroform	7.20E-03	mg/L	7.20E-03	mg/L	M	2.0E-04	mg/kg-day	1.00E-02	mg/kg-day	NA	NA	2.0E-02
	Vinyl Chloride	9.20E-04	mg/L	9.20E-04	mg/L	M	2.5E-05	mg/kg-day	3.00E-03	mg/kg-day	NA	NA	8.4E-03
	Arsenic	5.30E-03	mg/L	5.30E-03	mg/L	M	1.5E-04	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	4.8E-01
	Chromium	2.11E-01	mg/L	2.11E-01	mg/L	M	5.8E-03	mg/kg-day	1.50E+00	mg/kg-day	NA	NA	3.9E-03
	Vanadium	4.00E-02	mg/L	4.00E-02	mg/L	M	1.1E-03	mg/kg-day	7.00E-03	mg/kg-day	NA	NA	1.6E-01
	(total)												6.8E-01
Dermal	1,1,2-Trichloroethane	1.70E-03	mg/L	1.70E-03	mg/L	M	4.7E-06	mg/kg-day	4.00E-03	mg/kg-day	NA	NA	1.2E-03
	Chloroform	7.20E-03	mg/L	7.20E-03	mg/L	M	1.9E-05	mg/kg-day	1.00E-02	mg/kg-day	NA	NA	1.9E-03
	Vinyl Chloride	9.20E-04	mg/L	9.20E-04	mg/L	M	1.3E-06	mg/kg-day	3.00E-03	mg/kg-day	NA	NA	4.5E-04
	Arsenic	5.30E-03	mg/L	5.30E-03	mg/L	M	4.2E-07	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	1.4E-03
	Chromium	2.11E-01	mg/L	2.11E-01	mg/L	M	3.3E-05	mg/kg-day	3.75E-02	mg/kg-day	NA	NA	8.9E-04
	Vanadium	4.00E-02	mg/L	4.00E-02	mg/L	M	3.2E-06	mg/kg-day	1.82E-04	mg/kg-day	NA	NA	1.7E-02
	(total)												2.3E-02
Inhalation	1,1,2-Trichloroethane	1.70E-03	mg/L	4.63E-04	(mg/m^3- min)	R	1.0E-05	mg/kg-day		mg/kg-day	NA	NA	
	Chloroform	7.20E-03	mg/L	2.36E-03	(mg/m^3- min)	R	5.1E-05	mg/kg-day	8.60E-05	mg/kg-day	NA	NA	5.9E-01
	Vinyl Chloride	9.20E-04	mg/L	3.96E-04	(mg/m^3- min)	R	8.6E-06	mg/kg-day	2.80E-02	mg/kg-day	NA	NA	3.1E-04
	(total)												6.0E-01
												Total Hazard Index Across All Exposure Routes/Pathways	**1.3E+00**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

SITE 8 - TABLE 8.11. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF CANCER RISKS
EXPOSURE OF FUTURE ADULT RESIDENTS TO GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Tap Water
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1,2-Trichloroethane	1.70E-03	mg/L	1.70E-03	mg/L	M	1.6E-05	mg/kg-day	5.70E-02	$(mg/kg\text{-}day)^{-1}$	9.1E-07
	Chloroform	7.20E-03	mg/L	7.20E-03	mg/L	M	6.8E-05	mg/kg-day	6.10E-03	$(mg/kg\text{-}day)^{-1}$	4.1E-07
	Vinyl Chloride	9.20E-04	mg/L	9.20E-04	mg/L	M	8.6E-06	mg/kg-day	7.20E-01	$(mg/kg\text{-}day)^{-1}$	6.2E-06
	Arsenic	5.30E-03	mg/L	5.30E-03	mg/L	M	5.0E-05	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	7.5E-05
	(total)										8.2E-05
Dermal	1,1,2-Trichloroethane	1.70E-03	mg/L	1.70E-03	mg/L	M	1.6E-06	mg/kg-day	5.70E-02	$(mg/kg\text{-}day)^{-1}$	9.2E-08
	Chloroform	7.20E-03	mg/L	7.20E-03	mg/L	M	6.6E-06	mg/kg-day	6.10E-03	$(mg/kg\text{-}day)^{-1}$	4.0E-08
	Vinyl Chloride	9.20E-04	mg/L	9.20E-04	mg/L	M	4.6E-07	mg/kg-day	7.20E-01	$(mg/kg\text{-}day)^{-1}$	3.3E-07
	Arsenic	5.30E-03	mg/L	5.30E-03	mg/L	M	1.4E-07	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	2.1E-07
	(total)										6.8E-07
Inhalation	1,1,2-Trichloroethane	1.70E-03	mg/L	4.63E-04	$(mg/m^3\text{- min})$	R	3.4E-06	mg/kg-day	5.60E-02	$(mg/kg\text{-}day)^{-1}$	1.9E-07
	Chloroform	7.20E-03	mg/L	2.36E-03	$(mg/m^3\text{- min})$	R	1.8E-05	mg/kg-day	8.10E-02	$(mg/kg\text{-}day)^{-1}$	1.4E-06
	Vinyl Chloride	9.20E-04	mg/L	3.96E-04	$(mg/m^3\text{- min})$	R	2.9E-06	mg/kg-day	1.50E-02	$(mg/kg\text{-}day)^{-1}$	4.4E-08
	(total)										1.7E-06

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Total Risk Across All Exposure Routes/Pathways **8.5E-05**

CALCULATION OF DAevent - EXPOSURES THROUGH DERMAL CONTACT WITH GROUNDWATER
CENTRAL TENDENCY EXPOSURE (CTE) EXPOSURE OF FUTURE ADULT RESIDENTS TO GROUNDWATER

SITE NAME: **SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT**
LOCATION: **NSWC-WHITE OAK SILVER SPRING, MARYLAND**
DATE: **10/29/01**

REFERENCES: EPA, DECEMBER 1989 AND JANUARY 1992

DERMAL CONTACT: DAD = (DAevent x EV x ED x EF x A)/(BW x AT)

WHERE: DAD = DERMALLY ABSORBED DOSE (MG/KG/DAY)
DAevent = ABSORBED DOSE PER EVENT (MG/CM^2/EVENT)
A = SKIN SURFACE AREA AVAILABLE FOR CONTACT(CM^2)
EV = EVENT FREQUENCY (EVENTS/DAY)
ED = EXPOSURE DURATION (YEARS)
EF = EXPOSURE FREQUENCY (DAYS/YEAR)
BW = BODY WEIGHT(KG)
AT = AVERAGING TIME (DAYS)

FOR INORGANICS: DAevent = Kp x C x tevent x CF

FOR ORGANICS: IF tevent < t*, DAevent = 2Kp x C x CF x (6T x tevent/3.141592654)$^{0.5}$
IF tevent > t*, DAevent = Kp x C x CF x ((tevent/(1 + B)) + (2T x ((1+3B)/(1 + B))))

WHERE: Kp = PERMEABILITY COEFFICIENT FROM WATER (CM/HR)
C = CONCENTRATION OF CHEMICAL IN WATER (MG/L)
tevent = DURATION OF EVENT (HR/EVENT)
CF = CONVERSION FACTOR (1L/1000 CM^3)
t* = TIME IT TAKES TO REACH STEADY-STATE (HOUR/EVENT)
T = LAG TIME (HOUR/EVENT)
B = BUNGE MODEL CONSTANT (DIMENSIONLESS)

CHEMICAL	GW CONC. (mg/L)		ORGANIC OR INORGANIC?		t* (HR)	tevent	T (HR)		Kp (CM/HR)		B	DAevent
1,1,2-Trichloroethane	7.67E-04		o		1.40E+00	1.67E-01	5.70E-01		8.40E-03		1.10E-02	5.49E-09
Chloroform	3.69E-03		o		1.10E+00	1.67E-01	4.70E-01		8.90E-03		9.30E-03	2.54E-08
Vinyl Chloride	5.70E-04		o		5.10E-01	1.67E-01	2.10E-01		7.30E-03		2.30E-03	2.15E-09
Arsenic	2.80E-03		i			1.67E-01			1.00E-03			4.68E-10
Chromium	6.42E-02		i			1.67E-01			2.00E-03			2.14E-08
Vanadium	1.92E-02		i			1.67E-01			1.00E-03			3.20E-09

SITE 8 - TABLE 7.11a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF FUTURE ADULT RESIDENTS TO GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Tap Water
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	1,1,2-Trichloroethane	7.67E-04	mg/L	7.67E-04	mg/L	M	9.8E-06	mg/kg-day	4.00E-03	mg/kg-day	NA	NA	2.5E-03
	Chloroform	3.69E-03	mg/L	3.69E-03	mg/L	M	4.7E-05	mg/kg-day	1.00E-02	mg/kg-day	NA	NA	4.7E-03
	Vinyl Chloride	5.70E-04	mg/L	5.70E-04	mg/L	M	7.3E-06	mg/kg-day	3.00E-03	mg/kg-day	NA	NA	2.4E-03
	Arsenic	2.80E-03	mg/L	2.80E-03	mg/L	M	3.6E-05	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	1.2E-01
	Chromium	6.42E-02	mg/L	6.42E-02	mg/L	M	8.2E-04	mg/kg-day	1.50E+00	mg/kg-day	NA	NA	5.5E-04
	Vanadium	1.92E-02	mg/L	1.92E-02	mg/L	M	2.5E-04	mg/kg-day	7.00E-03	mg/kg-day	NA	NA	3.5E-02
	(total)												1.6E-01
Dermal	1,1,2-Trichloroethane	7.67E-04	mg/L	7.67E-04	mg/L	M	1.0E-06	mg/kg-day	4.00E-03	mg/kg-day	NA	NA	2.5E-04
	Chloroform	3.69E-03	mg/L	3.69E-03	mg/L	M	4.7E-06	mg/kg-day	1.00E-02	mg/kg-day	NA	NA	4.7E-04
	Vinyl Chloride	5.70E-04	mg/L	5.70E-04	mg/L	M	3.9E-07	mg/kg-day	3.00E-03	mg/kg-day	NA	NA	1.3E-04
	Arsenic	2.80E-03	mg/L	2.80E-03	mg/L	M	8.6E-08	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	2.9E-04
	Chromium	6.42E-02	mg/L	6.42E-02	mg/L	M	3.9E-06	mg/kg-day	3.75E-02	mg/kg-day	NA	NA	1.0E-04
	Vanadium	1.92E-02	mg/L	1.92E-02	mg/L	M	5.9E-07	mg/kg-day	1.82E-04	mg/kg-day	NA	NA	3.2E-03
	(total)												4.5E-03
Inhalation	1,1,2-Trichloroethane	7.67E-04	mg/L	2.09E-04	(mg/m^3- min)	R	1.7E-06	mg/kg-day		mg/kg-day	NA	NA	
	Chloroform	3.69E-03	mg/L	1.21E-03	(mg/m^3- min)	R	9.7E-06	mg/kg-day	8.60E-05	mg/kg-day	NA	NA	1.1E-01
	Vinyl Chloride	5.70E-04	mg/L	2.46E-04	(mg/m^3- min)	R	2.0E-06	mg/kg-day	2.80E-02	mg/kg-day	NA	NA	7.0E-05
	(total)												1.1E-01
												Total Hazard Index Across All Exposure Routes/Pathways	**2.8E-01**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

SITE 8 - TABLE 8.11a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF CANCER RISKS
EXPOSURE OF FUTURE ADULT RESIDENTS TO GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Tap Water
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1,2-Trichloroethane	7.67E-04	mg/L	7.67E-04	mg/L	M	9.8E-07	mg/kg-day	5.70E-02	$(mg/kg\text{-}day)^{-1}$	5.6E-08
	Chloroform	3.69E-03	mg/L	3.69E-03	mg/L	M	4.7E-06	mg/kg-day	6.10E-03	$(mg/kg\text{-}day)^{-1}$	2.9E-08
	Vinyl Chloride	5.70E-04	mg/L	5.70E-04	mg/L	M	7.3E-07	mg/kg-day	7.20E-01	$(mg/kg\text{-}day)^{-1}$	5.3E-07
	Arsenic	2.80E-03	mg/L	2.80E-03	mg/L	M	3.6E-06	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	5.4E-06
	(total)										6.0E-06
Dermal	1,1,2-Trichloroethane	7.67E-04	mg/L	7.67E-04	mg/L	M	1.0E-07	mg/kg-day	5.70E-02	$(mg/kg\text{-}day)^{-1}$	5.7E-09
	Chloroform	3.69E-03	mg/L	3.69E-03	mg/L	M	4.7E-07	mg/kg-day	6.10E-03	$(mg/kg\text{-}day)^{-1}$	2.8E-09
	Vinyl Chloride	5.70E-04	mg/L	5.70E-04	mg/L	M	3.9E-08	mg/kg-day	7.20E-01	$(mg/kg\text{-}day)^{-1}$	2.8E-08
	Arsenic	2.80E-03	mg/L	2.80E-03	mg/L	M	8.6E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-08
	(total)										5.0E-08
Inhalation	1,1,2-Trichloroethane	7.67E-04	mg/L	2.09E-04	$(mg/m^3\text{- min})$	R	1.7E-07	mg/kg-day	5.60E-02	$(mg/kg\text{-}day)^{-1}$	9.4E-09
	Chloroform	3.69E-03	mg/L	1.21E-03	$(mg/m^3\text{- min})$	R	9.7E-07	mg/kg-day	8.10E-02	$(mg/kg\text{-}day)^{-1}$	7.9E-08
	Vinyl Chloride	5.70E-04	mg/L	2.45E-04	$(mg/m^3\text{- min})$	R	2.0E-07	mg/kg-day	1.50E-02	$(mg/kg\text{-}day)^{-1}$	3.0E-09
	(total)										9.1E-08

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Total Risk Across All Exposure Routes/Pathways **6.1E-06**

SITE 8 - TABLE 4.12

VALUES USED FOR DAILY INTAKE CALCULATIONS
EXPOSURE OF FUTURE CHILD RESIDENTS TO GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Tap Water
Receptor Population: Resident
Receptor Age: Child (0-6 Years)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cw	Chemical Concentration in Water	(mg/L)	95%UCL	EPA 1993a	95%UCL	EPA 1993a	Chronic Daily Intake (CDI) (mg/kg-day)=
	IRw	Ingestion Rate of Water	(L/day)	1	EPA 1997a	1	EPA 1997a	Cw x IRw x EF x ED
	EF	Exposure Frequency	(days/year)	350	EPA 1993a	234	EPA 1993a	BW x AT
	ED	Exposure Duration	(years)	6	EPA 1993a	2	EPA 1993a	
	BW	Body Weight	(kg)	15	EPA 1989a	15	EPA 1989a	
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25550	EPA 1989a	
	AT-N	Averaging Time (Noncancer)	(days)	2,190	EPA 1989a	730	EPA 1989a	
Dermal	Cw	Chemical Concentration in Water	(mg/L)	95%UCL	EPA 1993a	95%UCL	EPA 1993a	Dermally Absorbed Dose =
	SA	Skin Surface Area	(cm^2)	6,970	EPA 1997a	6,970	EPA 1997a	DAevent x EV x EF x ED x A
	Kp	Permeability Constant	(cm/hr)	Chemical-specific	EPA 1992d	Chemical-specific	EPA 1992d	BW x AT
	EV	Event Frequency	(events/day)	1	Professional judgement	1	Professional Judgement	
	EF	Exposure Frequency	(days/year)	350	EPA 1993a	234	EPA 1993a	DAevent = Constants x Kp x Cw x tevent
	ED	Exposure Duration	(years)	6	EPA 1993a	2	EPA 1993a	
	BW	Body Weight	(kg)	15	EPA 1989a	15	EPA 1989a	
	tevent	Duration of Event	(hr/event)	0.25	EPA 1992d	0.167	EPA 1002d	
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25,550	EPA 1989a	
	AT-N	Averaging Time (Noncancer)	(days)	2,190	EPA 1989a	730	EPA 1989a	
Inhalation	S	Volatile Chemical Generation Rate	(ug/m^3-min shower)	Derived	Foster&Chrostowski 1987	Derived	Foster & Chrostowski 1987	Chronic Daily Intake (CDI) (mg/kg-day)=
	IRsh	Inhalation Rate of volatiles in shower	(L/min)	10	EPA 1991	10	EPA 1991	S x IRsh x K x EF x ED
	EF	Exposure Frequency	(days/year)	350	EPA 1993a	234	EPA 1993a	BW x AT x Ra x CF
	K	Masss Transfer Coefficient	(min)	Derived	Foster&Chrostowski 1987	Derived	Foster & Chrostowski 1987	K = Ds + exp(-Ra x Dt)/Ra - [exp(Ra) x (Ds-Dt)]/Ra
	ED	Exposure Duration	(years)	6	EPA 1993a	2	EPA 1993a	
	BW	Body Weight	(kg)	15	EPA 1989a	15	EPA 1989a	
	Ra	Air Exchange Rate	(min^{-1})	0.025	Foster&Chrostowski 1987	0.025	Foster & Chrostowski 1987	
	Ds	Shower Duration	(min)	15	EPA 1992d	10	EPA 1992d	
	Dt	Total Time in Bathroom	(min)	20	Professional judgement	15	Professional Judgement	
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25550	EPA 1989a	
	AT-N	Averaging Time (Noncancer)	(days)	2,190	EPA 1989a	730	EPA 1989a	

Daily Intake Calculations

Ingestion Intake = (IRgw x EF x ED) / (BW x AT)
Dermal Intake = (A x EV x ED x EF) / (BW x AT)

Cancer Ingestion Intake(RME) = 5.48E-03
Noncancer Ingestion Intake(RME) = 6.39E-02

Cancer Ingestion Intake(CTE) = 1.22E-03
Noncancer Ingestion Intake(CTE) = 4.27E-02

Cancer Dermal Intake(RME) = 3.82E+01
Noncancer Dermal Intake(RME) = 4.46E+02

Cancer Dermal Intake(CTE) = 8.51E+00
Noncancer Dermal Intake(CTE) = 2.98E+02

CALCULATION OF DAevent - EXPOSURES THROUGH DERMAL CONTACT WITH GROUNDWATER
REASONABLE MAXIMUM EXPOSURE (RME) EXPOSURE OF FUTURE CHILD RESIDENTS TO GROUNDWATER

SITE NAME: SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
LOCATION: NSWC-WHITE OAK SILVER SPRING, MARYLAND
DATE: 10/29/01

REFERENCES: EPA, DECEMBER 1989 AND JANUARY 1992

DERMAL CONTACT: DAD = (DAevent x EV x ED x EF x A)/(BW x AT)

WHERE: DAD = DERMALLY ABSORBED DOSE (MG/KG/DAY)
DAevent = ABSORBED DOSE PER EVENT (MG/CM^2/EVENT)
A = SKIN SURFACE AREA AVAILABLE FOR CONTACT(CM^2)
EV = EVENT FREQUENCY (EVENTS/DAY)
ED = EXPOSURE DURATION (YEARS)
EF = EXPOSURE FREQUENCY (DAYS/YEAR)
BW = BODY WEIGHT(KG)
AT = AVERAGING TIME (DAYS)

FOR INORGANICS: DAevent = Kp x C x tevent x CF

FOR ORGANICS: IF tevent < t*, DAevent = 2Kp x C x CF x (6T x tevent/3.141592654)$^{0.5}$
IF tevent > t*, DAevent = Kp x C x CF x ((tevent/(1 + B)) + (2T x ((1+3B)/(1 + B))))

WHERE: Kp = PERMEABILITY COEFFICIENT FROM WATER (CM/HR)
C = CONCENTRATION OF CHEMICAL IN WATER (MG/L)
tevent = DURATION OF EVENT (HR/EVENT)
CF = CONVERSION FACTOR (1L/1000 CM^3)
t* = TIME IT TAKES TO REACH STEADY-STATE (HOUR/EVENT)
T = LAG TIME (HOUR/EVENT)
B = BUNGE MODEL CONSTANT (DIMENSIONLESS)

CHEMICAL	GW CONC. (mg/L)		ORGANIC OR INORGANIC?		t* (HR)	tevent	T (HR)		Kp (CM/HR)		B	DAevent
1,1,2-Trichloroethane	1.70E-03		o		1.40E+00	2.50E-01	5.70E-01		8.40E-03		1.10E-02	1.49E-08
Chloroform	7.20E-03		o		1.10E+00	2.50E-01	4.70E-01		8.90E-03		9.30E-03	6.07E-08
Vinyl Chloride	9.20E-04		o		5.10E-01	2.50E-01	2.10E-01		7.30E-03		2.30E-03	4.25E-09
Arsenic	5.30E-03		i			2.50E-01			1.00E-03			1.33E-09
Chromium	2.11E-01		i			2.50E-01			2.00E-03			1.06E-07
Vanadium	4.00E-02		i			2.50E-01			1.00E-03			1.00E-08

SITE 8 - TABLE 7.12. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF FUTURE CHILD RESIDENTS TO GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Tap Water
Receptor Population: Resident
Receptor Age: Child (0-6 Years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	1,1,2-Trichloroethane	1.70E-03	mg/L	1.70E-03	mg/L	M	1.1E-04	mg/kg-day	4.00E-03	mg/kg-day	NA	NA	2.7E-02
	Chloroform	7.20E-03	mg/L	7.20E-03	mg/L	M	4.6E-04	mg/kg-day	1.00E-02	mg/kg-day	NA	NA	4.6E-02
	Vinyl Chloride	9.20E-04	mg/L	9.20E-04	mg/L	M	5.9E-05	mg/kg-day	3.00E-03	mg/kg-day	NA	NA	2.0E-02
	Arsenic	5.30E-03	mg/L	5.30E-03	mg/L	M	3.4E-04	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	1.1E+00
	Chromium	2.11E-01	mg/L	2.11E-01	mg/L	M	1.3E-02	mg/kg-day	1.50E+00	mg/kg-day	NA	NA	9.0E-03
	Vanadium	4.00E-02	mg/L	4.00E-02	mg/L	M	2.6E-03	mg/kg-day	7.00E-03	mg/kg-day	NA	NA	3.7E-01
	(total)												1.6E+00
Dermal	1,1,2-Trichloroethane	1.70E-03	mg/L	1.70E-03	mg/L	M	6.6E-06	mg/kg-day	4.00E-03	mg/kg-day	NA	NA	1.7E-03
	Chloroform	7.20E-03	mg/L	7.20E-03	mg/L	M	2.7E-05	mg/kg-day	1.00E-02	mg/kg-day	NA	NA	2.7E-03
	Vinyl Chloride	9.20E-04	mg/L	9.20E-04	mg/L	M	1.9E-06	mg/kg-day	3.00E-03	mg/kg-day	NA	NA	6.3E-04
	Arsenic	5.30E-03	mg/L	5.30E-03	mg/L	M	5.9E-07	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	2.0E-03
	Chromium	2.11E-01	mg/L	2.11E-01	mg/L	M	4.7E-05	mg/kg-day	3.75E-02	mg/kg-day	NA	NA	1.3E-03
	Vanadium	4.00E-02	mg/L	4.00E-02	mg/L	M	4.5E-06	mg/kg-day	1.82E-04	mg/kg-day	NA	NA	2.4E-02
	(total)												3.3E-02
Inhalation	1,1,2-Trichloroethane	1.70E-03	mg/L	4.63E-04	(mg/m^3- min)	R	4.7E-05	mg/kg-day		mg/kg-day	NA	NA	
	Chloroform	7.20E-03	mg/L	2.36E-03	(mg/m^3- min)	R	2.4E-04	mg/kg-day	8.60E-05	mg/kg-day	NA	NA	2.8E+00
	Vinyl Chloride	9.20E-04	mg/L	3.96E-04	(mg/m^3- min)	R	4.0E-05	mg/kg-day	2.80E-02	mg/kg-day	NA	NA	1.4E-03
	(total)												2.8E+00
												Total Hazard Index Across All Exposure Routes/Pathways	**4.4E+00**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

SITE 8 - TABLE 8.12. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF CANCER RISKS
EXPOSURE OF FUTURE CHILD RESIDENTS TO GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Tap Water
Receptor Population: Resident
Receptor Age: Child (0-6 Years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1,2-Trichloroethane	1.70E-03	mg/L	1.70E-03	mg/L	M	9.3E-06	mg/kg-day	5.70E-02	$(mg/kg\text{-}day)^{-1}$	5.3E-07
	Chloroform	7.20E-03	mg/L	7.20E-03	mg/L	M	3.9E-05	mg/kg-day	6.10E-03	$(mg/kg\text{-}day)^{-1}$	2.4E-07
	Vinyl Chloride	9.20E-04	mg/L	9.20E-04	mg/L	M	5.0E-06	mg/kg-day	1.40E+00	$(mg/kg\text{-}day)^{-1}$	7.1E-06
	Arsenic	5.30E-03	mg/L	5.30E-03	mg/L	M	2.9E-05	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	4.4E-05
	(total)										5.1E-05
Dermal	1,1,2-Trichloroethane	1.70E-03	mg/L	1.70E-03	mg/L	M	5.7E-07	mg/kg-day	5.70E-02	$(mg/kg\text{-}day)^{-1}$	3.2E-08
	Chloroform	7.20E-03	mg/L	7.20E-03	mg/L	M	2.3E-06	mg/kg-day	6.10E-03	$(mg/kg\text{-}day)^{-1}$	1.4E-08
	Vinyl Chloride	9.20E-04	mg/L	9.20E-04	mg/L	M	1.6E-07	mg/kg-day	1.40E+00	$(mg/kg\text{-}day)^{-1}$	2.3E-07
	Arsenic	5.30E-03	mg/L	5.30E-03	mg/L	M	5.1E-08	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	7.6E-08
	(total)										3.5E-07
Inhalation	1,1,2-Trichloroethane	1.70E-03	mg/L	4.63E-04	$(mg/m^3\text{- min})$	R	4.0E-06	mg/kg-day	5.60E-02	$(mg/kg\text{-}day)^{-1}$	2.3E-07
	Chloroform	7.20E-03	mg/L	2.36E-03	$(mg/m^3\text{- min})$	R	2.0E-05	mg/kg-day	8.10E-02	$(mg/kg\text{-}day)^{-1}$	1.7E-06
	Vinyl Chloride	9.20E-04	mg/L	3.96E-04	$(mg/m^3\text{- min})$	R	3.4E-06	mg/kg-day	3.00E-02	$(mg/kg\text{-}day)^{-1}$	1.0E-07
	(total)										2.0E-06

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Total Risk Across All Exposure Routes/Pathways **5.4E-05**

CALCULATION OF DAevent - EXPOSURES THROUGH DERMAL CONTACT WITH GROUNDWATER
CENTRAL TENDENCY EXPOSURE (CTE) **EXPOSURE OF FUTURE CHILD RESIDENTS TO GROUNDWATER**

SITE NAME: **SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT**
LOCATION: **NSWC-WHITE OAK SILVER SPRING, MARYLAND**
DATE: **10/29/01**

REFERENCES: EPA, DECEMBER 1989 AND JANUARY 1992

DERMAL CONTACT: DAD = (DAevent x EV x ED x EF x A)/(BW x AT)

WHERE: DAD = DERMALLY ABSORBED DOSE (MG/KG/DAY)
DAevent = ABSORBED DOSE PER EVENT (MG/CM^2/EVENT)
A = SKIN SURFACE AREA AVAILABLE FOR CONTACT(CM^2)
EV = EVENT FREQUENCY (EVENTS/DAY)
ED = EXPOSURE DURATION (YEARS)
EF = EXPOSURE FREQUENCY (DAYS/YEAR)
BW = BODY WEIGHT(KG)
AT = AVERAGING TIME (DAYS)

FOR INORGANICS: DAevent = Kp x C x tevent x CF

FOR ORGANICS: IF tevent < t*, DAevent = 2Kp x C x CF x (6T x tevent/3.141592654)$^{0.5}$
IF tevent > t*, DAevent = Kp x C x CF x ((tevent/(1 + B)) + (2T x ((1+3B)/(1 + B))))

WHERE: Kp = PERMEABILITY COEFFICIENT FROM WATER (CM/HR)
C = CONCENTRATION OF CHEMICAL IN WATER (MG/L)
tevent = DURATION OF EVENT (HR/EVENT)
CF = CONVERSION FACTOR (1L/1000 CM^3)
t* = TIME IT TAKES TO REACH STEADY-STATE (HOUR/EVENT)
T = LAG TIME (HOUR/EVENT)
B = BUNGE MODEL CONSTANT (DIMENSIONLESS)

CHEMICAL	GW CONC. (mg/L)		ORGANIC OR INORGANIC?		t* (HR)	tevent	T (HR)		Kp (CM/HR)		B	DAevent
1,1,2-Trichloroethane	7.67E-04		o		1.40E+00	1.67E-01	5.70E-01		8.40E-03		1.10E-02	5.49E-09
Chloroform	3.69E-03		o		1.10E+00	1.67E-01	4.70E-01		8.90E-03		9.30E-03	2.54E-08
Vinyl Chloride	5.70E-04		o		5.10E-01	1.67E-01	2.10E-01		7.30E-03		2.30E-03	2.15E-09
Arsenic	2.80E-03		i			1.67E-01			1.00E-03			4.68E-10
Chromium	6.42E-02		i			1.67E-01			2.00E-03			2.14E-08
Vanadium	1.92E-02		i			1.67E-01			1.00E-03			3.20E-09

SITE 8 - TABLE 7.12a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF FUTURE CHILD RESIDENTS TO GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	1,1,2-Trichloroethane	7.67E-04	mg/L	7.67E-04	mg/L	M	3.3E-05	mg/kg-day	4.00E-03	mg/kg-day	NA	NA	8.2E-03
	Chloroform	3.69E-03	mg/L	3.69E-03	mg/L	M	1.6E-04	mg/kg-day	1.00E-02	mg/kg-day	NA	NA	1.6E-02
	Vinyl Chloride	5.70E-04	mg/L	5.70E-04	mg/L	M	2.4E-05	mg/kg-day	3.00E-03	mg/kg-day	NA	NA	8.1E-03
	Arsenic	2.80E-03	mg/L	2.80E-03	mg/L	M	1.2E-04	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	4.0E-01
	Chromium	6.42E-02	mg/L	6.42E-02	mg/L	M	2.7E-03	mg/kg-day	1.50E+00	mg/kg-day	NA	NA	1.8E-03
	Vanadium	1.92E-02	mg/L	1.92E-02	mg/L	M	8.2E-04	mg/kg-day	7.00E-03	mg/kg-day	NA	NA	1.2E-01
	(total)												5.5E-01
Dermal	1,1,2-Trichloroethane	7.67E-04	mg/L	7.67E-04	mg/L	M	1.6E-06	mg/kg-day	4.00E-03	mg/kg-day	NA	NA	4.1E-04
	Chloroform	3.69E-03	mg/L	3.69E-03	mg/L	M	7.6E-06	mg/kg-day	1.00E-02	mg/kg-day	NA	NA	7.6E-04
	Vinyl Chloride	5.70E-04	mg/L	5.70E-04	mg/L	M	6.4E-07	mg/kg-day	3.00E-03	mg/kg-day	NA	NA	2.1E-04
	Arsenic	2.80E-03	mg/L	2.80E-03	mg/L	M	1.4E-07	mg/kg-day	3.00E-04	mg/kg-day	NA	NA	4.6E-04
	Chromium	6.42E-02	mg/L	6.42E-02	mg/L	M	6.4E-06	mg/kg-day	3.75E-02	mg/kg-day	NA	NA	1.7E-04
	Vanadium	1.92E-02	mg/L	1.92E-02	mg/L	M	9.5E-07	mg/kg-day	1.82E-04	mg/kg-day	NA	NA	5.2E-03
	(total)												7.2E-03
Inhalation	1,1,2-Trichloroethane	7.67E-04	mg/L	2.09E-04	(mg/m^3- min)	R	7.8E-06	mg/kg-day		mg/kg-day	NA	NA	
	Chloroform	3.69E-03	mg/L	1.21E-03	(mg/m^3- min)	R	4.5E-05	mg/kg-day	8.60E-05	mg/kg-day	NA	NA	5.3E-01
	Vinyl Chloride	5.70E-04	mg/L	2.45E-04	(mg/m^3- min)	R	9.2E-06	mg/kg-day	2.80E-02	mg/kg-day	NA	NA	3.3E-04
	(total)												5.3E-01

Total Hazard Index Across All Exposure Routes/Pathways **1.1E+00**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

SITE 8 - TABLE 8.12a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF CANCER RISKS
EXPOSURE OF FUTURE CHILD RESIDENTS TO GROUNDWATER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Tap Water
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1,2-Trichloroethane	7.67E-04	mg/L	7.67E-04	mg/L	M	9.4E-07	mg/kg-day	5.70E-02	$(mg/kg\text{-}day)^{-1}$	5.3E-08
	Chloroform	3.69E-03	mg/L	3.69E-03	mg/L	M	4.5E-06	mg/kg-day	6.10E-03	$(mg/kg\text{-}day)^{-1}$	2.7E-08
	Vinyl Chloride	5.70E-04	mg/L	5.70E-04	mg/L	M	7.0E-07	mg/kg-day	1.40E+00	$(mg/kg\text{-}day)^{-1}$	9.7E-07
	Arsenic	2.80E-03	mg/L	2.80E-03	mg/L	M	3.4E-06	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	5.1E-06
	(total)										6.2E-06
Dermal	1,1,2-Trichloroethane	7.67E-04	mg/L	7.67E-04	mg/L	M	4.7E-08	mg/kg-day	5.70E-02	$(mg/kg\text{-}day)^{-1}$	2.7E-09
	Chloroform	3.69E-03	mg/L	3.69E-03	mg/L	M	2.2E-07	mg/kg-day	6.10E-03	$(mg/kg\text{-}day)^{-1}$	1.3E-09
	Vinyl Chloride	5.70E-04	mg/L	5.70E-04	mg/L	M	1.8E-08	mg/kg-day	1.40E+00	$(mg/kg\text{-}day)^{-1}$	2.6E-08
	Arsenic	2.80E-03	mg/L	2.80E-03	mg/L	M	4.0E-09	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	6.0E-09
	(total)										3.6E-08
Inhalation	1,1,2-Trichloroethane	7.67E-04	mg/L	2.09E-04	$(mg/m^3\text{- min})$	R	2.2E-07	mg/kg-day	5.60E-02	$(mg/kg\text{-}day)^{-1}$	1.3E-08
	Chloroform	3.69E-03	mg/L	1.21E-03	$(mg/m^3\text{- min})$	R	1.3E-06	mg/kg-day	8.10E-02	$(mg/kg\text{-}day)^{-1}$	1.0E-07
	Vinyl Chloride	5.70E-04	mg/L	2.45E-04	$(mg/m^3\text{- min})$	R	2.6E-07	mg/kg-day	3.00E-02	$(mg/kg\text{-}day)^{-1}$	7.9E-09
	(total)										1.3E-07

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

Total Risk Across All Exposure Routes/Pathways **6.3E-06**

SITE 8 - TABLE 4.13

VALUES USED FOR DAILY INTAKE CALCULATIONS
EXPOSURE OF FULL TIME WORKERS TO INDOOR AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Indoor Air / Outdoor Ambient Air
Receptor Population: Full Time Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Cair	Chemical Concentration in Air	(mg/m^3)	Derived	EPA 1989a	Derived	EPA 1989a	Chronic Daily Intake (CDI) (mg/kg-day)=
	IRa	Inhalation Rate	(m^3/hr)	2.5	EPA 1989a	2.5	EPA 1989a	Cair x IRa x ET x EF x ED / BW x AT
	EF	Exposure Frequency	(days/year)	250	EPA 1993a	219	EPA 1993a	
	ED	Exposure Duration	(years)	25	EPA 1993a	9	EPA 1993a	
	ET	Exposure Time	(hr/day)	8	Professional judgement	4	Professional Judgement	
	BW	Body Weight	(kg)	70	EPA 1989a	70	EPA 1989a	
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25,550	EPA 1989a	
	AT-N	Averaging Time (Noncancer)	(days)	9,125	EPA 1989a	3,285	EPA 1989a	

Daily Intake Calculations

Inhalation Intake = (Cair x Ira x Et x EF x ED) / (BW x AT)

Cancer Inhalation Intake(RME) = 6.99E-02
Noncancer Inhalation Intake(RME) = 1.96E-01

Cancer Inhalation Intake(CTE) = 1.10E-02
Noncancer Inhalation Intake(CTE) = 8.57E-02

SITE 8 - TABLE 7.13. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF FULL TIME WORKERS TO INDOOR AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Indoor Air
Receptor Population: Full Time Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2-Trichloroethane	1.70E-03	mg/L	2.40E-06	mg/m^3	R	4.7E-07	mg/kg-day		mg/kg-day	NA	NA	
	Chloroform	7.20E-03	mg/L	3.81E-05	mg/m^3	R	7.5E-06	mg/kg-day	8.60E-05	mg/kg-day	NA	NA	8.7E-02
	Vinyl Chloride	9.20E-04	mg/L	2.57E-05	mg/m^3	R	5.0E-06	mg/kg-day	2.80E-02	mg/kg-day	NA	NA	1.8E-04
	(total)												8.7E-02

Total Hazard Index Across All Exposure Routes/Pathways **8.7E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

SITE 8 - TABLE 8.13. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF CANCER RISKS
EXPOSURE OF FULL TIME WORKERS TO INDOOR AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Indoor Air
Receptor Population: Full Time Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2-Trichloroethane	1.70E-03	mg/L	2.40E-06	mg/m^3	R	1.7E-07	mg/kg-day	5.60E-02	$(mg/kg\text{-}day)^{-1}$	9.4E-09
	Chloroform	7.20E-03	mg/L	3.81E-05	mg/m^3	R	2.7E-06	mg/kg-day	8.10E-02	$(mg/kg\text{-}day)^{-1}$	2.2E-07
	Vinyl Chloride	9.20E-04	mg/L	2.57E-05	mg/m^3	R	1.8E-06	mg/kg-day	1.50E-02	$(mg/kg\text{-}day)^{-1}$	2.7E-08
	(total)										2.5E-07
										Total Risk Across All Exposure Routes/Pathways	**2.5E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

SITE 8 - TABLE 7.13a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF FULL TIME WORKERS TO INDOOR AIR
SITE 8 - TABLE 7.14. REASONABLE MAXIMUM EXPOSURE (RME)
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Indoor Air
Receptor Population: Full Time Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2-Trichloroethane	7.67E-04	mg/L	1.08E-06	mg/m^3	R	9.3E-08	mg/kg-day		mg/kg-day	NA	NA	
	Chloroform	3.69E-03	mg/L	1.95E-05	mg/m^3	R	1.7E-06	mg/kg-day	8.60E-05	mg/kg-day	NA	NA	1.9E-02
	Vinyl Chloride	5.70E-04	mg/L	1.59E-05	mg/m^3	R	1.4E-06	mg/kg-day	2.80E-02	mg/kg-day	NA	NA	4.9E-05
	(total)												2.0E-02
												Total Hazard Index Across All Exposure Routes/Pathways	**2.0E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

SITE 8 - TABLE 8.13a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF CANCER RISKS
EXPOSURE OF FULL TIME WORKERS TO INDOOR AIR
SITE 8 - TABLE 7.14. REASONABLE MAXIMUM EXPOSURE (RME)
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Indoor Air
Receptor Population: Full Time Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2-Trichloroethane	7.67E-04	mg/L	1.08E-06	mg/m^3	R	1.2E-08	mg/kg-day	5.60E-02	$(mg/kg\text{-}day)^{-1}$	6.7E-10
	Chloroform	3.69E-03	mg/L	1.95E-05	mg/m^3	R	2.2E-07	mg/kg-day	8.10E-02	$(mg/kg\text{-}day)^{-1}$	1.7E-08
	Vinyl Chloride	5.70E-04	mg/L	1.59E-05	mg/m^3	R	1.8E-07	mg/kg-day	1.50E-02	$(mg/kg\text{-}day)^{-1}$	2.6E-09
	(total)										2.1E-08
										Total Risk Across All Exposure Routes/Pathways	**2.1E-08**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

SITE 8 - TABLE 4.14

VALUES USED FOR DAILY INTAKE CALCULATIONS
EXPOSURE OF FULL TIME WORKERS TO AMBIENT AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Ambient Air
Receptor Population: Full Time Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Cair	Chemical Concentration in Air	(mg/m^3)	Derived	EPA 1989a	Derived	EPA 1989a	Chronic Daily Intake (CDI) (mg/kg-day)=
	IRa	Inhalation Rate of volatiles	(m^3/hr)	2.5	EPA 1989a	2.5	EPA 1989a	Cair x IRa x ET x EF x ED / BW x AT
	EF	Exposure Frequency	(days/year)	250	EPA 1993a	219	EPA 1993a	
	ED	Exposure Duration	(years)	25	EPA 1993a	9	EPA 1993a	
	ET	Exposure Time	(hr/day)	8	Professional judgement	4	Professional Judgement	
	BW	Body Weight	(kg)	70	EPA 1989a	70	EPA 1989a	
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25,550	EPA 1989a	
	AT-N	Averaging Time (Noncancer)	(days)	9,125	EPA 1989a	3,285	EPA 1989a	

Daily Intake Calculations

Inhalation Intake = (IRa x ET x EF x ED) / (BW x AT)

Cancer Inhalation Intake(RME) = 6.99E-02
Noncancer Inhalation Intake(RME) = 1.96E-01

Cancer Inhalation Intake(CTE) = 1.10E-02
Noncancer Inhalation Intake(CTE) = 8.57E-02

SITE 8 - TABLE 7.14. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF FULL TIME WORKERS TO AMBIENT AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Ambient Air
Receptor Population: Full Time Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2-Trichloroethane	1.70E-03	mg/L	8.86E-09	mg/m^3	R	1.7E-09	mg/kg-day		mg/kg-day	NA	NA	
	Chloroform	7.20E-03	mg/L	9.20E-08	mg/m^3	R	1.8E-08	mg/kg-day	8.60E-05	mg/kg-day	NA	NA	2.1E-04
	Vinyl Chloride	9.20E-04	mg/L	4.97E-08	mg/m^3	R	9.7E-09	mg/kg-day	2.80E-02	mg/kg-day	NA	NA	3.5E-07
	(total)												2.1E-04
												Total Hazard Index Across All Exposure Routes/Pathways	**2.1E-04**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

SITE 8 - TABLE 8.14. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF CANCER RISKS
EXPOSURE OF FULL TIME WORKERS TO AMBIENT AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Ambient Air
Receptor Population: Full Time Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2-Trichloroethane	1.70E-03	mg/L	8.86E-09	mg/m^3	R	6.2E-10	mg/kg-day	5.60E-02	$(mg/kg\text{-}day)^{-1}$	3.5E-11
	Chloroform	7.20E-03	mg/L	9.20E-08	mg/m^3	R	6.4E-09	mg/kg-day	8.10E-02	$(mg/kg\text{-}day)^{-1}$	5.2E-10
	Vinyl Chloride	9.20E-04	mg/L	4.97E-08	mg/m^3	R	3.5E-09	mg/kg-day	1.50E-02	$(mg/kg\text{-}day)^{-1}$	5.2E-11
	(total)										6.1E-10
										Total Risk Across All Exposure Routes/Pathways	**6.1E-10**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

SITE 8 - TABLE 7.14a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF FULL TIME WORKERS TO AMBIENT AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Ambient Air
Receptor Population: Full Time Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2-Trichloroethane	7.67E-04	mg/L	3.99E-09	mg/m^3	R	3.4E-10	mg/kg-day		mg/kg-day	NA	NA	
	Chloroform	3.69E-03	mg/L	4.72E-08	mg/m^3	R	4.0E-09	mg/kg-day	8.60E-05	mg/kg-day	NA	NA	4.7E-05
	Vinyl Chloride	5.70E-04	mg/L	3.08E-08	mg/m^3	R	2.6E-09	mg/kg-day	2.80E-02	mg/kg-day	NA	NA	9.4E-08
	(total)												4.7E-05

Total Hazard Index Across All Exposure Routes/Pathways **4.7E-05**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

SITE 8 - TABLE 8.14a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF CANCER RISKS
EXPOSURE OF FULL TIME WORKERS TO AMBIENT AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Ambient Air
Receptor Population: Full Time Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2-Trichloroethane	7.67E-04	mg/L	3.99E-09	mg/m^3	R	4.4E-11	mg/kg-day	5.60E-02	$(mg/kg\text{-}day)^{-1}$	2.5E-12
	Chloroform	3.69E-03	mg/L	4.72E-08	mg/m^3	R	5.2E-10	mg/kg-day	8.10E-02	$(mg/kg\text{-}day)^{-1}$	4.2E-11
	Vinyl Chloride	5.70E-04	mg/L	3.08E-08	mg/m^3	R	3.4E-10	mg/kg-day	1.50E-02	$(mg/kg\text{-}day)^{-1}$	5.1E-12
	(total)										5.0E-11
										Total Risk Across All Exposure Routes/Pathways	**5.0E-11**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

SITE 8 - TABLE 4.15

VALUES USED FOR DAILY INTAKE CALCULATIONS
EXPOSURE OF DAY CARE CENTER CHILDREN TO INDOOR AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Indoor Air
Receptor Population: Day Care Child
Receptor Age: Child (0-6 Years)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Cair	Chemical Concentration in Air	(mg/m^3)	Derived	EPA 1989c	Derived	EPA 1989c	Chronic Daily Intake (CDI) (mg/kg-day)=
	IRa	Inhalation Rate	(m^3/hr)	1.2	EPA 1996a	1.2	EPA 1996a	Cair x IRa x ET x EF x ED / BW x AT
	EF	Exposure Frequency	(days/year)	250	EPA 1993a	219	EPA 1993a	
	ED	Exposure Duration	(years)	6	Professional judgement	3	Professional Judgement	
	ET	Exposure Time	(hr/day)	8	Professional judgement	4	Professional Judgement	
	BW	Body Weight	(kg)	15	EPA 1989c	15	EPA 1989c	
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989c	25,550	EPA 1989c	
	AT-N	Averaging Time (Noncancer)	(days)	2,190	EPA 1989c	1,095	EPA 1989c	

Daily Intake Calculations

Inhalation Intake = (Cair x Ira x Et x EF x ED) / (BW x AT)

Cancer Inhalation Intake(RME) = 3.76E-02
Noncancer Inhalation Intake(RME) = 4.38E-01

Cancer Inhalation Intake(CTE) = 8.23E-03
Noncancer Inhalation Intake(CTE) = 1.92E-01

SITE 8 - TABLE 7.15. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF DAY CARE CENTER CHILDREN TO INDOOR AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Indoor Air
Receptor Population: Day Care Child
Receptor Age: Child (0-6 Years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2-Trichloroethane	1.70E-03	mg/L	2.40E-06	mg/m^3	R	1.1E-06	mg/kg-day		mg/kg-day	NA	NA	
	Chloroform	7.20E-03	mg/L	3.81E-05	mg/m^3	R	1.7E-05	mg/kg-day	8.60E-05	mg/kg-day	NA	NA	1.9E-01
	Vinyl Chloride	9.20E-04	mg/L	2.57E-05	mg/m^3	R	1.1E-05	mg/kg-day	2.80E-02	mg/kg-day	NA	NA	4.0E-04
	(total)												1.9E-01
												Total Hazard Index Across All Exposure Routes/Pathways	**1.9E-01**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

SITE 8 - TABLE 8.15. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF CANCER RISKS
EXPOSURE OF DAY CARE CENTER CHILDREN TO INDOOR AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Indoor Air
Receptor Population: Day Care Child
Receptor Age: Child (0-6 Years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2-Trichloroethane	1.70E-03	mg/L	2.40E-06	mg/m^3	R	9.0E-08	mg/kg-day	5.60E-02	$(mg/kg\text{-}day)^{-1}$	5.0E-09
	Chloroform	7.20E-03	mg/L	3.81E-05	mg/m^3	R	1.4E-06	mg/kg-day	8.10E-02	$(mg/kg\text{-}day)^{-1}$	1.2E-07
	Vinyl Chloride	9.20E-04	mg/L	2.57E-05	mg/m^3	R	9.6E-07	mg/kg-day	3.00E-02	$(mg/kg\text{-}day)^{-1}$	2.9E-08
	(total)										1.5E-07
										Total Risk Across All Exposure Routes/Pathways	**1.5E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

SITE 8 - TABLE 7.15a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF DAY CARE CENTER CHILDREN TO INDOOR AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Indoor Air
Receptor Population: Day Care Child
Receptor Age: Child (0-6 Years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2-Trichloroethane	7.67E-04	mg/L	1.08E-06	mg/m^3	R	2.1E-07	mg/kg-day		mg/kg-day	NA	NA	
	Chloroform	3.69E-03	mg/L	1.95E-05	mg/m^3	R	3.8E-06	mg/kg-day	8.60E-05	mg/kg-day	NA	NA	4.4E-02
	Vinyl Chloride	5.70E-04	mg/L	1.59E-05	mg/m^3	R	3.1E-06	mg/kg-day	2.80E-02	mg/kg-day	NA	NA	1.1E-04
	(total)												4.4E-02
												Total Hazard Index Across All Exposure Routes/Pathways	**4.4E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

SITE 8 - TABLE 8.15a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF CANCER RISKS
EXPOSURE OF DAY CARE CENTER CHILDREN TO INDOOR AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Indoor Air
Receptor Population: Day Care Child
Receptor Age: Child (0-6 Years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2-Trichloroethane	7.67E-04	mg/L	1.08E-06	mg/m^3	R	8.9E-09	mg/kg-day	5.60E-02	$(mg/kg\text{-}day)^{-1}$	5.0E-10
	Chloroform	3.69E-03	mg/L	1.95E-05	mg/m^3	R	1.6E-07	mg/kg-day	8.10E-02	$(mg/kg\text{-}day)^{-1}$	1.3E-08
	Vinyl Chloride	5.70E-04	mg/L	1.59E-05	mg/m^3	R	1.3E-07	mg/kg-day	3.00E-02	$(mg/kg\text{-}day)^{-1}$	3.9E-09
	(total)										1.7E-08
										Total Risk Across All Exposure Routes/Pathways	**1.7E-08**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

SITE 8 - TABLE 4.16

VALUES USED FOR DAILY INTAKE CALCULATIONS
EXPOSURE OF FUTURE ADULT RESIDENTS TO INDOOR AIR / OUTDOOR AMBIENT AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Indoor Air / Outdoor Ambient Air
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Cair	Chemical Concentration in Air	(mg/m^3)	Derived	EPA 1989a	Derived	EPA 1989a	Chronic Daily Intake (CDI). (mg/kg-day)=
	IRa	Inhalation Rate	(m^3/hr)	0.833	EPA 1996a	0.833	EPA 1996a	Cair x IRa x ET x EF x ED / BW x AT
	EF	Exposure Frequency	(days/year)	350	EPA 1993a	234	EPA 1993a	
	ED	Exposure Duration	(years)	24	EPA 1993a	7	EPA 1993a	
	ET	Exposure Time	(hr/day)	24	EPA 1993a	24	EPA 1993a	
	BW	Body Weight	(kg)	70	EPA 1989a	70	EPA 1989a	
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25,550	EPA 1989a	
	AT-N	Averaging Time (Noncancer)	(days)	8,760	EPA 1989a	2,555	EPA 1989a	

Daily Intake Calculations
Inhalation Intake = (Cair x Ira x Et x EF x ED) / (BW x AT)

Cancer Inhalation Intake(RME) = 9.39E-02
Noncancer Inhalation Intake(RME) = 2.74E-01

Cancer Inhalation Intake(CTE) = 1.83E-02
Noncancer Inhalation Intake(CTE) = 1.83E-01

SITE 8 - TABLE 7.16. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF FUTURE CHILD RESIDENTS TO INDOOR AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Indoor Air
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2-Trichloroethane	1.70E-03	mg/L	2.40E-06	mg/m^3	R	6.6E-07	mg/kg-day		mg/kg-day	NA	NA	
	Chloroform	7.20E-03	mg/L	3.81E-05	mg/m^3	R	1.0E-05	mg/kg-day	8.60E-05	mg/kg-day	NA	NA	1.2E-01
	Vinyl Chloride	9.20E-04	mg/L	2.57E-05	mg/m^3	R	7.0E-06	mg/kg-day	2.80E-02	mg/kg-day	NA	NA	2.5E-04
	(total)												1.2E-01

Total Hazard Index Across All Exposure Routes/Pathways **1.2E-01**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

SITE 8 - TABLE 8.16. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF CANCER RISKS
EXPOSURE OF FUTURE CHILD RESIDENTS TO INDOOR AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Indoor Air
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2-Trichloroethane	1.70E-03	mg/L	2.40E-06	mg/m^3	R	2.3E-07	mg/kg-day	5.60E-02	$(mg/kg\text{-}day)^{-1}$	1.3E-08
	Chloroform	7.20E-03	mg/L	3.81E-05	mg/m^3	R	3.6E-06	mg/kg-day	8.10E-02	$(mg/kg\text{-}day)^{-1}$	2.9E-07
	Vinyl Chloride	9.20E-04	mg/L	2.57E-05	mg/m^3	R	2.4E-06	mg/kg-day	1.50E-02	$(mg/kg\text{-}day)^{-1}$	3.6E-08
	(total)										3.4E-07
										Total Risk Across All Exposure Routes/Pathways	**3.4E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

SITE 8 - TABLE 7.16a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF FUTURE CHILD RESIDENTS TO INDOOR AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Indoor Air
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2-Trichloroethane	7.67E-04	mg/L	1.08E-06	mg/m^3	R	2.0E-07	mg/kg-day		mg/kg-day	NA	NA	
	Chloroform	3.69E-03	mg/L	1.95E-05	mg/m^3	R	3.6E-06	mg/kg-day	8.60E-05	mg/kg-day	NA	NA	4.2E-02
	Vinyl Chloride	5.70E-04	mg/L	1.59E-05	mg/m^3	R	2.9E-06	mg/kg-day	2.80E-02	mg/kg-day	NA	NA	1.0E-04
	(total)												4.2E-02

Total Hazard Index Across All Exposure Routes/Pathways **4.2E-02**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

SITE 8 - TABLE 8.16a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF CANCER RISKS
EXPOSURE OF FUTURE CHILD RESIDENTS TO INDOOR AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Indoor Air
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2-Trichloroethane	7.67E-04	mg/L	1.08E-06	mg/m^3	R	2.0E-08	mg/kg-day	5.60E-02	$(mg/kg\text{-}day)^{-1}$	1.1E-09
	Chloroform	3.69E-03	mg/L	1.95E-05	mg/m^3	R	3.6E-07	mg/kg-day	8.10E-02	$(mg/kg\text{-}day)^{-1}$	2.9E-08
	Vinyl Chloride	5.70E-04	mg/L	1.59E-05	mg/m^3	R	2.9E-07	mg/kg-day	1.50E-02	$(mg/kg\text{-}day)^{-1}$	4.4E-09
	(total)										3.4E-08
										Total Risk Across All Exposure Routes/Pathways	**3.4E-08**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

SITE 8 - TABLE 4.17

VALUES USED FOR DAILY INTAKE CALCULATIONS
EXPOSURE OF FUTURE ADULT RESIDENTS TO AMBIENT AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Ambient Air
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Cair	Chemical Concentration in Air	(mg/m^3)	Derived	EPA 1989a	Derived	EPA 1989a	Chronic Daily Intake (CDI) (mg/kg-day)=
	IRa	Inhalation Rate of volatiles	(m^3/hr)	0.833	EPA 1996a	0.833	EPA 1996a	Cair x IRa x ET x EF x ED
	EF	Exposure Frequency	(days/year)	350	EPA 1993a	234	EPA 1993a	BW x AT
	ED	Exposure Duration	(years)	24	EPA 1993a	7	EPA 1993a	
	ET	Exposure Time	(hr/day)	24	EPA 1993a	24	EPA 1993a	
	BW	Body Weight	(kg)	70	EPA 1989a	70	EPA 1989a	
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25,550	EPA 1989a	
	AT-N	Averaging Time (Noncancer)	(days)	8,760	EPA 1989a	2,555	EPA 1989a	

Daily Intake Calculations

Inhalation Intake = (IRa x ET x EF x ED) / (BW x AT)

Cancer Inhalation Intake(RME) = 9.39E-02
Noncancer Inhalation Intake(RME) = 2.74E-01

Cancer Inhalation Intake(CTE) = 1.83E-02
Noncancer Inhalation Intake(CTE) = 1.83E-01

SITE 8 - TABLE 7.17. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF FUTURE ADULT RESIDENTS TO AMBIENT AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Ambient Air
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2-Trichloroethane	1.70E-03	mg/L	8.86E-09	mg/m^3	R	2.4E-09	mg/kg-day		mg/kg-day	NA	NA	
	Chloroform	7.20E-03	mg/L	9.20E-08	mg/m^3	R	2.5E-08	mg/kg-day	8.60E-05	mg/kg-day	NA	NA	2.9E-04
	Vinyl Chloride	9.20E-04	mg/L	4.97E-08	mg/m^3	R	1.4E-08	mg/kg-day	2.80E-02	mg/kg-day	NA	NA	4.9E-07
	(total)												2.9E-04
												Total Hazard Index Across All Exposure Routes/Pathways	**2.9E-04**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

SITE 8 - TABLE 8.17. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF CANCER RISKS
EXPOSURE OF FUTURE ADULT RESIDENTS TO AMBIENT AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Ambient Air
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2-Trichloroethane	1.70E-03	mg/L	8.86E-09	mg/m^3	R	8.3E-10	mg/kg-day	5.60E-02	$(mg/kg\text{-}day)^{-1}$	4.7E-11
	Chloroform	7.20E-03	mg/L	9.20E-08	mg/m^3	R	8.6E-09	mg/kg-day	8.10E-02	$(mg/kg\text{-}day)^{-1}$	7.0E-10
	Vinyl Chloride	9.20E-04	mg/L	4.97E-08	mg/m^3	R	4.7E-09	mg/kg-day	1.50E-02	$(mg/kg\text{-}day)^{-1}$	7.0E-11
	(total)										8.2E-10
										Total Risk Across All Exposure Routes/Pathways	**8.2E-10**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

SITE 8 - TABLE 7.17a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF FUTURE ADULT RESIDENTS TO AMBIENT AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Ambient Air
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2-Trichloroethane	7.67E-04	mg/L	3.99E-09	mg/m^3	R	7.3E-10	mg/kg-day		mg/kg-day	NA	NA	
	Chloroform	3.69E-03	mg/L	4.72E-08	mg/m^3	R	8.6E-09	mg/kg-day	8.60E-05	mg/kg-day	NA	NA	1.0E-04
	Vinyl Chloride	5.70E-04	mg/L	3.08E-08	mg/m^3	R	5.6E-09	mg/kg-day	2.80E-02	mg/kg-day	NA	NA	2.0E-07
	(total)												1.0E-04
												Total Hazard Index Across All Exposure Routes/Pathways	**1.0E-04**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

SITE 8 - TABLE 8.17a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF CANCER RISKS
EXPOSURE OF FUTURE ADULT RESIDENTS TO AMBIENT AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Ambient Air
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2-Trichloroethane	7.67E-04	mg/L	3.99E-09	mg/m^3	R	7.3E-11	mg/kg-day	5.60E-02	$(mg/kg\text{-}day)^{-1}$	4.1E-12
	Chloroform	3.69E-03	mg/L	4.72E-08	mg/m^3	R	8.6E-10	mg/kg-day	8.10E-02	$(mg/kg\text{-}day)^{-1}$	7.0E-11
	Vinyl Chloride	5.70E-04	mg/L	3.08E-08	mg/m^3	R	5.6E-10	mg/kg-day	1.50E-02	$(mg/kg\text{-}day)^{-1}$	8.5E-12
	(total)										8.2E-11
										Total Risk Across All Exposure Routes/Pathways	**8.2E-11**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

SITE 8 - TABLE 4.18

VALUES USED FOR DAILY INTAKE CALCULATIONS
EXPOSURE OF FUTURE CHILD RESIDENTS TO INDOOR AIR / OUTDOOR AMBIENT AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Indoor Air / Outdoor Ambient Air
Receptor Population: Resident
Receptor Age: Child (0-6 Years)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Cair	Chemical Concentration in Air	(mg/m^3)	Derived	EPA 1989a	Derived	EPA 1989a	Chronic Daily Intake (CDI) (mg/kg-day)=
	IRa	Inhalation Rate	(m^3/hr)	0.5	EPA 1996a	0.5	EPA 1989a	Cair x IRa x ET x EF x ED / BW x AT
	EF	Exposure Frequency	(days/year)	350	EPA 1993a	234	EPA 1993a	
	ED	Exposure Duration	(years)	6	EPA 1993a	2	EPA 1993a	
	ET	Exposure Time	(hr/day)	24	EPA 1993a	24	Professional Judgement	
	BW	Body Weight	(kg)	15	EPA 1989a	15	EPA 1989a	
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25,550	EPA 1989a	
	AT-N	Averaging Time (Noncancer)	(days)	2,190	EPA 1989a	730	EPA 1989a	

Daily Intake Calculations

Inhalation Intake = (Cair x Ira x Et x EF x ED) / (BW x AT)

Cancer Inhalation Intake(RME) = 6.58E-02
Noncancer Inhalation Intake(RME) = 7.67E-01

Cancer Inhalation Intake(CTE) = 1.47E-02
Noncancer Inhalation Intake(CTE) = 5.13E-01

SITE 8 - TABLE 7.18. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF FUTURE CHILD RESIDENTS TO INDOOR AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Indoor Air
Receptor Population: Resident
Receptor Age: Child (0-6 Years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2-Trichloroethane	1.70E-03	mg/L	2.40E-06	mg/m^3	R	1.8E-06	mg/kg-day		mg/kg-day	NA	NA	
	Chloroform	7.20E-03	mg/L	3.81E-05	mg/m^3	R	2.9E-05	mg/kg-day	8.60E-05	mg/kg-day	NA	NA	3.4E-01
	Vinyl Chloride	9.20E-04	mg/L	2.57E-05	mg/m^3	R	2.0E-05	mg/kg-day	2.80E-02	mg/kg-day	NA	NA	7.0E-04
	(total)												3.4E-01
												Total Hazard Index Across All Exposure Routes/Pathways	**3.4E-01**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

SITE 8 - TABLE 8.18. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF CANCER RISKS
EXPOSURE OF FUTURE CHILD RESIDENTS TO INDOOR AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Indoor Air
Receptor Population: Resident
Receptor Age: Child (0-6 Years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2-Trichloroethane	1.70E-03	mg/L	2.40E-06	mg/m^3	R	1.6E-07	mg/kg-day	5.60E-02	$(mg/kg\text{-}day)^{-1}$	8.8E-09
	Chloroform	7.20E-03	mg/L	3.81E-05	mg/m^3	R	2.5E-06	mg/kg-day	8.10E-02	$(mg/kg\text{-}day)^{-1}$	2.0E-07
	Vinyl Chloride	9.20E-04	mg/L	2.57E-05	mg/m^3	R	1.7E-06	mg/kg-day	3.00E-02	$(mg/kg\text{-}day)^{-1}$	5.1E-08
	(total)										2.6E-07
										Total Risk Across All Exposure Routes/Pathways	**2.6E-07**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

SITE 8 - TABLE 7.18a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF FUTURE CHILD RESIDENTS TO INDOOR AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Indoor Air
Receptor Population: Resident
Receptor Age: Child (0-6 Years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2-Trichloroethane	7.67E-04	mg/L	1.08E-06	mg/m^3	R	5.5E-07	mg/kg-day		mg/kg-day	NA	NA	
	Chloroform	3.69E-03	mg/L	1.95E-05	mg/m^3	R	1.0E-05	mg/kg-day	8.60E-05	mg/kg-day	NA	NA	1.2E-01
	Vinyl Chloride	5.70E-04	mg/L	1.59E-05	mg/m^3	R	8.2E-06	mg/kg-day	2.80E-02	mg/kg-day	NA	NA	2.9E-04
	(total)												1.2E-01
												Total Hazard Index Across All Exposure Routes/Pathways	**1.2E-01**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

SITE 8 - TABLE 8.18a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF CANCER RISKS
EXPOSURE OF FUTURE CHILD RESIDENTS TO INDOOR AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Indoor Air
Receptor Population: Resident
Receptor Age: Child (0-6 Years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2-Trichloroethane	7.67E-04	mg/L	1.08E-06	mg/m^3	R	1.6E-08	mg/kg-day	5.60E-02	$(mg/kg\text{-}day)^{-1}$	8.9E-10
	Chloroform	3.69E-03	mg/L	1.95E-05	mg/m^3	R	2.9E-07	mg/kg-day	8.10E-02	$(mg/kg\text{-}day)^{-1}$	2.3E-08
	Vinyl Chloride	5.70E-04	mg/L	1.59E-05	mg/m^3	R	2.3E-07	mg/kg-day	3.00E-02	$(mg/kg\text{-}day)^{-1}$	7.0E-09
	(total)										3.1E-08
										Total Risk Across All Exposure Routes/Pathways	**3.1E-08**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

SITE 8 - TABLE 4.19

VALUES USED FOR DAILY INTAKE CALCULATIONS
EXPOSURE OF FUTURE CHILD RESIDENTS TO AMBIENT AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Ambient Air
Receptor Population: Resident
Receptor Age: Child (0-6 Years)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Cair	Chemical Concentration in Air	(mg/m^3)	Derived	EPA 1989a	Derived	EPA 1989a	Chronic Daily Intake (CDI) (mg/kg-day)=
	IRa	Inhalation Rate of volatiles	(m^3/hr)	0.5	EPA 1996a	0.5	EPA 1989a	Cair x IRa x ET x EF x ED
	EF	Exposure Frequency	(days/year)	350	EPA 1993a	234	EPA 1993a	BW x AT
	ED	Exposure Duration	(years)	6	EPA 1993a	2	EPA 1993a	
	ET	Exposure Time	(hr/day)	24	EPA 1993a	24	Professional Judgement	
	BW	Body Weight	(kg)	15	EPA 1989a	15	EPA 1989a	
	AT-C	Averaging Time (Cancer)	(days)	25,550	EPA 1989a	25,550	EPA 1989a	
	AT-N	Averaging Time (Noncancer)	(days)	2,190	EPA 1989a	730	EPA 1989a	

Daily Intake Calculations

Inhalation Intake = (IRa x ET x EF x ED) / (BW x AT)

Cancer Inhalation Intake(RME) = 6.58E-02
Noncancer Inhalation Intake(RME) = 7.67E-01

Cancer Inhalation Intake(CTE) = 1.47E-02
Noncancer Inhalation Intake(CTE) = 5.13E-01

SITE 8 - TABLE 7.19. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF FUTURE CHILD RESIDENTS TO AMBIENT AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Ambient Air
Receptor Population: Resident
Receptor Age: Child (0-6 Years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2-Trichloroethane	1.70E-03	mg/L	8.86E-09	mg/m^3	R	6.8E-09	mg/kg-day		mg/kg-day	NA	NA	
	Chloroform	7.20E-03	mg/L	9.20E-08	mg/m^3	R	7.1E-08	mg/kg-day	8.60E-05	mg/kg-day	NA	NA	8.2E-04
	Vinyl Chloride	9.20E-04	mg/L	4.97E-08	mg/m^3	R	3.8E-08	mg/kg-day	2.80E-02	mg/kg-day	NA	NA	1.4E-06
	(total)												8.2E-04
												Total Hazard Index Across All Exposure Routes/Pathways	**8.2E-04**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

SITE 8 - TABLE 8.19. REASONABLE MAXIMUM EXPOSURE (RME)

CALCULATION OF CANCER RISKS
EXPOSURE OF FUTURE CHILD RESIDENTS TO AMBIENT AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Ambient Air
Receptor Population: Resident
Receptor Age: Child (0-6 Years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2-Trichloroethane	1.70E-03	mg/L	8.86E-09	mg/m^3	R	5.8E-10	mg/kg-day	5.60E-02	$(mg/kg\text{-}day)^{-1}$	3.3E-11
	Chloroform	7.20E-03	mg/L	9.20E-08	mg/m^3	R	6.0E-09	mg/kg-day	8.10E-02	$(mg/kg\text{-}day)^{-1}$	4.9E-10
	Vinyl Chloride	9.20E-04	mg/L	4.97E-08	mg/m^3	R	3.3E-09	mg/kg-day	3.00E-02	$(mg/kg\text{-}day)^{-1}$	9.8E-11
	(total)										6.2E-10
										Total Risk Across All Exposure Routes/Pathways	**6.2E-10**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

SITE 8 - TABLE 7.19a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF NON-CANCER HAZARDS
EXPOSURE OF FUTURE CHILD RESIDENTS TO AMBIENT AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Ambient Air
Receptor Population: Resident
Receptor Age: Child (0-6 Years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2-Trichloroethane	7.67E-04	mg/L	3.99E-09	mg/m^3	R	2.0E-09	mg/kg-day		mg/kg-day	NA	NA	
	Chloroform	3.69E-03	mg/L	4.72E-08	mg/m^3	R	2.4E-08	mg/kg-day	8.60E-05	mg/kg-day	NA	NA	2.8E-04
	Vinyl Chloride	5.70E-04	mg/L	3.08E-08	mg/m^3	R	1.6E-08	mg/kg-day	2.80E-02	mg/kg-day	NA	NA	5.6E-07
	(total)												2.8E-04
												Total Hazard Index Across All Exposure Routes/Pathways	**2.8E-04**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

SITE 8 - TABLE 8.19a. CENTRAL TENDENCY EXPOSURE (CTE)

CALCULATION OF CANCER RISKS
EXPOSURE OF FUTURE CHILD RESIDENTS TO AMBIENT AIR
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Ambient Air
Receptor Population: Resident
Receptor Age: Child (0-6 Years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2-Trichloroethane	7.67E-04	mg/L	3.99E-09	mg/m^3	R	5.9E-11	mg/kg-day	5.60E-02	$(mg/kg\text{-}day)^{-1}$	3.3E-12
	Chloroform	3.69E-03	mg/L	4.72E-08	mg/m^3	R	6.9E-10	mg/kg-day	8.10E-02	$(mg/kg\text{-}day)^{-1}$	5.6E-11
	Vinyl Chloride	5.70E-04	mg/L	3.08E-08	mg/m^3	R	4.5E-10	mg/kg-day	3.00E-02	$(mg/kg\text{-}day)^{-1}$	1.4E-11
	(total)										7.3E-11
										Total Risk Across All Exposure Routes/Pathways	**7.3E-11**

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

SITE 8 - TABLE 9.1. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - FULL TIME WORKER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Receptor Population: Full Time Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface and Suburface Soil	Aroclor-1260	2.1E-07		8.0E-08	2.9E-07	Aroclor-1260					
			Antimony					Antimony	Lifespan	1.8E-03		7.5E-05	1.9E-03
			Manganese					Manganese	CNS	4.1E-02		6.4E-03	4.7E-02
			Mercury					Mercury	CNS	3.5E-03		3.2E-04	3.8E-03
Groundwater	Water	Onsite Indoor and Outdoor Air	1,1,2-Trichloroethane		9.4E-09		9.4E-09	1,1,2-Trichloroethane	Liver				
			Chloroform		2.2E-07		2.2E-07	Chloroform	Liver		8.7E-02		8.7E-02
			Vinyl Chloride		2.7E-08		2.7E-08	Vinyl Chloride	Liver		1.8E-04		1.8E-04

Total Risk Across Surface Soil: 2.9E-07
Total Risk Across Groundwater / Air: 2.5E-07
Total Risk Across All Media and All Exposure Routes: 5.4E-07

Total Hazard Index Across All Media and All Exposure Routes: 1.4E-01
Total Liver HI = 8.7E-02
Total CNS HI = 5.1E-02

NOTE: Inhalation risks from exposure to vapors emitted from groundwater represent the sum of risks from indoor air and outdoor air.
The total risks from inhalation of indoor air, outdoor air, and air while showering are presented separately in Table 1, Cumulative Risk Summary.

SITE 8 - TABLE 9.1a. CNETRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - FULL TIME WORKER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Receptor Population: Full Time Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface and Suburface Soil	Aroclor-1260	3.3E-08		2.5E-09	3.6E-08	Aroclor-1260					
			Antimony					Antimony	Lifespan	7.8E-04		6.6E-06	7.9E-04
			Manganese					Manganese	CNS	1.8E-02		5.6E-04	1.8E-02
			Mercury					Mercury	CNS	1.5E-03		2.8E-05	1.6E-03
Groundwater	Water	Onsite Indoor and Outdoor Air	1,1,2-Trichloroethane		6.7E-10		6.7E-10	1,1,2-Trichloroethane	Liver				
			Chloroform		1.7E-08		1.7E-08	Chloroform	Liver		2.0E-02		2.0E-02
			Vinyl Chloride		2.6E-09		2.6E-09	Vinyl Chloride	Liver		4.9E-05		4.9E-05

Total Risk Across Surface Soil: 3.6E-08
Total Risk Across Groundwater / Air: 2.1E-08
Total Risk Across All Media and All Exposure Routes: 5.6E-08

Total Hazard Index Across All Media and All Exposure Routes: 4.0E-02
Total Liver HI = 2.0E-02
Total CNS HI = 2.0E-02

NOTE: Inhalation risks from exposure to vapors emitted from groundwater represent the sum of risks from indoor air and outdoor air.
The total risks from inhalation of indoor air, outdoor air, and air while showering are presented separately in Table 2, Cumulative Risk Summary.

SITE 8 - TABLE 9.2. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - MAINTENANCE / UTILITY WORKER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Receptor Population: Maintenance / Utility Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface and Subsurface Soil	Aroclor-1260	3.0E-08		1.7E-08	4.7E-08	Aroclor-1260					
			Antimony					Antimony	Lifespan	2.6E-04		1.6E-05	2.7E-04
			Manganese					Manganese	CNS	5.9E-03		1.4E-03	7.3E-03
			Mercury					Mercury	CNS	5.1E-04		6.9E-05	5.8E-04
Groundwater	Water	Onsite	1,1,2-Trichloroethane		5.0E-12	7.7E-09	7.7E-09	1,1,2-Trichloroethane	Liver			9.4E-05	9.4E-05
			Chloroform		7.5E-11	3.4E-09	3.4E-09	Chloroform	Liver		3.0E-05	1.5E-04	1.8E-04
			Vinyl Chloride		7.5E-12	3.1E-08	3.1E-08	Vinyl Chloride	Liver		5.0E-08	4.0E-05	4.0E-05
			Arsenic			3.6E-08	3.6E-08	Arsenic	Skin, Vascular			2.2E-04	2.2E-04
			Chromium					Chromium	NOAEL			1.4E-04	1.4E-04
			Vanadium					Vanadium	NOEL			2.8E-03	2.8E-03

Total Risk Across Surface Soil: 4.7E-08
Total Risk Across Groundwater: 7.8E-08

Total Risk Across All Media and All Exposure Routes: 1.3E-07

Total Hazard Index Across All Media and All Exposure Routes: 1.2E-02

Total Liver HI = 3.2E-04
Total CNS HI = 7.8E-03
Total Skin HI = 2.2E-04
Total Vascular HI = 2.2E-04

SITE 8 - TABLE 9.2a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - MAINTENANCE / UTILITY WORKER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Receptor Population: Maintenance / Utility Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface and Subsurface Soil	Aroclor-1260	2.7E-09		1.0E-09	3.7E-09	Aroclor-1260					
			Antimony					Antimony	Lifespan	6.4E-05		2.7E-06	6.7E-05
			Manganese					Manganese	CNS	1.5E-03		2.3E-04	1.7E-03
			Mercury					Mercury	CNS	1.3E-04		1.1E-05	1.4E-04
Groundwater	Water	Onsite	1,1,2-Trichloroethane		2.0E-13	6.2E-10	6.2E-10	1,1,2-Trichloroethane	Liver			2.1E-05	2.1E-05
			Chloroform		3.5E-12	3.1E-10	3.1E-10	Chloroform	Liver		3.9E-06	3.9E-05	4.3E-05
			Vinyl Chloride		4.2E-13	3.5E-09	3.5E-09	Vinyl Chloride	Liver		7.7E-09	1.2E-05	1.2E-05
			Arsenic			3.4E-09	3.4E-09	Arsenic	Skin, Vascular			5.9E-05	5.9E-05
			Chromium					Chromium	NOAEL			2.2E-05	2.2E-05
			Vanadium					Vanadium	NOEL			6.7E-04	6.7E-04

Total Risk Across Surface Soil: 3.7E-09
Total Risk Across Groundwater: 7.8E-09

Total Risk Across All Media and All Exposure Routes: 1.2E-08

Total Hazard Index Across All Media and All Exposure Routes: 2.7E-03

Total Liver HI = 7.7E-05
Total CNS HI = 1.8E-03
Total Skin HI = 5.9E-05
Total Vascular HI = 5.9E-05

SITE 8 - TABLE 9.3. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - CONSTRUCTION WORKER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface and Subsurface Soil	Aroclor-1260	2.9E-08		3.4E-09	3.2E-08	Aroclor-1260					
			Antimony					Antimony	Lifespan	6.2E-03		8.1E-05	6.2E-03
			Manganese					Manganese	CNS	1.4E-01		7.0E-03	1.5E-01
			Mercury					Mercury	CNS	1.2E-02		3.4E-04	1.3E-02
Groundwater	Water	Onsite	1,1,2-Trichloroethane		1.9E-12	1.5E-09	1.5E-09	1,1,2-Trichloroethane	Liver			4.7E-04	4.7E-04
			Chloroform		2.9E-11	6.7E-10	7.0E-10	Chloroform	Liver		2.9E-04	7.7E-04	1.1E-03
			Vinyl Chloride		2.9E-12	6.2E-09	6.2E-09	Vinyl Chloride	Liver		4.8E-07	2.0E-04	2.0E-04
			Arsenic			7.2E-09	7.2E-09	Arsenic	Skin, Vascular			1.1E-03	1.1E-03
			Chromium					Chromium	NOAEL			7.1E-04	7.1E-04
			Vanadium					Vanadium	NOEL			1.4E-02	1.4E-02

Total Risk Across Surface Soil: 3.2E-08
Total Risk Across Groundwater: 1.6E-08

Total Risk Across All Media and All Exposure Routes: 4.8E-08

Total Hazard Index Across All Media and All Exposure Routes: 1.8E-01

Total Liver HI = 1.7E-03
Total CNS HI = 1.6E-01
Total Skin HI = 1.1E-03
Total Vascular HI = 1.1E-03

SITE 8 - TABLE 9.3a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - CONSTRUCTION WORKER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface and Subsurface Soil	Aroclor-1260	1.4E-08		1.1E-09	1.6E-08	Aroclor-1260					
			Antimony					Antimony	Lifespan	3.1E-03		2.7E-05	3.1E-03
			Manganese					Manganese	CNS	7.1E-02		2.3E-03	7.3E-02
			Mercury					Mercury	CNS	6.1E-03		1.1E-04	6.2E-03
Groundwater	Water	Onsite	1,1,2-Trichloroethane		4.3E-13	6.9E-10	6.9E-10	1,1,2-Trichloroethane	Liver			2.1E-04	2.1E-04
			Chloroform		7.4E-12	3.4E-10	3.5E-10	Chloroform	Liver		7.4E-05	3.9E-04	4.7E-04
			Vinyl Chloride		8.9E-13	3.8E-09	3.9E-09	Vinyl Chloride	Liver		1.5E-07	1.2E-04	1.2E-04
			Arsenic			3.8E-09	3.8E-09	Arsenic	Skin, Vascular			5.9E-04	5.9E-04
			Chromium					Chromium	NOAEL			2.2E-04	2.2E-04
			Vanadium					Vanadium	NOEL			6.7E-03	6.7E-03

Total Risk Across Surface Soil: 1.6E-08
Total Risk Across Groundwater: 8.7E-09

Total Risk Across All Media and All Exposure Routes: 2.4E-08

Total Hazard Index Across All Media and All Exposure Routes: 9.0E-02

Total Liver HI = 8.1E-04
Total CNS HI = 7.9E-02
Total Skin HI = 5.9E-04
Total Vascular HI = 5.9E-04

SITE 8 - TABLE 9.4. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADULT RECREATIONAL USER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface and Subsurface Soil	Aroclor-1260	1.6E-08		2.6E-08	4.2E-08	Aroclor-1260					
			Antimony					Antimony	Lifespan	1.1E-04		2.1E-05	1.3E-04
			Manganese					Manganese	CNS	2.6E-03		1.8E-03	4.4E-03
			Mercury					Mercury	CNS	2.3E-04		8.7E-05	3.1E-04
						Total Risk Across Surface Soil	4.2E-08					Total Hazard Index Across All Media and All Exposure Routes	4.8E-03

k Across All Media and All Exposure Routes 4.2E-08

Total CNS HI = 4.7E-03

SITE 8 - TABLE 9.4a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADULT RECREATIONAL USER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface and Subsurface Soil	Aroclor-1260	1.2E-09		5.2E-10	1.7E-09	Aroclor-1260					
			Antimony					Antimony	Lifespan	2.8E-05		1.4E-06	3.0E-05
			Manganese					Manganese	CNS	6.5E-04		1.2E-04	7.7E-04
			Mercury					Mercury	CNS	5.6E-05		5.8E-06	6.2E-05
						Total Risk Across Surface Soil	1.7E-09					Total Hazard Index Across All Media and All Exposure Routes	8.6E-04

k Across All Media and All Exposure Routes 1.7E-09

Total CNS HI = 8.3E-04

SITE 8 - TABLE 9.5. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADOLESCENT TRESPASSER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface and Subsurface Soil	Aroclor-1260	2.8E-08		1.7E-08	4.5E-08	Aroclor-1260					
			Antimony					Antimony	Lifespan	6.0E-04		3.9E-05	6.4E-04
			Manganese					Manganese	CNS	1.4E-02		3.4E-03	1.7E-02
			Mercury					Mercury	CNS	1.2E-03		1.7E-04	1.4E-03
						Total Risk Across Surface Soil	4.5E-08					Total Hazard Index Across All Media and All Exposure Routes	1.9E-02

k Across All Media and All Exposure Routes 4.5E-08

Total CNS HI = 1.9E-02

SITE 8 - TABLE 9.5a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - ADOLESCENT TRESPASSER
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface and Subsurface Soil	Aroclor-1260	7.1E-09		1.1E-09	8.2E-09	Aroclor-1260					
			Antimony					Antimony	Lifespan	1.5E-04		2.6E-06	1.5E-04
			Manganese					Manganese	CNS	3.5E-03		2.3E-04	3.7E-03
			Mercury					Mercury	CNS	3.0E-04		1.1E-05	3.1E-04
							Total Risk Across Surface Soil					Total Hazard Index Across All Media and All Exposure Routes	4.1E-03

k Across All Media and All Exposure Routes 8.2E-09

Total CNS HI = 4.0E-03

SITE 8 - TABLE 9.6. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - DAY CARE CENTER CHILD
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Receptor Population: Day Care Center Child
Receptor Age: Child (0-6 Years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface and Subsurface Soil	Aroclor-1260	2.3E-07		1.5E-07	3.8E-07	Aroclor-1260					
			Antimony					Antimony	Lifespan	8.3E-03		5.8E-04	8.9E-03
			Manganese					Manganese	CNS	1.9E-01		5.0E-02	2.4E-01
			Mercury					Mercury	CNS	1.6E-02		2.5E-03	1.9E-02
Groundwater	Water	Onsite Indoor and Outdoor Air	1,1,2-Trichloroethane		5.0E-09		5.0E-09	1,1,2-Trichloroethane	Liver				
			Chloroform		1.2E-07		1.2E-07	Chloroform	Liver		1.9E-01		1.9E-01
			Vinyl Chloride		2.9E-08		2.9E-08	Vinyl Chloride	Liver		4.0E-04		4.0E-04
						Total Risk Across Surface Soil	3.8E-07					Total Hazard Index Across All Media and All Exposure Routes	4.6E-01
						Total Risk Across Groundwater / Air	1.5E-07						
												Total Liver HI =	1.9E-01
						Total Risk Across All Media and All Exposure Routes	5.3E-07					Total CNS HI =	2.6E-01

SITE 8 - TABLE 9.6a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - DAY CARE CENTER CHILD
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Receptor Population: Day Care Center Child
Receptor Age: Child (0-6 Years)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface and Subsurface Soil	Aroclor-1260	5.1E-08		8.7E-09	6.0E-08	Aroclor-1260					
			Antimony					Antimony	Lifespan	3.6E-03		6.8E-05	3.7E-03
			Manganese					Manganese	CNS	8.3E-02		5.8E-03	8.9E-02
			Mercury					Mercury	CNS	7.2E-03		2.9E-04	7.5E-03
Groundwater	Water	Onsite Indoor and Outdoor Air	1,1,2-Trichloroethane		5.0E-10		5.0E-10	1,1,2-Trichloroethane	Liver				
			Chloroform		1.3E-08		1.3E-08	Chloroform	Liver		4.4E-02		4.4E-02
			Vinyl Chloride		3.9E-09		3.9E-09	Vinyl Chloride	Liver		1.1E-04		1.1E-04

Total Risk Across Surface Soil: 6.0E-08
Total Risk Across Groundwater / Air: 1.7E-08
Total Risk Across All Media and All Exposure Routes: 7.8E-08

Total Hazard Index Across All Media and All Exposure Routes: 1.4E-01
Total Liver HI = 4.4E-02
Total CNS HI = 9.7E-02

SITE 8 - TABLE 9.7. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - FUTURE ADULT RESIDENT
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface and Subsurface Soil	Aroclor-1260	2.8E-07		1.1E-07	3.9E-07	Aroclor-1260					
			Antimony					Antimony	Lifespan	2.5E-03		1.0E-04	2.6E-03
			Manganese					Manganese	CNS	5.7E-02		9.0E-03	6.6E-02
			Mercury					Mercury	CNS	4.9E-03		4.4E-04	5.4E-03
Groundwater	Water	Onsite	1,1,2-Trichloroethane	9.1E-07	2.1E-07	9.2E-08	1.2E-06	1,1,2-Trichloroethane	Liver	1.2E-02		1.2E-03	1.3E-02
			Chloroform	4.1E-07	1.7E-06	4.0E-08	2.2E-06	Chloroform	Liver	2.0E-02	7.2E-01	1.9E-03	7.4E-01
			Vinyl Chloride	6.2E-06	8.0E-08	3.3E-07	6.6E-06	Vinyl Chloride	Liver	8.4E-03	5.6E-04	4.5E-04	9.4E-03
			Arsenic	7.5E-05		2.1E-07	7.5E-05	Arsenic	Skin, Vascular	4.8E-01		1.4E-03	4.9E-01
			Chromium					Chromium	NOAEL	3.9E-03		8.9E-04	4.7E-03
			Vanadium					Vanadium	NOEL	1.6E-01		1.7E-02	1.7E-01

Total Risk Across Surface Soil	3.9E-07
Total Risk Across Groundwater	8.5E-05
Total Risk Across All Media and All Exposure Routes	8.5E-05

Total Hazard Index Across All Media and All Exposure Routes	1.5E+00
Total Liver HI =	7.5E-01
Total CNS HI =	7.1E-02
Total Skin HI =	4.9E-01
Total Vascular HI =	4.9E-01

NOTE: Inhalation risks from exposure to vapors emitted from groundwater represent the sum of risks from indoor air, outdoor air, and risks from inhalation while showering. The total risks from inhalation of indoor air, outdoor air, and air while showering are presented separately in Table 1, Cumulative Risk Summary.

SITE 8 - TABLE 9.7a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - FUTURE ADULT RESIDENT
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface and Subsurface Soil	Aroclor-1260	2.7E-08		3.0E-09	3.0E-08	Aroclor-1260					
			Antimony					Antimony	Lifespan	8.3E-04		1.0E-05	8.4E-04
			Manganese					Manganese	CNS	1.9E-02		8.6E-04	2.0E-02
			Mercury					Mercury	CNS	1.6E-03		4.2E-05	1.7E-03
Groundwater	Water	Onsite	1,1,2-Trichloroethane	5.6E-08	1.1E-08	5.7E-09	7.2E-08	1,1,2-Trichloroethane	Liver	2.5E-03		2.5E-04	2.7E-03
			Chloroform	2.9E-08	1.1E-07	2.8E-09	1.4E-07	Chloroform	Liver	4.7E-03	1.5E-01	4.7E-04	1.6E-01
			Vinyl Chloride	5.3E-07	7.3E-09	2.8E-08	5.6E-07	Vinyl Chloride	Liver	2.4E-03	1.7E-04	1.3E-04	2.7E-03
			Arsenic	5.4E-06		1.3E-08	5.4E-06	Arsenic	Skin, Vascular	1.2E-01		2.9E-04	1.2E-01
			Chromium					Chromium	NOAEL	5.5E-04		1.0E-04	6.5E-04
			Vanadium					Vanadium	NOEL	3.5E-02		3.2E-03	3.8E-02

Total Risk Across Surface Soil: 3.0E-08
Total Risk Across Groundwater: 6.2E-06

Total Risk Across All Media and All Exposure Routes: 6.2E-06

Total Hazard Index Across All Media and All Exposure Routes: 3.5E-01

Total Liver HI = 1.7E-01
Total CNS HI = 2.2E-02
Total Skin HI = 1.2E-01
Total Vascular HI = 1.2E-01

NOTE: Inhalation risks from exposure to vapors emitted from groundwater represent the sum of risks from indoor air, outdoor air, and risks from inhalation while showering. The total risks from inhalation of indoor air, outdoor air, and air while showering are presented separately in Table 2, Cumulative Risk Summary.

SITE 8 - TABLE 9.8. REASONABLE MAXIMUM EXPOSURE (RME)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - FUTURE CHILD RESIDENT
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface and Subsurface Soil	Aroclor-1260	6.6E-07		1.4E-07	8.0E-07	Aroclor-1260					
			Antimony					Antimony	Lifespan	2.3E-02		5.4E-04	2.4E-02
			Manganese					Manganese	CNS	5.3E-01		4.7E-02	5.8E-01
			Mercury					Mercury	CNS	4.6E-02		2.3E-03	4.8E-02
Groundwater	Water	Onsite	1,1,2-Trichloroethane	5.3E-07	2.3E-07	3.2E-08	8.0E-07	1,1,2-Trichloroethane	Liver	2.7E-02		1.7E-03	2.9E-02
			Chloroform	2.4E-07	1.9E-06	1.4E-08	2.1E-06	Chloroform	Liver	4.6E-02	3.1E+00	2.7E-03	3.2E+00
			Vinyl Chloride	7.1E-06	1.5E-07	2.3E-07	7.4E-06	Vinyl Chloride	Liver	2.0E-02	2.1E-03	6.3E-04	2.2E-02
			Arsenic	4.4E-05		7.6E-08	4.4E-05	Arsenic	Skin, Vascular	1.1E+00		2.0E-03	1.1E+00
			Chromium					Chromium	NOAEL	9.0E-03		1.3E-03	1.0E-02
			Vanadium					Vanadium	NOEL	3.7E-01		2.4E-02	3.9E-01

Total Risk Across Surface Soil: 8.0E-07
Total Risk Across Groundwater: 5.4E-05
Total Risk Across All Media and All Exposure Routes: 5.5E-05

Total Hazard Index Across All Media and All Exposure Routes: 5.4E+00

Total Liver HI = 3.2E+00
Total CNS HI = 6.3E-01
Total Skin HI = 1.1E+00
Total Vascular HI = 1.1E+00

NOTE: Inhalation risks from exposure to vapors emitted from groundwater represent the sum of risks from indoor air, outdoor air, and risks from inhalation while showering. The total risks from inhalation of indoor air, outdoor air, and air while showering are presented separately in Table 1, Cumulative Risk Summary.

SITE 8 - TABLE 9.8a. CENTRAL TENDENCY EXPOSURE (CTE)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - FUTURE CHILD RESIDENT
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface and Subsurface Soil	Aroclor-1260	7.3E-08		6.2E-09	7.9E-08	Aroclor-1260					
			Antimony					Antimony	Lifespan	7.8E-03		7.3E-05	7.9E-03
			Manganese					Manganese	CNS	1.8E-01		6.2E-03	1.8E-01
			Mercury					Mercury	CNS	1.5E-02		3.1E-04	1.6E-02
Groundwater	Water	Onsite	1,1,2-Trichloroethane	5.3E-08	1.3E-08	2.7E-09	6.9E-08	1,1,2-Trichloroethane	Liver	8.2E-03		4.1E-04	8.6E-03
			Chloroform	2.7E-08	1.3E-07	1.3E-09	1.6E-07	Chloroform	Liver	1.6E-02	6.4E-01	7.6E-04	6.6E-01
			Vinyl Chloride	9.7E-07	1.5E-08	2.6E-08	1.0E-06	Vinyl Chloride	Liver	8.1E-03	6.2E-04	2.1E-04	9.0E-03
			Arsenic	5.1E-06		6.0E-09	5.1E-06	Arsenic	Skin, Vascular	4.0E-01		4.6E-04	4.0E-01
			Chromium					Chromium	NOAEL	1.8E-03		1.7E-04	2.0E-03
			Vanadium					Vanadium	NOEL	1.2E-01		5.2E-03	1.2E-01

Total Risk Across Surface Soil: 7.9E-08
Total Risk Across Groundwater: 6.4E-06

Total Risk Across All Media and All Exposure Routes: 6.5E-06

Total Hazard Index Across All Media and All Exposure Routes: 1.4E+00

Total Liver HI = 6.8E-01
Total CNS HI = 2.0E-01
Total Skin HI = 4.0E-01
Total Vascular HI = 4.0E-01

NOTE: Inhalation risks from exposure to vapors emitted from groundwater represent the sum of risks from indoor air, outdoor air, and risks from inhalation while showering. The total risks from inhalation of indoor air, outdoor air, and air while showering are presented separately in Table 2, Cumulative Risk Summary.

SITE 8 - TABLE 10.1. REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - FUTURE ADULT RESIDENT
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Water	Onsite	1,1,2-Trichloroethane	9.1E-07	2.1E-07	9.2E-08	1.2E-06	1,1,2-Trichloroethane	Liver	1.2E-02		1.2E-03	1.3E-02
			Chloroform	4.1E-07	1.7E-06	4.0E-08	2.2E-06	Chloroform	Liver	2.0E-02	7.2E-01	1.9E-03	7.4E-01
			Vinyl Chloride	6.2E-06	8.0E-08	3.3E-07	6.6E-06	Vinyl Chloride					
			Arsenic	7.5E-05		2.1E-07	7.5E-05	Arsenic	Skin, Vascular	4.8E-01		1.4E-03	4.9E-01

Total Risk Across Surface Soil
Total Risk Across Groundwater: 8.5E-05
Total Risk Across All Media and All Exposure Routes: 8.5E-05

Total Hazard Index Across All Media and All Exposure Routes: 1.4E+00
Total Liver HI = 7.5E-01
Total Skin HI = 4.9E-01
Total Vascular HI = 4.9E-01

NOTE: Inhalation risks from exposure to vapors emitted from groundwater represent the sum of risks from indoor air, outdoor air, and risks from inhalation while showering. The total risks from inhalation of indoor air, outdoor air, and air while showering are presented separately in Table 1, Cumulative Risk Summary.

SITE 8 - TABLE 10.2. REASONABLE MAXIMUM EXPOSURE (RME)
RISK ASSESSMENT SUMMARY - FUTURE CHILD RESIDENT
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	Surface Soil	Aroclor-1260	9.2E-07		9.7E-07	1.9E-06	Aroclor-1260					
			Manganese					Manganese	CNS	5.3E-01		2.3E+00	2.8E+00
Groundwater	Water	Onsite	Chloroform	2.4E-07	1.9E-06	1.4E-08	2.1E-06	Chloroform	Liver	4.6E-02	3.1E+00	2.7E-03	3.2E+00
			Vinyl Chloride	7.1E-06	1.5E-07	2.3E-07	7.4E-06	Vinyl Chloride					
			Aluminum					Aluminum	Immunological, Nails				
			Arsenic	4.4E-05		7.6E-08	4.4E-05	Arsenic	Skin, Vascular	1.1E+00		2.0E-03	1.1E+00
			Cadmium					Cadmium	Kidney				
			Iron					Iron	Liver/Blood/GI Tract				
			Thallium					Thallium	Liver				

Total Risk Across Surface Soil: 1.9E-06
Total Risk Across Groundwater: 5.3E-05

Total Risk Across All Media and All Exposure Routes: 5.5E-05

Total Hazard Index Across All Media and All Exposure Routes: 7.1E+00

Total Liver HI = 3.2E+00
Total CNS HI = 2.8E+00
Total Skin HI = 1.1E+00
Total Vascular HI = 1.1E+00

Volatilization from Groundwater to Outdoor Air - RME
Source: ASTM E 1739-95
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT

Parameter	Value	Definition
H	Chemical specific	Henry's Law Constant, (cm^3-H_2O)/(cm^3-air)
Uair	390	Wind speed above ground in mixing zone (cm/sec)
dair	200	ambient air mixing zone height, (cm)
W	1500	width of source parallel to groundwater flow direction, (cm)
hcap	5	thickness of capillary fringe, (cm)
hv	295	thickness of vadose zone, (cm)
Lgw	300	depth to groundwater (cm)
Dws	Chemical specific	effective diffusion coefficient between groundwater and soil (cm^2/sec)
Dcap	Chemical specific	effective diffusion through capillary fringe, (cm^2/sec)
Ds	Chemical specific	effective diffusion coefficient in soil based on vapor concentration, (cm^2/sec)
Dair	Chemical specific	diffusion coefficient in air, (cm^2/sec)
Dwater	Chemical specific	diffusion coefficient in water, (cm^2/sec)
theta_as	0.26	volumetric air content in vadose zone soils, (cm^3-air/cm^3-soil)
theta_ws	0.12	volumetric water content in vadose zone soils, (cm^3-H_2O/cm^3-soil)
theta_T	0.38	total soil porosity, (cm^3/cm^3-soil)
theta_acap	0.038	volumetric air content in capillary fringe soils, (cm^3-air/cm^3-soil)
theta_wcap	0.342	volumetric water content in capillary fringe soils, (cm^3-H_2O/cm^3-soil)

RME

Chemical	Cw (mg/L)	Dair (cm^2/sec)	Dwater (cm^2/sec)	S mg/L	H'	Ds (cm^2/sec)	Dcap (cm^2/sec)	Dws (cm^2/sec)	VF mg/m^3)/(mg/L	Cair (mg/m^3)
1,1,2-Trichloroethane	1.70E-03	7.80E-02	8.80E-06	4.42E+03	3.74E-02	6.09E-03	5.58E-05	2.17E-03	5.21E-06	8.86E-09
Chloroform	7.20E-03	1.04E-01	1.00E-05	7.92E+03	1.50E-01	8.12E-03	2.64E-05	1.33E-03	1.28E-05	9.20E-08
Vinyl Chloride	9.20E-04	1.06E-01	1.23E-06	2.76E+03	1.11E+00	8.27E-03	1.39E-05	7.59E-04	5.40E-05	4.97E-08

Volatilization from Groundwater to Outdoor Air - CTE
Source: ASTM E 1739-95
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT

Parameter	Value	Definition
H	Chemical specific	Henry's Law Constant, (cm^3-H_2O)/(cm^3-air)
Uair	390	Wind speed above ground in mixing zone (cm/sec)
dair	200	ambient air mixing zone height, (cm)
W	1500	width of source parallel to groundwater flow direction, (cm)
hcap	5	thickness of capillary fringe, (cm)
hv	295	thickness of vadose zone, (cm)
Lgw	300	depth to groundwater (cm)
Dws	Chemical specific	effective diffusion coefficient between groundwater and soil (cm^2/sec)
Dcap	Chemical specific	effective diffusion through capillary fringe, (cm^2/sec)
Ds	Chemical specific	effective diffusion coefficient in soil based on vapor concentration, (cm^2/sec)
Dair	Chemical specific	diffusion coefficient in air, (cm^2/sec)
Dwater	Chemical specific	diffusion coefficient in water, (cm^2/sec)
theta_as	0.26	volumetric air content in vadose zone soils, (cm^3-air/cm^3-soil)
theta_ws	0.12	volumetric water content in vadose zone soils, (cm^3-H_2O/cm^3-soil)
theta_T	0.38	total soil porosity, (cm^3/cm^3-soil)
theta_acap	0.038	volumetric air content in capillary fringe soils, (cm^3-air/cm^3-soil)
theta_wcap	0.342	volumetric water content in capillary fringe soils, (cm^3-H_2O/cm^3-soil)

RME

Chemical	Cw (mg/L)	Dair (cm^2/sec)	Dwater (cm^2/sec)	S mg/L	H'	Ds (cm^2/sec)	Dcap (cm^2/sec)	Dws (cm^2/sec)	VF mg/m^3)/(mg/L	Cair (mg/m^3)
1,1,2-Trichloroethane	7.67E-04	7.80E-02	8.80E-06	4.42E+03	3.74E-02	6.09E-03	5.58E-05	2.17E-03	5.21E-06	3.99E-09
Chloroform	3.69E-03	1.04E-01	1.00E-05	7.92E+03	1.50E-01	8.12E-03	2.64E-05	1.33E-03	1.28E-05	4.72E-08
Vinyl Chloride	5.70E-04	1.06E-01	1.23E-06	2.76E+03	1.11E+00	8.27E-03	1.39E-05	7.59E-04	5.40E-05	3.08E-08

Vapor Intrusion from Groundwater - CTE
Source: ASTM E 1739-95
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT

Parameter	Value	Definition
H	Chemical specific	Henry's Law Constant, (cm^3-H_2O)/(cm^3-air)
ER	0.00023	enclosed space air exchange rate, L/sec
Lb	300	enclosed space volume/infiltration area ratio, (cm)
Lcrack	15	enclosed space foundaion or wall thickness, (cm)
n	0.01	areal fraction of cracks in foundation/walls, (cm^2-cracks/cm^2-total area)
hcap	5	thickness of capillary fringe, (cm)
hv	295	thickness of vadose zone, (cm)
Lgw	300	depth to groundwater (cm)
Dws	Chemical specific	effective diffusion coefficient between groundwater and soil (cm^2/sec)
Dcrack	Chemical specific	effective diffusion through foundation cracks, (cm^2/sec)
Dcap	Chemical specific	effective diffusion through capillary fringe, (cm^2/sec)
Ds	Chemical specific	effective diffusion coefficient in soil based on vapor concentration, (cm^2/sec)
Dair	Chemical specific	diffusion coefficient in air, (cm^2/sec)
Dwater	Chemical specific	diffusion coefficient in water, (cm^2/sec)
theta_as	0.26	volumetric air content in vadose zone soils, (cm^3-air/cm^3-soil)
theta_ws	0.12	volumetric water content in vadose zone soils, (cm^3-H_2O/cm^3-soil)
theta_T	0.38	total soil porosity, (cm^3/cm^3-soil)
theta_acap	0.038	volumetric air content in capillary fringe soils, (cm^3-air/cm^3-soil)
theta_wcap	0.342	volumetric water content in capillary fringe soils, (cm^3-H_2O/cm^3-soil)
theta_wcrack	0.12	volumetric water content in foundation/wall cracks, (cm^3-H_2O/cm^3-soil)
Theta_acrack	0.26	volumetric air content in foundation/wall cracks, (cm^3-air/cm^3-soil)

Chemical	Cw (mg/L)	Dair (cm^2/sec)	Dwater (cm^2/sec)	S mg/L	H'	Ds (cm^2/sec)	Dcap (cm^2/sec)	Dws (cm^2/sec)	Dcrack (cm^2/sec)	VF1	VF	Cair (mg/m^3)
1,1,2-Trichloroethane	7.67E-04	7.80E-02	8.80E-06	4.42E+03	3.74E-02	6.09E-03	5.58E-05	2.17E-03	6.09E-03	1.05E-04	1.41E-03	1.08E-06
Chloroform	3.69E-03	1.04E-01	1.00E-05	7.92E+03	1.50E-01	8.12E-03	2.64E-05	1.33E-03	8.12E-03	6.42E-05	5.29E-03	1.95E-05
Vinyl Chloride	5.70E-04	1.06E-01	1.23E-06	2.76E+03	1.11E+00	8.27E-03	1.39E-05	7.59E-04	8.27E-03	3.67E-05	2.79E-02	1.59E-05

Vapor Intrusion from Groundwater - RME
Source: ASTM E 1739-95
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT

Parameter	Value	Definition
H	Chemical specific	Henry's Law Constant, (cm^3-H_2O)/(cm^3-air)
ER	0.00023	enclosed space air exchange rate, L/sec
Lb	300	enclosed space volume/infiltration area ratio, (cm)
Lcrack	15	enclosed space foundaion or wall thickness, (cm)
n	0.01	areal fraction of cracks in foundation/walls, (cm^2-cracks/cm^2-total area)
hcap	5	thickness of capillary fringe, (cm)
hv	295	thickness of vadose zone, (cm)
Lgw	300	depth to groundwater (cm)
Dws	Chemical specific	effective diffusion coefficient between groundwater and soil (cm^2/sec)
Dcrack	Chemical specific	effective diffusion through foundation cracks, (cm^2/sec)
Dcap	Chemical specific	effective diffusion through capillary fringe, (cm^2/sec)
Ds	Chemical specific	effective diffusion coefficient in soil based on vapor concentration, (cm^2/sec)
Dair	Chemical specific	diffusion coefficient in air, (cm^2/sec)
Dwater	Chemical specific	diffusion coefficient in water, (cm^2/sec)
theta_as	0.26	volumetric air content in vadose zone soils, (cm^3-air/cm^3-soil)
theta_ws	0.12	volumetric water content in vadose zone soils, (cm^3-H_2O/cm^3-soil)
theta_T	0.38	total soil porosity, (cm^3/cm^3-soil)
theta_acap	0.038	volumetric air content in capillary fringe soils, (cm^3-air/cm^3-soil)
theta_wcap	0.342	volumetric water content in capillary fringe soils, (cm^3-H_2O/cm^3-soil)
theta_wcrack	0.12	volumetric water content in foundation/wall cracks, (cm^3-H_2O/cm^3-soil)
Theta_acrack	0.26	volumetric air content in foundation/wall cracks, (cm^3-air/cm^3-soil)

Chemical	Cw (mg/L)	Dair (cm^2/sec)	Dwater (cm^2/sec)	S mg/L	H'	Ds (cm^2/sec)	Dcap (cm^2/sec)	Dws (cm^2/sec)	Dcrack (cm^2/sec)	VF1	VF	Cair (mg/m^3)
1,1,2-Trichloroethane	1.70E-03	7.80E-02	8.80E-06	4.42E+03	3.74E-02	6.09E-03	5.58E-05	2.17E-03	6.09E-03	1.05E-04	1.41E-03	2.40E-06
Chloroform	7.20E-03	1.04E-01	1.00E-05	7.92E+03	1.50E-01	8.12E-03	2.64E-05	1.33E-03	8.12E-03	6.42E-05	5.29E-03	3.81E-05
Vinyl Chloride	9.20E-04	1.06E-01	1.23E-06	2.76E+03	1.11E+00	8.27E-03	1.39E-05	7.59E-04	8.27E-03	3.67E-05	2.79E-02	2.57E-05

Volatilization From Showering - RME
Source: Foster & Chrostowski, 1987.
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT

Parameter	Value	Definition
Ra	0.025	air exchange rate, (min^{-1})
Ds	15	shower duration, (min)
Dt	20	total time in bathroom, (min)
Fr	10	shower water flow rate, (L/min)
Sv	12	shower room air volume, (m^3)
ts	2	shower dropler drop time, (sec)
d	1	shower droplet diameter, (mm)
T1	293	calibration water temperature, (K)
Ts	318	shower water temperature, (K)
m1	0.982	water viscosity at T1, (cp)
ms	0.616	water viscosity at Ts, (cp)
K	3.96	mass transfer coefficient, (min)

Chemical	Cw (mg/L)	MW (g/mole)	H (atm-m^3/mol	Kl (cm/hr)	Kg (cm/hr)	KL (cm/hr)	Kal (cm/hr)	Cwd mg/L	S	S x K / Ra x CF
1,1,2-Trichloroethane	1.70E-03	1.33E+02	9.12E-04	1.15E+01	1.10E+03	9.03E+00	1.19E+01	5.56E-04	4.63E-04	4.32E-02
Chloroform	7.20E-03	1.19E+02	3.66E-03	1.22E+01	1.17E+03	1.14E+01	1.50E+01	2.83E-03	2.36E-03	5.19E-02
Vinyl Chloride	9.20E-04	6.30E+01	2.71E-02	1.67E+01	1.60E+03	1.66E+01	2.18E+01	4.75E-04	3.96E-04	6.82E-02

RISK ASSESSMENT SPREADSHEET - INHALATION OF VOLATILES FROM GROUNDWATER

SITE NAME: SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
LOCATION: NSWC-WHITE OAK SILVER SPRING, MARYLAND
EXPOSURE SCENARIO: INHALATION OF VAPOR WHILE SHOWERING- ADULT RESIDENT - RME
MEDIA: GROUNDWATER TO INDOOR AIR
DATE: 10/29/01

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH THE INHALATION OF VOLATILES WHILE SHOWERING ARE CONSIDERED.
INTAKE EQUATION IS BASED ON EPA, 1989 AND FOSTER AND CHROSTOWSKI, 1987.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $$\text{Intake} = \frac{S \times IR_{SW} \times K \times EF \times ED}{BW \times AT \times R_a \times CF}$$

WHERE:			
	K = :	3.96	Mass transfer coefficient (min)
	IR_{sh} = :	10	Inhalation rate (L/min)
	S = :		Volatile chemical generation rate (mg/m^3-min-shower)
	EF = :	350	Exposure Frequency (days/year)
	ED = :	24	Exposure Duration (years)
	BW = :	70	Body Weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	Atn = :	8,760	Averaging time for noncarcinogenic exposures (days)
	R_a = :	0.025	Air exchange rate (min^{-1})
	CF = :	1.00E+03	Convesrion Factor (L/m^3)

Unit Dose

Lifetime Chronic Daily Intake =	7.4E-03	(min-m^3-shower)/(kg-day)
Chronic Daily Intake = :	2.2E-02	(min-m^3-shower)/(kg-day)

RISK ASSESSMENT SPREADSHEET - INHALATION OF VOLATILES FROM GROUNDWATER

SITE NAME: SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
LOCATION: NSWC-WHITE OAK SILVER SPRING, MARYLAND
EXPOSURE SCENARIO: INHALATION OF VAPOR WHILE SHOWERING- ADULT RESIDENT - RME
MEDIA: GROUNDWATER TO INDOOR AIR
DATE: 10/29/01

CHEMICAL	S (mg/m^3- min - shower)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
1,1,2-Trichloroethane	4.63E-04	3.4E-06	1.0E-05	5.60E-02		1.9E-07	11.6%	NA	NA
Chloroform	2.36E-03	1.8E-05	5.1E-05	8.10E-02	8.60E-05	1.4E-06	85.7%	5.9E-01	99.9%
Vinyl Chloride	3.96E-04	2.9E-06	8.6E-06	1.50E-02	2.80E-02	4.4E-08	2.7%	3.1E-04	0.1%
					Total	**1.7E-06**	**100.0%**	**6.0E-01**	**100.0%**

RISK ASSESSMENT SPREADSHEET - INHALATION OF VOLATILES FROM GROUNDWATER

SITE NAME: SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
LOCATION: NSWC-WHITE OAK SILVER SPRING, MARYLAND
EXPOSURE SCENARIO: INHALATION OF VAPOR WHILE SHOWERING- CHILD RESIDENT - RME
MEDIA: GROUNDWATER TO INDOOR AIR
DATE: 10/29/01

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH THE INHALATION OF VOLATILES WHILE SHOWERING ARE CONSIDERED.
INTAKE EQUATION IS BASED ON EPA, 1989 AND FOSTER AND CHROSTOWSKI, 1987.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $$\text{Intake} = \frac{S \times IR_{SW} \times K \times EF \times ED}{BW \times AT \times R_a \times CF}$$

WHERE:			
	K = :	3.96	Mass transfer coefficient (min)
	IR_{sh} = :	10	Inhalation rate (L/min)
	S = :		Volatile chemical generation rate (mg/m^3-min-shower)
	EF = :	350	Exposure Frequency (days/year)
	ED = :	6	Exposure Duration (years)
	BW = :	15	Body Weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	Atn = :	2,190	Averaging time for noncarcinogenic exposures (days)
	R_a = :	0.025	Air exchange rate (min^{-1})
	CF = :	1.00E+03	Convesrion Factor (L/m^3)

Unit Dose

Lifetime Chronic Daily Intake =	8.7E-03	(min-m^3-shower)/(kg-day)
Chronic Daily Intake = :	1.0E-01	(min-m^3-shower)/(kg-day)

RISK ASSESSMENT SPREADSHEET - INHALATION OF VOLATILES FROM GROUNDWATER

SITE NAME: SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
LOCATION: NSWC-WHITE OAK SILVER SPRING, MARYLAND
EXPOSURE SCENARIO: INHALATION OF VAPOR WHILE SHOWERING- CHILD RESIDENT - RME
MEDIA: GROUNDWATER TO INDOOR AIR
DATE: 10/29/01

CHEMICAL	S (mg/m^3- min - shower)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
1,1,2-Trichloroethane	4.63E-04	4.0E-06	4.7E-05	5.60E-02		2.3E-07	11.3%	NA	NA
Chloroform	2.36E-03	2.0E-05	2.4E-04	8.10E-02	8.60E-05	1.7E-06	83.5%	2.8E+00	99.9%
Vinyl Chloride	3.96E-04	3.4E-06	4.0E-05	3.00E-02	2.80E-02	1.0E-07	5.2%	1:4E-03	0.1%
					Total	**2.0E-06**	**100.0%**	**2.8E+00**	**100.0%**

Volatilization From Showering - CTE
Source: Foster & Chrostowski, 1987.
SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT

Parameter	Value	Definition
Ra	0.025	air exchange rate, (min^{-1})
Ds	10	shower duration, (min)
Dt	15	total time in bathroom, (min)
Fr	10	shower water flow rate, (L/min)
Sv	12	shower room air volume, (m^3)
ts	2	shower dropler drop time, (sec)
d	1	shower droplet diameter, (mm)
T1	293	calibration water temperature, (K)
Ts	318	shower water temperature, (K)
m1	0.982	water viscosity at T1, (cp)
ms	0.616	water viscosity at Ts, (cp)
K	2.19	mass transfer coefficient, (min)

Chemical	Cw (mg/L)	MW (g/mole)	H (atm-m^3/mol	Kl (cm/hr)	Kg (cm/hr)	KL (cm/hr)	Kal (cm/hr)	Cwd mg/L	S	S x K Ra x CF
1,1,2-Trichloroethane	7.67E-04	1.33E+02	9.12E-04	1.15E+01	1.10E+03	9.03E+00	1.19E+01	2.51E-04	2.09E-04	2.39E-02
Chloroform	3.69E-03	1.19E+02	3.66E-03	1.22E+01	1.17E+03	1.14E+01	1.50E+01	1.45E-03	1.21E-03	2.87E-02
Vinyl Chloride	5.70E-04	6.30E+01	2.71E-02	1.67E+01	1.60E+03	1.66E+01	2.18E+01	2.94E-04	2.45E-04	3.77E-02

RISK ASSESSMENT SPREADSHEET - INHALATION OF VOLATILES FROM GROUNDWATER

SITE NAME: SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
LOCATION: NSWC-WHITE OAK SILVER SPRING, MARYLAND
EXPOSURE SCENARIO: INHALATION OF VAPOR WHILE SHOWERING- ADULT RESIDENT- CTE
MEDIA: GROUNDWATER TO INDOOR AIR
DATE: 10/29/01

HAZARD INDICES AND INCREMENTAL CANCER RISKS ARE CALCULATED BY THIS SPREADSHEET.
EXPOSURES THROUGH THE INHALATION OF VOLATILES WHILE SHOWERING ARE CONSIDERED.
INTAKE EQUATION IS BASED ON EPA, 1989 AND FOSTER AND CHROSTOWSKI, 1987.
ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $$\text{Intake} = \frac{S \times IR_{SW} \times K \times EF \times ED}{BW \times AT \times R_a \times CF}$$

WHERE:			
	K = :	2.19	Mass transfer coefficient (min)
	IR_{sh} = :	10	Inhalation rate (L/min)
	S = :		Volatile chemical generation rate (mg/m^3-min-shower)
	EF = :	234	Exposure Frequency (days/year)
	ED = :	7	Exposure Duration (years)
	BW = :	70	Body Weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	Atn = :	2,555	Averaging time for noncarcinogenic exposures (days)
	R_a = :	0.025	Air exchange rate (min^{-1})
	CF = :	1.00E+03	Convesrion Factor (L/m^3)

Unit Dose

Lifetime Chronic Daily Intake =	8.0E-04	(min-m^3-shower)/(kg-day)
Chronic Daily Intake = :	8.0E-03	(min-m^3-shower)/(kg-day)

RISK ASSESSMENT SPREADSHEET - INHALATION OF VOLATILES FROM GROUNDWATER

SITE NAME: SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
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EXPOSURE SCENARIO: INHALATION OF VAPOR WHILE SHOWERING- ADULT RESIDENT- CTE
MEDIA: GROUNDWATER TO INDOOR AIR
DATE: 10/29/01

CHEMICAL	S (mg/m^3- min - shower)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
1,1,2-Trichloroethane	2.09E-04	1.7E-07	1.7E-06	5.60E-02		9.4E-09	10.3%	NA	NA
Chloroform	1.21E-03	9.7E-07	9.7E-06	8.10E-02	8.60E-05	7.9E-08	86.4%	1.1E-01	99.9%
Vinyl Chloride	2.45E-04	2.0E-07	2.0E-06	1.50E-02	2.80E-02	3.0E-09	3.2%	7.0E-05	0.1%
					Total	**9.1E-08**	**100.0%**	**1.1E-01**	**100.0%**

RISK ASSESSMENT SPREADSHEET - INHALATION OF VOLATILES FROM GROUNDWATER

SITE NAME: SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
LOCATION: NSWC-WHITE OAK SILVER SPRING, MARYLAND
EXPOSURE SCENARIO: INHALATION OF VAPOR WHILE SHOWERING- CHILD RESIDENT - CTE
MEDIA: GROUNDWATER TO INDOOR AIR
DATE: 10/29/01

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EXPOSURES THROUGH THE INHALATION OF VOLATILES WHILE SHOWERING ARE CONSIDERED.
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ASSUMPTIONS ARE OUTLINED BELOW.

RELEVANT EQUATION: $$\text{Intake} = \frac{S \times IR_{SW} \times K \times EF \times ED}{BW \times AT \times R_a \times CF}$$

WHERE:			
	K = :	2.19	Mass transfer coefficient (min)
	IR_{sh} = :	10	Inhalation rate (L/min)
	S = :		Volatile chemical generation rate (mg/m^3-min-shower)
	EF = :	234	Exposure Frequency (days/year)
	ED = :	2	Exposure Duration (years)
	BW = :	15	Body Weight (kg)
	ATc = :	25,550	Averaging time for carcinogenic exposures (days)
	Atn = :	730	Averaging time for noncarcinogenic exposures (days)
	R_a = :	0.025	Air exchange rate (min^{-1})
	CF = :	1.00E+03	Convesrion Factor (L/m^3)

Unit Dose

Lifetime Chronic Daily Intake =	1.1E-03	(min-m^3-shower)/(kg-day)
Chronic Daily Intake = :	3.7E-02	(min-m^3-shower)/(kg-day)

RISK ASSESSMENT SPREADSHEET - INHALATION OF VOLATILES FROM GROUNDWATER

SITE NAME: SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT
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CHEMICAL	S (mg/m^3- min - shower)	Lifetime Chronic Daily Intake (mg/kg/day)	Chronic Daily Intake (mg/kg/day)	Cancer Slope Factor $(mg/kg/day)^{-1}$	Reference Dose (mg/kg/day)	Lifetime Cancer Risk	Percent Cancer Risk	Hazard Quotient	Percent Hazard Quotient
1,1,2-Trichloroethane	2.09E-04	2.2E-07	7.8E-06	5.60E-02		1.3E-08	10.0%	NA	NA
Chloroform	1.21E-03	1.3E-06	4.5E-05	8.10E-02	8.60E-05	1.0E-07	83.7%	5.3E-01	99.9%
Vinyl Chloride	2.45E-04	2.6E-07	9.2E-06	3.00E-02	2.80E-02	7.9E-09	6.3%	3.3E-04	0.1%
					Total	**1.3E-07**	**100.0%**	**5.3E-01**	**100.0%**