Post-Remediation Human Health Risk Assessment
Koppers Inc. Facility
Superior, Wisconsin

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EXECUTIVE SUMMARY

This document presents the results of the post-remediation human health risk assessment prepared in support of the Resource Conservation and Recovery Act (RCRA) Corrective Measures Study (CMS) being conducted for the Koppers Inc. (KI) facility in Superior, Wisconsin (the Site). The purpose of the post-remediation human health risk assessment is two-fold: 1) identify areas of the Site that could be remediated to achieve corrective action objectives; and 2) confirm that the proposed corrective action, if implemented, would result in acceptable levels of potential carcinogenic and noncarcinogenic human health risk.

The Site-specific corrective action objectives for soil are to: 1) mitigate direct contact by potential receptors to surface soil (defined as soil from the surface to a depth of 1 foot) containing constituents of potential concern (COPCs) at concentrations that may affect human health, and 2) minimize the potential for off-Site migration of COPCs through dissolved phase transport (groundwater) or erosion (surface water). Because institutional controls will be put into place to control potential access to soil deeper than 1 foot below the ground surface (bgs), risk-based corrective action objectives have not been developed for soil deeper than 1 foot bgs. Nevertheless, potential risks associated with hypothetical exposures to the soil depth interval extending from the ground surface to a depth of 5 feet bgs (referred to in this risk assessment as "subsurface soil" and encompassing both 0-1 foot bgs soil and soil from 1 to 5 feet bgs) have been evaluated in this risk assessment for informational purposes and to be consistent with previous risk assessments conducted for the Site.

The basic approach to the risk assessment included the following steps:

- Conduct a Site-wide[1] post-remediation human health risk assessment to evaluate the potential receptors and potential exposures specified in the approved *Technical Memorandum on Soil Risk Assessment Procedures* (Ogden, 1999); and
- Evaluate surface water quality and human health direct contact risk due to erosion and runoff of on-Site soils following corrective active at the target soil areas.

As discussed in detail in the *Focused Corrective Measures Study* (Focused CMS; ARCADIS BBL, 2007a), Beazer has proposed a natural attenuation-based approach for addressing groundwater at the Site. Accordingly, risks associated with COPCs in groundwater are not addressed herein.

Consistent with the risk assessment approach agreed to by Beazer East, Inc. (Beazer) and the Wisconsin Department of Natural Resources (WDNR) between 1996 and 2007, AMEC Earth & Environmental (AMEC) executed risk calculations to identify areas requiring corrective action and evaluated potential risk to the following potential receptors at the Site under post-remediation Site conditions:

[1] Note that "the Site" is divided into "on-property" and "off-property" areas. This Post-Remediation Human Health Risk Assessment addresses only the on-property portion of the Site, which consists of the KI facility (Figure 1). A more detailed description of the on- and off-property portions of the Site is provided in the *Focused Corrective Measures Study* (ARCADIS BBL, July 2007a).

- KI Site Workers;
- Trespassers;
- Construction Workers; and
- Utility Workers.

All potential receptors were assumed to contact constituents in soil at the Site via incidental ingestion, dermal contact, inhalation of volatiles migrating from soil to ambient air, and inhalation of soil-derived dust in ambient air. According to Wisconsin regulations (NR 720.11(3)(a)), the cumulative potential risk at a site must achieve a target excess lifetime cancer risk of less than or equal to $1x10^{-5}$ and a target hazard index of less than or equal to one. In addition, WDNR requires that potential risks for individual constituents not exceed 1×10^{-6} unless it is demonstrated to be impractical to achieve 1×10^{-6} for individual constituents. Per the understanding with WDNR for this Site (WDNR, 2006), potential excess lifetime cancer risk for individual carcinogenic polycyclic aromatic hydrocarbons (PAHs) may exceed 1×10^{-6}; however, cumulative potential risk for the seven carcinogenic PAHs must be $\leq 7 \times 10^{-6}$ (as benzo(a)pyrene toxic equivalents or BaP-TE). In addition, the acceptable potential excess lifetime cancer risk for individual polychlorinated dibenzo-p-dioxin and polychlorinated dibenzofuran (PCDD/PCDF) congeners is 1×10^{-6}; and acceptable cumulative potential excess lifetime cancer risk for PCDDs/PCDFs is 1×10^{-5} (as 2,3,7,8-tetrachlorodibenzo-p-dioxin toxic equivalents or TCDD-TEQ).

The approach used in this risk assessment to evaluate potential human health risks is consistent with U.S. Environmental Protection Agency (U.S. EPA) risk assessment protocols and guidance as well as with guidance and regulations established by WDNR. As initially stated in the approved *Technical Memorandum on Soil Risk Assessment Procedures* (Ogden, 1999), the constituents of potential concern (COPCs) at the Site are PAHs and pentachlorophenol. After further communication with WDNR, PCDDs/PCDFs are also considered COPCs at the Site. In this assessment, exposure point concentrations (EPCs) for BaP-TE, noncarcinogenic PAHs, TCDD-TEQ, and pentachlorophenol were calculated as the 95% upper confidence limit (UCL) on the arithmetic mean concentrations, using the t-statistic.

In addition to evaluating COPCs, this risk assessment also considers potential exposures to other detected constituents in soil at the Site. As a simplifying assumption, Site-wide maximum detected concentrations were used as EPCs for detected constituents that were not COPCs (referred to as "non-COPCs") for nearly all constituents in all areas. This conservative approach was employed because the maximum detected concentrations of non-COPCs generally contributed minimally to overall potential risks. In cases where the maximum Site-wide concentration of a non-COPC contributed to an overall potential risk that exceeded a target risk, a more refined approach was used to develop a more representative exposure point concentration for that non-COPC. Total potential risks for each receptor were calculated as the sum of the potential risks for COPCs and non-COPCs.

Initial baseline estimates of potential risk (that is, exposure to soil concentrations assuming no corrective measures are undertaken) resulted in potential risks exceeding 1×10^{-5} for KI Site Workers in some areas of the Site. After performing some initial calculations it became clear that addressing potential exposure to BaP-TE, pentachlorophenol, TCDD-TEQ, and noncarcinogenic PAHs would significantly affect the estimated potential risks. Thus, the entire

evaluation effort was focused on corrective action for these constituents. As a result, possible corrective action scenarios were defined in an iterative manner assuming that exposure to BaP-TE, pentachlorophenol, TCDD-TEQ, and noncarcinogenic PAHs in various sample locations was eliminated. Figure 1 shows the areas identified for corrective action, and the specific sample locations within the corrective action areas that require corrective action to achieve risk-based objectives for the Site. Surface soil sample locations were iteratively removed from the dataset to identify the locations that require action to achieve an estimated cancer risk of 1×10^{-5} for KI Site workers exposed to the 0-1 foot soil horizon in each exposure area.

Site-wide and area-specific potential noncarcinogenic hazard indices for receptors potentially exposed to surface soil under post-remediation conditions do not exceed one. For potential exposures to subsurface soil, Site-wide and area-specific potential noncarcinogenic hazard indices are less than or approximately equal to one. Site-wide and area-specific cumulative potential excess lifetime cancer risks to receptors potentially exposed to surface soils under post-remediation conditions do not exceed 1×10^{-5}. Under post-remediation conditions, Site-wide and area-specific individual potential carcinogenic risks to receptors potentially exposed to surface soils for BaP-TE are less than or equal to 7×10^{-6}, individual potential carcinogenic risks for pentachlorophenol are less than 1×10^{-6}, and individual potential carcinogenic risks for TCCD-TEQ are less than or equal to 1×10^{-5}.

Estimated concentrations of COPCs in surface water in Crawford Creek and the tributary to Crawford Creek due to potential erosion and runoff from the Site were predicted for the post-remediation scenario described above, to determine whether COPC concentrations in surface water in the Creek or the tributary posed potential risks exceeding regulatory benchmarks for aquatic ecological receptors and for human health associated with direct contact exposure to COPCs during recreational activity by potential trespassers or local residents. Concentrations of COPCs in surface water as a result of runoff and erosion from the Site were estimated using an approach developed by U.S. EPA (2005) for predicting concentrations of constituents in environmental media as a result of RCRA incineration facility emissions. Potential excess lifetime cancer risks associated with surface water in the creek and tributary are below Wisconsin's target risk of 1×10^{-5}, and potential hazard indices associated with surface water are below the target hazard index of one (under post-remediation conditions). This evaluation indicates that potential risks associated with exposure to COPCs in Crawford Creek and the tributary to Crawford Creek, resulting from erosion and runoff from the Site under post-remediation conditions, achieve target risks.

1.0 INTRODUCTION

Beazer East, Inc. (Beazer) is performing a Resource Conservation and Recovery Act (RCRA) Corrective Measures Study (CMS) for the Koppers Inc. (KI) facility in Superior, Wisconsin (the Site)[2]. This activity is being performed pursuant to the Hazardous and Solid Waste Amendments and RCRA portions of the permit for the facility, WID 006 179 493.

On April 9, 1996, Beazer and the Wisconsin Department of Natural Resources (WDNR) met regarding the conceptual model for the Site, which was initially developed based on the results of Phase II RCRA Facility Investigation (RFI) activities. At that meeting, Beazer presented, among other items, the Site conceptual model, including the evaluation of soil and groundwater physical and chemical characteristics. As part of this discussion, Beazer presented corrective action objectives for soil and a process for developing risk-based soil remedial goals. At that time, WDNR indicated that flexibility was available in the state's NR 720 Soil Cleanup Standards and that Beazer could provide a Site-specific method to develop soil remedial goals, with justification, for WDNR's review. Beazer submitted a *Technical Memorandum on Soil Risk Assessment Procedures* on December 20, 1996 that provided Beazer's proposed approach to developing soil remedial goals for the RCRA corrective action program at the Site.

Chapter NR 720 (Soil Cleanup Standards) of Wisconsin's Administrative Code for Investigation and Remediation of Environmental Contamination states that a "residual contaminant level" is the lowest of those concentrations that are protective of groundwater, protective of human health as a result of direct contact with soil, and protective of other pathways of concern that could be expected through constituent migration. Each of these approaches for establishing soil remedial goals was addressed in the 1996 *Technical Memorandum on Soil Risk Assessment Procedures*. The approaches discussed were consistent with those presented at Beazer's April 9, 1996 meeting with the WDNR.

WDNR comments on the *Technical Memorandum on Soil Risk Assessment Procedures* were transmitted on February 4, 1999 in a letter from Thomas J. Kendzierski, P.G. to Mr. Robert Markwell of Beazer. Ogden Environmental and Energy Services (Ogden; now AMEC) prepared a Response to Comments document on Beazer's behalf and submitted it to WDNR, along with a revised *Technical Memorandum on Soil Risk Assessment Procedures*, on April 28, 1999 (Ogden 1999). Following this submission, AMEC and Mr. Henry Nehls-Lowe, MPH of the Wisconsin Department of Health & Family Services (WDHFS) reached agreement regarding the methods and approaches to be used to perform risk assessment calculations on soils at the Site through the course of a Site visit and presentation on polycyclic aromatic hydrocarbon (PAH) bioavailability in August 2000, a Site meeting in November 2000, and numerous telephone calls. The outcome of these meetings and discussions is documented in a letter dated August 29,

[2] Note that "the Site" is divided into "on-property" and "off-property" areas. This Post-Remediation Human Health Risk Assessment addresses only the on-property portion of the Site, which consists of the KI facility (Figure 1). A more detailed description of the on- and off-property portions of the Site is provided in the *Focused Corrective Measures Study* (ARCADIS BBL, July 2007a).

2001 from Dr. Brian Magee of AMEC to Mr. Tom Kendzierski of WDNR, confirmed in an October 2, 2001 letter from Mr. Henry Nehls-Lowe (WDHFS) to Mr. Tom Kendzierski (WDNR), and summarized in a letter from Mr. Tom Kendzierski to Ms. Jane Patarcity of Beazer dated October 17, 2001.

In these discussions and letters, WDNR agreed to Beazer's use of risk assessment approaches that use spatial averaging geostatistical methods and "forward risk assessment" methods. In this case, forward risk assessment consists of evaluating the potential Site-specific carcinogenic and non-carcinogenic health effects due to Site conditions after corrective actions have been implemented (i.e., post-remediation risk assessment). A human health risk assessment using the agreed approach (i.e., forward risk assessment based on spatially averaged exposure point concentrations) was submitted in February, 2004 (AMEC, 2004). Additional sampling was carried out in July and September 2005 to further characterize the Site and to provide information to WDNR regarding the appropriateness of using available sampling data (primarily from the 0-1.5 foot depth interval) to characterize conditions in surficial (i.e., 0-1 foot) soil. All surface soil samples collected since July 2005 have been from the 0-0.5 ft interval.

A meeting on May 24, 2006 with WDNR resulted in further refinement and revision to the risk assessment approach. WDNR clarified several points raised at the May 24, 2006 meeting in a follow-up letter dated June 19, 2006 and a call on August 22, 2006. Additional soil sampling was conducted to delineate certain COPC concentrations in surface soil in October and November 2006. Additionally, KI collected six surface soil samples along the drip pad in November 2006 as part of closure activities.

Most recently, a project meeting was held on April 11, 2007, where Beazer presented a revised approach for risk evaluation at the Site. The evaluation presented in detail below is consistent with this most recent approach, as well as with approaches that remain unchanged from previous agreements between Beazer and WDNR and documented in the correspondences described above. The risk assessment methodology and results of the risk characterization are described in Section 2, Section 3 discusses these results in the context of the CMS, uncertainties associated with the analysis are discussed in Section 4, and conclusions are presented in Section 5.

2.0 RISK ASSESSMENT METHODOLOGY

The approach adopted in the risk assessment is consistent with the approach recommended by the National Research Council (NRC) and follows human health risk assessment guidance provided in United States Environmental Protection Agency's (U.S. EPA's) Risk Assessment Guidance for Superfund, Volume I Part A - Human Health Evaluation Manual (U.S. EPA, 1989). The NRC, established by the National Academy of Sciences (NAS) to further scientific knowledge and to advise the federal government, has established a four-step paradigm for conducting health-based risk assessments (NAS, 1983). This paradigm has been adopted by the U.S. EPA as well as many federal and state regulatory agencies. In accordance with the NRC recommendations, the risk assessment was organized into the following four steps:

- Hazard Identification;

- Toxicity Assessment;
- Exposure Assessment; and
- Risk Characterization.

These steps were followed to quantify potential health risk under post-remediation Site conditions. Each of these is described in more detail below.

2.1 Hazard Identification

In the Hazard Identification step, analytical data are evaluated, and constituents of potential concern (COPCs) are selected for quantitative risk assessment. During several phases of investigation, soil samples have been collected from the following investigation areas of the Site:

- Area A (Former Unlined Landfill/Landfarm);
- Area B (Former Treatment Area);
- Area C (Closed Surface Impoundments);
- Area F (Drip Track Area);
- Area G (Straw Bales Area);
- Area H (Lead Track Landfill); and
- Area S (Former Sprayfield).

These areas are shown in Figure 1. According to the Phase III RFI report (Fluor Daniel GTI, 1997), and based on many rounds of groundwater sampling and measurements of water table elevations described in the Focused CMS, groundwater is present at the Site at a depth of approximately five feet below ground surface (bgs) in some areas and is shallower in other areas. Because of the limited potential for human receptors to contact soil below the water table, federal and state risk assessment guidance restricts soil risk assessments to soils above the groundwater table. In this case, only soil samples collected from the surface to a depth of five feet bgs were considered in the risk assessment. This is a conservative assumption for the current risk assessment given that the depth to groundwater is less than 5 feet in many portions of the Site.

The approved *Technical Memorandum on Soil Risk Assessment Procedures* (Ogden, 1999) identified PAHs and pentachlorophenol as the COPCs for the Site. Furthermore, in accordance with the *Technical Memorandum on Soil Risk Assessment Procedures* (Ogden, 1999), polychlorinated dibenzo-p-dioxin and polychlorinated dibenzofuran (PCDD/PCDF) congeners should be addressed by comparing the concentration of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) Toxic Equivalents (TCDD-TEQ) to the U.S. EPA's policy that requires cleanup of soil at industrial or commercial areas if the TCDD-TEQ concentration exceeds the remedial goal of 5 to 20 µg/kg (U.S. EPA, 1998a). Based on subsequent communications with WDNR, however, TCDD-TEQ has been included in the risk assessment as a COPC. Thus, the COPCs evaluated in this risk assessment include potentially carcinogenic polycyclic aromatic hydrocarbons (PAHs) (as benzo(a)pyrene toxic equivalents or BaP-TE), noncarcinogenic PAHs, pentachlorophenol, and PCDDs/PCDFs (as TCDD-TEQ).

Other detected constituents in soil at the Site (referred to as non-COPCs) have also been evaluated in this risk assessment. With the exception of arsenic, potential risks have been estimated for all non-COPCs. Arsenic was detected in three samples collected by KI during soil sampling in the vicinity of the drip pad in November 2006, with a maximum concentration of 3.5 mg/kg. USGS (1984) reports background levels for a number of elements in soils throughout the United States, including arsenic at mean concentrations of 7.0 and 7.4 mg/kg for the western and eastern United States, respectively. Because the maximum detected concentration for arsenic was below background levels, arsenic was not considered further in this assessment.

Table 1a identifies the COPCs and non-COPCs and provides summary statistics (e.g., number of samples, number of detections, detection range, and average concentration) for analytical data representing the 0 to 1 foot and 0 to 5 foot depth intervals, on a Site-wide basis. Tables 1b through 1i provide similar statistics for the COPCs and non-COPCs for each specific area. Detailed data tables can be found in reports referenced within the Focused CMS report to which this risk assessment is appended.

2.2 Toxicity Assessment

The purpose of the Toxicity Assessment is to determine the relationship between the magnitude of exposure to each constituent (dose) and the occurrence of specific health effects for a potential receptor (response). This risk assessment includes an evaluation of both potentially noncarcinogenic and potentially carcinogenic effects.

The most current U.S. EPA-verified dose-response criteria were used. The dose-response information used in this risk assessment was obtained from the following sources, in order of priority:

- U.S. EPA's Integrated Risk Information System (IRIS) (U.S. EPA, 2007a);
- U.S. EPA Region III Risk-Based Concentration Table, dated April 6, 2007 (U.S. EPA, 2007b); and,
- U.S. EPA's Health Effects Assessment Summary Tables (HEAST) (U.S. EPA, 1997a).

In addition to benzo(a)pyrene (BaP), six PAHs are considered by U.S. EPA to be potentially carcinogenic. However, U.S. EPA has developed a cancer slope factor (CSF) only for BaP. BaP is generally recognized to be one of the most potent members of the PAH class of constituents. BaP toxic equivalency factors (TEFs) are quantitative indicators of the comparative potency of a PAH constituent compared to the potency of BaP. This risk assessment uses TEFs recommended by U.S. EPA's Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons (U.S. EPA, 1993). These TEFs are presented in Table 2. The concentration of each potentially carcinogenic PAH was multiplied by its TEF to derive a BaP toxic equivalent (BaP-TE) concentration for that constituent. The toxic equivalent concentrations for each individual potentially carcinogenic PAH were then summed to derive the total BaP-TE concentration in each sample analyzed for PAHs.

In order to assess the potential carcinogenic risk from exposure to PCDD/PCDF congeners in soil, TEFs were also used. These TEFs relate the potential carcinogenicity of each congener to

that of 2,3,7,8-TCDD, for which a CSF has been developed based on bioassay data (U.S. EPA, 1989). The TEFs used in this risk assessment are the most recent values recommended by the World Health Organization (Van den Berg et al., 2006) (see Table 3). Similar to the approach used to estimate the BaP-TE concentration in a sample, the concentration of each PCDD/PCDF congener was multiplied by its TEF to derive a 2,3,7,8-TCDD toxic equivalent (TCDD-TEQ) concentration for that constituent. The toxic equivalent concentrations for each individual PCDD/PCDF congener were then summed to derive the total TCDD-TEQ concentration in each sample analyzed for PCDDs/PCDFs.

For constituents that do not have dose-response values listed in these sources, surrogate toxicity values were assigned based on structural and toxicological similarities. Oral, dermal, and inhalation routes of exposure were evaluated in this risk assessment. Table 4 shows the toxicity values used in the risk assessment and the basis for the selection of each.

Absorption adjustment factors (AAFs) were used in the risk calculations for dermal exposures; they are necessary because the efficiency of constituent absorption via a particular route of exposure and from a particular environmental matrix may differ from the absorption efficiency for the exposure route and matrix used in the experimental study that provides the basis of the cancer slope factor (CSF; used to evaluate potential carcinogenic effects) or reference dose (RfD; used to evaluate potential noncarcinogenic effects). AAFs are used to adjust a receptor's average daily dose (ADD) based on these two absorption efficiencies, resulting in an ADD that is comparable to the toxicity value. The AAF is defined as the ratio of the absorption efficiency from the route of exposure and matrix of interest to the absorption efficiency from the route of exposure and matrix used in the study from which the toxicity value was derived. AAFs for dermal exposures are presented in Table 5. Dermal AAFs for PAHs and pentachlorophenol were based on a review and analysis of peer-reviewed literature, attached as Appendices A and B, respectively. The dermal AAF of 0.04 for TCDD-TEQ was based on the dermal absorption factor of 3% reported by U.S. EPA (2004), adjusted by the reported dietary absorption factor of 70%.

In accordance with agreements with WDNR, oral AAFs are set as default values of 1.0. WDNR agreed that Site-specific values could be used if Beazer executed an animal study with Site soils. However, in the absence of such a study, the default of 1.0 must be used.

2.3 Exposure Assessment

In the Exposure Assessment, the magnitude and frequency of receptors' potential exposures to COPCs are quantified. Potential human receptors were identified based on characteristics of the Site and surrounding area and the requirements of the risk assessment guidance. Next, potential routes of exposure were identified for each receptor based on information about activities that could occur in the area. Below, following a brief description of the Site and its surroundings, the potential receptors and exposure pathways, exposure point concentrations of COPCs and non-COPCs, and equations used to estimate potential doses of COPCs and non-COPCs are described.

2.3.1 Study Area

For the purposes of this risk assessment, the Site consists of KI-owned property west/southwest of the intersection of County Roads A and Z approximately five miles southwest of Superior, Wisconsin. The facility was constructed by the National Lumber and Creosoting Company in 1928, and produced pressure-treated railroad cross ties, bridge timbers, switch ties and crossing panels. The facility ceased its wood treatment operations in 2006; however, it continues to operate as a transfer station for lumber destined for treatment at other facilities. Details of the facility's operation are provided in the Focused CMS report to which this risk assessment is appended. The Site is bordered by railroad tracks to the north, west, and south. The area surrounding the Site is primarily undeveloped land, with some farmland located just to the south. Some sparse residential areas are located along County Roads A and Z to the north and southeast of the Site. There are no county or state parks located within one-half mile of the Site. The surrounding area is vegetated with trees, shrubs, and grasses, and contains some wetlands. Crawford Creek, a tributary to the Nemadji River, is located approximately one-half mile northwest of the Site. The primary drainage feature for the Site is the on-Site Outfall 001 drainage ditch, which feeds an unnamed tributary to Crawford Creek[3]. The tributary flows approximately one-half mile from the northwest corner of the KI facility to Crawford Creek.

The KI property is approximately 112 acres in size (of which approximately 8 acres is on the east side of County Road A). Approximately 78 acres is undeveloped and has never been actively used for facility operations. Potential post-remediation risks have been estimated at each of the investigation areas identified in Section 2.1. Additionally, potential post-remediation risks have been estimated for potential Site-wide exposures and for potential exposures in the combined Areas B and F (Treatment Area and Drip Track Area).

2.3.2 Receptors and Potential Exposure Pathways

The risk assessment process requires the creation of exposure scenarios to assess the potential for adverse health effects from constituents at or near the Site. While these scenarios represent hypothetical people and activities, they reflect the physical description of the Site and the surrounding areas, as well as the activities that may occur in these areas.

As described in the Superfund Public Health Evaluation Manual (U.S. EPA, 1986), four elements must be present in order for a potential human exposure pathway to be complete:

1. a source and mechanism of constituent release to the environment;
2. an environmental transport medium (e.g., soil or water);
3. an exposure point, or point of potential contact with the potentially affected medium; and
4. a receptor (e.g., human) with a route of exposure at the point of contact.

Potential exposure pathways are the ways by which potential receptors may be exposed to constituents. The potential exposure pathways included in this assessment were selected

[3] The entire length of the channel from the Site to Crawford Creek is referred to in previous documents as "the Outfall 001 drainage ditch;" the portion of this feature downstream of Hammond Avenue is now referred to as the "tributary to Crawford Creek" at the request of the WDNR.

based on the most likely mechanisms of exposure and observations at the Site. All potential receptors were assumed to contact constituents in soil at the Site via incidental ingestion, dermal contact, inhalation of volatiles migrating from soil to ambient air, and inhalation of soil-derived dust in ambient air. The respirable dust concentration was assumed to be 1.4 $\mu g/m^3$, in accordance with NR 720.19 (5)(c).

Potential receptors associated with current Site use include local residents who may trespass at the Site (Trespassers) and workers at the facility (KI Site Workers), who may contact surface soil (defined as soil from the ground surface to a depth of 1 foot below the ground surface [bgs]). Because institutional controls will be put into place to control potential access to soil deeper than 1 foot below the ground surface (bgs), risk-based corrective action objectives have not been developed for soil deeper than 1 foot bgs. Nevertheless, potential risks associated with hypothetical exposures to the soil depth interval extending from the ground surface to a depth of 5 feet bgs (referred to in this risk assessment as "subsurface soil" and encompassing both 0-1 foot bgs soil and soil from 1 to 5 feet bgs) have been evaluated in this risk assessment for informational purposes and to be consistent with previous risk assessments conducted for the Site. The risk assessment therefore also evaluates a scenario that assumes potential exposure for Utility Workers and Construction Workers who may contact subsurface soil. The foreseeable future use of the Site remains industrial. It is assumed that potential receptors associated with future use are similar to those associated with current use.

The exposure scenarios included in this risk assessment are the following:

KI Site Worker. This receptor is assumed to represent a hypothetical KI Site worker who is employed at this facility. The KI Site Worker receptor is referred to as "hypothetical" because this receptor is not intended to represent an actual person, but rather is intended to represent the practices of KI workers in general. The potential exposure assumptions used in this risk assessment for the KI Site Worker are based upon information discussed with and agreed to by KI. The KI Site Workers are assumed to spend eight hours per day outdoors at the Site, and are assumed to incidentally ingest and have direct contact with surface soil (defined as soil from the surface to a depth of one foot bgs), inhale soil-derived dust, and inhale volatiles potentially migrating from soil to ambient air. As a result of recent changes in operations conducted at the Site, no current KI workers are likely to be exposed to surface soil at the frequency and intensity assumed in this risk assessment.

Trespasser. It is possible that local teenagers may occasionally trespass at the Site and potentially contact surface soil there. The Trespasser is assumed to be between 11 and 18 years of age (i.e., a duration of seven years). Due to the industrial nature of the Site, it is assumed that young children would not trespass on the Site. Teenagers were selected as the age group for this scenario because it is more likely that teenagers would engage in trespassing activities than adults. Additionally, teenagers have a higher soil ingestion rate per unit body weight than adults, resulting in higher estimated potential exposures. Hence, the risk assessment focuses only on older children and teenagers. Trespassers at the Site are assumed to incidentally ingest and have direct contact with surface soils, inhale soil-derived dust, and inhale volatiles potentially migrating from soil to ambient air.

Construction Worker. Although no plans for construction exist for the foreseeable future, this exposure scenario assumes subsurface soil could be excavated for the purpose of constructing a building at the Site. While constructing the building, Construction Workers are assumed to incidentally ingest and dermally contact soil from the ground surface to a depth of five feet bgs, inhale soil-derived dust, and inhale volatiles potentially migrating from soil to ambient air.

Utility Worker. This exposure scenario assumes subsurface soil could be excavated for the purpose of installing or repairing underground utilities at the Site. While performing such installations or repairs, Utility Workers are assumed to incidentally ingest and have dermal contact with soil from the ground surface to a depth of five feet bgs, inhale soil-derived dust, and inhale volatiles potentially migrating from soil to ambient air.

2.3.3 Estimation of Exposure Point Concentrations

Exposure point concentrations (EPCs) were estimated using the soil analytical data from all field investigations conducted at the Site. A description of investigations conducted at the Site is located in Section 2.3 of the Focused CMS report.

Because receptors evaluated in this assessment are assumed to be exposed to soil of differing depth intervals, two sets of EPCs were defined. A 0-5 foot set was defined for Construction and Utility Worker scenarios, and a 0-1 foot set was defined for KI Site Worker, and Trespasser, scenarios. In all cases, data for each sample location were averaged over the appropriate depth interval. Table 6 summarizes the EPCs.

Figure 1 shows the areas identified for corrective action, and the specific sample locations within the corrective action areas that require corrective action to achieve risk-based objectives for the Site. Samples targeted for corrective action were removed from the database. This removal included all soil samples with concentrations of TCDD-TEQ exceeding 1 ug/kg and certain samples containing PAHs. Post-remediation EPCs were estimated by removing samples targeted for corrective action from the dataset. As a conservative measure, EPCs were estimated assuming only certain samples within the corrective action areas identified in the Focused CMS (that is, those with high COPC concentrations) were removed from the dataset. Corrective action measures undertaken as described in the Focused CMS will result in elimination of potential exposures of all soil inside corrective action areas. Considering that certain samples inside corrective action areas that are included in risk assessment calculations have detectable concentrations of COPCs, assuming that these concentrations remain available for potential exposure is conservative. Moreover, the actual post-remediation exposure point concentrations in exposure areas will be even lower than estimated in this risk assessment because the sample locations inside the corrective action area will have very low (if any) concentrations of constituents. The method used to estimate EPCs in the risk assessment account for the elimination of the concentrations that will be addressed in corrective action, but does not account for the fact that those concentrations will actually be replaced by much lower concentrations (i.e., concentrations representative of clean fill material). Had this situation been accounted for, actual concentrations in soil potentially available to receptors would be even lower.

As described in Section 1.0, institutional controls will be put into place to control potential access to subsurface soil. Accordingly, risk-based corrective action objectives have not been developed for subsurface soil. Nevertheless, potential risks associated with hypothetical exposures to subsurface soil have been evaluated in this risk assessment for informational purposes and to be consistent with previous risk assessments conducted for the Site.

For non-COPCs, EPCs were assumed to be the maximum detected concentration detected in surface and subsurface soil at the Site. Although certain to overestimate potential exposures to these constituents, this approach was used because these constituents were expected to contribute only minimally to overall potential risks. However, for dibenzofuran in subsurface soil in Areas A, B, and the combined Areas B/F, maximum detected concentrations contributed to exceedances of WDNR's target risks for the Site. In these cases, more refined approaches were used to estimate more realistic yet still very conservative EPCs. The following refined approaches were used to estimate EPCs for dibenzofuran:

- To estimate the EPC for dibenzofuran in subsurface soil in Areas A, B, and B/F, all detected concentrations in samples inside the corrective action areas were removed from the dataset (instead of just those designated for corrective action), and the upper 95% UCL on the arithmetic mean concentration was calculated from the remaining samples and used as the EPC;
- EPCs for dibenzofuran in subsurface soil in other areas (C, F, G, H, and S) were assumed to equal the maximum detected concentration of dibenzofuran in these areas;
- The EPC for dibenzofuran in Site-wide subsurface soil was assumed to equal the highest area-specific EPC among Areas A, B, C, F, G, H, S, and B/F.

Because estimated potential noncarcinogenic risks for the Construction Worker in Area A exceeded target risks established for the Site, a refined approach was used to estimate EPCs for certain COPCs in subsurface soil in this area:

- For PAH (except naphthalene) in Area A, all detected concentrations in samples inside the corrective action area were removed from the dataset (instead of just those designated for corrective action), and the upper 95% UCL on the arithmetic mean concentration from the remaining samples was used as the EPC;
- For naphthalene in Area A, all detected concentrations in samples inside the corrective action area were removed from the dataset instead of just those designated for removal, removed concentrations were assumed to be replaced with clean soil having a concentration of 0.33 mg/kg (a typical detection limit value), and the upper 95% UCL on the arithmetic mean concentration from all samples was used as the EPC.

2.3.4 Calculation of Potential Exposure Doses

Potential exposure doses for each receptor were calculated using standard equations presented by the U.S. EPA (1989). The approved *Technical Memorandum on Soil Risk Assessment Procedures* (Ogden, 1999) and subsequent Site correspondence detail the exposure assumptions that describe potential exposure scenarios at the Site. While standard U.S. EPA default exposure assumptions were not used for all exposure parameters, the assumptions made provide reasonably conservative estimates of potential Site-specific exposures under

post-remediation Site conditions. Most individuals will not be subject to all the conditions that comprise these scenarios. Individuals who do not meet all conditions in a scenario have lower potential exposures to constituents and therefore, lower potential risks associated with those exposures.

The Chronic Average Daily Dose (CADD) is an estimate of a receptor's potential daily intake from exposure to constituents with potential noncarcinogenic effects. Note that Average Daily Dose is a term-of-art used in risk assessment and does not represent a true average because the assumptions used to derive it do not represent "averages." According to U.S. EPA (1989), the exposure dose should be calculated by averaging over the period of time for which the receptor is assumed to be exposed. The CADD for each constituent via each route of exposure is compared to the RfD for that constituent to estimate the potential hazard quotient due to exposure to that constituent via that route of exposure.

For constituents with potential carcinogenic effects, the Lifetime Average Daily Dose (LADD) is an estimate of potential daily intake over the course of a lifetime. In accordance with U.S. EPA (1989), the LADD is calculated by averaging the assumed exposure over the receptor's entire lifetime (assumed to be 70 years). The LADD for each constituent via each route of exposure is combined with the CSF for that constituent in order to estimate the excess lifetime cancer risk due to exposure to that constituent via that route of exposure.

The equations for estimating a receptor's potential average daily dose (both lifetime and chronic) are presented and the exposure parameters used are discussed in the following paragraphs. The calculations for all receptors evaluated in this risk assessment are presented in Appendix C. Note that equations used to estimate potential average daily dose from exposure to surface water are presented here but used only to confirm that the proposed soil corrective action also protects potential exposures related to surface runoff (see Section 3.2.2).

Ingestion of Soil

$$A = \frac{B \times C \times D \times E \times F \times G \times H}{I \times J}$$

where:

A = Average Daily Dose Due to Soil Ingestion (mg/kg-day)
B = Constituent Concentration in Soil (mg/kg)
C = Unit Conversion Factor ($1x10^{-6}$ kg/mg)
D = Soil Ingestion Rate (mg/day)
E = Exposure Frequency (days/year)
F = Exposure Duration (years)
G = Oral-Soil Absorption Adjustment Factor (unitless)
H = Area Use Factor (unitless)
I = Body Weight (kg)
J = Averaging Time (days)

Dermal Contact with Soil

$$A = \frac{B \times C \times D \times E \times F \times G \times H \times I}{J \times K}$$

where:

A = Average Daily Dose Due to Dermal Contact (mg/kg-day)
B = Constituent Concentration in Soil (mg/kg)
C = Unit Conversion Factor ($1x10^{-6}$ kg/mg)
D = Soil to Skin Adherence Factor (mg/cm^2)
E = Skin Surface Area Exposed (cm^2/day)
F = Exposure Frequency (days/year)
G = Exposure Duration (years)
H = Dermal-Soil Absorption Adjustment Factor (unitless)
I = Area Use Factor (unitless)
J = Body Weight (kg)
K = Averaging Time (days)

Inhalation Exposure to Dust

$$A = \frac{B \times C \times D \times E \times F \times G \times H \times I}{J \times K}$$

where:

A = Average Daily Dose Due to Inhalation of Soil-Derived Dust (mg/kg-day)
B = Constituent Concentration in Soil (mg/kg)
C = Concentration of Respirable Dust Particles in Air (kg/m^3)
D = Inhalation Rate (m^3/hr)
E = Exposure Time (hr/day)
F = Exposure Frequency (days/year)
G = Exposure Duration (years)
H = Inhalation Absorption Adjustment Factor (unitless)
I = Area Use Factor (unitless)
J = Body Weight (kg)
K = Averaging Time (days)

Inhalation Exposure to Ambient Air

$$A = \frac{B \times C \times D \times E \times F \times G}{H \times I}$$

where:

A = Average Daily Dose Due to Inhalation of Volatiles in Ambient Air (mg/kg-day)
B = Air Concentration (mg/m^3)
C = Inhalation Rate (m^3/hour)

D = Exposure time (hr/day)
E = Exposure Frequency (days/year)
F = Exposure Duration (years)
G = Inhalation Absorption Adjustment Factor (unitless)
H = Body Weight (kg)
I = Averaging Time (days)

Ingestion of Surface Water

$$A = \frac{B \times C \times D \times E \times F \times G}{H \times I}$$

where:

A = Average Daily Dose Due to Surface Water Ingestion (mg/kg-day)
B = Constituent Concentration in Surface Water (mg/L)
C = Surface Water Ingestion Rate (L/hr)
D = Exposure Time (hr/day)
E = Exposure Frequency (days/year)
F = Exposure Duration (years)
G = Oral-Water Absorption Adjustment Factor (unitless)
H = Body Weight (kg)
I = Averaging Time (days)

Dermal Contact with Surface Water

$$A = \frac{B \times C \times D \times E \times F \times G \times H \times I}{J \times K}$$

where:

A = Average Daily Dose Due to Dermal Contact with Surface Water (mg/kg-day)
B = Constituent Concentration in Surface Water (mg/L)
C = Unit Conversion Factor (L/cm^3)
D = Dermal Permeability Constant (cm/hr)
E = Skin Exposed (cm^2)
F = Exposure Time (hr/day)
G = Exposure Frequency (days/year)
H = Exposure Duration (years)
I = Dermal-Water Absorption Adjustment Factor (unitless)
J = Body Weight (kg)
K = Averaging Time (days)

Table 7 presents the potential exposure assumptions used to evaluate each receptor in the risk assessment (described in detail below).

KI Site Worker. The KI Site Worker is conservatively assumed to contact surface soil while working on the Site 180 days per year for 25 years. The exposure frequency assumes that a worker has contact with soil five days a week for nine months. It is logical to assume that workers will not have access to Site soil during the winter due to snow and ice cover, inclement weather, and cold temperatures. In addition, even if workers do go outside in winter, they would by necessity be wearing heavy clothing, coats, and gloves. U.S. EPA's recommended high-end exposure duration for workers (25 years) is consistent with the employment durations of KI workers and is used as the exposure duration for KI Site Workers.

During each soil exposure event, the KI Site Worker is assumed to incidentally ingest and have dermal contact with surface soil, inhale soil-derived dust in air, and inhale constituents volatilized from soil to ambient air. The U.S. EPA's recommended soil ingestion rate for workers (50 mg/d) has been assumed (U.S. EPA, 1997b). Because of the impact of winter weather conditions on the amount of skin potentially exposed to Site soils, skin surface area was calculated by assuming that the KI Site Workers wear short sleeves 2/3 of the time and long sleeves 1/3 of the time. As such, skin surface area 2/3 of the time is 2478 cm^2 (hands, forearms, and face), and skin surface area 1/3 of the time is 1305 cm^2 (hands and face). The total skin surface area is then calculated as the sum of (2/3 x 2478) and (1/3 x 1305), or 2087 cm^2 (Table 8). Based on the 2/3+1/3 surface area ratio, a weighted average soil adherence factor was derived for the KI Site Worker, using adherence factors provided in U.S. EPA (1997b and 2004) for Construction and Utility Workers, and the following equation.

$$SA-Wt.\ AF = \frac{SA_h \times AF_h + SA_{fa} \times AF_{fa} + SA_f \times AF_f}{SA_h + SA_{fa} + SA_f}$$

where:

SA-Wt. AF = Surface Area-Weighted Adherence Factor (mg/cm^2)
SA_h = Surface Area of Hands (cm^2)
AF_h = Adherence Factor for Hands (mg/cm^2)
SA_{fa} = Surface Area of Forearms (cm^2)
AF_{fa} = Adherence Factor for Forearms (mg/cm^2)
SA_f = Surface Area of Face (cm^2)
AF_f = Adherence Factor for Face (mg/cm^2)

Calculation of surface area-weighted soil adherence factors is shown in Table 8. The final soil adherence factor was then calculated as the sum of (2/3 x 0.190) and (1/3 x 0.205), or 0.2 mg/cm^2.

Per agreement with KI, the KI Site Worker is assumed to be outdoors eight hours per day, during which inhalation exposure to ambient air could occur. An inhalation rate of 24 m^3/day is assumed, which is the default value under Chapter NR 720 (Soil Cleanup Standards) of Wisconsin's Administrative Code for Investigation and Remediation of Environmental Contamination. The U.S. EPA's recommended body weight for adults (71.8 kg) has been assumed for the KI Site Worker (U.S. EPA, 1997b).

Trespasser. The Trespasser is assumed to trespass at the Site 20 times per year, from age 11 to age 18 (i.e., a duration of 7 years). During each trespassing event, this individual is assumed to be exposed to constituents via incidental ingestion of surface soil, dermal contact with surface soil, inhalation of soil-derived dust, and inhalation of volatiles migrating from soil to ambient air. A soil ingestion rate of 50 mg/day is assumed for each exposure event. This value is equal to the soil ingestion rate recommended by U.S. EPA (1997b) for older children and adults. The Trespasser's hands, forearms, face, feet, and lower legs, having a total surface area of 5651 cm^2 (U.S. EPA, 1997b), are assumed to be exposed to soil. This value corresponds to the 50th percentile surface area value for children 15-16 years old. A weighted soil adherence factor of 0.158 mg/cm^2 was estimated using surface area and body-part specific adherence data from U.S. EPA (2004) and the following formula:

$$SA-Wt.\ AF = \frac{SA_h \times AF_h + SA_{fa} \times AF_{fa} + SA_f \times AF_f + SA_{ft} \times AF_{ft} + SA_{ll} \times AF_{ll}}{SA_h + SA_{fa} + SA_f + SA_{ft} + SA_{ll}}$$

where:

SA-Wt. AF = Surface Area-Weighted Adherence Factor (mg/cm^2)
SA_h = Surface Area of Hands (cm^2)
AF_h = Adherence Factor for Hands (mg/cm^2)
SA_{fa} = Surface Area of Forearms (cm^2)
AF_{fa} = Adherence Factor for Forearms (mg/cm^2)
SA_f = Surface Area of Face (cm^2)
AF_f = Adherence Factor for Face (mg/cm^2)
SA_{ft} = Surface Area of Feet (cm^2)
AF_{ft} = Adherence Factor for Feet (mg/cm^2)
SA_{ll} = Surface Area of Lower Legs (cm^2)
AF_{ll} = Adherence Factor for Lower Legs (mg/cm^2)

The calculation of this value is shown in Table 8. The Trespasser is assumed to be present at the Site for two hours during each trespassing event. An inhalation rate of 1.6 m^3/hr is assumed (U.S. EPA, 1997b), which corresponds to a moderate level of activity. The Trespasser is assumed to weigh 56 kg.

Construction Worker. Construction Workers are assumed to incidentally ingest and dermally contact soil from the ground surface to a depth of five feet bgs, inhale soil-derived dust, and inhale volatiles migrating from soil to ambient air while working at the Site. The excavation is assumed to require six months to complete. Assuming five-day work weeks during this time, the Construction Worker is assumed to be exposed to soil at the Site for 130 days per year for one year.

Because the Construction Worker's potential exposure to soil may be more intense than that for other types of outdoor workers, a soil ingestion rate of 118 mg/day was assumed for Construction Workers rather than the 100 mg/day value agreed to in the *Technical Memorandum on Soil Risk Assessment Procedures*. A soil ingestion rate of 330 mg/day for

construction workers is included in the Supplemental Soil Screening Guidance (U.S. EPA, 2002). This soil ingestion rate is intended for screening purposes for high intensity soil exposures, such as digging and working directly with subsurface utilities. Such intense excavation activities may occur during the short-term Utility Worker exposures, but are not likely to occur during the entire Construction Worker exposure duration of six months. The risk assessment approach has been revised to use this high-intensity soil ingestion rate (330 mg/day) for Utility Worker scenarios (see below). The Construction Worker scenario was revised to assume that high-intensity exposure occurs for ten days (assumed to represent the number of days that active earth movement would take place when constructing a building) and that a lower soil ingestion rate (100 mg/day, which still is two-fold higher than U.S. EPA's recommended soil ingestion rate for workers), occurs during the remainder of the Construction Worker exposure duration (120 days). For the Construction Worker exposure scenario, a weighted average soil ingestion rate of 118 mg/day was derived assuming ten days of exposure at 330 mg/day and 120 days of exposure at 100 mg/day. The weighted-average soil ingestion rate was calculated as follows:

$$Wt.\ Avg.\ IR = \frac{\left(IR_{high} \times EF_{high}\right) + \left(IR_{lower} \times EF_{lower}\right)}{EF_{high} + EF_{lower}}$$

where:

IR = Soil ingestion rate (mg/day); and
EF = Exposure frequency (days/year).

This derived value is more than two-fold higher than the U.S. EPA's recommended soil ingestion rate for workers (50 mg/d) (U.S. EPA, 1997b). The Construction Worker is assumed to have 2478 cm^2 skin contacting soil per day, corresponding to the 50^{th} percentile surface area of hands, forearms, and face for adult males and females (U.S. EPA, 2004). A weighted average soil adherence factor was used for the Construction Worker scenario, using adherence factors provided in U.S. EPA (1997b and 2004) for Construction Workers and the equation presented above for the KI Site Worker. Calculation of surface area-weighted soil adherence factor is shown in Table 8. The Construction Worker is assumed to be outdoors eight hours per day, during which inhalation of soil-derived dust and volatiles could occur. An inhalation rate of 2.5 m^3/hr is assumed for the Construction Worker (U.S. EPA, 1997b), which corresponds to a high level of activity for workers. The U.S. EPA's recommended body weight for adults (71.8 kg) has been assumed for the Construction Worker (U.S. EPA, 1997b).

Utility Worker. As described in Section 2.3.2, while performing utility installations or repairs, Utility Workers are assumed to incidentally ingest and have dermal contact with soil from the ground surface to a depth of five feet bgs, inhale soil-derived dust, and inhale volatiles migrating from soil to ambient air. The utility work is assumed to require five days per year to complete. The Utility Worker is conservatively assumed to be exposed to soil and ambient air at the Site for 5 days per year for 25 years (U.S. EPA, 1997b).

Because the Utility Worker's entire potential exposure to soil could involve high-intensity soil contact, a soil ingestion rate of 330 mg/day (U.S. EPA, 2002) was assumed for Utility Workers'

entire exposure duration. This value is over six times the U.S. EPA's recommended soil ingestion rate for workers (50 mg/d) (U.S. EPA, 1997b) and two times the value agreed upon in the *Technical Memorandum on Soil Risk Assessment Procedures*. The Utility Worker is assumed to have 2478 cm^2 skin contacting soil per day, corresponding to the 50^{th} percentile surface area of hands, forearms, and face for adult males and females (U.S. EPA, 2004). A weighted average soil adherence factor was used for the Utility Worker scenario, using adherence factors provided in U.S. EPA (1997b and 2004) for utility workers and the equation presented above for the KI Site Worker. Calculation of surface area-weighted soil adherence factors is shown in Table 8. The Utility Worker is assumed to be outdoors eight hours per day, during which inhalation of soil-derived dust and volatiles could occur. An inhalation rate of 2.5 m^3/hr is assumed for the Utility Worker (U.S. EPA, 1997b), which corresponds to a high level of activity for workers. The U.S. EPA's recommended body weight for adults (71.8 kg) has been assumed for the Utility Worker (U.S. EPA, 1997b).

2.4 Risk Characterization

The Risk Characterization combines the results of the Exposure Assessment with the results of the Toxicity Assessment to derive quantitative estimates of the potential for adverse health effects to occur as a result of potential exposure to Site-related constituents. Noncarcinogenic and carcinogenic risk characterizations are described separately below.

2.4.1 Potential Noncarcinogenic Risk Characterization

The potential for exposure to COPCs and non-COPCs at the Site to result in adverse noncarcinogenic health effects was estimated for each receptor by comparing the CADD for each COPC or non-COPC with its RfD. The resulting ratio, which is unitless, is known as the Hazard Quotient for that constituent. The HQ is calculated using the following formula:

$$HQ = CADD \div RfD$$

where:

HQ = Hazard Quotient (unitless);
CADD = Chronic Average Daily Dose (mg/kg-day); and
RfD = Reference Dose (mg/kg-day).

When the HQ for a given constituent and pathway does not exceed one, the RfD has not been exceeded, and no adverse noncarcinogenic health effects are expected to occur as a result of exposure to that constituent via that pathway. The HQs for each COPC and non-COPC are summed to yield the Hazard Index (HI) for that pathway. A Total HI for the receptor is then calculated for by summing the pathway-specific HIs. A Total HI that does not exceed one indicates that no adverse noncarcinogenic health effects are expected to occur as a result of that receptor's potential exposure to constituents at the Site.

Site-wide and area-specific total Total HIs for receptors potentially exposed to surface or subsurface soil under post-remediation conditions do not exceed one (Table 9).

2.4.2 Potential Carcinogenic Risk Characterization

The purpose of carcinogenic risk characterization is to estimate the likelihood, over and above the background cancer rate, that a receptor will develop cancer in his or her lifetime as a result of Site-related exposures to constituents in various environmental media. This likelihood is a function of the dose of a constituent and the CSF for that constituent. The relationship between the Potential Excess Lifetime Cancer Risk (PELCR) and the estimated Lifetime Average Daily Dose (LADD) of a constituent may be expressed as an exponential equation:

$$PELCR = 1 - e^{-LADD \times CSF}$$

where:

PELCR = Potential Excess Lifetime Cancer Risk (unitless);
LADD = Lifetime Average Daily Dose (mg/kg-day); and
CSF = Cancer Slope Factor [(mg/kg-day)$^{-1}$].

This is the general form of the equation, and may be used in all cases to estimate potential risk, regardless of the magnitude of the potential estimated risk. In particular, this equation should be used when the product of the dose and potency slope is greater than 0.01. This practice prevents calculation of potential risks that are greater than one.

The exponential equation can be simplified to a linear equation, which closely approximates the results of the exponential equation when the product of the dose and potency slope is less than 0.01. The simplified linear form of the equation is expressed as:

$$PELCR = LADD \times CSF$$

where:

PELCR = Potential Excess Lifetime Cancer Risk (unitless);
LADD = Lifetime Average Daily Dose (mg/kg-day); and
CSF = Cancer Slope Factor [(mg/kg-day)$^{-1}$].

For all potential exposures evaluated at this Site, the product of the dose and potency slope is less than 0.01. Therefore, the simplified linear equation was used in all risk calculations. The product of the CSF and the LADD is unitless, and provides an estimate of the potential carcinogenic risk associated with a receptor's exposure to that constituent via that pathway. PELCRs are calculated for each potentially carcinogenic constituent. The PELCRs for each pathway by which the receptor is assumed to be exposed are calculated by summing the potential risks derived for each constituent. A Total PELCR is then calculated for a receptor by summing the pathway-specific PELCRs.

The estimated potential carcinogenic risks for the Site under post-remediation conditions are given in Table 10. As shown, total estimated potential post-remediation risks, both Site-wide and area-specific, do not exceed 1×10^{-5}. Potential risks associated with BaP-TE do not exceed 7×10^{-6}, potential risks associated with pentachlorophenol do not exceed 1×10^{-6}, and potential risks associated with TCDD-TEQ do not exceed 1×10^{-5}.

3.0 DEVELOPMENT OF REMEDIAL APPROACH

A soil remedial approach was developed that meets the requirements of §NR 720.09 to 720.19 (see NR 720.07). These requirements include the need to address the protection of groundwater (NR 720.19(4)), protection of human health from direct contact (NR 720.19(5)), as well as other potential exposure pathways ((NR 720.19(6)), such as surface water and air. According to NR 720.11, cumulative potential carcinogenic risks may not exceed 1×10^{-5}. In addition, NR 720.19(3) states that a performance standard as specified in NR 720.19(2) "may be used when the residual contaminant levels established under sub. (3) are not practicable to achieve." NR 720.19(2) further states that "an engineering control may be selected even though the soil contaminants exceed a residual contaminant level."

The Site-specific corrective action objectives for soil are to: 1) mitigate direct contact by potential receptors to surface soil containing constituents at concentrations that may affect human health, and 2) minimize the potential for off-Site migration of COPCs through dissolved phase transport (groundwater) or erosion (surface water). Each of these objectives is discussed separately below.

3.1 Mitigate Direct Contact with On-Site Surface Soil

Potential risk estimates assuming exposure to soil concentrations under current conditions resulted in potential risks exceeding 1×10^{-5} for the hypothetical KI Site Worker receptor scenario only; potential risks for all other receptors were less than 1×10^{-5}. After performing some initial calculations it became clear that addressing potential exposure to BaP-TE, pentachlorophenol, TCDD-TEQ, and noncarcinogenic PAHs would significantly affect the estimated risk results, while inclusion of all other constituents was not significant. Thus, the entire evaluation effort was focused on corrective action to address concentrations of BaP-TE, pentachlorophenol, PCDDs/PCDFs and noncarcinogenic PAHs in surface soil. As a result, possible remediation scenarios were defined in an iterative manner assuming that exposure to BaP-TE, pentachlorophenol, TCDD-TEQ, and noncarcinogenic PAHs in various sample locations was eliminated. Locations were iteratively removed from the dataset (assuming elimination of exposure to soil to the depth of 1 foot) to determine the minimum number of locations that require action to achieve an estimated cancer risk of 1×10^{-5} for KI Site Workers potentially exposed to the 0-1 foot soil horizon in each exposure area. Elimination of samples from the dataset was mechanically accomplished by omitting the sample results from the dataset used to estimate EPCs. A list of samples requiring corrective action to achieve the risk-based objectives is provided in Table 11.

As noted above, the scenarios were all based on elimination of potential exposure to soils affected by BaP-TE, TCDD-TEQ, pentachlorophenol and noncarcinogenic PAHs. Thus, when it

is assumed that exposure to a 0-1 foot sample is eliminated, the BaP-TE, TCDD-TEQ, pentachlorophenol and noncarcinogenic PAHs concentrations are reduced, but the concentrations for all other COPCs are assumed to remain the same in the sample. This assumption results in an overestimate of risk, because clearly, concentrations of other COPCs in addition to BaP-TE, TCDD-TEQ, pentachlorophenol and noncarcinogenic PAHs are reduced at a location where corrective action remediation is assumed to occur. In addition, the proposed corrective action area within each exposure area requiring corrective action will include more sample locations than just those samples removed from the dataset to estimate potential post-remediation risks. This is due to the requirement of defining the extent of the corrective action area as the line connecting the "clean" sample locations that surround the samples requiring corrective action. The Focused CMS report provides more information on the delineation of corrective action area boundaries. Thus, risks are overestimated further because the EPCs still include certain samples with detectable concentrations that ultimately will be addressed during corrective measures, but are included in the potential risks estimated here. Moreover, the actual post-remediation exposure point concentrations in exposure areas will be even lower than estimated in this risk assessment because the sample locations inside the corrective action area will have very low (if any) concentrations of constituents. The method used to estimate EPCs in the risk assessment account for the elimination of the concentrations that will be addressed in corrective action, but does not account for the fact that those concentrations will actually be replaced by much lower concentrations. Had this situation been accounted for, actual concentrations in soil potentially available to receptors would be even lower**.**

3.2 Minimize Off-Site Migration

Potential off-Site migration was evaluated via both leaching of constituents from soil to groundwater, and erosion of on-Site soils to nearby surface water bodies. Each is described separately below.

3.2.1 Dissolved Phase Transport

As discussed in detail in the Focused CMS (ARCADIS BBL, 2007a), Beazer has proposed a natural attenuation-based approach for addressing groundwater at the Site. Accordingly, risks associated with COPCs in soil leaching into groundwater are not addressed herein.

To provide data to support the natural attenuation-based approach for groundwater, Beazer conducted various groundwater investigation activities between 2004 and 2007. One of the main conclusions of the supplemental groundwater investigations was that concentrations of COPCs in groundwater are stable or decreasing. This determination was made based on existing Site conditions. It is anticipated that completion of corrective actions to address surficial soils will result in additional improvements to groundwater quality by further reducing the potential leaching of COPCs from soil to groundwater.

3.2.2 Surface Runoff

§NR 720.19(6) addresses "other pathways of concern." With regard to the Site, a "pathway of concern" may include the potential for runoff from the Site. §NR 720.19(6) "requires responsible parties to establish appropriate residual contaminant levels protective of these pathways, when

necessary." As indicated in the Phase II RFI Report of Findings (Keystone Environmental Resources, 1991), the surface water drainageways are influenced principally by precipitation and surface runoff. The potential for constituents to migrate via runoff would likely be limited due to the vegetated nature of most of the Site and the high clay content of the soil, which results in cohesive soils that resist erosion. The clay nature of the soil would also tend to adsorb organic constituents, thereby reducing their potential for dissolved phase migration in surface water. Based on this information, soil remedial goal development for human health protection from direct exposure to Site soils would result in the most conservative residual constituent level for soil at the Site. Nevertheless, this pathway was conservatively evaluated as described in the following paragraphs.

Concentrations of COPCs in off-Site surface water as a result of runoff and erosion from the Site were estimated using an approach developed by U.S. EPA (2005) for predicting concentrations of constituents in environmental media as a result of RCRA incineration facility emissions. This approach includes a method to estimate concentrations of constituents in water bodies resulting from runoff and erosion from soil. The equations used to estimate these concentrations in water are given in Table 12.

Table 13 shows the constituent-specific values used to estimate COPC concentrations in runoff from the Site, including concentrations in soil, soil-water partition coefficients, Henry's Law constants, and diffusivities in water. This approach to calculating concentrations in runoff requires information about the area over which runoff and erosion occur, as well as the size and nature of the receiving water body. Concentrations in runoff were estimated using Site-wide concentrations of COPCs in surface soil under post-remediation conditions. The calculations of COPC concentrations in runoff assume that all areas of the Site drain to the northwest to Outfall 001, including Area G, which actually drains to a separate outfall in the southeast part of the Site. Consistent with the evaluation of potential soil risks, this modeling was conducted using surface soil 95% UCL concentrations under post-remediation conditions.

The runoff and erosion was assumed to enter the tributary to Crawford Creek, and then Crawford Creek, after leaving the Site. Information about the flow, depth, and velocity of water in Crawford Creek was obtained from the Supplemental Surface Water and Streambed Sediment Investigation Report (BBL, 2000). Average measurements reported for the area of Crawford Creek closest to the Site (from the tributary to the railroad bridge) were calculated and used to estimate COPC concentrations in runoff. Surface area, depth, and velocity information for the tributary to Crawford Creek were taken from BBL (2000) or estimated for average conditions. In the absence of baseflow data, the flow rate in the tributary to Crawford Creek was assumed to be 10% of the flow of Crawford Creek.

Table 14 shows the estimated COPC concentrations off-Site resulting from erosion and runoff from the Site. Estimated constituent concentrations in water were compared to Wisconsin's Surface Water Quality Criteria (NR 105) and U.S. EPA's Ambient Water Quality Criteria (AWQC; U.S. EPA, 2007c) – Freshwater chronic and acute values. As shown in Table 14, concentrations of pentachlorophenol in the tributary to Crawford Creek predicted using 95% UCL soil concentrations (23.6 µg/L total and 23.5 µg/L dissolved) do not exceed either the Federal acute and chronic AWQC (58.9 µg/L and 45.2 µg/L, respectively) or the Wisconsin surface water quality acute and chronic standards (53.2 and 48.7 µg/L, respectively). These

standards are based on pH values that were measured in the tributary and Crawford Creek surface water (personal communication, ARCADIS BBL, 2007b). Table 14 also compares the estimated COPC concentrations to COPC concentrations measured in Outfall 001 stormwater during routine stormwater monitoring events. As shown, the estimated concentrations in the tributary are approximately one order of magnitude higher than the concentrations measured in stormwater. This indicates that the modeling approach is conservative relative to the use of measured values (i.e., suggests a higher concentration than actually exists under current conditions).

In addition, estimated concentrations of COPCs in surface water in the tributary to Crawford Creek and Crawford Creek were evaluated to determine whether they posed a potential risk to human health resulting from direct contact exposure to COPCs during recreational activity by potential trespassers or local residents. Tables 15 and 16 show the equations and input values used to assess potential surface water exposure. Local residents or trespassers were assumed to be teenagers (ages 11-18) contacting surface water from the portion of Crawford Creek closest to the Site and from the tributary. Potential exposure was assumed to occur 40 times per year, over a seven-year period. During each potential exposure event, receptors were assumed to contact water for a two-hour period, during which incidental ingestion of 5 mL of water was assumed to occur. The receptor's hands, forearms, face, feet, and lower legs, having a surface area of 5651 cm^2 (U.S. EPA, 1997b), were assumed to be exposed. This value corresponds to the 50th percentile surface area value for children 15-16 years old. The derivation of dermal permeability constants for PAHs used in the equations are described in Appendix D.

As shown in Tables 15 and 16, potential excess lifetime cancer risks associated with potential exposure to surface water in both Crawford Creek and the tributary (under post-remediation conditions) fall within or are less than U.S. EPA's acceptable risk range of 10^{-4} to 10^{-6} and are below Wisconsin's target risk of 10^{-5}, using the 95% UCL concentrations. Potential HIs associated with exposure to surface water (under post-remediation conditions) are below the target HI of one. Therefore, potential risks associated with exposure to constituents in off-Site water bodies resulting from erosion and runoff from the Site achieve target risk levels.

4.0 UNCERTAINTY ANALYSIS

Throughout the risk assessment process, assumptions must be made due to a lack of absolute scientific knowledge. Some of the assumptions are supported by considerable scientific evidence, while others have less support. Every assumption introduces some degree of uncertainty into the risk assessment process; although assumptions are typically conservative to ensure that the health of the potential receptors is protected. Therefore, when all of the assumptions are combined, it is much more likely that actual risks, if any, are overestimated rather than underestimated.

The assumptions that introduce the greatest amount of uncertainty in this risk assessment are discussed in this section. They are discussed in general terms, because for most of the assumptions there is not enough information to assign a numerical value that can be factored into the calculation of potential risk.

4.1 Evaluation of Surface Runoff

The evaluation of surface runoff presented in Section 3.2.2 involved estimating concentrations of COPCs in off-Site surface water as a result of runoff and erosion from the Site. Off-Site surface water concentrations were estimated using an approach developed by U.S. EPA. This approach to calculating concentrations in runoff requires information about the area over which runoff and erosion occur, as well as the size and nature of the receiving water body. The calculations of COPC concentrations in runoff assume that runoff and erosion occur over all the areas of the Site. Average measurements reported for the area of Crawford Creek closest to the Site (from the tributary to the railroad bridge) were calculated and used to estimate COPC concentrations in runoff. Surface area, depth, and velocity information for the tributary to Crawford Creek were taken from BBL (2000) or estimated for average conditions. In the absence of base flow data, the flow rate in the tributary to Crawford Creek was assumed to be 10% of the flow of Crawford Creek. This assumption introduces uncertainty to the surface runoff evaluation. However, it is based upon observations made during field reconnaissance and appears to reflect actual Site conditions. Further, the estimated concentrations in the tributary are approximately one order of magnitude higher than the concentrations measured in stormwater at Outfall 001 during routine stormwater monitoring events (see Table 14), indicating that the assumptions in this analysis are conservative. In addition, this approach ignores the contribution to surface runoff originating from portions of the Site not affected by Site-related constituents. This unaffected runoff would reduce the constituent concentrations in runoff, reducing potential risks associated with this exposure. The above discussion demonstrates that the assumptions made in the surface runoff analysis are conservative and health-protective. Based on the approach used, actual risks from exposure to surface runoff are likely to be far lower than those reported.

4.2 Dermal-Soil AAFs

The dermal-soil AAFs used in this risk assessment are lower than U.S. EPA default assumptions (0.02 carcinogenic – 0.1 noncarcinogenic vs. 0.13 for PAH; 0.03 vs. 0.25 for pentachlorophenol). Using the U.S. EPA default dermal-soil AAFs would result in higher potential dermal risk estimates for pentachlorophenol and carcinogenic PAHs than those reported in this document but would not change the conclusions. The AAFs used were appropriately derived from the scientific literature and have been published in a peer-reviewed journal (Magee et al., 1996). Further, evaluation of potential dermal exposures was not required by WDNR and the inclusion of this pathway overestimates actual risks (if any) to receptors at the Site.

4.3 Skin Surface Area

This risk assessment assumes that the surface area of the hands and face of KI Site Workers may be potentially exposed to soil for three months per year and their hands, face and forearms for 8 months per year. Although it is possible that KI Site Workers may have additional skin potentially exposed to soil (e.g., the neck), this is highly unlikely given clothing requirements, climate and work activities. Incorporation of such additional surface area is not likely to significantly increase the potential risk estimates reported herein.

4.4 Dermal Permeability Constants for PAHs

The dermal permeability constants (K_p) for PAHs used to evaluate potential surface water exposures in the tributary to Crawford Creek and Crawford Creek were derived from scientific literature. The K_p for BaP of 0.02 cm/hr was used as a surrogate for all PAHs. The derivation of this value is provided in Appendix D. This value is lower than the U.S. EPA default K_p for BaP of 0.7 cm/hr. However, the U.S. EPA default value was not used in this risk assessment because it is flawed. That is, U.S. EPA has not based its K_p for benzo(a)pyrene on experimental data on PAHs. Instead, the K_p is an *estimated* value derived from a regression equation that resulted from fitting a curve to a large data set of data of constituents of different classes. The parameters in the regression equation are molecular weight and octanol-water partition coefficient. Experimental studies have showed that dermal absorption of PAHs congeners is *inversely* proportional to octanol-water partition coefficient not *directly* proportional as assumed by the K_p equations (Roy et al., 1997). Thus, the regression equation selected by U.S. EPA to derive K_p values is not appropriate for PAHs.

5.0 CONCLUSIONS

As detailed above, potential on-Site human health risks due to potential exposure to soil were evaluated according to standard risk assessment protocols and guidance agreed upon by WDNR and Beazer. Both Site-wide and area-specific potential risks were estimated.

According to NR 720.11, cumulative potential carcinogenic risks may not exceed 1×10^{-5}, with no individual constituents above 1×10^{-6} (unless it is demonstrated to be impractical to achieve 1×10^{-6} for individual constituents). With the exception of the KI Site Worker, allowable risk levels were determined to exist for all receptor scenarios that were evaluated under current conditions. For the KI Site Worker, possible corrective action scenarios were defined in an iterative manner assuming that exposure to BaP-TE, noncarcinogenic PAHs, pentachlorophenol, and TCDD-TEQ in various samples was eliminated. Sample locations were iteratively removed from the dataset (assuming elimination of exposure to soil to the depth of 1 foot) to identify the locations that require action to achieve an estimated cancer risk of 1×10^{-5} for KI Site Workers exposed to the 0-1 foot soil horizon in each exposure area.

Exposure point concentrations for BaP-TE, noncarcinogenic PAHs, TCDD-TEQ, and pentachlorophenol were calculated for post-remediation conditions using the 95% UCL based on the t-statistic. Post-remediation exposure point concentrations were estimated assuming that certain samples were eliminated from the dataset. Post-remediation EPCs for PAH in subsurface soil in Area A were estimated using a more refined approach. Site-wide maximum detected concentrations were used as the EPC for other detected constituents with the exception of dibenzofuran in subsurface soil, where a more refined approach was used to estimate EPCs in subsurface soil in Areas A, B and B/F.

Based on the risk evaluation conducted, cumulative potential excess lifetime cancer risks did not exceed 1×10^{-5} under post-remediation conditions, and potential noncarcinogenic HIs did not exceed the benchmark of one under post-remediation conditions.

Consistent with Wisconsin's Soil Cleanup Standards (NR 720), estimated concentrations of COPCs in the tributary to Crawford Creek and Crawford Creek surface water due to erosion and runoff from the Site soils were also evaluated assuming post-remediation conditions to evaluate surface water quality and direct contact potential human health risk. All estimated surface water concentrations in both the tributary to Crawford Creek and Crawford Creek were less than Wisconsin Surface Water Quality Criteria and Federal AWQC. Additionally, potential excess lifetime cancer risks associated with surface water in both the tributary to Crawford Creek and Crawford Creek fall within or are less than U.S. EPA's acceptable risk range of 10^{-4} to 10^{-6} and are below Wisconsin's target risk of 10^{-5}, and potential HIs associated with surface water are below the target HI of one. Therefore, this pathway is compliant with NR 720.

Finally, as discussed in detail in the Focused CMS (ARCADIS BBL, 2007a), Beazer has proposed a natural attenuation-based approach for addressing groundwater at the Site. Accordingly, risks associated with COPCs in soil leaching into groundwater are not addressed herein.

Therefore, following completion of corrective actions to address the soil samples specified in Table 11, soil cleanup standards as described in NR 720 have been met at the Site and Corrective Action Objectives will be achieved.

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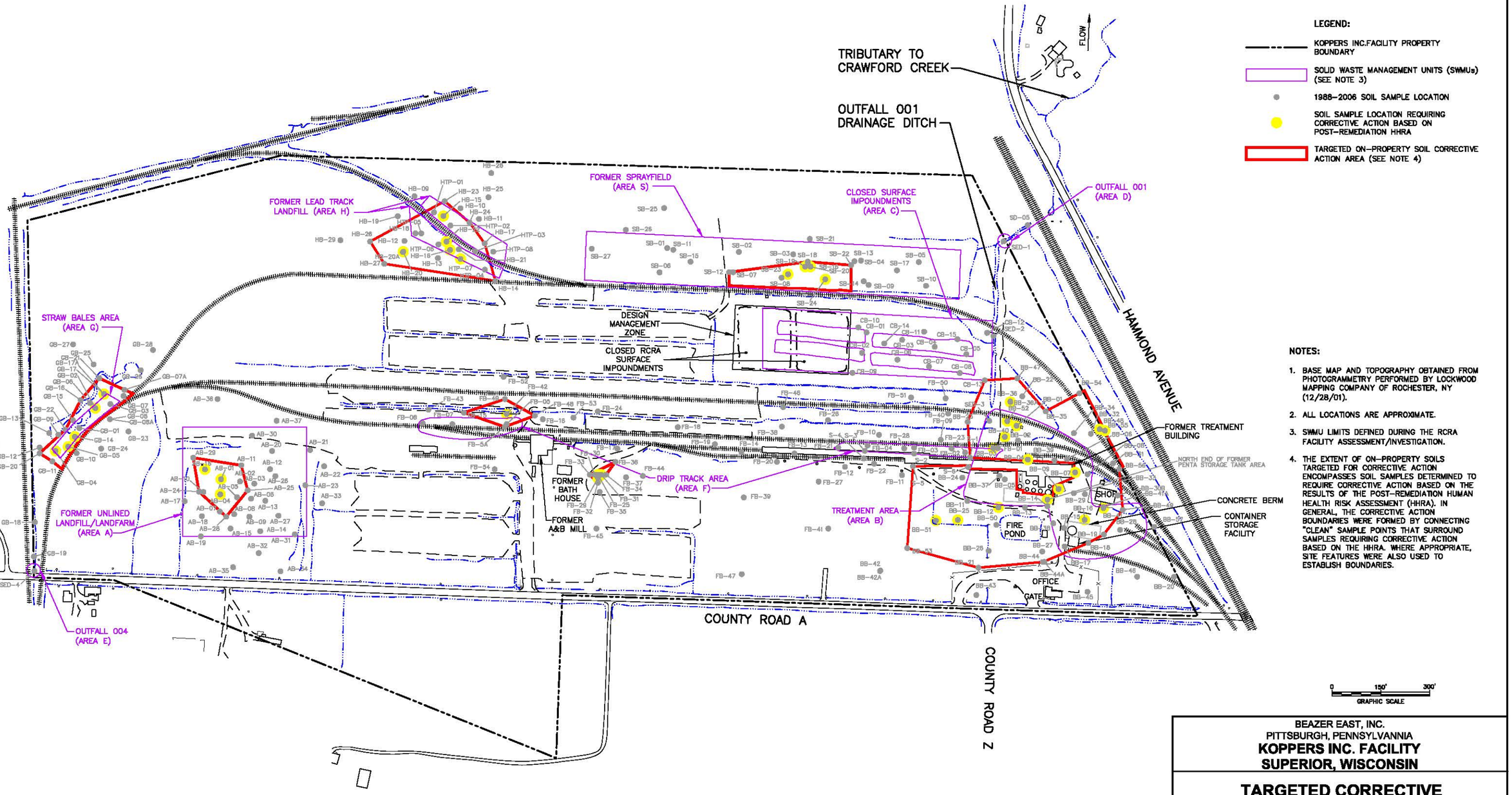

LEGEND:

- KOPPERS INC.FACILITY PROPERTY BOUNDARY
- SOLID WASTE MANAGEMENT UNITS (SWMUs) (SEE NOTE 3)
- 1988–2006 SOIL SAMPLE LOCATION
- SOIL SAMPLE LOCATION REQUIRING CORRECTIVE ACTION BASED ON POST–REMEDIATION HHRA
- TARGETED ON–PROPERTY SOIL CORRECTIVE ACTION AREA (SEE NOTE 4)

NOTES:

1. BASE MAP AND TOPOGRAPHY OBTAINED FROM PHOTOGRAMMETRY PERFORMED BY LOCKWOOD MAPPING COMPANY OF ROCHESTER, NY (12/28/01).
2. ALL LOCATIONS ARE APPROXIMATE.
3. SWMU LIMITS DEFINED DURING THE RCRA FACILITY ASSESSMENT/INVESTIGATION.
4. THE EXTENT OF ON–PROPERTY SOILS TARGETED FOR CORRECTIVE ACTION ENCOMPASSES SOIL SAMPLES DETERMINED TO REQUIRE CORRECTIVE ACTION BASED ON THE RESULTS OF THE POST–REMEDIATION HUMAN HEALTH RISK ASSESSMENT (HHRA). IN GENERAL, THE CORRECTIVE ACTION BOUNDARIES WERE FORMED BY CONNECTING "CLEAN" SAMPLE POINTS THAT SURROUND SAMPLES REQUIRING CORRECTIVE ACTION BASED ON THE HHRA. WHERE APPROPRIATE, SITE FEATURES WERE ALSO USED TO ESTABLISH BOUNDARIES.

0 150' 300'
GRAPHIC SCALE

BEAZER EAST, INC.
PITTSBURGH, PENNSYLVANNIA
KOPPERS INC. FACILITY
SUPERIOR, WISCONSIN

TARGETED CORRECTIVE ACTION AREAS

ARCADIS BBL
Infrastructure, environment, facilities

FIGURE
1

SYR=BS-LAF LJP LAF LAYER: ON=*; OFF=*REF*
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Table 1a
Summary of Soil Data - Site-Wide (Post-Remediation)
KI Facility
Superior, WI

Area	Site-Wide									
Depth Interval	0-1 foot					0-5 feet				
Constituent	Detects	Samples	Minimum (mg/kg) (a)	Maximum (mg/kg) (a)	Mean (mg/kg) (a)	Detects	Samples	Minimum (mg/kg) (a)	Maximum (mg/kg) (a)	Mean (mg/kg) (a)
Acenaphthene	80	123	9.00E-03	1.00E+02	3.22E+00	107	172	9.00E-03	2.43E+03	2.49E+01
Acenaphthylene	76	123	4.65E-02	1.00E+02	2.21E+00	103	172	4.70E-02	5.98E+02	1.02E+01
Anthracene	93	123	2.30E-03	5.50E+01	3.11E+00	124	172	2.35E-03	1.39E+03	1.44E+01
BaP-TE (a,b)	116	123	1.20E-03	2.43E+01	3.34E+00	164	172	1.20E-03	5.71E+02	1.01E+01
Benzo(a)anthracene	100	123	4.65E-04	2.79E+01	1.36E+00	141	172	4.70E-04	3.55E+02	4.53E+00
Benzo(a)pyrene	115	123	4.65E-04	1.06E+01	1.25E+00	161	172	4.80E-04	2.35E+02	3.97E+00
Benzo(b)fluoranthene	115	123	4.65E-04	1.30E+01	2.15E+00	161	172	4.80E-04	2.61E+02	4.31E+00
Benzo(g,h,i)perylene	108	123	1.10E-03	1.18E+01	1.70E+00	150	172	1.15E-03	1.68E+02	3.78E+00
Benzo(k)fluoranthene	97	123	4.65E-04	1.06E+01	7.87E-01	139	172	4.80E-04	9.83E+01	1.57E+00
Chrysene	98	123	2.50E-03	3.92E+01	2.72E+00	143	172	2.50E-03	6.60E+02	9.68E+00
Dibenz(a,h)anthracene	99	123	5.00E-04	1.26E+01	1.58E+00	142	172	5.00E-04	2.69E+02	5.01E+00
Fluoranthene	102	123	4.65E-03	2.37E+02	5.33E+00	141	172	4.70E-03	3.81E+03	3.72E+01
Fluorene	78	123	4.65E-03	2.16E+01	1.17E+00	117	172	4.70E-03	2.07E+03	1.83E+01
Indeno(1,2,3-cd)pyrene	111	123	1.00E-03	1.06E+01	1.48E+00	153	172	1.00E-03	3.89E+01	1.65E+00
1-Methylnaphthalene	9	39	1.16E-02	1.00E+02	5.71E+00	9	55	1.16E-02	1.00E+02	5.36E+00
2-Methylnaphthalene	4	36	2.25E-02	1.00E+02	5.98E+00	4	43	5.00E-04	1.00E+02	5.52E+00
Naphthalene	87	130	2.00E-03	1.00E+02	2.39E+00	121	176	2.00E-03	1.14E+03	1.76E+01
Phenanthrene	88	123	1.10E-02	6.55E+01	2.20E+00	126	172	1.15E-02	6.09E+03	5.14E+01
Pyrene	101	123	4.65E-03	1.10E+02	4.11E+00	140	172	4.70E-03	1.69E+03	2.51E+01
1,2,3,4,6,7,8-HpCDD	38	38	2.45E-05	5.11E-02	8.26E-03	38	38	2.45E-05	5.11E-02	8.26E-03
1,2,3,4,6,7,8-HpCDF	38	38	6.88E-06	6.93E-03	1.58E-03	38	38	6.88E-06	6.93E-03	1.58E-03
1,2,3,4,7,8,9-HpCDF	36	38	2.15E-07	4.73E-04	1.33E-04	36	38	2.15E-07	4.73E-04	1.33E-04
1,2,3,4,7,8-HxCDD	36	38	3.68E-07	2.50E-04	4.60E-05	36	38	3.68E-07	2.50E-04	4.60E-05
1,2,3,4,7,8-HxCDF	36	38	4.60E-07	5.13E-04	1.25E-04	36	38	4.60E-07	5.13E-04	1.25E-04
1,2,3,6,7,8-HxCDD	38	38	1.02E-06	1.14E-03	2.59E-04	38	38	1.02E-06	1.14E-03	2.59E-04
1,2,3,6,7,8-HxCDF	34	38	1.30E-07	1.49E-04	3.85E-05	34	38	1.30E-07	1.49E-04	3.85E-05
1,2,3,7,8,9-HxCDD	36	38	5.52E-07	3.80E-04	7.70E-05	36	38	5.52E-07	3.80E-04	7.70E-05
1,2,3,7,8,9-HxCDF	32	38	6.50E-08	1.92E-04	4.03E-05	32	38	6.50E-08	1.92E-04	4.03E-05
1,2,3,7,8-PeCDD	27	38	1.55E-07	7.00E-05	1.36E-05	27	38	1.55E-07	7.00E-05	1.36E-05
1,2,3,7,8-PeCDF	32	38	9.00E-08	6.47E-05	1.26E-05	32	38	9.00E-08	6.47E-05	1.26E-05
2,3,4,6,7,8-HxCDF	35	38	3.40E-07	2.25E-04	5.81E-05	35	38	3.40E-07	2.25E-04	5.81E-05
2,3,4,7,8-PeCDF	33	38	6.50E-08	1.37E-04	2.61E-05	33	38	6.50E-08	1.37E-04	2.61E-05
2,3,7,8-TCDD	6	38	5.50E-08	6.60E-06	1.64E-06	6	38	5.50E-08	6.60E-06	1.64E-06
2,3,7,8-TCDF	19	38	6.00E-08	1.30E-05	2.26E-06	19	38	6.00E-08	1.30E-05	2.26E-06
OCDD	38	38	2.99E-04	4.21E-01	7.36E-02	38	38	2.99E-04	4.21E-01	7.36E-02
OCDF	38	38	1.73E-05	4.07E-02	6.44E-03	38	38	1.73E-05	4.07E-02	6.44E-03
TCDD-TEQ (a,c)	38	38	1.12E-06	9.48E-04	2.12E-04	38	38	1.12E-06	9.48E-04	2.12E-04
Pentachlorophenol	59	111	6.00E-03	1.95E+02	8.59E+00	91	153	6.00E-03	1.95E+02	9.13E+00
Aldrin				3.00E-03					3.00E-03	
Arsenic				3.50E+00					3.50E+00	
Barium				2.99E+02					2.99E+02	
delta-BHC				3.00E-03					3.00E-03	
Chlorobenzene				3.00E-03					3.00E-03	
Chloromethane				2.00E-03					2.00E-03	
4-Chloro-3-methylphenol				2.50E-01					2.50E-01	
Chromium				6.80E+01					6.80E+01	
4,4'-DDD				3.60E-02					3.60E-02	
4,4'-DDE				8.00E-03					8.00E-03	
4,4'-DDT				1.90E-02					1.90E-02	
Dibenzofuran				1.90E+00					1.54E+03	
1,2-Dichlorobenzene				2.00E-03					2.00E-03	
1,4-Dichlorobenzene				2.00E-03					2.00E-03	
1,2-Dichloropropane				4.00E-03					4.00E-03	
4,6-Dinitro-2-methylphenol				1.50E+00					1.50E+00	
2,4-Dinitrophenol				6.30E-01					6.30E-01	
Endosulfan II				1.40E-02					1.40E-02	
Endosulfan sulfate				1.40E-02					1.40E-02	
Endrin				3.60E-02					3.60E-02	
Endrin aldehyde				3.30E-02					3.30E-02	
Ethylbenzene				2.10E+00					2.10E+00	
Isopropylbenzene				3.30E-02					3.30E-02	
Manganese				8.52E+02					8.52E+02	
Methylene chloride				7.40E-02					7.40E-02	
4-Nitrophenol				2.50E-01					2.50E-01	
Phenol				1.20E-02					1.20E-02	
Tetrachloroethene				8.00E-03					8.00E-03	
2,3,4,6 & 2,3,5,6-				1.55E-01					1.55E-01	
Toluene				2.80E-02					2.80E-02	
1,2,4-Trichlorobenzene				1.00E-03					1.00E-03	
2,4,5-Trichlorophenol				1.60E-01					1.60E-01	
2,4,6-Trichlorophenol				3.50E-01					3.50E-01	
1,2,4-Trimethylbenzene				4.40E-02					4.40E-02	
Total Xylenes				2.00E-03					2.00E-03	

Notes:
(a) Assumes constituents reported as not detected in a sample were present at one-half the detection limit.
(b) BaP-TE calculated using toxic equivalent factors from U.S. EPA (1993); see Table 2.
(c) TCDD-TEQ calculated using toxic equivalent factors from Van den Berg et al. (2006); see Table 3.

Table 1b
Summary of Soil Data - Area A (Post-Remediation)
KI Facility
Superior, WI

Area	Area A (Former Unlined Landfill/Landfarm)									
Depth Interval	0-1 foot					0-5 feet				
Constituent	Detects	Samples	Minimum (mg/kg) (a)	Maximum (mg/kg) (a)	Mean (mg/kg) (a)	Detects	Samples	Minimum (mg/kg) (a)	Maximum (mg/kg) (a)	Mean (mg/kg) (a)
Acenaphthene	16	23	1.30E-02	4.45E+01	2.86E+00	23	35	1.30E-02	2.43E+03	1.03E+02
Acenaphthylene	16	23	4.70E-02	4.45E+01	3.03E+00	23	35	4.70E-02	5.98E+02	3.91E+01
Anthracene	19	23	2.35E-03	3.87E+01	4.03E+00	29	35	2.35E-03	1.39E+03	5.72E+01
BaP-TE (a,b)	23	23	3.11E-03	1.45E+01	4.09E+00	35	35	1.25E-02	5.71E+02	2.89E+01
Benzo(a)anthracene	20	23	4.70E-04	8.90E+00	1.38E+00	31	35	4.70E-04	3.55E+02	1.54E+01
Benzo(a)pyrene	23	23	1.80E-03	6.20E+00	1.78E+00	35	35	2.00E-03	2.35E+02	1.19E+01
Benzo(b)fluoranthene	23	23	2.60E-03	9.80E+00	2.96E+00	35	35	4.20E-03	2.61E+02	1.34E+01
Benzo(g,h,i)perylene	22	23	4.60E-03	1.00E+01	2.55E+00	34	35	4.90E-03	1.68E+02	1.05E+01
Benzo(k)fluoranthene	14	23	4.90E-04	2.50E+00	5.28E-01	25	35	4.80E-04	9.83E+01	4.50E+00
Chrysene	18	23	3.35E-03	3.92E+01	5.04E+00	29	35	3.35E-03	6.60E+02	3.19E+01
Dibenz(a,h)anthracene	21	23	7.00E-04	9.40E+00	1.65E+00	33	35	9.60E-03	2.69E+02	1.37E+01
Fluoranthene	19	23	4.70E-03	2.50E+01	3.09E+00	29	35	4.70E-03	3.81E+03	1.52E+02
Fluorene	16	23	4.70E-03	5.00E+00	7.24E-01	27	35	4.70E-03	2.07E+03	8.00E+01
Indeno(1,2,3-cd)pyrene	23	23	2.90E-03	7.50E+00	2.14E+00	35	35	3.80E-03	3.89E+01	3.33E+00
1-Methylnaphthalene	0	7	4.70E-02	4.45E+01	7.79E+00	0	8	4.70E-02	4.45E+01	9.33E+00
2-Methylnaphthalene	0	7	4.70E-02	4.45E+01	7.79E+00	0	8	4.70E-02	4.45E+01	9.33E+00
Naphthalene	18	23	2.40E-02	4.45E+01	3.03E+00	26	35	2.40E-02	1.14E+03	7.02E+01
Phenanthrene	17	23	1.15E-02	7.20E+00	1.27E+00	27	35	1.15E-02	6.09E+03	2.34E+02
Pyrene	18	23	4.70E-03	2.60E+01	3.08E+00	29	35	4.70E-03	1.69E+03	7.59E+01
1,2,3,4,6,7,8-HpCDD	2	2	1.70E-03	7.05E-03	4.38E-03	2	2	1.70E-03	7.05E-03	4.38E-03
1,2,3,4,6,7,8-HpCDF	2	2	1.80E-04	1.11E-03	6.45E-04	2	2	1.80E-04	1.11E-03	6.45E-04
1,2,3,4,7,8,9-HpCDF	2	2	1.30E-05	1.01E-04	5.68E-05	2	2	1.30E-05	1.01E-04	5.68E-05
1,2,3,4,7,8-HxCDD	2	2	3.10E-06	2.90E-05	1.61E-05	2	2	3.10E-06	2.90E-05	1.61E-05
1,2,3,4,7,8-HxCDF	2	2	1.30E-05	9.90E-05	5.60E-05	2	2	1.30E-05	9.90E-05	5.60E-05
1,2,3,6,7,8-HxCDD	2	2	3.90E-05	2.10E-04	1.25E-04	2	2	3.90E-05	2.10E-04	1.25E-04
1,2,3,6,7,8-HxCDF	2	2	2.30E-06	1.60E-05	9.15E-06	2	2	2.30E-06	1.60E-05	9.15E-06
1,2,3,7,8,9-HxCDD	2	2	4.00E-06	2.40E-05	1.40E-05	2	2	4.00E-06	2.40E-05	1.40E-05
1,2,3,7,8,9-HxCDF	2	2	3.35E-06	4.50E-06	3.93E-06	2	2	3.35E-06	4.50E-06	3.93E-06
1,2,3,7,8-PeCDD	1	2	2.75E-07	3.10E-06	1.69E-06	1	2	2.75E-07	3.10E-06	1.69E-06
1,2,3,7,8-PeCDF	2	2	1.40E-06	9.30E-06	5.35E-06	2	2	1.40E-06	9.30E-06	5.35E-06
2,3,4,6,7,8-HxCDF	2	2	1.90E-06	1.34E-05	7.65E-06	2	2	1.90E-06	1.34E-05	7.65E-06
2,3,4,7,8-PeCDF	2	2	3.20E-06	9.10E-06	6.15E-06	2	2	3.20E-06	9.10E-06	6.15E-06
2,3,7,8-TCDD	0	2	1.15E-07	3.60E-07	2.38E-07	0	2	1.15E-07	3.60E-07	2.38E-07
2,3,7,8-TCDF	2	2	4.70E-07	8.75E-07	6.73E-07	2	2	4.70E-07	8.75E-07	6.73E-07
OCDD	2	2	1.70E-02	7.45E-02	4.58E-02	2	2	1.70E-02	7.45E-02	4.58E-02
OCDF	2	2	8.80E-04	4.50E-03	2.69E-03	2	2	8.80E-04	4.50E-03	2.69E-03
TCDD-TEQ (a,c)	2	2	3.25E-05	1.52E-04	9.24E-05	2	2	3.25E-05	1.52E-04	9.24E-05
Pentachlorophenol	5	15	6.00E-03	6.30E+00	1.56E+00	14	26	6.00E-03	6.30E+00	1.40E+00
Aldrin				3.00E-03					3.00E-03	
Arsenic				3.50E+00					3.50E+00	
Barium				2.99E+02					2.99E+02	
delta-BHC				3.00E-03					3.00E-03	
Chlorobenzene				3.00E-03					3.00E-03	
Chloromethane				2.00E-03					2.00E-03	
4-Chloro-3-methylphenol				2.50E-01					2.50E-01	
Chromium				6.80E+01					6.80E+01	
4,4'-DDD				3.60E-02					3.60E-02	
4,4'-DDE				8.00E-03					8.00E-03	
4,4'-DDT				1.90E-02					1.90E-02	
Dibenzofuran				1.90E+00					1.54E+03	
1,2-Dichlorobenzene				2.00E-03					2.00E-03	
1,4-Dichlorobenzene				2.00E-03					2.00E-03	
1,2-Dichloropropane				4.00E-03					4.00E-03	
4,6-Dinitro-2-methylphenol				1.50E+00					1.50E+00	
2,4-Dinitrophenol				6.30E-01					6.30E-01	
Endosulfan II				1.40E-02					1.40E-02	
Endosulfan sulfate				1.40E-02					1.40E-02	
Endrin				3.60E-02					3.60E-02	
Endrin aldehyde				3.30E-02					3.30E-02	
Ethylbenzene				2.10E+00					2.10E+00	
Isopropylbenzene				3.30E-02					3.30E-02	
Manganese				8.52E+02					8.52E+02	
Methylene chloride				7.40E-02					7.40E-02	
4-Nitrophenol				2.50E-01					2.50E-01	
Phenol				1.20E-02					1.20E-02	
Tetrachloroethene				8.00E-03					8.00E-03	
2,3,4,6 & 2,3,5,6-Tetrachlorophenol				1.55E-01					1.55E-01	
Toluene				2.80E-02					2.80E-02	
1,2,4-Trichlorobenzene				1.00E-03					1.00E-03	
2,4,5-Trichlorophenol				1.60E-01					1.60E-01	
2,4,6-Trichlorophenol				3.50E-01					3.50E-01	
1,2,4-Trimethylbenzene				4.40E-02					4.40E-02	
Total Xylenes				2.00E-03					2.00E-03	

Notes:
(a) Assumes constituents reported as not detected in a sample were present at one-half the detection limit.
(b) BaP-TE calculated using toxic equivalent factors from U.S. EPA (1993); see Table 2.
(c) TCDD-TEQ calculated using toxic equivalent factors from Van den Berg et al. (2006); see Table 3.

Table 1c
Summary of Soil Data - Area B (Post-Remediation)
KI Facility
Superior, WI

Area	Area B (Former Treatment Area)									
Depth Inverval	0-1 foot					0-5 feet				
Constituent	Detects	Samples	Minimum (mg/kg) (a)	Maximum (mg/kg) (a)	Mean (mg/kg) (a)	Detects	Samples	Minimum (mg/kg) (a)	Maximum (mg/kg) (a)	Mean (mg/kg) (a)
Acenaphthene	16	23	1.30E-02	4.45E+01	2.86E+00	33	44	4.30E-02	1.10E+02	7.02E+00
Acenaphthylene	16	23	4.70E-02	4.45E+01	3.03E+00	29	44	4.80E-02	6.38E+01	3.99E+00
Anthracene	19	23	2.35E-03	3.87E+01	4.03E+00	31	44	2.40E-03	4.18E+01	4.07E+00
BaP-TE (a,b)	23	23	3.11E-03	1.45E+01	4.09E+00	43	44	1.40E-03	1.05E+02	9.73E+00
Benzo(a)anthracene	20	23	4.70E-04	8.90E+00	1.38E+00	34	44	4.80E-04	1.46E+01	2.22E+00
Benzo(a)pyrene	23	23	1.80E-03	6.20E+00	1.78E+00	42	44	4.80E-04	7.34E+01	3.72E+00
Benzo(b)fluoranthene	23	23	2.60E-03	9.80E+00	2.96E+00	41	44	4.80E-04	1.91E+01	2.42E+00
Benzo(g,h,i)perylene	22	23	4.60E-03	1.00E+01	2.55E+00	39	44	1.15E-03	4.65E+01	3.59E+00
Benzo(k)fluoranthene	14	23	4.90E-04	2.50E+00	5.28E-01	38	44	4.80E-04	4.52E+00	7.26E-01
Chrysene	18	23	3.35E-03	3.92E+01	5.04E+00	39	44	3.40E-03	5.83E+01	5.79E+00
Dibenz(a,h)anthracene	21	23	7.00E-04	9.40E+00	1.65E+00	40	44	7.00E-04	8.28E+01	5.39E+00
Fluoranthene	19	23	4.70E-03	2.50E+01	3.09E+00	35	44	4.80E-03	8.03E+01	9.22E+00
Fluorene	16	23	4.70E-03	5.00E+00	7.24E-01	34	44	4.80E-03	5.51E+01	4.28E+00
Indeno(1,2,3-cd)pyrene	23	23	2.90E-03	7.50E+00	2.14E+00	40	44	1.15E-03	1.02E+01	1.47E+00
1-Methylnaphthalene	0	7	4.70E-02	4.45E+01	7.79E+00	2	21	4.80E-02	6.00E+00	3.40E+00
2-Methylnaphthalene	0	7	4.70E-02	4.45E+01	7.79E+00	0	9	4.80E-02	6.00E+00	1.85E+00
Naphthalene	18	23	2.40E-02	4.45E+01	3.03E+00	37	44	4.80E-02	1.60E+02	1.00E+01
Phenanthrene	17	23	1.15E-02	7.20E+00	1.27E+00	34	44	1.15E-02	1.25E+02	7.68E+00
Pyrene	18	23	4.70E-03	2.60E+01	3.08E+00	34	44	4.80E-03	7.40E+02	2.70E+01
1,2,3,4,6,7,8-HpCDD	2	2	1.70E-03	7.05E-03	4.38E-03	4	4	3.77E-03	1.44E-02	7.02E-03
1,2,3,4,6,7,8-HpCDF	2	2	1.80E-04	1.11E-03	6.45E-04	4	4	7.29E-04	3.18E-03	1.43E-03
1,2,3,4,7,8,9-HpCDF	2	2	1.30E-05	1.01E-04	5.68E-05	4	4	6.10E-05	2.52E-04	1.21E-04
1,2,3,4,7,8-HxCDD	2	2	3.10E-06	2.90E-05	1.61E-05	4	4	2.30E-05	8.48E-05	4.06E-05
1,2,3,4,7,8-HxCDF	2	2	1.30E-05	9.90E-05	5.60E-05	4	4	6.11E-05	2.28E-04	1.15E-04
1,2,3,6,7,8-HxCDD	2	2	3.90E-05	2.10E-04	1.25E-04	4	4	8.91E-05	4.00E-04	1.94E-04
1,2,3,6,7,8-HxCDF	2	2	2.30E-06	1.60E-05	9.15E-06	4	4	1.60E-05	5.70E-05	2.88E-05
1,2,3,7,8,9-HxCDD	2	2	4.00E-06	2.40E-05	1.40E-05	4	4	1.90E-05	1.44E-04	6.33E-05
1,2,3,7,8,9-HxCDF	2	2	3.35E-06	4.50E-06	3.93E-06	4	4	4.50E-06	5.30E-05	2.30E-05
1,2,3,7,8-PeCDD	1	2	2.75E-07	3.10E-06	1.69E-06	4	4	4.50E-06	2.69E-05	1.32E-05
1,2,3,7,8-PeCDF	2	2	1.40E-06	9.30E-06	5.35E-06	4	4	5.33E-06	1.77E-05	9.95E-06
2,3,4,6,7,8-HxCDF	2	2	1.90E-06	1.34E-05	7.65E-06	4	4	1.20E-05	1.08E-04	4.64E-05
2,3,4,7,8-PeCDF	2	2	3.20E-06	9.10E-06	6.15E-06	4	4	1.09E-05	4.30E-05	2.09E-05
2,3,7,8-TCDD	0	2	1.15E-07	3.60E-07	2.38E-07	0	4	6.00E-07	3.34E-06	2.02E-06
2,3,7,8-TCDF	2	2	4.70E-07	8.75E-07	6.73E-07	3	4	1.00E-06	3.46E-06	2.44E-06
OCDD	2	2	1.70E-02	7.45E-02	4.58E-02	4	4	3.52E-02	1.63E-01	7.51E-02
OCDF	2	2	8.80E-04	4.50E-03	2.69E-03	4	4	2.58E-03	1.45E-02	5.99E-03
TCDD-TEQ (a,c)	2	2	3.25E-05	1.52E-04	9.24E-05	4	4	1.02E-04	3.83E-04	1.83E-04
Pentachlorophenol	5	15	6.00E-03	6.30E+00	1.56E+00	17	37	6.65E-03	2.69E+01	2.25E+00
Aldrin				3.00E-03					3.00E-03	
Arsenic				3.50E+00					3.50E+00	
Barium				2.99E+02					2.99E+02	
delta-BHC				3.00E-03					3.00E-03	
Chlorobenzene				3.00E-03					3.00E-03	
Chloromethane				2.00E-03					2.00E-03	
4-Chloro-3-methylphenol				2.50E-01					2.50E-01	
Chromium				6.80E+01					6.80E+01	
4,4'-DDD				3.60E-02					3.60E-02	
4,4'-DDE				8.00E-03					8.00E-03	
4,4'-DDT				1.90E-02					1.90E-02	
Dibenzofuran				1.90E+00					1.54E+03	
1,2-Dichlorobenzene				2.00E-03					2.00E-03	
1,4-Dichlorobenzene				2.00E-03					2.00E-03	
1,2-Dichloropropane				4.00E-03					4.00E-03	
4,6-Dinitro-2-methylphenol				1.50E+00					1.50E+00	
2,4-Dinitrophenol				6.30E-01					6.30E-01	
Endosulfan II				1.40E-02					1.40E-02	
Endosulfan sulfate				1.40E-02					1.40E-02	
Endrin				3.60E-02					3.60E-02	
Endrin aldehyde				3.30E-02					3.30E-02	
Ethylbenzene				2.10E+00					2.10E+00	
Isopropylbenzene				3.30E-02					3.30E-02	
Manganese				8.52E+02					8.52E+02	
Methylene chloride				7.40E-02					7.40E-02	
4-Nitrophenol				2.50E-01					2.50E-01	
Phenol				1.20E-02					1.20E-02	
Tetrachloroethene				8.00E-03					8.00E-03	
2,3,4,6 & 2,3,5,6-Tetrachlorophenol				1.55E-01					1.55E-01	
Toluene				2.80E-02					2.80E-02	
1,2,4-Trichlorobenzene				1.00E-03					1.00E-03	
2,4,5-Trichlorophenol				1.60E-01					1.60E-01	
2,4,6-Trichlorophenol				3.50E-01					3.50E-01	
1,2,4-Trimethylbenzene				4.40E-02					4.40E-02	
Total Xylenes				2.00E-03					2.00E-03	

Notes:
(a) Assumes constituents reported as not detected in a sample were present at one-half the detection limit.
(b) BaP-TE calculated using toxic equivalent factors from U.S. EPA (1993); see Table 2.
(c) TCDD-TEQ calculated using toxic equivalent factors from Van den Berg et al. (2006); see Table 3.

Table 1d
Summary of Soil Data - Area C (Post-Remediation)
KI Facility
Superior, WI

Area	Area C (Closed Surface Impoundments)									
Depth Interval	0-1 foot					0-5 feet				
Constituent	Detects	Samples	Minimum (mg/kg) (a)	Maximum (mg/kg) (a)	Mean (mg/kg) (a)	Detects	Samples	Minimum (mg/kg) (a)	Maximum (mg/kg) (a)	Mean (mg/kg) (a)
Acenaphthene	0	9	4.75E-02	4.60E+00	5.99E-01	2	11	4.75E-02	5.28E+00	1.02E+00
Acenaphthylene	0	9	4.75E-02	4.60E+00	5.99E-01	2	11	4.75E-02	4.60E+00	6.75E-01
Anthracene	0	9	2.40E-03	2.33E-01	8.53E-02	2	11	2.40E-03	1.95E+00	3.88E-01
BaP-TE (a,b)	6	9	1.20E-03	5.14E-01	1.59E-01	8	11	1.20E-03	1.22E+00	3.89E-01
Benzo(a)anthracene	3	9	4.75E-04	2.23E-01	4.71E-02	5	11	4.75E-04	9.10E-01	1.88E-01
Benzo(a)pyrene	6	9	4.95E-04	2.23E-01	6.20E-02	8	11	4.95E-04	3.10E-01	1.20E-01
Benzo(b)fluoranthene	6	9	4.95E-04	3.40E-01	8.65E-02	8	11	4.95E-04	5.02E-01	1.86E-01
Benzo(g,h,i)perylene	4	9	1.20E-03	2.80E-01	8.92E-02	6	11	1.20E-03	3.89E-01	1.55E-01
Benzo(k)fluoranthene	5	9	4.95E-04	2.23E-01	5.13E-02	7	11	4.95E-04	2.23E-01	8.08E-02
Chrysene	1	9	2.50E-03	3.25E-01	9.35E-02	4	11	2.50E-03	1.63E+00	3.69E-01
Dibenz(a,h)anthracene	3	9	5.00E-04	2.33E-01	7.46E-02	5	11	5.00E-04	7.87E-01	2.22E-01
Fluoranthene	2	9	4.75E-03	4.60E-01	1.17E-01	4	11	4.75E-03	7.41E+00	1.43E+00
Fluorene	0	9	4.75E-03	4.60E-01	1.07E-01	2	11	4.75E-03	4.42E+00	7.95E-01
Indeno(1,2,3-cd)pyrene	4	9	1.00E-03	3.00E-01	8.66E-02	6	11	1.00E-03	3.00E-01	8.90E-02
1-Methylnaphthalene	2	5	5.00E-02	4.85E+00	1.96E+00	2	6	5.00E-02	4.85E+00	2.44E+00
2-Methylnaphthalene	0	5	4.75E-02	4.85E+00	1.92E+00	0	6	5.00E-04	4.85E+00	1.60E+00
Naphthalene	1	10	3.50E-03	2.70E+00	3.47E-01	3	12	3.50E-03	4.10E+00	6.76E-01
Phenanthrene	0	9	1.15E-02	1.10E+00	2.10E-01	2	11	1.15E-02	1.27E+01	2.27E+00
Pyrene	3	9	4.75E-03	4.60E-01	1.02E-01	5	11	4.75E-03	5.00E+00	8.53E-01
1,2,3,4,6,7,8-HpCDD	2	2	2.70E-04	5.40E-04	4.05E-04	2	2	2.70E-04	5.40E-04	4.05E-04
1,2,3,4,6,7,8-HpCDF	2	2	5.70E-05	2.80E-04	1.69E-04	2	2	5.70E-05	2.80E-04	1.69E-04
1,2,3,4,7,8,9-HpCDF	2	2	3.70E-06	1.90E-05	1.14E-05	2	2	3.70E-06	1.90E-05	1.14E-05
1,2,3,4,7,8-HxCDD	2	2	1.50E-06	2.50E-06	2.00E-06	2	2	1.50E-06	2.50E-06	2.00E-06
1,2,3,4,7,8-HxCDF	2	2	4.40E-06	2.60E-05	1.52E-05	2	2	4.40E-06	2.60E-05	1.52E-05
1,2,3,6,7,8-HxCDD	2	2	9.40E-06	2.00E-05	1.47E-05	2	2	9.40E-06	2.00E-05	1.47E-05
1,2,3,6,7,8-HxCDF	2	2	7.60E-07	4.10E-06	2.43E-06	2	2	7.60E-07	4.10E-06	2.43E-06
1,2,3,7,8,9-HxCDD	1	2	1.40E-06	2.15E-06	1.78E-06	1	2	1.40E-06	2.15E-06	1.78E-06
1,2,3,7,8,9-HxCDF	2	2	1.40E-06	5.90E-06	3.65E-06	2	2	1.40E-06	5.90E-06	3.65E-06
1,2,3,7,8-PeCDD	0	2	1.55E-07	7.50E-07	4.53E-07	0	2	1.55E-07	7.50E-07	4.53E-07
1,2,3,7,8-PeCDF	2	2	4.80E-07	1.80E-06	1.14E-06	2	2	4.80E-07	1.80E-06	1.14E-06
2,3,4,6,7,8-HxCDF	1	2	1.90E-06	2.00E-06	1.95E-06	1	2	1.90E-06	2.00E-06	1.95E-06
2,3,4,7,8-PeCDF	2	2	9.30E-07	2.10E-06	1.52E-06	2	2	9.30E-07	2.10E-06	1.52E-06
2,3,7,8-TCDD	0	2	2.10E-07	5.50E-07	3.80E-07	0	2	2.10E-07	5.50E-07	3.80E-07
2,3,7,8-TCDF	0	2	1.00E-07	4.50E-07	2.75E-07	0	2	1.00E-07	4.50E-07	2.75E-07
OCDD	2	2	2.60E-03	7.30E-03	4.95E-03	2	2	2.60E-03	7.30E-03	4.95E-03
OCDF	2	2	1.70E-04	7.90E-04	4.80E-04	2	2	1.70E-04	7.90E-04	4.80E-04
TCDD-TEQ (a,c)	2	2	6.89E-06	1.91E-05	1.30E-05	2	2	6.89E-06	1.91E-05	1.30E-05
Pentachlorophenol	4	9	6.75E-03	1.87E+00	6.22E-01	6	11	6.75E-03	1.87E+00	6.07E-01
Aldrin				3.00E-03					3.00E-03	
Arsenic				3.50E+00					3.50E+00	
Barium				2.99E+02					2.99E+02	
delta-BHC				3.00E-03					3.00E-03	
Chlorobenzene				3.00E-03					3.00E-03	
Chloromethane				2.00E-03					2.00E-03	
4-Chloro-3-methylphenol				2.50E-01					2.50E-01	
Chromium				6.80E+01					6.80E+01	
4,4'-DDD				3.60E-02					3.60E-02	
4,4'-DDE				8.00E-03					8.00E-03	
4,4'-DDT				1.90E-02					1.90E-02	
Dibenzofuran				1.90E+00					1.54E+03	
1,2-Dichlorobenzene				2.00E-03					2.00E-03	
1,4-Dichlorobenzene				2.00E-03					2.00E-03	
1,2-Dichloropropane				4.00E-03					4.00E-03	
4,6-Dinitro-2-methylphenol				1.50E+00					1.50E+00	
2,4-Dinitrophenol				6.30E-01					6.30E-01	
Endosulfan II				1.40E-02					1.40E-02	
Endosulfan sulfate				1.40E-02					1.40E-02	
Endrin				3.60E-02					3.60E-02	
Endrin aldehyde				3.30E-02					3.30E-02	
Ethylbenzene				2.10E+00					2.10E+00	
Isopropylbenzene				3.30E-02					3.30E-02	
Manganese				8.52E+02					8.52E+02	
Methylene chloride				7.40E-02					7.40E-02	
4-Nitrophenol				2.50E-01					2.50E-01	
Phenol				1.20E-02					1.20E-02	
Tetrachloroethene				8.00E-03					8.00E-03	
2,3,4,6 & 2,3,5,6-Tetrachlorophenol				1.55E-01					1.55E-01	
Toluene				2.80E-02					2.80E-02	
1,2,4-Trichlorobenzene				1.00E-03					1.00E-03	
2,4,5-Trichlorophenol				1.60E-01					1.60E-01	
2,4,6-Trichlorophenol				3.50E-01					3.50E-01	
1,2,4-Trimethylbenzene				4.40E-02					4.40E-02	
Total Xylenes				2.00E-03					2.00E-03	

Notes:
(a) Assumes constituents reported as not detected in a sample were present at one-half the detection limit.
(b) BaP-TE calculated using toxic equivalent factors from U.S. EPA (1993); see Table 2.
(c) TCDD-TEQ calculated using toxic equivalent factors from Van den Berg et al. (2006); see Table 3.

Table 1e
Summary of Soil Data - Area F (Post-Remediation)
KI Facility
Superior, WI

Area	Area F (Drip Track Area)									
Depth Interval	0-1 foot					0-5 feet				
Constituent	Detects	Samples	Minimum (mg/kg) (a)	Maximum (mg/kg) (a)	Mean (mg/kg) (a)	Detects	Samples	Minimum (mg/kg) (a)	Maximum (mg/kg) (a)	Mean (mg/kg) (a)
Acenaphthene	30	33	9.00E-03	1.00E+02	7.05E+00	32	38	9.00E-03	1.00E+02	7.62E+00
Acenaphthylene	30	33	7.00E-02	1.00E+02	4.60E+00	32	38	5.00E-02	1.00E+02	4.47E+00
Anthracene	33	33	1.29E-01	5.50E+01	5.46E+00	35	38	2.50E-02	5.50E+01	6.04E+00
BaP-TE (a,b)	33	33	3.22E-01	2.43E+01	4.25E+00	38	38	5.17E-03	3.96E+01	5.30E+00
Benzo(a)anthracene	32	33	1.10E-01	2.79E+01	2.15E+00	36	38	1.26E-03	2.79E+01	2.56E+00
Benzo(a)pyrene	33	33	1.28E-01	1.06E+01	1.88E+00	38	38	2.72E-03	1.14E+01	2.09E+00
Benzo(b)fluoranthene	33	33	2.60E-01	1.30E+01	3.17E+00	37	38	1.00E-03	1.59E+01	3.38E+00
Benzo(g,h,i)perylene	31	33	1.31E-01	1.18E+01	2.30E+00	35	38	3.15E-03	1.18E+01	2.33E+00
Benzo(k)fluoranthene	33	33	7.15E-02	1.06E+01	1.53E+00	37	38	1.00E-03	1.06E+01	1.56E+00
Chrysene	32	33	2.00E-01	2.65E+01	3.43E+00	36	38	7.50E-03	5.03E+01	5.16E+00
Dibenz(a,h)anthracene	27	33	6.10E-02	1.18E+01	1.61E+00	31	38	1.89E-03	2.47E+01	2.39E+00
Fluoranthene	32	33	1.00E-01	2.37E+02	1.11E+01	36	38	1.00E-02	2.37E+02	1.32E+01
Fluorene	29	33	2.00E-02	2.10E+01	1.54E+00	31	38	1.00E-02	2.72E+01	2.26E+00
Indeno(1,2,3-cd)pyrene	33	33	1.50E-01	1.06E+01	2.11E+00	37	38	3.15E-03	1.06E+01	2.06E+00
1-Methylnaphthalene	5	9	1.16E-02	1.00E+02	1.35E+01	5	9	1.16E-02	1.00E+02	1.46E+01
2-Methylnaphthalene	4	9	2.25E-02	1.00E+02	1.39E+01	4	9	2.25E-02	1.00E+02	1.48E+01
Naphthalene	30	35	1.10E-02	1.00E+02	4.64E+00	34	40	1.10E-02	5.00E+01	3.49E+00
Phenanthrene	32	33	4.60E-02	1.80E+01	2.11E+00	34	38	2.50E-02	7.56E+01	4.29E+00
Pyrene	32	33	1.28E-01	1.10E+02	8.04E+00	34	38	1.26E-02	1.10E+02	9.60E+00
1,2,3,4,6,7,8-HpCDD	10	10	5.20E-05	1.99E-02	7.47E-03	10	10	5.20E-05	1.99E-02	7.47E-03
1,2,3,4,6,7,8-HpCDF	10	10	7.10E-06	3.62E-03	1.28E-03	10	10	7.10E-06	3.62E-03	1.28E-03
1,2,3,4,7,8,9-HpCDF	9	10	2.15E-07	2.20E-04	8.94E-05	9	10	2.15E-07	2.20E-04	8.94E-05
1,2,3,4,7,8-HxCDD	10	10	9.00E-07	2.50E-04	8.59E-05	10	10	9.00E-07	2.50E-04	8.59E-05
1,2,3,4,7,8-HxCDF	9	10	4.60E-07	1.80E-04	6.76E-05	9	10	4.60E-07	1.80E-04	6.76E-05
1,2,3,6,7,8-HxCDD	10	10	1.90E-06	7.41E-04	2.90E-04	10	10	1.90E-06	7.41E-04	2.90E-04
1,2,3,6,7,8-HxCDF	8	10	1.30E-07	7.50E-05	3.64E-05	8	10	1.30E-07	7.50E-05	3.64E-05
1,2,3,7,8,9-HxCDD	10	10	1.40E-06	3.80E-04	1.35E-04	10	10	1.40E-06	3.80E-04	1.35E-04
1,2,3,7,8,9-HxCDF	8	10	6.50E-08	4.40E-05	1.93E-05	8	10	6.50E-08	4.40E-05	1.93E-05
1,2,3,7,8-PeCDD	7	10	1.90E-07	7.00E-05	2.81E-05	7	10	1.90E-07	7.00E-05	2.81E-05
1,2,3,7,8-PeCDF	7	10	9.00E-08	2.20E-05	7.45E-06	7	10	9.00E-08	2.20E-05	7.45E-06
2,3,4,6,7,8-HxCDF	9	10	3.40E-07	1.43E-04	4.69E-05	9	10	3.40E-07	1.43E-04	4.69E-05
2,3,4,7,8-PeCDF	7	10	6.50E-08	3.30E-05	1.27E-05	7	10	6.50E-08	3.30E-05	1.27E-05
2,3,7,8-TCDD	3	10	9.00E-08	6.60E-06	2.14E-06	3	10	9.00E-08	6.60E-06	2.14E-06
2,3,7,8-TCDF	4	10	6.00E-08	4.09E-06	1.55E-06	4	10	6.00E-08	4.09E-06	1.55E-06
OCDD	10	10	4.20E-04	1.72E-01	5.95E-02	10	10	4.20E-04	1.72E-01	5.95E-02
OCDF	10	10	2.30E-05	1.40E-02	4.51E-03	10	10	2.30E-05	1.40E-02	4.51E-03
TCDD-TEQ (a,c)	10	10	1.55E-06	5.20E-04	2.10E-04	10	10	1.55E-06	5.20E-04	2.10E-04
Pentachlorophenol	11	29	5.30E-02	1.61E+02	1.06E+01	14	33	6.25E-03	1.61E+02	1.01E+01
Aldrin				3.00E-03					3.00E-03	
Arsenic				3.50E+00					3.50E+00	
Barium				2.99E+02					2.99E+02	
delta-BHC				3.00E-03					3.00E-03	
Chlorobenzene				3.00E-03					3.00E-03	
Chloromethane				2.00E-03					2.00E-03	
4-Chloro-3-methylphenol				2.50E-01					2.50E-01	
Chromium				6.80E+01					6.80E+01	
4,4'-DDD				3.60E-02					3.60E-02	
4,4'-DDE				8.00E-03					8.00E-03	
4,4'-DDT				1.90E-02					1.90E-02	
Dibenzofuran				1.90E+00					1.54E+03	
1,2-Dichlorobenzene				2.00E-03					2.00E-03	
1,4-Dichlorobenzene				2.00E-03					2.00E-03	
1,2-Dichloropropane				4.00E-03					4.00E-03	
4,6-Dinitro-2-methylphenol				1.50E+00					1.50E+00	
2,4-Dinitrophenol				6.30E-01					6.30E-01	
Endosulfan II				1.40E-02					1.40E-02	
Endosulfan sulfate				1.40E-02					1.40E-02	
Endrin				3.60E-02					3.60E-02	
Endrin aldehyde				3.30E-02					3.30E-02	
Ethylbenzene				2.10E+00					2.10E+00	
Isopropylbenzene				3.30E-02					3.30E-02	
Manganese				8.52E+02					8.52E+02	
Methylene chloride				7.40E-02					7.40E-02	
4-Nitrophenol				2.50E-01					2.50E-01	
Phenol				1.20E-02					1.20E-02	
Tetrachloroethene				8.00E-03					8.00E-03	
2,3,4,6 & 2,3,5,6-Tetrachlorophenol				1.55E-01					1.55E-01	
Toluene				2.80E-02					2.80E-02	
1,2,4-Trichlorobenzene				1.00E-03					1.00E-03	
2,4,5-Trichlorophenol				1.60E-01					1.60E-01	
2,4,6-Trichlorophenol				3.50E-01					3.50E-01	
1,2,4-Trimethylbenzene				4.40E-02					4.40E-02	
Total Xylenes				2.00E-03					2.00E-03	

Notes:
(a) Assumes constituents reported as not detected in a sample were present at one-half the detection limit.
(b) BaP-TE calculated using toxic equivalent factors from U.S. EPA (1993); see Table 2.
(c) TCDD-TEQ calculated using toxic equivalent factors from Van den Berg et al. (2006); see Table 3.

Table 1f
Summary of Soil Data - Area G (Post-Remediation)
KI Facility
Superior, WI

Area	Area G (Straw Bales Area)									
Depth Interval	0-1 foot					0-5 feet				
Constituent	Detects	Samples	Minimum (mg/kg) (a)	Maximum (mg/kg) (a)	Mean (mg/kg) (a)	Detects	Samples	Minimum (mg/kg) (a)	Maximum (mg/kg) (a)	Mean (mg/kg) (a)
Acenaphthene	1	9	1.05E-02	5.60E-01	2.93E-01	3	15	1.05E-02	2.67E+01	2.16E+00
Acenaphthylene	2	9	5.50E-02	4.65E-01	2.44E-01	6	15	4.80E-02	1.04E+01	9.56E-01
Anthracene	5	9	6.40E-03	2.55E-01	1.22E-01	8	15	2.40E-03	7.17E+00	6.53E-01
BaP-TE (a,b)	7	9	1.13E-01	1.70E+00	6.16E-01	13	15	2.81E-02	9.33E+00	1.02E+00
Benzo(a)anthracene	4	9	5.50E-04	3.84E-01	1.33E-01	10	15	5.50E-04	5.95E+00	5.35E-01
Benzo(a)pyrene	6	9	4.65E-03	2.55E-01	1.10E-01	12	15	2.56E-03	2.34E+00	2.40E-01
Benzo(b)fluoranthene	7	9	3.80E-02	4.70E-01	1.96E-01	13	15	5.50E-03	2.78E+00	3.13E-01
Benzo(g,h,i)perylene	6	9	3.20E-02	4.50E-01	2.09E-01	12	15	7.10E-03	4.00E+00	4.14E-01
Benzo(k)fluoranthene	2	9	5.50E-04	4.00E-01	1.93E-01	8	15	5.50E-04	1.09E+00	1.99E-01
Chrysene	5	9	3.80E-03	5.15E-01	2.15E-01	11	15	3.80E-03	2.23E+01	1.77E+00
Dibenz(a,h)anthracene	4	9	9.00E-02	1.60E+00	4.49E-01	10	15	2.40E-02	6.00E+00	6.77E-01
Fluoranthene	6	9	2.00E-02	2.60E-01	1.47E-01	11	15	4.80E-03	2.00E+01	1.78E+00
Fluorene	1	9	2.60E-02	5.60E-01	2.18E-01	6	15	4.80E-03	6.97E+00	1.08E+00
Indeno(1,2,3-cd)pyrene	6	9	3.15E-02	5.20E-01	2.16E-01	11	15	2.50E-03	8.90E-01	1.79E-01
1-Methylnaphthalene	0	3	5.50E-02	4.65E-01	3.25E-01	0	4	5.50E-02	4.55E-01	2.12E-01
2-Methylnaphthalene	0	3	5.50E-02	4.65E-01	3.25E-01	0	4	4.80E-02	4.55E-01	2.04E-01
Naphthalene	3	11	2.00E-03	5.60E-01	2.48E-01	7	16	2.00E-03	5.21E+00	5.80E-01
Phenanthrene	4	9	1.30E-02	3.68E-01	1.58E-01	10	15	1.30E-02	9.55E+00	1.12E+00
Pyrene	6	9	3.95E-02	5.70E-01	2.16E-01	11	15	5.00E-03	4.40E+00	6.03E-01
1,2,3,4,6,7,8-HpCDD	10	10	2.45E-05	5.11E-02	1.42E-02	10	10	2.45E-05	5.11E-02	1.42E-02
1,2,3,4,6,7,8-HpCDF	10	10	6.88E-06	6.93E-03	2.51E-03	10	10	6.88E-06	6.93E-03	2.51E-03
1,2,3,4,7,8,9-HpCDF	10	10	6.67E-07	4.73E-04	2.18E-04	10	10	6.67E-07	4.73E-04	2.18E-04
1,2,3,4,7,8-HxCDD	9	10	3.68E-07	1.13E-04	4.58E-05	9	10	3.68E-07	1.13E-04	4.58E-05
1,2,3,4,7,8-HxCDF	9	10	9.46E-07	4.58E-04	1.95E-04	9	10	9.46E-07	4.58E-04	1.95E-04
1,2,3,6,7,8-HxCDD	10	10	1.02E-06	1.14E-03	3.85E-04	10	10	1.02E-06	1.14E-03	3.85E-04
1,2,3,6,7,8-HxCDF	9	10	4.63E-07	1.49E-04	5.85E-05	9	10	4.63E-07	1.49E-04	5.85E-05
1,2,3,7,8,9-HxCDD	10	10	5.52E-07	2.38E-04	8.83E-05	10	10	5.52E-07	2.38E-04	8.83E-05
1,2,3,7,8,9-HxCDF	8	10	1.26E-07	1.92E-04	7.35E-05	8	10	1.26E-07	1.92E-04	7.35E-05
1,2,3,7,8-PeCDD	7	10	1.81E-07	2.61E-05	1.13E-05	7	10	1.81E-07	2.61E-05	1.13E-05
1,2,3,7,8-PeCDF	9	10	2.10E-07	5.39E-05	1.97E-05	9	10	2.10E-07	5.39E-05	1.97E-05
2,3,4,6,7,8-HxCDF	10	10	4.25E-07	2.25E-04	9.07E-05	10	10	4.25E-07	2.25E-04	9.07E-05
2,3,4,7,8-PeCDF	9	10	2.12E-07	1.11E-04	3.88E-05	9	10	2.12E-07	1.11E-04	3.88E-05
2,3,7,8-TCDD	2	10	5.50E-08	3.43E-06	1.79E-06	2	10	5.50E-08	3.43E-06	1.79E-06
2,3,7,8-TCDF	5	10	7.95E-08	6.18E-06	2.50E-06	5	10	7.95E-08	6.18E-06	2.50E-06
OCDD	10	10	2.99E-04	4.21E-01	1.21E-01	10	10	2.99E-04	4.21E-01	1.21E-01
OCDF	10	10	1.73E-05	4.07E-02	1.06E-02	10	10	1.73E-05	4.07E-02	1.06E-02
TCDD-TEQ (a,c)	10	10	1.12E-06	9.48E-04	3.28E-04	10	10	1.12E-06	9.48E-04	3.28E-04
Pentachlorophenol	6	9	1.50E-01	3.55E+00	1.57E+00	11	15	7.00E-03	9.78E+01	1.02E+01
Aldrin				3.00E-03					3.00E-03	
Arsenic				3.50E+00					3.50E+00	
Barium				2.99E+02					2.99E+02	
delta-BHC				3.00E-03					3.00E-03	
Chlorobenzene				3.00E-03					3.00E-03	
Chloromethane				2.00E-03					2.00E-03	
4-Chloro-3-methylphenol				2.50E-01					2.50E-01	
Chromium				6.80E+01					6.80E+01	
4,4'-DDD				3.60E-02					3.60E-02	
4,4'-DDE				8.00E-03					8.00E-03	
4,4'-DDT				1.90E-02					1.90E-02	
Dibenzofuran				1.90E+00					1.54E+03	
1,2-Dichlorobenzene				2.00E-03					2.00E-03	
1,4-Dichlorobenzene				2.00E-03					2.00E-03	
1,2-Dichloropropane				4.00E-03					4.00E-03	
4,6-Dinitro-2-methylphenol				1.50E+00					1.50E+00	
2,4-Dinitrophenol				6.30E-01					6.30E-01	
Endosulfan II				1.40E-02					1.40E-02	
Endosulfan sulfate				1.40E-02					1.40E-02	
Endrin				3.60E-02					3.60E-02	
Endrin aldehyde				3.30E-02					3.30E-02	
Ethylbenzene				2.10E+00					2.10E+00	
Isopropylbenzene				3.30E-02					3.30E-02	
Manganese				8.52E+02					8.52E+02	
Methylene chloride				7.40E-02					7.40E-02	
4-Nitrophenol				2.50E-01					2.50E-01	
Phenol				1.20E-02					1.20E-02	
Tetrachloroethene				8.00E-03					8.00E-03	
2,3,4,6 & 2,3,5,6-Tetrachlorophenol				1.55E-01					1.55E-01	
Toluene				2.80E-02					2.80E-02	
1,2,4-Trichlorobenzene				1.00E-03					1.00E-03	
2,4,5-Trichlorophenol				1.60E-01					1.60E-01	
2,4,6-Trichlorophenol				3.50E-01					3.50E-01	
1,2,4-Trimethylbenzene				4.40E-02					4.40E-02	
Total Xylenes				2.00E-03					2.00E-03	

Notes:
(a) Assumes constituents reported as not detected in a sample were present at one-half the detection limit.
(b) BaP-TE calculated using toxic equivalent factors from U.S. EPA (1993); see Table 2.
(c) TCDD-TEQ calculated using toxic equivalent factors from Van den Berg et al. (2006); see Table 3.

Table 1g
Summary of Soil Data - Area H (Post-Remediation)
KI Facility
Superior, WI

Area	Area H (Lead Track Landfill)									
Depth Interval	0-1 foot					0-5 feet				
Constituent	Detects	Samples	Minimum (mg/kg) (a)	Maximum (mg/kg) (a)	Mean (mg/kg) (a)	Detects	Samples	Minimum (mg/kg) (a)	Maximum (mg/kg) (a)	Mean (mg/kg) (a)
Acenaphthene	3	8	5.00E-02	1.60E+01	3.16E+00	7	13	5.00E-02	1.60E+01	2.71E+00
Acenaphthylene	2	8	5.00E-02	5.86E+00	1.09E+00	6	13	5.00E-02	8.19E+00	1.42E+00
Anthracene	4	8	2.50E-03	1.50E+01	2.73E+00	8	13	2.50E-03	1.50E+01	2.15E+00
BaP-TE (a,b)	7	8	1.43E-03	7.03E+00	2.15E+00	12	13	1.43E-03	8.52E+00	2.17E+00
Benzo(a)anthracene	6	8	5.00E-04	7.80E+00	1.63E+00	10	13	5.00E-04	7.80E+00	1.43E+00
Benzo(a)pyrene	7	8	5.00E-04	3.60E+00	6.05E-01	11	13	5.00E-04	3.60E+00	6.33E-01
Benzo(b)fluoranthene	7	8	5.00E-04	7.50E+00	1.14E+00	12	13	5.00E-04	7.50E+00	7.83E-01
Benzo(g,h,i)perylene	5	8	1.20E-03	5.86E+00	1.08E+00	9	13	1.20E-03	5.86E+00	9.07E-01
Benzo(k)fluoranthene	5	8	5.00E-04	5.86E+00	1.13E+00	9	13	5.00E-04	5.86E+00	8.21E-01
Chrysene	5	8	3.55E-03	1.10E+01	3.31E+00	9	13	3.55E-03	1.10E+01	3.08E+00
Dibenz(a,h)anthracene	5	8	7.00E-04	5.86E+00	1.15E+00	9	13	7.00E-04	5.86E+00	1.23E+00
Fluoranthene	7	8	5.00E-03	4.10E+01	7.11E+00	11	13	5.00E-03	4.10E+01	5.56E+00
Fluorene	3	8	5.00E-03	1.50E+01	3.48E+00	8	13	5.00E-03	1.50E+01	2.92E+00
Indeno(1,2,3-cd)pyrene	5	8	1.20E-03	5.86E+00	1.03E+00	9	13	1.20E-03	5.86E+00	7.20E-01
1-Methylnaphthalene	0	3	5.00E-02	4.00E-01	1.67E-01	0	3	5.00E-02	4.00E-01	1.67E-01
2-Methylnaphthalene	0	3	5.00E-02	4.00E-01	1.67E-01	0	3	5.00E-02	4.00E-01	1.67E-01
Naphthalene	3	8	5.00E-02	1.30E+01	2.70E+00	6	13	5.00E-02	1.30E+01	3.09E+00
Phenanthrene	3	8	1.20E-02	5.20E+01	8.68E+00	8	13	1.20E-02	5.20E+01	7.11E+00
Pyrene	7	8	5.00E-03	2.90E+01	5.25E+00	12	13	5.00E-03	2.90E+01	4.04E+00
1,2,3,4,6,7,8-HpCDD	6	6	1.75E-04	2.29E-02	6.74E-03	6	6	1.75E-04	2.29E-02	6.74E-03
1,2,3,4,6,7,8-HpCDF	6	6	2.99E-05	3.86E-03	1.39E-03	6	6	2.99E-05	3.86E-03	1.39E-03
1,2,3,4,7,8,9-HpCDF	5	6	2.48E-06	3.59E-04	1.23E-04	5	6	2.48E-06	3.59E-04	1.23E-04
1,2,3,4,7,8-HxCDD	5	6	1.67E-06	8.65E-05	2.70E-05	5	6	1.67E-06	8.65E-05	2.70E-05
1,2,3,4,7,8-HxCDF	6	6	2.58E-06	3.86E-04	1.16E-04	6	6	2.58E-06	3.86E-04	1.16E-04
1,2,3,6,7,8-HxCDD	6	6	6.01E-06	6.96E-04	2.22E-04	6	6	6.01E-06	6.96E-04	2.22E-04
1,2,3,6,7,8-HxCDF	5	6	9.67E-07	1.02E-04	3.35E-05	5	6	9.67E-07	1.02E-04	3.35E-05
1,2,3,7,8,9-HxCDD	5	6	2.33E-06	1.52E-04	4.50E-05	5	6	2.33E-06	1.52E-04	4.50E-05
1,2,3,7,8,9-HxCDF	4	6	4.04E-07	1.75E-04	5.30E-05	4	6	4.04E-07	1.75E-04	5.30E-05
1,2,3,7,8-PeCDD	5	6	7.00E-07	2.26E-05	7.29E-06	5	6	7.00E-07	2.26E-05	7.29E-06
1,2,3,7,8-PeCDF	4	6	2.25E-07	6.47E-05	1.79E-05	4	6	2.25E-07	6.47E-05	1.79E-05
2,3,4,6,7,8-HxCDF	5	6	1.42E-06	1.64E-04	5.47E-05	5	6	1.42E-06	1.64E-04	5.47E-05
2,3,4,7,8-PeCDF	5	6	8.00E-07	1.37E-04	3.75E-05	5	6	8.00E-07	1.37E-04	3.75E-05
2,3,7,8-TCDD	1	6	1.75E-07	3.15E-06	1.32E-06	1	6	1.75E-07	3.15E-06	1.32E-06
2,3,7,8-TCDF	3	6	2.05E-07	1.30E-05	3.78E-06	3	6	2.05E-07	1.30E-05	3.78E-06
OCDD	6	6	1.45E-03	2.08E-01	6.63E-02	6	6	1.45E-03	2.08E-01	6.63E-02
OCDF	6	6	1.37E-04	1.80E-02	6.42E-03	6	6	1.37E-04	1.80E-02	6.42E-03
TCDD-TEQ (a,c)	6	6	5.42E-06	5.38E-04	1.80E-04	6	6	5.42E-06	5.38E-04	1.80E-04
Pentachlorophenol	8	8	2.30E-01	5.00E+01	1.40E+01	12	12	2.29E-01	1.39E+02	2.92E+01
Aldrin				3.00E-03					3.00E-03	
Arsenic				3.50E+00					3.50E+00	
Barium				2.99E+02					2.99E+02	
delta-BHC				3.00E-03					3.00E-03	
Chlorobenzene				3.00E-03					3.00E-03	
Chloromethane				2.00E-03					2.00E-03	
4-Chloro-3-methylphenol				2.50E-01					2.50E-01	
Chromium				6.80E+01					6.80E+01	
4,4'-DDD				3.60E-02					3.60E-02	
4,4'-DDE				8.00E-03					8.00E-03	
4,4'-DDT				1.90E-02					1.90E-02	
Dibenzofuran				1.90E+00					1.54E+03	
1,2-Dichlorobenzene				2.00E-03					2.00E-03	
1,4-Dichlorobenzene				2.00E-03					2.00E-03	
1,2-Dichloropropane				4.00E-03					4.00E-03	
4,6-Dinitro-2-methylphenol				1.50E+00					1.50E+00	
2,4-Dinitrophenol				6.30E-01					6.30E-01	
Endosulfan II				1.40E-02					1.40E-02	
Endosulfan sulfate				1.40E-02					1.40E-02	
Endrin				3.60E-02					3.60E-02	
Endrin aldehyde				3.30E-02					3.30E-02	
Ethylbenzene				2.10E+00					2.10E+00	
Isopropylbenzene				3.30E-02					3.30E-02	
Manganese				8.52E+02					8.52E+02	
Methylene chloride				7.40E-02					7.40E-02	
4-Nitrophenol				2.50E-01					2.50E-01	
Phenol				1.20E-02					1.20E-02	
Tetrachloroethene				8.00E-03					8.00E-03	
2,3,4,6 & 2,3,5,6-Tetrachlorophenol				1.55E-01					1.55E-01	
Toluene				2.80E-02					2.80E-02	
1,2,4-Trichlorobenzene				1.00E-03					1.00E-03	
2,4,5-Trichlorophenol				1.60E-01					1.60E-01	
2,4,6-Trichlorophenol				3.50E-01					3.50E-01	
1,2,4-Trimethylbenzene				4.40E-02					4.40E-02	
Total Xylenes				2.00E-03					2.00E-03	

Notes:
(a) Assumes constituents reported as not detected in a sample were present at one-half the detection limit.
(b) BaP-TE calculated using toxic equivalent factors from U.S. EPA (1993); see Table 2.
(c) TCDD-TEQ calculated using toxic equivalent factors from Van den Berg et al. (2006); see Table 3.

Table 1h
Summary of Soil Data - Area S (Post-Remediation)
KI Facility
Superior, WI

Area	Area S (Former Sprayfield)									
Depth Interval	0-1 foot					0-5 feet				
Constituent	Detects	Samples	Minimum (mg/kg) (a)	Maximum (mg/kg) (a)	Mean (mg/kg) (a)	Detects	Samples	Minimum (mg/kg) (a)	Maximum (mg/kg) (a)	Mean (mg/kg) (a)
Acenaphthene	7	16	4.65E-02	5.04E+00	7.37E-01	7	16	4.83E-02	5.04E+00	6.38E-01
Acenaphthylene	5	16	4.65E-02	2.35E+00	3.05E-01	5	16	4.83E-02	1.20E+00	2.06E-01
Anthracene	11	16	2.30E-03	2.63E+01	2.03E+00	11	16	2.43E-03	2.63E+01	2.02E+00
BaP-TE (a,b)	15	16	1.33E-03	1.08E+01	2.67E+00	15	16	1.40E-03	1.08E+01	2.58E+00
Benzo(a)anthracene	15	16	4.65E-04	6.44E+00	1.10E+00	15	16	4.83E-04	6.44E+00	1.08E+00
Benzo(a)pyrene	15	16	4.65E-04	2.42E+00	6.20E-01	15	16	4.83E-04	2.42E+00	6.04E-01
Benzo(b)fluoranthene	15	16	4.65E-04	5.35E+00	1.43E+00	15	16	4.83E-04	5.35E+00	1.39E+00
Benzo(g,h,i)perylene	15	16	1.10E-03	4.55E+00	1.08E+00	15	16	1.18E-03	4.55E+00	1.06E+00
Benzo(k)fluoranthene	15	16	4.65E-04	1.95E+00	4.79E-01	15	16	4.83E-04	1.95E+00	4.67E-01
Chrysene	15	16	3.30E-03	8.83E+00	1.76E+00	15	16	3.48E-03	8.83E+00	1.70E+00
Dibenz(a,h)anthracene	14	16	6.50E-04	6.88E+00	1.72E+00	14	16	7.00E-04	6.88E+00	1.65E+00
Fluoranthene	15	16	4.65E-03	3.28E+01	3.49E+00	15	16	4.83E-03	3.28E+01	3.45E+00
Fluorene	8	16	4.65E-03	7.37E+00	8.41E-01	9	16	8.33E-03	7.37E+00	8.31E-01
Indeno(1,2,3-cd)pyrene	15	16	1.10E-03	3.17E+00	7.39E-01	15	16	1.18E-03	3.17E+00	7.16E-01
1-Methylnaphthalene	0	4	4.65E-02	2.35E+00	8.44E-01	0	4	4.83E-02	1.20E+00	4.46E-01
2-Methylnaphthalene	0	4	4.65E-02	2.35E+00	8.44E-01	0	4	4.83E-02	1.20E+00	4.46E-01
Naphthalene	8	16	2.50E-02	1.50E+00	3.17E-01	8	16	3.33E-02	1.24E+00	2.33E-01
Phenanthrene	11	16	1.10E-02	1.18E+01	9.22E-01	11	16	1.18E-02	1.18E+01	9.08E-01
Pyrene	15	16	4.65E-03	2.28E+01	2.87E+00	15	16	4.83E-03	2.28E+01	2.80E+00
1,2,3,4,6,7,8-HpCDD	4	4	6.96E-04	9.67E-03	4.65E-03	4	4	6.96E-04	9.67E-03	4.65E-03
1,2,3,4,6,7,8-HpCDF	4	4	2.34E-04	3.45E-03	1.66E-03	4	4	2.34E-04	3.45E-03	1.66E-03
1,2,3,4,7,8,9-HpCDF	4	4	2.27E-05	3.62E-04	1.53E-04	4	4	2.27E-05	3.62E-04	1.53E-04
1,2,3,4,7,8-HxCDD	4	4	3.90E-06	4.34E-05	1.80E-05	4	4	3.90E-06	4.34E-05	1.80E-05
1,2,3,4,7,8-HxCDF	4	4	2.42E-05	5.13E-04	2.05E-04	4	4	2.42E-05	5.13E-04	2.05E-04
1,2,3,6,7,8-HxCDD	4	4	2.52E-05	3.97E-04	1.77E-04	4	4	2.52E-05	3.97E-04	1.77E-04
1,2,3,6,7,8-HxCDF	4	4	5.27E-06	1.17E-04	4.34E-05	4	4	5.27E-06	1.17E-04	4.34E-05
1,2,3,7,8,9-HxCDD	4	4	5.80E-06	8.64E-05	3.42E-05	4	4	5.80E-06	8.64E-05	3.42E-05
1,2,3,7,8,9-HxCDF	4	4	6.05E-06	1.16E-04	4.44E-05	4	4	6.05E-06	1.16E-04	4.44E-05
1,2,3,7,8-PeCDD	3	4	6.30E-07	1.26E-05	5.40E-06	3	4	6.30E-07	1.26E-05	5.40E-06
1,2,3,7,8-PeCDF	4	4	2.00E-06	3.10E-05	1.16E-05	4	4	2.00E-06	3.10E-05	1.16E-05
2,3,4,6,7,8-HxCDF	4	4	8.22E-06	1.95E-04	7.52E-05	4	4	8.22E-06	1.95E-04	7.52E-05
2,3,4,7,8-PeCDF	4	4	5.06E-06	1.04E-04	3.83E-05	4	4	5.06E-06	1.04E-04	3.83E-05
2,3,7,8-TCDD	0	4	2.50E-07	2.55E-06	1.44E-06	0	4	2.50E-07	2.55E-06	1.44E-06
2,3,7,8-TCDF	2	4	5.70E-07	5.59E-06	2.80E-06	2	4	5.70E-07	5.59E-06	2.80E-06
OCDD	4	4	7.71E-03	9.52E-02	4.76E-02	4	4	7.71E-03	9.52E-02	4.76E-02
OCDF	4	4	8.74E-04	1.26E-02	6.21E-03	4	4	8.74E-04	1.26E-02	6.21E-03
TCDD-TEQ (a,c)	4	4	2.67E-05	3.60E-04	1.59E-04	4	4	2.67E-05	3.60E-04	1.59E-04
Pentachlorophenol	17	19	6.50E-03	1.95E+02	2.29E+01	17	19	7.00E-03	1.95E+02	2.28E+01
Aldrin				3.00E-03					3.00E-03	
Arsenic				3.50E+00					3.50E+00	
Barium				2.99E+02					2.99E+02	
delta-BHC				3.00E-03					3.00E-03	
Chlorobenzene				3.00E-03					3.00E-03	
Chloromethane				2.00E-03					2.00E-03	
4-Chloro-3-methylphenol				2.50E-01					2.50E-01	
Chromium				6.80E+01					6.80E+01	
4,4'-DDD				3.60E-02					3.60E-02	
4,4'-DDE				8.00E-03					8.00E-03	
4,4'-DDT				1.90E-02					1.90E-02	
Dibenzofuran				1.90E+00					1.54E+03	
1,2-Dichlorobenzene				2.00E-03					2.00E-03	
1,4-Dichlorobenzene				2.00E-03					2.00E-03	
1,2-Dichloropropane				4.00E-03					4.00E-03	
4,6-Dinitro-2-methylphenol				1.50E+00					1.50E+00	
2,4-Dinitrophenol				6.30E-01					6.30E-01	
Endosulfan II				1.40E-02					1.40E-02	
Endosulfan sulfate				1.40E-02					1.40E-02	
Endrin				3.60E-02					3.60E-02	
Endrin aldehyde				3.30E-02					3.30E-02	
Ethylbenzene				2.10E+00					2.10E+00	
Isopropylbenzene				3.30E-02					3.30E-02	
Manganese				8.52E+02					8.52E+02	
Methylene chloride				7.40E-02					7.40E-02	
4-Nitrophenol				2.50E-01					2.50E-01	
Phenol				1.20E-02					1.20E-02	
Tetrachloroethene				8.00E-03					8.00E-03	
2,3,4,6 & 2,3,5,6-Tetrachlorophenol				1.55E-01					1.55E-01	
Toluene				2.80E-02					2.80E-02	
1,2,4-Trichlorobenzene				1.00E-03					1.00E-03	
2,4,5-Trichlorophenol				1.60E-01					1.60E-01	
2,4,6-Trichlorophenol				3.50E-01					3.50E-01	
1,2,4-Trimethylbenzene				4.40E-02					4.40E-02	
Total Xylenes				2.00E-03					2.00E-03	

Notes:
(a) Assumes constituents reported as not detected in a sample were present at one-half the detection limit.
(b) BaP-TE calculated using toxic equivalent factors from U.S. EPA (1993); see Table 2.
(c) TCDD-TEQ calculated using toxic equivalent factors from Van den Berg et al. (2006); see Table 3.

Table 1i
Summary of Soil Data - Area B/F (Post-Remediation)
KI Facility
Superior, WI

Area	Area B/F (Former Treatment Area and Drip Track Area)									
Depth Interval	0-1 foot					0-5 feet				
Constituent	Detects	Samples	Minimum (mg/kg) (a)	Maximum (mg/kg) (a)	Mean (mg/kg) (a)	Detects	Samples	Minimum (mg/kg) (a)	Maximum (mg/kg) (a)	Mean (mg/kg) (a)
Acenaphthene	53	58	9.00E-03	1.00E+02	4.93E+00	65	82	9.00E-03	1.10E+02	7.30E+00
Acenaphthylene	51	58	7.00E-02	1.00E+02	3.12E+00	61	82	4.80E-02	1.00E+02	4.22E+00
Anthracene	54	58	2.50E-02	5.50E+01	4.03E+00	66	82	2.40E-03	5.50E+01	4.98E+00
BaP-TE (a,b)	58	58	2.28E-01	2.43E+01	4.31E+00	81	82	1.40E-03	1.05E+02	7.68E+00
Benzo(a)anthracene	52	58	5.00E-03	2.79E+01	1.77E+00	70	82	4.80E-04	2.79E+01	2.38E+00
Benzo(a)pyrene	58	58	1.28E-01	1.06E+01	1.67E+00	80	82	4.80E-04	7.34E+01	2.96E+00
Benzo(b)fluoranthene	57	58	1.87E-01	1.30E+01	2.80E+00	78	82	4.80E-04	1.91E+01	2.87E+00
Benzo(g,h,i)perylene	56	58	1.06E-01	1.18E+01	2.09E+00	74	82	1.15E-03	4.65E+01	3.00E+00
Benzo(k)fluoranthene	56	58	6.30E-02	1.06E+01	1.13E+00	75	82	4.80E-04	1.06E+01	1.11E+00
Chrysene	54	58	1.43E-01	2.65E+01	2.77E+00	75	82	3.40E-03	5.83E+01	5.50E+00
Dibenz(a,h)anthracene	52	58	2.55E-02	1.26E+01	1.98E+00	71	82	7.00E-04	8.28E+01	4.00E+00
Fluoranthene	53	58	1.00E-01	2.37E+02	8.08E+00	71	82	4.80E-03	2.37E+02	1.11E+01
Fluorene	50	58	2.00E-02	2.16E+01	1.43E+00	65	82	4.80E-03	5.51E+01	3.34E+00
Indeno(1,2,3-cd)pyrene	58	58	9.55E-02	1.06E+01	1.89E+00	77	82	1.15E-03	1.06E+01	1.75E+00
1-Methylnaphthalene	7	17	1.16E-02	1.00E+02	9.03E+00	7	30	1.16E-02	1.00E+02	6.75E+00
2-Methylnaphthalene	4	14	2.25E-02	1.00E+02	1.04E+01	4	18	2.25E-02	1.00E+02	8.34E+00
Naphthalene	54	62	2.50E-03	1.00E+02	3.35E+00	71	84	1.10E-02	1.60E+02	6.90E+00
Phenanthrene	53	58	2.50E-02	6.55E+01	2.65E+00	68	82	1.15E-02	1.25E+02	6.11E+00
Pyrene	52	58	1.28E-01	1.10E+02	5.93E+00	68	82	4.80E-03	7.40E+02	1.89E+01
1,2,3,4,6,7,8-HpCDD	14	14	5.20E-05	1.99E-02	7.34E-03	14	14	5.20E-05	1.99E-02	7.34E-03
1,2,3,4,6,7,8-HpCDF	14	14	7.10E-06	3.62E-03	1.32E-03	14	14	7.10E-06	3.62E-03	1.32E-03
1,2,3,4,7,8,9-HpCDF	13	14	2.15E-07	2.52E-04	9.86E-05	13	14	2.15E-07	2.52E-04	9.86E-05
1,2,3,4,7,8-HxCDD	14	14	9.00E-07	2.50E-04	7.29E-05	14	14	9.00E-07	2.50E-04	7.29E-05
1,2,3,4,7,8-HxCDF	13	14	4.60E-07	2.28E-04	8.10E-05	13	14	4.60E-07	2.28E-04	8.10E-05
1,2,3,6,7,8-HxCDD	14	14	1.90E-06	7.41E-04	2.62E-04	14	14	1.90E-06	7.41E-04	2.62E-04
1,2,3,6,7,8-HxCDF	12	14	1.30E-07	7.50E-05	3.42E-05	12	14	1.30E-07	7.50E-05	3.42E-05
1,2,3,7,8,9-HxCDD	14	14	1.40E-06	3.80E-04	1.15E-04	14	14	1.40E-06	3.80E-04	1.15E-04
1,2,3,7,8,9-HxCDF	12	14	6.50E-08	5.30E-05	2.04E-05	12	14	6.50E-08	5.30E-05	2.04E-05
1,2,3,7,8-PeCDD	11	14	1.90E-07	7.00E-05	2.38E-05	11	14	1.90E-07	7.00E-05	2.38E-05
1,2,3,7,8-PeCDF	11	14	9.00E-08	2.20E-05	8.16E-06	11	14	9.00E-08	2.20E-05	8.16E-06
2,3,4,6,7,8-HxCDF	13	14	3.40E-07	1.43E-04	4.67E-05	13	14	3.40E-07	1.43E-04	4.67E-05
2,3,4,7,8-PeCDF	11	14	6.50E-08	4.30E-05	1.50E-05	11	14	6.50E-08	4.30E-05	1.50E-05
2,3,7,8-TCDD	3	14	9.00E-08	6.60E-06	2.11E-06	3	14	9.00E-08	6.60E-06	2.11E-06
2,3,7,8-TCDF	7	14	6.00E-08	4.09E-06	1.80E-06	7	14	6.00E-08	4.09E-06	1.80E-06
OCDD	14	14	4.20E-04	1.72E-01	6.40E-02	14	14	4.20E-04	1.72E-01	6.40E-02
OCDF	14	14	2.30E-05	1.45E-02	4.93E-03	14	14	2.30E-05	1.45E-02	4.93E-03
TCDD-TEQ (a,c)	14	14	1.55E-06	5.20E-04	2.02E-04	14	14	1.55E-06	5.20E-04	2.02E-04
Pentachlorophenol	19	51	7.00E-03	1.61E+02	7.13E+00	31	70	6.25E-03	1.61E+02	5.96E+00
Aldrin				3.00E-03					3.00E-03	
Arsenic				3.50E+00					3.50E+00	
Barium				2.99E+02					2.99E+02	
delta-BHC				3.00E-03					3.00E-03	
Chlorobenzene				3.00E-03					3.00E-03	
Chloromethane				2.00E-03					2.00E-03	
4-Chloro-3-methylphenol				2.50E-01					2.50E-01	
Chromium				6.80E+01					6.80E+01	
4,4'-DDD				3.60E-02					3.60E-02	
4,4'-DDE				8.00E-03					8.00E-03	
4,4'-DDT				1.90E-02					1.90E-02	
Dibenzofuran				1.90E+00					1.54E+03	
1,2-Dichlorobenzene				2.00E-03					2.00E-03	
1,4-Dichlorobenzene				2.00E-03					2.00E-03	
1,2-Dichloropropane				4.00E-03					4.00E-03	
4,6-Dinitro-2-methylphenol				1.50E+00					1.50E+00	
2,4-Dinitrophenol				6.30E-01					6.30E-01	
Endosulfan II				1.40E-02					1.40E-02	
Endosulfan sulfate				1.40E-02					1.40E-02	
Endrin				3.60E-02					3.60E-02	
Endrin aldehyde				3.30E-02					3.30E-02	
Ethylbenzene				2.10E+00					2.10E+00	
Isopropylbenzene				3.30E-02					3.30E-02	
Manganese				8.52E+02					8.52E+02	
Methylene chloride				7.40E-02					7.40E-02	
4-Nitrophenol				2.50E-01					2.50E-01	
Phenol				1.20E-02					1.20E-02	
Tetrachloroethene				8.00E-03					8.00E-03	
2,3,4,6 & 2,3,5,6-Tetrachlorophenol				1.55E-01					1.55E-01	
Toluene				2.80E-02					2.80E-02	
1,2,4-Trichlorobenzene				1.00E-03					1.00E-03	
1,1,1-Trichloroethane				5.00E-03					5.00E-03	
Trichlorofluoromethane				2.00E-03					2.00E-03	
2,4,5-Trichlorophenol				1.60E-01					1.60E-01	
2,4,6-Trichlorophenol				3.50E-01					3.50E-01	
1,2,4-Trimethylbenzene				4.40E-02					4.40E-02	
Total Xylenes				2.00E-03					2.00E-03	

Notes:
(a) Assumes constituents reported as not detected in a sample were present at one-half the detection limit.
(b) BaP-TE calculated using toxic equivalent factors from U.S. EPA (1993); see Table 2.
(c) TCDD-TEQ calculated using toxic equivalent factors from Van den Berg et al. (2006); see Table 3.

Table 2
Toxic Equivalent Factors for Potentially Carcinogenic PAHs
KI Facility
Superior, WI

Constituent	TEF
Benzo(a)anthracene	0.1
Benzo(k)fluoranthene	0.01
Benzo(a)pyrene	1
Benzo(b)fluoranthene	0.1
Chrysene	0.001
Dibenzo(a,h)anthracene	1
Indeno(1,2,3-cd)pyrene	0.1

Source: U.S. EPA, 1993.

Table 3
Toxic Equivalent Factors for PCDDs/PCDFs
KI Facility
Superior, WI

Constituent	WHO 2005 TEF
Chlorinated Dibenzo-p-dioxins	
1,2,3,7,8-PeCDD	1
1,2,3,4,7,8-HxCDD	0.1
1,2,3,6,7,8-HxCDD	0.1
1,2,3,7,8,9-HxCDD	0.1
1,2,3,4,6,7,8-HpCDD	0.01
OCDD	0.0003
Chlorinated Dibenzofurans	
2,3,7,8-TCDF	0.1
1,2,3,7,8-PeCDF	0.03
2,3,4,7,8-PeCDF	0.3
1,2,3,4,7,8-HxCDF	0.1
1,2,3,6,7,8-HxCDF	0.1
1,2,3,7,8,9-HxCDF	0.1
2,3,4,6,7,8-HxCDF	0.1
1,2,3,4,6,7,8-HpCDF	0.01
1,2,3,4,7,8,9-HpCDF	0.01
OCDF	0.0003

Source: Van den Berg et al., 2006.

Table 4
Noncarcinogenic and Carcinogenic Dose-Response Information
KI Facility
Superior, WI

Constituent	Subchronic Oral RfD (mg/kg-d)	Source	Chronic Oral RfD (mg/kg-d)	Source	Oral CSF 1/(mg/kg-d)	Source	Chronic Inh RfD (mg/kg-d)	Source	Inhalation CSF 1/(mg/kg-d)	Source	Subchronic Inh. RfD (mg/kg-d)	Source
Acenaphthene	6.0E-01	HEAST	6.0E-02	IRIS	NA		6.0E-02	(c)	NA		6.0E-01	(c)
Acenaphthylene	2.0E-01	(l)	2.0E-02	(l)	NA		3.0E-02	(q)	NA		8.6E-04	(l)
Aldrin	3.0E-05	HEAST	3.0E-05	IRIS	1.7E+01	IRIS	3.0E-05	(c)	1.7E+01	IRIS	3.0E-05	(c)
Anthracene	3.0E+00	HEAST	3.0E-01	IRIS	NA		3.0E-01	(c)	NA		3.0E+00	(c)
Barium	7.0E-02	HEAST	2.0E-01	IRIS	NA		2.0E-01	(c)	NA		2.0E-01	(a)
Benzo(a)anthracene	2.0E-01	(l)	2.0E-02	(l)	7.3E-01	(m)	3.0E-02	(q)	3.1E-01	(m)	3.0E-02	(a)
Benzo(a)pyrene	2.0E-01	(l)	2.0E-02	(l)	7.3E+00	IRIS	3.0E-02	(q)	3.1E+00	NCEA Reg III	3.0E-02	(a)
Benzo(b)fluoranthene	2.0E-01	(l)	2.0E-02	(l)	7.3E-01	(m)	3.0E-02	(q)	3.1E-01	(m)	3.0E-02	(a)
Benzo(g,h,i)perylene	2.0E-01	(l)	2.0E-02	(l)	NA		3.0E-02	(q)	NA		8.6E-04	(l)
Benzo(k)fluoranthene	2.0E-01	(l)	2.0E-02	(l)	7.3E-02	(m)	3.0E-02	(q)	3.1E-02	(m)	3.0E-02	(a)
delta-BHC	3.0E-03	HEAST (b)	3.0E-04	IRIS (b)	1.3E+00	HEAST (b)	3.0E-04	(c)	NA		3.0E-04	(a)
Chlorobenzene	2.0E-02	(a)	2.0E-02	IRIS	NA		1.4E-02	PPTRV Reg III	NA		2.0E-02	(c)
Chloromethane	2.6E-02	(a)	2.6E-02	(e)	NA		2.6E-02	IRIS	NA		2.6E-02	(a)
4-Chloro-3-methylphenol	5.0E-02	(a)	5.0E-02	(g)	NA		5.0E-02	(c)	NA		5.0E-02	(c)
Chromium	2.0E-02	HEAST	3.0E-03	IRIS	NA		2.9E-05	(h)	4.2E+01	(i)	2.9E-04	(h)
Chrysene	2.0E-01	(l)	2.0E-02	(l)	7.3E-03	(m)	3.0E-02	(q)	3.1E-03	(m)	3.0E-02	(a)
4,4'-DDD	NA		NA		2.4E-01	IRIS	NA		2.4E-01	(c)	NA	
4,4'-DDE	NA		NA		3.4E-01	IRIS	NA		3.4E-01	(c)	NA	
4,4'-DDT	5.0E-04	HEAST	5.0E-04	IRIS	3.4E-01	IRIS	5.0E-04	(c)	3.4E-01	IRIS	5.0E-04	(c)
Dibenz(a,h)anthracene	2.0E-01	(l)	2.0E-02	(l)	7.3E+00	(m)	3.0E-02	(q)	3.1E+00	(m)	3.0E-02	(a)
Dibenzofuran	2.0E-03	(a)	2.0E-03	NCEA Reg IX	NA		2.0E-03	(c)	NA		2.0E-03	(c)
1,2-Dichlorobenzene	9.0E-02	(a)	9.0E-02	IRIS	NA		6.9E-03	NCEA Reg VI	NA		6.9E-03	(a)
1,4-Dichlorobenzene	3.0E-02	(a)	3.0E-02	NCEA Reg III	2.4E-02	HEAST	2.3E-01	IRIS	2.4E-02	NCEA Reg VI	2.3E-01	(a)
1,2-Dichloropropane	3.7E-03	(e)	1.1E-03	(e)	6.8E-02	HEAST	1.1E-03	IRIS	NA		1.1E-03	(a)
4,6-Dinitro-2-methylphenol	1.0E-03	(a)	1.0E-04	PPTRV Reg IX	NA		1.0E-04	(c)	NA		1.0E-03	(c)
2,4-Dinitrophenol	2.0E-03	HEAST	2.0E-03	IRIS	NA		2.0E-03	(c)	NA		2.0E-03	(c)
Endosulfan II	6.0E-03	(a)	6.0E-03	IRIS (n)	NA		6.0E-03	(c)	NA		6.0E-03	(a)
Endosulfan sulfate	6.0E-03	(a)	6.0E-03	IRIS (n)	NA		6.0E-03	(c)	NA		6.0E-03	(a)
Endrin	3.0E-04	HEAST	3.0E-04	IRIS	NA		3.0E-04	(c)	NA		3.0E-04	(c)
Endrin aldehyde	3.0E-04	(a)	3.0E-04	(o)	NA		3.0E-04	(c)	NA		3.0E-04	(c)
Ethylbenzene	1.0E-01	(a)	1.0E-01	IRIS	NA		2.9E-01	IRIS	NA		2.9E-01	(a)
Fluoranthene	4.0E-01	HEAST	4.0E-02	IRIS	NA		4.0E-02	(c)	NA		4.0E-01	(c)
Fluorene	4.0E-01	HEAST	4.0E-02	IRIS	NA		4.0E-02	(c)	NA		4.0E-01	(c)
Indeno(1,2,3-cd)pyrene	2.0E-01	(l)	2.0E-02	(l)	7.3E-01	(m)	3.0E-02	(q)	3.1E-01	(m)	3.0E-02	(a)
Isopropylbenzene	1.0E-01	(a)	1.0E-01	IRIS	NA		1.0E-01	(h)	NA		1.0E-01	(a)
Manganese	1.4E-01	HEAST	1.4E-01	IRIS	NA		1.4E-05	IRIS	NA		1.4E-05	(a)
Methylene chloride	6.0E-02	HEAST	6.0E-02	IRIS	7.5E-03	IRIS	8.6E-01	HEAST	1.6E-03	(i)	8.6E-01	(a)
1-Methylnaphthalene	2.0E-01	(l)	2.0E-02	(l)	NA		8.6E-04	(l)	NA		8.6E-04	(l)
2-Methylnaphthalene	2.0E-01	(l)	2.0E-02	(l)	NA		8.6E-04	(l)	NA		8.6E-04	(l)
Naphthalene	2.0E-01	(j)	2.0E-02	IRIS	NA		8.6E-04	IRIS	NA		8.6E-04	(a)
4-Nitrophenol	8.0E-03	(a)	8.0E-03	NCEA Reg VI	NA		8.0E-03	(c)	NA		8.0E-03	(c)
Pentachlorophenol	3.0E-02	HEAST	3.0E-02	IRIS	1.2E-01	IRIS	3.0E-02	(c)	NA		3.0E-02	(c)
Phenanthrene	2.0E-01	(l)	2.0E-02	(l)	NA		8.6E-04	(l)	NA		8.6E-04	(l)
Phenol	3.0E-01	(a)	3.0E-01	IRIS	NA		3.0E-01	(c)	NA		3.0E-01	(a)
Pyrene	3.0E-01	HEAST	3.0E-02	IRIS	NA		3.0E-02	(c)	NA		3.0E-01	(c)
Tetrachloroethene	1.0E-01	HEAST	1.0E-02	IRIS	5.4E-01	Reg III	1.1E-01	NCEA Reg VI	2.1E-02	Region VI	1.1E-01	(a)
2,3,7,8-TCDD	NA		NA		1.5E+05	HEAST	NA		1.5E+05	HEAST	NA	
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	3.0E-01	HEAST	3.0E-02	IRIS	NA		3.0E-02	(c)	NA		3.0E-01	(c)
Toluene	2.0E+00	HEAST	8.0E-02	IRIS	NA		1.4E+00	IRIS	NA		1.4E+00	(a)
1,2,4-Trichlorobenzene	1.0E-02	HEAST	1.0E-02	IRIS	NA		1.1E-03	PPRTV Reg VI	NA		1.1E-03	(a)
1,1,1-Trichloroethane	2.8E-01	(j)	2.8E-02	NCEA Reg VI	NA		6.3E-01	PPRTV Reg VI	NA		6.3E-01	(a)
Trichlorofluoromethane	7.0E-01	HEAST	3.0E-01	IRIS	NA		2.0E-01	HEAST	NA		2.0E-01	(a)
2,4,5-Trichlorophenol	1.0E+00	HEAST	1.0E-01	IRIS	NA		1.0E-01	(c)	NA		1.0E-01	(a)
2,4,6-Trichlorophenol	1.0E+00	(k)	1.0E-04	NCEA Reg IX	1.1E-02	IRIS	1.0E-04	(c)	1.1E-02	IRIS	1.0E+00	(k)
1,2,4-Trimethylbenzene	5.0E-02	(a)	5.0E-02	PPTRV Reg IX	NA		1.7E-03	PPTRV Reg IX	NA		1.7E-03	(a)
Total Xylenes	2.0E+00	(a)	2.0E+00	IRIS	NA		2.9E-02	(h)	NA		2.9E-02	(a)

Sources:
IRIS: U.S. EPA's Integrated Risk Information System. On-Line Database. 2007
Region III, 2007. Risk-Based Concentrations (RBC) Table, April 6, 2007.
Region VI, 2007. Region 6 Human Health Medium-Specific Screening Levels 2007
Region IX, 2004. Preliminary Remediation Goal (PRG) Table.
HEAST: U.S. EPA's Health Effects Assessment Summary Tables. Fiscal Year 1997
NA: Not available

Notes:
(a) Use chronic value as surrogate
(b) Use gamma-BHC as surrogate
(c) Use oral value as surrogate
(d) Converted from RfDi
(e) Use inhalation value as surrogate
(f) Converted from CSFi
(g) Use 3-methylphenol as surrogate
(h) Converted from RfC
(i) Converted from URF
(j) Chronic value adjusted by 10 to account for subchronic study duration
(k) Use 2,4,5-Trichlorophenol as surrogate
(l) Use naphthalene as a surrogate
(m) Potential carcinogenic risk evaluated as BAP-TE by applying TEF from USEPA (1993) to the carcinogenic dose-response value for benzo(a)pyrene
(n) Use endosulfan as surrogate
(o) Use endrin as surrogate
(p) Use phenol as a surrogate
(q) Use pyrene as a surrogate

Table 5
Absorption Adjustment Factors
KI Facility
Superior, WI

Constituent	Oral Soil / Sediment[1]		Dermal Soil / Sediment[2]		Inhalation	
	Cancer	Noncancer Chronic	Cancer	Noncancer Chronic	Cancer	Noncancer Chronic
Acenaphthene	NA	1	NA	0.1 (a)	NA	1
Acenaphthylene	NA	1	NA	0.1 (a)	NA	1
Aldrin	1	1	0.25	0.25	1	1
Anthracene	NA	1	NA	0.1 (a)	NA	1
Barium	NA	1	NA	0.001	NA	1
Benzo(a)anthracene	1	1	0.02 (a)	0.02 (a)	1	1
Benzo(a)pyrene	1	1	0.02 (a)	0.02 (a)	1	1
Benzo(b)fluoranthene	1	1	0.02 (a)	0.02 (a)	1	1
Benzo(g,h,i)perylene	NA	1	NA	0.1 (a)	NA	1
Benzo(k)fluoranthene	1	1	0.02 (a)	0.02 (a)	1	1
delta-BHC	1	1	0.25	0.25	1	1
Chlorobenzene	NA	1	0	0	NA	1
Chloromethane	NA	1	0	0	NA	1
4-Chloro-3-methylphenol	NA	1	NA	0.03	NA	1
Chromium	NA	1	NA	0.04	1	1
Chrysene	1	1	0.02 (a)	0.02 (a)	1	1
4,4'-DDD	1	NA	0.2	NA	1	NA
4,4'-DDE	1	NA	0.2	NA	1	NA
4,4'-DDT	1	1	0.2	0.2	1	1
delta-BHC	1	1	0.25	0.25	1	1
Dibenz(a,h)anthracene	1	1	0.02 (a)	0.02 (a)	1	1
Dibenzofuran	NA	1	NA	0.1	NA	1
1,2-Dichlorobenzene	NA	1	0	0	NA	1
1,4-Dichlorobenzene	1	1	0	0	1	1
1,2-Dichloropropane	1	1	0.2	0.2	NA	1
4,6-Dinitro-2-methylphenol	NA	1	NA	0.03	NA	1
2,4-Dinitrophenol	NA	1	NA	0.03	NA	1
Endosulfan II	NA	1	NA	0.2	NA	1
Endosulfan sulfate	NA	1	NA	0.2	NA	1
Endrin	NA	1	NA	0.25	NA	1
Endrin aldehyde	NA	1	NA	0.25	NA	1
Ethylbenzene	NA	1	0	0	NA	1
Fluoranthene	NA	1	NA	0.1 (a)	NA	1
Fluorene	NA	1	NA	0.1 (a)	NA	1
Indeno(1,2,3-cd)pyrene	1	1	0.02 (a)	0.02 (a)	1	1
Isopropylbenzene	NA	1	0	0	NA	1
Manganese	NA	1	NA	0.05	NA	1
Methylene chloride	1	1	0.1	0.1	1	1
1-Methylnaphthalene	NA	1	NA	0.1 (b)	NA	1
2-Methylnaphthalene	NA	1	NA	0.1 (b)	NA	1
Naphthalene	NA	1	NA	0.1 (a)	NA	1
4-Nitrophenol	NA	1	NA	0.03	NA	1
Pentachlorophenol	1	1	0.03 (c)	0.03 (c)	NA	1
Phenanthrene	NA	1	NA	0.1 (a)	NA	1
Phenol	NA	1	NA	0.1	NA	1
Pyrene	NA	1	NA	0.1 (a)	NA	1
Tetrachloroethene	1	1	0.1	0.1	1	1
1,2,4-Trichlorobenzene	NA	1	0	0	NA	1
2,3,7,8-TCDD	1	NA	0.04 (d)	NA	1	NA
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	NA	1	NA	0.03	NA	1
Toluene	NA	1	NA	0.04	NA	1
1,2,4-Trichlorobenzene	NA	1	NA	0.08	NA	1
1,1,1-Trichloroethane	NA	1	NA	0.1	NA	1
Trichlorofluoromethane	NA	1	NA	0.1	NA	1
2,4,5-Trichlorophenol	NA	1	NA	0.03	NA	1
2,4,6-Trichlorophenol	1	1	0.03	0.03	1	1
1,2,4-Trimethylbenzene	NA	1	NA	0.1	NA	1
Xylenes	NA	1	NA	0.04	NA	1

1 = Literature-derived AAFs were replaced by default values of 1.0
2 = Dermal risk assessment not required by WDNR, but was included. AAFs shown were derived from the scientific literature, as cited
(a) See Appendix A for derivation of AAFs for PAH.
(b) Based on structural similarity to naphthalene.
(c) See Appendix B for derivation of pentachlorophenol AAFs.
(d) Value based on dermal absorption efficiency of 3% presented in EPA (2002), adjusted by estimated oral absorption of 70%.

Table 6
Post - Remediation Exposure Point Concentrations[1]
KI Facility
Superior, WI

	Site-Wide		Area A		Area B		Area C		Area F		Area G		Area H		Area S		Area B/F	
Constituent	**0-1 ft**	**0-5 ft**	**0-1 ft**	**0-5 ft**	**0-1 ft**	**0-5 ft**	**0-1 ft**	**0-5 ft**	**0-1 ft**	**0-5 ft**	**0-1 ft**	**0-5 ft**	**0-1 ft**	**0-5 ft**	**0-1 ft**	**0-5 ft**	**0-1 ft**	**0-5 ft**
Acenaphthene	5.2	49	6.2	65	4.3	12	ND	2.1	14.2	14	0.41	5.2	6.8	5.1	1.3	1.2	9.0	11
Acenaphthylene	3.7	18	6.3	25.1	1.7	7.0	ND	1.4	9.7	8.9	0.33	2.1	2.4	2.7	0.6	0.33	6.0	6.8
Aldrin	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Anthracene	4.3	28	7.0	33	4.0	6.5	ND	0.76	8.8	9.2	0.18	1.5	6.3	4.2	4.9	4.9	6.1	6.9
Barium	299	299	299	299	299	299	299	299	299	299	299	299	299	299	299	299	299	299
Benzo(a)anthracene	1.8	8.0	2.1	9.2	2.3	3.3	0.10	0.36	3.6	4.0	0.22	1.2	3.5	2.6	1.8	1.8	2.7	3.2
Benzo(a)pyrene	1.5	6.5	2.4	9.1	1.9	6.6	0.12	0.19	2.6	2.9	0.17	0.5	1.4	1.2	0.9	0.9	2.1	4.6
BaP-TE	4.03	16	5.5	20.7	6.1	15	0.28	0.62	6.1	7.6	0.89	2.1	4.0	3.6	4.0	3.9	5.6	10.9
Benzo(b)fluoranthene	2.6	6.9	4.0	9.9	3.3	3.4	0.16	0.29	4.3	4.5	0.27	0.6	2.8	1.8	2.1	2.1	3.5	3.6
Benzo(g,h,i)perylene	2.0	5.6	3.5	6.9	2.4	5.7	0.16	0.24	3.2	3.1	0.29	0.9	2.4	1.7	1.6	1.6	2.6	4.2
Benzo(k)fluoranthene	1.0	2.6	0.77	2.9	0.9	1.0	0.10	0.13	2.2	2.2	0.28	0.3	2.5	1.6	0.72	0.71	1.5	1.4
delta-BHC	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Chlorobenzene	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Chloromethane	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
4-Chloro-3-methylphenol	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Chromium	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
Chrysene	3.5	16	8.1	22	3.0	9.1	0.17	0.69	5.1	7.9	0.32	4.3	6.2	5.1	2.8	2.7	3.8	7.6
4,4'-DDD	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036
4,4'-DDE	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008
4,4'-DDT	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019
Dibenz(a,h)anthracene	2	7.9	2.6	9.5	3.9	8.9	0.13	0.37	2.5	3.8	0.73	1.4	2.4	2.2	2.6	2.5	2.8	6.0
Dibenzofuran	1.9	51.7	1.9	51.7	1.9	32.2	1.9	1.9	1.9	22.6	1.9	24.5	1.9	26.7	1.9	1.9	1.9	32.2
1,2-Dichlorobenzene	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
1,4-Dichlorobenzene	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
1,2-Dichloropropane	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
4,6-Dinitro-2-methylphenol	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
2,4-Dinitrophenol	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Endosulfan II	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014
Endosulfan sulfate	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014
Endrin	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036
Endrin aldehyde	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033
Ethylbenzene	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Fluoranthene	8.7	75	5.1	84	8.6	15	0.21	3	23.2	24	0.20	4.1	16.4	11	7.0	7.0	15.1	17
Fluorene	1.7	39	1.2	47	2.8	7.4	ND	2	2.7	3.8	0.32	2.2	7.0	5.2	1.7	1.7	2.3	5.1
Indeno(1,2,3-cd)pyrene	1.8	2.1	2.9	2.9	2.1	2.0	0.16	0	3.0	2.8	0.31	0.28	2.4	1.5	1.1	1.1	2.4	2.2
Isopropylbenzene	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033
Manganese	852	852	852	852	852	852	852	852	852	852	852	852	852	852	852	852	852	852
Methylene chloride	0.074	0.074	0.074	0.074	0.074	0.074	0.074	0.074	0.074	0.074	0.074	0.074	0.074	0.074	0.074	0.074	0.074	0.074
1-Methylnaphthalene	10.4	8.7	ND	ND	5.3	4.2	4.2	4	33.7	35	ND	ND	ND	ND	ND	ND	19.1	12
2-Methylnaphthalene	11	10	ND	ND	ND	ND	ND	ND	34.0	35	ND	ND	ND	ND	ND	ND	22.8	18
Naphthalene	3.8	31	6.3	90.6	2.9	18	0.8	1	9.5	5.9	0.35	1.1	5.7	5.3	0.51	0.36	6.1	11
4-Nitrophenol	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Pentachlorophenol	12.8	13	2.5	2.0	4.6	3.6	1.1	1	20.5	19	2.4	22	27.9	53	41.6	42	12.8	10
Phenanthrene	3.4	111	1.9	130	7.8	14	ND	5	3.2	7.7	0.23	2.3	20.5	14	2.2	2.2	4.6	10
Phenol	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012
Pyrene	5.9	43	5.0	48	6.5	56	0.20	2	13.9	15	0.33	1.1	11.8	7.9	5.3	5.3	9.5	34
TCDD-TEQ	0.00027	0.00027	0.00015	0.00015	0.00033	0.00033	0.000019	0.000019	0.00032	0.00032	0.00051	0.00051	0.00037	0.00037	0.00032	0.00032	0.00028	0.00028
Tetrachloroethene	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155
Toluene	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028
1,2,4-Trichlorobenzene	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
1,1,1-Trichloroethane	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Trichlorofluoromethane	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
2,4,5-Trichlorophenol	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
2,4,6-Trichlorophenol	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
1,2,4-Trimethylbenzene	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044
Total xylenes	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002

Note: units are in mg/kg

1 = For COPCs, EPCs represent 95% UCL under post-remediation conditions. For non-COPCs, EPCs represent maximum detected concentrations under post-remediation conditions, with the exception of dibenzofuran. For dibenzofuran, the EPC represents the 95% UCL for Areas A, B and B/F and the maximum concentrations for the remaining areas.

Table 7
Summary of Potential Exposure Assumptions
KI Facility
Superior, WI

Receptor	Parameter (units)	Soil			Air/Dust	Surface Water
		Excavation	Surface	Trench		
Construction Worker	Exposure Time (hr/d)	NA	NA	NA	8	NA
	Exposure Frequency (d/y)	130	NA	NA	130	NA
	Exposure Duration (y)	1	NA	NA	1	NA
	Body Weight (kg)	71.8	NA	NA	71.8	NA
	Averaging Time - Lifetime (d)	25550	NA	NA	25550	NA
	Averaging Time - Subchronic Noncancer (d)	365	NA	NA	365	NA
	Contact Rate (mg/d) or (m^3/hr)	118	NA	NA	2.5	NA
	Fraction from Site (unitless)	1	NA	NA	1	NA
	Surface Area Exposed (cm^2/d)	2478	NA	NA	NA	NA
	Soil-to-Skin Adherence Factor (mg/cm^2)	0.139	NA	NA	NA	NA
Utility Worker	Exposure Time (hr/d)	NA	NA	NA	8	NA
	Exposure Frequency (d/y)	NA	NA	5	5	NA
	Exposure Duration (y)	NA	NA	25	25	NA
	Body Weight (kg)	NA	NA	71.8	71.8	NA
	Averaging Time - Lifetime (d)	NA	NA	25550	25550	NA
	Averaging Time - Chronic Noncancer (d)	NA	NA	9125	9125	NA
	Contact Rate (mg/d) or (m^3/hr)	NA	NA	330	2.5	NA
	Fraction from Site (unitless)	NA	NA	1	1	NA
	Surface Area Exposed (cm^2/d)	NA	NA	2478	NA	NA
	Soil-to-Skin Adherence Factor (mg/cm^2)	NA	NA	0.242	NA	NA
Trespasser	Exposure Time (hr/d)	NA	NA	NA	2	2
	Exposure Frequency (d/y)	NA	20	NA	20	40
	Exposure Duration (y)	NA	7	NA	7	7
	Body Weight (kg)	NA	56	NA	56	56
	Averaging Time - Lifetime (d)	NA	25550	NA	25550	25550
	Averaging Time - Chronic Noncancer (d)	NA	2555	NA	2555	2555
	Contact Rate (mg/day) or (m^3/hr) or (L/hr)	NA	50	NA	1.6	0.005
	Fraction from Site (unitless)	NA	1	NA	1	1
	Surface Area Exposed (cm^2/d)	NA	5651	NA	NA	5651
	Soil-to-Skin Adherence Factor (mg/cm^2)	NA	0.158	NA	NA	NA
KI Site Worker	Exposure Time (hr/d)	NA	NA	NA	8	NA
	Exposure Frequency (d/y)	NA	180	NA	180	NA
	Exposure Duration (y)	NA	25	NA	25	NA
	Body Weight (kg)	NA	71.8	NA	71.8	NA
	Averaging Time - Lifetime (d)	NA	25550	NA	25550	NA
	Averaging Time - Noncancer (d)	NA	9125	NA	9125	NA
	Contact Rate (mg/day) or (m^3/hr)	NA	50	NA	3	NA
	Fraction from Site (unitless)	NA	1	NA	1	NA
	Surface Area Exposed (cm^2/d)	NA	2087	NA	NA	NA
	Soil-to-Skin Adherence Factor (mg/cm^2)	NA	0.2	NA	NA	NA

NA - Not applicable

Table 8
Calculation of Weighted Average Soil Adherence Factors
KI Facility
Superior, WI

Receptor Body Part	50th %ile Surface Area (cm^2) (a)			Construction Worker		Utility Worker	
				AF (b)	Wt. AF	AF (b)	Wt. AF
	M	F	Avg				
Hands	990	817	904	0.24	0.0875	0.295	0.1076
Forearms	1310	1035	1173	0.098	0.0464	0.25	0.1183
Face (1/3 Head)	433	370	402	0.029	0.0047	0.1	0.0162
		Total =	2478		0.139		0.242

Receptor Body Part	Fraction of Total SA (a)	50th %ile Surface Area (cm^2) (a)			Trespasser (15-16 years old) (d)	
		M	F	Avg	AF	Wt. AF
		17000	15700			
Hands	0.0568	965.6	892	928.68	0.3854	0.0633
Forearms	0.059	1003	926	964.65	0.0147	0.0025
Feet	0.0693	1178.1	1088	1133.055	0.3854	0.0773
Lower Legs	0.134	2278	2104	2190.9	0.0372	0.0144
Face (1/3 Head)	0.0265	450.5	416	433.275	0.0042	0.0003
			Total =	5650.56		0.158

KI Site Worker Body Part	50th %ile Surface Area (cm^2) (a)			Construction Worker		Utility Worker		KI Worker (c)	
				AF	Wt. AF	AF	Wt. AF	AF	Wt. AF
	M	F	Avg						
Hands	990	817	904	0.24	0.0875	0.295	0.1076	0.2675	0.1158
Forearms	1310	1035	1173	0.098	0.0464	0.25	0.1183	0.174	0.0978
Face (1/3 Head)	433	370	402	0.029	0.0047	0.1	0.0162	0.0645	0.0124
		Total =	2087						0.226

(a) U.S. EPA 2001, Exhibit C-1.
(b) U.E. EPA (2001), Exhibit C-2, Geometric Mean values.
(c) Average of Construction Worker and Utility Worker values
(d) AF values from U.S. EPA (2001), Exhibit C-2, Geometric Mean of values for Children Playing (dry soil) and Children Playing (wet soil).
Soil adherence to feet assumed to equal soil adherence to hands.

Table 9
Summary of Potential Noncarcinogenic Hazard Indices Under Post-Remediation Conditions
KI Facility
Superior, WI

	Site-Wide				Area A				Area B			
Receptor	**Total[1]**	**BaP-TE**	**TCDD-TEQ**	**Penta-chlorophenol**	**Total[1]**	**BaP-TE**	**TCDD-TEQ**	**Penta-chlorophenol**	**Total[1]**	**BaP-TE**	**TCDD-TEQ**	**Penta-chlorophenol**
KI Site Worker (0-1' Soil)	0.1	0.00008	NA	0.0002	0.09	0.0001	NA	0.00004	0.1	0.0001	NA	0.00007
Trespasser (0-1' Soil)	0.008	0.00001	NA	0.00003	0.007	0.00002	NA	0.000006	0.007	0.00002	NA	0.00001
Construction Worker (0-5' Soil)	0.9	0.0004	NA	0.0003	1	0.0006	NA	0.00005	0.4	0.0004	NA	0.00009
Utility Worker (0-5' Soil)	0.01	0.00005	NA	0.00003	0.02	0.00007	NA	0.000005	0.009	0.00005	NA	0.000008

	Area C				Area F				Area G			
Receptor	**Total[1]**	**BaP-TE**	**TCDD-TEQ**	**Penta-chlorophenol**	**Total[1]**	**BaP-TE**	**TCDD-TEQ**	**Penta-chlorophenol**	**Total[1]**	**BaP-TE**	**TCDD-TEQ**	**Penta-chlorophenol**
KI Site Worker (0-1' Soil)	0.08	0.000006	NA	0.00002	0.3	0.0001	NA	0.0003	0.07	0.00002	NA	0.00004
Trespasser (0-1' Soil)	0.006	0.0000009	NA	0.000003	0.01	0.00002	NA	0.00005	0.006	0.000003	NA	0.000006
Construction Worker (0-5' Soil)	0.1	0.00002	NA	0.00002	0.8	0.0002	NA	0.0004	0.1	0.00006	NA	0.0005
Utility Worker (0-5' Soil)	0.005	0.000002	NA	0.000002	0.01	0.00002	NA	0.00004	0.006	0.000007	NA	0.00005

	Area H				Area S				Area B/F			
Receptor	**Total[1]**	**BaP-TE**	**TCDD-TEQ**	**Penta-chlorophenol**	**Total[1]**	**BaP-TE**	**TCDD-TEQ**	**Penta-chlorophenol**	**Total[1]**	**BaP-TE**	**TCDD-TEQ**	**Penta-chlorophenol**
KI Site Worker (0-1' Soil)	0.1	0.00008	NA	0.0004	0.07	0.00008	NA	0.0006	0.2	0.0001	NA	0.0002
Trespasser (0-1' Soil)	0.007	0.00001	NA	0.00007	0.006	0.00001	NA	0.0001	0.01	0.00002	NA	0.00003
Construction Worker (0-5' Soil)	0.2	0.0001	NA	0.001	0.05	0.0001	NA	0.001	0.5	0.0003	NA	0.0002
Utility Worker (0-5' Soil)	0.007	0.00001	NA	0.0001	0.005	0.00001	NA	0.00009	0.01	0.00004	NA	0.00002

Note:
Risk estimates represent post-remediation Site conditions
1 = Total potential hazard indices are the sum of potenital hazard indices for COPCs and non-COPCs
NA - Not applicable

Table 10
Summary of Potential Excess Limetime Cancer Risks Under Post-Remediation Conditions
KI Facility
Superior, WI

	Site-Wide				Area A				Area B			
Receptor	**Total[1]**	**BaP-TE**	**TCDD-TEQ**	**Penta-chlorophenol**	**Total[1]**	**BaP-TE**	**TCDD-TEQ**	**Penta-chlorophenol**	**Total[1]**	**BaP-TE**	**TCDD-TEQ**	**Penta-chlorophenol**
KI Site Worker (0-1' Soil)	1E-05	4E-06	7E-06	2E-07	1E-05	6E-06	4E-06	5E-08	1E-05	6E-06	8E-06	8E-08
Trespasser (0-1' Soil)	6E-07	2E-07	3E-07	1E-08	5E-07	3E-07	2E-07	2E-09	7E-07	3E-07	4E-07	4E-09
Construction Worker (0-5' Soil)	1E-06	1E-06	4E-07	1E-08	2E-06	1E-06	2E-07	2E-09	1E-06	1E-06	5E-07	4E-09
Utility Worker (0-5' Soil)	4E-06	3E-06	1E-06	4E-08	4E-06	4E-06	6E-07	6E-09	4E-06	3E-06	1E-06	1E-08

	Area C				Area F				Area G			
Receptor	**Total[1]**	**BaP-TE**	**TCDD-TEQ**	**Penta-chlorophenol**	**Total[1]**	**BaP-TE**	**TCDD-TEQ**	**Penta-chlorophenol**	**Total[1]**	**BaP-TE**	**TCDD-TEQ**	**Penta-chlorophenol**
KI Site Worker (0-1' Soil)	8E-07	3E-07	5E-07	2E-08	1E-05	6E-06	8E-06	4E-07	1E-05	9E-07	1E-05	4E-08
Trespasser (0-1' Soil)	4E-08	1E-08	2E-08	1E-09	7E-07	3E-07	4E-07	2E-08	7E-07	4E-08	6E-07	2E-09
Construction Worker (0-5' Soil)	7E-08	4E-08	3E-08	1E-09	1E-06	5E-07	5E-07	2E-08	9E-07	1E-07	7E-07	2E-08
Utility Worker (0-5' Soil)	2E-07	1E-07	7E-08	3E-09	3E-06	1E-06	1E-06	5E-08	2E-06	4E-07	2E-06	6E-08

	Area H				Area S				Area B/F			
Receptor	**Total[1]**	**BaP-TE**	**TCDD-TEQ**	**Penta-chlorophenol**	**Total[1]**	**BaP-TE**	**TCDD-TEQ**	**Penta-chlorophenol**	**Total[1]**	**BaP-TE**	**TCDD-TEQ**	**Penta-chlorophenol**
KI Site Worker (0-1' Soil)	1E-05	4E-06	9E-06	5E-07	1E-05	4E-06	8E-06	8E-07	1E-05	6E-06	7E-06	2E-07
Trespasser (0-1' Soil)	7E-07	2E-07	5E-07	3E-08	6E-07	2E-07	4E-07	4E-08	6E-07	3E-07	4E-07	1E-08
Construction Worker (0-5' Soil)	8E-07	2E-07	5E-07	6E-08	8E-07	3E-07	5E-07	5E-08	1E-06	7E-07	4E-07	1E-08
Utility Worker (0-5' Soil)	2E-06	6E-07	1E-06	2E-07	2E-06	7E-07	1E-06	1E-07	3E-06	2E-06	1E-06	3E-08

Note:
Risk estimates represent post-remediation Site conditions
1 = Total Risks are the sum of potential estimated excess lifetime cancer risks for COPCs and non-COPCs

Table 11
Samples Requiring Corrective Action to Achieve Risk-Based Objectives
KI Facility
Superior, WI

Area	Sample Location	Area	Sample Location
Area A	AB-01	Area F	FB-25
	AB-04		FB-29
	AB-16		FB-31
Area B	BB-01		FB-42
	BB-03	Area G	GB-02
	BB-04		GB-04
	BB-07		GB-05
	BB-09		GB-14
	BB-12		GB-17
	BB-16	Area H	HB-15
	BB-25		HB-16
	BB-36		HB-20
	BB-40		HB-22
	BB-41		HTP-07
	BB-48	Area S	SB-16
	BB-51		SB-19
	BB-52		SB-20
	BB-55		SB-23
	NEFPSTA		SB-24

Table 12
Equations Used to Estimate Surface Water Concentrations from Soil Runoff
KI Facility
Superior, WI

Source: U.S. EPA (2005)

$$C_{wctot} = f_{wc} \times C_{wtot} \times \frac{d_{wc} + d_{bs}}{d_{wc}}$$

$$C_{wtot} = \frac{L_T}{Vf_x \times f_{wc} \times k_{wt} \times A_w \times (d_{wc} + d_{bs})}$$

$$f_{wc} = \frac{(1 + Kd_{sw} \times TSS \times 1e-6) \times \frac{d_{wc}}{d_z}}{(1 + Kd_{sw} \times TSS \times 1e-6) \times \frac{d_{wc}}{d_z} + (\theta_{bs} + Kd_{bs} \times C_{BS}) \times \frac{d_{bs}}{d_z}}$$

$$f_{bs} = 1 - f_{wc}$$

$$L_T = L_{DEP} + L_{dif} + L_{RI} + L_R + L_E$$

$$L_R = RO \times (A_L - A_I) \times \frac{C_s \times BD}{\theta_{sw} + Kd_s \times BD} \times 0.01$$

$$L_E = X_e \times (A_L - A_I) \times SD \times ER \times \frac{Cs \times Kd_s \times BS}{\theta_{sw} + Kd_s \times BS} \times 0.001$$

$$k_{wt} = f_{wc} \times k_v + f_{bs} \times k_b$$

$$k_v = \frac{K_v}{d_z \times (1 + Kd_{sw} \times TSS \times 1e-6)}$$

$$K_v = \left[K_L^{-1} + \left(K_G \times \frac{H}{R \times T_{wk}} \right)^{-1} \right]^{-1} \times \theta^{(T_{wk} - 293)}$$

$$K_L = \sqrt{\frac{(1e-4) \times D_w \times u}{d_z}} 3.1536e+7$$

$$X_e = RF \times K \times LS \times C \times PF \times \frac{907.18}{4047}$$

$$SD = a \times (A_L{}^{-b})$$

$$k_b = \left(\frac{X_e \times A_L \times SD \times 1000 - Vf_x \times TSS}{A_w \times TSS} \right) \times \left(\frac{TSS \times 1e-6}{C_{BS} \times d_{bs}} \right)$$

Table 12
Equations Used to Estimate Surface Water Concentrations from Soil Runoff
KI Facility
Superior, WI

where:
C_{wctot} = Total compound concentration in water column (mg/L)
C_{wtot} = Total compound concentration in water body (mg/L)
L_{DEP} = Total deposition to water body (g/yr) (assumed to be 0)
L_{dif} = Vapor phase diffusion load to water body (g/yr) (assumed to be 0)
L_{RI} = Runoff load from impervious surfaces (g/yr) (assumed to be 0)
L_R = Runoff load from pervious surfaces (g/yr) (calculated)
L_E = Soil erosion load (g/yr) (calculated)
X_e = Unit soil loss (kg/m2-yr) (calculated)
SD = Sediment delivery ratio (unitless) (calculated)
f_{wc} = Fraction of total water body concentration that is in water column (unitless) (calculated)
k_{wt} = Overall total water body dissipation rate constant (yr^{-1}) (calculated)
f_{bs} = Fraction of total water body concentration that is in benthic sediment (unitless) (calculated)
d_z = Total water body depth (m) (calculated)
k_v = Water column volatilization rate constant (yr^{-1}) (calculated)
k_b = Benthic burial rate constant (yr^{-1}) (calculated)
K_v = Overall compound transfer rate coefficient (m/yr) (calculated)
K_L = Liquid phase transfer coefficient (m/yr) (calculated)
BD = Soil bulk density (g/cm^3) (assumed to be 1.5 g/cm^3)
θ_{sw} = Soil volumetric water content (mL/cm^3) (assumed to be 0.2 mL/cm^3)
ER = Soil enrichment ratio (unitless) (assumed to be 3 for organics and 1 for inorganics)
d_{bs} = Depth of benthic sediment layer (m) (assumed to be 0.03 m)
TSS = Total suspended solids (mg/L) (assumed to be 10 mg/L)
C_{BS} = Bed sediment bulk density (g/cm^3) (assumed to be 1 g/cm^3)
θ_{bs} = Bed sediment porosity (Lwater / Lsediment) (assumed to be 0.6 L/L)
a = Empirical intercept coefficient (unitless) (assumed to be 0.1, corresponding to a watershed area of 0.1 square miles)
b = Empirical slope coefficient (unitless) (assumed to be 0.125)
K_G = Gas phase transfer coefficient (m/yr) (assumed to be 36500 m/yr)
R = Universal gas constant (atm-m^3/mol-K) (8.21 e-5 atm-m^3/mol-K)
T_{wk} = Water body temperature (K) (assumed to be 298 K)
θ = Temperature correction factor (unitless) (assumed to be 0.026)
0.01 = Unit conversion factor (kg-cm^2/mg-m^2)
0.001 = Unit conversion factor (kg-cm^2/mg-m^2)
907.18 = Unit conversion factor (kg/ton)
4047 = Unit conversion factor (m^2/acre)
1e-6 = Unit conversion factor (kg/mg)
3.1536e+7 = Unit conversion factor (s/yr)
Vf_x = Volumetric flow rate through water body (m^3/yr) (assumed to be 1.34e7 m^3/yr for Crawford Creek corresponding to the mean flow rate measured in Crawford Creek between the drainage ditch and the railroad bridge; assumed to be 1.34e6 m^3/yr for the drainage ditch based on baseflow estimations by
A_w = Water body surface area (m^2) (assumed to be 36,000 m^2 for Crawford Creek corresponding to the area of Crawford Creek from the drainage ditch to the railroad bridge; assumed to be 873 m^2 for the drainage ditch based on the 2000 streambed investigation)
D_{wc} = Depth of water column (m) (assumed to be 0.54 m for Crawford Creek corresponding to the mean staff gauge measurement in Crawford Creek between the drainage ditch and the railroad bridge; assumed to be 0.15 m for the drainage ditch based on baseflow observations)
u = Current velocity (m/s) (assumed to be 0.12 m/s for Crawford Creek corresponding to the mean velocity measured in Crawford Creek between the drainage ditch and the railroad bridge; assumed to be 0.15 m/s for the drainage ditch from Hammond Avenue to Crawford Creek)

Table 12
Equations Used to Estimate Surface Water Concentrations from Soil Runoff
KI Facility
Superior, WI

RO = Average annual surface runoff from pervious surfaces (cm/yr) (Site-specific value of 50 cm/yr, derived by subtracting the minimum default evapotranspiration value from the Site-specific precipitation value)

AL = Total watershed area (m^2) (assumed to be 120,342 m^2, corresponding to the area of the Site that drains to the northwest to Outfall 1)

AI = Impervious watershed area (m^2) (assumed to be 12,034.2 m^2, corresponding to 10 % of the area in the region of the Site that drains to the northwest to Outfall 1)

RF = USLE rainfall factor (yr^{-1}) (assumed to be 100 yr^{-1}, based on information provided at http://danpatch.ecn.purdue.edu/~wepphtml/wepp/wepptut/jhtml/imagedir/usa.gif)

K = USLE erodibility factor (ton/acre) (assumed to be default value of 0.39 ton/acre)

LS = USLE length-slope factor (unitless) (assumed to be default value of 1.5)

C = USLE cover management factor (unitless) (assumed to be 1, corresponding to bare soil)

PF = USLE supporting practice factor (unitless) (assumed to be 1, corresponding to the absence of erosion control measures)

Cs = Compound concentration in soil (mg/kg) (see Table 13)

Kd = Soil-water partition coefficient (cm^3/g) (see Table 13)

H = Henry's Law constant (atm-m^3/mol) (see Table 13)

D_w = Diffusivity of compound in water (cm^2/s) (see Table 13)

Note:
All values obtained from the following EPA guidance documents:
U.S. EPA. 2005. Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities. EPA530-R-05-006. Final. September, 2005

Table 13
Constituent-Specific Parameters Used to Estimate Concentrations in Off-Site Surface Water Under Post-Remediation Conditions
KI Facility
Superior, WI

Constituent	95% UCL Post-Remediation Concentration in Site-Wide Surface Soil (mg/kg)	Henry's Law Constant[1] (atm-m^3/mol)	Soil-Water Partition Coefficient[1] (cm^3/g)	Diffusivity in Water[1] (cm^2/sec)
Acenaphthene	5.2	0.0002	70.79	0.0000077
Acenaphthylene	3.7	0.0001	69.18	0.0000071
Anthracene	4.3	0.00007	295.12	0.0000077
Benzo(a)anthracene	1.8	0.000003	3981.07	0.000009
Benzo(a)pyrene	1.5	0.000001	10232.93	0.000009
Benzo(b)fluoranthene	2.6	0.0001	12302.69	0.0000056
Benzo(g,h,i)perylene	2.0	0.0000001	15848.93	0.000057
Benzo(k)fluoranthene	1.0	0.0000008	12302.69	0.0000056
Chrysene	3.5	0.0001	3981.07	0.0000062
Dibenz(a,h)anthracene	2.0	0.00000001	38018.94	0.0000052
Fluoranthene	8.7	0.00002	1071.52	0.0000064
Fluorene	1.7	0.00006	138.04	0.0000079
Indeno(1,2,3-cd)pyrene	1.8	0.000002	34673.68	0.0000057
1-Methylnaphthalene	10.4	0.0004	22.9	0.00000713
2-Methylnaphthalene	11.0	0.0005	43.2	0.0000072
Naphthalene	3.8	0.0005	19.95	0.0000075
Pentachlorophenol	12.8	0.00000002	199.53	0.0000061
Phenanthrene	3.4	0.0001	141.25	0.0000075
Pyrene	5.9	0.00001	1047.13	0.0000072
TCDD-TEQ	0.00027	0.00147	141000	0.000008

1: Constituent-specific values from TCEQ (2007) and U.S. EPA (1996) Soil Screening Guidance.

Table 14
Estimated Concentrations in Off-Site Surface Water Under Post-Remediation Conditions
KI Facility
Superior, WI

Constituent	Estimated Concentration in Surface Water in the Tributary to Crawford Creek (µg/L)		Estimated Concentration in Crawford Creek Surface Water (µg/L)		Concentration Measured During Stormwater Monitoring at Outfall 001 (µg/L) [a]		Ambient Water Quality Criterion (µg/L)	
	Total	Dissolved	Total	Dissolved	08/08/96	11/10/98	Acute	Chronic
Acenaphthene	11.24	11.23	0.805	0.803	1.7	0.34		
Acenaphthylene	8.17	8.16	0.606	0.605				
Anthracene	6.84	6.81	0.606	0.603	0.4	0.31		
Benzo(a)anthracene	0.95	0.88	0.249	0.232	0.4	0.24		
Benzo(a)pyrene	0.39	0.33	0.170	0.143	0.14	< 0.07		
Benzo(b)fluoranthene	0.57	0.46	0.229	0.186	0.28	< 0.1		
Benzo(g,h,i)perylene	0.37	0.29	0.198	0.153				
Benzo(k)fluoranthene	0.22	0.18	0.106	0.086	0.11	0.089		
Chrysene	1.78	1.66	0.386	0.359	0.9	< 0.14		
Dibenz(a,h)anthracene	0.19	0.11	0.138	0.081				
Fluoranthene	9.54	9.35	1.298	1.273	6	1.6		
Fluorene	3.16	3.15	0.259	0.258	1.2	< 0.14		
Indeno(1,2,3-cd)pyrene	0.18	0.11	0.127	0.078				
1-Methylnaphthalene	32.38	32.36	2.101	2.100	0.4	< 0.047		
2-Methylnaphthalene	25.26	25.24	1.644	1.643	1	< 0.063		
Naphthalene	12.57	12.56	0.803	0.803	0.9	0.21		
Pentachlorophenol	23.58	23.49	2.331	2.322			53.2[b]	48.7[b] (pH=8.8)
							58.9[c,d]	45.2[c,d]
Phenanthrene	6.08	6.06	0.460	0.459	2.3	0.69		
Pyrene	6.55	6.42	0.897	0.880	3.1	2.1		
TCDD-TEQ	0.000013	0.0000035	0.000011	0.0000031				

[a] Blank cells indicate that the sample was not analyzed for this compound.
[b] Source: NR 105.06 at pH=8.8, hardness 100 ppm
[c] Source: U.S. EPA 2007c
[d] Values based on pH = 8.9, average pH for tributary and Crawford Creek surface water (personal communication, BBL, 2007)

Table 15
Potential Excess Lifetime Cancer Risks and Hazard Indices Associated with Estimated Concentrations in Crawford Creek Surface Water from Runoff and Erosion Based on Post-Remediation Conditions
KI Facility
Superior, WI

Receptor:	Trespasser
Medium:	Estimated Surface Water from Runoff
Exposure Pathway:	Incidental Surface Water Ingestion & Dermal Contact

ADD ingestion (mg/kg-day) = $\frac{CW \times IR \times FI \times AAF \times ET \times EF \times ED}{BW \times AT}$

ADD dermal (mg/kg-day $\frac{CW \times CF \times SA \times Kp \times AAF \times ET \times EF \times ED}{BW \times AT}$

Hazard Quotient (HQ) = ADD (mg/kg-day) / RfD (mg/kg-d)
Cancer Risk (ELCR) = ADD (mg/kg-day) * CSF [1/(mg/kg-day)]

Parameter (units)	Value
ADD: Average Daily Dose (mg/kg-day)	See Below
CW: Constituent Concentration in Water (mg/L)	Constituent-Specific
IR: Ingestion Rate (L/hr)	0.005
AAF: Absorption Adjustment Factor (Oral-Water) (unitless)	Constituent-Specific
FI: Fraction Ingested from Site (unitless)	1
SA: Skin Surface Area (cm^2)	5651
PC Permeability Constant (cm/hr)	Constituent-Specific
AAF: Absorption Adjustment Factor (Dermal-Water) (unitless)	Constituent-Specific
FA: Fraction Absorbed from Site (unitless)	1
ET: Exposure Time (hr/day)	2
EF: Exposure Frequency (days/year)	40
ED: Exposure Duration (years)	7
BW: Body Weight (kg)	56
AT: Averaging Time (days) (ED x 365 days/yr, noncancer)	2555
AT: Averaging Time (days) (75 yr. x 365 days/yr, cancer)	25550
RfD: Reference Dose (mg/kg-day)	Constituent-Specific
CSF: Cancer Slope Factor [1/(mg/kg-day)]	Constituent-Specific
CF: Conversion factor	0.001

		Oral Noncancer				Oral Cancer				Dermal Contact Noncancer				Dermal Contact Cancer			Total	
Constituent	Water Concentration	Oral-Water AAF (noncancer)	ADD (noncancer)	Chronic RfD	Oral HQ	Oral-Water AAF (cancer)	ADD (cancer) (mg/kg-day)	CSF [1/(mg/kg-day)]	Oral Risk	Kp	Dermal-Water AAF (noncancer)	ADD (noncancer)	Dermal HQ	Dermal-Water AAF (cancer)	ADD (cancer)	Dermal Risk	Risk (SW)	HI (SW)
	(mg/L)	Subchronic	(mg/kg-day)	(mg/kg-day)						(cm/hr)	Subchronic	(mg/kg-day)			(mg/kg-day)			
Acenaphthene	8.0E-04	1	1.57E-08	6.00E-02	3E-07	1	NA	NA	NA	4.00E-02	1	7.12E-07	1E-05	1	NA	NA	NA	1E-05
Acenaphthylene	6.1E-04	1	1.19E-08	2.00E-02	6E-07	1	NA	NA	NA	4.00E-02	1	5.36E-07	3E-05	1	NA	NA	NA	3E-05
Anthracene	6.1E-04	1	1.19E-08	3.00E-01	4E-08	1	NA	NA	NA	4.00E-02	1	5.36E-07	2E-06	1	NA	NA	NA	2E-06
Benzo(a)anthracene	2.5E-04	1	4.87E-09	2.00E-02	2E-07	1	NA	NA	NA	2.00E-02	1	1.10E-07	6E-06	1	NA	NA	NA	6E-06
Benzo(a)pyrene	1.7E-04	1	3.33E-09	2.00E-02	2E-07	1	3.33E-10	7.30E+00	2E-09	2.00E-02	1	7.52E-08	4E-06	1	7.52E-09	5E-08	6E-08	4E-06
Benzo(b)fluoranthene	2.3E-04	1	4.47E-09	2.00E-02	2E-07	1	NA	NA	NA	2.00E-02	1	1.01E-07	5E-06	1	NA	NA	NA	5E-06
Benzo(g,h,i)perylene	2.0E-04	1	3.88E-09	2.00E-02	2E-07	1	NA	NA	NA	4.00E-02	1	1.75E-07	9E-06	1	NA	NA	NA	9E-06
Benzo(k)fluoranthene	1.1E-04	1	2.07E-09	2.00E-02	1E-07	1	NA	NA	NA	2.00E-02	1	4.68E-08	2E-06	1	NA	NA	NA	2E-06
Chrysene	3.9E-04	1	7.55E-09	2.00E-02	4E-07	1	NA	NA	NA	2.00E-02	1	1.71E-07	9E-06	1	NA	NA	NA	9E-06
Dibenz(a,h)anthracene	1.4E-04	1	2.70E-09	2.00E-02	1E-07	1	NA	NA	NA	2.00E-02	1	6.09E-08	3E-06	1	NA	NA	NA	3E-06
Fluoranthene	1.3E-03	1	2.54E-08	4.00E-02	6E-07	1	NA	NA	NA	4.00E-02	1	1.15E-06	3E-05	1	NA	NA	NA	3E-05
Fluorene	2.6E-04	1	5.07E-09	4.00E-02	1E-07	1	NA	NA	NA	4.00E-02	1	2.29E-07	6E-06	1	NA	NA	NA	6E-06
Indeno(1,2,3-cd)pyrene	1.3E-04	1	2.49E-09	2.00E-02	1E-07	1	NA	NA	NA	2.00E-02	1	5.63E-08	3E-06	1	NA	NA	NA	3E-06
1-Methylnaphthalene	2.1E-03	1	4.11E-08	2.00E-02	2E-06	1	NA	NA	NA	9.08E-02	1	4.22E-06	2E-04	1	NA	NA	NA	2E-04
2-Methylnaphthalene	1.6E-03	1	3.22E-08	2.00E-02	2E-06	1	NA	NA	NA	4.00E-02	1	1.45E-06	7E-05	1	NA	NA	NA	7E-05
Naphthalene	8.0E-04	1	1.57E-08	2.00E-02	8E-07	1	NA	NA	NA	4.00E-02	1	7.11E-07	4E-05	1	NA	NA	NA	4E-05
Pentachlorophenol	2.3E-03	1	4.56E-08	3.00E-02	2E-06	1	4.56E-09	1.20E-01	5E-10	6.50E-01	1	3.35E-05	1E-03	1	3.35E-06	4E-07	4E-07	1E-03
Phenanthrene	4.6E-04	1	9.01E-09	2.00E-02	5E-07	1	NA	NA	NA	4.00E-02	1	4.07E-07	2E-05	1	NA	NA	NA	2E-05
Pyrene	9.0E-04	1	1.76E-08	3.00E-02	6E-07	1	NA	NA	NA	4.00E-02	1	7.94E-07	3E-05	1	NA	NA	NA	3E-05
TCDD-TEQ	1.1E-08	1	NA	NA	NA	1	2.19E-14	1.50E+05	3E-09	4.00E-04	1	NA	NA	1	9.91E-15	1E-09	5E-09	NA
																Total:	5E-07	0.002

Table 16
Potential Excess Lifetime Cancer Risks and Hazard Indices Associated with Estimated Concentrations in Surface Water in the Tributary to Crawford Creek from Runoff and Erosion Based on Post-Remediation Conditions
KI Facility
Superior, WI

Receptor:	Trespasser
Medium:	Estimated Surface Water from Runoff
Exposure Pathway:	Incidental Surface Water Ingestion & Dermal Contact

ADD ingestion (mg/kg-day) = $\frac{CW \times IR \times FI \times AAF \times ET \times EF \times ED}{BW \times AT}$

ADD dermal (mg/kg-day) $\frac{CW \times CF \times SA \times Kp \times AAF \times ET \times EF}{BW \times AT} \times ED$

Hazard Quotient (HQ) = ADD (mg/kg-day) / RfD (mg/kg-d)
Cancer Risk (ELCR) = ADD (mg/kg-day) * CSF [1/(mg/kg-day)]

Parameter (units)	Value
ADD: Average Daily Dose (mg/kg-day)	See Below
CW: Constituent Concentration in Water (mg/L)	Constituent-Specific
IR: Ingestion Rate (L/hr)	0.005
AAF: Absorption Adjustment Factor (Oral-Water) (unitless)	Constituent-Specific
FI: Fraction Ingested from Site (unitless)	1
SA: Skin Surface Area (cm^2)	5651
PC Permeability Constant (cm/hr)	Constituent-Specific
AAF: Absorption Adjustment Factor (Dermal-Water) (unitless)	Constituent-Specific
FA: Fraction Absorbed from Site (unitless)	1
ET: Exposure Time (hr/day)	2
EF: Exposure Frequency (days/year)	40
ED: Exposure Duration (years)	7
BW: Body Weight (kg)	56
AT: Averaging Time (days) (ED x 365 days/yr, noncancer)	2555
AT: Averaging Time (days) (75 yr. x 365 days/yr, cancer)	25550
RfD: Reference Dose (mg/kg-day)	Constituent-Specific
CSF: Cancer Slope Factor [1/(mg/kg-day)]	Constituent-Specific
CF: Conversion factor	0.001

		Oral Noncancer				Oral Cancer				Dermal Contact Noncancer				Dermal Contact Cancer			Total	
Constituent	Water Concentration	Oral-Water AAF (noncancer)	ADD (noncancer)	Chronic RfD	Oral HQ	Oral-Water AAF (cancer)	ADD (cancer) (mg/kg-day)	CSF [1/(mg/kg-day)]	Oral Risk	Kp	Dermal-Water AAF (noncancer)	ADD (noncancer)	Dermal HQ	Dermal-Water AAF	ADD (cancer)	Dermal Risk	Risk (SW)	HI (SW)
	(mg/L)	Subchronic	(mg/kg-day)	(mg/kg-day)						(cm/hr)	Subchronic	(mg/kg-day)		(cancer)	(mg/kg-day)			
Acenaphthene	1.1E-02	1	2.20E-07	6.00E-02	4E-06	1	NA	NA	NA	4.00E-02	1.00E+00	9.95E-06	2E-04	1	NA	NA	NA	2E-04
Acenaphthylene	8.2E-03	1	1.60E-07	2.00E-02	8E-06	1	NA	NA	NA	4.00E-02	1.00E+00	7.23E-06	4E-04	1	NA	NA	NA	4E-04
Anthracene	6.8E-03	1	1.34E-07	3.00E-01	4E-07	1	NA	NA	NA	4.00E-02	1.00E+00	6.06E-06	2E-05	1	NA	NA	NA	2E-05
Benzo(a)anthracene	9.5E-04	1	1.86E-08	2.00E-02	9E-07	1	NA	NA	NA	2.00E-02	1.00E+00	4.20E-07	2E-05	1	NA	NA	NA	2E-05
Benzo(a)pyrene	3.9E-04	1	7.64E-09	2.00E-02	4E-07	1	7.64E-10	7.30E+00	6E-09	2.00E-02	1.00E+00	1.73E-07	9E-06	1	1.73E-08	1E-07	1E-07	9E-06
Benzo(b)fluoranthene	5.7E-04	1	1.11E-08	2.00E-02	6E-07	1	NA	NA	NA	2.00E-02	1.00E+00	2.51E-07	1E-05	1	NA	NA	NA	1E-05
Benzo(g,h,i)perylene	3.7E-04	1	7.25E-09	2.00E-02	4E-07	1	NA	NA	NA	4.00E-02	1.00E+00	3.28E-07	2E-05	1	NA	NA	NA	2E-05
Benzo(k)fluoranthene	2.2E-04	1	4.34E-09	2.00E-02	2E-07	1	NA	NA	NA	2.00E-02	1.00E+00	9.82E-08	5E-06	1	NA	NA	NA	5E-06
Chrysene	1.8E-03	1	3.48E-08	2.00E-02	2E-06	1	NA	NA	NA	2.00E-02	1.00E+00	7.87E-07	4E-05	1	NA	NA	NA	4E-05
Dibenz(a,h)anthracene	1.9E-04	1	3.71E-09	2.00E-02	2E-07	1	NA	NA	NA	2.00E-02	1.00E+00	8.39E-08	4E-06	1	NA	NA	NA	4E-06
Fluoranthene	9.5E-03	1	1.87E-07	4.00E-02	5E-06	1	NA	NA	NA	4.00E-02	1.00E+00	8.44E-06	2E-04	1	NA	NA	NA	2E-04
Fluorene	3.2E-03	1	6.18E-08	4.00E-02	2E-06	1	NA	NA	NA	4.00E-02	1.00E+00	2.79E-06	7E-05	1	NA	NA	NA	7E-05
Indeno(1,2,3-cd)pyrene	1.8E-04	1	3.52E-09	2.00E-02	2E-07	1	NA	NA	NA	2.00E-02	1.00E+00	7.97E-08	4E-06	1	NA	NA	NA	4E-06
1-Methylnaphthalene	3.2E-02	1	6.34E-07	2.00E-02	3E-05	1	NA	NA	NA	9.08E-02	1.00E+00	6.50E-05	3E-03	1	NA	NA	NA	3E-03
2-Methylnaphthalene	2.5E-02	1	4.94E-07	2.00E-02	2E-05	1	NA	NA	NA	4.00E-02	1.00E+00	2.23E-05	1E-03	1	NA	NA	NA	1E-03
Naphthalene	1.3E-02	1	2.46E-07	2.00E-02	1E-05	1	NA	NA	NA	4.00E-02	1.00E+00	1.11E-05	6E-04	1	NA	NA	NA	6E-04
Pentachlorophenol	2.4E-02	1	4.61E-07	3.00E-02	2E-05	1	4.61E-08	1.20E-01	6E-09	6.50E-01	1.00E+00	3.39E-04	1E-02	1	3.39E-05	4E-06	4E-06	1E-02
Phenanthrene	6.1E-03	1	1.19E-07	2.00E-02	6E-06	1	NA	NA	NA	4.00E-02	1.00E+00	5.38E-06	3E-04	1	NA	NA	NA	3E-04
Pyrene	6.5E-03	1	1.28E-07	3.00E-02	4E-06	1	NA	NA	NA	4.00E-02	1.00E+00	5.79E-06	2E-04	1	NA	NA	NA	2E-04
TCDD-TEQ	1.3E-08	1	NA	NA	NA	1	2.45E-14	1.50E+05	4E-09	4.00E-04	1.00E+00	NA	NA	1	1.11E-14	2E-09	5E-09	NA
																Total:	4E-06	0.02

Appendix A

Absorption Adjustment Factors (AAFs) For Dermal Absorption of Polynuclear Aromatic Hydrocarbons In Soil And Sediment

ABSORPTION ADJUSTMENT FACTORS (AAFS) FOR DERMAL AND ORAL ABSORPTION OF POLYNUCLEAR AROMATIC HYDROCARBONS IN SOIL AND SEDIMENT

To estimate the potential risk to human health that may be posed by the presence of compounds in various environmental media (such as soil, sediment, water or air), it is first necessary to estimate the human exposure dose of each compound. The exposure dose is similar to the administered dose or applied dose of a laboratory experiment. The exposure dose is then combined with an estimate of the toxicity of the compound to produce an estimate of risk posed to human health.

The estimate of toxicity of a compound, termed the dose-response value, can be derived from human epidemiological data, but it is most often derived from experiments with laboratory animals. The dose-response value can be calculated based on the administered dose of the compound (similar to the human potential dose) or, when data are available, based on the absorbed dose, or internal dose, of the compound.

In animals, as in humans, the administered dose of a compound is not necessarily completely absorbed. Moreover, differences in absorption exist between laboratory animals and humans, as well as between different media and routes of exposure. Therefore, it is not always appropriate to directly apply a dose-response value to the human potential dose. In many cases, a correction factor in the calculation of risk is needed to account for differences between absorption in the dose-response study and absorption likely to occur upon human exposure to a compound. Without such a correction, the estimate of human health risk could be over- or under-estimated.

This correction factor is termed the absorption adjustment factor, or AAF. The AAF is used to adjust the human potential dose so that it is expressed in the same terms as the doses used to generate the dose-response curve in the dose-response study. The AAF is the ratio between the estimated human absorption factor for the specific medium and route of exposure, and the known or estimated absorption factor for the laboratory study from which the dose-response value was derived.

AAF = (fraction absorbed in humans for the environmental exposure)/
(fraction absorbed in the dose-response study).

The use of an AAF allows the risk assessor to make appropriate adjustments if the efficiency of absorption between environmental exposure and experimental exposure is known or expected to differ because of physiological effects and/or matrix or vehicle effects. Absorption adjustment factors can be less than one or greater than one, depending on the particular circumstances at hand. If it is thought that absorption from the site-specific exposure is the same as absorption in the laboratory study, then the AAF is 1.0.

AMEC has summarized the route of exposure and the experimental matrix (diet, drinking water, corn oil gavage, etc.) used in the experimental study from which the relevant dose-response value was derived for each PAH compound. In addition, AMEC has reviewed scientific literature on the absorption and bioavailability of PAHs for the relevant routes of exposure and matrices. Based on these data, AMEC has derived a scientifically defensible AAF for each relevant chemical/route/medium situation.

Absorption of PAHs From the Dose-Response Studies

Absorption was not measured in the laboratory studies used to develop toxicity factors. Therefore, it was necessary to identify the dosing methods used in the toxicity reference studies and then to look to other studies of the absorption of PAHs for those particular methods.

Potentially carcinogenic PAHs are routinely evaluated using the comparative potency approach described in U.S. U.S. EPA (1993). With this approach, all potentially carcinogenic PAHs are assessed in terms of their benzo(a)pyrene toxic equivalent concentrations, and U.S. U.S. EPA's cancer slope factor for benzo(a)pyrene is used.

The risk assessment of potentially carcinogenic PAHs is performed using the oral cancer slope factor (CSF) for benzo(a)pyrene (B(a)P). The oral CSF for B(a)P (7.3 $(mg/kg\text{-}day)^{-1}$) is the geometric mean of four slope factors derived from two rodent feeding studies: Neal and Rigdon (1967) and Brune *et al*. (1981). In the first study, CFW mice were dosed with B(a)P in their laboratory chow (diet). The diet was prepared by dissolving benzo(a)pyrene in benzene, mixing with wheat flour, evaporating the benzene and mixing the flour-benzo(a)pyrene mixture with laboratory chow pellets. In the second, Sprague Dawley rats were also dosed with B(a)P in their laboratory chow (diet).

The oral RfD for anthracene was derived from a 90 day corn oil gavage study in male and female CD-1 (ICR) BR mice. The mice were given 250 to 1000 mg/kg-day for at least 90 days. The RfD is reported as 0.3 mg/kg-day (U.S. U.S. EPA 1999).

The oral RfD for fluoranthene was derived from a 13 week corn oil gavage study in male and female CD-1 mice. The mice were given 125 to 500 mg/kg-day. The RfD is reported as 0.04 mg/kg-day (U.S. EPA 1999).

The oral RfD for fluorene was derived from a 13 week corn oil gavage study in mice. The mice were given 125 to 250 mg/kg-day. The RfD is reported as 0.04 mg/kg-day (U.S. EPA 1999).

The oral RfD for pyrene was derived from a 13 week corn oil gavage study in male and female CD-1 mice. The mice were given 75 to 250 mg/kg-day. The RfD is reported as 0.03 mg/kg-day (U.S. EPA 1999).

The oral RfD for naphthalene was derived from a 13 week corn oil gavage study in rats (NTP, 1980). The rats were given 25 to 400 mg/kg-day. The RfD is reported as 0.02 mg/kg-day (U.S. EPA 1999).

Thus, studies of dosing by diet and gavage are of interest in determining the absorption relevant to PAH toxicity factors.

Absorption of B(a)P and other PAHs from food has been shown to be high in both humans and rodents by several researchers. Many articles on absorption were reviewed. However, studies that used inappropriate scientific methods were rejected for AAF derivation. For instance, studies that measured total radiolabel in the feces do not yield useful absorption information, because B(a)P metabolites are known to be excreted into bile (see, for instance, Chipman *et al*., 1981a, 1981b; Bowes and Renwick, 1986) and therefore absorbed material would also appear in the feces.

As an example, data are presented in a paper by Chang (1943) on fecal excretion of benzo(a)pyrene and other PAHs. This paper cannot be used to estimate gastrointestinal absorption of PAH, because the gravimetric analytical method used is nonspecific and does not distinguish between unchanged PAHs and PAH metabolites. A paper by Flesher and Syndor (1960) is also deficient for AAF derivation, because total tritium is measured in feces after oral dosing of rats with ^{3}H-3-methylcholanthrene. This method does not distinguish between unabsorbed PAHs and absorbed and metabolized PAHs excreted into the bile and feces.

Other studies are not useful because they only define a small fraction of a PAHs total disposition. For instance, in a study by Rees *et al.* (1971), benzo(a)pyrene was given to rats by stomach tube and the PAH was measured in the lymphatic duct. While the presence of B(a)P in the lymph indicates that absorption occurred, the experiment is not quantitative. Similarly, Foth *et al.* (1988) measured benzo(a)pyrene absorption in the rat after a continuous infusion into the duodenum by measuring B(a)P in the atrial blood and bile. In this case, the conditions of the experiment are unnatural, and the experiment does not account for a total mass balance of B(a)P. Other studies were rejected for similar reasons. The following principal studies are those in which useful absorption quantitative information can be determined.

Hecht et al. (1979)

Hecht and coworkers (Hecht *et al.,* 1979) fed B(a)P to both humans and F-344 rats and measured the unchanged B(a)P in the feces to obtain an estimate of the amount of the compound absorbed. Because unchanged B(a)P in the feces can be due to absorbed material that is excreted unchanged in the bile, these studies reveal the minimum amount of B(a)P that was absorbed. It is known, however, that B(a)P is extensively metabolized, so that the potential underestimate of absorption caused by biliary excretion of B(a)P is minor. Thus, these estimates of absorption are valid for AAF derivation.

For rats, at least 87% of B(a)P was absorbed from a low single dose in peanut oil (0.037 mg/kg). Minimum absorption from medium and high doses (0.37 mg/kg and 3.7 mg/kg) were 92.2% and 94.4%. The mean absorption of B(a)P in peanut oil in rats was 91.2% (n=30). This value was used in AAF derivation.

When rats were fed a single dose of charcoal-broiled hamburger containing B(a)P (0.002 mg/kg body weight), at least 89% was absorbed (n=10). In humans, a high percentage of B(a)P present in charcoal-broiled meat was also absorbed (0.0001 mg/kg body weight, assuming 70 kg), because no unchanged B(a)P was detected in the feces. Assuming that B(a)P was present in feces at 1/2 the detection limit, the minimal absorption is 98.8% (n=8). This study indicates that there is no significant difference in absorption between two dietary vehicles in rats. That is, absorption of B(a)P from peanut oil and meat was essentially the same. The results with rats and humans also indicate that there is no major difference in the gastrointestinal absorption of B(a)P between rats and humans when administered in food items. Both of the above values were used in AAF derivation.

Mirvish et al. (1981)

Mirvish and co-workers (Mirvish e*t al*., 1981) fed B(a)P to Syrian golden hamsters in their diets and measured the amount of unmetabolized B(a)P in their feces to determine the efficiency of absorption from the gastrointestinal tract. In method I, a B(a)P solution in 150 ml acetone was

pipetted onto 1 kg pelleted diet contained in a glass bottle, with occasional gentle shaking. The pellets were dried overnight on trays. This method of preparing a B[a]P-containing diet is the same as the method used in the Neal and Rigdon (1967) study from which the cancer slope factor was derived. In Method II, B(a)P was dissolved in corn oil, and the corn oil was added to a commercial rodent chow. Animals were treated with B(a)P in the diet for 7 to 10 days before samples were collected to give adequate time to reach steady-state PAH concentrations in the feces and gastrointestinal tract contents.

The percentage of fecal excretion of unchanged B(a)P remained relatively constant (94.3% to 98.0%) as its concentration in commercial diet was varied over a wide range (0.16 mg/kg to 5.5 mg/kg). Absorption efficiency was not dose-dependent. The minimal gastrointestinal absorption of B(a)P was found to be 96.7% for the commercial chow using preparation method I (average of results from seven experiments at different dose levels; eleven animal groups, each containing 3-5 hamsters) or 98% for the commercial chow using preparation method II (one experiment; four animal groups, each containing 3-5 hamsters, 1.6 mg/kg). These two values (96.7% and 98%) were used in AAF derivation.

3-methyl cholanthrene (3-MC) absorption was also studied in hamsters. 3-MC (1.7 mg/kg) was dissolved in corn oil and added to a semisynthetic diet consisting of corn oil, corn starch, vitamin-free casein, and alphacel. Minimum gastrointestinal absorption was found to be 93.8% in four animal groups containing 3-5 hamsters each. This value is also used in AAF derivation.

Other experiments demonstrated that B(a)P was absorbed slightly more efficiently from semisynthetic diets than from commercial rodent diets. Addition of corn oil to the hamsters' semisynthetic diets had little effect on the fecal excretion of unchanged B(a)P, and thus its gastrointestinal absorption. Addition of bran to the semisynthetic diets caused a slight lowering of gastrointestinal absorption.

Rabache et al. (1985)

Rabache and co-workers (Rabache *et al*., 1985) fed B(a)P to male Wistar rats in their diets for 22 days and measured the amount of unmetabolized B(a)P in their feces to determine the efficiency of absorption from the gastrointestinal tract. B(a)P was dissolved in soy oil and mixed with the synthetic ration, which was comprised of 10% soy oil. Young rats were given 1 g B(a)P/kg body weight, and adult rats were given 5 g/kg. The minimal gastrointestinal absorption of B(a)P was found to be 88.7% for young rats (n=8) and 99.6% for adult rats (n=12). Both of these values are used in AAF derivation.

Withey et al. (1991)

Withey and co-workers (Withey *et al*., 1991) administered pyrene by stomach tube to male Wistar rats in an aqueous emulsion and measured the amount of C-14 radiolabel in the blood over time to make an estimate of the traditional pharmacokinetic parameter "bioavailability". A single dose of pyrene was given to 4 groups of six animals at a concentration ranging from 4-15 mg/kg as a solution in 20% Emulphor/80% physiological saline. Radiolabeled pyrene was also given intravenously for comparison. "Bioavailability" was defined as the area of the blood level-time curve of radiolabel over a specified time period after oral dosing (0-8 hours) divided by the corresponding area of the curve for intravenous dosing.

"Bioavailability" was found to vary from 65% to 84% depending on dose level. This pharmacokinetic parameter has its basis in classical drug studies where the circulating blood level of the parent (unmetabolized) drug is of primary interest. However, this parameter does not provide an optimal estimate of a chemical's gastrointestinal absorption, because the fraction of the chemical or its metabolites that leaves the blood and distributes to tissues is not properly counted.

For this reason, the urinary excretion data over 6 days were also used to derive an estimate of absorption for each group. Absorption was estimated as the fraction of total radiolabel excreted in the urine after oral dosing divided by the fraction excreted after intravenous dosing. Because the fraction excreted in the urine at day 6 post-dosing was slightly higher at every dose level for oral dosing compared to intravenous dosing, the estimates of gastrointestinal absorption are 100% for all four dose groups.

For each dose group, the blood level estimate of "bioavailability" was averaged with the urinary estimate of gastrointestinal absorption to derive an estimate of gastrointestinal absorption. These estimates are: 92%, 82.5%, 86.5%, and 87% for doses ranging from 4-15 mg/kg. The average of these four estimates (87%) is used in AAF derivation.

Grimmer et al. (1988)

Grimmer and co-workers (Grimmer *et al*., 1988) administered chrysene by stomach tube to unfasted male Wistar rats in a solution of 33% dimethylsulfoxide and 66% corn oil. Eight rats weighing 200-250 grams received a single dose of 50 ug chrysene. Assuming an average weight of 225 g, the dose was 0.22 mg/kg. Feces and urine were collected for four days. Unchanged chrysene and specific metabolites were analyzed. The fraction of the unchanged chrysene in the feces was determined. This serves as an estimate of minimal gastrointestinal absorption. Average absorption for the eight rats was 86.9%. This value was used in AAF derivation.

Bartosek et al. (1984)

Bartosek and co-workers (Bartosek *et al*., 1984) administered benz(a)anthracene, chrysene, or triphenylene to female CD-COBS rats by stomach tube in an aqueous emulsion of 10% Pluronic F68 emulsifier and 90% olive oil. Animals were fasted for 24 hours prior to being given a single oral dose of the PAHs. Each group consisted of 3-5 rats weighing 150-170 g. PAHs were given at single doses of 11.4 and 22.8 mg/ animal, which corresponds to 71.3 mg/kg and 142.5 mg/kg, assuming an average weight of 160 g. Rats were allowed access for food 3 hours after dosing. The fraction of administered dose of the unchanged PAHs recovered in the feces after 72 hours was taken as an estimate of the minimal absorption. Results were 94% for benz(a)anthracene, 75% for chrysene, and 97% for triphenylene. These three values were used in AAF derivation.

Summary of Absorption Data for Exposure Methods used in the Dose-Response Studies

The data presented above and summarized in Table 1, indicate that, although there is some variability in the absorption of various PAHs, no consistent trend is apparent that would lead one to conclude that absorption of one PAH differs significantly from another when administered in the ways used to derive dose-response data. In addition, the data show that gastrointestinal absorption of PAHs is relatively high, whether given in oil vehicles or in the diet. Accordingly, all

of the data from the dose-response studies from which the cancer slope factor for B(a)P and the RfDs for various noncarcinogenic PAHs were derived, were merged to derive an absorption estimate for all PAHs of interest. The resulting estimate of gastrointestinal absorption of PAHs is 92%.

However, each data point in a study was not given equal weight in deriving the final estimate of oral absorption in the dose-response studies. For instance, in the Mirvish *et al.* study the 96.7% value represents the average of results from seven experiments at different dose levels. There were eleven animal groups, each containing 3-5 hamsters. Thus, this value represents experiments with 33-55 animals. The 98% value represents one experiment at one dose group. There were four animal groups, each containing 3-5 hamsters. Thus, this data point represents 12-20 animals. There are many ways to summarize such a large and diverse set of experimental results. Table 2, however, demonstrates that the resulting estimate of absorption in the PAH dose-response studies is not particularly sensitive to the manner of summarizing the available data.

TABLE 1
SUMMARY OF ABSORPTION DATA FOR PAH DOSE-RESPONSE STUDIES

Value	Citation	Animal	PAH	Vehicle
91.2%	Hecht	male F344 rats	B(a)P	Peanut oil (single dose)
89%	Hecht	male F344 rats	B(a)P	Char-broiled hamburger (single dose)
98.8%	Hecht	Humans	B(a)P	Char-broiled hamburger (single dose)
88.7%	Rabache	young male Wistar rats	B(a)P	Synthetic diet + soy oil (22 days)
99.6%	Rabache	adult male Wistar rats	B(a)P	Synthetic diet + soy oil (22 days)
96.7%	Mirvish	male Syrian golden hamsters	B(a)P	Commercial Diet Method I (7-10 days)
98.0%	Mirvish	male Syrian golden hamsters	B(a)P	Corn oil + commercial diet Method II (7-10 days)
87%	Withey	male Wistar rats	pyrene	20% Emulphor/ 80% saline (single dose)
86.9%	Grimmer	male Wistar rats	chrysene	33% DMSO/ 66% corn oil (single dose)
94%	Bartosek	female CD-COBS rats	B(a)A	10% emulsifier/ 90% olive oil (single dose)
75%	Bartosek	female CD-COBS rats	chrysene	10% emulsifier/ 90% olive oil (single dose)
97%	Bartosek	female CD-COBS rats	triphenylene	10% emulsifier/ 90% olive oil (single dose)
93.8%	Mirvish	male Syrian golden hamsters	3-methyl cholanthrene	Corn oil + semisynthetic diet (7-10 days)

Table 2
METHODS OF SUMMARIZING PAH GASTROINTESTINAL ABSORPTION DATA

Method Used	# Data Points	Average Absorption
Each experiment within a study used as a single data point*	13	92.0%
Each result presented in each study used as a single data point	24	92.1%
Each result presented in each B(a)P study used as a single data point	15	95.0%
Each study represented as a single data point	7	90.9%
Each B(a)P study represented as a single data point	3	94.4%

* Method used in this AAF derivation.

Derivation of Oral-Soil AAF for PAHs

Four studies were identified in which the gastrointestinal absorption of PAHs was measured from a soil matrix. These include Goon *et al.* (1991), Weyand *et al.* (1996), Magee, et al. (1999) and Koganti, et al (1998). Each of these studies is discussed below. Each of these studies used exposure methods similar to those employed in the dose-response investigations (feeding or gavage) and, additionally, had their own internal controls. Therefore, AAFs may be calculated directly from the work, without use of fractional absorption observations noted in the studies described previously.

Weyand et al. (1996)

Weyand *et al.* (1996) studied the bioavailability of pyrene from manufactured gas plant (MGP) residue (coal tar) by comparing the urinary pyrene metabolite levels in animals receiving pyrene as methylene chloride extracts of MGP contaminated soil in their diet to animals receiving pyrene as MGP contaminated soil in their diet. The two contaminated soil samples were aged soils from MGP sites. They were sieved to a particle size range of less than or equal to 0.150 mm. Soil was added to powder diets from PMI Feeds, Inc. (rodent laboratory diet #5001) (20% soil / 80% powder diet). MGP contaminated soil extracts were added to gel diets from Bio-Serv (rodent basal gel diet) so that the same amount of pyrene was present as in the soil/diet groups. Groups of female $B_6C_3F_1$ mice were fed soil or organic extract for 14 days. Urine was collected on day 14. The level of pyrene metabolites (1-hydroxypyrene, 1-hydroxypyrene glucuronide

conjugates, and 1-hydroxypyrene sulfate conjugates) were determined by HPLC using fluorescence detection (Singh *et al*., 1995).

“Fractional urinary excretion" is defined as the amount of pyrene excreted in the urine over 24 hours on day 15 divided by the amount of pyrene ingested on day 15 x 100. The amount of pyrene excreted into the urine is not, itself, a direct measure of total absorption of pyrene from the diet, because PAHs are efficiently excreted into the feces via the biliary system. However, the level of pyrene and its metabolites in urine on day 15 gives a measure of the steady state level of pyrene excretion.

As shown in Table 3, the "fractional urinary excretion" of pyrene from soil #1 was 6.2% and from soil #2 was 1.7%. The "fractional urinary excretion" of pyrene from the organic extract of soil #1 was 17.2% and from soil #2 was 16.1%.

The ratio of "fractional urinary excretion" from MGP contaminated soil to "fractional urinary excretion" from an extract of MGP contaminated soil added to diet is a direct estimate of the oral-soil AAF. It is a measure of the degree to which the presence of soil increases or decreases the absorption of pyrene from the diet. The AAF from soil #1 was 36% (6.2%/17.2% x 100).

Table 3
PYRENE URINARY METABOLITES
SOIL VS ORGANIC EXTRACT OF SOIL
(WEYAND *ET AL*., 1996)

Diet	[a]Pyrene Ingested (µg/mouse)	[b]Pyrene Excreted (µg/mouse)	[c]Fractional Urinary Excretion
Extracted Soil #1	0	0	ND
Extracted Soil #2	0	0	ND
Soil #1	0.60	0.039	6.2
Soil #2	30.42	0.527	1.7
Organic Extract #1	0.56	0.097	17.2
Organic Extract #2	25.91	4.16	16.1

[a]The sum of 1-OH P-GlcUA, 1-OH P-Sul, and 1-OH P levels is expressed in terms of equivalents of pyrene.
[b]The amount of soil and pyrene consumed in metabolism cages on day 15 over a period of 24 hr.
[c]Fractional Urinary Excretion = (amount of pyrene excreted / amount of pyrene consumed on day 15) x 100. (The authors termed this "bioavailability." Because this is a nonstandard use of the term, it is renamed here.)

Note: Soil #1: 1 ppm pyrene; 9 ppm total PAHs; Soil #2: 35 ppm pyrene; 377 ppm total PAHs.

The AAF from soil #2 was 11% (1.7%/16.1% x 100). This study clearly shows that pyrene in aged soil is absorbed in the gastrointestinal tract to a lesser degree than is pyrene added to rodent food as an organic extract.

DNA adducts in lung tissue were also measured for soil #2 (246 cPAH) and its organic extract, and the resulting AAF, which is relevant to potentially carcinogenic PAHs, is 0.17.

Koganti, et al. (1998)

Koganti, et al (1998), is another study by workers in Weyand's laboratory and the methods described above were also used here. In this case, soils and soil extracts from three MGP sites were fed to female mice. However, in contrast to earlier work from this laboratory, two measurements of systemic absorption of PAHs were used. The first method was equivalent to that described for earlier studies: measurement of urinary metabolites of pyrene. The second method was the quantitative measurement of covalent binding of PAH metabolites to DNA of lung tissue (DNA adducts). This is of interest because the measurements may address the absorption of two different groups of PAHs. Pyrene is a low molecular weight PAH with less affinity for soil sorption than higher molecular weight PAHs, such as B(a)P. Thus, the pyrene metabolite measurements may relate specifically to low molecular weight PAHs and might be hypothesized to be more available for absorption from a soil matrix than higher molecular weight compounds. DNA adduct measurement may be indicative of the absorption of high molecular weight PAHs and may be used to evaluate comparative absorption of high molecular weight PAHs, if combined with the appropriate measure of PAH dosing.

Koganti, et al (1998) fed mice (four in each dosing group) with a mixture of soil and feed or organic extract or soil plus feed at three to four different nominal concentrations. AAFs were calculated based on the ratio of fractional urinary excretion (described in the discussion of the Weyand, 1996 report) observed between animals fed soils and those fed organic extract of the soil. The results of this evaluation are shown in Table 4 of Koganti, et al (1998). Although Koganti, et al (1996) used a soil or extract addition to make up several different final concentrations of PAHs in the feed, no trend in fractional absorption with concentration was observed. Therefore, all AAFs calculated in this report were used separately and are included in the AAF summary table for pyrene metabolites of this report (Table 7).

In addition to measurement of pyrene metabolites in urine, Koganti, et al (1998) quantified DNA adducts. Adducts were measured in only one large organ (lung) and do not fully capture total adduct mass in the animal. However, Koganti, et al (1998) used a ratio approach to calculate the "fractional lung adduct" as a proportion of the total exposure to PAH (mg PAH per mouse). The ratio of fractional lung adduct in mice fed to that observed in mice fed organic extract is a means of calculating AAFs that is identical to the fractional urinary excretion method described above. Koganti, et al (1998) expressed the opinion that only higher molecular weight PAH generally believed to be rodent or human carcinogens were responsible for DNA adduct formation. Therefore, they normalized fractional lung adducts based on the total exposure of each mouse to "carcinogenic PAH" (cPAH). As such, the AAFs calculated from DNA adduct quantification (these appear in Table 5 of Koganti, et al (1998)) may be specifically relevant to high molecular weight, potentially carcinogenic PAH. These AAFs are summarized in a separate table in this report, along with other AAFs that may also be specifically relevant to cPAH (Table 8). As with previously-described observations using pyrene metabolites, Koganti, et al (1998) discern no association of AAF with the concentration of cPAH administered, so Table 8 contains all AAF calculations.

Goon et al. (1991)

Goon, *et al.* (1991) studied the bioavailability of a specific PAH, benzo(a)pyrene, administered orally as the pure chemical or as B(a)P adsorbed onto soil particles. Additional information about the study was obtained directly from the authors (Goon et al., 1996) and an analysis of the work of Goon and co-workers has been published (Magee, et al, 1996)Male Sprague-Dawley rats were gavaged with B(a)P mixed with ^{14}C-B(a)P in solution [0.5% Tween 80 (v/v in saline)] (1.0 µmol B(a)P/kg, 25 µCi/kg) or the equivalent dose adsorbed onto a clay-based soil or a sand-based soil. The soils consisted of 2.5 g solid/kg containing 100 mg/kg B(a)P. All animals received 7.5 mL of 0.5% Tween 80 (v/v in saline).

Venous blood samples were collected from the retro-orbital plexus at predetermined times (0.5, 1, 2, 4, 8, 12, 24, 48, 72, 96, 120, 144, and 168 hours), and excreta were collected continuously over 24-hour intervals. After 168 hours, animals were euthanized and tissues collected for analysis. Total radioactivity was measured by liquid scintillation in blood, urine, feces, and tissues.

The sandy soil was classified as a loam which was very low in organic content, 0.04%. It contained 47% sand, 41% silt, and 12% clay. The pH was 6.5, and the cation exchange content was 0.6 meq/100 g. The clay-based soil was classified as a clay with low organic content, 1.35%. It contained 6% sand, 18% silt, and 76% clay. The pH was 7.0 and the cation exchange content was 45.65 meq/100 g. The sandy soil was ground and sonic sifted. The clay-based soil was dried and passed through a Brickman ultra-centrifugal mill. In both cases, the particles size was small, <100 um. Both soils were washed twice with methylene chloride and dried before use. This destroyed any microbial activity that may have existed in the soils.

B(a)P and ^{14}C-B(a)P were added in acetone to soils. The acetone was evaporated, leaving soils that were 100 ppm in B(a)P and 10 uCi/g in radiolabel. Animals were administered the soil-adsorbed B(a)P at various time intervals after the soil and the B(a)P were mixed: 1 day, 7 days, 30 days, 6 months and one year. Animals were fasted for 12 hours prior to dosing. Two hours after dosing, Purina Rodent Chow 5001 and water were available *ad libitum*.

In this experiment, three dosing vehicles were prepared that contained radiolabeled B[a]P: emulsified aqueous solution, sandy soil, and clayey soil. Male Sprague Dawley rats were gavaged with the three vehicles and followed for seven days. Blood, urine, and feces were measured at numerous time points for seven days. After seven days, the animals were sacrificed, and more than ten tissues were analyzed for radiolabel. Animals received equal doses of B[a]P regardless of dosing group. After the initial experiment, the same vehicles were administered to different animals after seven days, one month, six months, and one year. Recoveries for these experiments were reasonable:

Solution: 76%
Sandy Soil: 102%
Clayey Soil: 105%

After normalizing to each animal's individual total recovery, the data were summarized and AAFs were derived by comparing the fractional seven-day urinary excretion to that in the solution group and by comparing the seven day blood area-under-the-curve to that in the solution group (see Table 4). Because the reanalysis of the 1990 experiment showed that there

was no difference between the solution and diet groups, no normalization of the results of the solution groups was deemed necessary to create AAFs that are directly relevant to use with the cancer slope factor, which was derived from dietary studies.

TABLE 4
SUMMARY OF AAFS FROM GOON et al. (1991) REANALYSIS

	Urinary AAF	Urinary AAF	Blood AUC AAF	Blood AUC AAF
Ageing Period	**Sandy Soil**	**Clayey Soil**	**Sandy Soil**	**Clayey Soil**
One Day	0.47	0.40	0.43	0.35
Seven Days	0.46	0.52	0.49	0.38
One Month	0.56	0.40	0.45	0.36
Six Months	0.48	0.33	0.37	0.22
One Year	0.50	0.26	0.40	0.24

For site aged sandy soil the AAF based on the blood AUC data is 0.39. The AAF based on urinary data is 0.49. These values are the averages of the six month and one year experiments.

For site aged clayey soil the AAF based on the blood AUC data is 0.23. The AAF based on urinary data is 0.30. These values are the averages of the six month and one year experiments.

One way to measure relative bioavailability is to compare the area under the blood curve (AUC) for total radiolabel over the entire 168 hour experimental period during which blood B(a)P levels were measured. Radiolabel in the blood represents a fraction the B(a)P that was absorbed in the gastrointestinal tract, including parent B(a)P and metabolites.

The use of AUC measurements is a classic approach in drug pharmacology where systemic bioavailability is defined as the blood AUC after an intravenous dose divided by the AUC after an oral dose. In the case of drugs, the amount of parent drug circulating in the blood over a long period of time is of primary interest, because, in most cases, first pass metabolism of the drug in the liver reduces the drug efficacy. Metabolites are inactive and are excreted. Thus, total blood levels of parent drug is of greater interest than is drug plus metabolites.

This same concern is not relevant for the risk assessment of PAHs, such as B(a)P, because B(a)P is not direct acting. No toxic effects are manifested by the parent, unmetabolized B(a)P. Instead, metabolism is required for toxicity. It is the metabolites of B(a)P and other PAH that bind to cellular macromolecules, such as DNA, and cause adverse effects in various tissues. Metabolism of PAHs occurs in all tissues, and orally administered B(a)P has caused tumors in

laboratory animals in various tissues, including stomach, lung, esophagus, larynx, and others. B(a)P metabolism is also multistepped. In order for the B(a)P diol epoxide, the putative mutagenic metabolite, to be formed, several metabolic conversions involving several enzymes must occur.

Thus, in some cases the toxic metabolite in a distant tissue, such as the lung, is caused by a B(a)P molecule that was absorbed through the gastrointestinal tract, was *not* metabolized in the liver, circulated through the blood, and was metabolized in several steps in the lung. In other cases, the toxic lung metabolite was formed by a molecule that was absorbed though the gastrointestinal tract, was metabolized to an intermediate metabolite in the liver, and circulated through the blood as a B(a)P metabolite, and was metabolized several more times in the lung to a toxic metabolite.

In addition, B(a)P and B(a)P metabolites excreted in the bile are known to be reabsorbed in the gastrointestinal tract by a process known as enterohepatic recirculation (Chipman et al., 1981). Thus, some B(a)P metabolites are known to be excreted into the bile and the gastrointestinal tract. When present in the gastrointestinal tract parent B(a)P can be reabsorbed. In addition, conjugated metabolites, such as glucuronide, sulfate, and glutathione metabolites can be de-conjugated by enzymes residing in bacteria present naturally in the gastrointestinal tract. After de-conjugation, the primary metabolite can and is reabsorbed. After reabsorption, it can travel to a distant tissue via the systemic circulation and cause damage.

Thus, for B(a)P and other PAHs, the circulating blood level of just the parent compound is not a relevant dose metric. Instead, the total B(a)P dose including parent B(a)P and metabolites is the critical parameter to measure. This is because some metabolites are directly toxic to distant tissues, some metabolites are metabolic precursors of secondary metabolites that are toxic to distant tissues and can be formed therein, and some metabolites can be excreted and reabsorbed and can later cause damage in distant tissues, including the gastrointestinal tract itself.

While the total blood radiolabel AUC from 0-168 hours does not define the fraction of the administered B(a)P that was absorbed in an animal or a treatment group, the ratio of AUC measurements for two treatment groups administered the B(a)P by the same route of exposure in an excellent measure of *relative* bioavailability between the two treatment groups.

AMEC notes that the two soils studied were very low in organic content (0.04% and 1.35%). Certainly, the value for sandy soil is much lower than a typical soil. For instance, in its Risk Based Corrective Action guidance, the ATSM assumes 1% as a default value for typical soils. Accordingly, the AAF for clay-based soil is probably more typical of average soils than the AAF for sandy soil.

Goon et al. (1990)

In an earlier experiment, Goon et al. (1990) studied the bioavailability of B(a)P in aqueous solution, in laboratory chow, in unaged sandy soil and in unaged clay-based soil. Additional information was obtained directly from the authors (Goon et al., 1996). The study was performed in the same manner as the one described above with the exception that 4 male rats and 4 female rats were placed in each of four study groups, including rodent chow.

AMEC rejected the data from the Goon et al. (1990) study for AAF derivation and relied solely on the 1991 experiment because of low recovery and high variability.

After dosing, urine, feces, and blood were analyzed for seven days. Then, at the end of seven days, the animals were sacrificed, and all tissues were analyzed. Total recovery of B[a]P was calculated by comparing the amount recovered to the amount administered. Recoveries of total B[a]P were generally poor in all treatment groups in the 1990 study:

Solution	75%
Diet	62%
Sand	65%
Clay	48%

It is not known what the cause of the poor recoveries was, but such poor recovery of administered dose is reason enough to reject this study from AAF derivation.

However, for the sake of completeness AMEC summarized the tissue, urine, and fecal B[a]P for each animal. In view of the high variability among animals within treatment groups, each animal was analyzed separately, and statistical tests were performed to determine if the groups were statistically significantly different from each other. Because only total radiolabel was measured, one cannot distinguish between unmetabolized B[a]P and B[a]P metabolites in the feces. Tissue radioactivity was found to be insignificant compared to the amount excreted in the urine. Thus, it is not possible to make estimates of total absorption from this experiment. Accordingly, relative bioavailability is determined by comparing the amount of the administered dose cumulatively found in the urine over the seven day period after dosing.

TABLE 5
SUMMARY OF URINARY EXCRETION RESULTS
Goon et al. (1990)

TREATMENT GROUP	MEAN FRACTIONAL 7-DAY URINARY EXCRETION (%)*	STANDARD DEVIATION (%)	SAMPLE SIZE
Solution	4.9 % (1)	1.9 %	8
Diet (unaged)	4.4 % (2)	1.8 %	10
Solution + Diet (unaged)	4.6 % (3)	1.8 %	18
Sand (unaged)	3.7 % (4)	2.2 %	10
Clay (unaged)	1.9 % (5)	0.8 %	8

* Total amount detected in urine over seven days (nmol) / administered dose (nmol) x 100.
(1) Not significantly different from diet group.
(2) Not significantly different from solution group.
(3) Solution and diet groups combined.
(4) Not significantly different from solution + diet group.
(5) Significantly different from solution + diet group.

As noted above (see Table 5), bioavailability as measured by urinary excretion was not statistically different between the solution and diet groups. This finding differs from the results reported by Goon et al. (1990) for two reasons. First, the urinary, fecal and tissue data had not been analyzed at that time, and estimates of urinary excretion were lacking. Second, the blood area-under-the-curve (AUC) data presented by Goon et al. in 1990 were grouped, so that the great variability from animal-to-animal was masked. The result that follows the animal-by-animal reanalysis of the raw data is consistent with the general literature on PAH absorption.

Because the solution and diet groups were not different, data from these two groups were merged for comparison with the sand and clay groups. Bioavailability was not statistically different between the solution/diet group and the unaged sand group. This contradicts results from the study that were presented at the 1990 Society of Toxicology meeting, which indicated that the bioavailability from the sand group was *higher* than from the solution and diet groups. In fact, the mean urinary excretion in the sand group is lower than the absorption in the solution, diet, or diet/solution group. Because of the great variability within both groups, however, there is no statistically significant difference between the solution/diet and sand groups. This result does not demonstrate that the presence of sandy soil has no effect on bioavailability. Instead, the experiment has so much variability in it that the experiment is unable to detect any difference that may actually exist.

Bioavailability as measured by cumulative urinary excretion *was statistically different* between the solution/diet group and the unaged clay group. This confirms results from the study that were presented at the 1990 Society of Toxicology meeting, which indicated a lower bioavailability from the clay group. Results could be used to derive an AAF for unaged clay (AAF=0.42).

In conclusion, the animal-by-animal evaluation of the data from the Goon et al. (1990) study shows there is very high animal-to-animal variability and that recoveries of administered B[a]P were low, ranging from 48% to 75%. Because of the high variability, statistical tests show that there is no difference in the bioavailability of B[a]P in the groups treated with the test chemical in emulsified aqueous solutions, dietary vehicle, or in sandy soil. There was a statistically significant difference in the B[a]P absorption from clayey soil. We conclude from this detailed analysis that the experiment in which males and female animals were both used lacks sufficient power to measure bioavailability and must be rejected for AAF derivation purposes.

Magee, et al. (1999)

Magee, et al. (1999) studied the absorption of PAH from soils collected from residential yards in the vicinity of a Superfund site (not MGP waste). Three samples (identified as 007-009) were selected from available material based on the availability of a size fraction (<250 μm) most appropriate for absorption studies. The concentration of PAH in the soils ranged from 66 to 388 ppm, and benzo[a]pyrene- toxic equivalent concentrations range from 9 to 70 ppm.

This study was performed using organic extracts of the soils as an internal control, as was described in the discussion of studies by Weyand, et al (1996). Powder rat chow containing either soil or organic extract of that soil was fed to mice (2 replicates of 4 mice each for each of the 3 soil samples) for 14 days and urine was collected for analysis of both pyrene and B(a)P metabolites. Additionally, rats were sacrificed at the end of the exposure period and lung tissue was harvested for quantification of DNA adducts. AAFs were calculated as the ratio of either the fractional urinary excretion of B(a)P metabolites or the fractional lung adducts between soil and organic extract fed mice (the lung adducts were divided by cPAH exposure, as done in the Koganti, et al (1998) study and therefore relates specifically to cPAH availability). The average fractional urinary excretion and fractional lung adduct values for each soil sample (based on observations in eight animals each) are shown in Table 6, with the corresponding AAF.

Table 6

AAF CALCULATIONS OF B(A)P AND cPAH AAFS BY MAGEE, ET AL (1999)

Soil Sample	Mean Fractional Urinary Excretion of 3-hydroxy B(a)P (ug 3OH-B(a)P per mouse/ug BaP ingested per mouse)		AAF based on B(a)P metabolite excretion	Mean Fractional Lund Adduct (pmol/mg DNA per mouse/mg cPAH ingested per mouse)		AAF based on DNA Adducts
	Soil	Organic Extract		Soil	Organic Extract	
Soil 009	0.0116	0.1587	0.07	3.04	40.99	0.07
Soil 008	0.0375	0.386	0.1	6.97	36.14	0.19
Soil 007	0.0587	0.2029	0.29	5.93	16.31	0.36

Summary of Oral-Soil AAFs

Several estimates of oral-soil AAFs were derived from five studies, as shown in Tables 7 and 8. These estimates of oral-soil AAFs were derived from studies with B(a)P, a five-ring potentially carcinogenic PAH,;a general measure of cPAH ; and pyrene, a four-ring noncarcinogenic PAH. Because of the physical property differences (specifically, affinity for sorption to soil) between low molecular weight PAH such as pyrene and the higher molecular weight PAH such as B(a)P and other cPAH, it is likely that the relative absorption of these subclasses of PAH will be different. Indeed, the average of AAFs based on pyrene (Table 7) is 0.43, whereas the AAFs based on studies of B(a)P and other cPAH is smaller: 0.27. It is recommended that the average pyrene AAF be used for all low molecular weight PAH and the average value of observations from Table 8 be used for all cPAH.

Table 7
SUMMARY OF ORAL-SOIL AAFS FOR PYRENE

Oral-Soil AAF	Notes	Source
0.08	B6CF1 mice, Site B MGP soil, 1 ppm pyrene, 4 ppm tPAH	Koganti, *et al* 1999.
0.11	B6CF1 mice, Site B MGP soil, 5 ppm pyrene, 36 ppm	Koganti, *et al* 1999.
0.11	B6C3F1 mice, MGP soil, 35 ppm pyrene, 377 ppm tPAH	Weyand *et al.* (1996)
0.21	B6C3F1 mice, Site A MGP soil, 17 ppm pyrene, 135 ppm tPAH	Koganti, *et al* 1999.
0.26	B6CF1 mice, Site C MGP soil, 627 ppm pyrene, 3120 ppm tPAH	Koganti, *et al* 1999.
0.30	B6CF1 mice, Site A MGP soil, 193 ppm pyrene, 1600 ppm tPAH	Koganti, *et al* 1999.
0.31	B6CF1 mice, Site B MGP soil, 148 ppm pyrene, 975 ppm tPAH	Koganti, *et al* 1999.
0.36	$B_6C_3F_1$ mice, MGP soil, 1 ppm pyrene, 9 ppm tPAH	Weyand *et al.* (1996)
0.46	$B_6C_3F_1$ mice, MGP soil, 57 ppm pyrene, 456 ppm tPAH	Magee *et al.* (1998)
0.47	$B_6C_3F_1$ mice, MGP soil, 44 ppm pyrene, 388 ppm tPAH	Magee *et al.* (1998)
0.52	B6CF1 mice, Site C MGP soil, 3 ppm pyrene, 20 ppm tPAH	Koganti, *et al* 1999.
0.55	B6CF1 mice, Site A MGP soil, 1 ppm pyrene, 8 ppm tPAH	Koganti, *et al* 1999.
0.75	B6CF1 mice, Site A MGP soil, 0.2 ppm pyrene, 0.6 ppm	Koganti, *et al* 1999.
0.97	$B_6C_3F_1$ mice, MGP soil, 7 ppm pyrene, 66 ppm tPAH	Magee *et al.* (1998)
1.0	B6CF1 mice, Site C MGP soil, 21 ppm pyrene, 132 ppm tPAH	Koganti, *et al* 1999.

Table 8
SUMMARY OF ORAL-SOIL AAFS FOR B(A)P AND cPAH

Oral-Soil AAF	Notes	Source
0.07	B6C3F1 mice MGP soil; 48 ppm BAP, 388 ppm tPAH (BAP metabolites)	Magee, *et al* (1998)
0.07	B6C3F1 mice MGP soil; 239 ppm cPAH, 388 ppm tPAH (DNA adducts)	Magee, *et al* (1998)
0.08	B6C3F1 mice, Site A MGP soil, 86 ppm cPAH, 135 ppm tPAH (DNA adducts)	Koganti, *et al* (1998)
0.10	B6C3F1 mice MGP soil; 50 ppm BAP, 456 ppm tPAH (BAP metabolites)	Magee, *et al* (1998)
0.15	B6C3F1 mice, Site B MGP soil, 24 ppm cPAH, 36 ppm tPAH (DNA adducts)	Koganti, *et al* (1998)
0.17	B6C3F1 mice, Site A MGP soil, 5 ppm cPAH, 8 ppm tPAH (DNA adducts)	Koganti, *et al* (1998)
0.17	B6C3F1 mice, MGP soil, 247 ppm cPAH, 377 ppm tPAH (DNA adducts)	Weyand *et al.* (1996)
0.20	B6C3F1 mice, Site C MGP soil, 895 ppm cPAH, 3120 ppm tPAH (DNA adducts)	Koganti, *et al* (1998)
0.19	B6C3F1 mice MGP soil; 271 ppm cPAH, 456 ppm tPAH (DNA adducts)	Magee, *et al* (1998)
0.23	Sprague-Dawley Rats, clay-based soils, 100 ppm BAP, 100 ppm tPAH (blood measurements)	Goon, *et a*l (1991)
0.29	B6C3F1 mice MGP soil; 6 ppm BAP, 66 ppm tPAH (BAP metabolites)	Magee, *et al* (1998)
0.30	Sprague-Dawley Rats, clay-based soils, 100 ppm BAP, 100 ppm tPAH (urine measurements)	Goon, *et a*l (1991)
0.32	B6C3F1 mice, Site B MGP soil, 238 ppm cPAH, 975 ppm tPAH (DNA adducts)	Koganti, *et al* (1998)
0.36	B6C3F1 mice MGP soil; 41ppm cPAH, 66 ppm tPAH (DNA adducts)	Magee, *et al* (1998)
0.39	Sprague-Dawley Rats, sandy	Goon, *et al* (1991)

	soils, 100 ppm BAP, 100 ppm tPAH (blood measurements)	
0.47	B6C3F1 mice, Site A MGP soil, 986 ppm cPAH, 1600 ppm tPAH (DNA adducts)	Koganti, *et al* (1998)
0.49	Sprague-Dawley Rats, sandy soils, 100 ppm BAP, 100 ppm tPAH (urine measurements)	Goon, *et al* (1991)
0.76	B6C3F1 mice, Site C MGP soil, 55 ppm cPAH, 132 ppm tPAH (DNA adducts)	Koganti, *et al* (1998)

Derivation of Dermal-soil AAF for Potentially Carcinogenic PAH

Two studies were identified in which the dermal absorption of PAHs was measured from a soil matrix. These include Yang *et al.* (1989) and Wester *et al.* (1990). These studies are discussed below. Estimates of dermal-soil AAFs can be derived from the results of these studies when combined with data on absorption from investigations using dosing methods similar to the dose-response studies.

Dermal Absorption Studies

Yang et al. (1989)

Yang, *et al*. (1989) measured the percutaneous absorption of benzo(a)pyrene (B(a)P) from petroleum crude-fortified soil and from pure petroleum crude oil both in live rats and in *in vitro* studies using excised rat skin (see Table 9). The soil was a loam containing 1.64% organic matter, 46% sand, 36% silt, and 18% clay. The B(a)P-soil mixture was prepared by adding the radiolabelled crude oil in dichloromethane to the soil. The solvent was removed by rotary evaporator. All soils were used within 72 hours of preparation.

Radiolabelled B(a)P (^{3}H-B(a)P) was added at a known concentration for quantification. In the *in vivo* experiments, soil containing B(a)P in crude petroleum or pure crude petroleum containing B(a)P was applied to the dorsal skin of the female Sprague-Dawley rats. In both cases, the dose of B(a)P was 0.01 ug/cm^2. For the crude oil, 90 ug/cm^2 of oil containing 100 ppm B(a)P was applied. For soil, 9 mg/cm^2 of soil containing 1 ppm of B(a)P was applied. The dorsal area was covered with a non-occlusive glass cell to prevent ingestion of the B(a)P by grooming behavior.

Absorption was determined by measuring the radioactivity in the urine and feces once daily and the urine, feces and tissues at 96 hours. Data from five animals were averaged. After 96 hours, cumulative absorption of B(a)P from crude-soaked soil (9.2%) was less than that from the crude alone (35.3%).

In the *in vitro* experiments, dorsal skin was excised from female Sprague-Dawley rats after sacrifice. 350 um skin sections were placed in consoles containing 15 mm diameter Franz diffusion cells. The receptor fluid was an aqueous solution of 6% Volpo-20, a nonionic surfactant. The absorption was measured by analyzing the surfactant containing receptor fluid that bathed the receiving reservoir of the absorption chamber for radiolabelled B(a)P. The receptor fluid was sampled once every 24 hours for four days. Data from five trials were averaged. Again, 96 hour cumulative absorption was greater for B(a)P in oil (38.1%) versus B(a)P in oil-soaked soil (8.4%).

Table 9
DERMAL ABSORPTION OF BENZO(a)PYRENE FROM SOIL IN THE RAT
YANG, *ET AL*. (1989)

Time Point	*In Vivo* Results	*In Vitro* Results
24 Hours[1]	1.1% (0.3)[1,2]	1.5%[4]
48 Hours[1]	3.7% (0.8)[1,2]	3.5%[4]
72 Hours[1]	5.8% (1.0)[1,2]	5.5%[4]
96 Hours[3]	9.2% (1.2)[1,3]	8.4%[4]

[1]Values shown for 48-96 hours are cumulative. Results are the mean for five rats (standard error).
[2] Urine plus feces
[3] Urine plus feces plus tissues.
[4] See Figure 1 of Yang, *et al.* (1989)

Wester et al. (1990)

Wester *et al*. (1990) measured the absorption of B(a)P *in vivo* over 24 hours in the monkey using acetone as vehicle or using soil containing B(a)P at the 10 ppm level (see Table 10). The soil used contained 26% sand, 26% clay, and 48% silt. The organic content was not specified. The B(a)P containing soil was prepared by adding the B(a)P in (7:3, v/v) hexane:methylene chloride. The soil was mixed by hand and left open to the air to allow dissipation of the solvent. The B(a)P-soil mixture was not aged before use.

Four female Rhesus monkeys were tested with 40 mg soil/cm^2 applied to the abdominal skin. The skin area was covered with a nonocculusive cover to prevent loss of soil or ingestion of soil by grooming behavior. Percutaneous absorption was measured by comparing the quantity of radiolabel (^{14}C-B(a)P) in the urine following topical application to that following intravenous application. Urine was collected for 24 hours. After 24 hours, all visible soil was collected from the application site. The skin surface was washed with soap and water, and the monkeys were returned to metabolic cages for urine collection for an additional six days. *In vivo*, the absorption was 51.0% for acetone vehicle and 13.2% for soil.

In vitro studies were also carried out with viable human cadaver skin in cells of the flow-through design. Human serum was used as the receptor fluid. Radiolabel was determined in the receptor fluid after 24 hours as well as in the skin after a surface wash with soap and water. The amount of B(a)P that cannot be removed from the skin with a soap and water wash is designated here as "absorbed" for the purposes of AAF derivation. In six experiments with skin from two donors, 23.8% of the B(a)P was absorbed with acetone vehicle. From soil (10 ppm), 1.45% was absorbed in 24 hours.

Roy, et al (1998)

This investigation is worth mention because it utilized soils from sites containing MGP tars. And is the most recent evaluation of dermal absorption. In this paper, the authors note substantial reduction in the absorption of B(a)P in soils applied to skin in an in vitro diffusion apparatus when compared to organic extracts of the same material. However, these investigators used an excess of B(a)P source in doing these experiments and, as such, are calculating the flux rate of B(a)P under conditions of “infinite source”. Thus, while the absorption reduction is interesting, it cannot be converted to an AAF for risk assessment purposes in that both the dose-response data and the relevant environmental exposure (dermal absorption of PAH on the skin) are likely to be finite sources, that are controlled as much by reduction in available PAH as the rate at which the compounds cross the skin. Therefore, this study was not used to estimate AAFs for the dermal absorption exposure route.

Dermal-Soil AAF Derivation

The fraction absorbed in a 24-hour or 96-hour experiment has little relevance to human risk assessment. Receptors who might touch, walk on, or otherwise contact PAH-containing soil would only realistically be exposed for a period of 6-12 hours at maximum before washing themselves or before the soil would drop off or be rubbed off the skin. The Wester, *et al*. (1990) paper demonstrates that soap and water wash can remove a large amount of the administered dose (53-91%), even after 24 hours. Even more would be removed after only 6-12 hours exposure.

U.S. EPA guidance for dermal risk assessment recognizes that the time period of a dermal experiment is an important factor to consider when evaluating experimental data. U.S. EPA (1992b) has noted: "The experiment should provide absorption estimates over a time corresponding to the time that soil is likely to remain on skin during actual human exposures."

Table 10
DERMAL ABSORPTION OF BENZO(a)PYRENE FROM SOIL
WESTER, *ET AL*. (1990)

Sample	Monkey Skin	Human Skin
1	13.1%[1]	1.01%[3]
2	10.8%[1]	1.52%[3]
3	18.0%[1]	0.61%[3]
4	11.0%[1]	2.21%[3]
5	NA	0.31%[3]
6	NA	3.01%[3]
Mean +/- SD	13.2% +/- 3.4%[2]	1.45% +/- 1.02% [2]

[1]Percentage of applied dose absorbed = (^{14}C urinary excretion for seven days following 24 hour topical application) /(^{14}C urinary excretion following intravenous administration) x 100
[2] Mean +/- Standard Deviation
[3] Fraction of applied dose in the skin plus fraction in receptor fluid.

Accordingly, the data from the Yang, *et al.* (1989) and Wester, *et al.* (1990) experiments should be prorated for a reasonable exposure period, such as 6-12 hours. A health-protective way to do this is to simply assume that absorption is linear over time. The Yang, *et al*. (1989) *in vitro* study showed a linear absorption into rat skin from 24-96 hours, but no data are available for the 0-24 hour period.

In fact, Kao *et al*. (1985) have shown that the appearance of radiolabel from topically applied benzo(a)pyrene and other chemicals in human, rodent, and other species' skin in the culture medium of their *in vitro* system was exponential, not linear. A distinct time lag is apparent before any absorption occurs. A time lag has also been shown for various chlorophenols in human skin (Roberts, *et al*., 1977; Huq, *et al*., 1986). U.S. EPA (1992b) also recognizes that a time lag may exist: "time is required after initial contact with the skin for such a steady-state to be achieved." Also: "Linear adjustments may not be accurate, since it is unknown how soon steady-state is established and since steady-state conditions may not be maintained throughout the experiment due to mass balance constraints."

Thus, linear adjustments of 24 hour absorption data to estimate absorption over 6-12 hours may overestimate the absorption true absorption, but it is not likely to underestimate absorption. A health-protective approach would be to assume that a relevant absorption period is as high as 8 hours. (U.S. EPA in its recently proposed Hazardous Waste Identification Rule assumes 8 hour exposures.) With this assumption, the Yang *et al*, 1989 data from the *in vitro* experiment can be adjusted to 0.27% absorption over 8 hours using a linear regression of all four time points. The data from the *in vivo* experiment can be adjusted to 0.8% absorption over 8 hours. The 96 hour

data is used in this case, because tissue-bound B(a)P was measured only for this time point. The 8 hour estimated absorption using a linear regression is only 0.01%, and was thus rejected for AAF derivation.

The Wester, *et al*. (1990) data can be adjusted to 4.4% absorption in the *in vivo* monkey experiment over an 8 hour exposure period. Similarly, the 8 hour estimated exposure for the *in vitro* human skin experiment is 0.48%.

For deterministic risk assessments, a single estimate of the dermal-soil AAF is needed. In this case, four estimates of the dermal absorption of PAHs from soil were presented: 0.27%, 0.80%, 4.4%, and 0.48%. In addition, 12 estimates of the absorption of PAHs from the dose-response study were presented in Table 1. The average value is 92%. Four AAF estimates are 0.003, 0.009, 0.048, and 0.005. The deterministic estimate of the dermal-soil AAF is simply the average of the four AAFs, 0.02.

Applicability of Dermal-Soil AAF to Other PAHS

Dermal-soil AAFs have been derived for B(a)P based on four experimental data points with B(a)P. However, risk assessment of PAHs involves the calculation of benzo(a)pyrene-toxic equivalents, which includes the seven PAHs designated as potentially carcinogenic. The following section addresses the applicability of the B(a)P AAF to other potentially carcinogenic PAHs.

Various researchers have investigated the dermal absorption of different PAHs from pure mixtures, such as coal tar, or from solvent vehicles, such as acetone. From these studies, data on the comparative dermal absorption of various pure PAHs are available, but no studies are available on the dermal absorption of various PAHs from a soil matrix.

For instance, Sanders, *et al*. (1984) studied the dermal absorption of B(a)P and dimethylbenz(a)anthracene (DMBA) in Swiss-Webster mice from an acetone vehicle. The dermal absorption was similar for the two PAHs. For instance, at similar dose levels, the amount found in the tissues and excreta 24 hours after dosing was 84% for B(a)P and 82% for DMBA.

Yang and coworkers (Yang *et al.* 1986a, 1986b) studied dermal absorption of B(a)P and anthracene at similar doses from solvent vehicles in the female Sprague-Dawley rat in both *in vivo* and *in vitro* systems. Absorption was similar for the two PAHs. *In vivo*, absorption after 144 hours was 46.2% for B(a)P and 52.3% for anthracene. *In vitro*, absorption after 144 hours was 49.9% for B(a)P and 55.9% for anthracene.

Ng and coworkers (Ng *et al.*, 1992) studied dermal absorption of B(a)P and pyrene at similar doses from an acetone vehicle in the hairless guinea pig. Absorption after 24 hours was 73.3% for B(a)P and 93.9% for pyrene. In an *in vitro* experiment, absorption of B(a)P was 67.4% versus 89.9% for pyrene. In another *in vitro* experiment, absorption of B(a)P was 39.8% versus 40.8% for pyrene.

Dankovic and colleagues (Dankovic *et al.,* 1989) studied the comparative dermal absorption in female CD-1 mice of 12 high molecular weight PAHs isolated from the 800-850 degree (F) complex organic mixture (COM) derived from a coal liquefaction process. Absorption was

measured as the half life of disappearance of the PAH from the mouse skin. The half life was 5.0 hours for pyrene. For B(a)P, the half life was 6.7 hours. All other PAH had half lives similar to B(a)P, including benz(a)anthracene (6.5 hr), chrysene (7.3 hr), and benzo(j/k)fluoranthene (8.1 hr).

VanRooij *et al. (*1995) studied the dermal absorption in the blood-perfused pig ear of 10 PAHs present in coal tar. The blood-perfused pig ear was chosen as a test system because pig skin resembles human skin morphologically and functionally and because percutaneous absorption rates of various chemicals in pig skin are comparable to the rates seen in human skin.

The absorption after 3.3 hours varied among PAHs. Absorption was greatest for phenanthrene and fluorene. Anthracene, fluoranthene, and pyrene showed similar absorption rates that were roughly ten times less than those for phenanthrene and fluorene. The 4-6 ring PAHs showed substantially lower dermal absorption, which was 100-1000 times less than that seen with phenanthrene and fluorene. It should be noted, however, that the maximum fractional absorption seen, which was with fluorene, was only 0.004% of the applied dose.

Of the potentially carcinogenic PAH studied in the above dermal absorption experiments, B(a)P showed equal or greater dermal absorption. None of these experiments were performed with soil matrices. They all involved applying the PAHs as solutions in organic solvents.

As noted above, dimethylbenz(a)anthracene, benz(a)anthracene, and benzo(b)fluoranthene were absorbed to a degree similar to B(a)P. Chrysene, benzo(k)fluoranthene, indeno[1,2,3-cd]pyrene, and dibenzo(a,h)anthracene were absorbed to a lesser degree than was B(a)P. Accordingly, it is health protective to use dermal-soil AAFs derived for B(a)P for performing risk assessment of all potentially carcinogenic PAH.

Derivation of Dermal-Soil AAF for Noncarcinogenic PAHs

Noncarcinogenic PAH with smaller molecular weights, however, were absorbed to a greater degree than was B(a)P in several experiments. Fluorene, phenanthrene, anthracene, fluoranthene, and pyrene were absorbed at rates varying from 1.03 times the B(a)P rate to 92 times the B(a)P rate. Accordingly it may be appropriate to modify upward the dermal-soil AAF derived from studies with B(a)P by the use of an uncertainty factor so that it can be used in the risk assessment of noncarcinogenic PAHs.

However, all of the experiments used coal tar or PAHs in solutions. No information is available on the comparative absorption of different PAHs from soil matrices. It is possible that small molecular weight PAHs in pure form are absorbed through skin to a greater degree than are large molecular weight PAHs, but that these smaller PAHs are also *less* bioavailable in soil matrices than are large PAHs. This could occur if the smaller PAHs more efficiently enter the small pore spaces of the soil matrices than do larger PAHs.

In the absence of appropriately designed experiments for noncarcinogenic PAH AAF derivation, it is difficult to determine a reasonable uncertainty factor. The dermal-soil AAF for noncarcinogenic PAHs may be higher or lower or the same as the dermal-soil AAF for potentially carcinogenic PAHs. The uncertainty factor is defined as a factor of 5. For deterministic risk assessments, the dermal-soil AAF for noncarcinogenic PAHs is 0.10 (0.02 x 5).

Summary of AAFs for PAH

Oral-Diet	1.0	
Oral-Soil	~~0.27~~	~~carcinogenic PAH~~ Default of 1.0 used per WDNR
Oral-Soil	~~0.43~~	~~noncarcinogenic PAH~~ Default of 1.0 used per WDNR
Oral-Water	1.0	carcinogenic and noncarcinogenic PAH
Dermal-Soil	0.02	carcinogenic PAH
Dermal-Soil	0.1	noncarcinogenic PAH
Dermal-Water	1.1	carcinogenic and noncarcinogenic PAH
Inhalation	1.0	carcinogenic and noncarcinogenic PAH

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Appendix B

Absorption Adjustment Factors For Pentachlorophenol

ABSORPTION ADJUSTMENT FACTORS (AAFS) FOR DERMAL AND ORAL ABSORPTION OF PENTACHLOROPHENOL IN SOIL AND SEDIMENT

The oral RfD for pentachlorophenol (3E-02 mg/kg/day) and the oral cancer slope factor (0.12 $(mg/kg/day)^{-1}$) are both based on dietary studies in rodents. Limited studies of absorption have been carried out in several species including humans, rats, and monkeys. Rats and monkeys given single oral doses in corn oil of 10 mg [^{14}C] pentachlorophenol/kg and rats were also dosed with 100 mg/kg (Braun and Sauerhoff, 1976; Braun et al., 1977). Absorption was extensive in both species with greater than 90% recovery of the dose in urine, feces, expired air, and tissues. Kinetic analyses were also performed. Essentially complete absorption by rats dosed with pentachlorophenol or sodium pentachlorophenate in water or food has also been reported (Meerman et al., 1983).

Hoben et al. (1976) studied pulmonary absorption of pentachlorophenol vapors in the rat. 70-75% of the dose was absorbed as determined by recovery of radioactivity in urine, plasma, liver, and lungs 24 hours post exposure.

Oral-Water and Oral-Soil/Sediment

Studies in humans also indicate high absorption following oral administration. Based upon these results, AMEC has assumed that absorption in the dose-response study was 100%. Furthermore, it is assumed that absorption is the same in animals and humans for gavage, drinking water, diet, and soil or sediment ingestion exposures. Thus, the AAF (oral-water), the AAF (oral-diet) and the AAF (oral-soil/sediment) are all 1.0.

Dermal-Soil/Sediment

Wester et al. (1993) studied the percutaneous absorption of ^{14}C-pentachlorophenol mixed in a soil matrix both *in vivo* in Rhesus monkeys and *in vitro* with excised human skin. The free phenol compound was used for their experiments. They dissolved pentachlorophenol in hexane:methylene chloride (7:3, v/v), mixed the solution with the test soil, and let the solvent evaporate by letting the mixture sit in the open air. The soil was not in contact with water, so the form of the chemical throughout the experiment would be expected to be the free phenol (un-ionized) form.

The experiment of Wester at al. (1993) used a low organic content soil, which was only 0.9% organic content. The soil composition also included: 26% sand, 26% clay, and 48% silt. The pentachlorophenol-soil mixture was unaged. Wester, et al. (1993) dissolved pentachlorophenol in hexane:methylene chloride (7:3, v/v), mixed the solution with the test soil, and let the solvent evaporate by letting the mixture sit in the open air. They then immediately executed their *in vivo* and *in vitro* dermal absorption experiments.

Pentachlorophenol was present in the soil at a concentration of 17 mg/kg. Soil was placed in contact with skin at the loading rate of 40 mg soil/cm^2 skin area. At this rate, pentachlorophenol was present at a rate of 0.7 ug/cm^2 skin area. With Rhesus monkeys, the treated area (abdominal skin) was covered with a nonocculsive cover, which allowed free passage of water vapor. Four monkeys were treated for 24 hours. Afterwards, the area was washed with soap and water. Urine was collected for a total of 14 days.

In the *in vitro* experiment, three replicates from two donor human skin sources were treated. The skin was viable. Flow through cells were used with human serum as the receptor fluid. As with the monkeys, the dose was 40 mg/cm^2 of soil containing 17 ppm pentachlorophenol. The skin was treated for 15 hours. After that time, the receptor fluid, the soap and water washes, and the skin were analyzed for radiolabel.

In the monkey experiment, 11.1% of the administered dose was excreted in the urine over 14 days. Assuming that urinary excretion is quantitatively equivalent for intravenous and topical exposures, this corresponds to 24.4% absorption over 24 hours.

In the human skin experiment, 0.17% of the administered dose was found in the receptor fluid or the skin (after washing) after a 15 hour exposure.

Absorption estimates taken from such long experiments are not relevant to human health risk assessment. People who might touch, walk on, or otherwise contact pentachlorophenol-containing soil would only be exposed for a period of 6-12 hours at maximum before washing themselves or before the soil would drop off or be rubbed off the skin. The paper clearly demonstrates that soap and water wash can remove a large amount of the administered dose (38-60%), even after 24 hours. Even more still would be removed after only 6-12 hours exposure.

Accordingly, the data from the Wester et al. (1993) experiment should be prorated for a reasonable exposure period, such as 6-12 hours. A health-protective way to do this is to simply assume that absorption is linear over time. In fact, Kao et al. (1985) have shown that the appearance of radiolabel from topically applied benzo(a)pyrene and other chemicals in human, rodent, and other species' skin in the culture medium of their *in vitro* system is exponential, not linear. A distinct time lag is apparent before any absorption occurs. A time lag has also been shown for various chlorophenols in human skin (Roberts, et al., 1977; Huq, et al., 1986). EPA (1992a) also recognizes that a time lag exists: "time is required after initial contact with the skin for such a steady-state to be achieved." Also: "Linear adjustments may not be accurate, since it is unknown how soon steady-state is established and since steady-state conditions may not be maintained throughout the experiment due to mass balance constraints."

Thus, linear adjustments of 15 and 24 hour absorption data to estimate absorption over 6-12 hours clearly overestimates the absorption. A health-protective approach would be to assume that a relevant absorption period is not higher than 8 hours. With this assumption, the absorption from the monkey experiment is 8.1% and the absorption from the human experiment is 0.09%.

The data from the Wester et al. (1993) study present a dilemma, because the results vary significantly between monkey and human skin. AMEC evaluated various aspects of the study to determine the appropriate approach for AAF derivation.

I. Adjustment for Presence of Pentachlorophenate in Soil:

In aqueous solutions, the presence of ionized and unionized species will be governed by pentachlorophenol's acid dissociation constant (pKa), which is 4.7 (Howard, 1991). At pH 6.7, pentachlorophenol in aqueous environments is 99% ionized (IARC, 1991).

Thus, if pentachlorophenol as its free phenol is placed in contact with soils, the majority of the chemical in contact with soil pore water will be the pentachlorophenate ion at soil pH values ranging from weakly acidic to alkaline.

Wester, et al. (1993) used the free phenol compound for their dermal absorption experiments. They dissolved pentachlorophenol in hexane:methylene chloride (7:3, v/v), mixed the solution with the test soil, and let the solvent evaporate by letting the mixture sit in the open air. In the monkey experiment, the soil was not in contact with water, so the form of the chemical throughout the experiment would be expected to be the free phenol (un-ionized) form.

However, in the human skin experiment, a thin section of skin (500 um) which had been stored in an aqueous medium (Eagel's minimum essential medium) was placed in the cell, with an aqueous solution (human serum) flowing beneath it at 3.09 mL/min. It is probable that the pentachlorophenol in the soil was in contact with a considerable amount of water and was thus ionized.

It is generally recognized that ionized chemicals are poorly absorbed through the skin of humans and other animals compared to unionized chemicals. For instance, Scheuplein and Blank (1971) state that the ionization of a weak electrolyte is known to "radically decrease its permeability." They cite the decreased permeability of sodium salicylate compared to salicylic acid as an example. Huq at al. (1986) studied a series of substituted phenols, including chlorophenols, and also found that skin permeability was pH dependent, indicating that the absorption of chlorophenols was much greater when they were in their un-ionized states. The same would be true for pentachlorophenol.

Data showing that the skin permeability of the pentachlorophenate ion is much less than that of the un-ionized pentachlorophenol are also available. EPA (1984) states that the human dermal absorption of an aqueous pentachlorophenate solution was five times less than the absorption of pentachlorophenol in an organic solution. Similarly, Horstman et al. (1989) reported that absorption into human skin of sodium pentachlorophenate was four times less than the absorption of pentachlorophenol in diesel oil.

In conclusion, the dermal absorption data from the monkey experiment in the Wester, et al. (1993) study overestimates the dermal absorption that would be expected from pentachlorophenate ion. This ionized chemical species is certainly present in soils at waste sites. In fact, pentachlorophenate may be the predominant form of pentachlorophenol in site soils that a human may contact. This may partially explain the low absorption seen with the human skin experiment in where the pentachlorophenol was likely present as the ionized species. Based on the data of Horstman et al (1989), the overestimation may be as high as 4 fold.

II. Adjustment for Use of Rhesus Monkey:

Several *in vivo* studies have been done in which absorption in monkeys (rhesus and squirrel) was directly compared to absorption in humans at the same anatomical site (usually the ventral forearm) [Wester and Maibach (1975); Wester and Noonan (1980); Wester and Maibach (1989); Wester and Maibach (1993)]. The following table shows that for 16 chemicals studied, absorption in the monkey was greater than absorption in human for 13 chemicals. For one, absorption was the same and for two, absorption was slightly less in monkeys.

COMPARISON OF DERMAL ABSORPTION IN MONKEYS AND HUMANS

CHEMICAL TESTED	MONKEY ABSORPTION/ HUMAN ABSORPTION	TYPE OF MONKEY
2,4-dinitrochlorobenzene	1.0	rhesus
nitrobenzene	2.8	rhesus
cortisone	1.6	rhesus
testosterone	1.4	rhesus
hydrocortisone	1.5	rhesus
benzoic acid	1.4	rhesus
resorcinol	2.3	rhesus
p-phenylenediamine	0.9	rhesus
2-nitro-p-phenylenediamine	3.9	rhesus
HC-Blue #1	0.9	rhesus
lindane	1.7	squirrel monkey
parathion	3.1	squirrel monkey
malathion	2.4	squirrel monkey
diethyl maleate	1.3	rhesus
DDT	1.9	rhesus
retinoic acid	2.0	rhesus

On average, dermal penetration in the monkey is 1.9 times greater than in the human for the same anatomical site. Wester and Maibach (1993) have concluded that there is no statistical difference in the absorption for some of the chemicals because of statistical error in the measurements. However, for those chemicals that are statistically different, the absorption seen in the monkey is 2.1 times higher on average than in humans.

Because the dermal absorption in rats, mice, guinea pigs, and rabbits, which have been used for absorption experiments in the past, is often shown to be 10-50 times higher than absorption in humans, Wester and Maibach (1989, 1993) conclude that the monkey is much more similar to humans than other experimental animals (with the possible exception of the pig). Accordingly, they have concluded: "In general, the comparative in vivo data that have been reviewed demonstrate that percutaneous absorption in the pig and the monkey (rhesus and squirrel) is usually similar to that in man..." (Wester and Maibach, 1989). Also, "This [monkey] is the most relevant animal model for percutaneous absorption" (Wester and Maibach, 1993).

The fact that absorption in the monkey is more similar to absorption in the human than many other animal species cannot be disputed, but the fact remains that dermal absorption in the monkey has been shown to be on average 1.9 times higher than absorption in the human when monkeys and humans are tested concurrently in the same laboratory and at the same anatomical site. Thus, absorption estimates taken from experiments in monkeys will overestimate absorption in humans by a factor of 1.9.

III. Adjustment for Use of Abdomen as Site of Exposure:

Wester et al. (1993) have used the abdomen as the site of application in their pentachlorophenol dermal absorption study in Rhesus monkeys. However, it is extremely unlikely that a person would contact pentachlorophenol/pentachlorophenate containing soil from the former Koppers site on their stomach. It is more likely that if a human contacted this soil, it would be by walking on it, touching it with the hands, or perhaps getting a small amount of it on their arms or legs.

Several scientific studies demonstrate that dermal penetration of organic chemical substances is greater through skin on the stomach (abdomen) than through skin on the hands, arms, legs, and feet. For instance, Maibach et. al. (1971) demonstrated that the 24 hour absorption of parathion through the abdomen of humans was 2.2 times the absorption through the forearm, 1.6 times the absorption through the palm of the hand, and 1.4 times the absorption through the ball of the foot. With malathion, abdominal absorption was 1.4 times that of the forearm, 1.6 times that of the palm of the hand, and 1.4 times that of the ball of the foot. In both cases, the abdominal absorption was slightly less than that on the back of the hand (0.9 and 0.8 times).

Rougier et al. (1986) compared dermal absorption of benzoic acid in humans by site of application. They found that absorption through the abdomen was 1.8 times that of the back, 1.6 times that of the arm, 1.3 times that of the chest, and 1.2 times that of the thigh. No data on absorption though the skin of the hands and feet were available from this experiment.

Bronaugh (1985) measured absorption of urea and cortisone in rats on their backs and their abdomens. The abdomen showed greater penetration by a factor of 11.8 for urea and by a factor of 7.2 for cortisone.

Wester et al. (1980) studied regional variation in dermal penetration of testosterone in Rhesus

monkeys and found differences in permeability among forearm, chest, cheek, scalp, and vagina. In addition, Moody and co-workers compared absorption of three pesticides in Rhesus monkey from the forearm and the forehead. Unfortunately, the abdomen was not studied by either set of investigators. However, Wester and Maibach (1989) when summarizing these studies noted that, for a variety of chemicals, the ratios of penetration (scalp/forearm and forehead/forearm) were similar in humans and Rhesus monkeys. Their conclusion was: "Therefore, the rhesus monkey probably can be a relevant model for human region variation." In another review article, Wester and Maibach (1993) state: "The rhesus monkey has certain physical advantages in that the inner parts of the arms, legs, and truck are relatively hairless; similar to that in man. Also, since percutaneous absorption differs from regions of the body, the same anatomic site can be used in both the rhesus monkey and man (i.e., ventral forearm)."

It is odd that Wester, Maibach and coworkers decided to execute rhesus monkey experiments for use in waste site risk assessments using abdominal skin sites, because they have previously concluded that: (1) human regional variation is similar to rhesus monkey regional variation and (2) human absorption through abdominal skin exceeds absorption through skin areas relevant to human waste site risk assessments (arms, legs, and feet) for several different chemicals tested. If the above data for parathion, malathion, and benzoic acid are averaged for all skin sites, the use of the abdomen will overestimate absorption for relevant skin sites by a factor of 1.4.

IV. General Evaluation of Wester et al. (1993) Monkey Study:

In the Wester study, the same amount (amount/cm^2) of pentachlorophenol was placed onto the abdomen of monkeys either as a pure liquid or as a soil mixture. In the case of the control, the dose was 0.8 ug/cm^2. Because the density of pentachlorophenol is 2 g/cm^3, one can calculate that the thin layer of the chemical on the skin was only $4x10^{-7}$ cm high or 4 nm high. However, the pentachlorophenol-containing soil was placed on the skin at a loading rate of 0.040 g/cm^2. Assuming that the soil had a density of 1.5 g/cm^3, the layer of soil was 0.03 cm high. Thus, the top level of the soil layer was 75,000 times higher than the top level of the liquid pentachlorophenol layer.

The reported results of the experiment, however, are that there was no difference in the absorption between the pure liquid and the soil mixture. Although these investigators are recognized as leaders in the field of dermal absorption experiments, this result is simply difficult to understand logically. If the pentachlorophenol was truly bound to the soil as it is at the site after years of contact with the soil, how can the pentachlorophenol molecules that are bound to soil at the top of the soil layer behave the same as liquid pentachlorophenol molecules that are directly in contact with the skin?

AMEC notes that the pure pentachlorophenol in acetone solvent was absorbed 23-29 times more efficiently in the *in vitro* human skin experiment. This is a logical result that is expected based on general knowledge about the interactions of organic chemicals with soil matrices.

It is possible that the experimental results reported by Wester et al. (1993) from the monkey experiment are artifacts. Perhaps the fraction of urinary excretion in the monkey is not the same for dermal exposure and intravenous exposure as assumed by the researchers. Perhaps the "nonocclusive" cover device did not behave as planned, and heat and water vapor increased in the device designed to hold the soil in place. Perhaps the shaving of the monkey's skin inadvertently damaged the skin. It is impossible to know if the experimental protocol was executed properly or not, but the *in vivo* monkey results are just not logical.

V. Conclusion:

Taking into consideration the three factors above, the monkey experiment may overestimate the absorption of pentachlorophenol from soil in human skin by a factor of 10.6. If adjustments are made for: (1) phenate ion, (2) monkey versus human skin, and (3) abdomen versus other sites, the monkey absorption result (8.1% over 8 hours) can be adjusted to 0.8% absorption.

Qiao et al. (1997) studied dermal absorption of pentachlorophenol in a soil matrix in the swine model. The soil used was 31.2% sand, 16.8% silt, 53.0% clay, 0.3% organic matter, and 1% water which was passed through a 80 mesh sieve. ^{14}C-labeled pentachlorophenol was given to the animals in a soil slurry composed of 55% soil, 31% water, and 15% ethanol. The pentachlorophenol dose was 40 ug pentachlorophenol/cm^2. The slurry was added at a rate of 13 mg/cm^2, which provided a soil loading rate of 7 mg/cm^2.

Pentachlorophenol was given to 8-10 week old female weanling Yorkshire-Landrace cross pigs. Pre-acclimated and jugular-vein-cannulated pigs were individually housed in metabolism cages after radiolabelled pentachlorophenol application. The skin site was the abdominal skin, because it is more predictable of human dermal absorption. The pentachlorophenol was applied to a 7.5 cm^2 region that was protected by a customized circular glass chamber with 3 mm diameter holes covered with nylon sieve screening and then positioned with Elasticon tape.

Radioactivity was then measured in the blood, plasma, urine and feces for a period of 408 hours. The blood and plasma curves for the nonocclusive soil dose showed an increase in total radioactivity for the first 12 hours and then a plateauing of the level of radioactivity in the blood and plasma. This indicated that absorption reached a steady state level after about 12 hours.

Urinary excretion as a fraction of the total dose was linear up to 48 hours and then plateaued. Fecal excretion rates as a fraction of the total dose was linear up to 72 hours and then plateaued. Both were plotted over the linear regions and the fraction of the dose excreted over 8 hours was determine. At 8 hours 0.44% of the total dose had been excreted.

After the entire 408 hour period, animals were sacrificed, and radioactivity was measured in all major tissues and organs. It was found that 16.51% of the total dose was present in the various tissues and organs (1.18X) compared to 13.94% of the total dose, which was excreted over the entire period. Thus, the 8-hour absorption estimate was derived taking into account the amount excreted (0.44%) plus the amount estimated to be present in the tissues (0.44% x 1.18 = 0.52%). In addition, the estimate was modified to account for total recovery, which was 62.78%. The final estimate of dermal absorption over 8 hours is 1.53% from the Qiao et al. (1997) study.

AMEC notes that this experiment used a slurry of soil, water and ethanol. The dermal absorption of pentachlorophenol in soil in the absence of an organic solvent is probably less than the value reported in this study. As such, the study is health-protective.

The available absorption estimates for pentachlorophenol in soil are summarized below:

SPECIES	TYPE	8-HOUR DERMAL ABSORPTION	CITATION
Monkey	*in vivo*	8.1% (0.81% if modified, see text)	Wester et al. (1993)
Human	*in vitro*	0.09%	Wester et al. (1993)
Pig	*in vivo*	1.53%	Qiao et al. (1997)

The average of the three values is 3.24%, and the average of the three values if the monkey result is modified as described in the text is 0.81%. AMEC notes that the latter estimate is almost identical to the EPA default values for organic chemicals, which is 1% (EPA, 1992b). However, to be health-protective, AMEC recommends that the data from the three experiments be simply averaged without modification. The resulting 8-hour estimate of dermal absorption of pentachlorophenol is 3.24%, giving an AAF of 0.032.

Dermal-Water

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when bathing or wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For pentachlorophenol, the AAF (dermal-water) is 100%/100% = 1.0.

Summary of AAFs for Pentachlorophenol

Oral-Diet	1.0
Oral-water	1.0
Oral-soil	1.0
Dermal-soil	0.032
Dermal-water	1.0

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Appendix C

Exposure and Risk Calculations

Table C-1 Unitized Risk Calculation

Scenario:	Current
Receptor:	KI Site Worker
Medium:	Shallow Soil (0-1')
Exposure Pathway:	Ingestion and Dermal Contact

ADM (mg/kg-day) = $\frac{CS \times [(IR \times FI \times AAF) + (SA \times AF \times FA \times AAF)] \times EF \times ED \times CF}{BW \times AT}$

Hazard Quotient (HQ) = ADD (mg/kg-day) / RfD (mg/kg-d)

Cancer Risk (ELCR) = ADD (mg/kg-day) * CSF [1/(mg/kg-day)]

Parameter (units)	Value
ADD: Average Daily Dose (mg/kg-day)	See Below
CS: Constituent Concentration in Soil (mg/kg)	Constituent-Specific
IR: Ingestion Rate (mg/day)	50
AAF: Absorption Adjustment Factor (Oral-Soil) (unitless)	Constituent-Specific
FI: Fraction Ingested from Site (unitless)	1
SA: Skin Surface Area (cm2/event)	2087
AF: Adherence Factor (mg/cm2)	0.2
AAF: Absorption Adjustment Factor (Dermal-Soil) (unitless)	Constituent-Specific
FA: Fraction Absorbed from Site (unitless)	1
EF: Exposure Frequency (days/year)	180
ED: Exposure Duration (years)	25
BW: Body Weight (kg)	71.8
AT: Averaging Time (days) (ED x 365 days/yr, noncancer)	9125
AT: Averaging Time (days) (75 yr. x 365 days/yr, cancer)	25550
RfD: Reference Dose (mg/kg-day)	Constituent-Specific
CSF: Cancer Slope Factor [1/(mg/kg-day)]	Constituent-Specific
CF: Conversion factor (kg/mg)	1.00E-06

		Noncancer Hazard Quotient					Excess Lifetime Cancer Risk				
Constituent	Soil Concentration (mg/kg)	Oral-Soil RAF (noncancer) Chronic	Dermal-Soil RAF (noncancer) Chronic	ADD (noncancer) (mg/kg-day)	Chronic RfD (mg/kg-day)	Soil HQ	Oral-Soil AAF (cancer)	Dermal-Soil AAF (cancer)	ADD (cancer) (mg/kg-day)	CSF [1/(mg/kg-day)]	Soil Risk (mg/kg)
Aldrin	1	1	0.25	1.06E-06	3.00E-05	3.53E-02	1	0.25	3.79E-07	1.70E+01	6.44E-06
Barium	1	1	0.001	3.46E-07	2.00E-01	1.73E-06	NA	NA	NA	NA	NA
Chlorobenzene	1	1	0	3.43E-07	2.00E-02	1.72E-05	NA	0	NA	NA	NA
Chloromethane	1	1	0	3.43E-07	2.60E-02	1.32E-05	NA	0	NA	NA	NA
4-Chloro-3-methylphenol	1	1	0.03	4.29E-07	5.00E-02	8.59E-06	NA	NA	NA	NA	NA
Chromium	1	1	0.04	4.58E-07	3.00E-03	1.53E-04	NA	NA	NA	NA	NA
4,4'-DDD	1	NA	NA	NA	NA	NA	1	0.2	3.27E-07	2.40E-01	7.86E-08
4,4'-DDE	1	NA	NA	NA	NA	NA	1	0.2	3.27E-07	3.40E-01	1.11E-07
4,4'-DDT	1	1	0.2	9.17E-07	5.00E-04	1.83E-03	1	0.2	3.27E-07	3.40E-01	1.11E-07
delta-BHC	1	1	0.25	1.06E-06	3.00E-04	3.53E-03	1	0.25	3.79E-07	1.30E+00	4.92E-07
Dibenzofuran	1	1	0.1	6.30E-07	2.00E-03	3.15E-04	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	1	1	0	3.43E-07	9.00E-02	3.82E-06	NA	0	NA	NA	NA
1,4-Dichlorobenzene	1	1	0	3.43E-07	3.00E-02	1.14E-05	1	0	1.23E-07	2.40E-02	2.94E-09
1,2-Dichloropropane	1	1	0.2	9.17E-07	1.10E-03	8.33E-04	1	0.2	3.27E-07	6.80E-02	2.23E-08
4,6-Dinitro-2-methylphenol	1	1	0.03	4.29E-07	1.00E-04	4.29E-03	NA	NA	NA	NA	NA
2,4-Dinitrophenol	1	1	0.03	4.29E-07	2.00E-03	2.15E-04	NA	NA	NA	NA	NA
Endosulfan II	1	1	0.2	9.17E-07	6.00E-03	1.53E-04	NA	NA	NA	NA	NA
Endosulfan Sulfate	1	1	0.2	9.17E-07	6.00E-03	1.53E-04	NA	NA	NA	NA	NA
Endrin	1	1	0.25	1.06E-06	3.00E-04	3.53E-03	NA	NA	NA	NA	NA
Endrin Aldehyde	1	1	0.25	1.06E-06	3.00E-04	3.53E-03	NA	NA	NA	NA	NA
Ethylbenzene	1	1	0	3.43E-07	1.00E-01	3.43E-06	NA	0	NA	NA	NA
Isopropylbenzene	1	1	0	3.43E-07	1.00E-01	3.43E-06	NA	0	NA	NA	NA
Manganese	1	1	0.05	4.87E-07	1.40E-01	3.48E-06	NA	NA	NA	NA	NA
Methylene Chloride	1	1	0.1	6.30E-07	6.00E-02	1.05E-05	1	0.1	2.25E-07	7.50E-03	1.69E-09
4-Nitrophenol	1	1	0.03	4.29E-07	8.00E-03	5.37E-05	NA	NA	NA	NA	NA
Phenol	1	1	0.1	6.30E-07	3.00E-01	2.10E-06	NA	NA	NA	NA	NA
Tetrachloroethene	1	1	0.1	6.30E-07	1.00E-02	6.30E-05	1	0.1	2.25E-07	5.40E-01	1.22E-07
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1	1	0.03	4.29E-07	3.00E-02	1.43E-05	NA	NA	NA	NA	NA
Toluene	1	1	0.04	4.58E-07	8.00E-02	5.73E-06	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	1	1	0	3.43E-07	1.00E-02	3.43E-05	NA	0	NA	NA	NA
1,1,1-Trichloroethane	1	1	0.1	6.30E-07	2.80E-02	2.25E-05	NA	NA	NA	NA	NA
Trichlorofluoromethane	1	1	0.1	6.30E-07	2.80E-02	2.25E-05	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	1	1	0.03	4.29E-07	1.00E-01	4.29E-06	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	1	1	0.03	4.29E-07	1.00E-04	4.29E-03	1	0.03	1.53E-07	1.10E-02	1.69E-09
1,2,4-Trimethylbenzene	1	1	0.1	6.30E-07	5.00E-02	1.26E-05	NA	NA	NA	NA	NA
Total Xylenes	1	1	0.04	4.58E-07	2.00E+00	2.29E-07	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HpCDD	1	NA	NA	NA	NA	NA	1	0.04	1.64E-07	1.50E+03	2.45E-04
1,2,3,4,6,7,8-HpCDF	1	NA	NA	NA	NA	NA	1	0.04	1.64E-07	1.50E+03	2.45E-04
1,2,3,4,7,8,9-HpCDF	1	NA	NA	NA	NA	NA	1	0.04	1.64E-07	1.50E+03	2.45E-04
1,2,3,4,7,8-HxCDD	1	NA	NA	NA	NA	NA	1	0.04	1.64E-07	1.50E+04	2.45E-03
1,2,3,4,7,8-HxCDF	1	NA	NA	NA	NA	NA	1	0.04	1.64E-07	1.50E+04	2.45E-03
1,2,3,6,7,8-HxCDD	1	NA	NA	NA	NA	NA	1	0.04	1.64E-07	1.50E+04	2.45E-03
1,2,3,6,7,8-HxCDF	1	NA	NA	NA	NA	NA	1	0.04	1.64E-07	1.50E+04	2.45E-03
1,2,3,7,8,9-HxCDD	1	NA	NA	NA	NA	NA	1	0.04	1.64E-07	1.50E+04	2.45E-03
1,2,3,7,8,9-HxCDF	1	NA	NA	NA	NA	NA	1	0.04	1.64E-07	1.50E+04	2.45E-03
1,2,3,7,8-PeCDD	1	NA	NA	NA	NA	NA	1	0.04	1.64E-07	1.50E+05	2.45E-02
1,2,3,7,8-PeCDF	1	NA	NA	NA	NA	NA	1	0.04	1.64E-07	4.50E+03	7.36E-04
2,3,4,6,7,8-HxCDF	1	NA	NA	NA	NA	NA	1	0.04	1.64E-07	1.50E+04	2.45E-03
2,3,4,7,8-PeCDF	1	NA	NA	NA	NA	NA	1	0.04	1.64E-07	4.50E+04	7.36E-03
2,3,7,8-TCDD	1	NA	NA	NA	NA	NA	1	0.04	1.64E-07	1.50E+05	2.45E-02
2,3,7,8-TCDF	1	NA	NA	NA	NA	NA	1	0.04	1.64E-07	1.50E+04	2.45E-03
OCDD	1	NA	NA	NA	NA	NA	1	0.04	1.64E-07	4.50E+01	7.36E-06
OCDF	1	NA	NA	NA	NA	NA	1	0.04	1.64E-07	4.50E+01	7.36E-06
TCDD TEQ	1	NA	NA	NA	NA	NA	1	0.04	1.64E-07	1.50E+05	2.45E-02
Acenaphthene	1	1	0.1	6.30E-07	6.00E-02	1.05E-05	NA	NA	NA	NA	NA
Acenaphthylene	1	1	0.1	6.30E-07	2.00E-02	3.15E-05	NA	NA	NA	NA	NA
Anthracene	1	1	0.1	6.30E-07	3.00E-01	2.10E-06	NA	NA	NA	NA	NA
Benzo(a)anthracene	1	1	0.02	4.01E-07	2.00E-02	2.00E-05	1	0.02	1.43E-07	7.30E-01	1.04E-07
Benzo(a)pyrene	1	1	0.02	4.01E-07	2.00E-02	2.00E-05	1	0.02	1.43E-07	7.30E+00	1.04E-06
Benzo(b)fluoranthene	1	1	0.02	4.01E-07	2.00E-02	2.00E-05	1	0.02	1.43E-07	7.30E-01	1.04E-07
Benzo(g,h,i)perylene	1	1	0.1	6.30E-07	2.00E-02	3.15E-05	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	1	1	0.02	4.01E-07	2.00E-02	2.00E-05	1	0.02	1.43E-07	7.30E-02	1.04E-08
Chrysene	1	1	0.02	4.01E-07	2.00E-02	2.00E-05	1	0.02	1.43E-07	7.30E-03	1.04E-09
Dibenz(a,h)anthracene	1	1	0.02	4.01E-07	2.00E-02	2.00E-05	1	0.02	1.43E-07	7.30E+00	1.04E-06
Fluoranthene	1	1	0.1	6.30E-07	4.00E-02	1.58E-05	NA	NA	NA	NA	NA
Fluorene	1	1	0.1	6.30E-07	4.00E-02	1.58E-05	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1	1	0.02	4.01E-07	2.00E-02	2.00E-05	1	0.02	1.43E-07	7.30E-01	1.04E-07
1-Methylnaphthalene	1	1	0.1	6.30E-07	2.00E-02	3.15E-05	NA	NA	NA	NA	NA
2-Methylnaphthalene	1	1	0.1	6.30E-07	2.00E-02	3.15E-05	NA	NA	NA	NA	NA
Naphthalene	1	1	0.1	6.30E-07	2.00E-02	3.15E-05	NA	NA	NA	NA	NA
Phenanthrene	1	1	0.1	6.30E-07	2.00E-02	3.15E-05	NA	NA	NA	NA	NA
Pyrene	1	1	0.1	6.30E-07	3.00E-02	2.10E-05	NA	NA	NA	NA	NA
BaP-TE	1	1	0.02	4.01E-07	2.00E-02	2.00E-05	1	0.02	1.43E-07	7.30E+00	1.04E-06
Pentachlorophenol	1	1	0.03	4.29E-07	3.00E-02	1.43E-05	1	0.03	1.53E-07	1.20E-01	1.84E-08

Table C-2 Unitized Risk Calculation

Scenario:	Current
Receptor:	KI Site Worker
Medium:	Shallow Soil (0-1')
Exposure Pathway:	Particulate Inhalation

ADD (mg/kg-d) = $\frac{CS \times RPC \times RAF \times ET \times EF \times ED \times CF}{BW \times AT}$

Hazard Quotient (HQ) = ADD (mg/kg-d) / RfDi (mg/kg-d)
Cancer Risk (ELCR) = ADD (mg/kg-d) * CSFi [1/(mg/kg-d)]

Parameter (units)	Value
ADD: Average Daily Dose (mg/kg-d)	See Below
CS: Constituent Concentration in Soil (mg/kg)	Constituent-Specific
RPC: Respirable Particulate Concentration (mg/m3)	0.0014
IF: Inhalation Rate (m3/hr)	3
ET: Exposure Time (hr/day)	8
EF: Exposure Frequency (days/year)	180
ED: Exposure Duration (years)	25
ATn: Averaging Time (days) (ED x 365 days/yr, noncancer)	9125
ATc: Averaging Time (days) (70 yr. x 365 days/yr, cancer)	25550
CF: Conversion Factor (kg/mg)	1.00E-06
RfDi: Inhalation Reference Dose (mg/kg-d)	Constituent-Specific
CSFi: Inhalation Cancer Slope Factor [1/(mg/kg-d)]	Constituent-Specific
BW: Body Weight (kg)	71.8

			Noncancer Hazard Quotient				Excess Lifetime Cancer Risk			
Constituent	0-1 ft. Soil Concentration (mg/kg)	Dust Concentration (mg/m3)	Inhalation RAF (noncancer)	ADD (noncancer) (mg/kg-d)	RfDi (mg/kg-d)	Dust HQ	Inhalation AAF (cancer)	LADD (cancer) (mg/kg-d)	CSFi [1/(mg/kg-d)]	Dust Risk
Aldrin	1	1.4E-09	1	2.31E-10	3.00E-05	7.69E-06	1	8.24207E-11	1.70E+01	1.40E-09
Barium	1	1.4E-09	1	2.31E-10	2.00E-01	1.15E-09	NA	NA	NA	NA
Chlorobenzene	1	1.4E-09	1	2.31E-10	1.40E-02	1.65E-08	NA	NA	NA	NA
Chloromethane	1	1.4E-09	1	2.31E-10	2.60E-02	8.88E-09	NA	NA	NA	NA
4-Chloro-3-methylphenol	1	1.4E-09	1	2.31E-10	5.00E-02	4.62E-09	NA	NA	NA	NA
Chromium	1	1.4E-09	1	2.31E-10	2.86E-05	8.08E-06	1	8.24207E-11	4.20E+01	3.46E-09
4,4'-DDD	1	1.4E-09	NA	NA	NA	NA	1	8.24207E-11	2.40E-01	1.98E-11
4,4'-DDE	1	1.4E-09	NA	NA	NA	NA	1	8.24207E-11	3.40E-01	2.80E-11
4,4'-DDT	1	1.4E-09	1	2.31E-10	5.00E-04	4.62E-07	1	8.24207E-11	3.40E-01	2.80E-11
delta-BHC	1	1.4E-09	1	2.31E-10	3.00E-04	7.69E-07	1	8.24207E-11	NA	NA
Dibenzofuran	1	1.4E-09	1	2.31E-10	2.00E-03	1.15E-07	NA	NA	NA	NA
1,2-Dichlorobenzene	1	1.4E-09	1	2.31E-10	6.90E-03	3.34E-08	NA	NA	NA	NA
1,4-Dichlorobenzene	1	1.4E-09	1	2.31E-10	2.30E-01	1.00E-09	1	8.24207E-11	2.40E-02	1.98E-12
1,2-Dichloropropane	1	1.4E-09	1	2.31E-10	1.10E-03	2.10E-07	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	1	1.4E-09	1	2.31E-10	1.00E-04	2.31E-06	NA	NA	NA	NA
2,4-Dinitrophenol	1	1.4E-09	1	2.31E-10	2.00E-03	1.15E-07	NA	NA	NA	NA
Endosulfan II	1	1.4E-09	1	2.31E-10	6.00E-03	3.85E-08	NA	NA	NA	NA
Endosulfan Sulfate	1	1.4E-09	1	2.31E-10	6.00E-03	3.85E-08	NA	NA	NA	NA
Endrin	1	1.4E-09	1	2.31E-10	3.00E-04	7.69E-07	NA	NA	NA	NA
Endrin Aldehyde	1	1.4E-09	1	2.31E-10	3.00E-04	7.69E-07	NA	NA	NA	NA
Ethylbenzene	1	1.4E-09	1	2.31E-10	2.90E-01	7.96E-10	NA	NA	NA	NA
Isoproylbenzene	1	1.4E-09	1	2.31E-10	1.00E-01	2.31E-09	NA	NA	NA	NA
Manganese	1	1.4E-09	1	2.31E-10	1.43E-05	1.61E-05	NA	NA	NA	NA
Methylene Chloride	1	1.4E-09	1	2.31E-10	8.60E-01	2.68E-10	1	8.24207E-11	1.65E-03	1.36E-13
4-Nitrophenol	1	1.4E-09	1	2.31E-10	8.00E-03	2.88E-08	NA	NA	NA	NA
Phenol	1	1.4E-09	1	2.31E-10	3.00E-01	7.69E-10	NA	NA	NA	NA
Tetrachloroethene	1	1.4E-09	1	2.31E-10	1.10E-01	2.10E-09	1	8.24207E-11	2.10E-02	1.73E-12
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1	1.4E-09	1	2.31E-10	3.00E-02	7.69E-09	NA	NA	NA	NA
Toluene	1	1.4E-09	1	2.31E-10	1.40E+00	1.65E-10	NA	NA	NA	NA
1,2,4-Trichlorobenzene	1	1.4E-09	1	2.31E-10	1.10E-03	2.10E-07	NA	NA	NA	NA
1,1,1-Trichloroethane	1	1.4E-09	1	2.31E-10	6.30E-01	3.66E-10	NA	NA	NA	NA
Trichlorofluoromethane	1	1.4E-09	1	2.31E-10	2.00E-01	1.15E-09	NA	NA	NA	NA
2,4,5-Trichlorophenol	1	1.4E-09	1	2.31E-10	1.00E-01	2.31E-09	NA	NA	NA	NA
2,4,6-Trichlorophenol	1	1.4E-09	1	2.31E-10	1.00E-04	2.31E-06	1	8.24207E-11	1.09E-02	8.94E-13
1,2,4-Trimethylbenzene	1	1.4E-09	1	2.31E-10	1.70E-03	1.36E-07	NA	NA	NA	NA
Total Xylenes	1	1.4E-09	1	2.31E-10	2.86E-02	8.08E-09	NA	NA	NA	NA
1,2,3,4,6,7,8-HpCDD	1	1.4E-09	NA	NA	NA	NA	1	8.24207E-11	1.50E+03	1.24E-07
1,2,3,4,6,7,8-HpCDF	1	1.4E-09	NA	NA	NA	NA	1	8.24207E-11	1.50E+03	1.24E-07
1,2,3,4,7,8,9-HpCDF	1	1.4E-09	NA	NA	NA	NA	1	8.24207E-11	1.50E+03	1.24E-07
1,2,3,4,7,8-HxCDD	1	1.4E-09	NA	NA	NA	NA	1	8.24207E-11	1.50E+04	1.24E-06
1,2,3,4,7,8-HxCDF	1	1.4E-09	NA	NA	NA	NA	1	8.24207E-11	1.50E+04	1.24E-06
1,2,3,6,7,8-HxCDD	1	1.4E-09	NA	NA	NA	NA	1	8.24207E-11	1.50E+04	1.24E-06
1,2,3,6,7,8-HxCDF	1	1.4E-09	NA	NA	NA	NA	1	8.24207E-11	1.50E+04	1.24E-06
1,2,3,7,8,9-HxCDD	1	1.4E-09	NA	NA	NA	NA	1	8.24207E-11	1.50E+04	1.24E-06
1,2,3,7,8,9-HxCDF	1	1.4E-09	NA	NA	NA	NA	1	8.24207E-11	1.50E+04	1.24E-06
1,2,3,7,8-PeCDD	1	1.4E-09	NA	NA	NA	NA	1	8.24207E-11	1.50E+05	1.24E-05
1,2,3,7,8-PeCDF	1	1.4E-09	NA	NA	NA	NA	1	8.24207E-11	4.50E+03	3.71E-07
2,3,4,6,7,8-HxCDF	1	1.4E-09	NA	NA	NA	NA	1	8.24207E-11	1.50E+04	1.24E-06
2,3,4,7,8-PeCDF	1	1.4E-09	NA	NA	NA	NA	1	8.24207E-11	4.50E+04	3.71E-06
2,3,7,8-TCDD	1	1.4E-09	NA	NA	NA	NA	1	8.24207E-11	1.50E+05	1.24E-05
2,3,7,8-TCDF	1	1.4E-09	NA	NA	NA	NA	1	8.24207E-11	1.50E+04	1.24E-06
OCDD	1	1.4E-09	NA	NA	NA	NA	1	8.24207E-11	4.50E+01	3.71E-09
OCDF	1	1.4E-09	NA	NA	NA	NA	1	8.24207E-11	4.50E+01	3.71E-09
TCDD TEQ	1	1.4E-09	NA	NA	NA	NA	1	8.24207E-11	1.50E+05	1.24E-05
Acenaphthene	1	1.4E-09	1	2.31E-10	6.00E-02	3.85E-09	NA	NA	NA	NA
Acenaphthylene	1	1.4E-09	1	2.31E-10	3.00E-02	7.69E-09	NA	NA	NA	NA
Anthracene	1	1.4E-09	1	2.31E-10	3.00E-01	7.69E-10	NA	NA	NA	NA
Benzo(a)anthracene	1	1.4E-09	1	2.31E-10	3.00E-02	7.69E-09	1	8.24207E-11	3.10E-01	2.56E-11
Benzo(a)pyrene	1	1.4E-09	1	2.31E-10	3.00E-02	7.69E-09	1	8.24207E-11	3.10E+00	2.56E-10
Benzo(b)fluoranthene	1	1.4E-09	1	2.31E-10	3.00E-02	7.69E-09	1	8.24207E-11	3.10E-01	2.56E-11
Benzo(g,h,i)perylene	1	1.4E-09	1	2.31E-10	3.00E-02	7.69E-09	NA	NA	NA	NA
Benzo(k)fluoranthene	1	1.4E-09	1	2.31E-10	3.00E-02	7.69E-09	1	8.24207E-11	3.10E-02	2.56E-12
Chrysene	1	1.4E-09	1	2.31E-10	3.00E-02	7.69E-09	1	8.24207E-11	3.10E-03	2.56E-13
Dibenz(a,h)anthracene	1	1.4E-09	1	2.31E-10	3.00E-02	7.69E-09	1	8.24207E-11	3.10E+00	2.56E-10
Fluoranthene	1	1.4E-09	1	2.31E-10	4.00E-02	5.77E-09	NA	NA	NA	NA
Fluorene	1	1.4E-09	1	2.31E-10	4.00E-02	5.77E-09	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1	1.4E-09	1	2.31E-10	3.00E-02	7.69E-09	1	8.24207E-11	3.10E-01	2.56E-11
1-Methylnaphthalene	1	1.4E-09	1	2.31E-10	8.57E-04	2.69E-07	NA	NA	NA	NA
2-Methylnaphthalene	1	1.4E-09	1	2.31E-10	8.57E-04	2.69E-07	NA	NA	NA	NA
Naphthalene	1	1.4E-09	1	2.31E-10	8.57E-04	2.69E-07	NA	NA	NA	NA
Phenanthrene	1	1.4E-09	1	2.31E-10	8.60E-04	2.68E-07	NA	NA	NA	NA
Pyrene	1	1.4E-09	1	2.31E-10	3.00E-02	7.69E-09	NA	NA	NA	NA
BaP-TE	1	1.4E-09	1	2.31E-10	3.00E-02	7.69E-09	1	8.24207E-11	3.10E+00	2.56E-10
Pentachlorophenol	1	1.4E-09	1	2.31E-10	3.00E-02	7.69E-09	NA	NA	NA	NA

Table C-3 Unitized Risk Calculation

Scenario:	Current
Receptor:	KI Site Worker
Medium:	Shallow Soil (0-1')
Exposure Pathway:	Inhalation of Volatiles in Soil

$$VF = \frac{Q/C * (\pi * D_A * T)^{1/2}}{2 * \rho_b * D_A} * C \quad ([mg/m^3]/[mg/kg])$$

$$Risk = \frac{C_a * IR * EF * ED * CSFi}{ATc * BW}$$

$$D_A = \frac{[(\theta_a^{10/3} * D_a * H' + \theta_w^{10/3} * D_w) * 1/n^2]}{\rho_b * K_d + \theta_w + \theta_a * H'}$$

$$HQ = \frac{C_a * IR * EF * ED}{ATnc * BW * RfDi}$$

$$K_d = K_{oc} * F_{oc}$$

Air Concentration (ug/m3) = Soil Conc. (mg/kg) * VF [(mg/m3)/(mg/kg)]

Parameter	Value	Comment
Q/C: Inverse of the mean concentration at center of square source ((g/m2-s) / (kg/m3)) (cm)	46.92	Value for 30-acre source area in Minneapolis, MN (SSL 96)
C: Conversion factor (m2/cm2)	0.0001	
D_A: Apparent diffusivity (cm^2/s)	see below	
H': Henry's Law Coefficient (cm^3-water/cm^3-air)	see below	
ρ_b: Soil bulk density (g/cm3)	1.5	
θ_w: Water-filled soil porosity (unitless)	0.15	
θ_a: Air-filled soil porosity (unitless)	0.28	
n: Total soil porosity (cm3/cm3)	0.43	
K_d: Soil-water sorption coefficient (K/kg)	see below	
K_{oc}: organic carbon-water sorption coefficient (K/kg)	see below	
F_{oc}: Fraction organic carbon	0.015	
D_a: Molecular diffusion coefficient in air (cm^2/s)	see below	
D_w: Molecular diffusion coefficient in water (cm^2/s)	see below	
T: Exposure interval (s)	788400000	
IR: Inhalation rate (m3/d)	24	
EF: Exposure frequency (days/year)	180	
ED: Exposure duration (years)	25	
Li: Lifetime (years)	25550	
ATnc: Averaging time - noncancer (days)	9125	
BW: Body weight (kg)	71.8	

								Shallow Soil (0-1')				
Constituent	H	K_{oc}	D_a	D_w	D_A	VF	CSFi (1/(mg/kg-d)	RfDi (mg/m3)	Conc (mg/kg)	Air conc. (mg/m3)	Risk	HQ
Aldrin	7.0E-03	2450000	1.3E-02	4.9E-06	1.30E-10	6.81E+06	1.7E+01	3.00E-05	1.0	1.47E-07	1.47E-07	8.06E-04
Barium	NA	NA	NA	NA	NA	NA	NA	2.00E-01	1.0	NA	NA	NA
Chlorobenzene	1.5E-01	219	7.3E-02	8.7E-06	1.68E-04	6.00E+03	NA	1.40E-02	1.0	1.67E-04	NA	1.96E-03
Chloromethane	3.6E-01	14	1.3E-01	6.5E-06	6.17E-03	9.91E+02	NA	2.60E-02	1.0	1.01E-03	NA	6.40E-03
4-Chloro-3-methylphenol	1.4E-05	878	6.5E-02	8.0E-06	7.43E-09	9.03E+05	NA	5.00E-02	1.0	1.11E-06	NA	3.65E-06
Chromium	NA	NA	NA	NA	NA	NA	4.2E+01	2.86E-05	1.0	NA	NA	NA
4,4'-DDD	1.6E-04	1000000	1.7E-02	4.8E-06	1.16E-11	2.28E+07	2.4E-01	NA	1.0	4.38E-08	6.19E-10	NA
4,4'-DDE	8.6E-04	4470000	1.4E-02	5.9E-06	1.01E-11	2.44E+07	3.4E-01	NA	1.0	4.09E-08	8.19E-10	NA
4,4'-DDT	3.3E-04	2630000	1.4E-02	5.0E-06	6.78E-12	2.99E+07	3.4E-01	5.00E-04	1.0	3.35E-08	6.70E-10	1.10E-05
delta-BHC	5.7E-04	1070	1.4E-02	7.3E-06	2.91E-08	4.57E+05	NA	3.00E-04	1.0	2.19E-06	NA	1.20E-03
Dibenzofuran	5.3E-02	8490	5.5E-02	7.0E-06	1.18E-06	7.16E+04	NA	2.00E-03	1.0	1.40E-05	NA	1.15E-03
1,2-Dichlorobenzene	7.8E-02	617	6.9E-02	7.9E-06	2.97E-05	1.43E+04	NA	6.90E-03	1.0	7.00E-05	NA	1.67E-03
1,4-Dichlorobenzene	7.4E+01	617	6.9E-02	7.9E-06	1.14E-02	7.29E+02	2.4E-02	2.30E-01	1.0	1.37E-03	1.94E-06	9.83E-04
1,2-Dichloropropane	1.2E-01	44	7.8E-02	8.7E-06	5.99E-04	3.18E+03	NA	1.10E-03	1.0	3.15E-04	NA	4.71E-02
4,6-Dinitro-2-methylphenol	1.1E-07	0.03	5.3E-02	7.3E-06	4.71E-07	1.13E+05	NA	1.00E-04	1.0	8.81E-06	NA	1.45E-02
2,4-Dinitrophenol	1.8E-05	0.01	2.7E-02	9.1E-06	8.42E-07	8.48E+04	NA	2.00E-03	1.0	1.18E-05	NA	9.71E-04
Endosulfan II	4.6E-04	2140	1.2E-02	4.6E-06	9.40E-09	8.03E+05	NA	6.00E-03	1.0	1.25E-06	NA	3.42E-05
Endosulfan Sulfate	4.6E-04	2140	1.2E-02	4.6E-06	9.40E-09	8.03E+05	NA	6.00E-03	1.0	1.25E-06	NA	3.42E-05
Endrin	3.1E-04	12300	1.3E-02	4.7E-06	1.25E-09	2.21E+06	NA	3.00E-04	1.0	4.53E-07	NA	2.49E-04
Endrin Aldehyde	3.1E-04	12300	1.3E-02	4.7E-06	1.25E-09	2.21E+06	NA	3.00E-04	1.0	4.53E-07	NA	2.49E-04
Ethylbenzene	3.2E-01	363	7.5E-02	7.8E-06	2.24E-04	5.20E+03	NA	2.90E-01	1.0	1.92E-04	NA	1.09E-04
Isopropylbenzene	4.7E-01	817	6.5E-02	7.1E-06	1.27E-04	6.90E+03	NA	1.00E-01	1.0	1.45E-04	NA	2.39E-04
Manganese	NA	NA	NA	NA	NA	NA	NA	1.43E-05	1.0	NA	NA	NA
Methylene Chloride	9.0E-02	12	1.0E-01	1.2E-05	1.61E-03	1.94E+03	1.6E-03	8.60E-01	1.0	5.15E-04	4.99E-08	9.87E-05
4-Nitrophenol	3.2E-08	3	6.7E-02	8.7E-06	3.81E-07	1.26E+05	NA	8.00E-03	1.0	7.93E-06	NA	1.63E-04
Phenol	1.6E-05	29	8.2E-02	9.1E-06	2.41E-07	1.59E+05	NA	3.00E-01	1.0	6.30E-06	NA	3.46E-06
Tetrachloroethene	7.5E-01	155	7.2E-02	8.2E-06	1.10E-03	2.35E+03	2.1E-02	1.10E-01	1.0	4.25E-04	5.26E-07	6.37E-04
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	2.5E-04	105	2.2E-02	7.1E-06	1.98E-07	1.75E+05	NA	3.00E-02	1.0	5.71E-06	NA	3.14E-05
Toluene	2.7E-01	182	8.7E-02	8.6E-06	4.25E-04	3.77E+03	NA	1.40E+00	1.0	2.65E-04	NA	3.12E-05
1,2,4-Trichlorobenzene	5.8E-02	1780	3.0E-02	8.2E-06	3.37E-06	4.24E+04	NA	1.10E-03	1.0	2.36E-05	NA	3.54E-03
1,1,1-Trichloroethane	7.1E-01	110	7.8E-02	8.8E-06	1.51E-03	2.00E+03	NA	6.30E-01	1.0	5.00E-04	NA	1.31E-04
Trichlorofluoromethane	4.0E+00	135	8.7E-02	9.7E-06	6.31E-03	9.80E+02	NA	2.00E-01	1.0	1.02E-03	NA	8.41E-04
2,4,5-Trichlorophenol	1.8E-04	1600	2.9E-02	7.0E-06	1.30E-08	6.82E+05	NA	1.00E-01	1.0	1.47E-06	NA	2.42E-06
2,4,6-Trichlorophenol	3.2E-04	131	3.2E-02	6.3E-06	2.74E-07	1.49E+05	1.1E-02	1.00E-04	1.0	6.72E-06	4.30E-09	1.11E-02
1,2,4-Trimethylbenzene	1.8E-01	933	6.2E-02	7.3E-06	4.19E-05	1.20E+04	NA	1.70E-03	1.0	8.32E-05	NA	8.07E-03
Total Xylenes	3.0E-01	407	7.0E-02	7.8E-06	1.74E-04	5.90E+03	NA	2.86E-02	1.0	1.70E-04	NA	9.78E-04
1,2,3,4,6,7,8-HpCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+03	NA	1.0	5.32E-08	4.70E-06	NA
1,2,3,4,6,7,8-HpCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+03	NA	1.0	5.32E-08	4.70E-06	NA
1,2,3,4,7,8,9-HpCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+03	NA	1.0	5.32E-08	4.70E-06	NA
1,2,3,4,7,8-HxCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+04	NA	1.0	5.32E-08	4.70E-05	NA
1,2,3,4,7,8-HxCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+04	NA	1.0	5.32E-08	4.70E-05	NA
1,2,3,6,7,8-HxCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+04	NA	1.0	5.32E-08	4.70E-05	NA
1,2,3,6,7,8-HxCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+04	NA	1.0	5.32E-08	4.70E-05	NA
1,2,3,7,8,9-HxCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+04	NA	1.0	5.32E-08	4.70E-05	NA
1,2,3,7,8,9-HxCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+04	NA	1.0	5.32E-08	4.70E-05	NA
1,2,3,7,8-PeCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+05	NA	1.0	5.32E-08	4.70E-04	NA
1,2,3,7,8-PeCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	4.5E+03	NA	1.0	5.32E-08	1.41E-05	NA
2,3,4,6,7,8-HxCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+04	NA	1.0	5.32E-08	4.70E-05	NA
2,3,4,7,8-PeCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	4.5E+04	NA	1.0	5.32E-08	1.41E-04	NA
2,3,7,8-TCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+05	NA	1.0	5.32E-08	4.70E-04	NA
2,3,7,8-TCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+04	NA	1.0	5.32E-08	4.70E-05	NA
OCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	4.5E+01	NA	1.0	5.32E-08	1.41E-07	NA
OCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	4.5E+01	NA	1.0	5.32E-08	1.41E-07	NA
TCDD TEQ	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.50E+05	NA	1.0	5.32E-08	4.70E-04	NA
Acenaphthene	6.4E-03	7079	4.2E-02	7.7E-06	1.31E-07	2.15E+05	NA	6.00E-02	1.0	4.66E-06	NA	1.28E-05
Acenaphthylene	4.7E-03	6918	4.4E-02	7.1E-06	1.04E-07	2.42E+05	NA	3.00E-02	1.0	4.13E-06	NA	2.27E-05
Anthracene	2.7E-03	29512	3.2E-02	7.7E-06	1.02E-08	7.70E+05	NA	3.00E-01	1.0	1.30E-06	NA	7.14E-07
Benzo(a)anthracene	1.4E-04	398107	5.1E-02	9.0E-06	7.17E-11	9.20E+06	3.10E-01	3.00E-02	1.0	1.09E-07	1.98E-09	5.98E-07
Benzo(a)pyrene	4.6E-05	1023293	4.3E-02	9.0E-06	1.05E-11	2.41E+07	3.10E+00	3.00E-02	1.0	4.16E-08	7.58E-09	2.28E-07
Benzo(b)fluoranthene	4.6E-03	1230269	2.3E-02	5.6E-06	2.99E-10	4.50E+06	3.10E-01	3.00E-02	1.0	2.22E-07	4.05E-09	1.22E-06
Benzo(g,h,i)perylene	5.8E-06	1584893	4.9E-02	5.7E-05	1.61E-11	1.94E+07	NA	3.00E-02	1.0	5.16E-08	NA	2.83E-07
Benzo(k)fluoranthene	3.4E-05	1230269	2.3E-02	5.6E-06	4.16E-12	3.82E+07	3.10E-02	3.00E-02	1.0	2.62E-08	4.78E-11	1.44E-07
Chrysene	3.9E-03	398107	2.5E-02	6.2E-06	8.52E-10	2.67E+06	3.10E-03	3.00E-02	1.0	3.75E-07	6.84E-11	2.06E-06
Dibenz(a,h)anthracene	6.0E-07	3801894	2.0E-02	5.2E-06	6.00E-13	1.00E+08	3.10E+00	3.00E-02	1.0	9.96E-09	1.82E-09	5.47E-08
Fluoranthene	6.6E-04	107152	3.0E-02	6.4E-06	6.64E-10	3.02E+06	NA	4.00E-02	1.0	3.31E-07	NA	1.36E-06
Fluorene	2.6E-03	13804	3.6E-02	7.9E-06	2.36E-08	5.06E+05	NA	4.00E-02	1.0	1.98E-06	NA	8.14E-06
Indeno(1,2,3-cd)pyrene	6.6E-05	3467368	1.9E-02	5.7E-06	1.96E-12	5.56E+07	3.10E-01	3.00E-02	1.0	1.80E-08	3.28E-10	9.88E-08
1-Methylnaphthalene	1.6E-02	2290	6.3E-02	7.1E-06	1.56E-06	6.24E+04	NA	8.57E-04	1.0	1.60E-05	NA	3.08E-03
2-Methylnaphthalene	1.9E-02	4320	6.3E-02	7.2E-06	9.29E-07	8.08E+04	NA	8.57E-04	1.0	1.24E-05	NA	2.38E-03
Naphthalene	2.0E-02	1995	5.9E-02	7.5E-06	2.02E-06	5.48E+04	NA	8.57E-04	1.0	1.82E-05	NA	3.51E-03
Phenanthrene	5.4E-03	14125	3.3E-02	7.5E-06	4.38E-08	3.72E+05	NA	8.60E-04	1.0	2.69E-06	NA	5.15E-04
Pyrene	4.5E-04	104713	2.7E-02	7.2E-06	4.30E-10	3.75E+06	NA	3.00E-02	1.0	2.66E-07	NA	1.46E-06
BaP-TE	4.6E-05	1023293	4.3E-02	9.0E-06	1.05E-11	2.41E+07	3.10E+00	3.00E-02	1.0	4.16E-08	7.58E-09	2.28E-07
Pentachlorophenol	1.0E-06	19953	5.6E-02	6.1E-06	1.41E-10	6.55E+06	NA	3.00E-02	1.0	1.53E-07	NA	8.39E-07

Table C-4
SITE-WIDE & AREA-SPECIFIC RISKS
INGESTION/DERMAL
KI SITE WORKER

Constituent	Site-Wide			Area A			Area B			Area C			Area F		
	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	1.06E-04	1.93E-08	3.00E-03	1.06E-04	1.93E-08	3.00E-03	1.06E-04	1.93E-08	3.00E-03	1.06E-04	1.93E-08	3.00E-03	1.06E-04	1.93E-08
Barium	2.99E+02	5.18E-04	NA	2.99E+02	5.18E-04	NA	2.99E+02	5.18E-04	NA	2.99E+02	5.18E-04	NA	2.99E+02	5.18E-04	NA
Chlorobenzene	3.00E-03	5.15E-08	NA	3.00E-03	5.15E-08	NA	3.00E-03	5.15E-08	NA	3.00E-03	5.15E-08	NA	3.00E-03	5.15E-08	NA
Chloromethane	2.00E-03	2.64E-08	NA	2.00E-03	2.64E-08	NA	2.00E-03	2.64E-08	NA	2.00E-03	2.64E-08	NA	2.00E-03	2.64E-08	NA
4-Chloro-3-methylphenol	2.50E-01	2.15E-06	NA	2.50E-01	2.15E-06	NA	2.50E-01	2.15E-06	NA	2.50E-01	2.15E-06	NA	2.50E-01	2.15E-06	NA
Chromium	6.80E+01	1.04E-02	NA	6.80E+01	1.04E-02	NA	6.80E+01	1.04E-02	NA	6.80E+01	1.04E-02	NA	6.80E+01	1.04E-02	NA
4,4'-DDD	3.60E-02	NA	2.83E-09	3.60E-02	NA	2.83E-09	3.60E-02	NA	2.83E-09	3.60E-02	0.00E+00	2.83E-09	3.60E-02	NA	2.83E-09
4,4'-DDE	8.00E-03	NA	8.91E-10	8.00E-03	NA	8.91E-10	8.00E-03	NA	8.91E-10	8.00E-03	0.00E+00	8.91E-10	8.00E-03	NA	8.91E-10
4,4'-DDT	1.90E-02	3.48E-05	2.12E-09	1.90E-02	3.48E-05	2.12E-09	1.90E-02	3.48E-05	2.12E-09	1.90E-02	3.48E-05	2.12E-09	1.90E-02	3.48E-05	2.12E-09
delta-BHC	3.00E-03	1.06E-05	1.48E-09	3.00E-03	1.06E-05	1.48E-09	3.00E-03	1.06E-05	1.48E-09	3.00E-03	1.06E-05	1.48E-09	3.00E-03	1.06E-05	1.48E-09
Dibenzofuran	1.90E+00	5.99E-04	NA	1.90E+00	5.99E-04	NA	1.90E+00	5.99E-04	NA	1.90E+00	5.99E-04	NA	1.90E+00	5.99E-04	NA
1,2-Dichlorobenzene	2.00E-03	7.63E-09	NA	2.00E-03	7.63E-09	NA	2.00E-03	7.63E-09	NA	2.00E-03	7.63E-09	NA	2.00E-03	7.63E-09	NA
1,4-Dichlorobenzene	2.00E-03	2.29E-08	5.89E-12	2.00E-03	2.29E-08	5.89E-12	2.00E-03	2.29E-08	5.89E-12	2.00E-03	2.29E-08	5.89E-12	2.00E-03	2.29E-08	5.89E-12
1,2-Dichloropropane	4.00E-03	3.33E-06	8.91E-11	4.00E-03	3.33E-06	8.91E-11	4.00E-03	3.33E-06	8.91E-11	4.00E-03	3.33E-06	8.91E-11	4.00E-03	3.33E-06	8.91E-11
4,6-Dinitro-2-methylphenol	1.50E+00	6.44E-03	NA	1.50E+00	6.44E-03	NA	1.50E+00	6.44E-03	NA	1.50E+00	6.44E-03	NA	1.50E+00	6.44E-03	NA
2,4-Dinitrophenol	6.30E-01	1.35E-04	NA	6.30E-01	1.35E-04	NA	6.30E-01	1.35E-04	NA	6.30E-01	1.35E-04	NA	6.30E-01	1.35E-04	NA
Endosulfan II	1.40E-02	2.14E-06	NA	1.40E-02	2.14E-06	NA	1.40E-02	2.14E-06	NA	1.40E-02	2.14E-06	NA	1.40E-02	2.14E-06	NA
Endosulfan Sulfate	1.40E-02	2.14E-06	NA	1.40E-02	2.14E-06	NA	1.40E-02	2.14E-06	NA	1.40E-02	2.14E-06	NA	1.40E-02	2.14E-06	NA
Endrin	3.60E-02	1.27E-04	NA	3.60E-02	1.27E-04	NA	3.60E-02	1.27E-04	NA	3.60E-02	1.27E-04	NA	3.60E-02	1.27E-04	NA
Endrin Aldehyde	3.30E-02	1.17E-04	NA	3.30E-02	1.17E-04	NA	3.30E-02	1.17E-04	NA	3.30E-02	1.17E-04	NA	3.30E-02	1.17E-04	NA
Ethylbenzene	2.10E+00	7.21E-06	NA	2.10E+00	7.21E-06	NA	2.10E+00	7.21E-06	NA	2.10E+00	7.21E-06	NA	2.10E+00	7.21E-06	NA
Isopropylbenzene	3.30E-02	1.13E-07	NA	3.30E-02	1.13E-07	NA	3.30E-02	1.13E-07	NA	3.30E-02	1.13E-07	NA	3.30E-02	1.13E-07	NA
Manganese	8.52E+02	2.96E-03	NA	8.52E+02	2.96E-03	NA	8.52E+02	2.96E-03	NA	8.52E+02	2.96E-03	NA	8.52E+02	2.96E-03	NA
Methylene Chloride	7.40E-02	7.77E-07	1.25E-10	7.40E-02	7.77E-07	1.25E-10	7.40E-02	7.77E-07	1.25E-10	7.40E-02	7.77E-07	1.25E-10	7.40E-02	7.77E-07	1.25E-10
4-Nitrophenol	2.50E-01	1.34E-05	NA	2.50E-01	1.34E-05	NA	2.50E-01	1.34E-05	NA	2.50E-01	1.34E-05	NA	2.50E-01	1.34E-05	NA
Phenol	1.20E-02	2.52E-08	NA	1.20E-02	2.52E-08	NA	1.20E-02	2.52E-08	NA	1.20E-02	2.52E-08	NA	1.20E-02	2.52E-08	NA
Tetrachloroethene	8.00E-03	5.04E-07	9.72E-10	8.00E-03	5.04E-07	9.72E-10	8.00E-03	5.04E-07	9.72E-10	8.00E-03	5.04E-07	9.72E-10	8.00E-03	5.04E-07	9.72E-10
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	2.22E-06	NA	1.55E-01	2.22E-06	NA	1.55E-01	2.22E-06	NA	1.55E-01	2.22E-06	NA	1.55E-01	2.22E-06	NA
Toluene	2.80E-02	1.60E-07	NA	2.80E-02	1.60E-07	NA	2.80E-02	1.60E-07	NA	2.80E-02	1.60E-07	NA	2.80E-02	1.60E-07	NA
1,2,4-Trichlorobenzene	1.00E-03	3.43E-08	NA	1.00E-03	3.43E-08	NA	1.00E-03	3.43E-08	NA	1.00E-03	3.43E-08	NA	1.00E-03	3.43E-08	NA
1,1,1-Trichloroethane	5.00E-03	1.13E-07	NA	5.00E-03	1.13E-07	NA	5.00E-03	1.13E-07	NA	5.00E-03	1.13E-07	NA	5.00E-03	1.13E-07	NA
Trichlorofluoromethane	2.00E-03	4.50E-08	NA	2.00E-03	4.50E-08	NA	2.00E-03	4.50E-08	NA	2.00E-03	4.50E-08	NA	2.00E-03	4.50E-08	NA
2,4,5-Trichlorophenol	1.60E-01	6.87E-07	NA	1.60E-01	6.87E-07	NA	1.60E-01	6.87E-07	NA	1.60E-01	6.87E-07	NA	1.60E-01	6.87E-07	NA
2,4,6-Trichlorophenol	3.50E-01	1.50E-03	5.90E-10	3.50E-01	1.50E-03	5.90E-10	3.50E-01	1.50E-03	5.90E-10	3.50E-01	1.50E-03	5.90E-10	3.50E-01	1.50E-03	5.90E-10
1,2,4-Trimethylbenzene	4.40E-02	5.54E-07	NA	4.40E-02	5.54E-07	NA	4.40E-02	5.54E-07	NA	4.40E-02	5.54E-07	NA	4.40E-02	5.54E-07	NA
Total Xylenes	2.00E-03	4.58E-10	NA	2.00E-03	4.58E-10	NA	2.00E-03	4.58E-10	NA	2.00E-03	4.58E-10	NA	2.00E-03	4.58E-10	NA
1,2,3,4,6,7,8-HpCDD	1.11E-02	NA	2.72E-06	7.05E-03	NA	1.73E-06	1.23E-02	NA	3.02E-06	5.40E-04	0.00E+00	1.33E-07	1.12E-02	NA	2.75E-06
1,2,3,4,6,7,8-HpCDF	2.05E-03	NA	5.03E-07	1.11E-03	NA	2.72E-07	2.68E-03	NA	6.57E-07	2.80E-04	0.00E+00	6.87E-08	1.97E-03	NA	4.83E-07
1,2,3,4,7,8,9-HpCDF	1.72E-04	NA	4.21E-08	1.01E-04	NA	2.47E-08	2.15E-04	NA	5.29E-08	1.90E-05	0.00E+00	4.66E-09	1.33E-04	NA	3.27E-08
1,2,3,4,7,8-HxCDD	6.11E-05	NA	1.50E-07	2.90E-05	NA	7.12E-08	7.21E-05	NA	1.77E-07	2.50E-06	0.00E+00	6.14E-09	1.33E-04	NA	3.27E-07
1,2,3,4,7,8-HxCDF	1.64E-04	NA	4.01E-07	9.90E-05	NA	2.43E-07	1.97E-04	NA	4.82E-07	2.60E-05	0.00E+00	6.38E-08	1.03E-04	NA	2.52E-07
1,2,3,6,7,8-HxCDD	3.36E-04	NA	8.24E-07	2.10E-04	NA	5.15E-07	3.43E-04	NA	8.42E-07	2.00E-05	0.00E+00	4.91E-08	4.45E-04	NA	1.09E-06
1,2,3,6,7,8-HxCDF	4.98E-05	NA	1.22E-07	1.60E-05	NA	3.93E-08	4.90E-05	NA	1.20E-07	4.10E-06	0.00E+00	1.01E-08	5.39E-05	NA	1.32E-07
1,2,3,7,8,9-HxCDD	1.03E-04	NA	2.52E-07	2.40E-05	NA	5.89E-08	1.22E-04	NA	3.00E-07	2.15E-06	0.00E+00	5.28E-09	2.11E-04	NA	5.18E-07
1,2,3,7,8,9-HxCDF	5.47E-05	NA	1.34E-07	4.50E-06	NA	1.10E-08	4.53E-05	NA	1.11E-07	5.90E-06	0.00E+00	1.45E-08	2.85E-05	NA	7.01E-08
1,2,3,7,8-PeCDD	1.83E-05	NA	4.49E-07	3.10E-06	NA	7.61E-08	2.35E-05	NA	5.77E-07	ND	ND	ND	4.30E-05	NA	1.06E-06
1,2,3,7,8-PeCDF	1.68E-05	NA	1.24E-08	9.30E-06	NA	6.85E-09	1.57E-05	NA	1.16E-08	1.80E-06	0.00E+00	1.33E-09	1.16E-05	NA	8.56E-09
2,3,4,6,7,8-HxCDF	7.61E-05	NA	1.87E-07	1.34E-05	NA	3.29E-08	9.15E-05	NA	2.25E-07	2.00E-06	0.00E+00	4.91E-09	7.52E-05	NA	1.85E-07
2,3,4,7,8-PeCDF	3.53E-05	NA	2.60E-07	9.10E-06	NA	6.70E-08	3.67E-05	NA	2.70E-07	2.10E-06	0.00E+00	1.55E-08	1.92E-05	NA	1.41E-07
2,3,7,8-TCDD	2.05E-06	NA	5.04E-08	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.34E-06	NA	8.20E-08
2,3,7,8-TCDF	2.92E-06	NA	7.18E-09	8.75E-07	NA	2.15E-09	3.46E-06	NA	8.49E-09	ND	ND	ND	2.37E-06	NA	5.82E-09
OCDD	9.78E-02	NA	7.20E-07	7.45E-02	NA	5.48E-07	1.38E-01	NA	1.02E-06	7.30E-03	0.00E+00	5.37E-08	8.96E-02	NA	6.60E-07
OCDF	8.69E-03	NA	6.40E-08	4.50E-03	NA	3.31E-08	1.21E-02	NA	8.87E-08	7.90E-04	0.00E+00	5.82E-09	7.05E-03	NA	5.19E-08
TCDD TEQ	2.73E-04	NA	6.70E-06	1.52E-04	NA	3.74E-06	3.26E-04	NA	8.00E-06	1.91E-05	0.00E+00	4.69E-07	3.16E-04	NA	7.76E-06
Acenaphthene	5.24E+00	5.50E-05	NA	6.16E+00	6.46E-05	NA	4.27E+00	4.48E-05	NA	ND	ND	ND	1.42E+01	1.49E-04	NA
Acenaphthylene	3.68E+00	1.16E-04	NA	6.28E+00	1.98E-04	NA	1.72E+00	5.40E-05	NA	ND	ND	ND	9.73E+00	3.07E-04	NA
Anthracene	4.28E+00	8.99E-06	NA	7.02E+00	1.47E-05	NA	4.04E+00	8.49E-06	NA	ND	ND	ND	8.79E+00	1.85E-05	NA
Benzo(a)anthracene	1.83E+00	3.66E-05	1.91E-07	2.09E+00	4.19E-05	2.19E-07	2.27E+00	4.54E-05	2.37E-07	9.51E-02	1.91E-06	9.94E-09	3.60E+00	7.21E-05	3.76E-07
Benzo(a)pyrene	1.52E+00	3.06E-05	1.59E-06	2.41E+00	4.83E-05	2.52E-06	1.93E+00	3.87E-05	2.02E-06	1.17E-01	2.33E-06	1.22E-07	2.63E+00	5.28E-05	2.75E-06
Benzo(b)fluoranthene	2.59E+00	5.18E-05	2.70E-07	4.02E+00	8.05E-05	4.20E-07	3.27E+00	6.54E-05	3.41E-07	1.63E-01	3.28E-06	1.71E-08	4.26E+00	8.53E-05	4.45E-07
Benzo(g,h,i)perylene	2.04E+00	6.43E-05	NA	3.54E+00	1.12E-04	NA	2.36E+00	7.44E-05	NA	1.61E-01	5.09E-06	NA	3.19E+00	1.00E-04	NA
Benzo(k)fluoranthene	1.00E+00	2.01E-05	1.05E-08	7.71E-01	1.55E-05	8.06E-09	8.99E-01	1.80E-05	9.39E-09	1.00E-01	2.01E-06	1.05E-09	2.19E+00	4.40E-05	2.29E-08
Chrysene	3.50E+00	7.01E-05	3.65E-09	8.14E+00	1.63E-04	8.50E-09	2.97E+00	5.95E-05	3.10E-09	1.72E-01	3.44E-06	1.80E-10	5.06E+00	1.01E-04	5.29E-09
Dibenz(a,h)anthracene	2.00E+00	4.01E-05	2.09E-06	2.56E+00	5.12E-05	2.67E-06	3.88E+00	7.77E-05	4.05E-06	1.30E-01	2.61E-06	1.36E-07	2.52E+00	5.05E-05	2.63E-06
Fluoranthene	8.70E+00	1.37E-04	NA	5.05E+00	7.96E-05	NA	8.59E+00	1.35E-04	NA	2.14E-01	3.37E-06	NA	2.32E+01	3.66E-04	NA
Fluorene	1.66E+00	2.61E-05	NA	1.16E+00	1.83E-05	NA	2.76E+00	4.36E-05	NA	ND	ND	ND	2.69E+00	4.24E-05	NA
Indeno(1,2,3-cd)pyrene	1.78E+00	3.57E-05	1.86E-07	2.91E+00	5.82E-05	3.04E-07	2.08E+00	4.17E-05	2.18E-07	1.63E-01	3.27E-06	1.71E-08	2.96E+00	5.92E-05	3.09E-07
1-Methylnaphthalene	1.04E+01	3.27E-04	NA	ND	ND	ND	5.29E+00	1.67E-04	NA	4.24E+00	1.33E-04	NA	3.37E+01	1.06E-03	NA
2-Methylnaphthalene	1.10E+01	3.47E-04	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.40E+01	1.07E-03	NA
Naphthalene	3.81E+00	1.20E-04	NA	6.30E+00	1.99E-04	NA	2.87E+00	9.03E-05	NA	8.23E-01	2.59E-05	NA	9.51E+00	3.00E-04	NA
Phenanthrene	3.35E+00	1.06E-04	NA	1.91E+00	6.01E-05	NA	7.79E+00	2.45E-04	NA	ND	ND	ND	3.15E+00	9.93E-05	NA
Pyrene	5.89E+00	1.24E-04	NA	5.03E+00	1.06E-04	NA	6.47E+00	1.36E-04	NA	1.96E-01	4.11E-06	NA	1.39E+01	2.92E-04	NA
BaP-TE	4.03E+00	8.08E-05	4.21E-06	5.49E+00	1.10E-04	5.74E-06	6.10E+00	1.22E-04	6.37E-06	2.81E-01	5.64E-06	2.94E-07	6.09E+00	1.22E-04	6.37E-06
Pentachlorophenol	1.28E+01	1.83E-04	2.35E-07	2.47E+00	3.54E-05	4.55E-08	4.56E+00	6.53E-05	8.40E-08	1.08E+00	1.54E-05	1.98E-08	2.05E+01	2.93E-04	3.77E-07
Total		2.47E-02	1.12E-05		2.40E-02	9.55E-06		2.42E-02	1.45E-05		2.32E-02	8.11E-07		2.72E-02	1.45E-05

Table C-4
SITE-WIDE & AREA-SPECIFIC RISKS
INGESTION/DERMAL
KI SITE WORKER

Constituent	Area G			Area H			Area S			Area B/F		
	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	1.06E-04	1.93E-08	3.00E-03	1.06E-04	1.93E-08	3.00E-03	1.06E-04	1.93E-08	3.00E-03	1.06E-04	1.93E-08
Barium	2.99E+02	5.18E-04	NA	2.99E+02	5.18E-04	NA	2.99E+02	5.18E-04	NA	2.99E+02	5.18E-04	NA
Chlorobenzene	3.00E-03	5.15E-08	NA	3.00E-03	5.15E-08	NA	3.00E-03	5.15E-08	NA	3.00E-03	5.15E-08	NA
Chloromethane	2.00E-03	2.64E-08	NA	2.00E-03	2.64E-08	NA	2.00E-03	2.64E-08	NA	2.00E-03	2.64E-08	NA
4-Chloro-3-methylphenol	2.50E-01	2.15E-06	NA	2.50E-01	2.15E-06	NA	2.50E-01	2.15E-06	NA	2.50E-01	2.15E-06	NA
Chromium	6.80E+01	1.04E-02	NA	6.80E+01	1.04E-02	NA	6.80E+01	1.04E-02	NA	6.80E+01	1.04E-02	NA
4,4'-DDD	3.60E-02	NA	2.83E-09	3.60E-02	NA	2.83E-09	3.60E-02	NA	2.83E-09	3.60E-02	NA	2.83E-09
4,4'-DDE	8.00E-03	NA	8.91E-10	8.00E-03	NA	8.91E-10	8.00E-03	NA	8.91E-10	8.00E-03	NA	8.91E-10
4,4'-DDT	1.90E-02	3.48E-05	2.12E-09	1.90E-02	3.48E-05	2.12E-09	1.90E-02	3.48E-05	2.12E-09	1.90E-02	3.48E-05	2.12E-09
delta-BHC	3.00E-03	1.06E-05	1.48E-09	3.00E-03	1.06E-05	1.48E-09	3.00E-03	1.06E-05	1.48E-09	3.00E-03	1.06E-05	1.48E-09
Dibenzofuran	1.90E+00	5.99E-04	NA	1.90E+00	5.99E-04	NA	1.90E+00	5.99E-04	NA	1.90E+00	5.99E-04	NA
1,2-Dichlorobenzene	2.00E-03	7.63E-09	NA	2.00E-03	7.63E-09	NA	2.00E-03	7.63E-09	NA	2.00E-03	7.63E-09	NA
1,4-Dichlorobenzene	2.00E-03	2.29E-08	5.89E-12	2.00E-03	2.29E-08	5.89E-12	2.00E-03	2.29E-08	5.89E-12	2.00E-03	2.29E-08	5.89E-12
1,2-Dichloropropane	4.00E-03	3.33E-06	8.91E-11	4.00E-03	3.33E-06	8.91E-11	4.00E-03	3.33E-06	8.91E-11	4.00E-03	3.33E-06	8.91E-11
4,6-Dinitro-2-methylphenol	1.50E+00	6.44E-03	NA	1.50E+00	6.44E-03	NA	1.50E+00	6.44E-03	NA	1.50E+00	6.44E-03	NA
2,4-Dinitrophenol	6.30E-01	1.35E-04	NA	6.30E-01	1.35E-04	NA	6.30E-01	1.35E-04	NA	6.30E-01	1.35E-04	NA
Endosulfan II	1.40E-02	2.14E-06	NA	1.40E-02	2.14E-06	NA	1.40E-02	2.14E-06	NA	1.40E-02	2.14E-06	NA
Endosulfan Sulfate	1.40E-02	2.14E-06	NA	1.40E-02	2.14E-06	NA	1.40E-02	2.14E-06	NA	1.40E-02	2.14E-06	NA
Endrin	3.60E-02	1.27E-04	NA	3.60E-02	1.27E-04	NA	3.60E-02	1.27E-04	NA	3.60E-02	1.27E-04	NA
Endrin Aldehyde	3.30E-02	1.17E-04	NA	3.30E-02	1.17E-04	NA	3.30E-02	1.17E-04	NA	3.30E-02	1.17E-04	NA
Ethylbenzene	2.10E+00	7.21E-06	NA	2.10E+00	7.21E-06	NA	2.10E+00	7.21E-06	NA	2.10E+00	7.21E-06	NA
Isopropylbenzene	3.30E-02	1.13E-07	NA	3.30E-02	1.13E-07	NA	3.30E-02	1.13E-07	NA	3.30E-02	1.13E-07	NA
Manganese	8.52E+02	2.96E-03	NA	8.52E+02	2.96E-03	NA	8.52E+02	2.96E-03	NA	8.52E+02	2.96E-03	NA
Methylene Chloride	7.40E-02	7.77E-07	1.25E-10	7.40E-02	7.77E-07	1.25E-10	7.40E-02	7.77E-07	1.25E-10	7.40E-02	7.77E-07	1.25E-10
4-Nitrophenol	2.50E-01	1.34E-05	NA	2.50E-01	1.34E-05	NA	2.50E-01	1.34E-05	NA	2.50E-01	1.34E-05	NA
Phenol	1.20E-02	2.52E-08	NA	1.20E-02	2.52E-08	NA	1.20E-02	2.52E-08	NA	1.20E-02	2.52E-08	NA
Tetrachloroethene	8.00E-03	5.04E-07	9.72E-10	8.00E-03	5.04E-07	9.72E-10	8.00E-03	5.04E-07	9.72E-10	8.00E-03	5.04E-07	9.72E-10
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	2.22E-06	NA	1.55E-01	2.22E-06	NA	1.55E-01	2.22E-06	NA	1.55E-01	2.22E-06	NA
Toluene	2.80E-02	1.60E-07	NA	2.80E-02	1.60E-07	NA	2.80E-02	1.60E-07	NA	2.80E-02	1.60E-07	NA
1,2,4-Trichlorobenzene	1.00E-03	3.43E-08	NA	1.00E-03	3.43E-08	NA	1.00E-03	3.43E-08	NA	1.00E-03	3.43E-08	NA
1,1,1-Trichloroethane	5.00E-03	1.13E-07	NA	5.00E-03	1.13E-07	NA	5.00E-03	1.13E-07	NA	5.00E-03	1.13E-07	NA
Trichlorofluoromethane	2.00E-03	4.50E-08	NA	2.00E-03	4.50E-08	NA	2.00E-03	4.50E-08	NA	2.00E-03	4.50E-08	NA
2,4,5-Trichlorophenol	1.60E-01	6.87E-07	NA	1.60E-01	6.87E-07	NA	1.60E-01	6.87E-07	NA	1.60E-01	6.87E-07	NA
2,4,6-Trichlorophenol	3.50E-01	1.50E-03	5.90E-10	3.50E-01	1.50E-03	5.90E-10	3.50E-01	1.50E-03	5.90E-10	3.50E-01	1.50E-03	5.90E-10
1,2,4-Trimethylbenzene	4.40E-02	5.54E-07	NA	4.40E-02	5.54E-07	NA	4.40E-02	5.54E-07	NA	4.40E-02	5.54E-07	NA
Total Xylenes	2.00E-03	4.58E-10	NA	2.00E-03	4.58E-10	NA	2.00E-03	4.58E-10	NA	2.00E-03	4.58E-10	NA
1,2,3,4,6,7,8-HpCDD	2.35E-02	NA	5.76E-06	1.43E-02	NA	3.50E-06	8.85E-03	NA	2.17E-06	1.01E-02	NA	2.49E-06
1,2,3,4,6,7,8-HpCDF	3.85E-03	NA	9.46E-07	2.90E-03	NA	7.11E-07	3.17E-03	NA	7.77E-07	1.86E-03	NA	4.57E-07
1,2,3,4,7,8,9-HpCDF	3.25E-04	NA	7.97E-08	2.58E-04	NA	6.32E-08	3.19E-04	NA	7.84E-08	1.35E-04	NA	3.32E-08
1,2,3,4,7,8-HxCDD	6.80E-05	NA	1.67E-07	5.46E-05	NA	1.34E-07	3.78E-05	NA	9.27E-08	1.08E-04	NA	2.64E-07
1,2,3,4,7,8-HxCDF	2.91E-04	NA	7.15E-07	2.47E-04	NA	6.06E-07	4.47E-04	NA	1.10E-06	1.12E-04	NA	2.76E-07
1,2,3,6,7,8-HxCDD	6.00E-04	NA	1.47E-06	4.65E-04	NA	1.14E-06	3.52E-04	NA	8.63E-07	3.75E-04	NA	9.21E-07
1,2,3,6,7,8-HxCDF	8.93E-05	NA	2.19E-07	6.94E-05	NA	1.70E-07	9.97E-05	NA	2.45E-07	4.70E-05	NA	1.15E-07
1,2,3,7,8,9-HxCDD	1.37E-04	NA	3.36E-07	9.55E-05	NA	2.34E-07	7.44E-05	NA	1.82E-07	1.70E-04	NA	4.18E-07
1,2,3,7,8,9-HxCDF	1.12E-04	NA	2.75E-07	1.12E-04	NA	2.76E-07	9.85E-05	NA	2.42E-07	2.83E-05	NA	6.94E-08
1,2,3,7,8-PeCDD	1.69E-05	NA	4.15E-07	1.46E-05	NA	3.58E-07	1.10E-05	NA	2.70E-07	3.48E-05	NA	8.53E-07
1,2,3,7,8-PeCDF	3.01E-05	NA	2.21E-08	3.84E-05	NA	2.83E-08	2.59E-05	NA	1.91E-08	1.13E-05	NA	8.33E-09
2,3,4,6,7,8-HxCDF	1.36E-04	NA	3.34E-07	1.15E-04	NA	2.82E-07	1.68E-04	NA	4.12E-07	6.83E-05	NA	1.68E-07
2,3,4,7,8-PeCDF	5.91E-05	NA	4.35E-07	8.12E-05	NA	5.98E-07	8.79E-05	NA	6.47E-07	2.09E-05	NA	1.54E-07
2,3,7,8-TCDD	2.54E-06	NA	6.25E-08	2.36E-06	NA	5.80E-08	ND	ND	ND	2.98E-06	NA	7.31E-08
2,3,7,8-TCDF	3.55E-06	NA	8.71E-09	7.61E-06	NA	1.87E-08	5.04E-06	NA	1.24E-08	2.45E-06	NA	6.01E-09
OCDD	2.00E-01	NA	1.47E-06	1.38E-01	NA	1.02E-06	9.12E-02	NA	6.71E-07	8.88E-02	NA	6.53E-07
OCDF	1.79E-02	NA	1.32E-07	1.34E-02	NA	9.88E-08	1.17E-02	NA	8.64E-08	7.12E-03	NA	5.24E-08
TCDD TEQ	5.05E-04	NA	1.24E-05	3.73E-04	NA	9.15E-06	3.20E-04	NA	7.86E-06	2.81E-04	NA	6.90E-06
Acenaphthene	4.05E-01	4.26E-06	NA	6.82E+00	7.17E-05	NA	1.30E+00	1.36E-05	NA	9.03E+00	9.49E-05	NA
Acenaphthylene	3.35E-01	1.06E-05	NA	2.39E+00	7.53E-05	NA	5.55E-01	1.75E-05	NA	6.03E+00	1.90E-04	NA
Anthracene	1.84E-01	3.86E-07	NA	6.25E+00	1.31E-05	NA	4.87E+00	1.02E-05	NA	6.08E+00	1.28E-05	NA
Benzo(a)anthracene	2.17E-01	4.36E-06	2.27E-08	3.50E+00	7.02E-05	3.66E-07	1.81E+00	3.63E-05	1.89E-07	2.69E+00	5.39E-05	2.81E-07
Benzo(a)pyrene	1.66E-01	3.34E-06	1.74E-07	1.41E+00	2.82E-05	1.47E-06	9.12E-01	1.83E-05	9.52E-07	2.15E+00	4.31E-05	2.25E-06
Benzo(b)fluoranthene	2.72E-01	5.46E-06	2.84E-08	2.84E+00	5.69E-05	2.97E-07	2.10E+00	4.21E-05	2.19E-07	3.53E+00	7.07E-05	3.69E-07
Benzo(g,h,i)perylene	2.90E-01	9.12E-06	NA	2.41E+00	7.58E-05	NA	1.65E+00	5.19E-05	NA	2.64E+00	8.32E-05	NA
Benzo(k)fluoranthene	2.81E-01	5.64E-06	2.94E-09	2.51E+00	5.02E-05	2.62E-08	7.17E-01	1.44E-05	7.49E-09	1.54E+00	3.08E-05	1.61E-08
Chrysene	3.24E-01	6.49E-06	3.38E-10	6.19E+00	1.24E-04	6.47E-09	2.79E+00	5.58E-05	2.91E-09	3.80E+00	7.61E-05	3.97E-09
Dibenz(a,h)anthracene	7.32E-01	1.47E-05	7.65E-07	2.43E+00	4.87E-05	2.54E-06	2.57E+00	5.16E-05	2.69E-06	2.76E+00	5.54E-05	2.89E-06
Fluoranthene	2.04E-01	3.21E-06	NA	1.64E+01	2.59E-04	NA	7.03E+00	1.11E-04	NA	1.51E+01	2.38E-04	NA
Fluorene	3.22E-01	5.07E-06	NA	7.05E+00	1.11E-04	NA	1.74E+00	2.74E-05	NA	2.32E+00	3.66E-05	NA
Indeno(1,2,3-cd)pyrene	3.07E-01	6.16E-06	3.21E-08	2.38E+00	4.76E-05	2.48E-07	1.11E+00	2.23E-05	1.16E-07	2.41E+00	4.83E-05	2.52E-07
1-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.91E+01	6.02E-04	NA
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.28E+01	7.18E-04	NA
Naphthalene	3.53E-01	1.11E-05	NA	5.73E+00	1.81E-04	NA	5.05E-01	1.59E-05	NA	6.12E+00	1.93E-04	NA
Phenanthrene	2.26E-01	7.11E-06	NA	2.05E+01	6.45E-04	NA	2.19E+00	6.90E-05	NA	4.59E+00	1.45E-04	NA
Pyrene	3.27E-01	6.86E-06	NA	1.18E+01	2.48E-04	NA	5.34E+00	1.12E-04	NA	9.52E+00	2.00E-04	NA
BaP-TE	8.94E-01	1.79E-05	9.34E-07	3.98E+00	7.97E-05	4.16E-06	3.98E+00	7.97E-05	4.16E-06	5.56E+00	1.11E-04	5.81E-06
Pentachlorophenol	2.38E+00	3.40E-05	4.38E-08	2.79E+01	4.00E-04	5.14E-07	4.16E+01	5.96E-04	7.66E-07	1.28E+01	1.83E-04	2.35E-07
Total		2.31E-02	1.34E-05		2.51E-02	1.38E-05		2.41E-02	1.28E-05		2.58E-02	1.30E-05

Table C-5
SITE-WIDE & AREA-SPECIFIC RISKS
INHALATION OF PARTICULATES
KI SITE WORKER

Constituent	Site-Wide			Area A			Area B			Area C			Area F		
	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	2.31E-08	4.20E-12	3.00E-03	2.31E-08	4.20E-12	3.00E-03	2.31E-08	4.20E-12	3.00E-03	2.31E-08	4.20E-12	3.00E-03	2.31E-08	4.20E-12
Barium	2.99E+02	3.45E-07	NA	2.99E+02	3.45E-07	NA	2.99E+02	3.45E-07	NA	2.99E+02	3.45E-07	NA	2.99E+02	3.45E-07	NA
Chlorobenzene	3.00E-03	4.95E-11	NA	3.00E-03	4.95E-11	NA	3.00E-03	4.95E-11	NA	3.00E-03	4.95E-11	NA	3.00E-03	4.95E-11	NA
Chloromethane	2.00E-03	1.78E-11	NA	2.00E-03	1.78E-11	NA	2.00E-03	1.78E-11	NA	2.00E-03	1.78E-11	NA	2.00E-03	1.78E-11	NA
4-Chloro-3-methylphenol	2.50E-01	1.15E-09	NA	2.50E-01	1.15E-09	NA	2.50E-01	1.15E-09	NA	2.50E-01	1.15E-09	NA	2.50E-01	1.15E-09	NA
Chromium	6.80E+01	5.49E-04	2.35E-07	6.80E+01	5.49E-04	2.35E-07	6.80E+01	5.49E-04	2.35E-07	6.80E+01	5.49E-04	2.35E-07	6.80E+01	5.49E-04	2.35E-07
4,4'-DDD	3.60E-02	NA	7.12E-13	3.60E-02	NA	7.12E-13	3.60E-02	NA	7.12E-13	3.60E-02	NA	7.12E-13	3.60E-02	NA	7.12E-13
4,4'-DDE	8.00E-03	NA	2.24E-13	8.00E-03	NA	2.24E-13	8.00E-03	NA	2.24E-13	8.00E-03	NA	2.24E-13	8.00E-03	NA	2.24E-13
4,4'-DDT	1.90E-02	8.77E-09	5.32E-13	1.90E-02	8.77E-09	5.32E-13	1.90E-02	8.77E-09	5.32E-13	1.90E-02	8.77E-09	5.32E-13	1.90E-02	8.77E-09	5.32E-13
delta-BHC	3.00E-03	2.31E-09	NA	3.00E-03	2.31E-09	NA	3.00E-03	2.31E-09	NA	3.00E-03	2.31E-09	NA	3.00E-03	2.31E-09	NA
Dibenzofuran	1.90E+00	2.19E-07	NA	1.90E+00	2.19E-07	NA	1.90E+00	2.19E-07	NA	1.90E+00	2.19E-07	NA	1.90E+00	2.19E-07	NA
1,2-Dichlorobenzene	2.00E-03	6.69E-11	NA	2.00E-03	6.69E-11	NA	2.00E-03	6.69E-11	NA	2.00E-03	6.69E-11	NA	2.00E-03	6.69E-11	NA
1,4-Dichlorobenzene	2.00E-03	2.01E-12	3.96E-15	2.00E-03	2.01E-12	3.96E-15	2.00E-03	2.01E-12	3.96E-15	2.00E-03	2.01E-12	3.96E-15	2.00E-03	2.01E-12	3.96E-15
1,2-Dichloropropane	4.00E-03	8.39E-10	NA	4.00E-03	8.39E-10	NA	4.00E-03	8.39E-10	NA	4.00E-03	8.39E-10	NA	4.00E-03	8.39E-10	NA
4,6-Dinitro-2-methylphenol	1.50E+00	3.46E-06	NA	1.50E+00	3.46E-06	NA	1.50E+00	3.46E-06	NA	1.50E+00	3.46E-06	NA	1.50E+00	3.46E-06	NA
2,4-Dinitrophenol	6.30E-01	7.27E-08	NA	6.30E-01	7.27E-08	NA	6.30E-01	7.27E-08	NA	6.30E-01	7.27E-08	NA	6.30E-01	7.27E-08	NA
Endosulfan II	1.40E-02	5.38E-10	NA	1.40E-02	5.38E-10	NA	1.40E-02	5.38E-10	NA	1.40E-02	5.38E-10	NA	1.40E-02	5.38E-10	NA
Endosulfan Sulfate	1.40E-02	5.38E-10	NA	1.40E-02	5.38E-10	NA	1.40E-02	5.38E-10	NA	1.40E-02	5.38E-10	NA	1.40E-02	5.38E-10	NA
Endrin	3.60E-02	2.77E-08	NA	3.60E-02	2.77E-08	NA	3.60E-02	2.77E-08	NA	3.60E-02	2.77E-08	NA	3.60E-02	2.77E-08	NA
Endrin Aldehyde	3.30E-02	2.54E-08	NA	3.30E-02	2.54E-08	NA	3.30E-02	2.54E-08	NA	3.30E-02	2.54E-08	NA	3.30E-02	2.54E-08	NA
Ethylbenzene	2.10E+00	1.67E-09	NA	2.10E+00	1.67E-09	NA	2.10E+00	1.67E-09	NA	2.10E+00	1.67E-09	NA	2.10E+00	1.67E-09	NA
Isopropylbenzene	3.30E-02	7.62E-11	NA	3.30E-02	7.62E-11	NA	3.30E-02	7.62E-11	NA	3.30E-02	7.62E-11	NA	3.30E-02	7.62E-11	NA
Manganese	8.52E+02	1.37E-02	NA	8.52E+02	1.37E-02	NA	8.52E+02	1.37E-02	NA	8.52E+02	1.37E-02	NA	8.52E+02	1.37E-02	NA
Methylene Chloride	7.40E-02	1.99E-11	1.00E-14	7.40E-02	1.99E-11	1.00E-14	7.40E-02	1.99E-11	1.00E-14	7.40E-02	1.99E-11	1.00E-14	7.40E-02	1.99E-11	1.00E-14
4-Nitrophenol	2.50E-01	7.21E-09	NA	2.50E-01	7.21E-09	NA	2.50E-01	7.21E-09	NA	2.50E-01	7.21E-09	NA	2.50E-01	7.21E-09	NA
Phenol	1.20E-02	9.23E-12	NA	1.20E-02	9.23E-12	NA	1.20E-02	9.23E-12	NA	1.20E-02	9.23E-12	NA	1.20E-02	9.23E-12	NA
Tetrachloroethene	8.00E-03	1.68E-11	1.38E-14	8.00E-03	1.68E-11	1.38E-14	8.00E-03	1.68E-11	1.38E-14	8.00E-03	1.68E-11	1.38E-14	8.00E-03	1.68E-11	1.38E-14
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	1.19E-09	NA	1.55E-01	1.19E-09	NA	1.55E-01	1.19E-09	NA	1.55E-01	1.19E-09	NA	1.55E-01	1.19E-09	NA
Toluene	2.80E-02	4.62E-12	NA	2.80E-02	4.62E-12	NA	2.80E-02	4.62E-12	NA	2.80E-02	4.62E-12	NA	2.80E-02	4.62E-12	NA
1,2,4-Trichlorobenzene	1.00E-03	2.10E-10	NA	1.00E-03	2.10E-10	NA	1.00E-03	2.10E-10	NA	1.00E-03	2.10E-10	NA	1.00E-03	2.10E-10	NA
1,1,1-Trichloroethane	5.00E-03	1.83E-12	NA	5.00E-03	1.83E-12	NA	5.00E-03	1.83E-12	NA	5.00E-03	1.83E-12	NA	5.00E-03	1.83E-12	NA
Trichlorofluoromethane	2.00E-03	2.31E-12	NA	2.00E-03	2.31E-12	NA	2.00E-03	2.31E-12	NA	2.00E-03	2.31E-12	NA	2.00E-03	2.31E-12	NA
2,4,5-Trichlorophenol	1.60E-01	3.69E-10	NA	1.60E-01	3.69E-10	NA	1.60E-01	3.69E-10	NA	1.60E-01	3.69E-10	NA	1.60E-01	3.69E-10	NA
2,4,6-Trichlorophenol	3.50E-01	8.08E-07	3.13E-13	3.50E-01	8.08E-07	3.13E-13	3.50E-01	8.08E-07	3.13E-13	3.50E-01	8.08E-07	3.13E-13	3.50E-01	8.08E-07	3.13E-13
1,2,4-Trimethylbenzene	4.40E-02	5.97E-09	NA	4.40E-02	5.97E-09	NA	4.40E-02	5.97E-09	NA	4.40E-02	5.97E-09	NA	4.40E-02	5.97E-09	NA
Total Xylenes	2.00E-03	1.62E-11	NA	2.00E-03	1.62E-11	NA	2.00E-03	1.62E-11	NA	2.00E-03	1.62E-11	NA	2.00E-03	1.62E-11	NA
1,2,3,4,6,7,8-HpCDD	1.11E-02	NA	1.37E-09	7.05E-03	NA	8.72E-10	1.23E-02	NA	1.52E-09	5.40E-04	NA	6.68E-11	1.12E-02	NA	1.39E-09
1,2,3,4,6,7,8-HpCDF	2.05E-03	NA	2.53E-10	1.11E-03	NA	1.37E-10	2.68E-03	NA	3.31E-10	2.80E-04	NA	3.46E-11	1.97E-03	NA	2.43E-10
1,2,3,4,7,8,9-HpCDF	1.72E-04	NA	2.12E-11	1.01E-04	NA	1.24E-11	2.15E-04	NA	2.66E-11	1.90E-05	NA	2.35E-12	1.33E-04	NA	1.65E-11
1,2,3,4,7,8-HxCDD	6.11E-05	NA	7.56E-11	2.90E-05	NA	3.59E-11	7.21E-05	NA	8.92E-11	2.50E-06	NA	3.09E-12	1.33E-04	NA	1.65E-10
1,2,3,4,7,8-HxCDF	1.64E-04	NA	2.02E-10	9.90E-05	NA	1.22E-10	1.97E-04	NA	2.43E-10	2.60E-05	NA	3.21E-11	1.03E-04	NA	1.27E-10
1,2,3,6,7,8-HxCDD	3.36E-04	NA	4.15E-10	2.10E-04	NA	2.60E-10	3.43E-04	NA	4.24E-10	2.00E-05	NA	2.47E-11	4.45E-04	NA	5.51E-10
1,2,3,6,7,8-HxCDF	4.98E-05	NA	6.15E-11	1.60E-05	NA	1.98E-11	4.90E-05	NA	6.06E-11	4.10E-06	NA	5.07E-12	5.39E-05	NA	6.66E-11
1,2,3,7,8,9-HxCDD	1.03E-04	NA	1.27E-10	2.40E-05	NA	2.97E-11	1.22E-04	NA	1.51E-10	2.15E-06	NA	2.66E-12	2.11E-04	NA	2.61E-10
1,2,3,7,8,9-HxCDF	5.47E-05	NA	6.77E-11	4.50E-06	NA	5.56E-12	4.53E-05	NA	5.60E-11	5.90E-06	NA	7.29E-12	2.85E-05	NA	3.53E-11
1,2,3,7,8-PeCDD	1.83E-05	NA	2.26E-10	3.10E-06	NA	3.83E-11	2.35E-05	NA	2.90E-10	ND	ND	ND	4.30E-05	NA	5.32E-10
1,2,3,7,8-PeCDF	1.68E-05	NA	6.23E-12	9.30E-06	NA	3.45E-12	1.57E-05	NA	5.83E-12	1.80E-06	NA	6.68E-13	1.16E-05	NA	4.31E-12
2,3,4,6,7,8-HxCDF	7.61E-05	NA	9.41E-11	1.34E-05	NA	1.66E-11	9.15E-05	NA	1.13E-10	2.00E-06	NA	2.47E-12	7.52E-05	NA	9.30E-11
2,3,4,7,8-PeCDF	3.53E-05	NA	1.31E-10	9.10E-06	NA	3.38E-11	3.67E-05	NA	1.36E-10	2.10E-06	NA	7.79E-12	1.92E-05	NA	7.11E-11
2,3,7,8-TCDD	2.05E-06	NA	2.54E-11	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.34E-06	NA	4.13E-11
2,3,7,8-TCDF	2.92E-06	NA	3.61E-12	8.75E-07	NA	1.08E-12	3.46E-06	NA	4.28E-12	ND	ND	ND	2.37E-06	NA	2.93E-12
OCDD	9.78E-02	NA	3.63E-10	7.45E-02	NA	2.76E-10	1.38E-01	NA	5.12E-10	7.30E-03	NA	2.71E-11	8.96E-02	NA	3.32E-10
OCDF	8.69E-03	NA	3.22E-11	4.50E-03	NA	1.67E-11	1.21E-02	NA	4.47E-11	7.90E-04	NA	2.93E-12	7.05E-03	NA	2.62E-11
TCDD TEQ	2.73E-04	NA	3.38E-09	1.52E-04	NA	1.88E-09	3.26E-04	NA	4.03E-09	1.91E-05	NA	2.36E-10	3.16E-04	NA	3.91E-09
Acenaphthene	5.24E+00	2.01E-08	NA	6.16E+00	2.37E-08	NA	4.27E+00	1.64E-08	NA	ND	ND	ND	1.42E+01	5.45E-08	NA
Acenaphthylene	3.68E+00	2.83E-08	NA	6.28E+00	4.83E-08	NA	1.72E+00	1.32E-08	NA	ND	ND	ND	9.73E+00	7.49E-08	NA
Anthracene	4.28E+00	3.29E-09	NA	7.02E+00	5.40E-09	NA	4.04E+00	3.11E-09	NA	ND	ND	ND	8.79E+00	6.76E-09	NA
Benzo(a)anthracene	1.83E+00	1.40E-08	4.66E-11	2.09E+00	1.61E-08	5.35E-11	2.27E+00	1.74E-08	5.79E-11	9.51E-02	7.32E-10	2.43E-12	3.60E+00	2.77E-08	9.20E-11
Benzo(a)pyrene	1.52E+00	1.17E-08	3.90E-10	2.41E+00	1.85E-08	6.16E-10	1.93E+00	1.48E-08	4.93E-10	1.17E-01	8.96E-10	2.98E-11	2.63E+00	2.03E-08	6.73E-10
Benzo(b)fluoranthene	2.59E+00	1.99E-08	6.61E-11	4.02E+00	3.09E-08	1.03E-10	3.27E+00	2.51E-08	8.35E-11	1.63E-01	1.26E-09	4.18E-12	4.26E+00	3.27E-08	1.09E-10
Benzo(g,h,i)perylene	2.04E+00	1.57E-08	NA	3.54E+00	2.72E-08	NA	2.36E+00	1.82E-08	NA	1.61E-01	1.24E-09	NA	3.19E+00	2.45E-08	NA
Benzo(k)fluoranthene	1.00E+00	7.71E-09	2.56E-12	7.71E-01	5.93E-09	1.97E-12	8.99E-01	6.91E-09	2.30E-12	1.00E-01	7.72E-10	2.56E-13	2.19E+00	1.69E-08	5.61E-12
Chrysene	3.50E+00	2.69E-08	8.93E-13	8.14E+00	6.26E-08	2.08E-12	2.97E+00	2.28E-08	7.59E-13	1.72E-01	1.32E-09	4.39E-14	5.06E+00	3.89E-08	1.29E-12
Dibenz(a,h)anthracene	2.00E+00	1.54E-08	5.12E-10	2.56E+00	1.97E-08	6.53E-10	3.88E+00	2.98E-08	9.91E-10	1.30E-01	1.00E-09	3.33E-11	2.52E+00	1.94E-08	6.43E-10
Fluoranthene	8.70E+00	5.02E-08	NA	5.05E+00	2.92E-08	NA	8.59E+00	4.95E-08	NA	2.14E-01	1.23E-09	NA	2.32E+01	1.34E-07	NA
Fluorene	1.66E+00	9.55E-09	NA	1.16E+00	6.71E-09	NA	2.76E+00	1.60E-08	NA	ND	ND	ND	2.69E+00	1.55E-08	NA
Indeno(1,2,3-cd)pyrene	1.78E+00	1.37E-08	4.56E-11	2.91E+00	2.24E-08	7.43E-11	2.08E+00	1.60E-08	5.32E-11	1.63E-01	1.26E-09	4.17E-12	2.96E+00	2.27E-08	7.55E-11
1-Methylnaphthalene	1.04E+01	2.79E-06	NA	ND	ND	ND	5.29E+00	1.43E-06	NA	4.24E+00	1.14E-06	NA	3.37E+01	9.07E-06	NA
2-Methylnaphthalene	1.10E+01	2.97E-06	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.40E+01	9.15E-06	NA
Naphthalene	3.81E+00	1.03E-06	NA	6.30E+00	1.70E-06	NA	2.87E+00	7.72E-07	NA	8.23E-01	2.22E-07	NA	9.51E+00	2.56E-06	NA
Phenanthrene	3.35E+00	8.99E-07	NA	1.91E+00	5.12E-07	NA	7.79E+00	2.09E-06	NA	ND	ND	ND	3.15E+00	8.46E-07	NA
Pyrene	5.89E+00	4.53E-08	NA	5.03E+00	3.87E-08	NA	6.47E+00	4.97E-08	NA	1.96E-01	1.51E-09	NA	1.39E+01	1.07E-07	NA
BaP-TE	4.03E+00	3.10E-08	1.03E-09	5.49E+00	4.23E-08	1.40E-09	6.10E+00	4.69E-08	1.56E-09	2.81E-01	2.16E-09	7.19E-11	6.09E+00	4.69E-08	1.56E-09
Pentachlorophenol	1.28E+01	9.81E-08	NA	2.47E+00	1.90E-08	NA	4.56E+00	3.51E-08	NA	1.08E+00	8.29E-09	NA	2.05E+01	1.57E-07	NA
Total		1.43E-02	2.40E-07		1.43E-02	2.39E-07		1.43E-02	2.41E-07		1.43E-02	2.36E-07		1.43E-02	2.41E-07

Table C-5
SITE-WIDE & AREA-SPECIFIC RISKS
INHALATION OF PARTICULATES
KI SITE WORKER

Constituent	Area G			Area H			Area S			Area B/F		
	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	2.31E-08	4.20E-12	3.00E-03	2.31E-08	4.20E-12	3.00E-03	2.31E-08	4.20E-12	3.00E-03	2.31E-08	4.20E-12
Barium	2.99E+02	3.45E-07	NA	2.99E+02	3.45E-07	NA	2.99E+02	3.45E-07	NA	2.99E+02	3.45E-07	NA
Chlorobenzene	3.00E-03	4.95E-11	NA	3.00E-03	4.95E-11	NA	3.00E-03	4.95E-11	NA	3.00E-03	4.95E-11	NA
Chloromethane	2.00E-03	1.78E-11	NA	2.00E-03	1.78E-11	NA	2.00E-03	1.78E-11	NA	2.00E-03	1.78E-11	NA
4-Chloro-3-methylphenol	2.50E-01	1.15E-09	NA	2.50E-01	1.15E-09	NA	2.50E-01	1.15E-09	NA	2.50E-01	1.15E-09	NA
Chromium	6.80E+01	5.49E-04	2.35E-07	6.80E+01	5.49E-04	2.35E-07	6.80E+01	5.49E-04	2.35E-07	6.80E+01	5.49E-04	2.35E-07
4,4'-DDD	3.60E-02	NA	7.12E-13	3.60E-02	NA	7.12E-13	3.60E-02	NA	7.12E-13	3.60E-02	NA	7.12E-13
4,4'-DDE	8.00E-03	NA	2.24E-13	8.00E-03	NA	2.24E-13	8.00E-03	NA	2.24E-13	8.00E-03	NA	2.24E-13
4,4'-DDT	1.90E-02	8.77E-09	5.32E-13	1.90E-02	8.77E-09	5.32E-13	1.90E-02	8.77E-09	5.32E-13	1.90E-02	8.77E-09	5.32E-13
delta-BHC	3.00E-03	2.31E-09	NA	3.00E-03	2.31E-09	NA	3.00E-03	2.31E-09	NA	3.00E-03	2.31E-09	NA
Dibenzofuran	1.90E+00	2.19E-07	NA	1.90E+00	2.19E-07	NA	1.90E+00	2.19E-07	NA	1.90E+00	2.19E-07	NA
1,2-Dichlorobenzene	2.00E-03	6.69E-11	NA	2.00E-03	6.69E-11	NA	2.00E-03	6.69E-11	NA	2.00E-03	6.69E-11	NA
1,4-Dichlorobenzene	2.00E-03	2.01E-12	3.96E-15	2.00E-03	2.01E-12	3.96E-15	2.00E-03	2.01E-12	3.96E-15	2.00E-03	2.01E-12	3.96E-15
1,2-Dichloropropane	4.00E-03	8.39E-10	NA	4.00E-03	8.39E-10	NA	4.00E-03	8.39E-10	NA	4.00E-03	8.39E-10	NA
4,6-Dinitro-2-methylphenol	1.50E+00	3.46E-06	NA	1.50E+00	3.46E-06	NA	1.50E+00	3.46E-06	NA	1.50E+00	3.46E-06	NA
2,4-Dinitrophenol	6.30E-01	7.27E-08	NA	6.30E-01	7.27E-08	NA	6.30E-01	7.27E-08	NA	6.30E-01	7.27E-08	NA
Endosulfan II	1.40E-02	5.38E-10	NA	1.40E-02	5.38E-10	NA	1.40E-02	5.38E-10	NA	1.40E-02	5.38E-10	NA
Endosulfan Sulfate	1.40E-02	5.38E-10	NA	1.40E-02	5.38E-10	NA	1.40E-02	5.38E-10	NA	1.40E-02	5.38E-10	NA
Endrin	3.60E-02	2.77E-08	NA	3.60E-02	2.77E-08	NA	3.60E-02	2.77E-08	NA	3.60E-02	2.77E-08	NA
Endrin Aldehyde	3.30E-02	2.54E-08	NA	3.30E-02	2.54E-08	NA	3.30E-02	2.54E-08	NA	3.30E-02	2.54E-08	NA
Ethylbenzene	2.10E+00	1.67E-09	NA	2.10E+00	1.67E-09	NA	2.10E+00	1.67E-09	NA	2.10E+00	1.67E-09	NA
Isopropylbenzene	3.30E-02	7.62E-11	NA	3.30E-02	7.62E-11	NA	3.30E-02	7.62E-11	NA	3.30E-02	7.62E-11	NA
Manganese	8.52E+02	1.37E-02	NA	8.52E+02	1.37E-02	NA	8.52E+02	1.37E-02	NA	8.52E+02	1.37E-02	NA
Methylene Chloride	7.40E-02	1.99E-11	1.00E-14	7.40E-02	1.99E-11	1.00E-14	7.40E-02	1.99E-11	1.00E-14	7.40E-02	1.99E-11	1.00E-14
4-Nitrophenol	2.50E-01	7.21E-09	NA	2.50E-01	7.21E-09	NA	2.50E-01	7.21E-09	NA	2.50E-01	7.21E-09	NA
Phenol	1.20E-02	9.23E-12	NA	1.20E-02	9.23E-12	NA	1.20E-02	9.23E-12	NA	1.20E-02	9.23E-12	NA
Tetrachloroethene	8.00E-03	1.68E-11	1.38E-14	8.00E-03	1.68E-11	1.38E-14	8.00E-03	1.68E-11	1.38E-14	8.00E-03	1.68E-11	1.38E-14
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	1.19E-09	NA	1.55E-01	1.19E-09	NA	1.55E-01	1.19E-09	NA	1.55E-01	1.19E-09	NA
Toluene	2.80E-02	4.62E-12	NA	2.80E-02	4.62E-12	NA	2.80E-02	4.62E-12	NA	2.80E-02	4.62E-12	NA
1,2,4-Trichlorobenzene	1.00E-03	2.10E-10	NA	1.00E-03	2.10E-10	NA	1.00E-03	2.10E-10	NA	1.00E-03	2.10E-10	NA
1,1,1-Trichloroethane	5.00E-03	1.83E-12	NA	5.00E-03	1.83E-12	NA	5.00E-03	1.83E-12	NA	5.00E-03	1.83E-12	NA
Trichlorofluoromethane	2.00E-03	2.31E-12	NA	2.00E-03	2.31E-12	NA	2.00E-03	2.31E-12	NA	2.00E-03	2.31E-12	NA
2,4,5-Trichlorophenol	1.60E-01	3.69E-10	NA	1.60E-01	3.69E-10	NA	1.60E-01	3.69E-10	NA	1.60E-01	3.69E-10	NA
2,4,6-Trichlorophenol	3.50E-01	8.08E-07	3.13E-13	3.50E-01	8.08E-07	3.13E-13	3.50E-01	8.08E-07	3.13E-13	3.50E-01	8.08E-07	3.13E-13
1,2,4-Trimethylbenzene	4.40E-02	5.97E-09	NA	4.40E-02	5.97E-09	NA	4.40E-02	5.97E-09	NA	4.40E-02	5.97E-09	NA
Total Xylenes	2.00E-03	1.62E-11	NA	2.00E-03	1.62E-11	NA	2.00E-03	1.62E-11	NA	2.00E-03	1.62E-11	NA
1,2,3,4,6,7,8-HpCDD	2.35E-02	NA	2.90E-09	1.43E-02	NA	1.76E-09	8.85E-03	NA	1.09E-09	1.01E-02	NA	1.25E-09
1,2,3,4,6,7,8-HpCDF	3.85E-03	NA	4.76E-10	2.90E-03	NA	3.58E-10	3.17E-03	NA	3.91E-10	1.86E-03	NA	2.30E-10
1,2,3,4,7,8,9-HpCDF	3.25E-04	NA	4.02E-11	2.58E-04	NA	3.18E-11	3.19E-04	NA	3.95E-11	1.35E-04	NA	1.67E-11
1,2,3,4,7,8-HxCDD	6.80E-05	NA	8.41E-11	5.46E-05	NA	6.75E-11	3.78E-05	NA	4.67E-11	1.08E-04	NA	1.33E-10
1,2,3,4,7,8-HxCDF	2.91E-04	NA	3.60E-10	2.47E-04	NA	3.05E-10	4.47E-04	NA	5.53E-10	1.12E-04	NA	1.39E-10
1,2,3,6,7,8-HxCDD	6.00E-04	NA	7.41E-10	4.65E-04	NA	5.75E-10	3.52E-04	NA	4.35E-10	3.75E-04	NA	4.64E-10
1,2,3,6,7,8-HxCDF	8.93E-05	NA	1.10E-10	6.94E-05	NA	8.58E-11	9.97E-05	NA	1.23E-10	4.70E-05	NA	5.81E-11
1,2,3,7,8,9-HxCDD	1.37E-04	NA	1.69E-10	9.55E-05	NA	1.18E-10	7.44E-05	NA	9.19E-11	1.70E-04	NA	2.11E-10
1,2,3,7,8,9-HxCDF	1.12E-04	NA	1.38E-10	1.12E-04	NA	1.39E-10	9.85E-05	NA	1.22E-10	2.83E-05	NA	3.50E-11
1,2,3,7,8-PeCDD	1.69E-05	NA	2.09E-10	1.46E-05	NA	1.80E-10	1.10E-05	NA	1.36E-10	3.48E-05	NA	4.30E-10
1,2,3,7,8-PeCDF	3.01E-05	NA	1.12E-11	3.84E-05	NA	1.43E-11	2.59E-05	NA	9.60E-12	1.13E-05	NA	4.20E-12
2,3,4,6,7,8-HxCDF	1.36E-04	NA	1.68E-10	1.15E-04	NA	1.42E-10	1.68E-04	NA	2.07E-10	6.83E-05	NA	8.45E-11
2,3,4,7,8-PeCDF	5.91E-05	NA	2.19E-10	8.12E-05	NA	3.01E-10	8.79E-05	NA	3.26E-10	2.09E-05	NA	7.74E-11
2,3,7,8-TCDD	2.54E-06	NA	3.15E-11	2.36E-06	NA	2.92E-11	ND	ND	ND	2.98E-06	NA	3.68E-11
2,3,7,8-TCDF	3.55E-06	NA	4.39E-12	7.61E-06	NA	9.41E-12	5.04E-06	NA	6.23E-12	2.45E-06	NA	3.03E-12
OCDD	2.00E-01	NA	7.41E-10	1.38E-01	NA	5.12E-10	9.12E-02	NA	3.38E-10	8.88E-02	NA	3.29E-10
OCDF	1.79E-02	NA	6.64E-11	1.34E-02	NA	4.97E-11	1.17E-02	NA	4.36E-11	7.12E-03	NA	2.64E-11
TCDD TEQ	5.05E-04	NA	6.25E-09	3.73E-04	NA	4.61E-09	3.20E-04	NA	3.96E-09	2.81E-04	NA	3.48E-09
Acenaphthene	4.05E-01	1.56E-09	NA	6.82E+00	2.63E-08	NA	1.30E+00	4.99E-09	NA	9.03E+00	3.47E-08	NA
Acenaphthylene	3.35E-01	2.58E-09	NA	2.39E+00	1.84E-08	NA	5.55E-01	4.27E-09	NA	6.03E+00	4.63E-08	NA
Anthracene	1.84E-01	1.42E-10	NA	6.25E+00	4.81E-09	NA	4.87E+00	3.74E-09	NA	6.08E+00	4.68E-09	NA
Benzo(a)anthracene	2.17E-01	1.67E-09	5.55E-12	3.50E+00	2.69E-08	8.95E-11	1.81E+00	1.39E-08	4.63E-11	2.69E+00	2.07E-08	6.87E-11
Benzo(a)pyrene	1.66E-01	1.28E-09	4.25E-11	1.41E+00	1.08E-08	3.60E-10	9.12E-01	7.01E-09	2.33E-10	2.15E+00	1.65E-08	5.49E-10
Benzo(b)fluoranthene	2.72E-01	2.09E-09	6.96E-12	2.84E+00	2.18E-08	7.26E-11	2.10E+00	1.62E-08	5.37E-11	3.53E+00	2.72E-08	9.02E-11
Benzo(g,h,i)perylene	2.90E-01	2.23E-09	NA	2.41E+00	1.85E-08	NA	1.65E+00	1.27E-08	NA	2.64E+00	2.03E-08	NA
Benzo(k)fluoranthene	2.81E-01	2.16E-09	7.19E-13	2.51E+00	1.93E-08	6.40E-12	7.17E-01	5.52E-09	1.83E-12	1.54E+00	1.18E-08	3.93E-12
Chrysene	3.24E-01	2.49E-09	8.27E-14	6.19E+00	4.76E-08	1.58E-12	2.79E+00	2.14E-08	7.12E-13	3.80E+00	2.92E-08	9.71E-13
Dibenz(a,h)anthracene	7.32E-01	5.63E-09	1.87E-10	2.43E+00	1.87E-08	6.21E-10	2.57E+00	1.98E-08	6.57E-10	2.76E+00	2.13E-08	7.06E-10
Fluoranthene	2.04E-01	1.18E-09	NA	1.64E+01	9.47E-08	NA	7.03E+00	4.06E-08	NA	1.51E+01	8.73E-08	NA
Fluorene	3.22E-01	1.86E-09	NA	7.05E+00	4.06E-08	NA	1.74E+00	1.00E-08	NA	2.32E+00	1.34E-08	NA
Indeno(1,2,3-cd)pyrene	3.07E-01	2.36E-09	7.85E-12	2.38E+00	1.83E-08	6.07E-11	1.11E+00	8.57E-09	2.85E-11	2.41E+00	1.85E-08	6.15E-11
1-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.91E+01	5.15E-06	NA
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.28E+01	6.14E-06	NA
Naphthalene	3.53E-01	9.51E-08	NA	5.73E+00	1.54E-06	NA	5.05E-01	1.36E-07	NA	6.12E+00	1.65E-06	NA
Phenanthrene	2.26E-01	6.06E-08	NA	2.05E+01	5.50E-06	NA	2.19E+00	5.88E-07	NA	4.59E+00	1.23E-06	NA
Pyrene	3.27E-01	2.51E-09	NA	1.18E+01	9.07E-08	NA	5.34E+00	4.11E-08	NA	9.52E+00	7.32E-08	NA
BaP-TE	8.94E-01	6.88E-09	2.29E-10	3.98E+00	3.06E-08	1.02E-09	3.98E+00	3.06E-08	1.02E-09	5.56E+00	4.28E-08	1.42E-09
Pentachlorophenol	2.38E+00	1.83E-08	NA	2.79E+01	2.15E-07	NA	4.16E+01	3.20E-07	NA	1.28E+01	9.81E-08	NA
Total		1.43E-02	2.42E-07		1.43E-02	2.41E-07		1.43E-02	2.40E-07		1.43E-02	2.40E-07

Table C-6
SITE-WIDE & AREA-SPECIFIC RISKS
INHALATION OF VOLATILES
KI SITE WORKER

Constituent	Site-Wide			Area A			Area B			Area C			Area F		
	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	2.42E-06	4.41E-10	3.00E-03	2.42E-06	4.41E-10	3.00E-03	2.42E-06	4.41E-10	3.00E-03	2.42E-06	4.41E-10	3.00E-03	2.42E-06	4.41E-10
Barium	2.99E+02	NA	NA	2.99E+02	NA	NA	2.99E+02	NA	NA	2.99E+02	NA	NA	2.99E+02	NA	NA
Chlorobenzene	3.00E-03	5.89E-06	NA	3.00E-03	5.89E-06	NA	3.00E-03	5.89E-06	NA	3.00E-03	5.89E-06	NA	3.00E-03	5.89E-06	NA
Chloromethane	2.00E-03	1.28E-05	NA	2.00E-03	1.28E-05	NA	2.00E-03	1.28E-05	NA	2.00E-03	1.28E-05	NA	2.00E-03	1.28E-05	NA
4-Chloro-3-methylphenol	2.50E-01	9.13E-07	NA	2.50E-01	9.13E-07	NA	2.50E-01	9.13E-07	NA	2.50E-01	9.13E-07	NA	2.50E-01	9.13E-07	NA
Chromium	6.80E+01	NA	NA	6.80E+01	NA	NA	6.80E+01	NA	NA	6.80E+01	NA	NA	6.80E+01	NA	NA
4,4'-DDD	3.60E-02	NA	2.23E-11	3.60E-02	NA	2.23E-11	3.60E-02	NA	2.23E-11	3.60E-02	NA	2.23E-11	3.60E-02	NA	2.23E-11
4,4'-DDE	8.00E-03	NA	6.55E-12	8.00E-03	NA	6.55E-12	8.00E-03	NA	6.55E-12	8.00E-03	NA	6.55E-12	8.00E-03	NA	6.55E-12
4,4'-DDT	1.90E-02	2.10E-07	1.27E-11	1.90E-02	2.10E-07	1.27E-11	1.90E-02	2.10E-07	1.27E-11	1.90E-02	2.10E-07	1.27E-11	1.90E-02	2.10E-07	1.27E-11
delta-BHC	3.00E-03	3.61E-06	NA	3.00E-03	3.61E-06	NA	3.00E-03	3.61E-06	NA	3.00E-03	3.61E-06	NA	3.00E-03	3.61E-06	NA
Dibenzofuran	1.90E+00	2.19E-03	NA	1.90E+00	2.19E-03	NA	1.90E+00	2.19E-03	NA	1.90E+00	2.19E-03	NA	1.90E+00	2.19E-03	NA
1,2-Dichlorobenzene	2.00E-03	3.35E-06	NA	2.00E-03	3.35E-06	NA	2.00E-03	3.35E-06	NA	2.00E-03	3.35E-06	NA	2.00E-03	3.35E-06	NA
1,4-Dichlorobenzene	2.00E-03	1.97E-06	3.88E-09	2.00E-03	1.97E-06	3.88E-09	2.00E-03	1.97E-06	3.88E-09	2.00E-03	1.97E-06	3.88E-09	2.00E-03	1.97E-06	3.88E-09
1,2-Dichloropropane	4.00E-03	1.89E-04	NA	4.00E-03	1.89E-04	NA	4.00E-03	1.89E-04	NA	4.00E-03	1.89E-04	NA	4.00E-03	1.89E-04	NA
4,6-Dinitro-2-methylphenol	1.50E+00	2.18E-02	NA	1.50E+00	2.18E-02	NA	1.50E+00	2.18E-02	NA	1.50E+00	2.18E-02	NA	1.50E+00	2.18E-02	NA
2,4-Dinitrophenol	6.30E-01	6.12E-04	NA	6.30E-01	6.12E-04	NA	6.30E-01	6.12E-04	NA	6.30E-01	6.12E-04	NA	6.30E-01	6.12E-04	NA
Endosulfan II	1.40E-02	4.79E-07	NA	1.40E-02	4.79E-07	NA	1.40E-02	4.79E-07	NA	1.40E-02	4.79E-07	NA	1.40E-02	4.79E-07	NA
Endosulfan Sulfate	1.40E-02	4.79E-07	NA	1.40E-02	4.79E-07	NA	1.40E-02	4.79E-07	NA	1.40E-02	4.79E-07	NA	1.40E-02	4.79E-07	NA
Endrin	3.60E-02	8.97E-06	NA	3.60E-02	8.97E-06	NA	3.60E-02	8.97E-06	NA	3.60E-02	8.97E-06	NA	3.60E-02	8.97E-06	NA
Endrin Aldehyde	3.30E-02	8.22E-06	NA	3.30E-02	8.22E-06	NA	3.30E-02	8.22E-06	NA	3.30E-02	8.22E-06	NA	3.30E-02	8.22E-06	NA
Ethylbenzene	2.10E+00	2.29E-04	NA	2.10E+00	2.29E-04	NA	2.10E+00	2.29E-04	NA	2.10E+00	2.29E-04	NA	2.10E+00	2.29E-04	NA
Isopropylbenzene	3.30E-02	7.88E-06	NA	3.30E-02	7.88E-06	NA	3.30E-02	7.88E-06	NA	3.30E-02	7.88E-06	NA	3.30E-02	7.88E-06	NA
Manganese	8.52E+02	NA	NA	8.52E+02	NA	NA	8.52E+02	NA	NA	8.52E+02	NA	NA	8.52E+02	NA	NA
Methylene Chloride	7.40E-02	7.31E-06	3.69E-09	7.40E-02	7.31E-06	3.69E-09	7.40E-02	7.31E-06	3.69E-09	7.40E-02	7.31E-06	3.69E-09	7.40E-02	7.31E-06	3.69E-09
4-Nitrophenol	2.50E-01	4.08E-05	NA	2.50E-01	4.08E-05	NA	2.50E-01	4.08E-05	NA	2.50E-01	4.08E-05	NA	2.50E-01	4.08E-05	NA
Phenol	1.20E-02	4.16E-08	NA	1.20E-02	4.16E-08	NA	1.20E-02	4.16E-08	NA	1.20E-02	4.16E-08	NA	1.20E-02	4.16E-08	NA
Tetrachloroethene	8.00E-03	5.10E-06	4.21E-09	8.00E-03	5.10E-06	4.21E-09	8.00E-03	5.10E-06	4.21E-09	8.00E-03	5.10E-06	4.21E-09	8.00E-03	5.10E-06	4.21E-09
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	4.87E-06	NA	1.55E-01	4.87E-06	NA	1.55E-01	4.87E-06	NA	1.55E-01	4.87E-06	NA	1.55E-01	4.87E-06	NA
Toluene	2.80E-02	8.74E-07	NA	2.80E-02	8.74E-07	NA	2.80E-02	8.74E-07	NA	2.80E-02	8.74E-07	NA	2.80E-02	8.74E-07	NA
1,2,4-Trichlorobenzene	1.00E-03	3.54E-06	NA	1.00E-03	3.54E-06	NA	1.00E-03	3.54E-06	NA	1.00E-03	3.54E-06	NA	1.00E-03	3.54E-06	NA
1,1,1-Trichloroethane	5.00E-03	6.54E-07	NA	5.00E-03	6.54E-07	NA	5.00E-03	6.54E-07	NA	5.00E-03	6.54E-07	NA	5.00E-03	6.54E-07	NA
Trichlorofluoromethane	2.00E-03	1.68E-06	NA	2.00E-03	1.68E-06	NA	2.00E-03	1.68E-06	NA	2.00E-03	1.68E-06	NA	2.00E-03	1.68E-06	NA
2,4,5-Trichlorophenol	1.60E-01	3.87E-07	NA	1.60E-01	3.87E-07	NA	1.60E-01	3.87E-07	NA	1.60E-01	3.87E-07	NA	1.60E-01	3.87E-07	NA
2,4,6-Trichlorophenol	3.50E-01	3.88E-03	1.50E-09	3.50E-01	3.88E-03	1.50E-09	3.50E-01	3.88E-03	1.50E-09	3.50E-01	3.88E-03	1.50E-09	3.50E-01	3.88E-03	1.50E-09
1,2,4-Trimethylbenzene	4.40E-02	3.55E-04	NA	4.40E-02	3.55E-04	NA	4.40E-02	3.55E-04	NA	4.40E-02	3.55E-04	NA	4.40E-02	3.55E-04	NA
Total Xylenes	2.00E-03	1.96E-06	NA	2.00E-03	1.96E-06	NA	2.00E-03	1.96E-06	NA	2.00E-03	1.96E-06	NA	2.00E-03	1.96E-06	NA
1,2,3,4,6,7,8-HpCDD	1.11E-02	NA	5.20E-08	7.05E-03	NA	3.31E-08	1.23E-02	NA	5.78E-08	5.40E-04	NA	2.54E-09	1.12E-02	NA	5.27E-08
1,2,3,4,6,7,8-HpCDF	2.05E-03	NA	9.63E-09	1.11E-03	NA	5.22E-09	2.68E-03	NA	1.26E-08	2.80E-04	NA	1.32E-09	1.97E-03	NA	9.25E-09
1,2,3,4,7,8,9-HpCDF	1.72E-04	NA	8.07E-10	1.01E-04	NA	4.72E-10	2.15E-04	NA	1.01E-09	1.90E-05	NA	8.93E-11	1.33E-04	NA	6.27E-10
1,2,3,4,7,8-HxCDD	6.11E-05	NA	2.87E-09	2.90E-05	NA	1.36E-09	7.21E-05	NA	3.39E-09	2.50E-06	NA	1.17E-10	1.33E-04	NA	6.27E-09
1,2,3,4,7,8-HxCDF	1.64E-04	NA	7.69E-09	9.90E-05	NA	4.65E-09	1.97E-04	NA	9.24E-09	2.60E-05	NA	1.22E-09	1.03E-04	NA	4.82E-09
1,2,3,6,7,8-HxCDD	3.36E-04	NA	1.58E-08	2.10E-04	NA	9.87E-09	3.43E-04	NA	1.61E-08	2.00E-05	NA	9.40E-10	4.45E-04	NA	2.09E-08
1,2,3,6,7,8-HxCDF	4.98E-05	NA	2.34E-09	1.60E-05	NA	7.52E-10	4.90E-05	NA	2.30E-09	4.10E-06	NA	1.93E-10	5.39E-05	NA	2.53E-09
1,2,3,7,8,9-HxCDD	1.03E-04	NA	4.82E-09	2.40E-05	NA	1.13E-09	1.22E-04	NA	5.75E-09	2.15E-06	NA	1.01E-10	2.11E-04	NA	9.92E-09
1,2,3,7,8,9-HxCDF	5.47E-05	NA	2.57E-09	4.50E-06	NA	2.11E-10	4.53E-05	NA	2.13E-09	5.90E-06	NA	2.77E-10	2.85E-05	NA	1.34E-09
1,2,3,7,8-PeCDD	1.83E-05	NA	8.61E-09	3.10E-06	NA	1.46E-09	2.35E-05	NA	1.10E-08	ND	ND	ND	4.30E-05	NA	2.02E-08
1,2,3,7,8-PeCDF	1.68E-05	NA	2.37E-10	9.30E-06	NA	1.31E-10	1.57E-05	NA	2.22E-10	1.80E-06	NA	2.54E-11	1.16E-05	NA	1.64E-10
2,3,4,6,7,8-HxCDF	7.61E-05	NA	3.58E-09	1.34E-05	NA	6.30E-10	9.15E-05	NA	4.30E-09	2.00E-06	NA	9.40E-11	7.52E-05	NA	3.53E-09
2,3,4,7,8-PeCDF	3.53E-05	NA	4.97E-09	9.10E-06	NA	1.28E-09	3.67E-05	NA	5.18E-09	2.10E-06	NA	2.96E-10	1.92E-05	NA	2.70E-09
2,3,7,8-TCDD	2.05E-06	NA	9.65E-10	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.34E-06	NA	1.57E-09
2,3,7,8-TCDF	2.92E-06	NA	1.37E-10	8.75E-07	NA	4.11E-11	3.46E-06	NA	1.63E-10	ND	ND	ND	2.37E-06	NA	1.12E-10
OCDD	9.78E-02	NA	1.38E-08	7.45E-02	NA	1.05E-08	1.38E-01	NA	1.95E-08	7.30E-03	NA	1.03E-09	8.96E-02	NA	1.26E-08
OCDF	8.69E-03	NA	1.23E-09	4.50E-03	NA	6.34E-10	1.21E-02	NA	1.70E-09	7.90E-04	NA	1.11E-10	7.05E-03	NA	9.94E-10
TCDD TEQ	2.73E-04	NA	1.28E-07	1.52E-04	NA	7.16E-08	3.26E-04	NA	1.53E-07	1.91E-05	NA	8.98E-09	3.16E-04	NA	1.49E-07
Acenaphthene	5.24E+00	6.70E-05	NA	6.16E+00	7.88E-05	NA	4.27E+00	5.46E-05	NA	ND	ND	ND	1.42E+01	1.81E-04	NA
Acenaphthylene	3.68E+00	8.37E-05	NA	6.28E+00	1.43E-04	NA	1.72E+00	3.90E-05	NA	ND	ND	ND	9.73E+00	2.21E-04	NA
Anthracene	4.28E+00	3.06E-06	NA	7.02E+00	5.01E-06	NA	4.04E+00	2.89E-06	NA	ND	ND	ND	8.79E+00	6.27E-06	NA
Benzo(a)anthracene	1.83E+00	1.09E-06	3.62E-09	2.09E+00	1.25E-06	4.15E-09	2.27E+00	1.35E-06	4.50E-09	9.51E-02	5.68E-08	1.89E-10	3.60E+00	2.15E-06	7.14E-09
Benzo(a)pyrene	1.52E+00	3.48E-07	1.16E-08	2.41E+00	5.51E-07	1.83E-08	1.93E+00	4.41E-07	1.46E-08	1.17E-01	2.66E-08	8.84E-10	2.63E+00	6.02E-07	2.00E-08
Benzo(b)fluoranthene	2.59E+00	3.16E-06	1.05E-08	4.02E+00	4.90E-06	1.63E-08	3.27E+00	3.99E-06	1.32E-08	1.63E-01	2.00E-07	6.63E-10	4.26E+00	5.19E-06	1.72E-08
Benzo(g,h,i)perylene	2.04E+00	5.78E-07	NA	3.54E+00	1.00E-06	NA	2.36E+00	6.70E-07	NA	1.61E-01	4.58E-08	NA	3.19E+00	9.03E-07	NA
Benzo(k)fluoranthene	1.00E+00	1.44E-07	4.79E-11	7.71E-01	1.11E-07	3.69E-11	8.99E-01	1.29E-07	4.30E-11	1.00E-01	1.44E-08	4.80E-12	2.19E+00	3.16E-07	1.05E-10
Chrysene	3.50E+00	7.21E-06	2.39E-10	8.14E+00	1.68E-05	5.57E-10	2.97E+00	6.12E-06	2.03E-10	1.72E-01	3.54E-07	1.18E-11	5.06E+00	1.04E-05	3.46E-10
Dibenz(a,h)anthracene	2.00E+00	1.10E-07	3.64E-09	2.56E+00	1.40E-07	4.64E-09	3.88E+00	2.12E-07	7.05E-09	1.30E-01	7.12E-09	2.36E-10	2.52E+00	1.38E-07	4.57E-09
Fluoranthene	8.70E+00	1.19E-05	NA	5.05E+00	6.89E-06	NA	8.59E+00	1.17E-05	NA	2.14E-01	2.91E-07	NA	2.32E+01	3.16E-05	NA
Fluorene	1.66E+00	1.35E-05	NA	1.16E+00	9.46E-06	NA	2.76E+00	2.25E-05	NA	ND	ND	ND	2.69E+00	2.19E-05	NA
Indeno(1,2,3-cd)pyrene	1.78E+00	1.76E-07	5.85E-10	2.91E+00	2.87E-07	9.53E-10	2.08E+00	2.06E-07	6.83E-10	1.63E-01	1.61E-08	5.36E-11	2.96E+00	2.92E-07	9.70E-10
1-Methylnaphthalene	1.04E+01	3.20E-02	NA	ND	ND	ND	5.29E+00	1.63E-02	NA	4.24E+00	1.31E-02	NA	3.37E+01	1.04E-01	NA
2-Methylnaphthalene	1.10E+01	2.63E-02	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.40E+01	8.10E-02	NA
Naphthalene	3.81E+00	1.34E-02	NA	6.30E+00	2.21E-02	NA	2.87E+00	1.01E-02	NA	8.23E-01	2.89E-03	NA	9.51E+00	3.34E-02	NA
Phenanthrene	3.35E+00	1.73E-03	NA	1.91E+00	9.83E-04	NA	7.79E+00	4.01E-03	NA	ND	ND	ND	3.15E+00	1.62E-03	NA
Pyrene	5.89E+00	8.63E-06	NA	5.03E+00	7.36E-06	NA	6.47E+00	9.47E-06	NA	1.96E-01	2.87E-07	NA	1.39E+01	2.03E-05	NA
BaP-TE	4.03E+00	9.20E-07	3.06E-08	5.49E+00	1.25E-06	4.17E-08	6.10E+00	1.39E-06	4.63E-08	2.81E-01	6.43E-08	2.13E-09	6.09E+00	1.39E-06	4.62E-08
Pentachlorophenol	1.28E+01	1.07E-05	NA	2.47E+00	2.08E-06	NA	4.56E+00	3.83E-06	NA	1.08E+00	9.05E-07	NA	2.05E+01	1.72E-05	NA
Total		1.03E-01	1.73E-07		5.27E-02	1.27E-07		5.99E-02	2.13E-07		4.53E-02	2.49E-08		2.50E-01	2.09E-07

Table C-6
SITE-WIDE & AREA-SPECIFIC RISKS
INHALATION OF VOLATILES
KI SITE WORKER

Constituent	Area G			Area H			Area S			Area B/F		
	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	2.42E-06	4.41E-10	3.00E-03	2.42E-06	4.41E-10	3.00E-03	2.42E-06	4.41E-10	3.00E-03	2.42E-06	4.41E-10
Barium	2.99E+02	NA	NA	2.99E+02	NA	NA	2.99E+02	NA	NA	2.99E+02	NA	NA
Chlorobenzene	3.00E-03	5.89E-06	NA	3.00E-03	5.89E-06	NA	3.00E-03	5.89E-06	NA	3.00E-03	5.89E-06	NA
Chloromethane	2.00E-03	1.28E-05	NA	2.00E-03	1.28E-05	NA	2.00E-03	1.28E-05	NA	2.00E-03	1.28E-05	NA
4-Chloro-3-methylphenol	2.50E-01	9.13E-07	NA	2.50E-01	9.13E-07	NA	2.50E-01	9.13E-07	NA	2.50E-01	9.13E-07	NA
Chromium	6.80E+01	NA	NA	6.80E+01	NA	NA	6.80E+01	NA	NA	6.80E+01	NA	NA
4,4'-DDD	3.60E-02	NA	2.23E-11	3.60E-02	NA	2.23E-11	3.60E-02	NA	2.23E-11	3.60E-02	NA	2.23E-11
4,4'-DDE	8.00E-03	NA	6.55E-12	8.00E-03	NA	6.55E-12	8.00E-03	NA	6.55E-12	8.00E-03	NA	6.55E-12
4,4'-DDT	1.90E-02	2.10E-07	1.27E-11	1.90E-02	2.10E-07	1.27E-11	1.90E-02	2.10E-07	1.27E-11	1.90E-02	2.10E-07	1.27E-11
delta-BHC	3.00E-03	3.61E-06	NA	3.00E-03	3.61E-06	NA	3.00E-03	3.61E-06	NA	3.00E-03	3.61E-06	NA
Dibenzofuran	1.90E+00	2.19E-03	NA	1.90E+00	2.19E-03	NA	1.90E+00	2.19E-03	NA	1.90E+00	2.19E-03	NA
1,2-Dichlorobenzene	2.00E-03	3.35E-06	NA	2.00E-03	3.35E-06	NA	2.00E-03	3.35E-06	NA	2.00E-03	3.35E-06	NA
1,4-Dichlorobenzene	2.00E-03	1.97E-06	3.88E-09	2.00E-03	1.97E-06	3.88E-09	2.00E-03	1.97E-06	3.88E-09	2.00E-03	1.97E-06	3.88E-09
1,2-Dichloropropane	4.00E-03	1.89E-04	NA	4.00E-03	1.89E-04	NA	4.00E-03	1.89E-04	NA	4.00E-03	1.89E-04	NA
4,6-Dinitro-2-methylphenol	1.50E+00	2.18E-02	NA	1.50E+00	2.18E-02	NA	1.50E+00	2.18E-02	NA	1.50E+00	2.18E-02	NA
2,4-Dinitrophenol	6.30E-01	6.12E-04	NA	6.30E-01	6.12E-04	NA	6.30E-01	6.12E-04	NA	6.30E-01	6.12E-04	NA
Endosulfan II	1.40E-02	4.79E-07	NA	1.40E-02	4.79E-07	NA	1.40E-02	4.79E-07	NA	1.40E-02	4.79E-07	NA
Endosulfan Sulfate	1.40E-02	4.79E-07	NA	1.40E-02	4.79E-07	NA	1.40E-02	4.79E-07	NA	1.40E-02	4.79E-07	NA
Endrin	3.60E-02	8.97E-06	NA	3.60E-02	8.97E-06	NA	3.60E-02	8.97E-06	NA	3.60E-02	8.97E-06	NA
Endrin Aldehyde	3.30E-02	8.22E-06	NA	3.30E-02	8.22E-06	NA	3.30E-02	8.22E-06	NA	3.30E-02	8.22E-06	NA
Ethylbenzene	2.10E+00	2.29E-04	NA	2.10E+00	2.29E-04	NA	2.10E+00	2.29E-04	NA	2.10E+00	2.29E-04	NA
Isopropylbenzene	3.30E-02	7.88E-06	NA	3.30E-02	7.88E-06	NA	3.30E-02	7.88E-06	NA	3.30E-02	7.88E-06	NA
Manganese	8.52E+02	NA	NA	8.52E+02	NA	NA	8.52E+02	NA	NA	8.52E+02	NA	NA
Methylene Chloride	7.40E-02	7.31E-06	3.69E-09	7.40E-02	7.31E-06	3.69E-09	7.40E-02	7.31E-06	3.69E-09	7.40E-02	7.31E-06	3.69E-09
4-Nitrophenol	2.50E-01	4.08E-05	NA	2.50E-01	4.08E-05	NA	2.50E-01	4.08E-05	NA	2.50E-01	4.08E-05	NA
Phenol	1.20E-02	4.16E-08	NA	1.20E-02	4.16E-08	NA	1.20E-02	4.16E-08	NA	1.20E-02	4.16E-08	NA
Tetrachloroethene	8.00E-03	5.10E-06	4.21E-09	8.00E-03	5.10E-06	4.21E-09	8.00E-03	5.10E-06	4.21E-09	8.00E-03	5.10E-06	4.21E-09
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	4.87E-06	NA	1.55E-01	4.87E-06	NA	1.55E-01	4.87E-06	NA	1.55E-01	4.87E-06	NA
Toluene	2.80E-02	8.74E-07	NA	2.80E-02	8.74E-07	NA	2.80E-02	8.74E-07	NA	2.80E-02	8.74E-07	NA
1,2,4-Trichlorobenzene	1.00E-03	3.54E-06	NA	1.00E-03	3.54E-06	NA	1.00E-03	3.54E-06	NA	1.00E-03	3.54E-06	NA
1,1,1-Trichloroethane	5.00E-03	6.54E-07	NA	5.00E-03	6.54E-07	NA	5.00E-03	6.54E-07	NA	5.00E-03	6.54E-07	NA
Trichlorofluoromethane	2.00E-03	1.68E-06	NA	2.00E-03	1.68E-06	NA	2.00E-03	1.68E-06	NA	2.00E-03	1.68E-06	NA
2,4,5-Trichlorophenol	1.60E-01	3.87E-07	NA	1.60E-01	3.87E-07	NA	1.60E-01	3.87E-07	NA	1.60E-01	3.87E-07	NA
2,4,6-Trichlorophenol	3.50E-01	3.88E-03	1.50E-09	3.50E-01	3.88E-03	1.50E-09	3.50E-01	3.88E-03	1.50E-09	3.50E-01	3.88E-03	1.50E-09
1,2,4-Trimethylbenzene	4.40E-02	3.55E-04	NA	4.40E-02	3.55E-04	NA	4.40E-02	3.55E-04	NA	4.40E-02	3.55E-04	NA
Total Xylenes	2.00E-03	1.96E-06	NA	2.00E-03	1.96E-06	NA	2.00E-03	1.96E-06	NA	2.00E-03	1.96E-06	NA
1,2,3,4,6,7,8-HpCDD	2.35E-02	NA	1.10E-07	1.43E-02	NA	6.71E-08	8.85E-03	NA	4.16E-08	1.01E-02	NA	4.76E-08
1,2,3,4,6,7,8-HpCDF	3.85E-03	NA	1.81E-08	2.90E-03	NA	1.36E-08	3.17E-03	NA	1.49E-08	1.86E-03	NA	8.75E-09
1,2,3,4,7,8,9-HpCDF	3.25E-04	NA	1.53E-09	2.58E-04	NA	1.21E-09	3.19E-04	NA	1.50E-09	1.35E-04	NA	6.36E-10
1,2,3,4,7,8-HxCDD	6.80E-05	NA	3.20E-09	5.46E-05	NA	2.57E-09	3.78E-05	NA	1.78E-09	1.08E-04	NA	5.06E-09
1,2,3,4,7,8-HxCDF	2.91E-04	NA	1.37E-08	2.47E-04	NA	1.16E-08	4.47E-04	NA	2.10E-08	1.12E-04	NA	5.28E-09
1,2,3,6,7,8-HxCDD	6.00E-04	NA	2.82E-08	4.65E-04	NA	2.18E-08	3.52E-04	NA	1.65E-08	3.75E-04	NA	1.76E-08
1,2,3,6,7,8-HxCDF	8.93E-05	NA	4.20E-09	6.94E-05	NA	3.26E-09	9.97E-05	NA	4.69E-09	4.70E-05	NA	2.21E-09
1,2,3,7,8,9-HxCDD	1.37E-04	NA	6.44E-09	9.55E-05	NA	4.49E-09	7.44E-05	NA	3.49E-09	1.70E-04	NA	8.00E-09
1,2,3,7,8,9-HxCDF	1.12E-04	NA	5.26E-09	1.12E-04	NA	5.28E-09	9.85E-05	NA	4.63E-09	2.83E-05	NA	1.33E-09
1,2,3,7,8-PeCDD	1.69E-05	NA	7.95E-09	1.46E-05	NA	6.86E-09	1.10E-05	NA	5.18E-09	3.48E-05	NA	1.63E-08
1,2,3,7,8-PeCDF	3.01E-05	NA	4.24E-10	3.84E-05	NA	5.42E-10	2.59E-05	NA	3.65E-10	1.13E-05	NA	1.60E-10
2,3,4,6,7,8-HxCDF	1.36E-04	NA	6.39E-09	1.15E-04	NA	5.40E-09	1.68E-04	NA	7.89E-09	6.83E-05	NA	3.21E-09
2,3,4,7,8-PeCDF	5.91E-05	NA	8.33E-09	8.12E-05	NA	1.14E-08	8.79E-05	NA	1.24E-08	2.09E-05	NA	2.94E-09
2,3,7,8-TCDD	2.54E-06	NA	1.20E-09	2.36E-06	NA	1.11E-09	ND	ND	ND	2.98E-06	NA	1.40E-09
2,3,7,8-TCDF	3.55E-06	NA	1.67E-10	7.61E-06	NA	3.58E-10	5.04E-06	NA	2.37E-10	2.45E-06	NA	1.15E-10
OCDD	2.00E-01	NA	2.82E-08	1.38E-01	NA	1.95E-08	9.12E-02	NA	1.29E-08	8.88E-02	NA	1.25E-08
OCDF	1.79E-02	NA	2.52E-09	1.34E-02	NA	1.89E-09	1.17E-02	NA	1.66E-09	7.12E-03	NA	1.00E-09
TCDD TEQ	5.05E-04	NA	2.37E-07	3.73E-04	NA	1.75E-07	3.20E-04	NA	1.51E-07	2.81E-04	NA	1.32E-07
Acenaphthene	4.05E-01	5.18E-06	NA	6.82E+00	8.73E-05	NA	1.30E+00	1.66E-05	NA	9.03E+00	1.16E-04	NA
Acenaphthylene	3.35E-01	7.61E-06	NA	2.39E+00	5.43E-05	NA	5.55E-01	1.26E-05	NA	6.03E+00	1.37E-04	NA
Anthracene	1.84E-01	1.31E-07	NA	6.25E+00	4.46E-06	NA	4.87E+00	3.47E-06	NA	6.08E+00	4.34E-06	NA
Benzo(a)anthracene	2.17E-01	1.30E-07	4.31E-10	3.50E+00	2.09E-06	6.95E-09	1.81E+00	1.08E-06	3.60E-09	2.69E+00	1.61E-06	5.34E-09
Benzo(a)pyrene	1.66E-01	3.80E-08	1.26E-09	1.41E+00	3.22E-07	1.07E-08	9.12E-01	2.08E-07	6.91E-09	2.15E+00	4.91E-07	1.63E-08
Benzo(b)fluoranthene	2.72E-01	3.32E-07	1.10E-09	2.84E+00	3.47E-06	1.15E-08	2.10E+00	2.56E-06	8.51E-09	3.53E+00	4.31E-06	1.43E-08
Benzo(g,h,i)perylene	2.90E-01	8.21E-08	NA	2.41E+00	6.82E-07	NA	1.65E+00	4.67E-07	NA	2.64E+00	7.48E-07	NA
Benzo(k)fluoranthene	2.81E-01	4.05E-08	1.35E-11	2.51E+00	3.61E-07	1.20E-10	7.17E-01	1.03E-07	3.43E-11	1.54E+00	2.21E-07	7.34E-11
Chrysene	3.24E-01	6.67E-07	2.22E-11	6.19E+00	1.28E-05	4.24E-10	2.79E+00	5.74E-06	1.91E-10	3.80E+00	7.83E-06	2.60E-10
Dibenz(a,h)anthracene	7.32E-01	4.01E-08	1.33E-09	2.43E+00	1.33E-07	4.41E-09	2.57E+00	1.41E-07	4.67E-09	2.76E+00	1.51E-07	5.02E-09
Fluoranthene	2.04E-01	2.78E-07	NA	1.64E+01	2.24E-05	NA	7.03E+00	9.59E-06	NA	1.51E+01	2.06E-05	NA
Fluorene	3.22E-01	2.62E-06	NA	7.05E+00	5.74E-05	NA	1.74E+00	1.41E-05	NA	2.32E+00	1.89E-05	NA
Indeno(1,2,3-cd)pyrene	3.07E-01	3.03E-08	1.01E-10	2.38E+00	2.35E-07	7.80E-10	1.11E+00	1.10E-07	3.65E-10	2.41E+00	2.38E-07	7.90E-10
1-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.91E+01	5.89E-02	NA
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.28E+01	5.43E-02	NA
Naphthalene	3.53E-01	1.24E-03	NA	5.73E+00	2.01E-02	NA	5.05E-01	1.77E-03	NA	6.12E+00	2.15E-02	NA
Phenanthrene	2.26E-01	1.16E-04	NA	2.05E+01	1.06E-02	NA	2.19E+00	1.13E-03	NA	4.59E+00	2.37E-03	NA
Pyrene	3.27E-01	4.78E-07	NA	1.18E+01	1.73E-05	NA	5.34E+00	7.82E-06	NA	9.52E+00	1.39E-05	NA
BaP-TE	8.94E-01	2.04E-07	6.78E-09	3.98E+00	9.08E-07	3.02E-08	3.98E+00	9.08E-07	3.02E-08	5.56E+00	1.27E-06	4.22E-08
Pentachlorophenol	2.38E+00	2.00E-06	NA	2.79E+01	2.35E-05	NA	4.16E+01	3.49E-05	NA	1.28E+01	1.07E-05	NA
Total		3.07E-02	2.58E-07		6.03E-02	2.19E-07		3.24E-02	1.94E-07		1.67E-01	1.88E-07

Table C-7
SITE-WIDE & AREA-SPECIFIC RISKS
TOTAL RISKS: KI SITE WORKER

Constituent	Site-Wide			Area A			Area B			Area C			Area F		
	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	1.08E-04	1.98E-08	3.00E-03	1.08E-04	1.98E-08	3.00E-03	1.08E-04	1.98E-08	3.00E-03	1.08E-04	1.98E-08	3.00E-03	1.08E-04	1.98E-08
Barium	2.99E+02	5.18E-04	NA	2.99E+02	5.18E-04	NA	2.99E+02	5.18E-04	NA	2.99E+02	5.18E-04	NA	2.99E+02	5.18E-04	NA
Chlorobenzene	3.00E-03	5.94E-06	NA	3.00E-03	5.94E-06	NA	3.00E-03	5.94E-06	NA	3.00E-03	5.94E-06	NA	3.00E-03	5.94E-06	NA
Chloromethane	2.00E-03	1.28E-05	NA	2.00E-03	1.28E-05	NA	2.00E-03	1.28E-05	NA	2.00E-03	1.28E-05	NA	2.00E-03	1.28E-05	NA
4-Chloro-3-methylphenol	2.50E-01	3.06E-06	NA	2.50E-01	3.06E-06	NA	2.50E-01	3.06E-06	NA	2.50E-01	3.06E-06	NA	2.50E-01	3.06E-06	NA
Chromium	6.80E+01	1.09E-02	NA	6.80E+01	1.09E-02	NA	6.80E+01	1.09E-02	NA	6.80E+01	1.09E-02	NA	6.80E+01	1.09E-02	NA
4,4'-DDD	3.60E-02	NA	2.85E-09	3.60E-02	NA	2.85E-09	3.60E-02	NA	2.85E-09	3.60E-02	0.00E+00	2.85E-09	3.60E-02	NA	2.85E-09
4,4'-DDE	8.00E-03	NA	8.97E-10	8.00E-03	NA	8.97E-10	8.00E-03	NA	8.97E-10	8.00E-03	0.00E+00	8.97E-10	8.00E-03	NA	8.97E-10
4,4'-DDT	1.90E-02	3.51E-05	2.13E-09	1.90E-02	3.51E-05	2.13E-09	1.90E-02	3.51E-05	2.13E-09	1.90E-02	3.51E-05	2.13E-09	1.90E-02	3.51E-05	2.13E-09
delta-BHC	3.00E-03	1.42E-05	1.48E-09	3.00E-03	1.42E-05	1.48E-09	3.00E-03	1.42E-05	1.48E-09	3.00E-03	1.42E-05	1.48E-09	3.00E-03	1.42E-05	1.48E-09
Dibenzofuran	1.90E+00	2.79E-03	NA	1.90E+00	2.79E-03	NA	1.90E+00	2.79E-03	NA	1.90E+00	2.79E-03	NA	1.90E+00	2.79E-03	NA
1,2-Dichlorobenzene	2.00E-03	3.35E-06	NA	2.00E-03	3.35E-06	NA	2.00E-03	3.35E-06	NA	2.00E-03	3.35E-06	NA	2.00E-03	3.35E-06	NA
1,4-Dichlorobenzene	2.00E-03	1.99E-06	3.88E-09	2.00E-03	1.99E-06	3.88E-09	2.00E-03	1.99E-06	3.88E-09	2.00E-03	1.99E-06	3.88E-09	2.00E-03	1.99E-06	3.88E-09
1,2-Dichloropropane	4.00E-03	1.92E-04	8.91E-11	4.00E-03	1.92E-04	8.91E-11	4.00E-03	1.92E-04	8.91E-11	4.00E-03	1.92E-04	8.91E-11	4.00E-03	1.92E-04	8.91E-11
4,6-Dinitro-2-methylphenol	1.50E+00	2.82E-02	NA	1.50E+00	2.82E-02	NA	1.50E+00	2.82E-02	NA	1.50E+00	2.82E-02	NA	1.50E+00	2.82E-02	NA
2,4-Dinitrophenol	6.30E-01	7.47E-04	NA	6.30E-01	7.47E-04	NA	6.30E-01	7.47E-04	NA	6.30E-01	7.47E-04	NA	6.30E-01	7.47E-04	NA
Endosulfan II	1.40E-02	2.62E-06	NA	1.40E-02	2.62E-06	NA	1.40E-02	2.62E-06	NA	1.40E-02	2.62E-06	NA	1.40E-02	2.62E-06	NA
Endosulfan Sulfate	1.40E-02	2.62E-06	NA	1.40E-02	2.62E-06	NA	1.40E-02	2.62E-06	NA	1.40E-02	2.62E-06	NA	1.40E-02	2.62E-06	NA
Endrin	3.60E-02	1.36E-04	NA	3.60E-02	1.36E-04	NA	3.60E-02	1.36E-04	NA	3.60E-02	1.36E-04	NA	3.60E-02	1.36E-04	NA
Endrin Aldehyde	3.30E-02	1.25E-04	NA	3.30E-02	1.25E-04	NA	3.30E-02	1.25E-04	NA	3.30E-02	1.25E-04	NA	3.30E-02	1.25E-04	NA
Ethylbenzene	2.10E+00	2.37E-04	NA	2.10E+00	2.37E-04	NA	2.10E+00	2.37E-04	NA	2.10E+00	2.37E-04	NA	2.10E+00	2.37E-04	NA
Isopropylbenzene	3.30E-02	7.99E-06	NA	3.30E-02	7.99E-06	NA	3.30E-02	7.99E-06	NA	3.30E-02	7.99E-06	NA	3.30E-02	7.99E-06	NA
Manganese	8.52E+02	1.67E-02	NA	8.52E+02	1.67E-02	NA	8.52E+02	1.67E-02	NA	8.52E+02	1.67E-02	NA	8.52E+02	1.67E-02	NA
Methylene Chloride	7.40E-02	8.08E-06	3.82E-09	7.40E-02	8.08E-06	3.82E-09	7.40E-02	8.08E-06	3.82E-09	7.40E-02	8.08E-06	3.82E-09	7.40E-02	8.08E-06	3.82E-09
4-Nitrophenol	2.50E-01	5.43E-05	NA	2.50E-01	5.43E-05	NA	2.50E-01	5.43E-05	NA	2.50E-01	5.43E-05	NA	2.50E-01	5.43E-05	NA
Phenol	1.20E-02	6.68E-08	NA	1.20E-02	6.68E-08	NA	1.20E-02	6.68E-08	NA	1.20E-02	6.68E-08	NA	1.20E-02	6.68E-08	NA
Tetrachloroethene	8.00E-03	5.60E-06	5.18E-09	8.00E-03	5.60E-06	5.18E-09	8.00E-03	5.60E-06	5.18E-09	8.00E-03	5.60E-06	5.18E-09	8.00E-03	5.60E-06	5.18E-09
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	7.09E-06	NA	1.55E-01	7.09E-06	NA	1.55E-01	7.09E-06	NA	1.55E-01	7.09E-06	NA	1.55E-01	7.09E-06	NA
Toluene	2.80E-02	1.03E-06	NA	2.80E-02	1.03E-06	NA	2.80E-02	1.03E-06	NA	2.80E-02	1.03E-06	NA	2.80E-02	1.03E-06	NA
1,2,4-Trichlorobenzene	1.00E-03	3.57E-06	NA	1.00E-03	3.57E-06	NA	1.00E-03	3.57E-06	NA	1.00E-03	3.57E-06	NA	1.00E-03	3.57E-06	NA
1,1,1-Trichloroethane	5.00E-03	7.66E-07	NA	5.00E-03	7.66E-07	NA	5.00E-03	7.66E-07	NA	5.00E-03	7.66E-07	NA	5.00E-03	7.66E-07	NA
Trichlorofluoromethane	2.00E-03	1.73E-06	NA	2.00E-03	1.73E-06	NA	2.00E-03	1.73E-06	NA	2.00E-03	1.73E-06	NA	2.00E-03	1.73E-06	NA
2,4,5-Trichlorophenol	1.60E-01	1.07E-06	NA	1.60E-01	1.07E-06	NA	1.60E-01	1.07E-06	NA	1.60E-01	1.07E-06	NA	1.60E-01	1.07E-06	NA
2,4,6-Trichlorophenol	3.50E-01	5.38E-03	2.09E-09	3.50E-01	5.38E-03	2.09E-09	3.50E-01	5.38E-03	2.09E-09	3.50E-01	5.38E-03	2.09E-09	3.50E-01	5.38E-03	2.09E-09
1,2,4-Trimethylbenzene	4.40E-02	3.56E-04	NA	4.40E-02	3.56E-04	NA	4.40E-02	3.56E-04	NA	4.40E-02	3.56E-04	NA	4.40E-02	3.56E-04	NA
Total Xylenes	2.00E-03	1.96E-06	NA	2.00E-03	1.96E-06	NA	2.00E-03	1.96E-06	NA	2.00E-03	1.96E-06	NA	2.00E-03	1.96E-06	NA
1,2,3,4,6,7,8-HpCDD	1.11E-02	NA	2.77E-06	7.05E-03	NA	1.76E-06	1.23E-02	NA	3.08E-06	5.40E-04	0.00E+00	1.35E-07	1.12E-02	NA	2.81E-06
1,2,3,4,6,7,8-HpCDF	2.05E-03	NA	5.13E-07	1.11E-03	NA	2.78E-07	2.68E-03	NA	6.69E-07	2.80E-04	0.00E+00	7.01E-08	1.97E-03	NA	4.92E-07
1,2,3,4,7,8,9-HpCDF	1.72E-04	NA	4.29E-08	1.01E-04	NA	2.51E-08	2.15E-04	NA	5.39E-08	1.90E-05	0.00E+00	4.75E-09	1.33E-04	NA	3.34E-08
1,2,3,4,7,8-HxCDD	6.11E-05	NA	1.53E-07	2.90E-05	NA	7.26E-08	7.21E-05	NA	1.81E-07	2.50E-06	0.00E+00	6.26E-09	1.33E-04	NA	3.34E-07
1,2,3,4,7,8-HxCDF	1.64E-04	NA	4.09E-07	9.90E-05	NA	2.48E-07	1.97E-04	NA	4.92E-07	2.60E-05	0.00E+00	6.51E-08	1.03E-04	NA	2.57E-07
1,2,3,6,7,8-HxCDD	3.36E-04	NA	8.40E-07	2.10E-04	NA	5.25E-07	3.43E-04	NA	8.58E-07	2.00E-05	0.00E+00	5.00E-08	4.45E-04	NA	1.11E-06
1,2,3,6,7,8-HxCDF	4.98E-05	NA	1.25E-07	1.60E-05	NA	4.00E-08	4.90E-05	NA	1.23E-07	4.10E-06	0.00E+00	1.03E-08	5.39E-05	NA	1.35E-07
1,2,3,7,8,9-HxCDD	1.03E-04	NA	2.57E-07	2.40E-05	NA	6.01E-08	1.22E-04	NA	3.06E-07	2.15E-06	0.00E+00	5.38E-09	2.11E-04	NA	5.28E-07
1,2,3,7,8,9-HxCDF	5.47E-05	NA	1.37E-07	4.50E-06	NA	1.13E-08	4.53E-05	NA	1.13E-07	5.90E-06	0.00E+00	1.48E-08	2.85E-05	NA	7.14E-08
1,2,3,7,8-PeCDD	1.83E-05	NA	4.58E-07	3.10E-06	NA	7.76E-08	2.35E-05	NA	5.88E-07	ND	ND	ND	4.30E-05	NA	1.08E-06
1,2,3,7,8-PeCDF	1.68E-05	NA	1.26E-08	9.30E-06	NA	6.98E-09	1.57E-05	NA	1.18E-08	1.80E-06	0.00E+00	1.35E-09	1.16E-05	NA	8.73E-09
2,3,4,6,7,8-HxCDF	7.61E-05	NA	1.91E-07	1.34E-05	NA	3.35E-08	9.15E-05	NA	2.29E-07	2.00E-06	0.00E+00	5.00E-09	7.52E-05	NA	1.88E-07
2,3,4,7,8-PeCDF	3.53E-05	NA	2.65E-07	9.10E-06	NA	6.83E-08	3.67E-05	NA	2.76E-07	2.10E-06	0.00E+00	1.58E-08	1.92E-05	NA	1.44E-07
2,3,7,8-TCDD	2.05E-06	NA	5.14E-08	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.34E-06	NA	8.36E-08
2,3,7,8-TCDF	2.92E-06	NA	7.32E-09	8.75E-07	NA	2.19E-09	3.46E-06	NA	8.66E-09	ND	ND	ND	2.37E-06	NA	5.94E-09
OCDD	9.78E-02	NA	7.34E-07	7.45E-02	NA	5.59E-07	1.38E-01	NA	1.04E-06	7.30E-03	0.00E+00	5.48E-08	8.96E-02	NA	6.73E-07
OCDF	8.69E-03	NA	6.53E-08	4.50E-03	NA	3.38E-08	1.21E-02	NA	9.05E-08	7.90E-04	0.00E+00	5.93E-09	7.05E-03	NA	5.29E-08
TCDD TEQ	2.73E-04	NA	6.83E-06	1.52E-04	NA	3.81E-06	3.26E-04	NA	8.15E-06	1.91E-05	0.00E+00	4.78E-07	3.16E-04	NA	7.92E-06
Acenaphthene	5.24E+00	1.22E-04	NA	6.16E+00	1.43E-04	NA	4.27E+00	9.95E-05	NA	ND	ND	ND	1.42E+01	3.30E-04	NA
Acenaphthylene	3.68E+00	2.00E-04	NA	6.28E+00	3.41E-04	NA	1.72E+00	9.30E-05	NA	ND	ND	ND	9.73E+00	5.28E-04	NA
Anthracene	4.28E+00	1.21E-05	NA	7.02E+00	1.98E-05	NA	4.04E+00	1.14E-05	NA	ND	ND	ND	8.79E+00	2.47E-05	NA
Benzo(a)anthracene	1.83E+00	3.77E-05	1.94E-07	2.09E+00	4.32E-05	2.23E-07	2.27E+00	4.68E-05	2.41E-07	9.51E-02	1.96E-06	1.01E-08	3.60E+00	7.43E-05	3.83E-07
Benzo(a)pyrene	1.52E+00	3.09E-05	1.60E-06	2.41E+00	4.89E-05	2.54E-06	1.93E+00	3.91E-05	2.03E-06	1.17E-01	2.36E-06	1.23E-07	2.63E+00	5.34E-05	2.77E-06
Benzo(b)fluoranthene	2.59E+00	5.50E-05	2.81E-07	4.02E+00	8.55E-05	4.36E-07	3.27E+00	6.95E-05	3.55E-07	1.63E-01	3.48E-06	1.77E-08	4.26E+00	9.05E-05	4.62E-07
Benzo(g,h,i)perylene	2.04E+00	6.49E-05	NA	3.54E+00	1.13E-04	NA	2.36E+00	7.51E-05	NA	1.61E-01	5.13E-06	NA	3.19E+00	1.01E-04	NA
Benzo(k)fluoranthene	1.00E+00	2.02E-05	1.05E-08	7.71E-01	1.56E-05	8.10E-09	8.99E-01	1.81E-05	9.44E-09	1.00E-01	2.03E-06	1.05E-09	2.19E+00	4.43E-05	2.30E-08
Chrysene	3.50E+00	7.73E-05	3.89E-09	8.14E+00	1.80E-04	9.06E-09	2.97E+00	6.56E-05	3.31E-09	1.72E-01	3.80E-06	1.91E-10	5.06E+00	1.12E-04	5.64E-09
Dibenz(a,h)anthracene	2.00E+00	4.02E-05	2.10E-06	2.56E+00	5.14E-05	2.67E-06	3.88E+00	7.80E-05	4.06E-06	1.30E-01	2.62E-06	1.36E-07	2.52E+00	5.06E-05	2.64E-06
Fluoranthene	8.70E+00	1.49E-04	NA	5.05E+00	8.65E-05	NA	8.59E+00	1.47E-04	NA	2.14E-01	3.66E-06	NA	2.32E+01	3.97E-04	NA
Fluorene	1.66E+00	3.96E-05	NA	1.16E+00	2.78E-05	NA	2.76E+00	6.61E-05	NA	ND	ND	ND	2.69E+00	6.44E-05	NA
Indeno(1,2,3-cd)pyrene	1.78E+00	3.59E-05	1.87E-07	2.91E+00	5.85E-05	3.05E-07	2.08E+00	4.19E-05	2.18E-07	1.63E-01	3.29E-06	1.71E-08	2.96E+00	5.95E-05	3.10E-07
1-Methylnaphthalene	1.04E+01	3.23E-02	NA	ND	ND	ND	5.29E+00	1.65E-02	NA	4.24E+00	1.32E-02	NA	3.37E+01	1.05E-01	NA
2-Methylnaphthalene	1.10E+01	2.66E-02	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.40E+01	8.20E-02	NA
Naphthalene	3.81E+00	1.35E-02	NA	6.30E+00	2.23E-02	NA	2.87E+00	1.02E-02	NA	8.23E-01	2.91E-03	NA	9.51E+00	3.37E-02	NA
Phenanthrene	3.35E+00	1.83E-03	NA	1.91E+00	1.04E-03	NA	7.79E+00	4.26E-03	NA	ND	ND	ND	3.15E+00	1.72E-03	NA
Pyrene	5.89E+00	1.32E-04	NA	5.03E+00	1.13E-04	NA	6.47E+00	1.45E-04	NA	1.96E-01	4.40E-06	NA	1.39E+01	3.12E-04	NA
BaP-TE	4.03E+00	8.17E-05	4.24E-06	5.49E+00	1.11E-04	5.78E-06	6.10E+00	1.24E-04	6.42E-06	2.81E-01	5.71E-06	2.96E-07	6.09E+00	1.24E-04	6.42E-06
Pentachlorophenol	1.28E+01	1.93E-04	2.35E-07	2.47E+00	3.75E-05	4.55E-08	4.56E+00	6.92E-05	8.40E-08	1.08E+00	1.63E-05	1.98E-08	2.05E+01	3.10E-04	3.77E-07
Total		1.42E-01	1.14E-05		9.10E-02	9.68E-06		9.84E-02	1.47E-05		8.28E-02	8.36E-07		2.91E-01	1.48E-05

Table C-7
SITE-WIDE & AREA-SPECIFIC RISKS
TOTAL RISKS: KI SITE WORKER

Constituent	Area G			Area H			Area S			Area B/F		
	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	1.08E-04	1.98E-08	3.00E-03	1.08E-04	1.98E-08	3.00E-03	1.08E-04	1.98E-08	3.00E-03	1.08E-04	1.98E-08
Barium	2.99E+02	5.18E-04	NA	2.99E+02	5.18E-04	NA	2.99E+02	5.18E-04	NA	2.99E+02	5.18E-04	NA
Chlorobenzene	3.00E-03	5.94E-06	NA	3.00E-03	5.94E-06	NA	3.00E-03	5.94E-06	NA	3.00E-03	5.94E-06	NA
Chloromethane	2.00E-03	1.28E-05	NA	2.00E-03	1.28E-05	NA	2.00E-03	1.28E-05	NA	2.00E-03	1.28E-05	NA
4-Chloro-3-methylphenol	2.50E-01	3.06E-06	NA	2.50E-01	3.06E-06	NA	2.50E-01	3.06E-06	NA	2.50E-01	3.06E-06	NA
Chromium	6.80E+01	1.09E-02	NA	6.80E+01	1.09E-02	NA	6.80E+01	1.09E-02	NA	6.80E+01	1.09E-02	NA
4,4'-DDD	3.60E-02	NA	2.85E-09	3.60E-02	NA	2.85E-09	3.60E-02	NA	2.85E-09	3.60E-02	NA	2.85E-09
4,4'-DDE	8.00E-03	NA	8.97E-10	8.00E-03	NA	8.97E-10	8.00E-03	NA	8.97E-10	8.00E-03	NA	8.97E-10
4,4'-DDT	1.90E-02	3.51E-05	2.13E-09	1.90E-02	3.51E-05	2.13E-09	1.90E-02	3.51E-05	2.13E-09	1.90E-02	3.51E-05	2.13E-09
delta-BHC	3.00E-03	1.42E-05	1.48E-09	3.00E-03	1.42E-05	1.48E-09	3.00E-03	1.42E-05	1.48E-09	3.00E-03	1.42E-05	1.48E-09
Dibenzofuran	1.90E+00	2.79E-03	NA	1.90E+00	2.79E-03	NA	1.90E+00	2.79E-03	NA	1.90E+00	2.79E-03	NA
1,2-Dichlorobenzene	2.00E-03	3.35E-06	NA	2.00E-03	3.35E-06	NA	2.00E-03	3.35E-06	NA	2.00E-03	3.35E-06	NA
1,4-Dichlorobenzene	2.00E-03	1.99E-06	3.88E-09	2.00E-03	1.99E-06	3.88E-09	2.00E-03	1.99E-06	3.88E-09	2.00E-03	1.99E-06	3.88E-09
1,2-Dichloropropane	4.00E-03	1.92E-04	8.91E-11	4.00E-03	1.92E-04	8.91E-11	4.00E-03	1.92E-04	8.91E-11	4.00E-03	1.92E-04	8.91E-11
4,6-Dinitro-2-methylphenol	1.50E+00	2.82E-02	NA	1.50E+00	2.82E-02	NA	1.50E+00	2.82E-02	NA	1.50E+00	2.82E-02	NA
2,4-Dinitrophenol	6.30E-01	7.47E-04	NA	6.30E-01	7.47E-04	NA	6.30E-01	7.47E-04	NA	6.30E-01	7.47E-04	NA
Endosulfan II	1.40E-02	2.62E-06	NA	1.40E-02	2.62E-06	NA	1.40E-02	2.62E-06	NA	1.40E-02	2.62E-06	NA
Endosulfan Sulfate	1.40E-02	2.62E-06	NA	1.40E-02	2.62E-06	NA	1.40E-02	2.62E-06	NA	1.40E-02	2.62E-06	NA
Endrin	3.60E-02	1.36E-04	NA	3.60E-02	1.36E-04	NA	3.60E-02	1.36E-04	NA	3.60E-02	1.36E-04	NA
Endrin Aldehyde	3.30E-02	1.25E-04	NA	3.30E-02	1.25E-04	NA	3.30E-02	1.25E-04	NA	3.30E-02	1.25E-04	NA
Ethylbenzene	2.10E+00	2.37E-04	NA	2.10E+00	2.37E-04	NA	2.10E+00	2.37E-04	NA	2.10E+00	2.37E-04	NA
Isopropylbenzene	3.30E-02	7.99E-06	NA	3.30E-02	7.99E-06	NA	3.30E-02	7.99E-06	NA	3.30E-02	7.99E-06	NA
Manganese	8.52E+02	1.67E-02	NA	8.52E+02	1.67E-02	NA	8.52E+02	1.67E-02	NA	8.52E+02	1.67E-02	NA
Methylene Chloride	7.40E-02	8.08E-06	3.82E-09	7.40E-02	8.08E-06	3.82E-09	7.40E-02	8.08E-06	3.82E-09	7.40E-02	8.08E-06	3.82E-09
4-Nitrophenol	2.50E-01	5.43E-05	NA	2.50E-01	5.43E-05	NA	2.50E-01	5.43E-05	NA	2.50E-01	5.43E-05	NA
Phenol	1.20E-02	6.68E-08	NA	1.20E-02	6.68E-08	NA	1.20E-02	6.68E-08	NA	1.20E-02	6.68E-08	NA
Tetrachloroethene	8.00E-03	5.60E-06	5.18E-09	8.00E-03	5.60E-06	5.18E-09	8.00E-03	5.60E-06	5.18E-09	8.00E-03	5.60E-06	5.18E-09
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	7.09E-06	NA	1.55E-01	7.09E-06	NA	1.55E-01	7.09E-06	NA	1.55E-01	7.09E-06	NA
Toluene	2.80E-02	1.03E-06	NA	2.80E-02	1.03E-06	NA	2.80E-02	1.03E-06	NA	2.80E-02	1.03E-06	NA
1,2,4-Trichlorobenzene	1.00E-03	3.57E-06	NA	1.00E-03	3.57E-06	NA	1.00E-03	3.57E-06	NA	1.00E-03	3.57E-06	NA
1,1,1-Trichloroethane	5.00E-03	7.66E-07	NA	5.00E-03	7.66E-07	NA	5.00E-03	7.66E-07	NA	5.00E-03	7.66E-07	NA
Trichlorofluoromethane	2.00E-03	1.73E-06	NA	2.00E-03	1.73E-06	NA	2.00E-03	1.73E-06	NA	2.00E-03	1.73E-06	NA
2,4,5-Trichlorophenol	1.60E-01	1.07E-06	NA	1.60E-01	1.07E-06	NA	1.60E-01	1.07E-06	NA	1.60E-01	1.07E-06	NA
2,4,6-Trichlorophenol	3.50E-01	5.38E-03	2.09E-09	3.50E-01	5.38E-03	2.09E-09	3.50E-01	5.38E-03	2.09E-09	3.50E-01	5.38E-03	2.09E-09
1,2,4-Trimethylbenzene	4.40E-02	3.56E-04	NA	4.40E-02	3.56E-04	NA	4.40E-02	3.56E-04	NA	4.40E-02	3.56E-04	NA
Total Xylenes	2.00E-03	1.96E-06	NA	2.00E-03	1.96E-06	NA	2.00E-03	1.96E-06	NA	2.00E-03	1.96E-06	NA
1,2,3,4,6,7,8-HpCDD	2.35E-02	NA	5.88E-06	1.43E-02	NA	3.57E-06	8.85E-03	NA	2.21E-06	1.01E-02	NA	2.54E-06
1,2,3,4,6,7,8-HpCDF	3.85E-03	NA	9.64E-07	2.90E-03	NA	7.25E-07	3.17E-03	NA	7.92E-07	1.86E-03	NA	4.66E-07
1,2,3,4,7,8,9-HpCDF	3.25E-04	NA	8.13E-08	2.58E-04	NA	6.44E-08	3.19E-04	NA	7.99E-08	1.35E-04	NA	3.39E-08
1,2,3,4,7,8-HxCDD	6.80E-05	NA	1.70E-07	5.46E-05	NA	1.37E-07	3.78E-05	NA	9.46E-08	1.08E-04	NA	2.69E-07
1,2,3,4,7,8-HxCDF	2.91E-04	NA	7.29E-07	2.47E-04	NA	6.18E-07	4.47E-04	NA	1.12E-06	1.12E-04	NA	2.81E-07
1,2,3,6,7,8-HxCDD	6.00E-04	NA	1.50E-06	4.65E-04	NA	1.16E-06	3.52E-04	NA	8.80E-07	3.75E-04	NA	9.39E-07
1,2,3,6,7,8-HxCDF	8.93E-05	NA	2.23E-07	6.94E-05	NA	1.74E-07	9.97E-05	NA	2.49E-07	4.70E-05	NA	1.18E-07
1,2,3,7,8,9-HxCDD	1.37E-04	NA	3.43E-07	9.55E-05	NA	2.39E-07	7.44E-05	NA	1.86E-07	1.70E-04	NA	4.26E-07
1,2,3,7,8,9-HxCDF	1.12E-04	NA	2.80E-07	1.12E-04	NA	2.81E-07	9.85E-05	NA	2.47E-07	2.83E-05	NA	7.08E-08
1,2,3,7,8-PeCDD	1.69E-05	NA	4.23E-07	1.46E-05	NA	3.65E-07	1.10E-05	NA	2.76E-07	3.48E-05	NA	8.70E-07
1,2,3,7,8-PeCDF	3.01E-05	NA	2.26E-08	3.84E-05	NA	2.88E-08	2.59E-05	NA	1.94E-08	1.13E-05	NA	8.50E-09
2,3,4,6,7,8-HxCDF	1.36E-04	NA	3.40E-07	1.15E-04	NA	2.88E-07	1.68E-04	NA	4.20E-07	6.83E-05	NA	1.71E-07
2,3,4,7,8-PeCDF	5.91E-05	NA	4.43E-07	8.12E-05	NA	6.09E-07	8.79E-05	NA	6.59E-07	2.09E-05	NA	1.57E-07
2,3,7,8-TCDD	2.54E-06	NA	6.37E-08	2.36E-06	NA	5.91E-08	ND	ND	ND	2.98E-06	NA	7.45E-08
2,3,7,8-TCDF	3.55E-06	NA	8.88E-09	7.61E-06	NA	1.90E-08	5.04E-06	NA	1.26E-08	2.45E-06	NA	6.13E-09
OCDD	2.00E-01	NA	1.50E-06	1.38E-01	NA	1.04E-06	9.12E-02	NA	6.85E-07	8.88E-02	NA	6.66E-07
OCDF	1.79E-02	NA	1.34E-07	1.34E-02	NA	1.01E-07	1.17E-02	NA	8.81E-08	7.12E-03	NA	5.34E-08
TCDD TEQ	5.05E-04	NA	1.26E-05	3.73E-04	NA	9.33E-06	3.20E-04	NA	8.02E-06	2.81E-04	NA	7.04E-06
Acenaphthene	4.05E-01	9.44E-06	NA	6.82E+00	1.59E-04	NA	1.30E+00	3.02E-05	NA	9.03E+00	2.10E-04	NA
Acenaphthylene	3.35E-01	1.82E-05	NA	2.39E+00	1.30E-04	NA	5.55E-01	3.01E-05	NA	6.03E+00	3.27E-04	NA
Anthracene	1.84E-01	5.18E-07	NA	6.25E+00	1.76E-05	NA	4.87E+00	1.37E-05	NA	6.08E+00	1.71E-05	NA
Benzo(a)anthracene	2.17E-01	4.49E-06	2.32E-08	3.50E+00	7.23E-05	3.73E-07	1.81E+00	3.74E-05	1.93E-07	2.69E+00	5.55E-05	2.86E-07
Benzo(a)pyrene	1.66E-01	3.38E-06	1.75E-07	1.41E+00	2.86E-05	1.48E-06	9.12E-01	1.85E-05	9.60E-07	2.15E+00	4.36E-05	2.26E-06
Benzo(b)fluoranthene	2.72E-01	5.79E-06	2.96E-08	2.84E+00	6.04E-05	3.08E-07	2.10E+00	4.47E-05	2.28E-07	3.53E+00	7.51E-05	3.83E-07
Benzo(g,h,i)perylene	2.90E-01	9.21E-06	NA	2.41E+00	7.65E-05	NA	1.65E+00	5.24E-05	NA	2.64E+00	8.39E-05	NA
Benzo(k)fluoranthene	2.81E-01	5.68E-06	2.95E-09	2.51E+00	5.06E-05	2.63E-08	7.17E-01	1.45E-05	7.53E-09	1.54E+00	3.10E-05	1.61E-08
Chrysene	3.24E-01	7.15E-06	3.60E-10	6.19E+00	1.37E-04	6.90E-09	2.79E+00	6.16E-05	3.10E-09	3.80E+00	8.40E-05	4.23E-09
Dibenz(a,h)anthracene	7.32E-01	1.47E-05	7.67E-07	2.43E+00	4.88E-05	2.54E-06	2.57E+00	5.17E-05	2.69E-06	2.76E+00	5.55E-05	2.89E-06
Fluoranthene	2.04E-01	3.49E-06	NA	1.64E+01	2.81E-04	NA	7.03E+00	1.20E-04	NA	1.51E+01	2.59E-04	NA
Fluorene	3.22E-01	7.69E-06	NA	7.05E+00	1.68E-04	NA	1.74E+00	4.15E-05	NA	2.32E+00	5.55E-05	NA
Indeno(1,2,3-cd)pyrene	3.07E-01	6.19E-06	3.22E-08	2.38E+00	4.79E-05	2.49E-07	1.11E+00	2.24E-05	1.17E-07	2.41E+00	4.85E-05	2.52E-07
1-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.91E+01	5.95E-02	NA
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.28E+01	5.50E-02	NA
Naphthalene	3.53E-01	1.25E-03	NA	5.73E+00	2.03E-02	NA	5.05E-01	1.79E-03	NA	6.12E+00	2.17E-02	NA
Phenanthrene	2.26E-01	1.23E-04	NA	2.05E+01	1.12E-02	NA	2.19E+00	1.20E-03	NA	4.59E+00	2.51E-03	NA
Pyrene	3.27E-01	7.35E-06	NA	1.18E+01	2.65E-04	NA	5.34E+00	1.20E-04	NA	9.52E+00	2.14E-04	NA
BaP-TE	8.94E-01	1.81E-05	9.41E-07	3.98E+00	8.06E-05	4.19E-06	3.98E+00	8.06E-05	4.19E-06	5.56E+00	1.13E-04	5.86E-06
Pentachlorophenol	2.38E+00	3.61E-05	4.38E-08	2.79E+01	4.24E-04	5.14E-07	4.16E+01	6.31E-04	7.66E-07	1.28E+01	1.93E-04	2.35E-07
Total		6.81E-02	1.37E-05		9.98E-02	1.41E-05		7.08E-02	1.30E-05		2.07E-01	1.32E-05

Table C-8 Unitized Risk Calculation

Scenario:	Current
Receptor:	Trespasser
Medium:	Shallow Soil (0-1')
Exposure Pathway:	Ingestion and Dermal Contact

ADD (mg/kg-day) = $\frac{CS \times [(IR \times FI \times AAF) + (SA \times AF \times FA \times AAF)] \times EF \times ED \times CF}{BW \times AT}$

Hazard Quotient (HQ) = ADD (mg/kg-day) / RfD (mg/kg-d)
Cancer Risk (ELCR) = ADD (mg/kg-day) * CSF [1/(mg/kg-day)]

Parameter (units)	Value
ADD: Average Daily Dose (mg/kg-day)	See Below
CS: Constituent Concentration in Soil (mg/kg)	Constituent-Specific
IR: Ingestion Rate (mg/day)	50
AAF: Absorption Adjustment Factor (Oral-Soil) (unitless)	Constituent-Specific
FI: Fraction Ingested from Site (unitless)	1
SA: Skin Surface Area (cm2/event)	5651
AF: Adherence Factor (mg/cm2)	0.158
AAF: Absorption Adjustment Factor (Dermal-Soil) (unitless)	Constituent-Specific
FA: Fraction Absorbed from Site (unitless)	1
EF: Exposure Frequency (days/year)	20
ED: Exposure Duration (years)	7
BW: Body Weight (kg)	56
AT: Averaging Time (days) (ED x 365 days/yr, noncancer)	2555
AT: Averaging Time (days) (75 yr. x 365 days/yr, cancer)	25550
RfD: Reference Dose (mg/kg-day)	Constituent-Specific
CSF: Cancer Slope Factor [1/(mg/kg-day)]	Constituent-Specific
CF: Conversion factor (kg/mg)	1.00E-06

		Noncancer Hazard Quotient					Excess Lifetime Cancer Risk				
Constituent	Soil Concentration (mg/kg)	Oral-Soil RAF (noncancer) Chronic	Dermal-Soil RAF (noncancer) Chronic	ADD (noncancer) (mg/kg-day)	Chronic RfD (mg/kg-day)	Soil HQ	Oral-Soil AAF (cancer)	Dermal-Soil AAF (cancer)	ADD (cancer) (mg/kg-day)	CSF [1/(mg/kg-day)]	Soil Risk (mg/kg)
Aldrin	1	1	0.25	2.67E-07	3.00E-05	8.91E-03	1	0.25	2.67E-08	1.70E+01	4.54E-07
Barium	1	1	0.001	4.98E-08	2.00E-01	2.49E-07	NA	NA	NA	NA	NA
Chlorobenzene	1	1	0	4.89E-08	2.00E-02	2.45E-06	NA	0	NA	NA	NA
Chloromethane	1	1	0	4.89E-08	2.60E-02	1.88E-06	NA	0	NA	NA	NA
4-Chloro-3-methylphenol	1	1	0.03	7.51E-08	5.00E-02	1.50E-06	NA	NA	NA	NA	NA
Chromium	1	1	0.04	8.39E-08	3.00E-03	2.80E-05	NA	NA	NA	NA	NA
4,4'-DDD	1	NA	NA	NA	NA	NA	1	0.2	2.24E-08	2.40E-01	5.37E-09
4,4'-DDE	1	NA	NA	NA	NA	NA	1	0.2	2.24E-08	3.40E-01	7.60E-09
4,4'-DDT	1	1	0.2	2.24E-07	5.00E-04	4.47E-04	1	0.2	2.24E-08	3.40E-01	7.60E-09
delta-BHC	1	1	0.25	2.67E-07	3.00E-04	8.91E-04	1	0.25	2.67E-08	1.30E+00	3.48E-08
Dibenzofuran	1	1	0.1	1.36E-07	2.00E-03	6.81E-05	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	1	1	0	4.89E-08	9.00E-02	5.44E-07	NA	0	NA	NA	NA
1,4-Dichlorobenzene	1	1	0	4.89E-08	3.00E-02	1.63E-06	1	0	4.89E-09	2.40E-02	1.17E-10
1,2-Dichloropropane	1	1	0.2	2.24E-07	1.10E-03	2.03E-04	1	0.2	2.24E-08	6.80E-02	1.52E-09
4,6-Dinitro-2-methylphenol	1	1	0.03	7.51E-08	1.00E-04	7.51E-04	NA	NA	NA	NA	NA
2,4-Dinitrophenol	1	1	0.03	7.51E-08	2.00E-03	3.76E-05	NA	NA	NA	NA	NA
Endosulfan II	1	1	0.2	2.24E-07	6.00E-03	3.73E-05	NA	NA	NA	NA	NA
Endosulfan Sulfate	1	1	0.2	2.24E-07	6.00E-03	3.73E-05	NA	NA	NA	NA	NA
Endrin	1	1	0.25	2.67E-07	3.00E-04	8.91E-04	NA	NA	NA	NA	NA
Endrin Aldehyde	1	1	0.25	2.67E-07	3.00E-04	8.91E-04	NA	NA	NA	NA	NA
Ethylbenzene	1	1	0	4.89E-08	1.00E-01	4.89E-07	NA	0	NA	NA	NA
Isopropylbenzene	1	1	0	4.89E-08	1.00E-01	4.89E-07	NA	0	NA	NA	NA
Manganese	1	1	0.05	9.26E-08	1.40E-01	6.61E-07	NA	NA	NA	NA	NA
Methylene Chloride	1	1	0.1	1.36E-07	6.00E-02	2.27E-06	1	0.1	1.36E-08	7.50E-03	1.02E-10
4-Nitrophenol	1	1	0.03	7.51E-08	8.00E-03	9.39E-06	NA	NA	NA	NA	NA
Phenol	1	1	0.1	1.36E-07	3.00E-01	4.54E-07	NA	NA	NA	NA	NA
Tetrachloroethene	1	1	0.1	1.36E-07	1.00E-02	1.36E-05	1	0.1	1.36E-08	5.40E-01	7.36E-09
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1	1	0.03	7.51E-08	3.00E-02	2.50E-06	NA	NA	NA	NA	NA
Toluene	1	1	0.04	8.39E-08	8.00E-02	1.05E-06	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	1	1	0	4.89E-08	1.00E-02	4.89E-06	NA	0	NA	NA	NA
1,1,1-Trichloroethane	1	1	0.1	1.36E-07	2.80E-02	4.87E-06	NA	NA	NA	NA	NA
Trichlorofluoromethane	1	1	0.1	1.36E-07	2.80E-02	4.87E-06	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	1	1	0.03	7.51E-08	1.00E-01	7.51E-07	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	1	1	0.03	7.51E-08	1.00E-04	7.51E-04	1	0.03	7.51E-09	1.10E-02	8.26E-11
1,2,4-Trimethylbenzene	1	1	0.1	1.36E-07	5.00E-02	2.73E-06	NA	NA	NA	NA	NA
Total Xylenes	1	1	0.04	8.39E-08	2.00E+00	4.19E-08	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HpCDD	1	NA	NA	NA	NA	NA	1	0.04	8.39E-09	1.50E+03	1.26E-05
1,2,3,4,6,7,8-HpCDF	1	NA	NA	NA	NA	NA	1	0.04	8.39E-09	1.50E+03	1.26E-05
1,2,3,4,7,8,9-HpCDF	1	NA	NA	NA	NA	NA	1	0.04	8.39E-09	1.50E+03	1.26E-05
1,2,3,4,7,8-HxCDD	1	NA	NA	NA	NA	NA	1	0.04	8.39E-09	1.50E+04	1.26E-04
1,2,3,4,7,8-HxCDF	1	NA	NA	NA	NA	NA	1	0.04	8.39E-09	1.50E+04	1.26E-04
1,2,3,6,7,8-HxCDD	1	NA	NA	NA	NA	NA	1	0.04	8.39E-09	1.50E+04	1.26E-04
1,2,3,6,7,8-HxCDF	1	NA	NA	NA	NA	NA	1	0.04	8.39E-09	1.50E+04	1.26E-04
1,2,3,7,8,9-HxCDD	1	NA	NA	NA	NA	NA	1	0.04	8.39E-09	1.50E+04	1.26E-04
1,2,3,7,8,9-HxCDF	1	NA	NA	NA	NA	NA	1	0.04	8.39E-09	1.50E+04	1.26E-04
1,2,3,7,8-PeCDD	1	NA	NA	NA	NA	NA	1	0.04	8.39E-09	1.50E+05	1.26E-03
1,2,3,7,8-PeCDF	1	NA	NA	NA	NA	NA	1	0.04	8.39E-09	4.50E+03	3.77E-05
2,3,4,6,7,8-HxCDF	1	NA	NA	NA	NA	NA	1	0.04	8.39E-09	1.50E+04	1.26E-04
2,3,4,7,8-PeCDF	1	NA	NA	NA	NA	NA	1	0.04	8.39E-09	4.50E+04	3.77E-04
2,3,7,8-TCDD	1	NA	NA	NA	NA	NA	1	0.04	8.39E-09	1.50E+05	1.26E-03
2,3,7,8-TCDF	1	NA	NA	NA	NA	NA	1	0.04	8.39E-09	1.50E+04	1.26E-04
OCDD	1	NA	NA	NA	NA	NA	1	0.04	8.39E-09	4.50E+01	3.77E-07
OCDF	1	NA	NA	NA	NA	NA	1	0.04	8.39E-09	4.50E+01	3.77E-07
TCDD TEQ	1	NA	NA	NA	NA	NA	1	0.04	8.39E-09	1.50E+05	1.26E-03
Acenaphthene	1	1	0.1	1.36E-07	6.00E-02	2.27E-06	NA	NA	NA	NA	NA
Acenaphthylene	1	1	0.1	1.36E-07	2.00E-02	6.81E-06	NA	NA	NA	NA	NA
Anthracene	1	1	0.1	1.36E-07	3.00E-01	4.54E-07	NA	NA	NA	NA	NA
Benzo(a)anthracene	1	1	0.02	6.64E-08	2.00E-02	3.32E-06	1	0.02	6.64E-09	7.30E-01	4.85E-09
Benzo(a)pyrene	1	1	0.02	6.64E-08	2.00E-02	3.32E-06	1	0.02	6.64E-09	7.30E+00	4.85E-08
Benzo(b)fluoranthene	1	1	0.02	6.64E-08	2.00E-02	3.32E-06	1	0.02	6.64E-09	7.30E-01	4.85E-09
Benzo(g,h,i)perylene	1	1	0.1	1.36E-07	2.00E-02	6.81E-06	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	1	1	0.02	6.64E-08	2.00E-02	3.32E-06	1	0.02	6.64E-09	7.30E-02	4.85E-10
Chrysene	1	1	0.02	6.64E-08	2.00E-02	3.32E-06	1	0.02	6.64E-09	7.30E-03	4.85E-11
Dibenz(a,h)anthracene	1	1	0.02	6.64E-08	2.00E-02	3.32E-06	1	0.02	6.64E-09	7.30E+00	4.85E-08
Fluoranthene	1	1	0.1	1.36E-07	4.00E-02	3.41E-06	NA	NA	NA	NA	NA
Fluorene	1	1	0.1	1.36E-07	4.00E-02	3.41E-06	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1	1	0.02	6.64E-08	2.00E-02	3.32E-06	1	0.02	6.64E-09	7.30E-01	4.85E-09
1-Methylnaphthalene	1	1	0.1	1.36E-07	2.00E-02	6.81E-06	NA	NA	NA	NA	NA
2-Methylnaphthalene	1	1	0.1	1.36E-07	2.00E-02	6.81E-06	NA	NA	NA	NA	NA
Naphthalene	1	1	0.1	1.36E-07	2.00E-02	6.81E-06	NA	NA	NA	NA	NA
Phenanthrene	1	1	0.1	1.36E-07	2.00E-02	6.81E-06	NA	NA	NA	NA	NA
Pyrene	1	1	0.1	1.36E-07	3.00E-02	4.54E-06	NA	NA	NA	NA	NA
BaP-TE	1	1	0.02	6.64E-08	2.00E-02	3.32E-06	1	0.02	6.64E-09	7.30E+00	4.85E-08
Pentachlorophenol	1	1	0.03	7.51E-08	3.00E-02	2.50E-06	1	0.03	7.51E-09	1.20E-01	9.02E-10

Table C-9 Unitized Risk Calculation

Scenario:	Current
Receptor:	Trespasser
Medium:	Shallow Soil (0-1')
Exposure Pathway:	Particulate Inhalation

ADD (mg/kg-d) = $\frac{CS \times RPC \times RAF \times ET \times EF \times ED \times CF}{BW \times AT}$

Hazard Quotient (HQ) = ADD (mg/kg-d) / RfDi (mg/kg-d)
Cancer Risk (ELCR) = ADD (mg/kg-d) * CSFi [1/(mg/kg-d)]

Parameter (units)	Value
ADD: Average Daily Dose (mg/kg-d)	See Below
CS: Constituent Concentration in Soil (mg/kg)	Constituent-Specific
RPC: Respirable Particulate Concentration (mg/m3)	0.0014
IF: Inhalation Rate (m3/hr)	1.6
ET: Exposure Time (hr/day)	2
EF: Exposure Frequency (days/year)	20
ED: Exposure Duration (years)	7
ATn: Averaging Time (days) (ED x 365 days/yr, noncancer)	2555
ATc: Averaging Time (days) (70 yr. x 365 days/yr, cancer)	25550
CF: Conversion Factor (kg/mg)	1.00E-06
RfDi: Inhalation Reference Dose (mg/kg-d)	Constituent-Specific
CSFi: Inhalation Cancer Slope Factor [1/(mg/kg-d)]	Constituent-Specific
BW: Body Weight (kg)	56

	0-1 ft.		Noncancer Hazard Quotient				Excess Lifetime Cancer Risk			
Constituent	Soil Concentration (mg/kg)	Dust Concentration (mg/m3)	Inhalation RAF (noncancer)	ADD (noncancer) (mg/kg-d)	RfDi (mg/kg-d)	Dust HQ	Inhalation AAF (cancer)	LADD (cancer) (mg/kg-d)	CSFi [1/(mg/kg-d)]	Dust Risk
Aldrin	1	1.4E-09	1	4.38E-12	3.00E-05	1.46E-07	1	4.38356E-13	17	7.45E-12
Barium	1	1.4E-09	1	4.38E-12	2.00E-01	2.19E-11	NA	NA	NA	NA
Chlorobenzene	1	1.4E-09	1	4.38E-12	1.40E-02	3.13E-10	NA	NA	NA	NA
Chloromethane	1	1.4E-09	1	4.38E-12	2.60E-02	1.69E-10	NA	NA	NA	NA
4-Chloro-3-methylphenol	1	1.4E-09	1	4.38E-12	5.00E-02	8.77E-11	NA	NA	NA	NA
Chromium	1	1.4E-09	1	4.38E-12	2.86E-05	1.53E-07	1	4.38356E-13	42	1.84E-11
4,4'-DDD	1	1.4E-09	NA	NA	NA	NA	1	4.38356E-13	0.24	1.05E-13
4,4'-DDE	1	1.4E-09	NA	NA	NA	NA	1	4.38356E-13	0.34	1.49E-13
4,4'-DDT	1	1.4E-09	1	4.38E-12	5.00E-04	8.77E-09	1	4.38356E-13	0.34	1.49E-13
delta-BHC	1	1.4E-09	1	4.38E-12	3.00E-04	1.46E-08	1	4.38356E-13	NA	NA
Dibenzofuran	1	1.4E-09	1	4.38E-12	2.00E-03	2.19E-09	NA	NA	NA	NA
1,2-Dichlorobenzene	1	1.4E-09	1	4.38E-12	6.90E-03	6.35E-10	NA	NA	NA	NA
1,4-Dichlorobenzene	1	1.4E-09	1	4.38E-12	2.30E-01	1.91E-11	1	4.38356E-13	0.024	1.05E-14
1,2-Dichloropropane	1	1.4E-09	1	4.38E-12	1.10E-03	3.99E-09	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	1	1.4E-09	1	4.38E-12	1.00E-04	4.38E-08	NA	NA	NA	NA
2,4-Dinitrophenol	1	1.4E-09	1	4.38E-12	2.00E-03	2.19E-09	NA	NA	NA	NA
Endosulfan II	1	1.4E-09	1	4.38E-12	6.00E-03	7.31E-10	NA	NA	NA	NA
Endosulfan Sulfate	1	1.4E-09	1	4.38E-12	6.00E-03	7.31E-10	NA	NA	NA	NA
Endrin	1	1.4E-09	1	4.38E-12	3.00E-04	1.46E-08	NA	NA	NA	NA
Endrin Aldehyde	1	1.4E-09	1	4.38E-12	3.00E-04	1.46E-08	NA	NA	NA	NA
Ethylbenzene	1	1.4E-09	1	4.38E-12	2.90E-01	1.51E-11	NA	NA	NA	NA
Isopropylbenzene	1	1.4E-09	1	4.38E-12	1.00E-01	4.38E-11	NA	NA	NA	NA
Manganese	1	1.4E-09	1	4.38E-12	1.43E-05	3.07E-07	NA	NA	NA	NA
Methylene Chloride	1	1.4E-09	1	4.38E-12	8.60E-01	5.10E-12	1	4.38356E-13	0.001645	7.21E-16
4-Nitrophenol	1	1.4E-09	1	4.38E-12	8.00E-03	5.48E-10	NA	NA	NA	NA
Phenol	1	1.4E-09	1	4.38E-12	3.00E-01	1.46E-11	NA	NA	NA	NA
Tetrachloroethene	1	1.4E-09	1	4.38E-12	1.10E-01	3.99E-11	1	4.38356E-13	0.021	9.21E-15
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1	1.4E-09	1	4.38E-12	3.00E-02	1.46E-10	NA	NA	NA	NA
Toluene	1	1.4E-09	1	4.38E-12	1.40E+00	3.13E-12	NA	NA	NA	NA
1,2,4-Trichlorobenzene	1	1.4E-09	1	4.38E-12	1.10E-03	3.99E-09	NA	NA	NA	NA
1,1,1-Trichloroethane	1	1.4E-09	1	4.38E-12	6.30E-01	6.96E-12	NA	NA	NA	NA
Trichlorofluoromethane	1	1.4E-09	1	4.38E-12	2.00E-01	2.19E-11	NA	NA	NA	NA
2,4,5-Trichlorophenol	1	1.4E-09	1	4.38E-12	1.00E-01	4.38E-11	NA	NA	NA	NA
2,4,6-Trichlorophenol	1	1.4E-09	1	4.38E-12	1.00E-04	4.38E-08	1	4.38356E-13	0.01085	4.76E-15
1,2,4-Trimethylbenzene	1	1.4E-09	1	4.38E-12	1.70E-03	2.58E-09	NA	NA	NA	NA
Total Xylenes	1	1.4E-09	1	4.38E-12	2.86E-02	1.53E-10	NA	NA	NA	NA
1,2,3,4,6,7,8-HpCDD	1	1.4E-09	NA	NA	NA	NA	1	4.38356E-13	1500.00	6.58E-10
1,2,3,4,6,7,8-HpCDF	1	1.4E-09	NA	NA	NA	NA	1	4.38356E-13	1500.00	6.58E-10
1,2,3,4,7,8,9-HpCDF	1	1.4E-09	NA	NA	NA	NA	1	4.38356E-13	1500	6.58E-10
1,2,3,4,7,8-HxCDD	1	1.4E-09	NA	NA	NA	NA	1	4.38356E-13	15000	6.58E-09
1,2,3,4,7,8-HxCDF	1	1.4E-09	NA	NA	NA	NA	1	4.38356E-13	15000	6.58E-09
1,2,3,6,7,8-HxCDD	1	1.4E-09	NA	NA	NA	NA	1	4.38356E-13	15000	6.58E-09
1,2,3,6,7,8-HxCDF	1	1.4E-09	NA	NA	NA	NA	1	4.38356E-13	15000	6.58E-09
1,2,3,7,8,9-HxCDD	1	1.4E-09	NA	NA	NA	NA	1	4.38356E-13	15000	6.58E-09
1,2,3,7,8,9-HxCDF	1	1.4E-09	NA	NA	NA	NA	1	4.38356E-13	15000	6.58E-09
1,2,3,7,8-PeCDD	1	1.4E-09	NA	NA	NA	NA	1	4.38356E-13	150000	6.58E-08
1,2,3,7,8-PeCDF	1	1.4E-09	NA	NA	NA	NA	1	4.38356E-13	4500	1.97E-09
2,3,4,6,7,8-HxCDF	1	1.4E-09	NA	NA	NA	NA	1	4.38356E-13	15000	6.58E-09
2,3,4,7,8-PeCDF	1	1.4E-09	NA	NA	NA	NA	1	4.38356E-13	45000	1.97E-08
2,3,7,8-TCDD	1	1.4E-09	NA	NA	NA	NA	1	4.38356E-13	150000	6.58E-08
2,3,7,8-TCDF	1	1.4E-09	NA	NA	NA	NA	1	4.38356E-13	15000	6.58E-09
OCDD	1	1.4E-09	NA	NA	NA	NA	1	4.38356E-13	45	1.97E-11
OCDF	1	1.4E-09	NA	NA	NA	NA	1	4.38356E-13	45	1.97E-11
TCDD TEQ	1	1.4E-09	NA	NA	NA	NA	1	4.38356E-13	150000	6.58E-08
Acenaphthene	1	1.4E-09	1	4.38E-12	0.06	7.31E-11	NA	NA	NA	NA
Acenaphthylene	1	1.4E-09	1	4.38E-12	0.03	1.46E-10	NA	NA	NA	NA
Anthracene	1	1.4E-09	1	4.38E-12	0.30	1.46E-11	NA	NA	NA	NA
Benzo(a)anthracene	1	1.4E-09	1	4.38E-12	0.03	1.46E-10	1	4.38356E-13	0.31	1.36E-13
Benzo(a)pyrene	1	1.4E-09	1	4.38E-12	0.03	1.46E-10	1	4.38356E-13	3.1	1.36E-12
Benzo(b)fluoranthene	1	1.4E-09	1	4.38E-12	0.03	1.46E-10	1	4.38356E-13	0.31	1.36E-13
Benzo(g,h,i)perylene	1	1.4E-09	1	4.38E-12	0.03	1.46E-10	NA	NA	NA	NA
Benzo(k)fluoranthene	1	1.4E-09	1	4.38E-12	0.03	1.46E-10	1	4.38356E-13	0.031	1.36E-14
Chrysene	1	1.4E-09	1	4.38E-12	0.03	1.46E-10	1	4.38356E-13	0.0031	1.36E-15
Dibenz(a,h)anthracene	1	1.4E-09	1	4.38E-12	0.03	1.46E-10	1	4.38356E-13	3.1	1.36E-12
Fluoranthene	1	1.4E-09	1	4.38E-12	0.04	1.10E-10	NA	NA	NA	NA
Fluorene	1	1.4E-09	1	4.38E-12	0.04	1.10E-10	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1	1.4E-09	1	4.38E-12	0.03	1.46E-10	1	4.38356E-13	0.31	1.36E-13
1-Methylnaphthalene	1	1.4E-09	1	4.38E-12	0.00	5.11E-09	NA	NA	NA	NA
2-Methylnaphthalene	1	1.4E-09	1	4.38E-12	0.00	5.11E-09	NA	NA	NA	NA
Naphthalene	1	1.4E-09	1	4.38E-12	0.00	5.12E-09	NA	NA	NA	NA
Phenanthrene	1	1.4E-09	1	4.38E-12	0.03	1.46E-10	NA	NA	NA	NA
Pyrene	1	1.4E-09	1	4.38E-12	0.03	1.46E-10	NA	NA	NA	NA
BaP-TE	1	1.4E-09	1	4.38E-12	0.03	1.46E-10	1	4.38356E-13	3.1	1.36E-12
Pentachlorophenol	1	1.4E-09	1	4.38E-12	0.03	1.46E-10	NA	NA	NA	NA

Table C-10 Unitized Risk Calculation

Scenario:	Current
Receptor:	Trespasser
Medium:	Shallow Soil (0-1')
Exposure Pathway:	Inhalation of Volatiles in Soil

$$VF = \frac{Q/C * (\pi * D_A * T)^{1/2}}{2 * \rho_b * D_A} * C \quad ([mg/m^3]/[mg/kg])$$

$$Risk = \frac{C_a * IR * EF * ED * CSFi}{ATc * BW}$$

$$D_A = \frac{[(\theta_a^{10/3} * D_a * H' + \theta_w^{10/3} * D_w) * 1/n^2]}{\rho_b * K_d + \theta_w + \theta_a * H'}$$

$$HQ = \frac{C_a * IR * EF * ED}{ATnc * BW * RfDi}$$

$$K_d = K_{oc} * F_{oc}$$

Air Concentration (ug/m3) = Soil Conc. (mg/kg) * VF [(mg/m3)/(mg/kg)]

Parameter	Value	Comment
Q/C: Inverse of the mean concentration at center of square source ((g/m2-s) / (kg/m3)) (cm)	46.92	Value for 30-acre source area in Minneapolis, MN (SSL 96)
C: Conversion factor (m2/cm2)	0.0001	
D_A: Apparent diffusivity (cm^2/s)	see below	
H': Henry's Law Coefficient (cm^3-water/cm^3-air)	see below	
ρ_b: Soil bulk density (g/cm3)	1.5	
θ_w: Water-filled soil porosity (unitless)	0.15	
θ_a: Air-filled soil porosity (unitless)	0.28	
n: Total soil porosity (cm3/cm3)	0.43	
K_d: Soil-water sorption coefficient (K/kg)	see below	
K_{oc}: organic carbon-water sorption coefficient (K/kg)	see below	
F_{oc}: Fraction organic carbon	0.015	
D_a: Molecular diffusion coefficient in air (cm^2/s)	see below	
D_w: Molecular diffusion coefficient in water (cm^2/s)	see below	
T: Exposure interval (s)	220752000	
IR: Inhalation rate (m3/d)	3.2	
EF: Exposure frequency (days/year)	20	
ED: Exposure duration (years)	7	
Li: Lifetime (years)	25550	
ATnc: Averaging time - noncancer (days)	2555	
BW: Body weight (kg)	56	

							Shallow Soil (0-1')					
Constituent	H	K_{oc}	D_a	D_w	D_A	VF	CSFi (1/(mg/kg-d)	RfDi (mg/m3)	Conc (mg/kg)	Air conc. (mg/m3)	Risk	HQ
Aldrin	7.0E-03	2450000	1.3E-02	4.9E-06	1.30E-10	3.61E+06	1.7E+01	3.00E-05	1.0	0.0000003	1.48E-09	2.89E-05
Barium	NA	NA	NA	NA	NA	NA	NA	2.00E-01	1.0	NA	NA	NA
Chlorobenzene	1.5E-01	219	7.3E-02	8.7E-06	1.68E-04	3.17E+03	NA	1.40E-02	1.0	0.0003150	NA	7.05E-05
Chloromethane	3.6E-01	14	1.3E-01	6.5E-06	6.17E-03	5.24E+02	NA	2.60E-02	1.0	0.0019068	NA	2.30E-04
4-Chloro-3-methylphenol	1.4E-05	878	6.5E-02	8.0E-06	7.43E-09	4.78E+05	NA	5.00E-02	1.0	0.0000021	NA	1.31E-07
Chromium	NA	NA	NA	NA	NA	NA	4.2E+01	2.86E-05	1.0	NA	NA	NA
4,4'-DDD	1.6E-04	1000000	1.7E-02	4.8E-06	1.16E-11	1.21E+07	2.4E-01	NA	1.0	0.0000001	6.22E-12	NA
4,4'-DDE	8.6E-04	4470000	1.4E-02	5.9E-06	1.01E-11	1.29E+07	3.4E-01	NA	1.0	0.0000001	8.23E-12	NA
4,4'-DDT	3.3E-04	2630000	1.4E-02	5.0E-06	6.78E-12	1.58E+07	3.4E-01	5.00E-04	1.0	0.0000001	6.73E-12	3.96E-07
delta-BHC	5.7E-04	1070	1.4E-02	7.3E-06	2.91E-08	2.42E+05	NA	3.00E-04	1.0	0.0000041	NA	4.32E-05
Dibenzofuran	5.3E-02	8490	5.5E-02	7.0E-06	1.18E-06	3.79E+04	NA	2.00E-03	1.0	0.0000264	NA	4.13E-05
1,2-Dichlorobenzene	7.8E-02	617	6.9E-02	7.9E-06	2.97E-05	7.56E+03	NA	6.90E-03	1.0	0.0001323	NA	6.01E-05
1,4-Dichlorobenzene	7.4E+01	617	6.9E-02	7.9E-06	1.14E-02	3.86E+02	2.4E-02	2.30E-01	1.0	0.0025922	1.95E-08	3.53E-05
1,2-Dichloropropane	1.2E-01	44	7.8E-02	8.7E-06	5.99E-04	1.68E+03	NA	1.10E-03	1.0	0.0005944	NA	1.69E-03
4,6-Dinitro-2-methylphenol	1.1E-07	0.03	5.3E-02	7.3E-06	4.71E-07	6.00E+04	NA	1.00E-04	1.0	0.0000167	NA	5.22E-04
2,4-Dinitrophenol	1.8E-05	0.01	2.7E-02	9.1E-06	8.42E-07	4.49E+04	NA	2.00E-03	1.0	0.0000223	NA	3.49E-05
Endosulfan II	4.6E-04	2140	1.2E-02	4.6E-06	9.40E-09	4.25E+05	NA	6.00E-03	1.0	0.0000024	NA	1.23E-06
Endosulfan Sulfate	4.6E-04	2140	1.2E-02	4.6E-06	9.40E-09	4.25E+05	NA	6.00E-03	1.0	0.0000024	NA	1.23E-06
Endrin	3.1E-04	12300	1.3E-02	4.7E-06	1.25E-09	1.17E+06	NA	3.00E-04	1.0	0.0000009	NA	8.94E-06
Endrin Aldehyde	3.1E-04	12300	1.3E-02	4.7E-06	1.25E-09	1.17E+06	NA	3.00E-04	1.0	0.0000009	NA	8.94E-06
Ethylbenzene	3.2E-01	363	7.5E-02	7.8E-06	2.24E-04	2.75E+03	NA	2.90E-01	1.0	0.0003632	NA	3.92E-06
Isopropylbenzene	4.7E-01	817	6.5E-02	7.1E-06	1.27E-04	3.65E+03	NA	1.00E-01	1.0	0.0002737	NA	8.57E-06
Manganese	NA	NA	NA	NA	NA	NA	NA	1.43E-05	1.0	NA	NA	NA
Methylene Chloride	9.0E-02	12	1.0E-01	1.2E-05	1.61E-03	1.03E+03	1.6E-03	8.60E-01	1.0	0.0009733	5.01E-10	3.54E-06
4-Nitrophenol	3.2E-08	3	6.7E-02	8.7E-06	3.81E-07	6.68E+04	NA	8.00E-03	1.0	0.0000150	NA	5.86E-06
Phenol	1.6E-05	29	8.2E-02	9.1E-06	2.41E-07	8.40E+04	NA	3.00E-01	1.0	0.0000119	NA	1.24E-07
Tetrachloroethene	7.5E-01	155	7.2E-02	8.2E-06	1.10E-03	1.24E+03	2.1E-02	1.10E-01	1.0	0.0008037	5.28E-09	2.29E-05
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	2.5E-04	105	2.2E-02	7.1E-06	1.98E-07	9.26E+04	NA	3.00E-02	1.0	0.0000108	NA	1.13E-06
Toluene	2.7E-01	182	8.7E-02	8.6E-06	4.25E-04	2.00E+03	NA	1.40E+00	1.0	0.0005007	NA	1.12E-06
1,2,4-Trichlorobenzene	5.8E-02	1780	3.0E-02	8.2E-06	3.37E-06	2.24E+04	NA	1.10E-03	1.0	0.0000446	NA	1.27E-04
1,1,1-Trichloroethane	7.1E-01	110	7.8E-02	8.8E-06	1.51E-03	1.06E+03	NA	6.30E-01	1.0	0.0009445	NA	4.69E-06
Trichlorofluoromethane	4.0E+00	135	8.7E-02	9.7E-06	6.31E-03	5.19E+02	NA	2.00E-01	1.0	0.0019286	NA	3.02E-05
2,4,5-Trichlorophenol	1.8E-04	1600	2.9E-02	7.0E-06	1.30E-08	3.61E+05	NA	1.00E-01	1.0	0.0000028	NA	8.67E-08
2,4,6-Trichlorophenol	3.2E-04	131	3.2E-02	6.3E-06	2.74E-07	7.87E+04	1.1E-02	1.00E-04	1.0	0.0000127	4.32E-11	3.98E-04
1,2,4-Trimethylbenzene	1.8E-01	933	6.2E-02	7.3E-06	4.19E-05	6.36E+03	NA	1.70E-03	1.0	0.0001572	NA	2.90E-04
Total Xylenes	3.0E-01	407	7.0E-02	7.8E-06	1.74E-04	3.12E+03	NA	2.86E-02	1.0	0.0003205	NA	3.51E-05
1,2,3,4,6,7,8-HpCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	9.94E+06	1.5E+03	NA	1.0	0.0000001	4.72E-08	NA
1,2,3,4,6,7,8-HpCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	9.94E+06	1.5E+03	NA	1.0	0.0000001	4.72E-08	NA
1,2,3,4,7,8,9-HpCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	9.94E+06	1.5E+03	NA	1.0	0.0000001	4.72E-08	NA
1,2,3,4,7,8-HxCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	9.94E+06	1.5E+04	NA	1.0	0.0000001	4.72E-07	NA
1,2,3,4,7,8-HxCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	9.94E+06	1.5E+04	NA	1.0	0.0000001	4.72E-07	NA
1,2,3,6,7,8-HxCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	9.94E+06	1.5E+04	NA	1.0	0.0000001	4.72E-07	NA
1,2,3,6,7,8-HxCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	9.94E+06	1.5E+04	NA	1.0	0.0000001	4.72E-07	NA
1,2,3,7,8,9-HxCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	9.94E+06	1.5E+04	NA	1.0	0.0000001	4.72E-07	NA
1,2,3,7,8,9-HxCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	9.94E+06	1.5E+04	NA	1.0	0.0000001	4.72E-07	NA
1,2,3,7,8-PeCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	9.94E+06	1.5E+05	NA	1.0	0.0000001	4.72E-06	NA
1,2,3,7,8-PeCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	9.94E+06	4.5E+03	NA	1.0	0.0000001	1.42E-07	NA
2,3,4,6,7,8-HxCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	9.94E+06	1.5E+04	NA	1.0	0.0000001	4.72E-07	NA
2,3,4,7,8-PeCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	9.94E+06	4.5E+04	NA	1.0	0.0000001	1.42E-06	NA
2,3,7,8-TCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	9.94E+06	1.5E+05	NA	1.0	0.0000001	4.72E-06	NA
2,3,7,8-TCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	9.94E+06	1.5E+04	NA	1.0	0.0000001	4.72E-07	NA
OCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	9.94E+06	4.5E+01	NA	1.0	0.0000001	1.42E-09	NA
OCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	9.94E+06	4.5E+01	NA	1.0	0.0000001	1.42E-09	NA
TCDD TEQ	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	9.94E+06	1.5E+05	NA	1.0	0.0000001	4.72E-06	NA
Acenaphthene	6.4E-03	7079	4.2E-02	7.7E-06	1.31E-07	1.14E+05	NA	6.00E-02	1.0	0.0000088	NA	4.59E-07
Acenaphthylene	4.7E-03	6918	4.4E-02	7.1E-06	1.04E-07	1.28E+05	NA	3.00E-02	1.0	0.0000078	NA	8.15E-07
Anthracene	2.7E-03	29512	3.2E-02	7.7E-06	1.02E-08	4.07E+05	NA	3.00E-01	1.0	0.0000025	NA	2.56E-08
Benzo(a)anthracene	1.4E-04	398107	5.1E-02	9.0E-06	7.17E-11	4.87E+06	3.1E-01	3.00E-02	1.0	0.0000002	1.99E-11	2.15E-08
Benzo(a)pyrene	4.6E-05	1023293	4.3E-02	9.0E-06	1.05E-11	1.27E+07	3.1E+00	3.00E-02	1.0	0.0000001	7.62E-11	8.20E-09
Benzo(b)fluoranthene	4.6E-03	1230269	2.3E-02	5.6E-06	2.99E-10	2.38E+06	3.1E-01	3.00E-02	1.0	0.0000004	4.07E-11	4.38E-08
Benzo(g,h,i)perylene	5.8E-06	1584893	4.9E-02	5.7E-05	1.61E-11	1.03E+07	NA	3.00E-02	1.0	0.0000001	NA	1.02E-08
Benzo(k)fluoranthene	3.4E-05	1230269	2.3E-02	5.6E-06	4.16E-12	2.02E+07	3.1E-02	3.00E-02	1.0	0.0000000	4.80E-13	5.17E-09
Chrysene	3.9E-03	398107	2.5E-02	6.2E-06	8.52E-10	1.41E+06	3.1E-03	3.00E-02	1.0	0.0000007	6.88E-13	7.40E-08
Dibenz(a,h)anthracene	6.0E-07	3801894	2.0E-02	5.2E-06	6.00E-13	5.32E+07	3.1E+00	3.00E-02	1.0	0.00000002	1.83E-11	1.96E-09
Fluoranthene	6.6E-04	107152	3.0E-02	6.4E-06	6.64E-10	1.60E+06	NA	4.00E-02	1.0	0.0000006	NA	4.90E-08
Fluorene	2.6E-03	13804	3.6E-02	7.9E-06	2.36E-08	2.68E+05	NA	4.00E-02	1.0	0.0000037	NA	2.92E-07
Indeno(1,2,3-cd)pyrene	6.6E-05	3467368	1.9E-02	5.7E-06	1.96E-12	2.94E+07	3.1E-01	3.00E-02	1.0	0.00000003	3.30E-12	3.54E-09
1-Methylnaphthalene	1.6E-02	2290	6.3E-02	7.1E-06	1.56E-06	3.30E+04	NA	8.57E-04	1.0	0.0000303	NA	1.11E-04
2-Methylnaphthalene	1.9E-02	4320	6.3E-02	7.2E-06	9.29E-07	4.27E+04	NA	8.57E-04	1.0	0.0000234	NA	8.55E-05
Naphthalene	2.0E-02	1995	5.9E-02	7.5E-06	2.02E-06	2.90E+04	NA	8.57E-04	1.0	0.0000345	NA	1.26E-04
Phenanthrene	5.4E-03	14125	3.3E-02	7.5E-06	4.38E-08	1.97E+05	NA	3.00E-02	1.0	0.0000051	NA	5.30E-07
Pyrene	4.5E-04	104713	2.7E-02	7.2E-06	4.30E-10	1.99E+06	NA	3.00E-02	1.0	0.0000005	NA	5.26E-08
BaP-TE	4.6E-05	1023293	4.3E-02	9.0E-06	1.05E-11	1.27E+07	3.1E+00	3.00E-02	1.0	0.0000001	7.62E-11	8.20E-09
Pentachlorophenol	1.0E-06	19953	5.6E-02	6.1E-06	1.41E-10	3.46E+06	NA	3.00E-02	1.0	0.0000003	NA	3.01E-08

Table C-11
SITE-WIDE & AREA-SPECIFIC RISKS
INGESTION/DERMAL
TRESPASSER

Constituent	Site-Wide			Area A			Area B			Area C			Area F		
	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	2.67E-05	1.36E-09	3.00E-03	2.67E-05	1.36E-09	3.00E-03	2.67E-05	1.36E-09	3.00E-03	2.67E-05	1.36E-09	3.00E-03	2.67E-05	1.36E-09
Barium	2.99E+02	7.44E-05	NA	2.99E+02	7.44E-05	NA	2.99E+02	7.44E-05	NA	2.99E+02	7.44E-05	NA	2.99E+02	7.44E-05	NA
Chlorobenzene	3.00E-03	7.34E-09	NA	3.00E-03	7.34E-09	NA	3.00E-03	7.34E-09	NA	3.00E-03	7.34E-09	NA	3.00E-03	7.34E-09	NA
Chloromethane	2.00E-03	3.76E-09	NA	2.00E-03	3.76E-09	NA	2.00E-03	3.76E-09	NA	2.00E-03	3.76E-09	NA	2.00E-03	3.76E-09	NA
4-Chloro-3-methylphenol	2.50E-01	3.76E-07	NA	2.50E-01	3.76E-07	NA	2.50E-01	3.76E-07	NA	2.50E-01	3.76E-07	NA	2.50E-01	3.76E-07	NA
Chromium	6.80E+01	1.90E-03	NA	6.80E+01	1.90E-03	NA	6.80E+01	1.90E-03	NA	6.80E+01	1.90E-03	NA	6.80E+01	1.90E-03	NA
4,4'-DDD	3.60E-02	NA	1.93E-10	3.60E-02	NA	1.93E-10	3.60E-02	NA	1.93E-10	3.60E-02	NA	1.93E-10	3.60E-02	NA	1.93E-10
4,4'-DDE	8.00E-03	NA	6.08E-11	8.00E-03	NA	6.08E-11	8.00E-03	NA	6.08E-11	8.00E-03	NA	6.08E-11	8.00E-03	NA	6.08E-11
4,4'-DDT	1.90E-02	8.50E-06	1.44E-10	1.90E-02	8.50E-06	1.44E-10	1.90E-02	8.50E-06	1.44E-10	1.90E-02	8.50E-06	1.44E-10	1.90E-02	8.50E-06	1.44E-10
delta-BHC	3.00E-03	2.67E-06	1.04E-10	3.00E-03	2.67E-06	1.04E-10	3.00E-03	2.67E-06	1.04E-10	3.00E-03	2.67E-06	1.04E-10	3.00E-03	2.67E-06	1.04E-10
Dibenzofuran	1.90E+00	1.29E-04	NA	1.90E+00	1.29E-04	NA	1.90E+00	1.29E-04	NA	1.90E+00	1.29E-04	NA	1.90E+00	1.29E-04	NA
1,2-Dichlorobenzene	2.00E-03	1.09E-09	NA	2.00E-03	1.09E-09	NA	2.00E-03	1.09E-09	NA	2.00E-03	1.09E-09	NA	2.00E-03	1.09E-09	NA
1,4-Dichlorobenzene	2.00E-03	3.26E-09	2.35E-13	2.00E-03	3.26E-09	2.35E-13	2.00E-03	3.26E-09	2.35E-13	2.00E-03	3.26E-09	2.35E-13	2.00E-03	3.26E-09	2.35E-13
1,2-Dichloropropane	4.00E-03	8.13E-07	6.08E-12	4.00E-03	8.13E-07	6.08E-12	4.00E-03	8.13E-07	6.08E-12	4.00E-03	8.13E-07	6.08E-12	4.00E-03	8.13E-07	6.08E-12
4,6-Dinitro-2-methylphenol	1.50E+00	1.13E-03	NA	1.50E+00	1.13E-03	NA	1.50E+00	1.13E-03	NA	1.50E+00	1.13E-03	NA	1.50E+00	1.13E-03	NA
2,4-Dinitrophenol	6.30E-01	2.37E-05	NA	6.30E-01	2.37E-05	NA	6.30E-01	2.37E-05	NA	6.30E-01	2.37E-05	NA	6.30E-01	2.37E-05	NA
Endosulfan II	1.40E-02	5.22E-07	NA	1.40E-02	5.22E-07	NA	1.40E-02	5.22E-07	NA	1.40E-02	5.22E-07	NA	1.40E-02	5.22E-07	NA
Endosulfan Sulfate	1.40E-02	5.22E-07	NA	1.40E-02	5.22E-07	NA	1.40E-02	5.22E-07	NA	1.40E-02	5.22E-07	NA	1.40E-02	5.22E-07	NA
Endrin	3.60E-02	3.21E-05	NA	3.60E-02	3.21E-05	NA	3.60E-02	3.21E-05	NA	3.60E-02	3.21E-05	NA	3.60E-02	3.21E-05	NA
Endrin Aldehyde	3.30E-02	2.94E-05	NA	3.30E-02	2.94E-05	NA	3.30E-02	2.94E-05	NA	3.30E-02	2.94E-05	NA	3.30E-02	2.94E-05	NA
Ethylbenzene	2.10E+00	1.03E-06	NA	2.10E+00	1.03E-06	NA	2.10E+00	1.03E-06	NA	2.10E+00	1.03E-06	NA	2.10E+00	1.03E-06	NA
Isopropylbenzene	3.30E-02	1.61E-08	NA	3.30E-02	1.61E-08	NA	3.30E-02	1.61E-08	NA	3.30E-02	1.61E-08	NA	3.30E-02	1.61E-08	NA
Manganese	8.52E+02	5.64E-04	NA	8.52E+02	5.64E-04	NA	8.52E+02	5.64E-04	NA	8.52E+02	5.64E-04	NA	8.52E+02	5.64E-04	NA
Methylene Chloride	7.40E-02	1.68E-07	7.56E-12	7.40E-02	1.68E-07	7.56E-12	7.40E-02	1.68E-07	7.56E-12	7.40E-02	1.68E-07	7.56E-12	7.40E-02	1.68E-07	7.56E-12
4-Nitrophenol	2.50E-01	2.35E-06	NA	2.50E-01	2.35E-06	NA	2.50E-01	2.35E-06	NA	2.50E-01	2.35E-06	NA	2.50E-01	2.35E-06	NA
Phenol	1.20E-02	5.45E-09	NA	1.20E-02	5.45E-09	NA	1.20E-02	5.45E-09	NA	1.20E-02	5.45E-09	NA	1.20E-02	5.45E-09	NA
Tetrachloroethene	8.00E-03	1.09E-07	5.89E-11	8.00E-03	1.09E-07	5.89E-11	8.00E-03	1.09E-07	5.89E-11	8.00E-03	1.09E-07	5.89E-11	8.00E-03	1.09E-07	5.89E-11
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	3.88E-07	NA	1.55E-01	3.88E-07	NA	1.55E-01	3.88E-07	NA	1.55E-01	3.88E-07	NA	1.55E-01	3.88E-07	NA
Toluene	2.80E-02	2.94E-08	NA	2.80E-02	2.94E-08	NA	2.80E-02	2.94E-08	NA	2.80E-02	2.94E-08	NA	2.80E-02	2.94E-08	NA
1,2,4-Trichlorobenzene	1.00E-03	4.89E-09	NA	1.00E-03	4.89E-09	NA	1.00E-03	4.89E-09	NA	1.00E-03	4.89E-09	NA	1.00E-03	4.89E-09	NA
1,1,1-Trichloroethane	5.00E-03	2.43E-08	NA	5.00E-03	2.43E-08	NA	5.00E-03	2.43E-08	NA	5.00E-03	2.43E-08	NA	5.00E-03	2.43E-08	NA
Trichlorofluoromethane	2.00E-03	9.73E-09	NA	2.00E-03	9.73E-09	NA	2.00E-03	9.73E-09	NA	2.00E-03	9.73E-09	NA	2.00E-03	9.73E-09	NA
2,4,5-Trichlorophenol	1.60E-01	1.20E-07	NA	1.60E-01	1.20E-07	NA	1.60E-01	1.20E-07	NA	1.60E-01	1.20E-07	NA	1.60E-01	1.20E-07	NA
2,4,6-Trichlorophenol	3.50E-01	2.63E-04	2.89E-11	3.50E-01	2.63E-04	2.89E-11	3.50E-01	2.63E-04	2.89E-11	3.50E-01	2.63E-04	2.89E-11	3.50E-01	2.63E-04	2.89E-11
1,2,4-Trimethylbenzene	4.40E-02	1.20E-07	NA	4.40E-02	1.20E-07	NA	4.40E-02	1.20E-07	NA	4.40E-02	1.20E-07	NA	4.40E-02	1.20E-07	NA
Total Xylenes	2.00E-03	8.39E-11	NA	2.00E-03	8.39E-11	NA	2.00E-03	8.39E-11	NA	2.00E-03	8.39E-11	NA	2.00E-03	8.39E-11	NA
1,2,3,4,6,7,8-HpCDD	1.11E-02	NA	1.39E-07	7.05E-03	NA	8.87E-08	1.23E-02	NA	1.55E-07	5.40E-04	NA	6.79E-09	1.12E-02	NA	1.41E-07
1,2,3,4,6,7,8-HpCDF	2.05E-03	NA	2.58E-08	1.11E-03	NA	1.40E-08	2.68E-03	NA	3.37E-08	2.80E-04	NA	3.52E-09	1.97E-03	NA	2.48E-08
1,2,3,4,7,8,9-HpCDF	1.72E-04	NA	2.16E-09	1.01E-04	NA	1.26E-09	2.15E-04	NA	2.71E-09	1.90E-05	NA	2.39E-10	1.33E-04	NA	1.68E-09
1,2,3,4,7,8-HxCDD	6.11E-05	NA	7.69E-09	2.90E-05	NA	3.65E-09	7.21E-05	NA	9.08E-09	2.50E-06	NA	3.15E-10	1.33E-04	NA	1.68E-08
1,2,3,4,7,8-HxCDF	1.64E-04	NA	2.06E-08	9.90E-05	NA	1.25E-08	1.97E-04	NA	2.47E-08	2.60E-05	NA	3.27E-09	1.03E-04	NA	1.29E-08
1,2,3,6,7,8-HxCDD	3.36E-04	NA	4.23E-08	2.10E-04	NA	2.64E-08	3.43E-04	NA	4.32E-08	2.00E-05	NA	2.52E-09	4.45E-04	NA	5.60E-08
1,2,3,6,7,8-HxCDF	4.98E-05	NA	6.26E-09	1.60E-05	NA	2.01E-09	4.90E-05	NA	6.17E-09	4.10E-06	NA	5.16E-10	5.39E-05	NA	6.78E-09
1,2,3,7,8,9-HxCDD	1.03E-04	NA	1.29E-08	2.40E-05	NA	3.02E-09	1.22E-04	NA	1.54E-08	2.15E-06	NA	2.70E-10	2.11E-04	NA	2.65E-08
1,2,3,7,8,9-HxCDF	5.47E-05	NA	6.88E-09	4.50E-06	NA	5.66E-10	4.53E-05	NA	5.70E-09	5.90E-06	NA	7.42E-10	2.85E-05	NA	3.59E-09
1,2,3,7,8-PeCDD	1.83E-05	NA	2.30E-08	3.10E-06	NA	3.90E-09	2.35E-05	NA	2.96E-08	ND	ND	ND	4.30E-05	NA	5.41E-08
1,2,3,7,8-PeCDF	1.68E-05	NA	6.33E-10	9.30E-06	NA	3.51E-10	1.57E-05	NA	5.93E-10	1.80E-06	NA	6.79E-11	1.16E-05	NA	4.39E-10
2,3,4,6,7,8-HxCDF	7.61E-05	NA	9.58E-09	1.34E-05	NA	1.69E-09	9.15E-05	NA	1.15E-08	2.00E-06	NA	2.52E-10	7.52E-05	NA	9.46E-09
2,3,4,7,8-PeCDF	3.53E-05	NA	1.33E-08	9.10E-06	NA	3.43E-09	3.67E-05	NA	1.39E-08	2.10E-06	NA	7.93E-10	1.92E-05	NA	7.24E-09
2,3,7,8-TCDD	2.05E-06	NA	2.58E-09	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.34E-06	NA	4.20E-09
2,3,7,8-TCDF	2.92E-06	NA	3.68E-10	8.75E-07	NA	1.10E-10	3.46E-06	NA	4.35E-10	ND	ND	ND	2.37E-06	NA	2.99E-10
OCDD	9.78E-02	NA	3.69E-08	7.45E-02	NA	2.81E-08	1.38E-01	NA	5.21E-08	7.30E-03	NA	2.76E-09	8.96E-02	NA	3.38E-08
OCDF	8.69E-03	NA	3.28E-09	4.50E-03	NA	1.70E-09	1.21E-02	NA	4.55E-09	7.90E-04	NA	2.98E-10	7.05E-03	NA	2.66E-09
TCDD TEQ	2.73E-04	NA	3.43E-07	1.52E-04	NA	1.92E-07	3.26E-04	NA	4.10E-07	1.91E-05	NA	2.40E-08	3.16E-04	NA	3.98E-07
Acenaphthene	5.24E+00	1.19E-05	NA	6.16E+00	1.40E-05	NA	4.27E+00	9.70E-06	NA	ND	ND	ND	1.42E+01	3.22E-05	NA
Acenaphthylene	3.68E+00	2.51E-05	NA	6.28E+00	4.28E-05	NA	1.72E+00	1.17E-05	NA	ND	ND	ND	9.73E+00	6.63E-05	NA
Anthracene	4.28E+00	1.95E-06	NA	7.02E+00	3.19E-06	NA	4.04E+00	1.84E-06	NA	ND	ND	ND	8.79E+00	3.99E-06	NA
Benzo(a)anthracene	1.83E+00	6.06E-06	8.85E-09	2.09E+00	6.95E-06	1.01E-08	2.27E+00	7.53E-06	1.10E-08	9.51E-02	3.16E-07	4.61E-10	3.60E+00	1.19E-05	1.74E-08
Benzo(a)pyrene	1.52E+00	5.06E-06	7.39E-08	2.41E+00	8.00E-06	1.17E-07	1.93E+00	6.40E-06	9.35E-08	1.17E-01	3.87E-07	5.65E-09	2.63E+00	8.75E-06	1.28E-07
Benzo(b)fluoranthene	2.59E+00	8.59E-06	1.25E-08	4.02E+00	1.33E-05	1.95E-08	3.27E+00	1.08E-05	1.58E-08	1.63E-01	5.43E-07	7.92E-10	4.26E+00	1.41E-05	2.06E-08
Benzo(g,h,i)perylene	2.04E+00	1.39E-05	NA	3.54E+00	2.41E-05	NA	2.36E+00	1.61E-05	NA	1.61E-01	1.10E-06	NA	3.19E+00	2.17E-05	NA
Benzo(k)fluoranthene	1.00E+00	3.33E-06	4.86E-10	7.71E-01	2.56E-06	3.74E-10	8.99E-01	2.98E-06	4.36E-10	1.00E-01	3.33E-07	4.86E-11	2.19E+00	7.29E-06	1.06E-09
Chrysene	3.50E+00	1.16E-05	1.69E-10	8.14E+00	2.70E-05	3.94E-10	2.97E+00	9.86E-06	1.44E-10	1.72E-01	5.71E-07	8.33E-12	5.06E+00	1.68E-05	2.45E-10
Dibenz(a,h)anthracene	2.00E+00	6.65E-06	9.70E-08	2.56E+00	8.48E-06	1.24E-07	3.88E+00	1.29E-05	1.88E-07	1.30E-01	4.32E-07	6.31E-09	2.52E+00	8.36E-06	1.22E-07
Fluoranthene	8.70E+00	2.96E-05	NA	5.05E+00	1.72E-05	NA	8.59E+00	2.93E-05	NA	2.14E-01	7.28E-07	NA	2.32E+01	7.91E-05	NA
Fluorene	1.66E+00	5.64E-06	NA	1.16E+00	3.96E-06	NA	2.76E+00	9.42E-06	NA	ND	ND	ND	2.69E+00	9.18E-06	NA
Indeno(1,2,3-cd)pyrene	1.78E+00	5.92E-06	8.64E-09	2.91E+00	9.65E-06	1.41E-08	2.08E+00	6.91E-06	1.01E-08	1.63E-01	5.42E-07	7.92E-10	2.96E+00	9.81E-06	1.43E-08
1-Methylnaphthalene	1.04E+01	7.06E-05	NA	ND	ND	ND	5.29E+00	3.61E-05	NA	4.24E+00	2.89E-05	NA	3.37E+01	2.29E-04	NA
2-Methylnaphthalene	1.10E+01	7.51E-05	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.40E+01	2.32E-04	NA
Naphthalene	3.81E+00	2.60E-05	NA	6.30E+00	4.29E-05	NA	2.87E+00	1.95E-05	NA	8.23E-01	5.61E-06	NA	9.51E+00	6.48E-05	NA
Phenanthrene	3.35E+00	2.28E-05	NA	1.91E+00	1.30E-05	NA	7.79E+00	5.31E-05	NA	ND	ND	ND	3.15E+00	2.15E-05	NA
Pyrene	5.89E+00	2.68E-05	NA	5.03E+00	2.28E-05	NA	6.47E+00	2.94E-05	NA	1.96E-01	8.90E-07	NA	1.39E+01	6.31E-05	NA
BaP-TEQ	4.03E+00	1.34E-05	1.95E-07	5.49E+00	1.82E-05	2.66E-07	6.10E+00	2.03E-05	2.96E-07	2.81E-01	9.34E-07	1.36E-08	6.09E+00	2.02E-05	2.95E-07
Pentachlorophenol	1.28E+01	3.19E-05	1.15E-08	2.47E+00	6.19E-06	2.23E-09	4.56E+00	1.14E-05	4.12E-09	1.08E+00	2.70E-06	9.72E-10	2.05E+01	5.13E-05	1.85E-08
Total		4.54E-03	5.52E-07		4.40E-03	4.62E-07		4.44E-03	7.12E-07		4.23E-03	4.06E-08		5.08E-03	7.14E-07

Table C-11
SITE-WIDE & AREA-SPECIFIC RISKS
INGESTION/DERMAL
TRESPASSER

Constituent	Area G			Area H			Area S			Area B/F		
	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	2.67E-05	1.36E-09	3.00E-03	2.67E-05	1.36E-09	3.00E-03	2.67E-05	1.36E-09	3.00E-03	2.67E-05	1.36E-09
Barium	2.99E+02	7.44E-05	NA	2.99E+02	7.44E-05	NA	2.99E+02	7.44E-05	NA	2.99E+02	7.44E-05	NA
Chlorobenzene	3.00E-03	7.34E-09	NA	3.00E-03	7.34E-09	NA	3.00E-03	7.34E-09	NA	3.00E-03	7.34E-09	NA
Chloromethane	2.00E-03	3.76E-09	NA	2.00E-03	3.76E-09	NA	2.00E-03	3.76E-09	NA	2.00E-03	3.76E-09	NA
4-Chloro-3-methylphenol	2.50E-01	3.76E-07	NA	2.50E-01	3.76E-07	NA	2.50E-01	3.76E-07	NA	2.50E-01	3.76E-07	NA
Chromium	6.80E+01	1.90E-03	NA	6.80E+01	1.90E-03	NA	6.80E+01	1.90E-03	NA	6.80E+01	1.90E-03	NA
4,4'-DDD	3.60E-02	NA	1.93E-10	3.60E-02	NA	1.93E-10	3.60E-02	NA	1.93E-10	3.60E-02	NA	1.93E-10
4,4'-DDE	8.00E-03	NA	6.08E-11	8.00E-03	NA	6.08E-11	8.00E-03	NA	6.08E-11	8.00E-03	NA	6.08E-11
4,4'-DDT	1.90E-02	8.50E-06	1.44E-10	1.90E-02	8.50E-06	1.44E-10	1.90E-02	8.50E-06	1.44E-10	1.90E-02	8.50E-06	1.44E-10
delta-BHC	3.00E-03	2.67E-06	1.04E-10	3.00E-03	2.67E-06	1.04E-10	3.00E-03	2.67E-06	1.04E-10	3.00E-03	2.67E-06	1.04E-10
Dibenzofuran	1.90E+00	1.29E-04	NA	1.90E+00	1.29E-04	NA	1.90E+00	1.29E-04	NA	1.90E+00	1.29E-04	NA
1,2-Dichlorobenzene	2.00E-03	1.09E-09	NA	2.00E-03	1.09E-09	NA	2.00E-03	1.09E-09	NA	2.00E-03	1.09E-09	NA
1,4-Dichlorobenzene	2.00E-03	3.26E-09	2.35E-13	2.00E-03	3.26E-09	2.35E-13	2.00E-03	3.26E-09	2.35E-13	2.00E-03	3.26E-09	2.35E-13
1,2-Dichloropropane	4.00E-03	8.13E-07	6.08E-12	4.00E-03	8.13E-07	6.08E-12	4.00E-03	8.13E-07	6.08E-12	4.00E-03	8.13E-07	6.08E-12
4,6-Dinitro-2-methylphenol	1.50E+00	1.13E-03	NA	1.50E+00	1.13E-03	NA	1.50E+00	1.13E-03	NA	1.50E+00	1.13E-03	NA
2,4-Dinitrophenol	6.30E-01	2.37E-05	NA	6.30E-01	2.37E-05	NA	6.30E-01	2.37E-05	NA	6.30E-01	2.37E-05	NA
Endosulfan II	1.40E-02	5.22E-07	NA	1.40E-02	5.22E-07	NA	1.40E-02	5.22E-07	NA	1.40E-02	5.22E-07	NA
Endosulfan Sulfate	1.40E-02	5.22E-07	NA	1.40E-02	5.22E-07	NA	1.40E-02	5.22E-07	NA	1.40E-02	5.22E-07	NA
Endrin	3.60E-02	3.21E-05	NA	3.60E-02	3.21E-05	NA	3.60E-02	3.21E-05	NA	3.60E-02	3.21E-05	NA
Endrin Aldehyde	3.30E-02	2.94E-05	NA	3.30E-02	2.94E-05	NA	3.30E-02	2.94E-05	NA	3.30E-02	2.94E-05	NA
Ethylbenzene	2.10E+00	1.03E-06	NA	2.10E+00	1.03E-06	NA	2.10E+00	1.03E-06	NA	2.10E+00	1.03E-06	NA
Isopropylbenzene	3.30E-02	1.61E-08	NA	3.30E-02	1.61E-08	NA	3.30E-02	1.61E-08	NA	3.30E-02	1.61E-08	NA
Manganese	8.52E+02	5.64E-04	NA	8.52E+02	5.64E-04	NA	8.52E+02	5.64E-04	NA	8.52E+02	5.64E-04	NA
Methylene Chloride	7.40E-02	1.68E-07	7.56E-12	7.40E-02	1.68E-07	7.56E-12	7.40E-02	1.68E-07	7.56E-12	7.40E-02	1.68E-07	7.56E-12
4-Nitrophenol	2.50E-01	2.35E-06	NA	2.50E-01	2.35E-06	NA	2.50E-01	2.35E-06	NA	2.50E-01	2.35E-06	NA
Phenol	1.20E-02	5.45E-09	NA	1.20E-02	5.45E-09	NA	1.20E-02	5.45E-09	NA	1.20E-02	5.45E-09	NA
Tetrachloroethene	8.00E-03	1.09E-07	5.89E-11	8.00E-03	1.09E-07	5.89E-11	8.00E-03	1.09E-07	5.89E-11	8.00E-03	1.09E-07	5.89E-11
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	3.88E-07	NA	1.55E-01	3.88E-07	NA	1.55E-01	3.88E-07	NA	1.55E-01	3.88E-07	NA
Toluene	2.80E-02	2.94E-08	NA	2.80E-02	2.94E-08	NA	2.80E-02	2.94E-08	NA	2.80E-02	2.94E-08	NA
1,2,4-Trichlorobenzene	1.00E-03	4.89E-09	NA	1.00E-03	4.89E-09	NA	1.00E-03	4.89E-09	NA	1.00E-03	4.89E-09	NA
1,1,1-Trichloroethane	5.00E-03	2.43E-08	NA	5.00E-03	2.43E-08	NA	5.00E-03	2.43E-08	NA	5.00E-03	2.43E-08	NA
Trichlorofluoromethane	2.00E-03	9.73E-09	NA	2.00E-03	9.73E-09	NA	2.00E-03	9.73E-09	NA	2.00E-03	9.73E-09	NA
2,4,5-Trichlorophenol	1.60E-01	1.20E-07	NA	1.60E-01	1.20E-07	NA	1.60E-01	1.20E-07	NA	1.60E-01	1.20E-07	NA
2,4,6-Trichlorophenol	3.50E-01	2.63E-04	2.89E-11	3.50E-01	2.63E-04	2.89E-11	3.50E-01	2.63E-04	2.89E-11	3.50E-01	2.63E-04	2.89E-11
1,2,4-Trimethylbenzene	4.40E-02	1.20E-07	NA	4.40E-02	1.20E-07	NA	4.40E-02	1.20E-07	NA	4.40E-02	1.20E-07	NA
Total Xylenes	2.00E-03	8.39E-11	NA	2.00E-03	8.39E-11	NA	2.00E-03	8.39E-11	NA	2.00E-03	8.39E-11	NA
1,2,3,4,6,7,8-HpCDD	2.35E-02	NA	2.95E-07	1.43E-02	NA	1.80E-07	8.85E-03	NA	1.11E-07	1.01E-02	NA	1.28E-07
1,2,3,4,6,7,8-HpCDF	3.85E-03	NA	4.85E-08	2.90E-03	NA	3.65E-08	3.17E-03	NA	3.98E-08	1.86E-03	NA	2.34E-08
1,2,3,4,7,8,9-HpCDF	3.25E-04	NA	4.09E-09	2.58E-04	NA	3.24E-09	3.19E-04	NA	4.02E-09	1.35E-04	NA	1.70E-09
1,2,3,4,7,8-HxCDD	6.80E-05	NA	8.56E-09	5.46E-05	NA	6.87E-09	3.78E-05	NA	4.75E-09	1.08E-04	NA	1.35E-08
1,2,3,4,7,8-HxCDF	2.91E-04	NA	3.66E-08	2.47E-04	NA	3.11E-08	4.47E-04	NA	5.63E-08	1.12E-04	NA	1.41E-08
1,2,3,6,7,8-HxCDD	6.00E-04	NA	7.54E-08	4.65E-04	NA	5.85E-08	3.52E-04	NA	4.42E-08	3.75E-04	NA	4.72E-08
1,2,3,6,7,8-HxCDF	8.93E-05	NA	1.12E-08	6.94E-05	NA	8.73E-09	9.97E-05	NA	1.25E-08	4.70E-05	NA	5.92E-09
1,2,3,7,8,9-HxCDD	1.37E-04	NA	1.72E-08	9.55E-05	NA	1.20E-08	7.44E-05	NA	9.35E-09	1.70E-04	NA	2.14E-08
1,2,3,7,8,9-HxCDF	1.12E-04	NA	1.41E-08	1.12E-04	NA	1.41E-08	9.85E-05	NA	1.24E-08	2.83E-05	NA	3.56E-09
1,2,3,7,8-PeCDD	1.69E-05	NA	2.13E-08	1.46E-05	NA	1.84E-08	1.10E-05	NA	1.39E-08	3.48E-05	NA	4.37E-08
1,2,3,7,8-PeCDF	3.01E-05	NA	1.13E-09	3.84E-05	NA	1.45E-09	2.59E-05	NA	9.77E-10	1.13E-05	NA	4.27E-10
2,3,4,6,7,8-HxCDF	1.36E-04	NA	1.71E-08	1.15E-04	NA	1.45E-08	1.68E-04	NA	2.11E-08	6.83E-05	NA	8.59E-09
2,3,4,7,8-PeCDF	5.91E-05	NA	2.23E-08	8.12E-05	NA	3.06E-08	8.79E-05	NA	3.32E-08	2.09E-05	NA	7.88E-09
2,3,7,8-TCDD	2.54E-06	NA	3.20E-09	2.36E-06	NA	2.97E-09	ND	ND	ND	2.98E-06	NA	3.75E-09
2,3,7,8-TCDF	3.55E-06	NA	4.47E-10	7.61E-06	NA	9.57E-10	5.04E-06	NA	6.34E-10	2.45E-06	NA	3.08E-10
OCDD	2.00E-01	NA	7.54E-08	1.38E-01	NA	5.21E-08	9.12E-02	NA	3.44E-08	8.88E-02	NA	3.35E-08
OCDF	1.79E-02	NA	6.75E-09	1.34E-02	NA	5.06E-09	1.17E-02	NA	4.43E-09	7.12E-03	NA	2.69E-09
TCDD TEQ	5.05E-04	NA	6.36E-07	3.73E-04	NA	4.69E-07	3.20E-04	NA	4.03E-07	2.81E-04	NA	3.54E-07
Acenaphthene	4.05E-01	9.20E-07	NA	6.82E+00	1.55E-05	NA	1.30E+00	2.95E-06	NA	9.03E+00	2.05E-05	NA
Acenaphthylene	3.35E-01	2.28E-06	NA	2.39E+00	1.63E-05	NA	5.55E-01	3.78E-06	NA	6.03E+00	4.11E-05	NA
Anthracene	1.84E-01	8.36E-08	NA	6.25E+00	2.84E-06	NA	4.87E+00	2.21E-06	NA	6.08E+00	2.76E-06	NA
Benzo(a)anthracene	2.17E-01	7.22E-07	1.05E-09	3.50E+00	1.16E-05	1.70E-08	1.81E+00	6.02E-06	8.78E-09	2.69E+00	8.93E-06	1.30E-08
Benzo(a)pyrene	1.66E-01	5.53E-07	8.07E-09	1.41E+00	4.68E-06	6.83E-08	9.12E-01	3.03E-06	4.42E-08	2.15E+00	7.14E-06	1.04E-07
Benzo(b)fluoranthene	2.72E-01	9.04E-07	1.32E-09	2.84E+00	9.43E-06	1.38E-08	2.10E+00	6.97E-06	1.02E-08	3.53E+00	1.17E-05	1.71E-08
Benzo(g,h,i)perylene	2.90E-01	1.97E-06	NA	2.41E+00	1.64E-05	NA	1.65E+00	1.12E-05	NA	2.64E+00	1.80E-05	NA
Benzo(k)fluoranthene	2.81E-01	9.34E-07	1.36E-10	2.51E+00	8.32E-06	1.21E-09	7.17E-01	2.38E-06	3.48E-10	1.54E+00	5.10E-06	7.45E-10
Chrysene	3.24E-01	1.07E-06	1.57E-11	6.19E+00	2.06E-05	3.00E-10	2.79E+00	9.25E-06	1.35E-10	3.80E+00	1.26E-05	1.84E-10
Dibenz(a,h)anthracene	7.32E-01	2.43E-06	3.55E-08	2.43E+00	8.07E-06	1.18E-07	2.57E+00	8.54E-06	1.25E-07	2.76E+00	9.17E-06	1.34E-07
Fluoranthene	2.04E-01	6.95E-07	NA	1.64E+01	5.59E-05	NA	7.03E+00	2.40E-05	NA	1.51E+01	5.16E-05	NA
Fluorene	3.22E-01	1.10E-06	NA	7.05E+00	2.40E-05	NA	1.74E+00	5.92E-06	NA	2.32E+00	7.91E-06	NA
Indeno(1,2,3-cd)pyrene	3.07E-01	1.02E-06	1.49E-09	2.38E+00	7.89E-06	1.15E-08	1.11E+00	3.70E-06	5.40E-09	2.41E+00	7.99E-06	1.17E-08
1-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.91E+01	1.30E-04	NA
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.28E+01	1.55E-04	NA
Naphthalene	3.53E-01	2.41E-06	NA	5.73E+00	3.91E-05	NA	5.05E-01	3.44E-06	NA	6.12E+00	4.17E-05	NA
Phenanthrene	2.26E-01	1.54E-06	NA	2.05E+01	1.40E-04	NA	2.19E+00	1.49E-05	NA	4.59E+00	3.13E-05	NA
Pyrene	3.27E-01	1.48E-06	NA	1.18E+01	5.36E-05	NA	5.34E+00	2.43E-05	NA	9.52E+00	4.32E-05	NA
BaP-TEQ	8.94E-01	2.97E-06	4.34E-08	3.98E+00	1.32E-05	1.93E-07	3.98E+00	1.32E-05	1.93E-07	5.56E+00	1.85E-05	2.70E-07
Pentachlorophenol	2.38E+00	5.96E-06	2.14E-09	2.79E+01	7.00E-05	2.52E-08	4.16E+01	1.04E-04	3.75E-08	1.28E+01	3.19E-05	1.15E-08
Total		4.21E-03	6.83E-07		4.63E-03	6.89E-07		4.40E-03	6.35E-07		4.78E-03	6.37E-07

Table C-12
SITE-WIDE & AREA-SPECIFIC RISKS
INHALATION OF PARTICULATES
TRESPASSER

Constituent	Site-Wide			Area A			Area B			Area C			Area F		
	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	4.38E-10	2.24E-14	3.00E-03	4.38E-10	2.24E-14	3.00E-03	4.38E-10	2.24E-14	3.00E-03	4.38E-10	2.24E-14	3.00E-03	4.38E-10	2.24E-14
Barium	2.99E+02	6.55E-09	NA	2.99E+02	6.55E-09	NA	2.99E+02	6.55E-09	NA	2.99E+02	6.55E-09	NA	2.99E+02	6.55E-09	NA
Chlorobenzene	3.00E-03	9.39E-13	NA	3.00E-03	9.39E-13	NA	3.00E-03	9.39E-13	NA	3.00E-03	9.39E-13	NA	3.00E-03	9.39E-13	NA
Chloromethane	2.00E-03	3.37E-13	NA	2.00E-03	3.37E-13	NA	2.00E-03	3.37E-13	NA	2.00E-03	3.37E-13	NA	2.00E-03	3.37E-13	NA
4-Chloro-3-methylphenol	2.50E-01	2.19E-11	NA	2.50E-01	2.19E-11	NA	2.50E-01	2.19E-11	NA	2.50E-01	2.19E-11	NA	2.50E-01	2.19E-11	NA
Chromium	6.80E+01	1.04E-05	1.25E-09	6.80E+01	1.04E-05	1.25E-09	6.80E+01	1.04E-05	1.25E-09	6.80E+01	1.04E-05	1.25E-09	6.80E+01	1.04E-05	1.25E-09
4,4'-DDD	3.60E-02	NA	3.79E-15	3.60E-02	NA	3.79E-15	3.60E-02	NA	3.79E-15	3.60E-02	NA	3.79E-15	3.60E-02	NA	3.79E-15
4,4'-DDE	8.00E-03	NA	1.19E-15	8.00E-03	NA	1.19E-15	8.00E-03	NA	1.19E-15	8.00E-03	NA	1.19E-15	8.00E-03	NA	1.19E-15
4,4'-DDT	1.90E-02	1.67E-10	2.83E-15	1.90E-02	1.67E-10	2.83E-15	1.90E-02	1.67E-10	2.83E-15	1.90E-02	1.67E-10	2.83E-15	1.90E-02	1.67E-10	2.83E-15
delta-BHC	3.00E-03	4.38E-11	NA	3.00E-03	4.38E-11	NA	3.00E-03	4.38E-11	NA	3.00E-03	4.38E-11	NA	3.00E-03	4.38E-11	NA
Dibenzofuran	1.90E+00	4.16E-09	NA	1.90E+00	4.16E-09	NA	1.90E+00	4.16E-09	NA	1.90E+00	4.16E-09	NA	1.90E+00	4.16E-09	NA
1,2-Dichloropropane	2.00E-03	1.27E-12	NA	2.00E-03	1.27E-12	NA	2.00E-03	1.27E-12	NA	2.00E-03	1.27E-12	NA	2.00E-03	1.27E-12	NA
1,2-Dichlorobenzene	2.00E-03	3.81E-14	2.10E-17	2.00E-03	3.81E-14	2.10E-17	2.00E-03	3.81E-14	2.10E-17	2.00E-03	3.81E-14	2.10E-17	2.00E-03	3.81E-14	2.10E-17
1,4-Dichlorobenzene	4.00E-03	1.59E-11	NA	4.00E-03	1.59E-11	NA	4.00E-03	1.59E-11	NA	4.00E-03	1.59E-11	NA	4.00E-03	1.59E-11	NA
4,6-Dinitro-2-methylphenol	1.50E+00	6.58E-08	NA	1.50E+00	6.58E-08	NA	1.50E+00	6.58E-08	NA	1.50E+00	6.58E-08	NA	1.50E+00	6.58E-08	NA
2,4-Dinitrophenol	6.30E-01	1.38E-09	NA	6.30E-01	1.38E-09	NA	6.30E-01	1.38E-09	NA	6.30E-01	1.38E-09	NA	6.30E-01	1.38E-09	NA
Endosulfan II	1.40E-02	1.02E-11	NA	1.40E-02	1.02E-11	NA	1.40E-02	1.02E-11	NA	1.40E-02	1.02E-11	NA	1.40E-02	1.02E-11	NA
Endosulfan Sulfate	1.40E-02	1.02E-11	NA	1.40E-02	1.02E-11	NA	1.40E-02	1.02E-11	NA	1.40E-02	1.02E-11	NA	1.40E-02	1.02E-11	NA
Endrin	3.60E-02	5.26E-10	NA	3.60E-02	5.26E-10	NA	3.60E-02	5.26E-10	NA	3.60E-02	5.26E-10	NA	3.60E-02	5.26E-10	NA
Endrin Aldehyde	3.30E-02	4.82E-10	NA	3.30E-02	4.82E-10	NA	3.30E-02	4.82E-10	NA	3.30E-02	4.82E-10	NA	3.30E-02	4.82E-10	NA
Ethylbenzene	2.10E+00	3.17E-11	NA	2.10E+00	3.17E-11	NA	2.10E+00	3.17E-11	NA	2.10E+00	3.17E-11	NA	2.10E+00	3.17E-11	NA
Isopropylbenzene	3.30E-02	1.45E-12	NA	3.30E-02	1.45E-12	NA	3.30E-02	1.45E-12	NA	3.30E-02	1.45E-12	NA	3.30E-02	1.45E-12	NA
Manganese	8.52E+02	2.61E-04	NA	8.52E+02	2.61E-04	NA	8.52E+02	2.61E-04	NA	8.52E+02	2.61E-04	NA	8.52E+02	2.61E-04	NA
Methylene Chloride	7.40E-02	3.77E-13	5.34E-17	7.40E-02	3.77E-13	5.34E-17	7.40E-02	3.77E-13	5.34E-17	7.40E-02	3.77E-13	5.34E-17	7.40E-02	3.77E-13	5.34E-17
4-Nitrophenol	2.50E-01	1.37E-10	NA	2.50E-01	1.37E-10	NA	2.50E-01	1.37E-10	NA	2.50E-01	1.37E-10	NA	2.50E-01	1.37E-10	NA
Phenol	1.20E-02	1.75E-13	NA	1.20E-02	1.75E-13	NA	1.20E-02	1.75E-13	NA	1.20E-02	1.75E-13	NA	1.20E-02	1.75E-13	NA
Tetrachloroethene	8.00E-03	3.19E-13	7.36E-17	8.00E-03	3.19E-13	7.36E-17	8.00E-03	3.19E-13	7.36E-17	8.00E-03	3.19E-13	7.36E-17	8.00E-03	3.19E-13	7.36E-17
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	2.26E-11	NA	1.55E-01	2.26E-11	NA	1.55E-01	2.26E-11	NA	1.55E-01	2.26E-11	NA	1.55E-01	2.26E-11	NA
Toluene	2.80E-02	8.77E-14	NA	2.80E-02	8.77E-14	NA	2.80E-02	8.77E-14	NA	2.80E-02	8.77E-14	NA	2.80E-02	8.77E-14	NA
1,2,4-Trichlorobenzene	1.00E-03	3.99E-12	NA	1.00E-03	3.99E-12	NA	1.00E-03	3.99E-12	NA	1.00E-03	3.99E-12	NA	1.00E-03	3.99E-12	NA
1,1,1-Trichloroethane	5.00E-03	3.48E-14	NA	5.00E-03	3.48E-14	NA	5.00E-03	3.48E-14	NA	5.00E-03	3.48E-14	NA	5.00E-03	3.48E-14	NA
Trichlorofluoromethane	2.00E-03	4.38E-14	NA	2.00E-03	4.38E-14	NA	2.00E-03	4.38E-14	NA	2.00E-03	4.38E-14	NA	2.00E-03	4.38E-14	NA
2,4,5-Trichlorophenol	1.60E-01	7.01E-12	NA	1.60E-01	7.01E-12	NA	1.60E-01	7.01E-12	NA	1.60E-01	7.01E-12	NA	1.60E-01	7.01E-12	NA
2,4,6-Trichlorophenol	3.50E-01	1.53E-08	1.66E-15	3.50E-01	1.53E-08	1.66E-15	3.50E-01	1.53E-08	1.66E-15	3.50E-01	1.53E-08	1.66E-15	3.50E-01	1.53E-08	1.66E-15
1,2,4-Trimethylbenzene	4.40E-02	1.13E-10	NA	4.40E-02	1.13E-10	NA	4.40E-02	1.13E-10	NA	4.40E-02	1.13E-10	NA	4.40E-02	1.13E-10	NA
Total Xylenes	2.00E-03	3.07E-13	NA	2.00E-03	3.07E-13	NA	2.00E-03	3.07E-13	NA	2.00E-03	3.07E-13	NA	2.00E-03	3.07E-13	NA
1,2,3,4,6,7,8-HpCDD	1.11E-02	NA	7.28E-12	7.05E-03	NA	4.64E-12	1.23E-02	NA	8.09E-12	5.40E-04	NA	3.55E-13	1.12E-02	NA	7.37E-12
1,2,3,4,6,7,8-HpCDF	2.05E-03	NA	1.35E-12	1.11E-03	NA	7.30E-13	2.68E-03	NA	1.76E-12	2.80E-04	NA	1.84E-13	1.97E-03	NA	1.29E-12
1,2,3,4,7,8,9-HpCDF	1.72E-04	NA	1.13E-13	1.01E-04	NA	6.61E-14	2.15E-04	NA	1.42E-13	1.90E-05	NA	1.25E-14	1.33E-04	NA	8.77E-14
1,2,3,4,7,8-HxCDD	6.11E-05	NA	4.02E-13	2.90E-05	NA	1.91E-13	7.21E-05	NA	4.74E-13	2.50E-06	NA	1.64E-14	1.33E-04	NA	8.77E-13
1,2,3,4,7,8-HxCDF	1.64E-04	NA	1.08E-12	9.90E-05	NA	6.51E-13	1.97E-04	NA	1.29E-12	2.60E-05	NA	1.71E-13	1.03E-04	NA	6.74E-13
1,2,3,6,7,8-HxCDD	3.36E-04	NA	2.21E-12	2.10E-04	NA	1.38E-12	3.43E-04	NA	2.26E-12	2.00E-05	NA	1.32E-13	4.45E-04	NA	2.93E-12
1,2,3,6,7,8-HxCDF	4.98E-05	NA	3.27E-13	1.60E-05	NA	1.05E-13	4.90E-05	NA	3.22E-13	4.10E-06	NA	2.70E-14	5.39E-05	NA	3.54E-13
1,2,3,7,8,9-HxCDD	1.03E-04	NA	6.75E-13	2.40E-05	NA	1.58E-13	1.22E-04	NA	8.04E-13	2.15E-06	NA	1.41E-14	2.11E-04	NA	1.39E-12
1,2,3,7,8,9-HxCDF	5.47E-05	NA	3.60E-13	4.50E-06	NA	2.96E-14	4.53E-05	NA	2.98E-13	5.90E-06	NA	3.88E-14	2.85E-05	NA	1.88E-13
1,2,3,7,8-PeCDD	1.83E-05	NA	1.20E-12	3.10E-06	NA	2.04E-13	2.35E-05	NA	1.55E-12	ND	ND	ND	4.30E-05	NA	2.83E-12
1,2,3,7,8-PeCDF	1.68E-05	NA	3.31E-14	9.30E-06	NA	1.83E-14	1.57E-05	NA	3.10E-14	1.80E-06	NA	3.55E-15	1.16E-05	NA	2.29E-14
2,3,4,6,7,8-HxCDF	7.61E-05	NA	5.01E-13	1.34E-05	NA	8.81E-14	9.15E-05	NA	6.02E-13	2.00E-06	NA	1.32E-14	7.52E-05	NA	4.94E-13
2,3,4,7,8-PeCDF	3.53E-05	NA	6.96E-13	9.10E-06	NA	1.80E-13	3.67E-05	NA	7.24E-13	2.10E-06	NA	4.14E-14	1.92E-05	NA	3.78E-13
2,3,7,8-TCDD	2.05E-06	NA	1.35E-13	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.34E-06	NA	2.20E-13
2,3,7,8-TCDF	2.92E-06	NA	1.92E-14	8.75E-07	NA	5.75E-15	3.46E-06	NA	2.28E-14	ND	ND	ND	2.37E-06	NA	1.56E-14
OCDD	9.78E-02	NA	1.93E-12	7.45E-02	NA	1.47E-12	1.38E-01	NA	2.72E-12	7.30E-03	NA	1.44E-13	8.96E-02	NA	1.77E-12
OCDF	8.69E-03	NA	1.72E-13	4.50E-03	NA	8.88E-14	1.21E-02	NA	2.38E-13	7.90E-04	NA	1.56E-14	7.05E-03	NA	1.39E-13
TCDD TEQ	2.73E-04	NA	1.80E-11	1.52E-04	NA	1.00E-11	3.26E-04	NA	2.14E-11	1.91E-05	NA	1.26E-12	3.16E-04	NA	2.08E-11
Acenaphthene	5.24E+00	3.83E-10	NA	6.16E+00	4.50E-10	NA	4.27E+00	3.12E-10	NA	ND	ND	ND	1.42E+01	1.03E-09	NA
Acenaphthylene	3.68E+00	5.38E-10	NA	6.28E+00	9.18E-10	NA	1.72E+00	2.51E-10	NA	ND	ND	ND	9.73E+00	1.42E-09	NA
Anthracene	4.28E+00	6.26E-11	NA	7.02E+00	1.03E-10	NA	4.04E+00	5.91E-11	NA	ND	ND	ND	8.79E+00	1.28E-10	NA
Benzo(a)anthracene	1.83E+00	2.67E-10	2.48E-13	2.09E+00	3.06E-10	2.84E-13	2.27E+00	3.31E-10	3.08E-13	9.51E-02	1.39E-11	1.29E-14	3.60E+00	5.26E-10	4.89E-13
Benzo(a)pyrene	1.52E+00	2.23E-10	2.07E-12	2.41E+00	3.52E-10	3.28E-12	1.93E+00	2.82E-10	2.62E-12	1.17E-01	1.70E-11	1.58E-13	2.63E+00	3.85E-10	3.58E-12
Benzo(b)fluoranthene	2.59E+00	3.78E-10	3.51E-13	4.02E+00	5.87E-10	5.46E-13	3.27E+00	4.77E-10	4.44E-13	1.63E-01	2.39E-11	2.22E-14	4.26E+00	6.22E-10	5.78E-13
Benzo(g,h,i)perylene	2.04E+00	2.98E-10	NA	3.54E+00	5.17E-10	NA	2.36E+00	3.45E-10	NA	1.61E-01	2.36E-11	NA	3.19E+00	4.66E-10	NA
Benzo(k)fluoranthene	1.00E+00	1.46E-10	1.36E-14	7.71E-01	1.13E-10	1.05E-14	8.99E-01	1.31E-10	1.22E-14	1.00E-01	1.47E-11	1.36E-15	2.19E+00	3.21E-10	2.98E-14
Chrysene	3.50E+00	5.11E-10	4.75E-15	8.14E+00	1.19E-09	1.11E-14	2.97E+00	4.34E-10	4.04E-15	1.72E-01	2.51E-11	2.34E-16	5.06E+00	7.40E-10	6.88E-15
Dibenz(a,h)anthracene	2.00E+00	2.93E-10	2.72E-12	2.56E+00	3.73E-10	3.47E-12	3.88E+00	5.67E-10	5.27E-12	1.30E-01	1.90E-11	1.77E-13	2.52E+00	3.68E-10	3.42E-12
Fluoranthene	8.70E+00	9.53E-10	NA	5.05E+00	5.54E-10	NA	8.59E+00	9.41E-10	NA	2.14E-01	2.34E-11	NA	2.32E+01	2.54E-09	NA
Fluorene	1.66E+00	1.81E-10	NA	1.16E+00	1.27E-10	NA	2.76E+00	3.03E-10	NA	ND	ND	ND	2.69E+00	2.95E-10	NA
Indeno(1,2,3-cd)pyrene	1.78E+00	2.61E-10	2.42E-13	2.91E+00	4.25E-10	3.95E-13	2.08E+00	3.04E-10	2.83E-13	1.63E-01	2.39E-11	2.22E-14	2.96E+00	4.32E-10	4.02E-13
1-Methylnaphthalene	1.04E+01	5.30E-08	NA	ND	ND	ND	5.29E+00	2.71E-08	NA	4.24E+00	2.17E-08	NA	3.37E+01	1.72E-07	NA
2-Methylnaphthalene	1.10E+01	5.64E-08	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.40E+01	1.74E-07	NA
Naphthalene	3.81E+00	1.95E-08	NA	6.30E+00	3.22E-08	NA	2.87E+00	1.47E-08	NA	8.23E-01	4.21E-09	NA	9.51E+00	4.87E-08	NA
Phenanthrene	3.35E+00	4.90E-10	NA	1.91E+00	2.79E-10	NA	7.79E+00	1.14E-09	NA	ND	ND	ND	3.15E+00	4.61E-10	NA
Pyrene	5.89E+00	8.61E-10	NA	5.03E+00	7.35E-10	NA	6.47E+00	9.45E-10	NA	1.96E-01	2.86E-11	NA	1.39E+01	2.03E-09	NA
BaP-TE	4.03E+00	5.89E-10	5.48E-12	5.49E+00	8.03E-10	7.46E-12	6.10E+00	8.91E-10	8.29E-12	2.81E-01	4.11E-11	3.82E-13	6.09E+00	8.91E-10	8.28E-12
Pentachlorophenol	1.28E+01	1.86E-09	NA	2.47E+00	3.61E-10	NA	4.56E+00	6.67E-10	NA	1.08E+00	1.58E-10	NA	2.05E+01	2.99E-09	NA
Total		2.72E-04	1.28E-09		2.72E-04	1.27E-09		2.72E-04	1.28E-09		2.72E-04	1.25E-09		2.72E-04	1.28E-09

Table C-12
SITE-WIDE & AREA-SPECIFIC RISKS
INHALATION OF PARTICULATES
TRESPASSER

Constituent	Area G			Area H			Area S			Area B/F		
	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	4.38E-10	2.24E-14	3.00E-03	4.38E-10	2.24E-14	3.00E-03	4.38E-10	2.24E-14	3.00E-03	4.38E-10	2.24E-14
Barium	2.99E+02	6.55E-09	NA	2.99E+02	6.55E-09	NA	2.99E+02	6.55E-09	NA	2.99E+02	6.55E-09	NA
Chlorobenzene	3.00E-03	9.39E-13	NA	3.00E-03	9.39E-13	NA	3.00E-03	9.39E-13	NA	3.00E-03	9.39E-13	NA
Chloromethane	2.00E-03	3.37E-13	NA	2.00E-03	3.37E-13	NA	2.00E-03	3.37E-13	NA	2.00E-03	3.37E-13	NA
4-Chloro-3-methylphenol	2.50E-01	2.19E-11	NA	2.50E-01	2.19E-11	NA	2.50E-01	2.19E-11	NA	2.50E-01	2.19E-11	NA
Chromium	6.80E+01	1.04E-05	1.25E-09	6.80E+01	1.04E-05	1.25E-09	6.80E+01	1.04E-05	1.25E-09	6.80E+01	1.04E-05	1.25E-09
4,4'-DDD	3.60E-02	NA	3.79E-15	3.60E-02	NA	3.79E-15	3.60E-02	NA	3.79E-15	3.60E-02	NA	3.79E-15
4,4'-DDE	8.00E-03	NA	1.19E-15	8.00E-03	NA	1.19E-15	8.00E-03	NA	1.19E-15	8.00E-03	NA	1.19E-15
4,4'-DDT	1.90E-02	1.67E-10	2.83E-15	1.90E-02	1.67E-10	2.83E-15	1.90E-02	1.67E-10	2.83E-15	1.90E-02	1.67E-10	2.83E-15
delta-BHC	3.00E-03	4.38E-11	NA	3.00E-03	4.38E-11	NA	3.00E-03	4.38E-11	NA	3.00E-03	4.38E-11	NA
Dibenzofuran	1.90E+00	4.16E-09	NA	1.90E+00	4.16E-09	NA	1.90E+00	4.16E-09	NA	1.90E+00	4.16E-09	NA
1,2-Dichloropropane	2.00E-03	1.27E-12	NA	2.00E-03	1.27E-12	NA	2.00E-03	1.27E-12	NA	2.00E-03	1.27E-12	NA
1,2-Dichlorobenzene	2.00E-03	3.81E-14	2.10E-17	2.00E-03	3.81E-14	2.10E-17	2.00E-03	3.81E-14	2.10E-17	2.00E-03	3.81E-14	2.10E-17
1,4-Dichlorobenzene	4.00E-03	1.59E-11	NA	4.00E-03	1.59E-11	NA	4.00E-03	1.59E-11	NA	4.00E-03	1.59E-11	NA
4,6-Dinitro-2-methylphenol	1.50E+00	6.58E-08	NA	1.50E+00	6.58E-08	NA	1.50E+00	6.58E-08	NA	1.50E+00	6.58E-08	NA
2,4-Dinitrophenol	6.30E-01	1.38E-09	NA	6.30E-01	1.38E-09	NA	6.30E-01	1.38E-09	NA	6.30E-01	1.38E-09	NA
Endosulfan II	1.40E-02	1.02E-11	NA	1.40E-02	1.02E-11	NA	1.40E-02	1.02E-11	NA	1.40E-02	1.02E-11	NA
Endosulfan Sulfate	1.40E-02	1.02E-11	NA	1.40E-02	1.02E-11	NA	1.40E-02	1.02E-11	NA	1.40E-02	1.02E-11	NA
Endrin	3.60E-02	5.26E-10	NA	3.60E-02	5.26E-10	NA	3.60E-02	5.26E-10	NA	3.60E-02	5.26E-10	NA
Endrin Aldehyde	3.30E-02	4.82E-10	NA	3.30E-02	4.82E-10	NA	3.30E-02	4.82E-10	NA	3.30E-02	4.82E-10	NA
Ethylbenzene	2.10E+00	3.17E-11	NA	2.10E+00	3.17E-11	NA	2.10E+00	3.17E-11	NA	2.10E+00	3.17E-11	NA
Isopropylbenzene	3.30E-02	1.45E-12	NA	3.30E-02	1.45E-12	NA	3.30E-02	1.45E-12	NA	3.30E-02	1.45E-12	NA
Manganese	8.52E+02	2.61E-04	NA	8.52E+02	2.61E-04	NA	8.52E+02	2.61E-04	NA	8.52E+02	2.61E-04	NA
Methylene Chloride	7.40E-02	3.77E-13	5.34E-17	7.40E-02	3.77E-13	5.34E-17	7.40E-02	3.77E-13	5.34E-17	7.40E-02	3.77E-13	5.34E-17
4-Nitrophenol	2.50E-01	1.37E-10	NA	2.50E-01	1.37E-10	NA	2.50E-01	1.37E-10	NA	2.50E-01	1.37E-10	NA
Phenol	1.20E-02	1.75E-13	NA	1.20E-02	1.75E-13	NA	1.20E-02	1.75E-13	NA	1.20E-02	1.75E-13	NA
Tetrachloroethene	8.00E-03	3.19E-13	7.36E-17	8.00E-03	3.19E-13	7.36E-17	8.00E-03	3.19E-13	7.36E-17	8.00E-03	3.19E-13	7.36E-17
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	2.26E-11	NA	1.55E-01	2.26E-11	NA	1.55E-01	2.26E-11	NA	1.55E-01	2.26E-11	NA
Toluene	2.80E-02	8.77E-14	NA	2.80E-02	8.77E-14	NA	2.80E-02	8.77E-14	NA	2.80E-02	8.77E-14	NA
1,2,4-Trichlorobenzene	1.00E-03	3.99E-12	NA	1.00E-03	3.99E-12	NA	1.00E-03	3.99E-12	NA	1.00E-03	3.99E-12	NA
1,1,1-Trichloroethane	5.00E-03	3.48E-14	NA	5.00E-03	3.48E-14	NA	5.00E-03	3.48E-14	NA	5.00E-03	3.48E-14	NA
Trichlorofluoromethane	2.00E-03	4.38E-14	NA	2.00E-03	4.38E-14	NA	2.00E-03	4.38E-14	NA	2.00E-03	4.38E-14	NA
2,4,5-Trichlorophenol	1.60E-01	7.01E-12	NA	1.60E-01	7.01E-12	NA	1.60E-01	7.01E-12	NA	1.60E-01	7.01E-12	NA
2,4,6-Trichlorophenol	3.50E-01	1.53E-08	1.66E-15	3.50E-01	1.53E-08	1.66E-15	3.50E-01	1.53E-08	1.66E-15	3.50E-01	1.53E-08	1.66E-15
1,2,4-Trimethylbenzene	4.40E-02	1.13E-10	NA	4.40E-02	1.13E-10	NA	4.40E-02	1.13E-10	NA	4.40E-02	1.13E-10	NA
Total Xylenes	2.00E-03	3.07E-13	NA	2.00E-03	3.07E-13	NA	2.00E-03	3.07E-13	NA	2.00E-03	3.07E-13	NA
1,2,3,4,6,7,8-HpCDD	2.35E-02	NA	1.54E-11	1.43E-02	NA	9.38E-12	8.85E-03	NA	5.82E-12	1.01E-02	NA	6.67E-12
1,2,3,4,6,7,8-HpCDF	3.85E-03	NA	2.53E-12	2.90E-03	NA	1.91E-12	3.17E-03	NA	2.08E-12	1.86E-03	NA	1.22E-12
1,2,3,4,7,8,9-HpCDF	3.25E-04	NA	2.14E-13	2.58E-04	NA	1.69E-13	3.19E-04	NA	2.10E-13	1.35E-04	NA	8.90E-14
1,2,3,4,7,8-HxCDD	6.80E-05	NA	4.47E-13	5.46E-05	NA	3.59E-13	3.78E-05	NA	2.49E-13	1.08E-04	NA	7.07E-13
1,2,3,4,7,8-HxCDF	2.91E-04	NA	1.92E-12	2.47E-04	NA	1.62E-12	4.47E-04	NA	2.94E-12	1.12E-04	NA	7.39E-13
1,2,3,6,7,8-HxCDD	6.00E-04	NA	3.94E-12	4.65E-04	NA	3.06E-12	3.52E-04	NA	2.31E-12	3.75E-04	NA	2.47E-12
1,2,3,6,7,8-HxCDF	8.93E-05	NA	5.87E-13	6.94E-05	NA	4.56E-13	9.97E-05	NA	6.56E-13	4.70E-05	NA	3.09E-13
1,2,3,7,8,9-HxCDD	1.37E-04	NA	9.01E-13	9.55E-05	NA	6.28E-13	7.44E-05	NA	4.89E-13	1.70E-04	NA	1.12E-12
1,2,3,7,8,9-HxCDF	1.12E-04	NA	7.36E-13	1.12E-04	NA	7.39E-13	9.85E-05	NA	6.48E-13	2.83E-05	NA	1.86E-13
1,2,3,7,8-PeCDD	1.69E-05	NA	1.11E-12	1.46E-05	NA	9.59E-13	1.10E-05	NA	7.25E-13	3.48E-05	NA	2.29E-12
1,2,3,7,8-PeCDF	3.01E-05	NA	5.93E-14	3.84E-05	NA	7.58E-14	2.59E-05	NA	5.11E-14	1.13E-05	NA	2.23E-14
2,3,4,6,7,8-HxCDF	1.36E-04	NA	8.95E-13	1.15E-04	NA	7.56E-13	1.68E-04	NA	1.10E-12	6.83E-05	NA	4.49E-13
2,3,4,7,8-PeCDF	5.91E-05	NA	1.16E-12	8.12E-05	NA	1.60E-12	8.79E-05	NA	1.73E-12	2.09E-05	NA	4.12E-13
2,3,7,8-TCDD	2.54E-06	NA	1.67E-13	2.36E-06	NA	1.55E-13	ND	ND	ND	2.98E-06	NA	1.96E-13
2,3,7,8-TCDF	3.55E-06	NA	2.33E-14	7.61E-06	NA	5.00E-14	5.04E-06	NA	3.31E-14	2.45E-06	NA	1.61E-14
OCDD	2.00E-01	NA	3.94E-12	1.38E-01	NA	2.72E-12	9.12E-02	NA	1.80E-12	8.88E-02	NA	1.75E-12
OCDF	1.79E-02	NA	3.53E-13	1.34E-02	NA	2.65E-13	1.17E-02	NA	2.32E-13	7.12E-03	NA	1.40E-13
TCDD TEQ	5.05E-04	NA	3.32E-11	3.73E-04	NA	2.45E-11	3.20E-04	NA	2.11E-11	2.81E-04	NA	1.85E-11
Acenaphthene	4.05E-01	2.96E-11	NA	6.82E+00	4.99E-10	NA	1.30E+00	9.48E-11	NA	9.03E+00	6.60E-10	NA
Acenaphthylene	3.35E-01	4.89E-11	NA	2.39E+00	3.49E-10	NA	5.55E-01	8.11E-11	NA	6.03E+00	8.80E-10	NA
Anthracene	1.84E-01	2.69E-12	NA	6.25E+00	9.13E-11	NA	4.87E+00	7.11E-11	NA	6.08E+00	8.89E-11	NA
Benzo(a)anthracene	2.17E-01	3.18E-11	2.95E-14	3.50E+00	5.12E-10	4.76E-13	1.81E+00	2.65E-10	2.46E-13	2.69E+00	3.93E-10	3.65E-13
Benzo(a)pyrene	1.66E-01	2.43E-11	2.26E-13	1.41E+00	2.06E-10	1.91E-12	9.12E-01	1.33E-10	1.24E-12	2.15E+00	3.14E-10	2.92E-12
Benzo(b)fluoranthene	2.72E-01	3.98E-11	3.70E-14	2.84E+00	4.15E-10	3.86E-13	2.10E+00	3.07E-10	2.85E-13	3.53E+00	5.16E-10	4.80E-13
Benzo(g,h,i)perylene	2.90E-01	4.23E-11	NA	2.41E+00	3.52E-10	NA	1.65E+00	2.41E-10	NA	2.64E+00	3.86E-10	NA
Benzo(k)fluoranthene	2.81E-01	4.11E-11	3.82E-15	2.51E+00	3.66E-10	3.40E-14	7.17E-01	1.05E-10	9.75E-15	1.54E+00	2.25E-10	2.09E-14
Chrysene	3.24E-01	4.73E-11	4.40E-16	6.19E+00	9.05E-10	8.42E-15	2.79E+00	4.07E-10	3.78E-15	3.80E+00	5.55E-10	5.16E-15
Dibenz(a,h)anthracene	7.32E-01	1.07E-10	9.95E-13	2.43E+00	3.55E-10	3.30E-12	2.57E+00	3.76E-10	3.50E-12	2.76E+00	4.04E-10	3.76E-12
Fluoranthene	2.04E-01	2.23E-11	NA	1.64E+01	1.80E-09	NA	7.03E+00	7.71E-10	NA	1.51E+01	1.66E-09	NA
Fluorene	3.22E-01	3.53E-11	NA	7.05E+00	7.72E-10	NA	1.74E+00	1.90E-10	NA	2.32E+00	2.54E-10	NA
Indeno(1,2,3-cd)pyrene	3.07E-01	4.49E-11	4.18E-14	2.38E+00	3.47E-10	3.23E-13	1.11E+00	1.63E-10	1.51E-13	2.41E+00	3.52E-10	3.27E-13
1-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.91E+01	9.77E-08	NA
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.28E+01	1.17E-07	NA
Naphthalene	3.53E-01	1.81E-09	NA	5.73E+00	2.93E-08	NA	5.05E-01	2.59E-09	NA	6.12E+00	3.13E-08	NA
Phenanthrene	2.26E-01	3.30E-11	NA	2.05E+01	2.99E-09	NA	2.19E+00	3.20E-10	NA	4.59E+00	6.71E-10	NA
Pyrene	3.27E-01	4.78E-11	NA	1.18E+01	1.72E-09	NA	5.34E+00	7.80E-10	NA	9.52E+00	1.39E-09	NA
BaP-TE	8.94E-01	1.31E-10	1.22E-12	3.98E+00	5.81E-10	5.41E-12	3.98E+00	5.81E-10	5.40E-12	5.56E+00	8.13E-10	7.56E-12
Pentachlorophenol	2.38E+00	3.47E-10	NA	2.79E+01	4.08E-09	NA	4.16E+01	6.08E-09	NA	1.28E+01	1.86E-09	NA
Total		2.72E-04	1.29E-09		2.72E-04	1.28E-09		2.72E-04	1.28E-09		2.72E-04	1.28E-09

Table C-13
SITE-WIDE & AREA-SPECIFIC RISKS
INHALATION OF VOLATILES
TRESPASSER

Constituent	Site-Wide			Area A			Area B			Area C			Area F		
	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	8.68E-08	4.43E-12	3.00E-03	8.68E-08	4.43E-12	3.00E-03	8.68E-08	4.43E-12	3.00E-03	8.68E-08	4.43E-12	3.00E-03	8.68E-08	4.43E-12
Barium	2.99E+02	NA	NA	2.99E+02	NA	NA	2.99E+02	NA	NA	2.99E+02	NA	NA	2.99E+02	NA	NA
Chlorobenzene	3.00E-03	2.11E-07	NA	3.00E-03	2.11E-07	NA	3.00E-03	2.11E-07	NA	3.00E-03	2.11E-07	NA	3.00E-03	2.11E-07	NA
Chloromethane	2.00E-03	4.59E-07	NA	2.00E-03	4.59E-07	NA	2.00E-03	4.59E-07	NA	2.00E-03	4.59E-07	NA	2.00E-03	4.59E-07	NA
4-Chloro-3-methylphenol	2.50E-01	3.28E-08	NA	2.50E-01	3.28E-08	NA	2.50E-01	3.28E-08	NA	2.50E-01	3.28E-08	NA	2.50E-01	3.28E-08	NA
Chromium	6.80E+01	NA	NA	6.80E+01	NA	NA	6.80E+01	NA	NA	6.80E+01	NA	NA	6.80E+01	NA	NA
4,4'-DDD	3.60E-02	NA	2.24E-13	3.60E-02	NA	2.24E-13	3.60E-02	NA	2.24E-13	3.60E-02	NA	2.24E-13	3.60E-02	NA	2.24E-13
4,4'-DDE	8.00E-03	NA	6.58E-14	8.00E-03	NA	6.58E-14	8.00E-03	NA	6.58E-14	8.00E-03	NA	6.58E-14	8.00E-03	NA	6.58E-14
4,4'-DDT	1.90E-02	7.52E-09	1.28E-13	1.90E-02	7.52E-09	1.28E-13	1.90E-02	7.52E-09	1.28E-13	1.90E-02	7.52E-09	1.28E-13	1.90E-02	7.52E-09	1.28E-13
delta-BHC	3.00E-03	1.30E-07	NA	3.00E-03	1.30E-07	NA	3.00E-03	1.30E-07	NA	3.00E-03	1.30E-07	NA	3.00E-03	1.30E-07	NA
Dibenzofuran	1.90E+00	7.85E-05	NA	1.90E+00	7.85E-05	NA	1.90E+00	7.85E-05	NA	1.90E+00	7.85E-05	NA	1.90E+00	7.85E-05	NA
1,2-Dichlorobenzene	2.00E-03	1.20E-07	NA	2.00E-03	1.20E-07	NA	2.00E-03	1.20E-07	NA	2.00E-03	1.20E-07	NA	2.00E-03	1.20E-07	NA
1,4-Dichlorobenzene	2.00E-03	7.06E-08	3.90E-11	2.00E-03	7.06E-08	3.90E-11	2.00E-03	7.06E-08	3.90E-11	2.00E-03	7.06E-08	3.90E-11	2.00E-03	7.06E-08	3.90E-11
1,2-Dichloropropane	4.00E-03	6.77E-06	NA	4.00E-03	6.77E-06	NA	4.00E-03	6.77E-06	NA	4.00E-03	6.77E-06	NA	4.00E-03	6.77E-06	NA
4,6-Dinitro-2-methylphenol	1.50E+00	7.82E-04	NA	1.50E+00	7.82E-04	NA	1.50E+00	7.82E-04	NA	1.50E+00	7.82E-04	NA	1.50E+00	7.82E-04	NA
2,4-Dinitrophenol	6.30E-01	2.20E-05	NA	6.30E-01	2.20E-05	NA	6.30E-01	2.20E-05	NA	6.30E-01	2.20E-05	NA	6.30E-01	2.20E-05	NA
Endosulfan II	1.40E-02	1.72E-08	NA	1.40E-02	1.72E-08	NA	1.40E-02	1.72E-08	NA	1.40E-02	1.72E-08	NA	1.40E-02	1.72E-08	NA
Endosulfan Sulfate	1.40E-02	1.72E-08	NA	1.40E-02	1.72E-08	NA	1.40E-02	1.72E-08	NA	1.40E-02	1.72E-08	NA	1.40E-02	1.72E-08	NA
Endrin	3.60E-02	3.22E-07	NA	3.60E-02	3.22E-07	NA	3.60E-02	3.22E-07	NA	3.60E-02	3.22E-07	NA	3.60E-02	3.22E-07	NA
Endrin Aldehyde	3.30E-02	2.95E-07	NA	3.30E-02	2.95E-07	NA	3.30E-02	2.95E-07	NA	3.30E-02	2.95E-07	NA	3.30E-02	2.95E-07	NA
Ethylbenzene	2.10E+00	8.24E-06	NA	2.10E+00	8.24E-06	NA	2.10E+00	8.24E-06	NA	2.10E+00	8.24E-06	NA	2.10E+00	8.24E-06	NA
Isopropylbenzene	3.30E-02	2.83E-07	NA	3.30E-02	2.83E-07	NA	3.30E-02	2.83E-07	NA	3.30E-02	2.83E-07	NA	3.30E-02	2.83E-07	NA
Manganese	8.52E+02	NA	NA	8.52E+02	NA	NA	8.52E+02	NA	NA	8.52E+02	NA	NA	8.52E+02	NA	NA
Methylene Chloride	7.40E-02	2.62E-07	3.71E-11	7.40E-02	2.62E-07	3.71E-11	7.40E-02	2.62E-07	3.71E-11	7.40E-02	2.62E-07	3.71E-11	7.40E-02	2.62E-07	3.71E-11
4-Nitrophenol	2.50E-01	1.47E-06	NA	2.50E-01	1.47E-06	NA	2.50E-01	1.47E-06	NA	2.50E-01	1.47E-06	NA	2.50E-01	1.47E-06	NA
Phenol	1.20E-02	1.49E-09	NA	1.20E-02	1.49E-09	NA	1.20E-02	1.49E-09	NA	1.20E-02	1.49E-09	NA	1.20E-02	1.49E-09	NA
Tetrachloroethene	8.00E-03	1.83E-07	4.23E-11	8.00E-03	1.83E-07	4.23E-11	8.00E-03	1.83E-07	4.23E-11	8.00E-03	1.83E-07	4.23E-11	8.00E-03	1.83E-07	4.23E-11
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	1.75E-07	NA	1.55E-01	1.75E-07	NA	1.55E-01	1.75E-07	NA	1.55E-01	1.75E-07	NA	1.55E-01	1.75E-07	NA
Toluene	2.80E-02	3.14E-08	NA	2.80E-02	3.14E-08	NA	2.80E-02	3.14E-08	NA	2.80E-02	3.14E-08	NA	2.80E-02	3.14E-08	NA
1,2,4-Trichlorobenzene	1.00E-03	1.27E-07	NA	1.00E-03	1.27E-07	NA	1.00E-03	1.27E-07	NA	1.00E-03	1.27E-07	NA	1.00E-03	1.27E-07	NA
1,1,1-Trichloroethane	5.00E-03	2.35E-08	NA	5.00E-03	2.35E-08	NA	5.00E-03	2.35E-08	NA	5.00E-03	2.35E-08	NA	5.00E-03	2.35E-08	NA
Trichlorofluoromethane	2.00E-03	6.04E-08	NA	2.00E-03	6.04E-08	NA	2.00E-03	6.04E-08	NA	2.00E-03	6.04E-08	NA	2.00E-03	6.04E-08	NA
2,4,5-Trichlorophenol	1.60E-01	1.39E-08	NA	1.60E-01	1.39E-08	NA	1.60E-01	1.39E-08	NA	1.60E-01	1.39E-08	NA	1.60E-01	1.39E-08	NA
2,4,6-Trichlorophenol	3.50E-01	1.39E-04	1.51E-11	3.50E-01	1.39E-04	1.51E-11	3.50E-01	1.39E-04	1.51E-11	3.50E-01	1.39E-04	1.51E-11	3.50E-01	1.39E-04	1.51E-11
1,2,4-Trimethylbenzene	4.40E-02	1.27E-05	NA	4.40E-02	1.27E-05	NA	4.40E-02	1.27E-05	NA	4.40E-02	1.27E-05	NA	4.40E-02	1.27E-05	NA
Total Xylenes	2.00E-03	7.02E-08	NA	2.00E-03	7.02E-08	NA	2.00E-03	7.02E-08	NA	2.00E-03	7.02E-08	NA	2.00E-03	7.02E-08	NA
1,2,3,4,6,7,8-HpCDD	1.11E-02	NA	5.23E-10	7.05E-03	NA	3.33E-10	1.23E-02	NA	5.81E-10	5.40E-04	NA	2.55E-11	1.12E-02	NA	5.30E-10
1,2,3,4,6,7,8-HpCDF	2.05E-03	NA	9.68E-11	1.11E-03	NA	5.24E-11	2.68E-03	NA	1.26E-10	2.80E-04	NA	1.32E-11	1.97E-03	NA	9.29E-11
1,2,3,4,7,8,9-HpCDF	1.72E-04	NA	8.11E-12	1.01E-04	NA	4.75E-12	2.15E-04	NA	1.02E-11	1.90E-05	NA	8.97E-13	1.33E-04	NA	6.30E-12
1,2,3,4,7,8-HxCDD	6.11E-05	NA	2.89E-11	2.90E-05	NA	1.37E-11	7.21E-05	NA	3.41E-11	2.50E-06	NA	1.18E-12	1.33E-04	NA	6.30E-11
1,2,3,4,7,8-HxCDF	1.64E-04	NA	7.73E-11	9.90E-05	NA	4.68E-11	1.97E-04	NA	9.28E-11	2.60E-05	NA	1.23E-11	1.03E-04	NA	4.85E-11
1,2,3,6,7,8-HxCDD	3.36E-04	NA	1.59E-10	2.10E-04	NA	9.92E-11	3.43E-04	NA	1.62E-10	2.00E-05	NA	9.45E-12	4.45E-04	NA	2.10E-10
1,2,3,6,7,8-HxCDF	4.98E-05	NA	2.35E-11	1.60E-05	NA	7.56E-12	4.90E-05	NA	2.32E-11	4.10E-06	NA	1.94E-12	5.39E-05	NA	2.54E-11
1,2,3,7,8,9-HxCDD	1.03E-04	NA	4.85E-11	2.40E-05	NA	1.13E-11	1.22E-04	NA	5.77E-11	2.15E-06	NA	1.02E-12	2.11E-04	NA	9.97E-11
1,2,3,7,8,9-HxCDF	5.47E-05	NA	2.58E-11	4.50E-06	NA	2.13E-12	4.53E-05	NA	2.14E-11	5.90E-06	NA	2.79E-12	2.85E-05	NA	1.35E-11
1,2,3,7,8-PeCDD	1.83E-05	NA	8.65E-11	3.10E-06	NA	1.46E-11	2.35E-05	NA	1.11E-10	ND	ND	ND	4.30E-05	NA	2.03E-10
1,2,3,7,8-PeCDF	1.68E-05	NA	2.38E-12	9.30E-06	NA	1.32E-12	1.57E-05	NA	2.23E-12	1.80E-06	NA	2.55E-13	1.16E-05	NA	1.65E-12
2,3,4,6,7,8-HxCDF	7.61E-05	NA	3.60E-11	1.34E-05	NA	6.33E-12	9.15E-05	NA	4.32E-11	2.00E-06	NA	9.45E-13	7.52E-05	NA	3.55E-11
2,3,4,7,8-PeCDF	3.53E-05	NA	5.00E-11	9.10E-06	NA	1.29E-11	3.67E-05	NA	5.20E-11	2.10E-06	NA	2.98E-12	1.92E-05	NA	2.72E-11
2,3,7,8-TCDD	2.05E-06	NA	9.70E-12	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.34E-06	NA	1.58E-11
2,3,7,8-TCDF	2.92E-06	NA	1.38E-12	8.75E-07	NA	4.13E-13	3.46E-06	NA	1.63E-12	ND	ND	ND	2.37E-06	NA	1.12E-12
OCDD	9.78E-02	NA	1.39E-10	7.45E-02	NA	1.06E-10	1.38E-01	NA	1.96E-10	7.30E-03	NA	1.03E-11	8.96E-02	NA	1.27E-10
OCDF	8.69E-03	NA	1.23E-11	4.50E-03	NA	6.38E-12	1.21E-02	NA	1.71E-11	7.90E-04	NA	1.12E-12	7.05E-03	NA	9.99E-12
TCDD TEQ	2.73E-04	NA	1.29E-09	1.52E-04	NA	7.20E-10	3.26E-04	NA	1.54E-09	1.91E-05	NA	9.02E-11	3.16E-04	NA	1.49E-09
Acenaphthene	5.24E+00	2.41E-06	NA	6.16E+00	2.83E-06	NA	4.27E+00	1.96E-06	NA	ND	ND	ND	1.42E+01	6.50E-06	NA
Acenaphthylene	3.68E+00	3.00E-06	NA	6.28E+00	5.12E-06	NA	1.72E+00	1.40E-06	NA	ND	ND	ND	9.73E+00	7.94E-06	NA
Anthracene	4.28E+00	1.10E-07	NA	7.02E+00	1.80E-07	NA	4.04E+00	1.04E-07	NA	ND	ND	ND	8.79E+00	2.25E-07	NA
Benzo(a)anthracene	1.83E+00	3.92E-08	3.64E-11	2.09E+00	4.49E-08	4.17E-11	2.27E+00	4.86E-08	4.52E-11	9.51E-02	2.04E-09	1.90E-12	3.60E+00	7.72E-08	7.18E-11
Benzo(a)pyrene	1.52E+00	1.25E-08	1.16E-10	2.41E+00	1.98E-08	1.84E-10	1.93E+00	1.58E-08	1.47E-10	1.17E-01	9.55E-10	8.88E-12	2.63E+00	2.16E-08	2.01E-10
Benzo(b)fluoranthene	2.59E+00	1.13E-07	1.05E-10	4.02E+00	1.76E-07	1.64E-10	3.27E+00	1.43E-07	1.33E-10	1.63E-01	7.16E-09	6.66E-12	4.26E+00	1.86E-07	1.73E-10
Benzo(g,h,i)perylene	2.04E+00	2.08E-08	NA	3.54E+00	3.60E-08	NA	2.36E+00	2.40E-08	NA	1.61E-01	1.64E-09	NA	3.19E+00	3.24E-08	NA
Benzo(k)fluoranthene	1.00E+00	5.18E-09	4.81E-13	7.71E-01	3.98E-09	3.71E-13	8.99E-01	4.64E-09	4.32E-13	1.00E-01	5.18E-10	4.82E-14	2.19E+00	1.13E-08	1.05E-12
Chrysene	3.50E+00	2.59E-07	2.41E-12	8.14E+00	6.02E-07	5.60E-12	2.97E+00	2.20E-07	2.04E-12	1.72E-01	1.27E-08	1.18E-13	5.06E+00	3.74E-07	3.48E-12
Dibenz(a,h)anthracene	2.00E+00	3.93E-09	3.66E-11	2.56E+00	5.02E-09	4.67E-11	3.88E+00	7.62E-09	7.08E-11	1.30E-01	2.56E-10	2.38E-12	2.52E+00	4.94E-09	4.60E-11
Fluoranthene	8.70E+00	4.26E-07	NA	5.05E+00	2.47E-07	NA	8.59E+00	4.20E-07	NA	2.14E-01	1.05E-08	NA	2.32E+01	1.14E-06	NA
Fluorene	1.66E+00	4.84E-07	NA	1.16E+00	3.40E-07	NA	2.76E+00	8.08E-07	NA	ND	ND	ND	2.69E+00	7.87E-07	NA
Indeno(1,2,3-cd)pyrene	1.78E+00	6.32E-09	5.88E-12	2.91E+00	1.03E-08	9.58E-12	2.08E+00	7.38E-09	6.87E-12	1.63E-01	5.79E-10	5.39E-13	2.96E+00	1.05E-08	9.75E-12
1-Methylnaphthalene	1.04E+01	1.15E-03	NA	ND	ND	ND	5.29E+00	5.86E-04	NA	4.24E+00	4.69E-04	NA	3.37E+01	3.73E-03	NA
2-Methylnaphthalene	1.10E+01	9.42E-04	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.40E+01	2.91E-03	NA
Naphthalene	3.81E+00	4.80E-04	NA	6.30E+00	7.94E-04	NA	2.87E+00	3.61E-04	NA	8.23E-01	1.04E-04	NA	9.51E+00	1.20E-03	NA
Phenanthrene	3.35E+00	1.78E-06	NA	1.91E+00	1.01E-06	NA	7.79E+00	4.13E-06	NA	ND	ND	ND	3.15E+00	1.67E-06	NA
Pyrene	5.89E+00	3.10E-07	NA	5.03E+00	2.64E-07	NA	6.47E+00	3.40E-07	NA	1.96E-01	1.03E-08	NA	1.39E+01	7.30E-07	NA
BaP-TE	4.03E+00	3.30E-08	3.07E-10	5.49E+00	4.50E-08	4.19E-10	6.10E+00	5.00E-08	4.65E-10	2.81E-01	2.31E-09	2.15E-11	6.09E+00	5.00E-08	4.65E-10
Pentachlorophenol	1.28E+01	3.84E-07	NA	2.47E+00	7.45E-08	NA	4.56E+00	1.38E-07	NA	1.08E+00	3.25E-08	NA	2.05E+01	6.17E-07	NA
Total		3.63E-03	1.74E-09		1.86E-03	1.28E-09		2.01E-03	2.14E-09		1.63E-03	2.50E-10		8.90E-03	2.10E-09

Table C-13
SITE-WIDE & AREA-SPECIFIC RISKS
INHALATION OF VOLATILES
TRESPASSER

Constituent	Area G			Area H			Area S			Area B/F		
	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	8.68E-08	4.43E-12	3.00E-03	8.68E-08	4.43E-12	3.00E-03	8.68E-08	4.43E-12	3.00E-03	8.68E-08	4.43E-12
Barium	2.99E+02	NA	NA	2.99E+02	NA	NA	2.99E+02	NA	NA	2.99E+02	NA	NA
Chlorobenzene	3.00E-03	2.11E-07	NA	3.00E-03	2.11E-07	NA	3.00E-03	2.11E-07	NA	3.00E-03	2.11E-07	NA
Chloromethane	2.00E-03	4.59E-07	NA	2.00E-03	4.59E-07	NA	2.00E-03	4.59E-07	NA	2.00E-03	4.59E-07	NA
4-Chloro-3-methylphenol	2.50E-01	3.28E-08	NA	2.50E-01	3.28E-08	NA	2.50E-01	3.28E-08	NA	2.50E-01	3.28E-08	NA
Chromium	6.80E+01	NA	NA	6.80E+01	NA	NA	6.80E+01	NA	NA	6.80E+01	NA	NA
4,4'-DDD	3.60E-02	NA	2.24E-13	3.60E-02	NA	2.24E-13	3.60E-02	NA	2.24E-13	3.60E-02	NA	2.24E-13
4,4'-DDE	8.00E-03	NA	6.58E-14	8.00E-03	NA	6.58E-14	8.00E-03	NA	6.58E-14	8.00E-03	NA	6.58E-14
4,4'-DDT	1.90E-02	7.52E-09	1.28E-13	1.90E-02	7.52E-09	1.28E-13	1.90E-02	7.52E-09	1.28E-13	1.90E-02	7.52E-09	1.28E-13
delta-BHC	3.00E-03	1.30E-07	NA	3.00E-03	1.30E-07	NA	3.00E-03	1.30E-07	NA	3.00E-03	1.30E-07	NA
Dibenzofuran	1.90E+00	7.85E-05	NA	1.90E+00	7.85E-05	NA	1.90E+00	7.85E-05	NA	1.90E+00	7.85E-05	NA
1,2-Dichlorobenzene	2.00E-03	1.20E-07	NA	2.00E-03	1.20E-07	NA	2.00E-03	1.20E-07	NA	2.00E-03	1.20E-07	NA
1,4-Dichlorobenzene	2.00E-03	7.06E-08	3.90E-11	2.00E-03	7.06E-08	3.90E-11	2.00E-03	7.06E-08	3.90E-11	2.00E-03	7.06E-08	3.90E-11
1,2-Dichloropropane	4.00E-03	6.77E-06	NA	4.00E-03	6.77E-06	NA	4.00E-03	6.77E-06	NA	4.00E-03	6.77E-06	NA
4,6-Dinitro-2-methylphenol	1.50E+00	7.82E-04	NA	1.50E+00	7.82E-04	NA	1.50E+00	7.82E-04	NA	1.50E+00	7.82E-04	NA
2,4-Dinitrophenol	6.30E-01	2.20E-05	NA	6.30E-01	2.20E-05	NA	6.30E-01	2.20E-05	NA	6.30E-01	2.20E-05	NA
Endosulfan II	1.40E-02	1.72E-08	NA	1.40E-02	1.72E-08	NA	1.40E-02	1.72E-08	NA	1.40E-02	1.72E-08	NA
Endosulfan Sulfate	1.40E-02	1.72E-08	NA	1.40E-02	1.72E-08	NA	1.40E-02	1.72E-08	NA	1.40E-02	1.72E-08	NA
Endrin	3.60E-02	3.22E-07	NA	3.60E-02	3.22E-07	NA	3.60E-02	3.22E-07	NA	3.60E-02	3.22E-07	NA
Endrin Aldehyde	3.30E-02	2.95E-07	NA	3.30E-02	2.95E-07	NA	3.30E-02	2.95E-07	NA	3.30E-02	2.95E-07	NA
Ethylbenzene	2.10E+00	8.24E-06	NA	2.10E+00	8.24E-06	NA	2.10E+00	8.24E-06	NA	2.10E+00	8.24E-06	NA
Isopropylbenzene	3.30E-02	2.83E-07	NA	3.30E-02	2.83E-07	NA	3.30E-02	2.83E-07	NA	3.30E-02	2.83E-07	NA
Manganese	8.52E+02	NA	NA	8.52E+02	NA	NA	8.52E+02	NA	NA	8.52E+02	NA	NA
Methylene Chloride	7.40E-02	2.62E-07	3.71E-11	7.40E-02	2.62E-07	3.71E-11	7.40E-02	2.62E-07	3.71E-11	7.40E-02	2.62E-07	3.71E-11
4-Nitrophenol	2.50E-01	1.47E-06	NA	2.50E-01	1.47E-06	NA	2.50E-01	1.47E-06	NA	2.50E-01	1.47E-06	NA
Phenol	1.20E-02	1.49E-09	NA	1.20E-02	1.49E-09	NA	1.20E-02	1.49E-09	NA	1.20E-02	1.49E-09	NA
Tetrachloroethene	8.00E-03	1.83E-07	4.23E-11	8.00E-03	1.83E-07	4.23E-11	8.00E-03	1.83E-07	4.23E-11	8.00E-03	1.83E-07	4.23E-11
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	1.75E-07	NA	1.55E-01	1.75E-07	NA	1.55E-01	1.75E-07	NA	1.55E-01	1.75E-07	NA
Toluene	2.80E-02	3.14E-08	NA	2.80E-02	3.14E-08	NA	2.80E-02	3.14E-08	NA	2.80E-02	3.14E-08	NA
1,2,4-Trichlorobenzene	1.00E-03	1.27E-07	NA	1.00E-03	1.27E-07	NA	1.00E-03	1.27E-07	NA	1.00E-03	1.27E-07	NA
1,1,1-Trichloroethane	5.00E-03	2.35E-08	NA	5.00E-03	2.35E-08	NA	5.00E-03	2.35E-08	NA	5.00E-03	2.35E-08	NA
Trichlorofluoromethane	2.00E-03	6.04E-08	NA	2.00E-03	6.04E-08	NA	2.00E-03	6.04E-08	NA	2.00E-03	6.04E-08	NA
2,4,5-Trichlorophenol	1.60E-01	1.39E-08	NA	1.60E-01	1.39E-08	NA	1.60E-01	1.39E-08	NA	1.60E-01	1.39E-08	NA
2,4,6-Trichlorophenol	3.50E-01	1.39E-04	1.51E-11	3.50E-01	1.39E-04	1.51E-11	3.50E-01	1.39E-04	1.51E-11	3.50E-01	1.39E-04	1.51E-11
1,2,4-Trimethylbenzene	4.40E-02	1.27E-05	NA	4.40E-02	1.27E-05	NA	4.40E-02	1.27E-05	NA	4.40E-02	1.27E-05	NA
Total Xylenes	2.00E-03	7.02E-08	NA	2.00E-03	7.02E-08	NA	2.00E-03	7.02E-08	NA	2.00E-03	7.02E-08	NA
1,2,3,4,6,7,8-HpCDD	2.35E-02	NA	1.11E-09	1.43E-02	NA	6.74E-10	8.85E-03	NA	4.18E-10	1.01E-02	NA	4.79E-10
1,2,3,4,6,7,8-HpCDF	3.85E-03	NA	1.82E-10	2.90E-03	NA	1.37E-10	3.17E-03	NA	1.50E-10	1.86E-03	NA	8.80E-11
1,2,3,4,7,8,9-HpCDF	3.25E-04	NA	1.53E-11	2.58E-04	NA	1.22E-11	3.19E-04	NA	1.51E-11	1.35E-04	NA	6.39E-12
1,2,3,4,7,8-HxCDD	6.80E-05	NA	3.21E-11	5.46E-05	NA	2.58E-11	3.78E-05	NA	1.79E-11	1.08E-04	NA	5.08E-11
1,2,3,4,7,8-HxCDF	2.91E-04	NA	1.38E-10	2.47E-04	NA	1.17E-10	4.47E-04	NA	2.11E-10	1.12E-04	NA	5.31E-11
1,2,3,6,7,8-HxCDD	6.00E-04	NA	2.83E-10	4.65E-04	NA	2.20E-10	3.52E-04	NA	1.66E-10	3.75E-04	NA	1.77E-10
1,2,3,6,7,8-HxCDF	8.93E-05	NA	4.22E-11	6.94E-05	NA	3.28E-11	9.97E-05	NA	4.71E-11	4.70E-05	NA	2.22E-11
1,2,3,7,8,9-HxCDD	1.37E-04	NA	6.47E-11	9.55E-05	NA	4.51E-11	7.44E-05	NA	3.51E-11	1.70E-04	NA	8.04E-11
1,2,3,7,8,9-HxCDF	1.12E-04	NA	5.29E-11	1.12E-04	NA	5.31E-11	9.85E-05	NA	4.65E-11	2.83E-05	NA	1.34E-11
1,2,3,7,8-PeCDD	1.69E-05	NA	7.99E-11	1.46E-05	NA	6.89E-11	1.10E-05	NA	5.21E-11	3.48E-05	NA	1.64E-10
1,2,3,7,8-PeCDF	3.01E-05	NA	4.26E-12	3.84E-05	NA	5.44E-12	2.59E-05	NA	3.67E-12	1.13E-05	NA	1.60E-12
2,3,4,6,7,8-HxCDF	1.36E-04	NA	6.43E-11	1.15E-04	NA	5.43E-11	1.68E-04	NA	7.93E-11	6.83E-05	NA	3.23E-11
2,3,4,7,8-PeCDF	5.91E-05	NA	8.37E-11	8.12E-05	NA	1.15E-10	8.79E-05	NA	1.24E-10	2.09E-05	NA	2.96E-11
2,3,7,8-TCDD	2.54E-06	NA	1.20E-11	2.36E-06	NA	1.12E-11	ND	ND	ND	2.98E-06	NA	1.41E-11
2,3,7,8-TCDF	3.55E-06	NA	1.68E-12	7.61E-06	NA	3.59E-12	5.04E-06	NA	2.38E-12	2.45E-06	NA	1.16E-12
OCDD	2.00E-01	NA	2.83E-10	1.38E-01	NA	1.96E-10	9.12E-02	NA	1.29E-10	8.88E-02	NA	1.26E-10
OCDF	1.79E-02	NA	2.54E-11	1.34E-02	NA	1.90E-11	1.17E-02	NA	1.66E-11	7.12E-03	NA	1.01E-11
TCDD TEQ	5.05E-04	NA	2.39E-09	3.73E-04	NA	1.76E-09	3.20E-04	NA	1.51E-09	2.81E-04	NA	1.33E-09
Acenaphthene	4.05E-01	1.86E-07	NA	6.82E+00	3.13E-06	NA	1.30E+00	5.96E-07	NA	9.03E+00	4.15E-06	NA
Acenaphthylene	3.35E-01	2.73E-07	NA	2.39E+00	1.95E-06	NA	5.55E-01	4.53E-07	NA	6.03E+00	4.91E-06	NA
Anthracene	1.84E-01	4.71E-09	NA	6.25E+00	1.60E-07	NA	4.87E+00	1.25E-07	NA	6.08E+00	1.56E-07	NA
Benzo(a)anthracene	2.17E-01	4.66E-09	4.34E-12	3.50E+00	7.51E-08	6.98E-11	1.81E+00	3.89E-08	3.61E-11	2.69E+00	5.77E-08	5.36E-11
Benzo(a)pyrene	1.66E-01	1.36E-09	1.27E-11	1.41E+00	1.15E-08	1.07E-10	9.12E-01	7.47E-09	6.95E-11	2.15E+00	1.76E-08	1.64E-10
Benzo(b)fluoranthene	2.72E-01	1.19E-08	1.11E-11	2.84E+00	1.24E-07	1.16E-10	2.10E+00	9.20E-08	8.56E-11	3.53E+00	1.55E-07	1.44E-10
Benzo(g,h,i)perylene	2.90E-01	2.95E-09	NA	2.41E+00	2.45E-08	NA	1.65E+00	1.68E-08	NA	2.64E+00	2.69E-08	NA
Benzo(k)fluoranthene	2.81E-01	1.45E-09	1.35E-13	2.51E+00	1.29E-08	1.20E-12	7.17E-01	3.70E-09	3.45E-13	1.54E+00	7.94E-09	7.38E-13
Chrysene	3.24E-01	2.39E-08	2.23E-13	6.19E+00	4.58E-07	4.26E-12	2.79E+00	2.06E-07	1.92E-12	3.80E+00	2.81E-07	2.61E-12
Dibenz(a,h)anthracene	7.32E-01	1.44E-09	1.34E-11	2.43E+00	4.77E-09	4.44E-11	2.57E+00	5.05E-09	4.70E-11	2.76E+00	5.43E-09	5.05E-11
Fluoranthene	2.04E-01	9.98E-09	NA	1.64E+01	8.03E-07	NA	7.03E+00	3.44E-07	NA	1.51E+01	7.41E-07	NA
Fluorene	3.22E-01	9.41E-08	NA	7.05E+00	2.06E-06	NA	1.74E+00	5.08E-07	NA	2.32E+00	6.78E-07	NA
Indeno(1,2,3-cd)pyrene	3.07E-01	1.09E-09	1.01E-12	2.38E+00	8.42E-09	7.84E-12	1.11E+00	3.95E-09	3.67E-12	2.41E+00	8.54E-09	7.94E-12
1-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.91E+01	2.12E-03	NA
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.28E+01	1.95E-03	NA
Naphthalene	3.53E-01	4.45E-05	NA	5.73E+00	7.22E-04	NA	5.05E-01	6.37E-05	NA	6.12E+00	7.71E-04	NA
Phenanthrene	2.26E-01	1.20E-07	NA	2.05E+01	1.09E-05	NA	2.19E+00	1.16E-06	NA	4.59E+00	2.43E-06	NA
Pyrene	3.27E-01	1.72E-08	NA	1.18E+01	6.20E-07	NA	5.34E+00	2.81E-07	NA	9.52E+00	5.00E-07	NA
BaP-TE	8.94E-01	7.33E-09	6.82E-11	3.98E+00	3.26E-08	3.03E-10	3.98E+00	3.26E-08	3.03E-10	5.56E+00	4.56E-08	4.24E-10
Pentachlorophenol	2.38E+00	7.17E-08	NA	2.79E+01	8.42E-07	NA	4.16E+01	1.25E-06	NA	1.28E+01	3.84E-07	NA
Total		1.10E-03	2.59E-09		1.80E-03	2.20E-09		1.12E-03	1.95E-09		5.90E-03	1.89E-09

Table C-14
SITE-WIDE & AREA-SPECIFIC RISKS
TOTAL RISKS: TRESPASSER

Constituent	Site-Wide			Area A			Area B			Area C			Area F		
	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	2.68E-05	1.37E-09	3.00E-03	2.68E-05	1.37E-09	3.00E-03	2.68E-05	1.37E-09	3.00E-03	2.68E-05	1.37E-09	3.00E-03	2.68E-05	1.37E-09
Barium	2.99E+02	7.45E-05	NA	2.99E+02	7.45E-05	NA	2.99E+02	7.45E-05	NA	2.99E+02	7.45E-05	NA	2.99E+02	7.45E-05	NA
Chlorobenzene	3.00E-03	2.19E-07	NA	3.00E-03	2.19E-07	NA	3.00E-03	2.19E-07	NA	3.00E-03	2.19E-07	NA	3.00E-03	2.19E-07	NA
Chloromethane	2.00E-03	4.63E-07	NA	2.00E-03	4.63E-07	NA	2.00E-03	4.63E-07	NA	2.00E-03	4.63E-07	NA	2.00E-03	4.63E-07	NA
4-Chloro-3-methylphenol	2.50E-01	4.08E-07	NA	2.50E-01	4.08E-07	NA	2.50E-01	4.08E-07	NA	2.50E-01	4.08E-07	NA	2.50E-01	4.08E-07	NA
Chromium	6.80E+01	1.91E-03	NA	6.80E+01	1.91E-03	NA	6.80E+01	1.91E-03	NA	6.80E+01	1.91E-03	NA	6.80E+01	1.91E-03	NA
4,4'-DDD	3.60E-02	NA	1.93E-10	3.60E-02	NA	1.93E-10	3.60E-02	NA	1.93E-10	3.60E-02	NA	1.93E-10	3.60E-02	NA	1.93E-10
4,4'-DDE	8.00E-03	NA	6.09E-11	8.00E-03	NA	6.09E-11	8.00E-03	NA	6.09E-11	8.00E-03	NA	6.09E-11	8.00E-03	NA	6.09E-11
4,4'-DDT	1.90E-02	8.51E-06	1.45E-10	1.90E-02	8.51E-06	1.45E-10	1.90E-02	8.51E-06	1.45E-10	1.90E-02	8.51E-06	1.45E-10	1.90E-02	8.51E-06	1.45E-10
delta-BHC	3.00E-03	2.80E-06	1.04E-10	3.00E-03	2.80E-06	1.04E-10	3.00E-03	2.80E-06	1.04E-10	3.00E-03	2.80E-06	1.04E-10	3.00E-03	2.80E-06	1.04E-10
Dibenzofuran	1.90E+00	2.08E-04	NA	1.90E+00	2.08E-04	NA	1.90E+00	2.08E-04	NA	1.90E+00	2.08E-04	NA	1.90E+00	2.08E-04	NA
1,2-Dichlorobenzene	2.00E-03	1.21E-07	NA	2.00E-03	1.21E-07	NA	2.00E-03	1.21E-07	NA	2.00E-03	1.21E-07	NA	2.00E-03	1.21E-07	NA
1,4-Dichlorobenzene	2.00E-03	7.38E-08	3.92E-11	2.00E-03	7.38E-08	3.92E-11	2.00E-03	7.38E-08	3.92E-11	2.00E-03	7.38E-08	3.92E-11	2.00E-03	7.38E-08	3.92E-11
1,2-Dichloropropane	4.00E-03	7.58E-06	6.08E-12	4.00E-03	7.58E-06	6.08E-12	4.00E-03	7.58E-06	6.08E-12	4.00E-03	7.58E-06	6.08E-12	4.00E-03	7.58E-06	6.08E-12
4,6-Dinitro-2-methylphenol	1.50E+00	1.91E-03	NA	1.50E+00	1.91E-03	NA	1.50E+00	1.91E-03	NA	1.50E+00	1.91E-03	NA	1.50E+00	1.91E-03	NA
2,4-Dinitrophenol	6.30E-01	4.56E-05	NA	6.30E-01	4.56E-05	NA	6.30E-01	4.56E-05	NA	6.30E-01	4.56E-05	NA	6.30E-01	4.56E-05	NA
Endosulfan II	1.40E-02	5.39E-07	NA	1.40E-02	5.39E-07	NA	1.40E-02	5.39E-07	NA	1.40E-02	5.39E-07	NA	1.40E-02	5.39E-07	NA
Endosulfan Sulfate	1.40E-02	5.39E-07	NA	1.40E-02	5.39E-07	NA	1.40E-02	5.39E-07	NA	1.40E-02	5.39E-07	NA	1.40E-02	5.39E-07	NA
Endrin	3.60E-02	3.24E-05	NA	3.60E-02	3.24E-05	NA	3.60E-02	3.24E-05	NA	3.60E-02	3.24E-05	NA	3.60E-02	3.24E-05	NA
Endrin Aldehyde	3.30E-02	2.97E-05	NA	3.30E-02	2.97E-05	NA	3.30E-02	2.97E-05	NA	3.30E-02	2.97E-05	NA	3.30E-02	2.97E-05	NA
Ethylbenzene	2.10E+00	9.26E-06	NA	2.10E+00	9.26E-06	NA	2.10E+00	9.26E-06	NA	2.10E+00	9.26E-06	NA	2.10E+00	9.26E-06	NA
Isopropylbenzene	3.30E-02	2.99E-07	NA	3.30E-02	2.99E-07	NA	3.30E-02	2.99E-07	NA	3.30E-02	2.99E-07	NA	3.30E-02	2.99E-07	NA
Manganese	8.52E+02	8.25E-04	NA	8.52E+02	8.25E-04	NA	8.52E+02	8.25E-04	NA	8.52E+02	8.25E-04	NA	8.52E+02	8.25E-04	NA
Methylene Chloride	7.40E-02	4.30E-07	4.47E-11	7.40E-02	4.30E-07	4.47E-11	7.40E-02	4.30E-07	4.47E-11	7.40E-02	4.30E-07	4.47E-11	7.40E-02	4.30E-07	4.47E-11
4-Nitrophenol	2.50E-01	3.81E-06	NA	2.50E-01	3.81E-06	NA	2.50E-01	3.81E-06	NA	2.50E-01	3.81E-06	NA	2.50E-01	3.81E-06	NA
Phenol	1.20E-02	6.94E-09	NA	1.20E-02	6.94E-09	NA	1.20E-02	6.94E-09	NA	1.20E-02	6.94E-09	NA	1.20E-02	6.94E-09	NA
Tetrachloroethene	8.00E-03	2.92E-07	1.01E-10	8.00E-03	2.92E-07	1.01E-10	8.00E-03	2.92E-07	1.01E-10	8.00E-03	2.92E-07	1.01E-10	8.00E-03	2.92E-07	1.01E-10
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	5.63E-07	NA	1.55E-01	5.63E-07	NA	1.55E-01	5.63E-07	NA	1.55E-01	5.63E-07	NA	1.55E-01	5.63E-07	NA
Toluene	2.80E-02	6.07E-08	NA	2.80E-02	6.07E-08	NA	2.80E-02	6.07E-08	NA	2.80E-02	6.07E-08	NA	2.80E-02	6.07E-08	NA
1,2,4-Trichlorobenzene	1.00E-03	1.32E-07	NA	1.00E-03	1.32E-07	NA	1.00E-03	1.32E-07	NA	1.00E-03	1.32E-07	NA	1.00E-03	1.32E-07	NA
1,1,1-Trichloroethane	5.00E-03	4.78E-08	NA	5.00E-03	4.78E-08	NA	5.00E-03	4.78E-08	NA	5.00E-03	4.78E-08	NA	5.00E-03	4.78E-08	NA
Trichlorofluoromethane	2.00E-03	7.01E-08	NA	2.00E-03	7.01E-08	NA	2.00E-03	7.01E-08	NA	2.00E-03	7.01E-08	NA	2.00E-03	7.01E-08	NA
2,4,5-Trichlorophenol	1.60E-01	1.34E-07	NA	1.60E-01	1.34E-07	NA	1.60E-01	1.34E-07	NA	1.60E-01	1.34E-07	NA	1.60E-01	1.34E-07	NA
2,4,6-Trichlorophenol	3.50E-01	4.02E-04	4.40E-11	3.50E-01	4.02E-04	4.40E-11	3.50E-01	4.02E-04	4.40E-11	3.50E-01	4.02E-04	4.40E-11	3.50E-01	4.02E-04	4.40E-11
1,2,4-Trimethylbenzene	4.40E-02	1.29E-05	NA	4.40E-02	1.29E-05	NA	4.40E-02	1.29E-05	NA	4.40E-02	1.29E-05	NA	4.40E-02	1.29E-05	NA
Total Xylenes	2.00E-03	7.03E-08	NA	2.00E-03	7.03E-08	NA	2.00E-03	7.03E-08	NA	2.00E-03	7.03E-08	NA	2.00E-03	7.03E-08	NA
1,2,3,4,6,7,8-HpCDD	1.11E-02	NA	1.40E-07	7.05E-03	NA	8.90E-08	1.23E-02	NA	1.55E-07	5.40E-04	NA	6.82E-09	1.12E-02	NA	1.42E-07
1,2,3,4,6,7,8-HpCDF	2.05E-03	NA	2.59E-08	1.11E-03	NA	1.40E-08	2.68E-03	NA	3.38E-08	2.80E-04	NA	3.54E-09	1.97E-03	NA	2.48E-08
1,2,3,4,7,8,9-HpCDF	1.72E-04	NA	2.17E-09	1.01E-04	NA	1.27E-09	2.15E-04	NA	2.72E-09	1.90E-05	NA	2.40E-10	1.33E-04	NA	1.68E-09
1,2,3,4,7,8-HxCDD	6.11E-05	NA	7.72E-09	2.90E-05	NA	3.66E-09	7.21E-05	NA	9.11E-09	2.50E-06	NA	3.16E-10	1.33E-04	NA	1.68E-08
1,2,3,4,7,8-HxCDF	1.64E-04	NA	2.07E-08	9.90E-05	NA	1.25E-08	1.97E-04	NA	2.48E-08	2.60E-05	NA	3.28E-09	1.03E-04	NA	1.30E-08
1,2,3,6,7,8-HxCDD	3.36E-04	NA	4.24E-08	2.10E-04	NA	2.65E-08	3.43E-04	NA	4.33E-08	2.00E-05	NA	2.53E-09	4.45E-04	NA	5.63E-08
1,2,3,6,7,8-HxCDF	4.98E-05	NA	6.29E-09	1.60E-05	NA	2.02E-09	4.90E-05	NA	6.19E-09	4.10E-06	NA	5.18E-10	5.39E-05	NA	6.80E-09
1,2,3,7,8,9-HxCDD	1.03E-04	NA	1.30E-08	2.40E-05	NA	3.03E-09	1.22E-04	NA	1.54E-08	2.15E-06	NA	2.72E-10	2.11E-04	NA	2.67E-08
1,2,3,7,8,9-HxCDF	5.47E-05	NA	6.91E-09	4.50E-06	NA	5.68E-10	4.53E-05	NA	5.72E-09	5.90E-06	NA	7.45E-10	2.85E-05	NA	3.61E-09
1,2,3,7,8-PeCDD	1.83E-05	NA	2.31E-08	3.10E-06	NA	3.91E-09	2.35E-05	NA	2.97E-08	ND	ND	ND	4.30E-05	NA	5.43E-08
1,2,3,7,8-PeCDF	1.68E-05	NA	6.36E-10	9.30E-06	NA	3.52E-10	1.57E-05	NA	5.95E-10	1.80E-06	NA	6.82E-11	1.16E-05	NA	4.40E-10
2,3,4,6,7,8-HxCDF	7.61E-05	NA	9.62E-09	1.34E-05	NA	1.69E-09	9.15E-05	NA	1.16E-08	2.00E-06	NA	2.53E-10	7.52E-05	NA	9.49E-09
2,3,4,7,8-PeCDF	3.53E-05	NA	1.34E-08	9.10E-06	NA	3.45E-09	3.67E-05	NA	1.39E-08	2.10E-06	NA	7.96E-10	1.92E-05	NA	7.26E-09
2,3,7,8-TCDD	2.05E-06	NA	2.59E-09	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.34E-06	NA	4.22E-09
2,3,7,8-TCDF	2.92E-06	NA	3.69E-10	8.75E-07	NA	1.10E-10	3.46E-06	NA	4.37E-10	ND	ND	ND	2.37E-06	NA	3.00E-10
OCDD	9.78E-02	NA	3.71E-08	7.45E-02	NA	2.82E-08	1.38E-01	NA	5.23E-08	7.30E-03	NA	2.77E-09	8.96E-02	NA	3.40E-08
OCDF	8.69E-03	NA	3.29E-09	4.50E-03	NA	1.70E-09	1.21E-02	NA	4.57E-09	7.90E-04	NA	2.99E-10	7.05E-03	NA	2.67E-09
TCDD TEQ	2.73E-04	NA	3.45E-07	1.52E-04	NA	1.92E-07	3.26E-04	NA	4.12E-07	1.91E-05	NA	2.41E-08	3.16E-04	NA	4.00E-07
Acenaphthene	5.24E+00	1.43E-05	NA	6.16E+00	1.68E-05	NA	4.27E+00	1.17E-05	NA	ND	ND	ND	1.42E+01	3.87E-05	NA
Acenaphthylene	3.68E+00	2.81E-05	NA	6.28E+00	4.79E-05	NA	1.72E+00	1.31E-05	NA	ND	ND	ND	9.73E+00	7.43E-05	NA
Anthracene	4.28E+00	2.06E-06	NA	7.02E+00	3.37E-06	NA	4.04E+00	1.94E-06	NA	ND	ND	ND	8.79E+00	4.22E-06	NA
Benzo(a)anthracene	1.83E+00	6.10E-06	8.88E-09	2.09E+00	6.99E-06	1.02E-08	2.27E+00	7.57E-06	1.10E-08	9.51E-02	3.18E-07	4.63E-10	3.60E+00	1.20E-05	1.75E-08
Benzo(a)pyrene	1.52E+00	5.07E-06	7.40E-08	2.41E+00	8.02E-06	1.17E-07	1.93E+00	6.42E-06	9.37E-08	1.17E-01	3.88E-07	5.66E-09	2.63E+00	8.77E-06	1.28E-07
Benzo(b)fluoranthene	2.59E+00	8.70E-06	1.26E-08	4.02E+00	1.35E-05	1.96E-08	3.27E+00	1.10E-05	1.60E-08	1.63E-01	5.50E-07	7.99E-10	4.26E+00	1.43E-05	2.08E-08
Benzo(g,h,i)perylene	2.04E+00	1.39E-05	NA	3.54E+00	2.42E-05	NA	2.36E+00	1.61E-05	NA	1.61E-01	1.10E-06	NA	3.19E+00	2.18E-05	NA
Benzo(k)fluoranthene	1.00E+00	3.33E-06	4.86E-10	7.71E-01	2.56E-06	3.74E-10	8.99E-01	2.99E-06	4.36E-10	1.00E-01	3.34E-07	4.87E-11	2.19E+00	7.30E-06	1.06E-09
Chrysene	3.50E+00	1.19E-05	1.72E-10	8.14E+00	2.76E-05	4.00E-10	2.97E+00	1.01E-05	1.46E-10	1.72E-01	5.83E-07	8.45E-12	5.06E+00	1.72E-05	2.49E-10
Dibenz(a,h)anthracene	2.00E+00	6.65E-06	9.71E-08	2.56E+00	8.49E-06	1.24E-07	3.88E+00	1.29E-05	1.88E-07	1.30E-01	4.32E-07	6.31E-09	2.52E+00	8.36E-06	1.22E-07
Fluoranthene	8.70E+00	3.01E-05	NA	5.05E+00	1.75E-05	NA	8.59E+00	2.97E-05	NA	2.14E-01	7.38E-07	NA	2.32E+01	8.02E-05	NA
Fluorene	1.66E+00	6.12E-06	NA	1.16E+00	4.30E-06	NA	2.76E+00	1.02E-05	NA	ND	ND	ND	2.69E+00	9.97E-06	NA
Indeno(1,2,3-cd)pyrene	1.78E+00	5.93E-06	8.65E-09	2.91E+00	9.66E-06	1.41E-08	2.08E+00	6.92E-06	1.01E-08	1.63E-01	5.43E-07	7.92E-10	2.96E+00	9.82E-06	1.43E-08
1-Methylnaphthalene	1.04E+01	1.22E-03	NA	ND	ND	ND	5.29E+00	6.22E-04	NA	4.24E+00	4.98E-04	NA	3.37E+01	3.96E-03	NA
2-Methylnaphthalene	1.10E+01	1.02E-03	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.40E+01	3.14E-03	NA
Naphthalene	3.81E+00	5.07E-04	NA	6.30E+00	8.37E-04	NA	2.87E+00	3.81E-04	NA	8.23E-01	1.09E-04	NA	9.51E+00	1.26E-03	NA
Phenanthrene	3.35E+00	2.46E-05	NA	1.91E+00	1.40E-05	NA	7.79E+00	5.72E-05	NA	ND	ND	ND	3.15E+00	2.32E-05	NA
Pyrene	5.89E+00	2.71E-05	NA	5.03E+00	2.31E-05	NA	6.47E+00	2.97E-05	NA	1.96E-01	9.00E-07	NA	1.39E+01	6.38E-05	NA
BaP-TE	4.03E+00	1.34E-05	1.96E-07	5.49E+00	1.83E-05	2.67E-07	6.10E+00	2.03E-05	2.96E-07	2.81E-01	9.37E-07	1.37E-08	6.09E+00	2.03E-05	2.96E-07
Pentachlorophenol	1.28E+01	3.23E-05	1.15E-08	2.47E+00	6.27E-06	2.23E-09	4.56E+00	1.16E-05	4.12E-09	1.08E+00	2.73E-06	9.72E-10	2.05E+01	5.19E-05	1.85E-08
Total		8.45E-03	5.54E-07		6.53E-03	4.63E-07		6.72E-03	7.14E-07		6.13E-03	4.09E-08		1.43E-02	7.16E-07

Table C-14
SITE-WIDE & AREA-SPECIFIC RISKS
TOTAL RISKS: TRESPASSER

Constituent	Area G			Area H			Area S			Area B/F		
	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk	0-1 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	2.68E-05	1.37E-09	3.00E-03	2.68E-05	1.37E-09	3.00E-03	2.68E-05	1.37E-09	3.00E-03	2.68E-05	1.37E-09
Barium	2.99E+02	7.45E-05	NA	2.99E+02	7.45E-05	NA	2.99E+02	7.45E-05	NA	2.99E+02	7.45E-05	NA
Chlorobenzene	3.00E-03	2.19E-07	NA	3.00E-03	2.19E-07	NA	3.00E-03	2.19E-07	NA	3.00E-03	2.19E-07	NA
Chloromethane	2.00E-03	4.63E-07	NA	2.00E-03	4.63E-07	NA	2.00E-03	4.63E-07	NA	2.00E-03	4.63E-07	NA
4-Chloro-3-methylphenol	2.50E-01	4.08E-07	NA	2.50E-01	4.08E-07	NA	2.50E-01	4.08E-07	NA	2.50E-01	4.08E-07	NA
Chromium	6.80E+01	1.91E-03	NA	6.80E+01	1.91E-03	NA	6.80E+01	1.91E-03	NA	6.80E+01	1.91E-03	NA
4,4'-DDD	3.60E-02	NA	1.93E-10	3.60E-02	NA	1.93E-10	3.60E-02	NA	1.93E-10	3.60E-02	NA	1.93E-10
4,4'-DDE	8.00E-03	NA	6.09E-11	8.00E-03	NA	6.09E-11	8.00E-03	NA	6.09E-11	8.00E-03	NA	6.09E-11
4,4'-DDT	1.90E-02	8.51E-06	1.45E-10	1.90E-02	8.51E-06	1.45E-10	1.90E-02	8.51E-06	1.45E-10	1.90E-02	8.51E-06	1.45E-10
delta-BHC	3.00E-03	2.80E-06	1.04E-10	3.00E-03	2.80E-06	1.04E-10	3.00E-03	2.80E-06	1.04E-10	3.00E-03	2.80E-06	1.04E-10
Dibenzofuran	1.90E+00	2.08E-04	NA	1.90E+00	2.08E-04	NA	1.90E+00	2.08E-04	NA	1.90E+00	2.08E-04	NA
1,2-Dichlorobenzene	2.00E-03	1.21E-07	NA	2.00E-03	1.21E-07	NA	2.00E-03	1.21E-07	NA	2.00E-03	1.21E-07	NA
1,4-Dichlorobenzene	2.00E-03	7.38E-08	3.92E-11	2.00E-03	7.38E-08	3.92E-11	2.00E-03	7.38E-08	3.92E-11	2.00E-03	7.38E-08	3.92E-11
1,2-Dichloropropane	4.00E-03	7.58E-06	6.08E-12	4.00E-03	7.58E-06	6.08E-12	4.00E-03	7.58E-06	6.08E-12	4.00E-03	7.58E-06	6.08E-12
4,6-Dinitro-2-methylphenol	1.50E+00	1.91E-03	NA	1.50E+00	1.91E-03	NA	1.50E+00	1.91E-03	NA	1.50E+00	1.91E-03	NA
2,4-Dinitrophenol	6.30E-01	4.56E-05	NA	6.30E-01	4.56E-05	NA	6.30E-01	4.56E-05	NA	6.30E-01	4.56E-05	NA
Endosulfan II	1.40E-02	5.39E-07	NA	1.40E-02	5.39E-07	NA	1.40E-02	5.39E-07	NA	1.40E-02	5.39E-07	NA
Endosulfan Sulfate	1.40E-02	5.39E-07	NA	1.40E-02	5.39E-07	NA	1.40E-02	5.39E-07	NA	1.40E-02	5.39E-07	NA
Endrin	3.60E-02	3.24E-05	NA	3.60E-02	3.24E-05	NA	3.60E-02	3.24E-05	NA	3.60E-02	3.24E-05	NA
Endrin Aldehyde	3.30E-02	2.97E-05	NA	3.30E-02	2.97E-05	NA	3.30E-02	2.97E-05	NA	3.30E-02	2.97E-05	NA
Ethylbenzene	2.10E+00	9.26E-06	NA	2.10E+00	9.26E-06	NA	2.10E+00	9.26E-06	NA	2.10E+00	9.26E-06	NA
Isopropylbenzene	3.30E-02	2.99E-07	NA	3.30E-02	2.99E-07	NA	3.30E-02	2.99E-07	NA	3.30E-02	2.99E-07	NA
Manganese	8.52E+02	8.25E-04	NA	8.52E+02	8.25E-04	NA	8.52E+02	8.25E-04	NA	8.52E+02	8.25E-04	NA
Methylene Chloride	7.40E-02	4.30E-07	4.47E-11	7.40E-02	4.30E-07	4.47E-11	7.40E-02	4.30E-07	4.47E-11	7.40E-02	4.30E-07	4.47E-11
4-Nitrophenol	2.50E-01	3.81E-06	NA	2.50E-01	3.81E-06	NA	2.50E-01	3.81E-06	NA	2.50E-01	3.81E-06	NA
Phenol	1.20E-02	6.94E-09	NA	1.20E-02	6.94E-09	NA	1.20E-02	6.94E-09	NA	1.20E-02	6.94E-09	NA
Tetrachloroethene	8.00E-03	2.92E-07	1.01E-10	8.00E-03	2.92E-07	1.01E-10	8.00E-03	2.92E-07	1.01E-10	8.00E-03	2.92E-07	1.01E-10
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	5.63E-07	NA	1.55E-01	5.63E-07	NA	1.55E-01	5.63E-07	NA	1.55E-01	5.63E-07	NA
Toluene	2.80E-02	6.07E-08	NA	2.80E-02	6.07E-08	NA	2.80E-02	6.07E-08	NA	2.80E-02	6.07E-08	NA
1,2,4-Trichlorobenzene	1.00E-03	1.32E-07	NA	1.00E-03	1.32E-07	NA	1.00E-03	1.32E-07	NA	1.00E-03	1.32E-07	NA
1,1,1-Trichloroethane	5.00E-03	4.78E-08	NA	5.00E-03	4.78E-08	NA	5.00E-03	4.78E-08	NA	5.00E-03	4.78E-08	NA
Trichlorofluoromethane	2.00E-03	7.01E-08	NA	2.00E-03	7.01E-08	NA	2.00E-03	7.01E-08	NA	2.00E-03	7.01E-08	NA
2,4,5-Trichlorophenol	1.60E-01	1.34E-07	NA	1.60E-01	1.34E-07	NA	1.60E-01	1.34E-07	NA	1.60E-01	1.34E-07	NA
2,4,6-Trichlorophenol	3.50E-01	4.02E-04	4.40E-11	3.50E-01	4.02E-04	4.40E-11	3.50E-01	4.02E-04	4.40E-11	3.50E-01	4.02E-04	4.40E-11
1,2,4-Trimethylbenzene	4.40E-02	1.29E-05	NA	4.40E-02	1.29E-05	NA	4.40E-02	1.29E-05	NA	4.40E-02	1.29E-05	NA
Total Xylenes	2.00E-03	7.03E-08	NA	2.00E-03	7.03E-08	NA	2.00E-03	7.03E-08	NA	2.00E-03	7.03E-08	NA
1,2,3,4,6,7,8-HpCDD	2.35E-02	NA	2.97E-07	1.43E-02	NA	1.80E-07	8.85E-03	NA	1.12E-07	1.01E-02	NA	1.28E-07
1,2,3,4,6,7,8-HpCDF	3.85E-03	NA	4.87E-08	2.90E-03	NA	3.66E-08	3.17E-03	NA	4.00E-08	1.86E-03	NA	2.35E-08
1,2,3,4,7,8,9-HpCDF	3.25E-04	NA	4.10E-09	2.58E-04	NA	3.25E-09	3.19E-04	NA	4.03E-09	1.35E-04	NA	1.71E-09
1,2,3,4,7,8-HxCDD	6.80E-05	NA	8.59E-09	5.46E-05	NA	6.90E-09	3.78E-05	NA	4.77E-09	1.08E-04	NA	1.36E-08
1,2,3,4,7,8-HxCDF	2.91E-04	NA	3.68E-08	2.47E-04	NA	3.12E-08	4.47E-04	NA	5.65E-08	1.12E-04	NA	1.42E-08
1,2,3,6,7,8-HxCDD	6.00E-04	NA	7.57E-08	4.65E-04	NA	5.87E-08	3.52E-04	NA	4.44E-08	3.75E-04	NA	4.74E-08
1,2,3,6,7,8-HxCDF	8.93E-05	NA	1.13E-08	6.94E-05	NA	8.76E-09	9.97E-05	NA	1.26E-08	4.70E-05	NA	5.94E-09
1,2,3,7,8,9-HxCDD	1.37E-04	NA	1.73E-08	9.55E-05	NA	1.21E-08	7.44E-05	NA	9.39E-09	1.70E-04	NA	2.15E-08
1,2,3,7,8,9-HxCDF	1.12E-04	NA	1.41E-08	1.12E-04	NA	1.42E-08	9.85E-05	NA	1.24E-08	2.83E-05	NA	3.57E-09
1,2,3,7,8-PeCDD	1.69E-05	NA	2.14E-08	1.46E-05	NA	1.84E-08	1.10E-05	NA	1.39E-08	3.48E-05	NA	4.39E-08
1,2,3,7,8-PeCDF	3.01E-05	NA	1.14E-09	3.84E-05	NA	1.46E-09	2.59E-05	NA	9.81E-10	1.13E-05	NA	4.29E-10
2,3,4,6,7,8-HxCDF	1.36E-04	NA	1.72E-08	1.15E-04	NA	1.45E-08	1.68E-04	NA	2.12E-08	6.83E-05	NA	8.63E-09
2,3,4,7,8-PeCDF	5.91E-05	NA	2.24E-08	8.12E-05	NA	3.08E-08	8.79E-05	NA	3.33E-08	2.09E-05	NA	7.91E-09
2,3,7,8-TCDD	2.54E-06	NA	3.21E-09	2.36E-06	NA	2.98E-09	ND	ND	ND	2.98E-06	NA	3.76E-09
2,3,7,8-TCDF	3.55E-06	NA	4.48E-10	7.61E-06	NA	9.61E-10	5.04E-06	NA	6.36E-10	2.45E-06	NA	3.09E-10
OCDD	2.00E-01	NA	7.56E-08	1.38E-01	NA	5.23E-08	9.12E-02	NA	3.45E-08	8.88E-02	NA	3.36E-08
OCDF	1.79E-02	NA	6.78E-09	1.34E-02	NA	5.08E-09	1.17E-02	NA	4.45E-09	7.12E-03	NA	2.70E-09
TCDD TEQ	5.05E-04	NA	6.38E-07	3.73E-04	NA	4.71E-07	3.20E-04	NA	4.05E-07	2.81E-04	NA	3.55E-07
Acenaphthene	4.05E-01	1.11E-06	NA	6.82E+00	1.86E-05	NA	1.30E+00	3.54E-06	NA	9.03E+00	2.47E-05	NA
Acenaphthylene	3.35E-01	2.56E-06	NA	2.39E+00	1.82E-05	NA	5.55E-01	4.24E-06	NA	6.03E+00	4.60E-05	NA
Anthracene	1.84E-01	8.83E-08	NA	6.25E+00	3.00E-06	NA	4.87E+00	2.34E-06	NA	6.08E+00	2.92E-06	NA
Benzo(a)anthracene	2.17E-01	7.26E-07	1.06E-09	3.50E+00	1.17E-05	1.70E-08	1.81E+00	6.05E-06	8.82E-09	2.69E+00	8.98E-06	1.31E-08
Benzo(a)pyrene	1.66E-01	5.54E-07	8.08E-09	1.41E+00	4.69E-06	6.84E-08	9.12E-01	3.03E-06	4.43E-08	2.15E+00	7.15E-06	1.04E-07
Benzo(b)fluoranthene	2.72E-01	9.16E-07	1.33E-09	2.84E+00	9.55E-06	1.39E-08	2.10E+00	7.07E-06	1.03E-08	3.53E+00	1.19E-05	1.73E-08
Benzo(g,h,i)perylene	2.90E-01	1.98E-06	NA	2.41E+00	1.64E-05	NA	1.65E+00	1.12E-05	NA	2.64E+00	1.80E-05	NA
Benzo(k)fluoranthene	2.81E-01	9.36E-07	1.37E-10	2.51E+00	8.33E-06	1.22E-09	7.17E-01	2.38E-06	3.48E-10	1.54E+00	5.11E-06	7.46E-10
Chrysene	3.24E-01	1.10E-06	1.59E-11	6.19E+00	2.10E-05	3.04E-10	2.79E+00	9.45E-06	1.37E-10	3.80E+00	1.29E-05	1.87E-10
Dibenz(a,h)anthracene	7.32E-01	2.43E-06	3.55E-08	2.43E+00	8.07E-06	1.18E-07	2.57E+00	8.55E-06	1.25E-07	2.76E+00	9.18E-06	1.34E-07
Fluoranthene	2.04E-01	7.05E-07	NA	1.64E+01	5.67E-05	NA	7.03E+00	2.43E-05	NA	1.51E+01	5.23E-05	NA
Fluorene	3.22E-01	1.19E-06	NA	7.05E+00	2.61E-05	NA	1.74E+00	6.43E-06	NA	2.32E+00	8.59E-06	NA
Indeno(1,2,3-cd)pyrene	3.07E-01	1.02E-06	1.49E-09	2.38E+00	7.90E-06	1.15E-08	1.11E+00	3.70E-06	5.40E-09	2.41E+00	8.00E-06	1.17E-08
1-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.91E+01	2.25E-03	NA
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.28E+01	2.10E-03	NA
Naphthalene	3.53E-01	4.69E-05	NA	5.73E+00	7.61E-04	NA	5.05E-01	6.71E-05	NA	6.12E+00	8.12E-04	NA
Phenanthrene	2.26E-01	1.66E-06	NA	2.05E+01	1.50E-04	NA	2.19E+00	1.61E-05	NA	4.59E+00	3.37E-05	NA
Pyrene	3.27E-01	1.50E-06	NA	1.18E+01	5.42E-05	NA	5.34E+00	2.45E-05	NA	9.52E+00	4.37E-05	NA
BaP-TE	8.94E-01	2.98E-06	4.34E-08	3.98E+00	1.32E-05	1.93E-07	3.98E+00	1.32E-05	1.93E-07	5.56E+00	1.85E-05	2.70E-07
Pentachlorophenol	2.38E+00	6.03E-06	2.14E-09	2.79E+01	7.08E-05	2.52E-08	4.16E+01	1.05E-04	3.75E-08	1.28E+01	3.23E-05	1.15E-08
Total		5.58E-03	6.86E-07		6.70E-03	6.91E-07		5.79E-03	6.37E-07		1.10E-02	6.39E-07

Table C-15 Unitized Risk Calculation

Scenario:	Current
Receptor:	Construction Worker
Medium:	Subsurface Soil (0-5')
Exposure Pathway:	Ingestion and Dermal Contact

ADM (mg/kg-day) = $\frac{CS \times [(IR \times FI \times AAF) + (SA \times AF \times FA \times AAF)] \times EF \times ED \times CF}{BW \times AT}$

Hazard Quotient (HQ) = ADD (mg/kg-day) / RfD (mg/kg-d)

Cancer Risk (ELCR) = ADD (mg/kg-day) * CSF [1/(mg/kg-day)]

Parameter (units)	Value
ADD: Average Daily Dose (mg/kg-day)	See Below
CS: Constituent Concentration in Soil (mg/kg)	Constituent-Specific
IR: Ingestion Rate (mg/day)	118
AAF: Absorption Adjustment Factor (Oral-Soil) (unitless)	Constituent-Specific
FI: Fraction Ingested from Site (unitless)	1
SA: Skin Surface Area (cm2/event)	2478
AF: Adherence Factor (mg/cm2)	0.139
AAF: Absorption Adjustment Factor (Dermal-Soil) (unitless)	Constituent-Specific
FA: Fraction Absorbed from Site (unitless)	1
EF: Exposure Frequency (days/year)	130
ED: Exposure Duration (years)	1
BW: Body Weight (kg)	71.8
AT: Averaging Time (days) (ED x 365 days/yr, noncancer)	365
AT: Averaging Time (days) (75 yr. x 365 days/yr, cancer)	25550
RfD: Reference Dose (mg/kg-day)	Constituent-Specific
CSF: Cancer Slope Factor [1/(mg/kg-day)]	Constituent-Specific
CF: Conversion factor (kg/mg)	1.00E-06

		Noncancer Hazard Quotient					Excess Lifetime Cancer Risk				
Constituent	Soil Concentration (mg/kg)	Oral-Soil RAF (noncancer) Chronic	Dermal-Soil RAF (noncancer) Chronic	ADD (noncancer) (mg/kg-day)	Subchronic RfD (mg/kg-day)	Soil HQ	Oral-Soil AAF (cancer)	Dermal-Soil AAF (cancer)	ADD (cancer) (mg/kg-day)	CSF [1/(mg/kg-day)]	Soil Risk (mg/kg)
Aldrin	1	1	0.25	1.01E-06	3.00E-05	3.37E-02	1	0.25	1.45E-08	1.70E+01	2.46E-07
Barium	1	1	0.001	5.87E-07	7.00E-02	8.39E-06	NA	NA	NA	NA	NA
Chlorobenzene	1	1	0	5.85E-07	2.00E-02	2.93E-05	NA	0	NA	NA	NA
Chloromethane	1	1	0	5.85E-07	2.60E-02	2.25E-05	NA	0	NA	NA	NA
4-Chloro-3-methylphenol	1	1	0.03	6.37E-07	5.00E-02	1.27E-05	NA	NA	NA	NA	NA
Chromium	1	1	0.04	6.54E-07	2.00E-02	3.27E-05	NA	NA	NA	NA	NA
4,4'-DDD	1	NA	NA	NA	NA	NA	1	0.2	1.32E-08	2.40E-01	3.18E-09
4,4'-DDE	1	NA	NA	NA	NA	NA	1	0.2	1.32E-08	3.40E-01	4.50E-09
4,4'-DDT	1	1	0.2	9.27E-07	5.00E-04	1.85E-03	1	0.2	1.32E-08	3.40E-01	4.50E-09
delta-BHC	1	1	0.25	1.01E-06	3.00E-03	3.37E-04	1	0.25	1.45E-08	1.30E+00	1.88E-08
Dibenzofuran	1	1	0.1	7.56E-07	2.00E-03	3.78E-04	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	1	1	0	5.85E-07	9.00E-02	6.50E-06	NA	0	NA	NA	NA
1,4-Dichlorobenzene	1	1	0	5.85E-07	3.00E-02	1.95E-05	1	0	8.36E-09	2.40E-02	2.01E-10
1,2-Dichloropropane	1	1	0.2	9.27E-07	3.70E-03	2.51E-04	1	0.2	1.32E-08	6.80E-02	9.01E-10
4,6-Dinitro-2-methylphenol	1	1	0.03	6.37E-07	1.00E-03	6.37E-04	NA	NA	NA	NA	NA
2,4-Dinitrophenol	1	1	0.03	6.37E-07	2.00E-03	3.18E-04	NA	NA	NA	NA	NA
Endosulfan II	1	1	0.2	9.27E-07	6.00E-03	1.55E-04	NA	NA	NA	NA	NA
Endosulfan Sulfate	1	1	0.2	9.27E-07	6.00E-03	1.55E-04	NA	NA	NA	NA	NA
Endrin	1	1	0.25	1.01E-06	3.00E-04	3.37E-03	NA	NA	NA	NA	NA
Endrin Aldehyde	1	1	0.25	1.01E-06	3.00E-04	3.37E-03	NA	NA	NA	NA	NA
Ethylbenzene	1	1	0	5.85E-07	1.00E-01	5.85E-06	NA	0	NA	NA	NA
Isopropylbenzene	1	1	0	5.85E-07	1.00E-01	5.85E-06	NA	0	NA	NA	NA
Manganese	1	1	0.05	6.71E-07	1.40E-01	4.79E-06	NA	NA	NA	NA	NA
Methylene Chloride	1	1	0.1	7.56E-07	6.00E-02	1.26E-05	1	0.1	1.08E-08	7.50E-03	8.10E-11
4-Nitrophenol	1	1	0.03	6.37E-07	8.00E-03	7.96E-05	NA	NA	NA	NA	NA
Phenol	1	1	0.1	7.56E-07	3.00E-01	2.52E-06	NA	NA	NA	NA	NA
Tetrachloroethene	1	1	0.1	7.56E-07	1.00E-01	7.56E-06	1	0.1	1.08E-08	5.40E-01	5.83E-09
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1	1	0.03	6.37E-07	3.00E-01	2.12E-06	NA	NA	NA	NA	NA
Toluene	1	1	0.04	6.54E-07	2.00E+00	3.27E-07	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	1	1	0	5.85E-07	1.00E-02	5.85E-05	NA	0	NA	NA	NA
1,1,1-Trichloroethane	1	1	0.1	7.56E-07	2.80E-01	2.70E-06	NA	NA	NA	NA	NA
Trichlorofluoromethane	1	1	0.1	7.56E-07	7.00E-01	1.08E-06	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	1	1	0.03	6.37E-07	1.00E+00	6.37E-07	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	1	1	0.03	6.37E-07	1.00E+00	6.37E-07	1	0.03	9.09E-09	1.10E-02	1.00E-10
1,2,4-Trimethylbenzene	1	1	0.1	7.56E-07	5.00E-02	1.51E-05	NA	NA	NA	NA	NA
Total Xylenes	1	1	0.04	6.54E-07	2.00E+00	3.27E-07	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HpCDD	1	NA	NA	NA	NA	NA	1	0.04	9.34E-09	1.50E+03	1.40E-05
1,2,3,4,6,7,8-HpCDF	1	NA	NA	NA	NA	NA	1	0.04	9.34E-09	1.50E+03	1.40E-05
1,2,3,4,7,8,9-HpCDF	1	NA	NA	NA	NA	NA	1	0.04	9.34E-09	1.50E+03	1.40E-05
1,2,3,4,7,8-HxCDD	1	NA	NA	NA	NA	NA	1	0.04	9.34E-09	1.50E+04	1.40E-04
1,2,3,4,7,8-HxCDF	1	NA	NA	NA	NA	NA	1	0.04	9.34E-09	1.50E+04	1.40E-04
1,2,3,6,7,8-HxCDD	1	NA	NA	NA	NA	NA	1	0.04	9.34E-09	1.50E+04	1.40E-04
1,2,3,6,7,8-HxCDF	1	NA	NA	NA	NA	NA	1	0.04	9.34E-09	1.50E+04	1.40E-04
1,2,3,7,8,9-HxCDD	1	NA	NA	NA	NA	NA	1	0.04	9.34E-09	1.50E+04	1.40E-04
1,2,3,7,8,9-HxCDF	1	NA	NA	NA	NA	NA	1	0.04	9.34E-09	1.50E+04	1.40E-04
1,2,3,7,8-PeCDD	1	NA	NA	NA	NA	NA	1	0.04	9.34E-09	1.50E+05	1.40E-03
1,2,3,7,8-PeCDF	1	NA	NA	NA	NA	NA	1	0.04	9.34E-09	4.50E+03	4.20E-05
2,3,4,6,7,8-HxCDF	1	NA	NA	NA	NA	NA	1	0.04	9.34E-09	1.50E+04	1.40E-04
2,3,4,7,8-PeCDF	1	NA	NA	NA	NA	NA	1	0.04	9.34E-09	4.50E+04	4.20E-04
2,3,7,8-TCDD	1	NA	NA	NA	NA	NA	1	0.04	9.34E-09	1.50E+05	1.40E-03
2,3,7,8-TCDF	1	NA	NA	NA	NA	NA	1	0.04	9.34E-09	1.50E+04	1.40E-04
OCDD	1	NA	NA	NA	NA	NA	1	0.04	9.34E-09	4.50E+01	4.20E-07
OCDF	1	NA	NA	NA	NA	NA	1	0.04	9.34E-09	4.50E+01	4.20E-07
TCDD TEQ	1	NA	NA	NA	NA	NA	1	0.04	9.34E-09	1.50E+05	1.40E-03
Acenaphthene	1	1	0.1	7.56E-07	6.00E-01	1.26E-06	NA	NA	NA	NA	NA
Acenaphthylene	1	1	0.1	7.56E-07	2.00E-01	3.78E-06	NA	NA	NA	NA	NA
Anthracene	1	1	0.1	7.56E-07	3.00E+00	2.52E-07	NA	NA	NA	NA	NA
Benzo(a)anthracene	1	1	0.02	6.20E-07	2.00E-01	3.10E-06	1	0.02	8.85E-09	7.30E-01	6.46E-09
Benzo(a)pyrene	1	1	0.02	6.20E-07	2.00E-01	3.10E-06	1	0.02	8.85E-09	7.30E+00	6.46E-08
Benzo(b)fluoranthene	1	1	0.02	6.20E-07	2.00E-01	3.10E-06	1	0.02	8.85E-09	7.30E-01	6.46E-09
Benzo(g,h,i)perylene	1	1	0.1	7.56E-07	2.00E-01	3.78E-06	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	1	1	0.02	6.20E-07	2.00E-01	3.10E-06	1	0.02	8.85E-09	7.30E-02	6.46E-10
Chrysene	1	1	0.02	6.20E-07	2.00E-01	3.10E-06	1	0.02	8.85E-09	7.30E-03	6.46E-11
Dibenz(a,h)anthracene	1	1	0.02	6.20E-07	2.00E-01	3.10E-06	1	0.02	8.85E-09	7.30E+00	6.46E-08
Fluoranthene	1	1	0.1	7.56E-07	4.00E-01	1.89E-06	NA	NA	NA	NA	NA
Fluorene	1	1	0.1	7.56E-07	4.00E-01	1.89E-06	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1	1	0.02	6.20E-07	2.00E-01	3.10E-06	1	0.02	8.85E-09	7.30E-01	6.46E-09
1-Methylnaphthalene	1	1	0.1	7.56E-07	2.00E-01	3.78E-06	NA	NA	NA	NA	NA
2-Methylnaphthalene	1	1	0.1	7.56E-07	2.00E-01	3.78E-06	NA	NA	NA	NA	NA
Naphthalene	1	1	0.1	7.56E-07	2.00E-01	3.78E-06	NA	NA	NA	NA	NA
Phenanthrene	1	1	0.1	7.56E-07	2.00E-01	3.78E-06	NA	NA	NA	NA	NA
Pyrene	1	1	0.1	7.56E-07	3.00E-01	2.52E-06	NA	NA	NA	NA	NA
BaP-TE	1	1	0.02	6.20E-07	2.00E-01	3.10E-06	1	0.02	8.85E-09	7.30E+00	6.46E-08
Pentachlorophenol	1	1	0.03	6.37E-07	3.00E-02	2.12E-05	1	0.03	9.09E-09	1.20E-01	1.09E-09

Table C-16 Unitized Risk Calculation

Scenario:	Current
Receptor:	Construction Worker
Medium:	Subsurface Soil (0-5')
Exposure Pathway:	Particulate Inhalation

ADD (mg/kg-d) = $\frac{CS \times RPC \times RAF \times ET \times EF \times ED \times CF}{BW \times AT}$

Hazard Quotient (HQ) = ADD (mg/kg-d) / RfDi (mg/kg-d)
Cancer Risk (ELCR) = ADD (mg/kg-d) * CSFi [1/(mg/kg-d)]

Parameter (units)	Value
ADD: Average Daily Dose (mg/kg-d)	See Below
CS: Constituent Concentration in Soil (mg/kg)	Constituent-Specific
RPC: Respirable Particulate Concentration (mg/m3)	0.0014
IF: Inhalation Rate (m3/hr)	2.5
ET: Exposure Time (hr/day)	8
EF: Exposure Frequency (days/year)	130
ED: Exposure Duration (years)	1
ATn: Averaging Time (days) (ED x 365 days/yr, noncancer)	365
ATc: Averaging Time (days) (70 yr. x 365 days/yr, cancer)	25550
CF: Conversion Factor (kg/mg)	1.00E-06
RfDi: Inhalation Reference Dose (mg/kg-d)	Constituent-Specific
CSFi: Inhalation Cancer Slope Factor [1/(mg/kg-d)]	Constituent-Specific
BW: Body Weight (kg)	71.8

			Noncancer Hazard Quotient				Excess Lifetime Cancer Risk			
Constituent	0-5 ft. Soil Concentration (mg/kg)	Dust Concentration (mg/m3)	Inhalation RAF (noncancer)	ADD (noncancer) (mg/kg-d)	subchronic RfDi (mg/kg-d)	Dust HQ	Inhalation AAF (cancer)	LADD (cancer) (mg/kg-d)	CSFi [1/(mg/kg-d)]	Dust Risk
Aldrin	1	1.4E-09	1	1.39E-10	3.00E-05	4.63E-06	1	1.9842E-12	17	3.37E-11
Barium	1	1.4E-09	1	1.39E-10	2.00E-01	6.94E-10	NA	NA	NA	NA
Chlorobenzene	1	1.4E-09	1	1.39E-10	2.00E-02	6.94E-09	NA	NA	NA	NA
Chloromethane	1	1.4E-09	1	1.39E-10	2.60E-02	5.34E-09	NA	NA	NA	NA
4-Chloro-3-methylphenol	1	1.4E-09	1	1.39E-10	5.00E-02	2.78E-09	NA	NA	NA	NA
Chromium	1	1.4E-09	1	1.39E-10	2.86E-04	4.86E-07	1	1.9842E-12	42	8.33E-11
4,4'-DDD	1	1.4E-09	NA	NA	NA	NA	1	1.9842E-12	0.24	4.76E-13
4,4'-DDE	1	1.4E-09	NA	NA	NA	NA	1	1.9842E-12	0.34	6.75E-13
4,4'-DDT	1	1.4E-09	1	1.39E-10	5.00E-04	2.78E-07	1	1.9842E-12	0.34	6.75E-13
delta-BHC	1	1.4E-09	1	1.39E-10	3.00E-04	4.63E-07	1	1.9842E-12	NA	NA
Dibenzofuran	1	1.4E-09	1	1.39E-10	2.00E-03	6.94E-08	NA	NA	NA	NA
1,2-Dichlorobenzene	1	1.4E-09	1	1.39E-10	6.90E-03	2.01E-08	NA	NA	NA	NA
1,4-Dichlorobenzene	1	1.4E-09	1	1.39E-10	2.30E-01	6.04E-10	1	1.9842E-12	0.024	4.76E-14
1,2-Dichloropropane	1	1.4E-09	1	1.39E-10	1.10E-03	1.26E-07	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	1	1.4E-09	1	1.39E-10	1.00E-03	1.39E-07	NA	NA	NA	NA
2,4-Dinitrophenol	1	1.4E-09	1	1.39E-10	2.00E-03	6.94E-08	NA	NA	NA	NA
Endosulfan II	1	1.4E-09	1	1.39E-10	6.00E-03	2.31E-08	NA	NA	NA	NA
Endosulfan Sulfate	1	1.4E-09	1	1.39E-10	6.00E-03	2.31E-08	NA	NA	NA	NA
Endrin	1	1.4E-09	1	1.39E-10	3.00E-04	4.63E-07	NA	NA	NA	NA
Endrin Aldehyde	1	1.4E-09	1	1.39E-10	3.00E-04	4.63E-07	NA	NA	NA	NA
Ethylbenzene	1	1.4E-09	1	1.39E-10	2.90E-01	4.79E-10	NA	NA	NA	NA
Isopropylbenzene	1	1.4E-09	1	1.39E-10	1.00E-01	1.39E-09	NA	NA	NA	NA
Manganese	1	1.4E-09	1	1.39E-10	1.43E-05	9.71E-06	NA	NA	NA	NA
Methylene Chloride	1	1.4E-09	1	1.39E-10	8.57E-01	1.62E-10	1	1.9842E-12	0.001645	3.26E-15
4-Nitrophenol	1	1.4E-09	1	1.39E-10	8.00E-03	1.74E-08	NA	NA	NA	NA
Phenol	1	1.4E-09	1	1.39E-10	3.00E-01	4.63E-10	NA	NA	NA	NA
Tetrachloroethene	1	1.4E-09	1	1.39E-10	1.10E-01	1.26E-09	1	1.9842E-12	0.021	4.17E-14
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1	1.4E-09	1	1.39E-10	3.00E-01	4.63E-10	NA	NA	NA	NA
Toluene	1	1.4E-09	1	1.39E-10	1.40E+00	9.92E-11	NA	NA	NA	NA
1,2,4-Trichlorobenzene	1	1.4E-09	1	1.39E-10	1.10E-03	1.26E-07	NA	NA	NA	NA
1,1,1-Trichloroethane	1	1.4E-09	1	1.39E-10	6.30E-01	2.20E-10	NA	NA	NA	NA
Trichlorofluoromethane	1	1.4E-09	1	1.39E-10	2.00E-01	6.94E-10	NA	NA	NA	NA
2,4,5-Trichlorophenol	1	1.4E-09	1	1.39E-10	1.00E-01	1.39E-09	NA	NA	NA	NA
2,4,6-Trichlorophenol	1	1.4E-09	1	1.39E-10	1.00E+00	1.39E-10	1	1.9842E-12	0.01085	2.15E-14
1,2,4-Trimethylbenzene	1	1.4E-09	1	1.39E-10	1.70E-03	8.17E-08	NA	NA	NA	NA
Total Xylenes	1	1.4E-09	1	1.39E-10	2.90E-02	4.79E-09	NA	NA	NA	NA
1,2,3,4,6,7,8-HpCDD	1	1.4E-09	NA	NA	NA	NA	1	1.9842E-12	1500.00	2.98E-09
1,2,3,4,6,7,8-HpCDF	1	1.4E-09	NA	NA	NA	NA	1	1.9842E-12	1500.00	2.98E-09
1,2,3,4,7,8,9-HpCDF	1	1.4E-09	NA	NA	NA	NA	1	1.9842E-12	1500	2.98E-09
1,2,3,4,7,8-HxCDD	1	1.4E-09	NA	NA	NA	NA	1	1.9842E-12	15000	2.98E-08
1,2,3,4,7,8-HxCDF	1	1.4E-09	NA	NA	NA	NA	1	1.9842E-12	15000	2.98E-08
1,2,3,6,7,8-HxCDD	1	1.4E-09	NA	NA	NA	NA	1	1.9842E-12	15000	2.98E-08
1,2,3,6,7,8-HxCDF	1	1.4E-09	NA	NA	NA	NA	1	1.9842E-12	15000	2.98E-08
1,2,3,7,8,9-HxCDD	1	1.4E-09	NA	NA	NA	NA	1	1.9842E-12	15000	2.98E-08
1,2,3,7,8,9-HxCDF	1	1.4E-09	NA	NA	NA	NA	1	1.9842E-12	15000	2.98E-08
1,2,3,7,8-PeCDD	1	1.4E-09	NA	NA	NA	NA	1	1.9842E-12	150000	2.98E-07
1,2,3,7,8-PeCDF	1	1.4E-09	NA	NA	NA	NA	1	1.9842E-12	4500	8.93E-09
2,3,4,6,7,8-HxCDF	1	1.4E-09	NA	NA	NA	NA	1	1.9842E-12	15000	2.98E-08
2,3,4,7,8-PeCDF	1	1.4E-09	NA	NA	NA	NA	1	1.9842E-12	45000	8.93E-08
2,3,7,8-TCDD	1	1.4E-09	NA	NA	NA	NA	1	1.9842E-12	150000	2.98E-07
2,3,7,8-TCDF	1	1.4E-09	NA	NA	NA	NA	1	1.9842E-12	15000	2.98E-08
OCDD	1	1.4E-09	NA	NA	NA	NA	1	1.9842E-12	45	8.93E-11
OCDF	1	1.4E-09	NA	NA	NA	NA	1	1.9842E-12	45	8.93E-11
TCDD TEQ	1	1.4E-09	NA	NA	NA	NA	1	1.9842E-12	150000	2.98E-07
Acenaphthene	1	1.4E-09	1	1.39E-10	6.00E-01	2.31E-10	NA	NA	NA	NA
Acenaphthylene	1	1.4E-09	1	1.39E-10	8.57E-04	1.62E-07	NA	NA	NA	NA
Anthracene	1	1.4E-09	1	1.39E-10	3.00E+00	4.63E-11	NA	NA	NA	NA
Benzo(a)anthracene	1	1.4E-09	1	1.39E-10	3.00E-02	4.63E-09	1	1.9842E-12	0.31	6.15E-13
Benzo(a)pyrene	1	1.4E-09	1	1.39E-10	3.00E-02	4.63E-09	1	1.9842E-12	3.1	6.15E-12
Benzo(b)fluoranthene	1	1.4E-09	1	1.39E-10	3.00E-02	4.63E-09	1	1.9842E-12	0.31	6.15E-13
Benzo(g,h,i)perylene	1	1.4E-09	1	1.39E-10	8.57E-04	1.62E-07	NA	NA	NA	NA
Benzo(k)fluoranthene	1	1.4E-09	1	1.39E-10	3.00E-02	4.63E-09	1	1.9842E-12	0.031	6.15E-14
Chrysene	1	1.4E-09	1	1.39E-10	3.00E-02	4.63E-09	1	1.9842E-12	0.0031	6.15E-15
Dibenz(a,h)anthracene	1	1.4E-09	1	1.39E-10	3.00E-02	4.63E-09	1	1.9842E-12	3.1	6.15E-12
Fluoranthene	1	1.4E-09	1	1.39E-10	4.00E-01	3.47E-10	NA	NA	NA	NA
Fluorene	1	1.4E-09	1	1.39E-10	4.00E-01	3.47E-10	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1	1.4E-09	1	1.39E-10	3.00E-02	4.63E-09	1	1.9842E-12	0.31	6.15E-13
1-Methylnaphthalene	1	1.4E-09	1	1.39E-10	8.57E-04	1.62E-07	NA	NA	NA	NA
2-Methylnaphthalene	1	1.4E-09	1	1.39E-10	8.57E-04	1.62E-07	NA	NA	NA	NA
Naphthalene	1	1.4E-09	1	1.39E-10	8.57E-04	1.62E-07	NA	NA	NA	NA
Phenanthrene	1	1.4E-09	1	1.39E-10	8.57E-04	1.62E-07	NA	NA	NA	NA
Pyrene	1	1.4E-09	1	1.39E-10	3.00E-01	4.63E-10	NA	NA	NA	NA
BaP-TE	1	1.4E-09	1	1.39E-10	8.57E-04	1.62E-07	1	1.9842E-12	3.1	6.15E-12
Pentachlorophenol	1	1.4E-09	1	1.39E-10	3.00E-02	4.63E-09	NA	NA	NA	NA

Table C-17 Unitized Risk Calculation

Scenario:	Current
Receptor:	Construction Worker
Medium:	Subsurface Soil (0-5')
Exposure Pathway:	Inhalation of Volatiles in Soil

$$VF = \frac{Q/C * (\pi * D_A * T)^{1/2}}{2 * \rho_b * D_A} * C \quad ([mg/m^3]/[mg/kg])$$

$$Risk = \frac{C_a * IR * EF * ED * CSFi}{ATc * BW}$$

$$D_A = \frac{[(\theta_a^{10/3} * D_a * H' + \theta_w^{10/3} * D_w) * 1/n^2]}{\rho_b * K_d + \theta_w + \theta_a * H'}$$

$$HQ = \frac{C_a * IR * EF * ED}{ATnc * BW * RfDi}$$

$$K_d = K_{oc} * F_{oc}$$

Air Concentration (ug/m3) = Soil Conc. (mg/kg) * VF [(mg/m3)/(mg/kg)]

Parameter	Value	Comment
Q/C: Inverse of the mean concentration at center of square source ((g/m2-s) / (kg/m3)) (cm)	46.92	Value for 30-acre source area in Minneapolis, MN (SSL 96)
C: Conversion factor (m2/cm2)	0.0001	
D_A: Apparent diffusivity (cm^2/s)	see below	
H': Henry's Law Coefficient (cm^3-water/cm^3-air)	see below	
ρ_b: Soil bulk density (g/cm3)	1.5	
θ_w: Water-filled soil porosity (unitless)	0.15	
θ_a: Air-filled soil porosity (unitless)	0.28	
n: Total soil porosity (cm3/cm3)	0.43	
K_d: Soil-water sorption coefficient (K/kg)	see below	
K_{oc}: organic carbon-water sorption coefficient (K/kg)	see below	
F_{oc}: Fraction organic carbon	0.015	
D_a: Molecular diffusion coefficient in air (cm^2/s)	see below	
D_w: Molecular diffusion coefficient in water (cm^2/s)	see below	
T: Exposure interval (s)	31536000	
IR: Inhalation rate (m3/d)	20	
EF: Exposure frequency (days/year)	130	
ED: Exposure duration (years)	1	
Li: Lifetime (years)	25550	
ATnc: Averaging time - noncancer (days)	365	
BW: Body weight (kg)	71.8	

								Subsurface Soil (0-5')				
Constituent	H	K_{oc}	D_a	D_w	D_A	VF	CSFi (1/(mg/kg-d)	subchronicRfDi (mg/m3)	Conc (mg/kg)	Air conc. (mg/m3)	Risk	HQ
Aldrin	7.0E-03	2450000	1.3E-02	4.9E-06	1.30E-10	1.36E+06	1.7E+01	3.00E-05	1.0	0.0000007	1.77E-08	2.43E-03
Barium	NA	NA	NA	NA	NA	NA	NA	2.00E-01	1.0	NA	NA	NA
Chlorobenzene	1.5E-01	219	7.3E-02	8.7E-06	1.68E-04	1.20E+03	NA	2.00E-02	1.0	0.0008335	NA	4.13E-03
Chloromethane	3.6E-01	14	1.3E-01	6.5E-06	6.17E-03	1.98E+02	NA	2.60E-02	1.0	0.0050448	NA	1.92E-02
4-Chloro-3-methylphenol	1.4E-05	878	6.5E-02	8.0E-06	7.43E-09	1.81E+05	NA	5.00E-02	1.0	0.0000055	NA	1.10E-05
Chromium	NA	NA	NA	NA	NA	NA	4.2E+01	2.86E-04	1.0	NA	NA	NA
4,4'-DDD	1.6E-04	1000000	1.7E-02	4.8E-06	1.16E-11	4.57E+06	2.4E-01	NA	1.0	0.0000002	7.45E-11	NA
4,4'-DDE	8.6E-04	4470000	1.4E-02	5.9E-06	1.01E-11	4.89E+06	3.4E-01	NA	1.0	0.0000002	9.86E-11	NA
4,4'-DDT	3.3E-04	2630000	1.4E-02	5.0E-06	6.78E-12	5.98E+06	3.4E-01	5.00E-04	1.0	0.0000002	8.06E-11	3.32E-05
delta-BHC	5.7E-04	1070	1.4E-02	7.3E-06	2.91E-08	9.13E+04	NA	3.00E-04	1.0	0.0000110	NA	3.62E-03
Dibenzofuran	5.3E-02	8490	5.5E-02	7.0E-06	1.18E-06	1.43E+04	NA	2.00E-03	1.0	0.0000698	NA	3.46E-03
1,2-Dichlorobenzene	7.8E-02	617	6.9E-02	7.9E-06	2.97E-05	2.86E+03	NA	6.90E-03	1.0	0.0003501	NA	5.03E-03
1,4-Dichlorobenzene	7.4E+01	617	6.9E-02	7.9E-06	1.14E-02	1.46E+02	2.4E-02	2.30E-01	1.0	0.0068584	2.33E-07	2.96E-03
1,2-Dichloropropane	1.2E-01	44	7.8E-02	8.7E-06	5.99E-04	6.36E+02	NA	1.10E-03	1.0	0.0015727	NA	1.42E-01
4,6-Dinitro-2-methylphenol	1.1E-07	0.03	5.3E-02	7.3E-06	4.71E-07	2.27E+04	NA	1.00E-03	1.0	0.0000441	NA	4.37E-03
2,4-Dinitrophenol	1.8E-05	0.01	2.7E-02	9.1E-06	8.42E-07	1.70E+04	NA	2.00E-03	1.0	0.0000589	NA	2.92E-03
Endosulfan II	4.6E-04	2140	1.2E-02	4.6E-06	9.40E-09	1.61E+05	NA	6.00E-03	1.0	0.0000062	NA	1.03E-04
Endosulfan Sulfate	4.6E-04	2140	1.2E-02	4.6E-06	9.40E-09	1.61E+05	NA	6.00E-03	1.0	0.0000062	NA	1.03E-04
Endrin	3.1E-04	12300	1.3E-02	4.7E-06	1.25E-09	4.41E+05	NA	3.00E-04	1.0	0.0000023	NA	7.50E-04
Endrin Aldehyde	3.1E-04	12300	1.3E-02	4.7E-06	1.25E-09	4.41E+05	NA	3.00E-04	1.0	0.0000023	NA	7.50E-04
Ethylbenzene	3.2E-01	363	7.5E-02	7.8E-06	2.24E-04	1.04E+03	NA	2.90E-01	1.0	0.0009610	NA	3.29E-04
Isopropylbenzene	4.7E-01	817	6.5E-02	7.1E-06	1.27E-04	1.38E+03	NA	1.00E-01	1.0	0.0007242	NA	7.18E-04
Manganese	NA	NA	NA	NA	NA	NA	NA	1.43E-05	1.0	NA	NA	NA
Methylene Chloride	9.0E-02	12	1.0E-01	1.2E-05	1.61E-03	3.88E+02	1.6E-03	8.57E-01	1.0	0.0025752	6.00E-09	2.98E-04
4-Nitrophenol	3.2E-08	3	6.7E-02	8.7E-06	3.81E-07	2.52E+04	NA	8.00E-03	1.0	0.0000396	NA	4.91E-04
Phenol	1.6E-05	29	8.2E-02	9.1E-06	2.41E-07	3.17E+04	NA	3.00E-01	1.0	0.0000315	NA	1.04E-05
Tetrachloroethene	7.5E-01	155	7.2E-02	8.2E-06	1.10E-03	4.70E+02	2.1E-02	1.10E-01	1.0	0.0021263	6.33E-08	1.92E-03
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	2.5E-04	105	2.2E-02	7.1E-06	1.98E-07	3.50E+04	NA	3.00E-01	1.0	0.0000286	NA	9.45E-06
Toluene	2.7E-01	182	8.7E-02	8.6E-06	4.25E-04	7.55E+02	NA	1.40E+00	1.0	0.0013249	NA	9.39E-05
1,2,4-Trichlorobenzene	5.8E-02	1780	3.0E-02	8.2E-06	3.37E-06	8.47E+03	NA	1.10E-03	1.0	0.0001180	NA	1.06E-02
1,1,1-Trichloroethane	7.1E-01	110	7.8E-02	8.8E-06	1.51E-03	4.00E+02	NA	6.30E-01	1.0	0.0024989	NA	3.94E-04
Trichlorofluoromethane	4.0E+00	135	8.7E-02	9.7E-06	6.31E-03	1.96E+02	NA	2.00E-01	1.0	0.0051026	NA	2.53E-03
2,4,5-Trichlorophenol	1.8E-04	1600	2.9E-02	7.0E-06	1.30E-08	1.36E+05	NA	1.00E-01	1.0	0.0000073	NA	7.27E-06
2,4,6-Trichlorophenol	3.2E-04	131	3.2E-02	6.3E-06	2.74E-07	2.97E+04	1.1E-02	1.00E+00	1.0	0.0000336	5.17E-10	3.34E-06
1,2,4-Trimethylbenzene	1.8E-01	933	6.2E-02	7.3E-06	4.19E-05	2.40E+03	NA	1.70E-03	1.0	0.0004160	NA	2.43E-02
Total Xylenes	3.0E-01	407	7.0E-02	7.8E-06	1.74E-04	1.18E+03	NA	2.90E-02	1.0	0.0008480	NA	2.90E-03
1,2,3,4,6,7,8-HpCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	3.76E+06	1.5E+03	NA	1.0	0.0000003	5.66E-07	NA
1,2,3,4,6,7,8-HpCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	3.76E+06	1.5E+03	NA	1.0	0.0000003	5.66E-07	NA
1,2,3,4,7,8,9-HpCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	3.76E+06	1.5E+03	NA	1.0	0.0000003	5.66E-07	NA
1,2,3,4,7,8-HxCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	3.76E+06	1.5E+04	NA	1.0	0.0000003	5.66E-06	NA
1,2,3,4,7,8-HxCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	3.76E+06	1.5E+04	NA	1.0	0.0000003	5.66E-06	NA
1,2,3,6,7,8-HxCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	3.76E+06	1.5E+04	NA	1.0	0.0000003	5.66E-06	NA
1,2,3,6,7,8-HxCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	3.76E+06	1.5E+04	NA	1.0	0.0000003	5.66E-06	NA
1,2,3,7,8,9-HxCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	3.76E+06	1.5E+04	NA	1.0	0.0000003	5.66E-06	NA
1,2,3,7,8,9-HxCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	3.76E+06	1.5E+04	NA	1.0	0.0000003	5.66E-06	NA
1,2,3,7,8-PeCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	3.76E+06	1.5E+05	NA	1.0	0.0000003	5.66E-05	NA
1,2,3,7,8-PeCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	3.76E+06	4.5E+03	NA	1.0	0.0000003	1.70E-06	NA
2,3,4,6,7,8-HxCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	3.76E+06	1.5E+04	NA	1.0	0.0000003	5.66E-06	NA
2,3,4,7,8-PeCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	3.76E+06	4.5E+04	NA	1.0	0.0000003	1.70E-05	NA
2,3,7,8-TCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	3.76E+06	1.5E+05	NA	1.0	0.0000003	5.66E-05	NA
2,3,7,8-TCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	3.76E+06	1.5E+04	NA	1.0	0.0000003	5.66E-06	NA
OCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	3.76E+06	4.5E+01	NA	1.0	0.0000003	1.70E-08	NA
OCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	3.76E+06	4.5E+01	NA	1.0	0.0000003	1.70E-08	NA
TCDD TEQ	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	3.76E+06	1.5E+05	NA	1.0	0.0000003	5.66E-05	NA
Acenaphthene	6.4E-03	7079	4.2E-02	7.7E-06	1.31E-07	4.29E+04	NA	6.00E-01	1.0	0.0000233	NA	3.85E-06
Acenaphthylene	4.7E-03	6918	4.4E-02	7.1E-06	1.04E-07	4.84E+04	NA	8.57E-04	1.0	0.0000207	NA	2.39E-03
Anthracene	2.7E-03	29512	3.2E-02	7.7E-06	1.02E-08	1.54E+05	NA	3.00E+00	1.0	0.0000065	NA	2.15E-07
Benzo(a)anthracene	1.4E-04	398107	5.1E-02	9.0E-06	7.17E-11	1.84E+06	3.1E-01	3.00E-02	1.0	0.0000005	2.39E-10	1.80E-06
Benzo(a)pyrene	4.6E-05	1023293	4.3E-02	9.0E-06	1.05E-11	4.81E+06	3.1E+00	3.00E-02	1.0	0.0000002	9.13E-10	6.87E-07
Benzo(b)fluoranthene	4.6E-03	1230269	2.3E-02	5.6E-06	2.99E-10	9.01E+05	3.1E-01	3.00E-02	1.0	0.0000011	4.88E-10	3.67E-06
Benzo(g,h,i)perylene	5.8E-06	1584893	4.9E-02	5.7E-05	1.61E-11	3.88E+06	NA	8.57E-04	1.0	0.0000003	NA	2.99E-05
Benzo(k)fluoranthene	3.4E-05	1230269	2.3E-02	5.6E-06	4.16E-12	7.64E+06	3.1E-02	3.00E-02	1.0	0.0000001	5.75E-12	4.33E-07
Chrysene	3.9E-03	398107	2.5E-02	6.2E-06	8.52E-10	5.33E+05	3.1E-03	3.00E-02	1.0	0.0000019	8.24E-12	6.20E-06
Dibenz(a,h)anthracene	6.0E-07	3801894	2.0E-02	5.2E-06	6.00E-13	2.01E+07	3.1E+00	3.00E-02	1.0	0.00000005	2.19E-10	1.65E-07
Fluoranthene	6.6E-04	107152	3.0E-02	6.4E-06	6.64E-10	6.04E+05	NA	4.00E-01	1.0	0.0000017	NA	4.10E-07
Fluorene	2.6E-03	13804	3.6E-02	7.9E-06	2.36E-08	1.01E+05	NA	4.00E-01	1.0	0.0000099	NA	2.45E-06
Indeno(1,2,3-cd)pyrene	6.6E-05	3467368	1.9E-02	5.7E-06	1.96E-12	1.11E+07	3.1E-01	3.00E-02	1.0	0.00000009	3.95E-11	2.97E-07
1-Methylnaphthalene	1.6E-02	2290	6.3E-02	7.1E-06	1.56E-06	1.25E+04	NA	8.57E-04	1.0	0.0000801	NA	9.28E-03
2-Methylnaphthalene	1.9E-02	4320	6.3E-02	7.2E-06	9.29E-07	1.62E+04	NA	8.57E-04	1.0	0.0000619	NA	7.17E-03
Naphthalene	2.0E-02	1995	5.9E-02	7.5E-06	2.02E-06	1.10E+04	NA	8.57E-04	1.0	0.0000912	NA	1.06E-02
Phenanthrene	5.4E-03	14125	3.3E-02	7.5E-06	4.38E-08	7.44E+04	NA	8.57E-04	1.0	0.0000134	NA	1.56E-03
Pyrene	4.5E-04	104713	2.7E-02	7.2E-06	4.30E-10	7.51E+05	NA	3.00E-01	1.0	0.0000013	NA	4.41E-07
BaP-TE	4.6E-05	1023293	4.3E-02	9.0E-06	1.05E-11	4.81E+06	3.1E+00	8.57E-04	1.0	0.0000002	9.13E-10	2.41E-05
Pentachlorophenol	1.0E-06	19953	5.6E-02	6.1E-06	1.41E-10	1.31E+06	NA	3.00E-02	1.0	0.0000008	NA	2.53E-06

Table C-18
SITE-WIDE & AREA-SPECIFIC RISKS
INGESTION/DERMAL
CONSTRUCTION WORKER

Constituent	Site-Wide			Area A			Area B			Area C			Area F		
	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	1.01E-04	7.38E-10	3.00E-03	1.01E-04	7.38E-10	3.00E-03	1.01E-04	7.38E-10	3.00E-03	1.01E-04	7.38E-10	3.00E-03	1.01E-04	7.38E-10
Barium	2.99E+02	2.51E-03	NA	2.99E+02	2.51E-03	NA	2.99E+02	2.51E-03	NA	2.99E+02	2.51E-03	NA	2.99E+02	2.51E-03	NA
Chlorobenzene	3.00E-03	8.78E-08	NA	3.00E-03	8.78E-08	NA	3.00E-03	8.78E-08	NA	3.00E-03	8.78E-08	NA	3.00E-03	8.78E-08	NA
Chloromethane	2.00E-03	4.50E-08	NA	2.00E-03	4.50E-08	NA	2.00E-03	4.50E-08	NA	2.00E-03	4.50E-08	NA	2.00E-03	4.50E-08	NA
4-Chloro-3-methylphenol	2.50E-01	3.18E-06	NA	2.50E-01	3.18E-06	NA	2.50E-01	3.18E-06	NA	2.50E-01	3.18E-06	NA	2.50E-01	3.18E-06	NA
Chromium	6.80E+01	2.22E-03	NA	6.80E+01	2.22E-03	NA	6.80E+01	2.22E-03	NA	6.80E+01	2.22E-03	NA	6.80E+01	2.22E-03	NA
4,4'-DDD	3.60E-02	NA	1.14E-10	3.60E-02	NA	1.14E-10	3.60E-02	NA	1.14E-10	3.60E-02	NA	1.14E-10	3.60E-02	NA	1.14E-10
4,4'-DDE	8.00E-03	NA	3.60E-11	8.00E-03	NA	3.60E-11	8.00E-03	NA	3.60E-11	8.00E-03	NA	3.60E-11	8.00E-03	NA	3.60E-11
4,4'-DDT	1.90E-02	3.52E-05	8.56E-11	1.90E-02	3.52E-05	8.56E-11	1.90E-02	3.52E-05	8.56E-11	1.90E-02	3.52E-05	8.56E-11	1.90E-02	3.52E-05	8.56E-11
delta-BHC	3.00E-03	1.01E-06	5.64E-11	3.00E-03	1.01E-06	5.64E-11	3.00E-03	1.01E-06	5.64E-11	3.00E-03	1.01E-06	5.64E-11	3.00E-03	1.01E-06	5.64E-11
Dibenzofuran	5.17E+01	1.95E-02	NA	5.17E+01	1.95E-02	NA	3.22E+01	1.22E-02	NA	1.90E+00	7.18E-04	NA	2.26E+01	8.55E-03	NA
1,2-Dichlorobenzene	2.00E-03	1.30E-08	NA	2.00E-03	1.30E-08	NA	2.00E-03	1.30E-08	NA	2.00E-03	1.30E-08	NA	2.00E-03	1.30E-08	NA
1,4-Dichlorobenzene	2.00E-03	3.90E-08	4.01E-13	2.00E-03	3.90E-08	4.01E-13	2.00E-03	3.90E-08	4.01E-13	2.00E-03	3.90E-08	4.01E-13	2.00E-03	3.90E-08	4.01E-13
1,2-Dichloropropane	4.00E-03	1.00E-06	3.60E-12	4.00E-03	1.00E-06	3.60E-12	4.00E-03	1.00E-06	3.60E-12	4.00E-03	1.00E-06	3.60E-12	4.00E-03	1.00E-06	3.60E-12
4,6-Dinitro-2-methylphenol	1.50E+00	9.55E-04	NA	1.50E+00	9.55E-04	NA	1.50E+00	9.55E-04	NA	1.50E+00	9.55E-04	NA	1.50E+00	9.55E-04	NA
2,4-Dinitrophenol	6.30E-01	2.01E-04	NA	6.30E-01	2.01E-04	NA	6.30E-01	2.01E-04	NA	6.30E-01	2.01E-04	NA	6.30E-01	2.01E-04	NA
Endosulfan II	1.40E-02	2.16E-06	NA	1.40E-02	2.16E-06	NA	1.40E-02	2.16E-06	NA	1.40E-02	2.16E-06	NA	1.40E-02	2.16E-06	NA
Endosulfan Sulfate	1.40E-02	2.16E-06	NA	1.40E-02	2.16E-06	NA	1.40E-02	2.16E-06	NA	1.40E-02	2.16E-06	NA	1.40E-02	2.16E-06	NA
Endrin	3.60E-02	1.21E-04	NA	3.60E-02	1.21E-04	NA	3.60E-02	1.21E-04	NA	3.60E-02	1.21E-04	NA	3.60E-02	1.21E-04	NA
Endrin Aldehyde	3.30E-02	1.11E-04	NA	3.30E-02	1.11E-04	NA	3.30E-02	1.11E-04	NA	3.30E-02	1.11E-04	NA	3.30E-02	1.11E-04	NA
Ethylbenzene	2.10E+00	1.23E-05	NA	2.10E+00	1.23E-05	NA	2.10E+00	1.23E-05	NA	2.10E+00	1.23E-05	NA	2.10E+00	1.23E-05	NA
Isopropylbenzene	3.30E-02	1.93E-07	NA	3.30E-02	1.93E-07	NA	3.30E-02	1.93E-07	NA	3.30E-02	1.93E-07	NA	3.30E-02	1.93E-07	NA
Manganese	8.52E+02	4.08E-03	NA	8.52E+02	4.08E-03	NA	8.52E+02	4.08E-03	NA	8.52E+02	4.08E-03	NA	8.52E+02	4.08E-03	NA
Methylene Chloride	7.40E-02	9.33E-07	6.00E-12	7.40E-02	9.33E-07	6.00E-12	7.40E-02	9.33E-07	6.00E-12	7.40E-02	9.33E-07	6.00E-12	7.40E-02	9.33E-07	6.00E-12
4-Nitrophenol	2.50E-01	1.99E-05	NA	2.50E-01	1.99E-05	NA	2.50E-01	1.99E-05	NA	2.50E-01	1.99E-05	NA	2.50E-01	1.99E-05	NA
Phenol	1.20E-02	3.02E-08	NA	1.20E-02	3.02E-08	NA	1.20E-02	3.02E-08	NA	1.20E-02	3.02E-08	NA	1.20E-02	3.02E-08	NA
Tetrachloroethene	8.00E-03	6.05E-08	4.67E-11	8.00E-03	6.05E-08	4.67E-11	8.00E-03	6.05E-08	4.67E-11	8.00E-03	6.05E-08	4.67E-11	8.00E-03	6.05E-08	4.67E-11
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	3.29E-07	NA	1.55E-01	3.29E-07	NA	1.55E-01	3.29E-07	NA	1.55E-01	3.29E-07	NA	1.55E-01	3.29E-07	NA
Toluene	2.80E-02	9.15E-09	NA	2.80E-02	9.15E-09	NA	2.80E-02	9.15E-09	NA	2.80E-02	9.15E-09	NA	2.80E-02	9.15E-09	NA
1,2,4-Trichlorobenzene	1.00E-03	5.85E-08	NA	1.00E-03	5.85E-08	NA	1.00E-03	5.85E-08	NA	1.00E-03	5.85E-08	NA	1.00E-03	5.85E-08	NA
1,1,1-Trichloroethane	5.00E-03	1.35E-08	NA	5.00E-03	1.35E-08	NA	5.00E-03	1.35E-08	NA	5.00E-03	1.35E-08	NA	5.00E-03	1.35E-08	NA
Trichlorofluoromethane	2.00E-03	2.16E-09	NA	2.00E-03	2.16E-09	NA	2.00E-03	2.16E-09	NA	2.00E-03	2.16E-09	NA	2.00E-03	2.16E-09	NA
2,4,5-Trichlorophenol	1.60E-01	1.02E-07	NA	1.60E-01	1.02E-07	NA	1.60E-01	1.02E-07	NA	1.60E-01	1.02E-07	NA	1.60E-01	1.02E-07	NA
2,4,6-Trichlorophenol	3.50E-01	2.23E-07	3.50E-11	3.50E-01	2.23E-07	3.50E-11	3.50E-01	2.23E-07	3.50E-11	3.50E-01	2.23E-07	3.50E-11	3.50E-01	2.23E-07	3.50E-11
1,2,4-Trimethylbenzene	4.40E-02	6.65E-07	NA	4.40E-02	6.65E-07	NA	4.40E-02	6.65E-07	NA	4.40E-02	6.65E-07	NA	4.40E-02	6.65E-07	NA
Total Xylenes	2.00E-03	6.54E-10	NA	2.00E-03	6.54E-10	NA	2.00E-03	6.54E-10	NA	2.00E-03	6.54E-10	NA	2.00E-03	6.54E-10	NA
1,2,3,4,6,7,8-HpCDD	1.11E-02	NA	1.55E-07	7.05E-03	NA	9.88E-08	1.23E-02	NA	1.72E-07	5.40E-04	NA	7.56E-09	1.12E-02	NA	1.57E-07
1,2,3,4,6,7,8-HpCDF	2.05E-03	NA	2.87E-08	1.11E-03	NA	1.55E-08	2.68E-03	NA	3.75E-08	2.80E-04	NA	3.92E-09	1.97E-03	NA	2.76E-08
1,2,3,4,7,8,9-HpCDF	1.72E-04	NA	2.40E-09	1.01E-04	NA	1.41E-09	2.15E-04	NA	3.02E-09	1.90E-05	NA	2.66E-10	1.33E-04	NA	1.87E-09
1,2,3,4,7,8-HxCDD	6.11E-05	NA	8.56E-09	2.90E-05	NA	4.06E-09	7.21E-05	NA	1.01E-08	2.50E-06	NA	3.50E-10	1.33E-04	NA	1.87E-08
1,2,3,4,7,8-HxCDF	1.64E-04	NA	2.29E-08	9.90E-05	NA	1.39E-08	1.97E-04	NA	2.75E-08	2.60E-05	NA	3.64E-09	1.03E-04	NA	1.44E-08
1,2,3,6,7,8-HxCDD	3.36E-04	NA	4.70E-08	2.10E-04	NA	2.94E-08	3.43E-04	NA	4.81E-08	2.00E-05	NA	2.80E-09	4.45E-04	NA	6.24E-08
1,2,3,6,7,8-HxCDF	4.98E-05	NA	6.97E-09	1.60E-05	NA	2.24E-09	4.90E-05	NA	6.87E-09	4.10E-06	NA	5.74E-10	5.39E-05	NA	7.54E-09
1,2,3,7,8,9-HxCDD	1.03E-04	NA	1.44E-08	2.40E-05	NA	3.36E-09	1.22E-04	NA	1.71E-08	2.15E-06	NA	3.01E-10	2.11E-04	NA	2.96E-08
1,2,3,7,8,9-HxCDF	5.47E-05	NA	7.67E-09	4.50E-06	NA	6.30E-10	4.53E-05	NA	6.35E-09	5.90E-06	NA	8.26E-10	2.85E-05	NA	4.00E-09
1,2,3,7,8-PeCDD	1.83E-05	NA	2.57E-08	3.10E-06	NA	4.34E-09	2.35E-05	NA	3.29E-08	ND	ND	ND	4.30E-05	NA	6.02E-08
1,2,3,7,8-PeCDF	1.68E-05	NA	7.05E-10	9.30E-06	NA	3.91E-10	1.57E-05	NA	6.60E-10	1.80E-06	NA	7.56E-11	1.16E-05	NA	4.89E-10
2,3,4,6,7,8-HxCDF	7.61E-05	NA	1.07E-08	1.34E-05	NA	1.88E-09	9.15E-05	NA	1.28E-08	2.00E-06	NA	2.80E-10	7.52E-05	NA	1.05E-08
2,3,4,7,8-PeCDF	3.53E-05	NA	1.48E-08	9.10E-06	NA	3.82E-09	3.67E-05	NA	1.54E-08	2.10E-06	NA	8.82E-10	1.92E-05	NA	8.06E-09
2,3,7,8-TCDD	2.05E-06	NA	2.88E-09	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.34E-06	NA	4.68E-09
2,3,7,8-TCDF	2.92E-06	NA	4.10E-10	8.75E-07	NA	1.23E-10	3.46E-06	NA	4.85E-10	ND	ND	ND	2.37E-06	NA	3.32E-10
OCDD	9.78E-02	NA	4.11E-08	7.45E-02	NA	3.13E-08	1.38E-01	NA	5.80E-08	7.30E-03	NA	3.07E-09	8.96E-02	NA	3.77E-08
OCDF	8.69E-03	NA	3.65E-09	4.50E-03	NA	1.89E-09	1.21E-02	NA	5.07E-09	7.90E-04	NA	3.32E-10	7.05E-03	NA	2.96E-09
TCDD TEQ	2.73E-04	NA	3.82E-07	1.52E-04	NA	2.13E-07	3.26E-04	NA	4.56E-07	1.91E-05	NA	2.68E-08	3.16E-04	NA	4.43E-07
Acenaphthene	4.93E+01	6.21E-05	NA	6.50E+01	8.19E-05	NA	1.23E+01	1.55E-05	NA	2.08E+00	2.62E-06	NA	1.39E+01	1.75E-05	NA
Acenaphthylene	1.76E+01	6.66E-05	NA	2.51E+01	9.49E-05	NA	7.00E+00	2.65E-05	NA	1.42E+00	5.36E-06	NA	8.94E+00	3.38E-05	NA
Anthracene	2.81E+01	7.08E-06	NA	3.30E+01	8.32E-06	NA	6.45E+00	1.63E-06	NA	7.60E-01	1.92E-07	NA	9.23E+00	2.33E-06	NA
Benzo(a)anthracene	8.03E+00	2.49E-05	5.19E-08	9.20E+00	2.85E-05	5.94E-08	3.28E+00	1.01E-05	2.12E-08	3.58E-01	1.11E-06	2.31E-09	3.97E+00	1.23E-05	2.56E-08
Benzo(a)pyrene	6.47E+00	2.00E-05	4.18E-07	9.10E+00	2.82E-05	5.88E-07	6.63E+00	2.05E-05	4.29E-07	1.85E-01	5.74E-07	1.20E-08	2.90E+00	8.97E-06	1.87E-07
Benzo(b)fluoranthene	6.94E+00	2.15E-05	4.49E-08	9.90E+00	3.07E-05	6.40E-08	3.43E+00	1.06E-05	2.22E-08	2.92E-01	9.06E-07	1.89E-09	4.51E+00	1.40E-05	2.92E-08
Benzo(g,h,i)perylene	5.62E+00	2.12E-05	NA	6.90E+00	2.61E-05	NA	5.67E+00	2.14E-05	NA	2.35E-01	8.90E-07	NA	3.15E+00	1.19E-05	NA
Benzo(k)fluoranthene	2.55E+00	7.91E-06	1.65E-09	2.90E+00	8.98E-06	1.87E-09	1.02E+00	3.15E-06	6.57E-10	1.27E-01	3.94E-07	8.23E-11	2.18E+00	6.74E-06	1.41E-09
Chrysene	1.63E+01	5.05E-05	1.05E-09	2.20E+01	6.81E-05	1.42E-09	9.09E+00	2.81E-05	5.87E-10	6.90E-01	2.14E-06	4.46E-11	7.88E+00	2.44E-05	5.09E-10
Dibenz(a,h)anthracene	7.87E+00	2.44E-05	5.09E-07	9.50E+00	2.94E-05	6.14E-07	8.90E+00	2.76E-05	5.75E-07	3.69E-01	1.14E-06	2.38E-08	3.75E+00	1.16E-05	2.42E-07
Fluoranthene	7.46E+01	1.41E-04	NA	8.40E+01	1.59E-04	NA	1.47E+01	2.77E-05	NA	3.00E+00	5.66E-06	NA	2.42E+01	4.57E-05	NA
Fluorene	3.87E+01	7.31E-05	NA	4.70E+01	8.89E-05	NA	7.38E+00	1.39E-05	NA	1.64E+00	3.10E-06	NA	3.81E+00	7.20E-06	NA
Indeno(1,2,3-cd)pyrene	2.11E+00	6.54E-06	1.36E-08	2.90E+00	8.98E-06	1.87E-08	1.97E+00	6.11E-06	1.27E-08	1.49E-01	4.61E-07	9.61E-10	2.83E+00	8.76E-06	1.83E-08
1-Methylnaphthalene	8.71E+00	3.29E-05	NA	ND	ND	ND	4.20E+00	1.59E-05	NA	4.46E+00	1.69E-05	NA	3.46E+01	1.31E-04	NA
2-Methylnaphthalene	9.84E+00	3.72E-05	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.48E+01	1.32E-04	NA
Naphthalene	3.11E+01	1.18E-04	NA	9.06E+01	3.43E-04	NA	1.76E+01	6.65E-05	NA	1.35E+00	5.12E-06	NA	5.85E+00	2.21E-05	NA
Phenanthrene	1.11E+02	4.20E-04	NA	1.30E+02	4.92E-04	NA	1.35E+01	5.11E-05	NA	4.81E+00	1.82E-05	NA	7.74E+00	2.93E-05	NA
Pyrene	4.34E+01	1.09E-04	NA	4.80E+01	1.21E-04	NA	5.57E+01	1.40E-04	NA	1.77E+00	4.46E-06	NA	1.53E+01	3.86E-05	NA
BaP-TE	1.60E+01	4.95E-05	1.03E-06	2.07E+01	6.41E-05	1.34E-06	1.54E+01	4.77E-05	9.95E-07	6.21E-01	1.92E-06	4.01E-08	7.64E+00	2.37E-05	4.94E-07
Pentachlorophenol	1.28E+01	2.71E-04	1.39E-08	2.03E+00	4.31E-05	2.22E-09	3.62E+00	7.68E-05	3.95E-09	9.71E-01	2.06E-05	1.06E-09	1.88E+01	3.99E-04	2.05E-08
Total		3.13E-02	1.43E-06		3.15E-02	1.55E-06		2.31E-02	1.46E-06		1.12E-02	6.91E-08		1.98E-02	9.59E-07

Table C-18
SITE-WIDE & AREA-SPECIFIC RISKS
INGESTION/DERMAL
CONSTRUCTION WORKER

Constituent	Area G			Area H			Area S			Area B/F		
	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	1.01E-04	7.38E-10	3.00E-03	1.01E-04	7.38E-10	3.00E-03	1.01E-04	7.38E-10	3.00E-03	1.01E-04	7.38E-10
Barium	2.99E+02	2.51E-03	NA	2.99E+02	2.51E-03	NA	2.99E+02	2.51E-03	NA	2.99E+02	2.51E-03	NA
Chlorobenzene	3.00E-03	8.78E-08	NA	3.00E-03	8.78E-08	NA	3.00E-03	8.78E-08	NA	3.00E-03	8.78E-08	NA
Chloromethane	2.00E-03	4.50E-08	NA	2.00E-03	4.50E-08	NA	2.00E-03	4.50E-08	NA	2.00E-03	4.50E-08	NA
4-Chloro-3-methylphenol	2.50E-01	3.18E-06	NA	2.50E-01	3.18E-06	NA	2.50E-01	3.18E-06	NA	2.50E-01	3.18E-06	NA
Chromium	6.80E+01	2.22E-03	NA	6.80E+01	2.22E-03	NA	6.80E+01	2.22E-03	NA	6.80E+01	2.22E-03	NA
4,4'-DDD	3.60E-02	NA	1.14E-10	3.60E-02	NA	1.14E-10	3.60E-02	NA	1.14E-10	3.60E-02	NA	1.14E-10
4,4'-DDE	8.00E-03	NA	3.60E-11	8.00E-03	NA	3.60E-11	8.00E-03	NA	3.60E-11	8.00E-03	NA	3.60E-11
4,4'-DDT	1.90E-02	3.52E-05	8.56E-11	1.90E-02	3.52E-05	8.56E-11	1.90E-02	3.52E-05	8.56E-11	1.90E-02	3.52E-05	8.56E-11
delta-BHC	3.00E-03	1.01E-06	5.64E-11	3.00E-03	1.01E-06	5.64E-11	3.00E-03	1.01E-06	5.64E-11	3.00E-03	1.01E-06	5.64E-11
Dibenzofuran	2.45E+01	9.26E-03	NA	2.67E+01	1.01E-02	NA	1.90E+00	7.18E-04	NA	3.22E+01	1.22E-02	NA
1,2-Dichlorobenzene	2.00E-03	1.30E-08	NA	2.00E-03	1.30E-08	NA	2.00E-03	1.30E-08	NA	2.00E-03	1.30E-08	NA
1,4-Dichlorobenzene	2.00E-03	3.90E-08	4.01E-13	2.00E-03	3.90E-08	4.01E-13	2.00E-03	3.90E-08	4.01E-13	2.00E-03	3.90E-08	4.01E-13
1,2-Dichloropropane	4.00E-03	1.00E-06	3.60E-12	4.00E-03	1.00E-06	3.60E-12	4.00E-03	1.00E-06	3.60E-12	4.00E-03	1.00E-06	3.60E-12
4,6-Dinitro-2-methylphenol	1.50E+00	9.55E-04	NA	1.50E+00	9.55E-04	NA	1.50E+00	9.55E-04	NA	1.50E+00	9.55E-04	NA
2,4-Dinitrophenol	6.30E-01	2.01E-04	NA	6.30E-01	2.01E-04	NA	6.30E-01	2.01E-04	NA	6.30E-01	2.01E-04	NA
Endosulfan II	1.40E-02	2.16E-06	NA	1.40E-02	2.16E-06	NA	1.40E-02	2.16E-06	NA	1.40E-02	2.16E-06	NA
Endosulfan Sulfate	1.40E-02	2.16E-06	NA	1.40E-02	2.16E-06	NA	1.40E-02	2.16E-06	NA	1.40E-02	2.16E-06	NA
Endrin	3.60E-02	1.21E-04	NA	3.60E-02	1.21E-04	NA	3.60E-02	1.21E-04	NA	3.60E-02	1.21E-04	NA
Endrin Aldehyde	3.30E-02	1.11E-04	NA	3.30E-02	1.11E-04	NA	3.30E-02	1.11E-04	NA	3.30E-02	1.11E-04	NA
Ethylbenzene	2.10E+00	1.23E-05	NA	2.10E+00	1.23E-05	NA	2.10E+00	1.23E-05	NA	2.10E+00	1.23E-05	NA
Isopropylbenzene	3.30E-02	1.93E-07	NA	3.30E-02	1.93E-07	NA	3.30E-02	1.93E-07	NA	3.30E-02	1.93E-07	NA
Manganese	8.52E+02	4.08E-03	NA	8.52E+02	4.08E-03	NA	8.52E+02	4.08E-03	NA	8.52E+02	4.08E-03	NA
Methylene Chloride	7.40E-02	9.33E-07	6.00E-12	7.40E-02	9.33E-07	6.00E-12	7.40E-02	9.33E-07	6.00E-12	7.40E-02	9.33E-07	6.00E-12
4-Nitrophenol	2.50E-01	1.99E-05	NA	2.50E-01	1.99E-05	NA	2.50E-01	1.99E-05	NA	2.50E-01	1.99E-05	NA
Phenol	1.20E-02	3.02E-08	NA	1.20E-02	3.02E-08	NA	1.20E-02	3.02E-08	NA	1.20E-02	3.02E-08	NA
Tetrachloroethene	8.00E-03	6.05E-08	4.67E-11	8.00E-03	6.05E-08	4.67E-11	8.00E-03	6.05E-08	4.67E-11	8.00E-03	6.05E-08	4.67E-11
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	3.29E-07	NA	1.55E-01	3.29E-07	NA	1.55E-01	3.29E-07	NA	1.55E-01	3.29E-07	NA
Toluene	2.80E-02	9.15E-09	NA	2.80E-02	9.15E-09	NA	2.80E-02	9.15E-09	NA	2.80E-02	9.15E-09	NA
1,2,4-Trichlorobenzene	1.00E-03	5.85E-08	NA	1.00E-03	5.85E-08	NA	1.00E-03	5.85E-08	NA	1.00E-03	5.85E-08	NA
1,1,1-Trichloroethane	5.00E-03	1.35E-08	NA	5.00E-03	1.35E-08	NA	5.00E-03	1.35E-08	NA	5.00E-03	1.35E-08	NA
Trichlorofluoromethane	2.00E-03	2.16E-09	NA	2.00E-03	2.16E-09	NA	2.00E-03	2.16E-09	NA	2.00E-03	2.16E-09	NA
2,4,5-Trichlorophenol	1.60E-01	1.02E-07	NA	1.60E-01	1.02E-07	NA	1.60E-01	1.02E-07	NA	1.60E-01	1.02E-07	NA
2,4,6-Trichlorophenol	3.50E-01	2.23E-07	3.50E-11	3.50E-01	2.23E-07	3.50E-11	3.50E-01	2.23E-07	3.50E-11	3.50E-01	2.23E-07	3.50E-11
1,2,4-Trimethylbenzene	4.40E-02	6.65E-07	NA	4.40E-02	6.65E-07	NA	4.40E-02	6.65E-07	NA	4.40E-02	6.65E-07	NA
Total Xylenes	2.00E-03	6.54E-10	NA	2.00E-03	6.54E-10	NA	2.00E-03	6.54E-10	NA	2.00E-03	6.54E-10	NA
1,2,3,4,6,7,8-HpCDD	2.35E-02	NA	3.29E-07	1.43E-02	NA	2.00E-07	8.85E-03	NA	1.24E-07	1.01E-02	NA	1.42E-07
1,2,3,4,6,7,8-HpCDF	3.85E-03	NA	5.40E-08	2.90E-03	NA	4.06E-08	3.17E-03	NA	4.43E-08	1.86E-03	NA	2.61E-08
1,2,3,4,7,8,9-HpCDF	3.25E-04	NA	4.55E-09	2.58E-04	NA	3.61E-09	3.19E-04	NA	4.47E-09	1.35E-04	NA	1.90E-09
1,2,3,4,7,8-HxCDD	6.80E-05	NA	9.53E-09	5.46E-05	NA	7.65E-09	3.78E-05	NA	5.29E-09	1.08E-04	NA	1.51E-08
1,2,3,4,7,8-HxCDF	2.91E-04	NA	4.08E-08	2.47E-04	NA	3.46E-08	4.47E-04	NA	6.27E-08	1.12E-04	NA	1.57E-08
1,2,3,6,7,8-HxCDD	6.00E-04	NA	8.40E-08	4.65E-04	NA	6.51E-08	3.52E-04	NA	4.93E-08	3.75E-04	NA	5.26E-08
1,2,3,6,7,8-HxCDF	8.93E-05	NA	1.25E-08	6.94E-05	NA	9.72E-09	9.97E-05	NA	1.40E-08	4.70E-05	NA	6.59E-09
1,2,3,7,8,9-HxCDD	1.37E-04	NA	1.92E-08	9.55E-05	NA	1.34E-08	7.44E-05	NA	1.04E-08	1.70E-04	NA	2.39E-08
1,2,3,7,8,9-HxCDF	1.12E-04	NA	1.57E-08	1.12E-04	NA	1.57E-08	9.85E-05	NA	1.38E-08	2.83E-05	NA	3.96E-09
1,2,3,7,8-PeCDD	1.69E-05	NA	2.37E-08	1.46E-05	NA	2.04E-08	1.10E-05	NA	1.54E-08	3.48E-05	NA	4.87E-08
1,2,3,7,8-PeCDF	3.01E-05	NA	1.26E-09	3.84E-05	NA	1.61E-09	2.59E-05	NA	1.09E-09	1.13E-05	NA	4.76E-10
2,3,4,6,7,8-HxCDF	1.36E-04	NA	1.91E-08	1.15E-04	NA	1.61E-08	1.68E-04	NA	2.35E-08	6.83E-05	NA	9.57E-09
2,3,4,7,8-PeCDF	5.91E-05	NA	2.48E-08	8.12E-05	NA	3.41E-08	8.79E-05	NA	3.69E-08	2.09E-05	NA	8.77E-09
2,3,7,8-TCDD	2.54E-06	NA	3.56E-09	2.36E-06	NA	3.31E-09	ND	ND	ND	2.98E-06	NA	4.17E-09
2,3,7,8-TCDF	3.55E-06	NA	4.97E-10	7.61E-06	NA	1.07E-09	5.04E-06	NA	7.06E-10	2.45E-06	NA	3.43E-10
OCDD	2.00E-01	NA	8.39E-08	1.38E-01	NA	5.80E-08	9.12E-02	NA	3.83E-08	8.88E-02	NA	3.73E-08
OCDF	1.79E-02	NA	7.52E-09	1.34E-02	NA	5.64E-09	1.17E-02	NA	4.93E-09	7.12E-03	NA	2.99E-09
TCDD TEQ	5.05E-04	NA	7.08E-07	3.73E-04	NA	5.22E-07	3.20E-04	NA	4.49E-07	2.81E-04	NA	3.94E-07
Acenaphthene	5.24E+00	6.61E-06	NA	5.07E+00	6.39E-06	NA	1.17E+00	1.48E-06	NA	1.13E+01	1.42E-05	NA
Acenaphthylene	2.14E+00	8.10E-06	NA	2.68E+00	1.01E-05	NA	3.35E-01	1.27E-06	NA	6.79E+00	2.57E-05	NA
Anthracene	1.48E+00	3.74E-07	NA	4.25E+00	1.07E-06	NA	4.85E+00	1.22E-06	NA	6.91E+00	1.74E-06	NA
Benzo(a)anthracene	1.22E+00	3.77E-06	7.87E-09	2.59E+00	8.02E-06	1.67E-08	1.80E+00	5.57E-06	1.16E-08	3.23E+00	1.00E-05	2.09E-08
Benzo(a)pyrene	5.06E-01	1.57E-06	3.27E-08	1.20E+00	3.73E-06	7.77E-08	9.00E-01	2.79E-06	5.82E-08	4.55E+00	1.41E-05	2.94E-07
Benzo(b)fluoranthene	6.24E-01	1.93E-06	4.03E-09	1.78E+00	5.52E-06	1.15E-08	2.08E+00	6.43E-06	1.34E-08	3.61E+00	1.12E-05	2.33E-08
Benzo(g,h,i)perylene	8.65E-01	3.27E-06	NA	1.74E+00	6.57E-06	NA	1.63E+00	6.17E-06	NA	4.17E+00	1.58E-05	NA
Benzo(k)fluoranthene	3.27E-01	1.01E-06	2.11E-10	1.65E+00	5.10E-06	1.06E-09	7.09E-01	2.20E-06	4.58E-10	1.44E+00	4.46E-06	9.31E-10
Chrysene	4.35E+00	1.35E-05	2.81E-10	5.09E+00	1.58E-05	3.29E-10	2.74E+00	8.49E-06	1.77E-10	7.63E+00	2.36E-05	4.93E-10
Dibenz(a,h)anthracene	1.35E+00	4.18E-06	8.73E-08	2.20E+00	6.81E-06	1.42E-07	2.52E+00	7.82E-06	1.63E-07	5.97E+00	1.85E-05	3.86E-07
Fluoranthene	4.11E+00	7.77E-06	NA	1.11E+01	2.09E-05	NA	7.00E+00	1.32E-05	NA	1.68E+01	3.18E-05	NA
Fluorene	2.17E+00	4.10E-06	NA	5.25E+00	9.92E-06	NA	1.73E+00	3.27E-06	NA	5.14E+00	9.71E-06	NA
Indeno(1,2,3-cd)pyrene	2.81E-01	8.71E-07	1.82E-09	1.52E+00	4.71E-06	9.83E-09	1.10E+00	3.40E-06	7.09E-09	2.19E+00	6.77E-06	1.41E-08
1-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.23E+01	4.67E-05	NA
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.79E+01	6.78E-05	NA
Naphthalene	1.13E+00	4.28E-06	NA	5.32E+00	2.01E-05	NA	3.62E-01	1.37E-06	NA	1.10E+01	4.16E-05	NA
Phenanthrene	2.32E+00	8.76E-06	NA	1.43E+01	5.41E-05	NA	2.18E+00	8.23E-06	NA	9.58E+00	3.62E-05	NA
Pyrene	1.13E+00	2.86E-06	NA	7.92E+00	2.00E-05	NA	5.28E+00	1.33E-05	NA	3.44E+01	8.67E-05	NA
BaP-TE	2.07E+00	6.42E-06	1.34E-07	3.64E+00	1.13E-05	2.35E-07	3.91E+00	1.21E-05	2.53E-07	1.09E+01	3.37E-05	7.03E-07
Pentachlorophenol	2.15E+01	4.57E-04	2.35E-08	5.30E+01	1.12E-03	5.78E-08	4.15E+01	8.81E-04	4.53E-08	1.01E+01	2.14E-04	1.10E-08
Total		2.02E-02	8.66E-07		2.18E-02	8.16E-07		1.20E-02	7.48E-07		2.32E-02	1.11E-06

Table C-19
SITE-WIDE & AREA-SPECIFIC RISKS
INHALTION OF PARTICULATES
CONSTRUCTION WORKER

	Site-Wide			Area A			Area B			Area C			Area F		
Constituent	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	1.39E-08	1.01E-13	3.00E-03	1.39E-08	1.01E-13	3.00E-03	1.39E-08	1.01E-13	3.00E-03	1.39E-08	1.01E-13	3.00E-03	1.39E-08	1.01E-13
Barium	2.99E+02	2.08E-07	NA	2.99E+02	2.08E-07	NA	2.99E+02	2.08E-07	NA	2.99E+02	2.08E-07	NA	2.99E+02	2.08E-07	NA
Chlorobenzene	3.00E-03	2.08E-11	NA	3.00E-03	2.08E-11	NA	3.00E-03	2.08E-11	NA	3.00E-03	2.08E-11	NA	3.00E-03	2.08E-11	NA
Chloromethane	2.00E-03	1.07E-11	NA	2.00E-03	1.07E-11	NA	2.00E-03	1.07E-11	NA	2.00E-03	1.07E-11	NA	2.00E-03	1.07E-11	NA
4-Chloro-3-methylphenol	2.50E-01	6.94E-10	NA	2.50E-01	6.94E-10	NA	2.50E-01	6.94E-10	NA	2.50E-01	6.94E-10	NA	2.50E-01	6.94E-10	NA
Chromium	6.80E+01	3.31E-05	5.67E-09	6.80E+01	3.31E-05	5.67E-09	6.80E+01	3.31E-05	5.67E-09	6.80E+01	3.31E-05	5.67E-09	6.80E+01	3.31E-05	5.67E-09
4,4'-DDD	3.60E-02	NA	1.71E-14	3.60E-02	NA	1.71E-14	3.60E-02	NA	1.71E-14	3.60E-02	NA	1.71E-14	3.60E-02	NA	1.71E-14
4,4'-DDE	8.00E-03	NA	5.40E-15	8.00E-03	NA	5.40E-15	8.00E-03	NA	5.40E-15	8.00E-03	NA	5.40E-15	8.00E-03	NA	5.40E-15
4,4'-DDT	1.90E-02	5.28E-09	1.28E-14	1.90E-02	5.28E-09	1.28E-14	1.90E-02	5.28E-09	1.28E-14	1.90E-02	5.28E-09	1.28E-14	1.90E-02	5.28E-09	1.28E-14
delta-BHC	3.00E-03	1.39E-09	NA	3.00E-03	1.39E-09	NA	3.00E-03	1.39E-09	NA	3.00E-03	1.39E-09	NA	3.00E-03	1.39E-09	NA
Dibenzofuran	5.17E+01	3.59E-06	NA	5.17E+01	3.59E-06	NA	3.22E+01	2.24E-06	NA	1.90E+00	1.32E-07	NA	2.26E+01	1.57E-06	NA
1,2-Dichloropropane	2.00E-03	4.03E-11	NA	2.00E-03	4.03E-11	NA	2.00E-03	4.03E-11	NA	2.00E-03	4.03E-11	NA	2.00E-03	4.03E-11	NA
1,2-Dichlorobenzene	2.00E-03	1.21E-12	9.52E-17	2.00E-03	1.21E-12	9.52E-17	2.00E-03	1.21E-12	9.52E-17	2.00E-03	1.21E-12	9.52E-17	2.00E-03	1.21E-12	9.52E-17
1,4-Dichlorobenzene	4.00E-03	5.05E-10	NA	4.00E-03	5.05E-10	NA	4.00E-03	5.05E-10	NA	4.00E-03	5.05E-10	NA	4.00E-03	5.05E-10	NA
4,6-Dinitro-2-methylphenol	1.50E+00	2.08E-07	NA	1.50E+00	2.08E-07	NA	1.50E+00	2.08E-07	NA	1.50E+00	2.08E-07	NA	1.50E+00	2.08E-07	NA
2,4-Dinitrophenol	6.30E-01	4.38E-08	NA	6.30E-01	4.38E-08	NA	6.30E-01	4.38E-08	NA	6.30E-01	4.38E-08	NA	6.30E-01	4.38E-08	NA
Endosulfan II	1.40E-02	3.24E-10	NA	1.40E-02	3.24E-10	NA	1.40E-02	3.24E-10	NA	1.40E-02	3.24E-10	NA	1.40E-02	3.24E-10	NA
Endosulfan Sulfate	1.40E-02	3.24E-10	NA	1.40E-02	3.24E-10	NA	1.40E-02	3.24E-10	NA	1.40E-02	3.24E-10	NA	1.40E-02	3.24E-10	NA
Endrin	3.60E-02	1.67E-08	NA	3.60E-02	1.67E-08	NA	3.60E-02	1.67E-08	NA	3.60E-02	1.67E-08	NA	3.60E-02	1.67E-08	NA
Endrin Aldehyde	3.30E-02	1.53E-08	NA	3.30E-02	1.53E-08	NA	3.30E-02	1.53E-08	NA	3.30E-02	1.53E-08	NA	3.30E-02	1.53E-08	NA
Ethylbenzene	2.10E+00	1.01E-09	NA	2.10E+00	1.01E-09	NA	2.10E+00	1.01E-09	NA	2.10E+00	1.01E-09	NA	2.10E+00	1.01E-09	NA
Isopropylbenzene	3.30E-02	4.58E-11	NA	3.30E-02	4.58E-11	NA	3.30E-02	4.58E-11	NA	3.30E-02	4.58E-11	NA	3.30E-02	4.58E-11	NA
Manganese	8.52E+02	8.28E-03	NA	8.52E+02	8.28E-03	NA	8.52E+02	8.28E-03	NA	8.52E+02	8.28E-03	NA	8.52E+02	8.28E-03	NA
Methylene Chloride	7.40E-02	1.20E-11	2.42E-16	7.40E-02	1.20E-11	2.42E-16	7.40E-02	1.20E-11	2.42E-16	7.40E-02	1.20E-11	2.42E-16	7.40E-02	1.20E-11	2.42E-16
4-Nitrophenol	2.50E-01	4.34E-09	NA	2.50E-01	4.34E-09	NA	2.50E-01	4.34E-09	NA	2.50E-01	4.34E-09	NA	2.50E-01	4.34E-09	NA
Phenol	1.20E-02	5.56E-12	NA	1.20E-02	5.56E-12	NA	1.20E-02	5.56E-12	NA	1.20E-02	5.56E-12	NA	1.20E-02	5.56E-12	NA
Tetrachloroethene	8.00E-03	1.01E-11	3.33E-16	8.00E-03	1.01E-11	3.33E-16	8.00E-03	1.01E-11	3.33E-16	8.00E-03	1.01E-11	3.33E-16	8.00E-03	1.01E-11	3.33E-16
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	7.18E-11	NA	1.55E-01	7.18E-11	NA	1.55E-01	7.18E-11	NA	1.55E-01	7.18E-11	NA	1.55E-01	7.18E-11	NA
Toluene	2.80E-02	2.78E-12	NA	2.80E-02	2.78E-12	NA	2.80E-02	2.78E-12	NA	2.80E-02	2.78E-12	NA	2.80E-02	2.78E-12	NA
1,2,4-Trichlorobenzene	1.00E-03	1.26E-10	NA	1.00E-03	1.26E-10	NA	1.00E-03	1.26E-10	NA	1.00E-03	1.26E-10	NA	1.00E-03	1.26E-10	NA
1,1,1-Trichloroethane	5.00E-03	1.10E-12	NA	5.00E-03	1.10E-12	NA	5.00E-03	1.10E-12	NA	5.00E-03	1.10E-12	NA	5.00E-03	1.10E-12	NA
Trichlorofluoromethane	2.00E-03	1.39E-12	NA	2.00E-03	1.39E-12	NA	2.00E-03	1.39E-12	NA	2.00E-03	1.39E-12	NA	2.00E-03	1.39E-12	NA
2,4,5-Trichlorophenol	1.60E-01	2.22E-10	NA	1.60E-01	2.22E-10	NA	1.60E-01	2.22E-10	NA	1.60E-01	2.22E-10	NA	1.60E-01	2.22E-10	NA
2,4,6-Trichlorophenol	3.50E-01	4.86E-11	7.54E-15	3.50E-01	4.86E-11	7.54E-15	3.50E-01	4.86E-11	7.54E-15	3.50E-01	4.86E-11	7.54E-15	3.50E-01	4.86E-11	7.54E-15
1,2,4-Trimethylbenzene	4.40E-02	3.59E-09	NA	4.40E-02	3.59E-09	NA	4.40E-02	3.59E-09	NA	4.40E-02	3.59E-09	NA	4.40E-02	3.59E-09	NA
Total Xylenes	2.00E-03	9.58E-12	NA	2.00E-03	9.58E-12	NA	2.00E-03	9.58E-12	NA	2.00E-03	9.58E-12	NA	2.00E-03	9.58E-12	NA
1,2,3,4,6,7,8-HpCDD	1.11E-02	NA	3.29E-11	7.05E-03	NA	2.10E-11	1.23E-02	NA	3.66E-11	5.40E-04	NA	1.61E-12	1.12E-02	NA	3.34E-11
1,2,3,4,6,7,8-HpCDF	2.05E-03	NA	6.10E-12	1.11E-03	NA	3.30E-12	2.68E-03	NA	7.96E-12	2.80E-04	NA	8.33E-13	1.97E-03	NA	5.86E-12
1,2,3,4,7,8,9-HpCDF	1.72E-04	NA	5.11E-13	1.01E-04	NA	2.99E-13	2.15E-04	NA	6.41E-13	1.90E-05	NA	5.65E-14	1.33E-04	NA	3.97E-13
1,2,3,4,7,8-HxCDD	6.11E-05	NA	1.82E-12	2.90E-05	NA	8.63E-13	7.21E-05	NA	2.15E-12	2.50E-06	NA	7.44E-14	1.33E-04	NA	3.97E-12
1,2,3,4,7,8-HxCDF	1.64E-04	NA	4.87E-12	9.90E-05	NA	2.95E-12	1.97E-04	NA	5.85E-12	2.60E-05	NA	7.74E-13	1.03E-04	NA	3.05E-12
1,2,3,6,7,8-HxCDD	3.36E-04	NA	1.00E-11	2.10E-04	NA	6.25E-12	3.43E-04	NA	1.02E-11	2.00E-05	NA	5.95E-13	4.45E-04	NA	1.33E-11
1,2,3,6,7,8-HxCDF	4.98E-05	NA	1.48E-12	1.60E-05	NA	4.76E-13	4.90E-05	NA	1.46E-12	4.10E-06	NA	1.22E-13	5.39E-05	NA	1.60E-12
1,2,3,7,8,9-HxCDD	1.03E-04	NA	3.06E-12	2.40E-05	NA	7.14E-13	1.22E-04	NA	3.64E-12	2.15E-06	NA	6.40E-14	2.11E-04	NA	6.28E-12
1,2,3,7,8,9-HxCDF	5.47E-05	NA	1.63E-12	4.50E-06	NA	1.34E-13	4.53E-05	NA	1.35E-12	5.90E-06	NA	1.76E-13	2.85E-05	NA	8.50E-13
1,2,3,7,8-PeCDD	1.83E-05	NA	5.45E-12	3.10E-06	NA	9.23E-13	2.35E-05	NA	6.99E-12	ND	ND	ND	4.30E-05	NA	1.28E-11
1,2,3,7,8-PeCDF	1.68E-05	NA	1.50E-13	9.30E-06	NA	8.30E-14	1.57E-05	NA	1.40E-13	1.80E-06	NA	1.61E-14	1.16E-05	NA	1.04E-13
2,3,4,6,7,8-HxCDF	7.61E-05	NA	2.27E-12	1.34E-05	NA	3.99E-13	9.15E-05	NA	2.72E-12	2.00E-06	NA	5.95E-14	7.52E-05	NA	2.24E-12
2,3,4,7,8-PeCDF	3.53E-05	NA	3.15E-12	9.10E-06	NA	8.13E-13	3.67E-05	NA	3.28E-12	2.10E-06	NA	1.88E-13	1.92E-05	NA	1.71E-12
2,3,7,8-TCDD	2.05E-06	NA	6.11E-13	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.34E-06	NA	9.94E-13
2,3,7,8-TCDF	2.92E-06	NA	8.70E-14	8.75E-07	NA	2.60E-14	3.46E-06	NA	1.03E-13	ND	ND	ND	2.37E-06	NA	7.06E-14
OCDD	9.78E-02	NA	8.73E-12	7.45E-02	NA	6.65E-12	1.38E-01	NA	1.23E-11	7.30E-03	NA	6.52E-13	8.96E-02	NA	8.00E-12
OCDF	8.69E-03	NA	7.76E-13	4.50E-03	NA	4.02E-13	1.21E-02	NA	1.08E-12	7.90E-04	NA	7.05E-14	7.05E-03	NA	6.30E-13
TCDD TEQ	2.73E-04	NA	8.13E-11	1.52E-04	NA	4.53E-11	3.26E-04	NA	9.70E-11	1.91E-05	NA	5.69E-12	3.16E-04	NA	9.42E-11
Acenaphthene	4.93E+01	1.14E-08	NA	6.50E+01	1.50E-08	NA	1.23E+01	2.85E-09	NA	2.08E+00	4.81E-10	NA	1.39E+01	3.22E-09	NA
Acenaphthylene	1.76E+01	2.86E-06	NA	2.51E+01	4.07E-06	NA	7.00E+00	1.13E-06	NA	1.42E+00	2.30E-07	NA	8.94E+00	1.45E-06	NA
Anthracene	2.81E+01	1.30E-09	NA	3.30E+01	1.53E-09	NA	6.45E+00	2.99E-10	NA	7.60E-01	3.52E-11	NA	9.23E+00	4.27E-10	NA
Benzo(a)anthracene	8.03E+00	3.72E-08	4.94E-12	9.20E+00	4.26E-08	5.66E-12	3.28E+00	1.52E-08	2.01E-12	3.58E-01	1.66E-09	2.20E-13	3.97E+00	1.84E-08	2.44E-12
Benzo(a)pyrene	6.47E+00	2.99E-08	3.98E-11	9.10E+00	4.21E-08	5.60E-11	6.63E+00	3.07E-08	4.08E-11	1.85E-01	8.57E-10	1.14E-12	2.90E+00	1.34E-08	1.78E-11
Benzo(b)fluoranthene	6.94E+00	3.21E-08	4.27E-12	9.90E+00	4.58E-08	6.09E-12	3.43E+00	1.59E-08	2.11E-12	2.92E-01	1.35E-09	1.80E-13	4.51E+00	2.09E-08	2.78E-12
Benzo(g,h,i)perylene	5.62E+00	9.11E-07	NA	6.90E+00	1.12E-06	NA	5.67E+00	9.19E-07	NA	2.35E-01	3.81E-08	NA	3.15E+00	5.10E-07	NA
Benzo(k)fluoranthene	2.55E+00	1.18E-08	1.57E-13	2.90E+00	1.34E-08	1.78E-13	1.02E+00	4.71E-09	6.26E-14	1.27E-01	5.90E-10	7.83E-15	2.18E+00	1.01E-08	1.34E-13
Chrysene	1.63E+01	7.55E-08	1.00E-13	2.20E+01	1.02E-07	1.35E-13	9.09E+00	4.21E-08	5.59E-14	6.90E-01	3.19E-09	4.24E-15	7.88E+00	3.65E-08	4.84E-14
Dibenz(a,h)anthracene	7.87E+00	3.65E-08	4.84E-11	9.50E+00	4.40E-08	5.84E-11	8.90E+00	4.12E-08	5.47E-11	3.69E-01	1.71E-09	2.27E-12	3.75E+00	1.74E-08	2.31E-11
Fluoranthene	7.46E+01	2.59E-08	NA	8.40E+01	2.92E-08	NA	1.47E+01	5.09E-09	NA	3.00E+00	1.04E-09	NA	2.42E+01	8.40E-09	NA
Fluorene	3.87E+01	1.34E-08	NA	4.70E+01	1.63E-08	NA	7.38E+00	2.56E-09	NA	1.64E+00	5.69E-10	NA	3.81E+00	1.32E-09	NA
Indeno(1,2,3-cd)pyrene	2.11E+00	9.77E-09	1.30E-12	2.90E+00	1.34E-08	1.78E-12	1.97E+00	9.14E-09	1.21E-12	1.49E-01	6.88E-10	9.15E-14	2.83E+00	1.31E-08	1.74E-12
1-Methylnaphthalene	8.71E+00	1.41E-06	NA	ND	ND	ND	4.20E+00	6.80E-07	NA	4.46E+00	7.23E-07	NA	3.46E+01	5.60E-06	NA
2-Methylnaphthalene	9.84E+00	1.59E-06	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.48E+01	5.64E-06	NA
Naphthalene	3.11E+01	5.04E-06	NA	9.06E+01	1.47E-05	NA	1.76E+01	2.85E-06	NA	1.35E+00	2.19E-07	NA	5.85E+00	9.49E-07	NA
Phenanthrene	1.11E+02	1.80E-05	NA	1.30E+02	2.11E-05	NA	1.35E+01	2.19E-06	NA	4.81E+00	7.79E-07	NA	7.74E+00	1.25E-06	NA
Pyrene	4.34E+01	2.01E-08	NA	4.80E+01	2.22E-08	NA	5.57E+01	2.58E-08	NA	1.77E+00	8.20E-10	NA	1.53E+01	7.09E-09	NA
BaP-TE	1.60E+01	2.59E-06	9.84E-11	2.07E+01	3.35E-06	1.27E-10	1.54E+01	2.50E-06	9.47E-11	6.21E-01	1.01E-07	3.82E-12	7.64E+00	1.24E-06	4.70E-11
Pentachlorophenol	1.28E+01	5.91E-08	NA	2.03E+00	9.41E-09	NA	3.62E+00	1.68E-08	NA	9.71E-01	4.49E-09	NA	1.88E+01	8.70E-08	NA
Total		8.35E-03	5.85E-09		8.36E-03	5.84E-09		8.32E-03	5.86E-09		8.31E-03	5.68E-09		8.33E-03	5.81E-09

Table C-19
SITE-WIDE & AREA-SPECIFIC RISKS
INHALTION OF PARTICULATES
CONSTRUCTION WORKER

	Area G			Area H			Area S			Area B/F		
Constituent	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	1.39E-08	1.01E-13	3.00E-03	1.39E-08	1.01E-13	3.00E-03	1.39E-08	1.01E-13	3.00E-03	1.39E-08	1.01E-13
Barium	2.99E+02	2.08E-07	NA	2.99E+02	2.08E-07	NA	2.99E+02	2.08E-07	NA	2.99E+02	2.08E-07	NA
Chlorobenzene	3.00E-03	2.08E-11	NA	3.00E-03	2.08E-11	NA	3.00E-03	2.08E-11	NA	3.00E-03	2.08E-11	NA
Chloromethane	2.00E-03	1.07E-11	NA	2.00E-03	1.07E-11	NA	2.00E-03	1.07E-11	NA	2.00E-03	1.07E-11	NA
4-Chloro-3-methylphenol	2.50E-01	6.94E-10	NA	2.50E-01	6.94E-10	NA	2.50E-01	6.94E-10	NA	2.50E-01	6.94E-10	NA
Chromium	6.80E+01	3.31E-05	5.67E-09	6.80E+01	3.31E-05	5.67E-09	6.80E+01	3.31E-05	5.67E-09	6.80E+01	3.31E-05	5.67E-09
4,4'-DDD	3.60E-02	NA	1.71E-14	3.60E-02	NA	1.71E-14	3.60E-02	NA	1.71E-14	3.60E-02	NA	1.71E-14
4,4'-DDE	8.00E-03	NA	5.40E-15	8.00E-03	NA	5.40E-15	8.00E-03	NA	5.40E-15	8.00E-03	NA	5.40E-15
4,4'-DDT	1.90E-02	5.28E-09	1.28E-14	1.90E-02	5.28E-09	1.28E-14	1.90E-02	5.28E-09	1.28E-14	1.90E-02	5.28E-09	1.28E-14
delta-BHC	3.00E-03	1.39E-09	NA	3.00E-03	1.39E-09	NA	3.00E-03	1.39E-09	NA	3.00E-03	1.39E-09	NA
Dibenzofuran	2.45E+01	1.70E-06	NA	2.67E+01	1.85E-06	NA	1.90E+00	1.32E-07	NA	3.22E+01	2.24E-06	NA
1,2-Dichloropropane	2.00E-03	4.03E-11	NA	2.00E-03	4.03E-11	NA	2.00E-03	4.03E-11	NA	2.00E-03	4.03E-11	NA
1,2-Dichlorobenzene	2.00E-03	1.21E-12	9.52E-17	2.00E-03	1.21E-12	9.52E-17	2.00E-03	1.21E-12	9.52E-17	2.00E-03	1.21E-12	9.52E-17
1,4-Dichlorobenzene	4.00E-03	5.05E-10	NA	4.00E-03	5.05E-10	NA	4.00E-03	5.05E-10	NA	4.00E-03	5.05E-10	NA
4,6-Dinitro-2-methylphenol	1.50E+00	2.08E-07	NA	1.50E+00	2.08E-07	NA	1.50E+00	2.08E-07	NA	1.50E+00	2.08E-07	NA
2,4-Dinitrophenol	6.30E-01	4.38E-08	NA	6.30E-01	4.38E-08	NA	6.30E-01	4.38E-08	NA	6.30E-01	4.38E-08	NA
Endosulfan II	1.40E-02	3.24E-10	NA	1.40E-02	3.24E-10	NA	1.40E-02	3.24E-10	NA	1.40E-02	3.24E-10	NA
Endosulfan Sulfate	1.40E-02	3.24E-10	NA	1.40E-02	3.24E-10	NA	1.40E-02	3.24E-10	NA	1.40E-02	3.24E-10	NA
Endrin	3.60E-02	1.67E-08	NA	3.60E-02	1.67E-08	NA	3.60E-02	1.67E-08	NA	3.60E-02	1.67E-08	NA
Endrin Aldehyde	3.30E-02	1.53E-08	NA	3.30E-02	1.53E-08	NA	3.30E-02	1.53E-08	NA	3.30E-02	1.53E-08	NA
Ethylbenzene	2.10E+00	1.01E-09	NA	2.10E+00	1.01E-09	NA	2.10E+00	1.01E-09	NA	2.10E+00	1.01E-09	NA
Isopropylbenzene	3.30E-02	4.58E-11	NA	3.30E-02	4.58E-11	NA	3.30E-02	4.58E-11	NA	3.30E-02	4.58E-11	NA
Manganese	8.52E+02	8.28E-03	NA	8.52E+02	8.28E-03	NA	8.52E+02	8.28E-03	NA	8.52E+02	8.28E-03	NA
Methylene Chloride	7.40E-02	1.20E-11	2.42E-16	7.40E-02	1.20E-11	2.42E-16	7.40E-02	1.20E-11	2.42E-16	7.40E-02	1.20E-11	2.42E-16
4-Nitrophenol	2.50E-01	4.34E-09	NA	2.50E-01	4.34E-09	NA	2.50E-01	4.34E-09	NA	2.50E-01	4.34E-09	NA
Phenol	1.20E-02	5.56E-12	NA	1.20E-02	5.56E-12	NA	1.20E-02	5.56E-12	NA	1.20E-02	5.56E-12	NA
Tetrachloroethene	8.00E-03	1.01E-11	3.33E-16	8.00E-03	1.01E-11	3.33E-16	8.00E-03	1.01E-11	3.33E-16	8.00E-03	1.01E-11	3.33E-16
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	7.18E-11	NA	1.55E-01	7.18E-11	NA	1.55E-01	7.18E-11	NA	1.55E-01	7.18E-11	NA
Toluene	2.80E-02	2.78E-12	NA	2.80E-02	2.78E-12	NA	2.80E-02	2.78E-12	NA	2.80E-02	2.78E-12	NA
1,2,4-Trichlorobenzene	1.00E-03	1.26E-10	NA	1.00E-03	1.26E-10	NA	1.00E-03	1.26E-10	NA	1.00E-03	1.26E-10	NA
1,1,1-Trichloroethane	5.00E-03	1.10E-12	NA	5.00E-03	1.10E-12	NA	5.00E-03	1.10E-12	NA	5.00E-03	1.10E-12	NA
Trichlorofluoromethane	2.00E-03	1.39E-12	NA	2.00E-03	1.39E-12	NA	2.00E-03	1.39E-12	NA	2.00E-03	1.39E-12	NA
2,4,5-Trichlorophenol	1.60E-01	2.22E-10	NA	1.60E-01	2.22E-10	NA	1.60E-01	2.22E-10	NA	1.60E-01	2.22E-10	NA
2,4,6-Trichlorophenol	3.50E-01	4.86E-11	7.54E-15	3.50E-01	4.86E-11	7.54E-15	3.50E-01	4.86E-11	7.54E-15	3.50E-01	4.86E-11	7.54E-15
1,2,4-Trimethylbenzene	4.40E-02	3.59E-09	NA	4.40E-02	3.59E-09	NA	4.40E-02	3.59E-09	NA	4.40E-02	3.59E-09	NA
Total Xylenes	2.00E-03	9.58E-12	NA	2.00E-03	9.58E-12	NA	2.00E-03	9.58E-12	NA	2.00E-03	9.58E-12	NA
1,2,3,4,6,7,8-HpCDD	2.35E-02	NA	6.99E-11	1.43E-02	NA	4.25E-11	8.85E-03	NA	2.63E-11	1.01E-02	NA	3.02E-11
1,2,3,4,6,7,8-HpCDF	3.85E-03	NA	1.15E-11	2.90E-03	NA	8.62E-12	3.17E-03	NA	9.42E-12	1.86E-03	NA	5.54E-12
1,2,3,4,7,8,9-HpCDF	3.25E-04	NA	9.67E-13	2.58E-04	NA	7.67E-13	3.19E-04	NA	9.51E-13	1.35E-04	NA	4.03E-13
1,2,3,4,7,8-HxCDD	6.80E-05	NA	2.02E-12	5.46E-05	NA	1.63E-12	3.78E-05	NA	1.12E-12	1.08E-04	NA	3.20E-12
1,2,3,4,7,8-HxCDF	2.91E-04	NA	8.67E-12	2.47E-04	NA	7.35E-12	4.47E-04	NA	1.33E-11	1.12E-04	NA	3.34E-12
1,2,3,6,7,8-HxCDD	6.00E-04	NA	1.78E-11	4.65E-04	NA	1.38E-11	3.52E-04	NA	1.05E-11	3.75E-04	NA	1.12E-11
1,2,3,6,7,8-HxCDF	8.93E-05	NA	2.66E-12	6.94E-05	NA	2.07E-12	9.97E-05	NA	2.97E-12	4.70E-05	NA	1.40E-12
1,2,3,7,8,9-HxCDD	1.37E-04	NA	4.08E-12	9.55E-05	NA	2.84E-12	7.44E-05	NA	2.21E-12	1.70E-04	NA	5.07E-12
1,2,3,7,8,9-HxCDF	1.12E-04	NA	3.33E-12	1.12E-04	NA	3.34E-12	9.85E-05	NA	2.93E-12	2.83E-05	NA	8.42E-13
1,2,3,7,8-PeCDD	1.69E-05	NA	5.03E-12	1.46E-05	NA	4.34E-12	1.10E-05	NA	3.28E-12	3.48E-05	NA	1.03E-11
1,2,3,7,8-PeCDF	3.01E-05	NA	2.68E-13	3.84E-05	NA	3.43E-13	2.59E-05	NA	2.31E-13	1.13E-05	NA	1.01E-13
2,3,4,6,7,8-HxCDF	1.36E-04	NA	4.05E-12	1.15E-04	NA	3.42E-12	1.68E-04	NA	4.99E-12	6.83E-05	NA	2.03E-12
2,3,4,7,8-PeCDF	5.91E-05	NA	5.27E-12	8.12E-05	NA	7.25E-12	8.79E-05	NA	7.84E-12	2.09E-05	NA	1.86E-12
2,3,7,8-TCDD	2.54E-06	NA	7.57E-13	2.36E-06	NA	7.03E-13	ND	ND	ND	2.98E-06	NA	8.86E-13
2,3,7,8-TCDF	3.55E-06	NA	1.06E-13	7.61E-06	NA	2.26E-13	5.04E-06	NA	1.50E-13	2.45E-06	NA	7.29E-14
OCDD	2.00E-01	NA	1.78E-11	1.38E-01	NA	1.23E-11	9.12E-02	NA	8.14E-12	8.88E-02	NA	7.92E-12
OCDF	1.79E-02	NA	1.60E-12	1.34E-02	NA	1.20E-12	1.17E-02	NA	1.05E-12	7.12E-03	NA	6.35E-13
TCDD TEQ	5.05E-04	NA	1.50E-10	3.73E-04	NA	1.11E-10	3.20E-04	NA	9.54E-11	2.81E-04	NA	8.37E-11
Acenaphthene	5.24E+00	1.21E-09	NA	5.07E+00	1.17E-09	NA	1.17E+00	2.71E-10	NA	1.13E+01	2.62E-09	NA
Acenaphthylene	2.14E+00	3.47E-07	NA	2.68E+00	4.35E-07	NA	3.35E-01	5.43E-08	NA	6.79E+00	1.10E-06	NA
Anthracene	1.48E+00	6.87E-11	NA	4.25E+00	1.97E-10	NA	4.85E+00	2.25E-10	NA	6.91E+00	3.20E-10	NA
Benzo(a)anthracene	1.22E+00	5.64E-09	7.49E-13	2.59E+00	1.20E-08	1.59E-12	1.80E+00	8.32E-09	1.11E-12	3.23E+00	1.49E-08	1.99E-12
Benzo(a)pyrene	5.06E-01	2.34E-09	3.11E-12	1.20E+00	5.57E-09	7.40E-12	9.00E-01	4.17E-09	5.54E-12	4.55E+00	2.11E-08	2.80E-11
Benzo(b)fluoranthene	6.24E-01	2.89E-09	3.84E-13	1.78E+00	8.25E-09	1.10E-12	2.08E+00	9.61E-09	1.28E-12	3.61E+00	1.67E-08	2.22E-12
Benzo(g,h,i)perylene	8.65E-01	1.40E-07	NA	1.74E+00	2.82E-07	NA	1.63E+00	2.64E-07	NA	4.17E+00	6.76E-07	NA
Benzo(k)fluoranthene	3.27E-01	1.51E-09	2.01E-14	1.65E+00	7.62E-09	1.01E-13	7.09E-01	3.28E-09	4.36E-14	1.44E+00	6.67E-09	8.86E-14
Chrysene	4.35E+00	2.01E-08	2.67E-14	5.09E+00	2.36E-08	3.13E-14	2.74E+00	1.27E-08	1.69E-14	7.63E+00	3.53E-08	4.70E-14
Dibenz(a,h)anthracene	1.35E+00	6.25E-09	8.31E-12	2.20E+00	1.02E-08	1.35E-11	2.52E+00	1.17E-08	1.55E-11	5.97E+00	2.77E-08	3.67E-11
Fluoranthene	4.11E+00	1.43E-09	NA	1.11E+01	3.85E-09	NA	7.00E+00	2.43E-09	NA	1.68E+01	5.85E-09	NA
Fluorene	2.17E+00	7.53E-10	NA	5.25E+00	1.82E-09	NA	1.73E+00	6.00E-10	NA	5.14E+00	1.78E-09	NA
Indeno(1,2,3-cd)pyrene	2.81E-01	1.30E-09	1.73E-13	1.52E+00	7.04E-09	9.36E-13	1.10E+00	5.08E-09	6.75E-13	2.19E+00	1.01E-08	1.34E-12
1-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.23E+01	2.00E-06	NA
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.79E+01	2.90E-06	NA
Naphthalene	1.13E+00	1.84E-07	NA	5.32E+00	8.62E-07	NA	3.62E-01	5.86E-08	NA	1.10E+01	1.78E-06	NA
Phenanthrene	2.32E+00	3.75E-07	NA	1.43E+01	2.32E-06	NA	2.18E+00	3.53E-07	NA	9.58E+00	1.55E-06	NA
Pyrene	1.13E+00	5.24E-10	NA	7.92E+00	3.67E-09	NA	5.28E+00	2.44E-09	NA	3.44E+01	1.59E-08	NA
BaP-TE	2.07E+00	3.36E-07	1.27E-11	3.64E+00	5.89E-07	2.24E-11	3.91E+00	6.34E-07	2.41E-11	1.09E+01	1.76E-06	6.69E-11
Pentachlorophenol	2.15E+01	9.97E-08	NA	5.30E+01	2.45E-07	NA	4.15E+01	1.92E-07	NA	1.01E+01	4.67E-08	NA
Total		8.31E-03	5.83E-09		8.32E-03	5.80E-09		8.31E-03	5.79E-09		8.32E-03	5.82E-09

Table C-20
SITE-WIDE & AREA-SPECIFIC RISKS
INHALATION OF VOLATILES
CONSTRUCTION WORKER

Constituent	Site-Wide			Area A			Area B			Area C			Area F		
	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	7.28E-06	5.30E-11	3.00E-03	7.28E-06	5.30E-11	3.00E-03	7.28E-06	5.30E-11	3.00E-03	7.28E-06	5.30E-11	3.00E-03	7.28E-06	5.30E-11
Barium	2.99E+02	NA	NA	2.99E+02	NA	NA	2.99E+02	NA	NA	2.99E+02	NA	NA	2.99E+02	NA	NA
Chlorobenzene	3.00E-03	1.24E-05	NA	3.00E-03	1.24E-05	NA	3.00E-03	1.24E-05	NA	3.00E-03	1.24E-05	NA	3.00E-03	1.24E-05	NA
Chloromethane	2.00E-03	3.85E-05	NA	2.00E-03	3.85E-05	NA	2.00E-03	3.85E-05	NA	2.00E-03	3.85E-05	NA	2.00E-03	3.85E-05	NA
4-Chloro-3-methylphenol	2.50E-01	2.75E-06	NA	2.50E-01	2.75E-06	NA	2.50E-01	2.75E-06	NA	2.50E-01	2.75E-06	NA	2.50E-01	2.75E-06	NA
Chromium	6.80E+01	NA	NA	6.80E+01	NA	NA	6.80E+01	NA	NA	6.80E+01	NA	NA	6.80E+01	NA	NA
4,4'-DDD	3.60E-02	NA	2.68E-12	3.60E-02	NA	2.68E-12	3.60E-02	NA	2.68E-12	3.60E-02	NA	2.68E-12	3.60E-02	NA	2.68E-12
4,4'-DDE	8.00E-03	NA	7.89E-13	8.00E-03	NA	7.89E-13	8.00E-03	NA	7.89E-13	8.00E-03	NA	7.89E-13	8.00E-03	NA	7.89E-13
4,4'-DDT	1.90E-02	6.31E-07	1.53E-12	1.90E-02	6.31E-07	1.53E-12	1.90E-02	6.31E-07	1.53E-12	1.90E-02	6.31E-07	1.53E-12	1.90E-02	6.31E-07	1.53E-12
delta-BHC	3.00E-03	1.09E-05	NA	3.00E-03	1.09E-05	NA	3.00E-03	1.09E-05	NA	3.00E-03	1.09E-05	NA	3.00E-03	1.09E-05	NA
Dibenzofuran	5.17E+01	1.79E-01	NA	5.17E+01	1.79E-01	NA	3.22E+01	1.12E-01	NA	1.90E+00	6.58E-03	NA	2.26E+01	7.83E-02	NA
1,2-Dichlorobenzene	2.00E-03	1.01E-05	NA	2.00E-03	1.01E-05	NA	2.00E-03	1.01E-05	NA	2.00E-03	1.01E-05	NA	2.00E-03	1.01E-05	NA
1,4-Dichlorobenzene	2.00E-03	5.92E-06	4.67E-10	2.00E-03	5.92E-06	4.67E-10	2.00E-03	5.92E-06	4.67E-10	2.00E-03	5.92E-06	4.67E-10	2.00E-03	5.92E-06	4.67E-10
1,2-Dichloropropane	4.00E-03	5.67E-04	NA	4.00E-03	5.67E-04	NA	4.00E-03	5.67E-04	NA	4.00E-03	5.67E-04	NA	4.00E-03	5.67E-04	NA
4,6-Dinitro-2-methylphenol	1.50E+00	6.56E-03	NA	1.50E+00	6.56E-03	NA	1.50E+00	6.56E-03	NA	1.50E+00	6.56E-03	NA	1.50E+00	6.56E-03	NA
2,4-Dinitrophenol	6.30E-01	1.84E-03	NA	6.30E-01	1.84E-03	NA	6.30E-01	1.84E-03	NA	6.30E-01	1.84E-03	NA	6.30E-01	1.84E-03	NA
Endosulfan II	1.40E-02	1.44E-06	NA	1.40E-02	1.44E-06	NA	1.40E-02	1.44E-06	NA	1.40E-02	1.44E-06	NA	1.40E-02	1.44E-06	NA
Endosulfan Sulfate	1.40E-02	1.44E-06	NA	1.40E-02	1.44E-06	NA	1.40E-02	1.44E-06	NA	1.40E-02	1.44E-06	NA	1.40E-02	1.44E-06	NA
Endrin	3.60E-02	2.70E-05	NA	3.60E-02	2.70E-05	NA	3.60E-02	2.70E-05	NA	3.60E-02	2.70E-05	NA	3.60E-02	2.70E-05	NA
Endrin Aldehyde	3.30E-02	2.47E-05	NA	3.30E-02	2.47E-05	NA	3.30E-02	2.47E-05	NA	3.30E-02	2.47E-05	NA	3.30E-02	2.47E-05	NA
Ethylbenzene	2.10E+00	6.90E-04	NA	2.10E+00	6.90E-04	NA	2.10E+00	6.90E-04	NA	2.10E+00	6.90E-04	NA	2.10E+00	6.90E-04	NA
Isopropylbenzene	3.30E-02	2.37E-05	NA	3.30E-02	2.37E-05	NA	3.30E-02	2.37E-05	NA	3.30E-02	2.37E-05	NA	3.30E-02	2.37E-05	NA
Manganese	8.52E+02	NA	NA	8.52E+02	NA	NA	8.52E+02	NA	NA	8.52E+02	NA	NA	8.52E+02	NA	NA
Methylene Chloride	7.40E-02	2.21E-05	4.44E-10	7.40E-02	2.21E-05	4.44E-10	7.40E-02	2.21E-05	4.44E-10	7.40E-02	2.21E-05	4.44E-10	7.40E-02	2.21E-05	4.44E-10
4-Nitrophenol	2.50E-01	1.23E-04	NA	2.50E-01	1.23E-04	NA	2.50E-01	1.23E-04	NA	2.50E-01	1.23E-04	NA	2.50E-01	1.23E-04	NA
Phenol	1.20E-02	1.25E-07	NA	1.20E-02	1.25E-07	NA	1.20E-02	1.25E-07	NA	1.20E-02	1.25E-07	NA	1.20E-02	1.25E-07	NA
Tetrachloroethene	8.00E-03	1.53E-05	5.06E-10	8.00E-03	1.53E-05	5.06E-10	8.00E-03	1.53E-05	5.06E-10	8.00E-03	1.53E-05	5.06E-10	8.00E-03	1.53E-05	5.06E-10
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	1.46E-06	NA	1.55E-01	1.46E-06	NA	1.55E-01	1.46E-06	NA	1.55E-01	1.46E-06	NA	1.55E-01	1.46E-06	NA
Toluene	2.80E-02	2.63E-06	NA	2.80E-02	2.63E-06	NA	2.80E-02	2.63E-06	NA	2.80E-02	2.63E-06	NA	2.80E-02	2.63E-06	NA
1,2,4-Trichlorobenzene	1.00E-03	1.06E-05	NA	1.00E-03	1.06E-05	NA	1.00E-03	1.06E-05	NA	1.00E-03	1.06E-05	NA	1.00E-03	1.06E-05	NA
1,1,1-Trichloroethane	5.00E-03	1.97E-06	NA	5.00E-03	1.97E-06	NA	5.00E-03	1.97E-06	NA	5.00E-03	1.97E-06	NA	5.00E-03	1.97E-06	NA
Trichlorofluoromethane	2.00E-03	5.06E-06	NA	2.00E-03	5.06E-06	NA	2.00E-03	5.06E-06	NA	2.00E-03	5.06E-06	NA	2.00E-03	5.06E-06	NA
2,4,5-Trichlorophenol	1.60E-01	1.16E-06	NA	1.60E-01	1.16E-06	NA	1.60E-01	1.16E-06	NA	1.60E-01	1.16E-06	NA	1.60E-01	1.16E-06	NA
2,4,6-Trichlorophenol	3.50E-01	1.17E-06	1.81E-10	3.50E-01	1.17E-06	1.81E-10	3.50E-01	1.17E-06	1.81E-10	3.50E-01	1.17E-06	1.81E-10	3.50E-01	1.17E-06	1.81E-10
1,2,4-Trimethylbenzene	4.40E-02	1.07E-03	NA	4.40E-02	1.07E-03	NA	4.40E-02	1.07E-03	NA	4.40E-02	1.07E-03	NA	4.40E-02	1.07E-03	NA
Total Xylenes	2.00E-03	5.80E-06	NA	2.00E-03	5.80E-06	NA	2.00E-03	5.80E-06	NA	2.00E-03	5.80E-06	NA	2.00E-03	5.80E-06	NA
1,2,3,4,6,7,8-HpCDD	1.11E-02	NA	6.26E-09	7.05E-03	NA	3.99E-09	1.23E-02	NA	6.96E-09	5.40E-04	NA	3.05E-10	1.12E-02	NA	6.34E-09
1,2,3,4,6,7,8-HpCDF	2.05E-03	NA	1.16E-09	1.11E-03	NA	6.28E-10	2.68E-03	NA	1.51E-09	2.80E-04	NA	1.58E-10	1.97E-03	NA	1.11E-09
1,2,3,4,7,8,9-HpCDF	1.72E-04	NA	9.71E-11	1.01E-04	NA	5.69E-11	2.15E-04	NA	1.22E-10	1.90E-05	NA	1.07E-11	1.33E-04	NA	7.55E-11
1,2,3,4,7,8-HxCDD	6.11E-05	NA	3.46E-10	2.90E-05	NA	1.64E-10	7.21E-05	NA	4.08E-10	2.50E-06	NA	1.41E-11	1.33E-04	NA	7.55E-10
1,2,3,4,7,8-HxCDF	1.64E-04	NA	9.25E-10	9.90E-05	NA	5.60E-10	1.97E-04	NA	1.11E-09	2.60E-05	NA	1.47E-10	1.03E-04	NA	5.80E-10
1,2,3,6,7,8-HxCDD	3.36E-04	NA	1.90E-09	2.10E-04	NA	1.19E-09	3.43E-04	NA	1.94E-09	2.00E-05	NA	1.13E-10	4.45E-04	NA	2.52E-09
1,2,3,6,7,8-HxCDF	4.98E-05	NA	2.82E-10	1.60E-05	NA	9.05E-11	4.90E-05	NA	2.77E-10	4.10E-06	NA	2.32E-11	5.39E-05	NA	3.05E-10
1,2,3,7,8,9-HxCDD	1.03E-04	NA	5.81E-10	2.40E-05	NA	1.36E-10	1.22E-04	NA	6.92E-10	2.15E-06	NA	1.22E-11	2.11E-04	NA	1.19E-09
1,2,3,7,8,9-HxCDF	5.47E-05	NA	3.10E-10	4.50E-06	NA	2.55E-11	4.53E-05	NA	2.56E-10	5.90E-06	NA	3.34E-11	2.85E-05	NA	1.62E-10
1,2,3,7,8-PeCDD	1.83E-05	NA	1.04E-09	3.10E-06	NA	1.75E-10	2.35E-05	NA	1.33E-09	ND	ND	ND	4.30E-05	NA	2.43E-09
1,2,3,7,8-PeCDF	1.68E-05	NA	2.85E-11	9.30E-06	NA	1.58E-11	1.57E-05	NA	2.67E-11	1.80E-06	NA	3.05E-12	1.16E-05	NA	1.97E-11
2,3,4,6,7,8-HxCDF	7.61E-05	NA	4.31E-10	1.34E-05	NA	7.58E-11	9.15E-05	NA	5.18E-10	2.00E-06	NA	1.13E-11	7.52E-05	NA	4.25E-10
2,3,4,7,8-PeCDF	3.53E-05	NA	5.99E-10	9.10E-06	NA	1.54E-10	3.67E-05	NA	6.23E-10	2.10E-06	NA	3.56E-11	1.92E-05	NA	3.25E-10
2,3,7,8-TCDD	2.05E-06	NA	1.16E-10	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.34E-06	NA	1.89E-10
2,3,7,8-TCDF	2.92E-06	NA	1.65E-11	8.75E-07	NA	4.95E-12	3.46E-06	NA	1.96E-11	ND	ND	ND	2.37E-06	NA	1.34E-11
OCDD	9.78E-02	NA	1.66E-09	7.45E-02	NA	1.26E-09	1.38E-01	NA	2.34E-09	7.30E-03	NA	1.24E-10	8.96E-02	NA	1.52E-09
OCDF	8.69E-03	NA	1.48E-10	4.50E-03	NA	7.64E-11	1.21E-02	NA	2.05E-10	7.90E-04	NA	1.34E-11	7.05E-03	NA	1.20E-10
TCDD TEQ	2.73E-04	NA	1.54E-08	1.52E-04	NA	8.62E-09	3.26E-04	NA	1.84E-08	1.91E-05	NA	1.08E-09	3.16E-04	NA	1.79E-08
Acenaphthene	4.93E+01	1.90E-04	NA	6.50E+01	2.50E-04	NA	1.23E+01	4.74E-05	NA	2.08E+00	8.00E-06	NA	1.39E+01	5.36E-05	NA
Acenaphthylene	1.76E+01	4.22E-02	NA	2.51E+01	6.01E-02	NA	7.00E+00	1.67E-02	NA	1.42E+00	3.39E-03	NA	8.94E+00	2.14E-02	NA
Anthracene	2.81E+01	6.03E-06	NA	3.30E+01	7.09E-06	NA	6.45E+00	1.39E-06	NA	7.60E-01	1.63E-07	NA	9.23E+00	1.98E-06	NA
Benzo(a)anthracene	8.03E+00	1.44E-05	1.92E-09	9.20E+00	1.65E-05	2.20E-09	3.28E+00	5.89E-06	7.83E-10	3.58E-01	6.44E-07	8.56E-11	3.97E+00	7.14E-06	9.48E-10
Benzo(a)pyrene	6.47E+00	4.44E-06	5.90E-09	9.10E+00	6.25E-06	8.31E-09	6.63E+00	4.56E-06	6.06E-09	1.85E-01	1.27E-07	1.69E-10	2.90E+00	1.99E-06	2.64E-09
Benzo(b)fluoranthene	6.94E+00	2.55E-05	3.39E-09	9.90E+00	3.64E-05	4.83E-09	3.43E+00	1.26E-05	1.67E-09	2.92E-01	1.07E-06	1.43E-10	4.51E+00	1.66E-05	2.20E-09
Benzo(g,h,i)perylene	5.62E+00	1.68E-04	NA	6.90E+00	2.06E-04	NA	5.67E+00	1.69E-04	NA	2.35E-01	7.03E-06	NA	3.15E+00	9.40E-05	NA
Benzo(k)fluoranthene	2.55E+00	1.11E-06	1.47E-11	2.90E+00	1.26E-06	1.67E-11	1.02E+00	4.41E-07	5.85E-12	1.27E-01	5.52E-08	7.33E-13	2.18E+00	9.42E-07	1.25E-11
Chrysene	1.63E+01	1.01E-04	1.34E-10	2.20E+01	1.36E-04	1.81E-10	9.09E+00	5.64E-05	7.49E-11	6.90E-01	4.28E-06	5.68E-12	7.88E+00	4.88E-05	6.49E-11
Dibenz(a,h)anthracene	7.87E+00	1.30E-06	1.72E-09	9.50E+00	1.56E-06	2.08E-09	8.90E+00	1.46E-06	1.95E-09	3.69E-01	6.07E-08	8.06E-11	3.75E+00	6.18E-07	8.21E-10
Fluoranthene	7.46E+01	3.06E-05	NA	8.40E+01	3.45E-05	NA	1.47E+01	6.02E-06	NA	3.00E+00	1.23E-06	NA	2.42E+01	9.93E-06	NA
Fluorene	3.87E+01	9.47E-05	NA	4.70E+01	1.15E-04	NA	7.38E+00	1.81E-05	NA	1.64E+00	4.01E-06	NA	3.81E+00	9.33E-06	NA
Indeno(1,2,3-cd)pyrene	2.11E+00	6.27E-07	8.33E-11	2.90E+00	8.62E-07	1.14E-10	1.97E+00	5.86E-07	7.79E-11	1.49E-01	4.42E-08	5.87E-12	2.83E+00	8.40E-07	1.12E-10
1-Methylnaphthalene	8.71E+00	8.08E-02	NA	ND	ND	ND	4.20E+00	3.89E-02	NA	4.46E+00	4.14E-02	NA	3.46E+01	3.21E-01	NA
2-Methylnaphthalene	9.84E+00	7.05E-02	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.48E+01	2.49E-01	NA
Naphthalene	3.11E+01	3.28E-01	NA	9.06E+01	9.56E-01	NA	1.76E+01	1.86E-01	NA	1.35E+00	1.43E-02	NA	5.85E+00	6.18E-02	NA
Phenanthrene	1.11E+02	1.73E-01	NA	1.30E+02	2.02E-01	NA	1.35E+01	2.10E-02	NA	4.81E+00	7.47E-03	NA	7.74E+00	1.20E-02	NA
Pyrene	4.34E+01	1.91E-05	NA	4.80E+01	2.11E-05	NA	5.57E+01	2.45E-05	NA	1.77E+00	7.80E-07	NA	1.53E+01	6.74E-06	NA
BaP-TE	1.60E+01	3.85E-04	1.46E-08	2.07E+01	4.98E-04	1.89E-08	1.54E+01	3.70E-04	1.41E-08	6.21E-01	1.49E-05	5.67E-10	7.64E+00	1.84E-04	6.98E-09
Pentachlorophenol	1.28E+01	3.22E-05	NA	2.03E+00	5.13E-06	NA	3.62E+00	9.14E-06	NA	9.71E-01	2.45E-06	NA	1.88E+01	4.75E-05	NA
Total		8.86E-01	3.17E-08		1.41E+00	2.92E-08		3.86E-01	3.41E-08		8.43E-02	3.30E-09		7.55E-01	2.65E-08

Table C-20
SITE-WIDE & AREA-SPECIFIC RISKS
INHALATION OF VOLATILES
CONSTRUCTION WORKER

Constituent	Area G			Area H			Area S			Area B/F		
	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	7.28E-06	5.30E-11	3.00E-03	7.28E-06	5.30E-11	3.00E-03	7.28E-06	5.30E-11	3.00E-03	7.28E-06	5.30E-11
Barium	2.99E+02	NA	NA	2.99E+02	NA	NA	2.99E+02	NA	NA	2.99E+02	NA	NA
Chlorobenzene	3.00E-03	1.24E-05	NA	3.00E-03	1.24E-05	NA	3.00E-03	1.24E-05	NA	3.00E-03	1.24E-05	NA
Chloromethane	2.00E-03	3.85E-05	NA	2.00E-03	3.85E-05	NA	2.00E-03	3.85E-05	NA	2.00E-03	3.85E-05	NA
4-Chloro-3-methylphenol	2.50E-01	2.75E-06	NA	2.50E-01	2.75E-06	NA	2.50E-01	2.75E-06	NA	2.50E-01	2.75E-06	NA
Chromium	6.80E+01	NA	NA	6.80E+01	NA	NA	6.80E+01	NA	NA	6.80E+01	NA	NA
4,4'-DDD	3.60E-02	NA	2.68E-12	3.60E-02	NA	2.68E-12	3.60E-02	NA	2.68E-12	3.60E-02	NA	2.68E-12
4,4'-DDE	8.00E-03	NA	7.89E-13	8.00E-03	NA	7.89E-13	8.00E-03	NA	7.89E-13	8.00E-03	NA	7.89E-13
4,4'-DDT	1.90E-02	6.31E-07	1.53E-12	1.90E-02	6.31E-07	1.53E-12	1.90E-02	6.31E-07	1.53E-12	1.90E-02	6.31E-07	1.53E-12
delta-BHC	3.00E-03	1.09E-05	NA	3.00E-03	1.09E-05	NA	3.00E-03	1.09E-05	NA	3.00E-03	1.09E-05	NA
Dibenzofuran	2.45E+01	8.49E-02	NA	2.67E+01	9.25E-02	NA	1.90E+00	6.58E-03	NA	3.22E+01	1.12E-01	NA
1,2-Dichlorobenzene	2.00E-03	1.01E-05	NA	2.00E-03	1.01E-05	NA	2.00E-03	1.01E-05	NA	2.00E-03	1.01E-05	NA
1,4-Dichlorobenzene	2.00E-03	5.92E-06	4.67E-10	2.00E-03	5.92E-06	4.67E-10	2.00E-03	5.92E-06	4.67E-10	2.00E-03	5.92E-06	4.67E-10
1,2-Dichloropropane	4.00E-03	5.67E-04	NA	4.00E-03	5.67E-04	NA	4.00E-03	5.67E-04	NA	4.00E-03	5.67E-04	NA
4,6-Dinitro-2-methylphenol	1.50E+00	6.56E-03	NA	1.50E+00	6.56E-03	NA	1.50E+00	6.56E-03	NA	1.50E+00	6.56E-03	NA
2,4-Dinitrophenol	6.30E-01	1.84E-03	NA	6.30E-01	1.84E-03	NA	6.30E-01	1.84E-03	NA	6.30E-01	1.84E-03	NA
Endosulfan II	1.40E-02	1.44E-06	NA	1.40E-02	1.44E-06	NA	1.40E-02	1.44E-06	NA	1.40E-02	1.44E-06	NA
Endosulfan Sulfate	1.40E-02	1.44E-06	NA	1.40E-02	1.44E-06	NA	1.40E-02	1.44E-06	NA	1.40E-02	1.44E-06	NA
Endrin	3.60E-02	2.70E-05	NA	3.60E-02	2.70E-05	NA	3.60E-02	2.70E-05	NA	3.60E-02	2.70E-05	NA
Endrin Aldehyde	3.30E-02	2.47E-05	NA	3.30E-02	2.47E-05	NA	3.30E-02	2.47E-05	NA	3.30E-02	2.47E-05	NA
Ethylbenzene	2.10E+00	6.90E-04	NA	2.10E+00	6.90E-04	NA	2.10E+00	6.90E-04	NA	2.10E+00	6.90E-04	NA
Isopropylbenzene	3.30E-02	2.37E-05	NA	3.30E-02	2.37E-05	NA	3.30E-02	2.37E-05	NA	3.30E-02	2.37E-05	NA
Manganese	8.52E+02	NA	NA	8.52E+02	NA	NA	8.52E+02	NA	NA	8.52E+02	NA	NA
Methylene Chloride	7.40E-02	2.21E-05	4.44E-10	7.40E-02	2.21E-05	4.44E-10	7.40E-02	2.21E-05	4.44E-10	7.40E-02	2.21E-05	4.44E-10
4-Nitrophenol	2.50E-01	1.23E-04	NA	2.50E-01	1.23E-04	NA	2.50E-01	1.23E-04	NA	2.50E-01	1.23E-04	NA
Phenol	1.20E-02	1.25E-07	NA	1.20E-02	1.25E-07	NA	1.20E-02	1.25E-07	NA	1.20E-02	1.25E-07	NA
Tetrachloroethene	8.00E-03	1.53E-05	5.06E-10	8.00E-03	1.53E-05	5.06E-10	8.00E-03	1.53E-05	5.06E-10	8.00E-03	1.53E-05	5.06E-10
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	1.46E-06	NA	1.55E-01	1.46E-06	NA	1.55E-01	1.46E-06	NA	1.55E-01	1.46E-06	NA
Toluene	2.80E-02	2.63E-06	NA	2.80E-02	2.63E-06	NA	2.80E-02	2.63E-06	NA	2.80E-02	2.63E-06	NA
1,2,4-Trichlorobenzene	1.00E-03	1.06E-05	NA	1.00E-03	1.06E-05	NA	1.00E-03	1.06E-05	NA	1.00E-03	1.06E-05	NA
1,1,1-Trichloroethane	5.00E-03	1.97E-06	NA	5.00E-03	1.97E-06	NA	5.00E-03	1.97E-06	NA	5.00E-03	1.97E-06	NA
Trichlorofluoromethane	2.00E-03	5.06E-06	NA	2.00E-03	5.06E-06	NA	2.00E-03	5.06E-06	NA	2.00E-03	5.06E-06	NA
2,4,5-Trichlorophenol	1.60E-01	1.16E-06	NA	1.60E-01	1.16E-06	NA	1.60E-01	1.16E-06	NA	1.60E-01	1.16E-06	NA
2,4,6-Trichlorophenol	3.50E-01	1.17E-06	1.81E-10	3.50E-01	1.17E-06	1.81E-10	3.50E-01	1.17E-06	1.81E-10	3.50E-01	1.17E-06	1.81E-10
1,2,4-Trimethylbenzene	4.40E-02	1.07E-03	NA	4.40E-02	1.07E-03	NA	4.40E-02	1.07E-03	NA	4.40E-02	1.07E-03	NA
Total Xylenes	2.00E-03	5.80E-06	NA	2.00E-03	5.80E-06	NA	2.00E-03	5.80E-06	NA	2.00E-03	5.80E-06	NA
1,2,3,4,6,7,8-HpCDD	2.35E-02	NA	1.33E-08	1.43E-02	NA	8.07E-09	8.85E-03	NA	5.01E-09	1.01E-02	NA	5.73E-09
1,2,3,4,6,7,8-HpCDF	3.85E-03	NA	2.18E-09	2.90E-03	NA	1.64E-09	3.17E-03	NA	1.79E-09	1.86E-03	NA	1.05E-09
1,2,3,4,7,8,9-HpCDF	3.25E-04	NA	1.84E-10	2.58E-04	NA	1.46E-10	3.19E-04	NA	1.81E-10	1.35E-04	NA	7.65E-11
1,2,3,4,7,8-HxCDD	6.80E-05	NA	3.85E-10	5.46E-05	NA	3.09E-10	3.78E-05	NA	2.14E-10	1.08E-04	NA	6.09E-10
1,2,3,4,7,8-HxCDF	2.91E-04	NA	1.65E-09	2.47E-04	NA	1.40E-09	4.47E-04	NA	2.53E-09	1.12E-04	NA	6.36E-10
1,2,3,6,7,8-HxCDD	6.00E-04	NA	3.39E-09	4.65E-04	NA	2.63E-09	3.52E-04	NA	1.99E-09	3.75E-04	NA	2.12E-09
1,2,3,6,7,8-HxCDF	8.93E-05	NA	5.05E-10	6.94E-05	NA	3.93E-10	9.97E-05	NA	5.64E-10	4.70E-05	NA	2.66E-10
1,2,3,7,8,9-HxCDD	1.37E-04	NA	7.75E-10	9.55E-05	NA	5.40E-10	7.44E-05	NA	4.21E-10	1.70E-04	NA	9.63E-10
1,2,3,7,8,9-HxCDF	1.12E-04	NA	6.33E-10	1.12E-04	NA	6.36E-10	9.85E-05	NA	5.57E-10	2.83E-05	NA	1.60E-10
1,2,3,7,8-PeCDD	1.69E-05	NA	9.57E-10	1.46E-05	NA	8.25E-10	1.10E-05	NA	6.23E-10	3.48E-05	NA	1.97E-09
1,2,3,7,8-PeCDF	3.01E-05	NA	5.10E-11	3.84E-05	NA	6.52E-11	2.59E-05	NA	4.39E-11	1.13E-05	NA	1.92E-11
2,3,4,6,7,8-HxCDF	1.36E-04	NA	7.70E-10	1.15E-04	NA	6.51E-10	1.68E-04	NA	9.49E-10	6.83E-05	NA	3.86E-10
2,3,4,7,8-PeCDF	5.91E-05	NA	1.00E-09	8.12E-05	NA	1.38E-09	8.79E-05	NA	1.49E-09	2.09E-05	NA	3.54E-10
2,3,7,8-TCDD	2.54E-06	NA	1.44E-10	2.36E-06	NA	1.34E-10	ND	ND	ND	2.98E-06	NA	1.68E-10
2,3,7,8-TCDF	3.55E-06	NA	2.01E-11	7.61E-06	NA	4.30E-11	5.04E-06	NA	2.85E-11	2.45E-06	NA	1.39E-11
OCDD	2.00E-01	NA	3.39E-09	1.38E-01	NA	2.34E-09	9.12E-02	NA	1.55E-09	8.88E-02	NA	1.51E-09
OCDF	1.79E-02	NA	3.04E-10	1.34E-02	NA	2.28E-10	1.17E-02	NA	1.99E-10	7.12E-03	NA	1.21E-10
TCDD TEQ	5.05E-04	NA	2.86E-08	3.73E-04	NA	2.11E-08	3.20E-04	NA	1.81E-08	2.81E-04	NA	1.59E-08
Acenaphthene	5.24E+00	2.02E-05	NA	5.07E+00	1.95E-05	NA	1.17E+00	4.51E-06	NA	1.13E+01	4.35E-05	NA
Acenaphthylene	2.14E+00	5.12E-03	NA	2.68E+00	6.42E-03	NA	3.35E-01	8.01E-04	NA	6.79E+00	1.63E-02	NA
Anthracene	1.48E+00	3.19E-07	NA	4.25E+00	9.12E-07	NA	4.85E+00	1.04E-06	NA	6.91E+00	1.48E-06	NA
Benzo(a)anthracene	1.22E+00	2.19E-06	2.91E-10	2.59E+00	4.66E-06	6.19E-10	1.80E+00	3.23E-06	4.30E-10	3.23E+00	5.80E-06	7.71E-10
Benzo(a)pyrene	5.06E-01	3.48E-07	4.62E-10	1.20E+00	8.27E-07	1.10E-09	9.00E-01	6.19E-07	8.22E-10	4.55E+00	3.13E-06	4.16E-09
Benzo(b)fluoranthene	6.24E-01	2.29E-06	3.05E-10	1.78E+00	6.54E-06	8.69E-10	2.08E+00	7.62E-06	1.01E-09	3.61E+00	1.33E-05	1.76E-09
Benzo(g,h,i)perylene	8.65E-01	2.58E-05	NA	1.74E+00	5.19E-05	NA	1.63E+00	4.87E-05	NA	4.17E+00	1.25E-04	NA
Benzo(k)fluoranthene	3.27E-01	1.42E-07	1.88E-12	1.65E+00	7.12E-07	9.47E-12	7.09E-01	3.07E-07	4.08E-12	1.44E+00	6.24E-07	8.29E-12
Chrysene	4.35E+00	2.70E-05	3.58E-11	5.09E+00	3.16E-05	4.19E-11	2.74E+00	1.70E-05	2.26E-11	7.63E+00	4.73E-05	6.29E-11
Dibenz(a,h)anthracene	1.35E+00	2.22E-07	2.95E-10	2.20E+00	3.62E-07	4.81E-10	2.52E+00	4.16E-07	5.52E-10	5.97E+00	9.83E-07	1.31E-09
Fluoranthene	4.11E+00	1.69E-06	NA	1.11E+01	4.55E-06	NA	7.00E+00	2.87E-06	NA	1.68E+01	6.91E-06	NA
Fluorene	2.17E+00	5.31E-06	NA	5.25E+00	1.29E-05	NA	1.73E+00	4.24E-06	NA	5.14E+00	1.26E-05	NA
Indeno(1,2,3-cd)pyrene	2.81E-01	8.35E-08	1.11E-11	1.52E+00	4.52E-07	6.01E-11	1.10E+00	3.26E-07	4.33E-11	2.19E+00	6.50E-07	8.63E-11
1-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.23E+01	1.15E-01	NA
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.79E+01	1.28E-01	NA
Naphthalene	1.13E+00	1.20E-02	NA	5.32E+00	5.62E-02	NA	3.62E-01	3.82E-03	NA	1.10E+01	1.16E-01	NA
Phenanthrene	2.32E+00	3.60E-03	NA	1.43E+01	2.23E-02	NA	2.18E+00	3.39E-03	NA	9.58E+00	1.49E-02	NA
Pyrene	1.13E+00	4.99E-07	NA	7.92E+00	3.49E-06	NA	5.28E+00	2.33E-06	NA	3.44E+01	1.52E-05	NA
BaP-TE	2.07E+00	4.98E-05	1.89E-09	3.64E+00	8.75E-05	3.32E-09	3.91E+00	9.41E-05	3.57E-09	1.09E+01	2.62E-04	9.93E-09
Pentachlorophenol	2.15E+01	5.44E-05	NA	5.30E+01	1.34E-04	NA	4.15E+01	1.05E-04	NA	1.01E+01	2.55E-05	NA
Total		1.17E-01	3.21E-08		1.89E-01	2.61E-08		2.59E-02	2.34E-08		5.14E-01	2.75E-08

Table C-21
SITE-WIDE & AREA-SPECIFIC RISKS
TOTAL RISKS: CONSTRUCTION WORKER

Constituent	Site-Wide			Area A			Area B			Area C			Area F		
	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	1.09E-04	7.91E-10	3.00E-03	1.09E-04	7.91E-10	3.00E-03	1.09E-04	7.91E-10	3.00E-03	1.09E-04	7.91E-10	3.00E-03	1.09E-04	7.91E-10
Barium	2.99E+02	2.51E-03	NA	2.99E+02	2.51E-03	NA	2.99E+02	2.51E-03	NA	2.99E+02	2.51E-03	NA	2.99E+02	2.51E-03	NA
Chlorobenzene	3.00E-03	1.25E-05	NA	3.00E-03	1.25E-05	NA	3.00E-03	1.25E-05	NA	3.00E-03	1.25E-05	NA	3.00E-03	1.25E-05	NA
Chloromethane	2.00E-03	3.85E-05	NA	2.00E-03	3.85E-05	NA	2.00E-03	3.85E-05	NA	2.00E-03	3.85E-05	NA	2.00E-03	3.85E-05	NA
4-Chloro-3-methylphenol	2.50E-01	5.93E-06	NA	2.50E-01	5.93E-06	NA	2.50E-01	5.93E-06	NA	2.50E-01	5.93E-06	NA	2.50E-01	5.93E-06	NA
Chromium	6.80E+01	2.26E-03	NA	6.80E+01	2.26E-03	NA	6.80E+01	2.26E-03	NA	6.80E+01	2.26E-03	NA	6.80E+01	2.26E-03	NA
4,4'-DDD	3.60E-02	NA	1.17E-10	3.60E-02	NA	1.17E-10	3.60E-02	NA	1.17E-10	3.60E-02	NA	1.17E-10	3.60E-02	NA	1.17E-10
4,4'-DDE	8.00E-03	NA	3.68E-11	8.00E-03	NA	3.68E-11	8.00E-03	NA	3.68E-11	8.00E-03	NA	3.68E-11	8.00E-03	NA	3.68E-11
4,4'-DDT	1.90E-02	3.59E-05	8.71E-11	1.90E-02	3.59E-05	8.71E-11	1.90E-02	3.59E-05	8.71E-11	1.90E-02	3.59E-05	8.71E-11	1.90E-02	3.59E-05	8.71E-11
delta-BHC	3.00E-03	1.19E-05	5.64E-11	3.00E-03	1.19E-05	5.64E-11	3.00E-03	1.19E-05	5.64E-11	3.00E-03	1.19E-05	5.64E-11	3.00E-03	1.19E-05	5.64E-11
Dibenzofuran	5.17E+01	1.99E-01	NA	5.17E+01	1.99E-01	NA	3.22E+01	1.24E-01	NA	1.90E+00	7.30E-03	NA	2.26E+01	8.68E-02	NA
1,2-Dichlorobenzene	2.00E-03	1.01E-05	NA	2.00E-03	1.01E-05	NA	2.00E-03	1.01E-05	NA	2.00E-03	1.01E-05	NA	2.00E-03	1.01E-05	NA
1,4-Dichlorobenzene	2.00E-03	5.96E-06	4.67E-10	2.00E-03	5.96E-06	4.67E-10	2.00E-03	5.96E-06	4.67E-10	2.00E-03	5.96E-06	4.67E-10	2.00E-03	5.96E-06	4.67E-10
1,2-Dichloropropane	4.00E-03	5.68E-04	3.60E-12	4.00E-03	5.68E-04	3.60E-12	4.00E-03	5.68E-04	3.60E-12	4.00E-03	5.68E-04	3.60E-12	4.00E-03	5.68E-04	3.60E-12
4,6-Dinitro-2-methylphenol	1.50E+00	7.51E-03	NA	1.50E+00	7.51E-03	NA	1.50E+00	7.51E-03	NA	1.50E+00	7.51E-03	NA	1.50E+00	7.51E-03	NA
2,4-Dinitrophenol	6.30E-01	2.04E-03	NA	6.30E-01	2.04E-03	NA	6.30E-01	2.04E-03	NA	6.30E-01	2.04E-03	NA	6.30E-01	2.04E-03	NA
Endosulfan II	1.40E-02	3.61E-06	NA	1.40E-02	3.61E-06	NA	1.40E-02	3.61E-06	NA	1.40E-02	3.61E-06	NA	1.40E-02	3.61E-06	NA
Endosulfan Sulfate	1.40E-02	3.61E-06	NA	1.40E-02	3.61E-06	NA	1.40E-02	3.61E-06	NA	1.40E-02	3.61E-06	NA	1.40E-02	3.61E-06	NA
Endrin	3.60E-02	1.49E-04	NA	3.60E-02	1.49E-04	NA	3.60E-02	1.49E-04	NA	3.60E-02	1.49E-04	NA	3.60E-02	1.49E-04	NA
Endrin Aldehyde	3.30E-02	1.36E-04	NA	3.30E-02	1.36E-04	NA	3.30E-02	1.36E-04	NA	3.30E-02	1.36E-04	NA	3.30E-02	1.36E-04	NA
Ethylbenzene	2.10E+00	7.03E-04	NA	2.10E+00	7.03E-04	NA	2.10E+00	7.03E-04	NA	2.10E+00	7.03E-04	NA	2.10E+00	7.03E-04	NA
Isopropylbenzene	3.30E-02	2.39E-05	NA	3.30E-02	2.39E-05	NA	3.30E-02	2.39E-05	NA	3.30E-02	2.39E-05	NA	3.30E-02	2.39E-05	NA
Manganese	8.52E+02	1.24E-02	NA	8.52E+02	1.24E-02	NA	8.52E+02	1.24E-02	NA	8.52E+02	1.24E-02	NA	8.52E+02	1.24E-02	NA
Methylene Chloride	7.40E-02	2.30E-05	4.50E-10	7.40E-02	2.30E-05	4.50E-10	7.40E-02	2.30E-05	4.50E-10	7.40E-02	2.30E-05	4.50E-10	7.40E-02	2.30E-05	4.50E-10
4-Nitrophenol	2.50E-01	1.43E-04	NA	2.50E-01	1.43E-04	NA	2.50E-01	1.43E-04	NA	2.50E-01	1.43E-04	NA	2.50E-01	1.43E-04	NA
Phenol	1.20E-02	1.55E-07	NA	1.20E-02	1.55E-07	NA	1.20E-02	1.55E-07	NA	1.20E-02	1.55E-07	NA	1.20E-02	1.55E-07	NA
Tetrachloroethene	8.00E-03	1.54E-05	5.53E-10	8.00E-03	1.54E-05	5.53E-10	8.00E-03	1.54E-05	5.53E-10	8.00E-03	1.54E-05	5.53E-10	8.00E-03	1.54E-05	5.53E-10
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	1.79E-06	NA	1.55E-01	1.79E-06	NA	1.55E-01	1.79E-06	NA	1.55E-01	1.79E-06	NA	1.55E-01	1.79E-06	NA
Toluene	2.80E-02	2.64E-06	NA	2.80E-02	2.64E-06	NA	2.80E-02	2.64E-06	NA	2.80E-02	2.64E-06	NA	2.80E-02	2.64E-06	NA
1,2,4-Trichlorobenzene	1.00E-03	1.07E-05	NA	1.00E-03	1.07E-05	NA	1.00E-03	1.07E-05	NA	1.00E-03	1.07E-05	NA	1.00E-03	1.07E-05	NA
1,1,1-Trichloroethane	5.00E-03	1.98E-06	NA	5.00E-03	1.98E-06	NA	5.00E-03	1.98E-06	NA	5.00E-03	1.98E-06	NA	5.00E-03	1.98E-06	NA
Trichlorofluoromethane	2.00E-03	5.06E-06	NA	2.00E-03	5.06E-06	NA	2.00E-03	5.06E-06	NA	2.00E-03	5.06E-06	NA	2.00E-03	5.06E-06	NA
2,4,5-Trichlorophenol	1.60E-01	1.27E-06	NA	1.60E-01	1.27E-06	NA	1.60E-01	1.27E-06	NA	1.60E-01	1.27E-06	NA	1.60E-01	1.27E-06	NA
2,4,6-Trichlorophenol	3.50E-01	1.39E-06	2.16E-10	3.50E-01	1.39E-06	2.16E-10	3.50E-01	1.39E-06	2.16E-10	3.50E-01	1.39E-06	2.16E-10	3.50E-01	1.39E-06	2.16E-10
1,2,4-Trimethylbenzene	4.40E-02	1.07E-03	NA	4.40E-02	1.07E-03	NA	4.40E-02	1.07E-03	NA	4.40E-02	1.07E-03	NA	4.40E-02	1.07E-03	NA
Total Xylenes	2.00E-03	5.80E-06	NA	2.00E-03	5.80E-06	NA	2.00E-03	5.80E-06	NA	2.00E-03	5.80E-06	NA	2.00E-03	5.80E-06	NA
1,2,3,4,6,7,8-HpCDD	1.11E-02	NA	1.61E-07	7.05E-03	NA	1.03E-07	1.23E-02	NA	1.79E-07	5.40E-04	NA	7.87E-09	1.12E-02	NA	1.63E-07
1,2,3,4,6,7,8-HpCDF	2.05E-03	NA	2.99E-08	1.11E-03	NA	1.62E-08	2.68E-03	NA	3.90E-08	2.80E-04	NA	4.08E-09	1.97E-03	NA	2.87E-08
1,2,3,4,7,8,9-HpCDF	1.72E-04	NA	2.50E-09	1.01E-04	NA	1.46E-09	2.15E-04	NA	3.14E-09	1.90E-05	NA	2.77E-10	1.33E-04	NA	1.94E-09
1,2,3,4,7,8-HxCDD	6.11E-05	NA	8.91E-09	2.90E-05	NA	4.23E-09	7.21E-05	NA	1.05E-08	2.50E-06	NA	3.64E-10	1.33E-04	NA	1.94E-08
1,2,3,4,7,8-HxCDF	1.64E-04	NA	2.38E-08	9.90E-05	NA	1.44E-08	1.97E-04	NA	2.86E-08	2.60E-05	NA	3.79E-09	1.03E-04	NA	1.50E-08
1,2,3,6,7,8-HxCDD	3.36E-04	NA	4.90E-08	2.10E-04	NA	3.06E-08	3.43E-04	NA	5.00E-08	2.00E-05	NA	2.92E-09	4.45E-04	NA	6.49E-08
1,2,3,6,7,8-HxCDF	4.98E-05	NA	7.26E-09	1.60E-05	NA	2.33E-09	4.90E-05	NA	7.15E-09	4.10E-06	NA	5.98E-10	5.39E-05	NA	7.85E-09
1,2,3,7,8,9-HxCDD	1.03E-04	NA	1.50E-08	2.40E-05	NA	3.50E-09	1.22E-04	NA	1.78E-08	2.15E-06	NA	3.13E-10	2.11E-04	NA	3.08E-08
1,2,3,7,8,9-HxCDF	5.47E-05	NA	7.98E-09	4.50E-06	NA	6.56E-10	4.53E-05	NA	6.61E-09	5.90E-06	NA	8.60E-10	2.85E-05	NA	4.16E-09
1,2,3,7,8-PeCDD	1.83E-05	NA	2.67E-08	3.10E-06	NA	4.52E-09	2.35E-05	NA	3.42E-08	ND	ND	ND	4.30E-05	NA	6.27E-08
1,2,3,7,8-PeCDF	1.68E-05	NA	7.34E-10	9.30E-06	NA	4.07E-10	1.57E-05	NA	6.87E-10	1.80E-06	NA	7.87E-11	1.16E-05	NA	5.08E-10
2,3,4,6,7,8-HxCDF	7.61E-05	NA	1.11E-08	1.34E-05	NA	1.95E-09	9.15E-05	NA	1.33E-08	2.00E-06	NA	2.92E-10	7.52E-05	NA	1.10E-08
2,3,4,7,8-PeCDF	3.53E-05	NA	1.54E-08	9.10E-06	NA	3.98E-09	3.67E-05	NA	1.61E-08	2.10E-06	NA	9.18E-10	1.92E-05	NA	8.38E-09
2,3,7,8-TCDD	2.05E-06	NA	2.99E-09	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.34E-06	NA	4.87E-09
2,3,7,8-TCDF	2.92E-06	NA	4.26E-10	8.75E-07	NA	1.28E-10	3.46E-06	NA	5.04E-10	ND	ND	ND	2.37E-06	NA	3.46E-10
OCDD	9.78E-02	NA	4.28E-08	7.45E-02	NA	3.26E-08	1.38E-01	NA	6.04E-08	7.30E-03	NA	3.19E-09	8.96E-02	NA	3.92E-08
OCDF	8.69E-03	NA	3.80E-09	4.50E-03	NA	1.97E-09	1.21E-02	NA	5.27E-09	7.90E-04	NA	3.45E-10	7.05E-03	NA	3.08E-09
TCDD TEQ	2.73E-04	NA	3.98E-07	1.52E-04	NA	2.22E-07	3.26E-04	NA	4.75E-07	1.91E-05	NA	2.78E-08	3.16E-04	NA	4.61E-07
Acenaphthene	4.93E+01	2.52E-04	NA	6.50E+01	3.32E-04	NA	1.23E+01	6.29E-05	NA	2.08E+00	1.06E-05	NA	1.39E+01	7.11E-05	NA
Acenaphthylene	1.76E+01	4.22E-02	NA	2.51E+01	6.02E-02	NA	7.00E+00	1.68E-02	NA	1.42E+00	3.40E-03	NA	8.94E+00	2.14E-02	NA
Anthracene	2.81E+01	1.31E-05	NA	3.30E+01	1.54E-05	NA	6.45E+00	3.01E-06	NA	7.60E-01	3.55E-07	NA	9.23E+00	4.31E-06	NA
Benzo(a)anthracene	8.03E+00	3.93E-05	5.38E-08	9.20E+00	4.51E-05	6.16E-08	3.28E+00	1.61E-05	2.19E-08	3.58E-01	1.76E-06	2.40E-09	3.97E+00	1.95E-05	2.66E-08
Benzo(a)pyrene	6.47E+00	2.45E-05	4.24E-07	9.10E+00	3.45E-05	5.96E-07	6.63E+00	2.51E-05	4.35E-07	1.85E-01	7.02E-07	1.21E-08	2.90E+00	1.10E-05	1.90E-07
Benzo(b)fluoranthene	6.94E+00	4.70E-05	4.83E-08	9.90E+00	6.71E-05	6.88E-08	3.43E+00	2.33E-05	2.39E-08	2.92E-01	1.98E-06	2.03E-09	4.51E+00	3.06E-05	3.14E-08
Benzo(g,h,i)perylene	5.62E+00	1.90E-04	NA	6.90E+00	2.33E-04	NA	5.67E+00	1.92E-04	NA	2.35E-01	7.95E-06	NA	3.15E+00	1.06E-04	NA
Benzo(k)fluoranthene	2.55E+00	9.03E-06	1.67E-09	2.90E+00	1.03E-05	1.89E-09	1.02E+00	3.60E-06	6.63E-10	1.27E-01	4.50E-07	8.30E-11	2.18E+00	7.69E-06	1.42E-09
Chrysene	1.63E+01	1.52E-04	1.19E-09	2.20E+01	2.05E-04	1.60E-09	9.09E+00	8.45E-05	6.62E-10	6.90E-01	6.42E-06	5.03E-11	7.88E+00	7.33E-05	5.74E-10
Dibenz(a,h)anthracene	7.87E+00	2.57E-05	5.10E-07	9.50E+00	3.10E-05	6.16E-07	8.90E+00	2.91E-05	5.77E-07	3.69E-01	1.20E-06	2.39E-08	3.75E+00	1.23E-05	2.43E-07
Fluoranthene	7.46E+01	1.72E-04	NA	8.40E+01	1.93E-04	NA	1.47E+01	3.38E-05	NA	3.00E+00	6.90E-06	NA	2.42E+01	5.57E-05	NA
Fluorene	3.87E+01	1.68E-04	NA	4.70E+01	2.04E-04	NA	7.38E+00	3.20E-05	NA	1.64E+00	7.11E-06	NA	3.81E+00	1.65E-05	NA
Indeno(1,2,3-cd)pyrene	2.11E+00	7.18E-06	1.37E-08	2.90E+00	9.86E-06	1.89E-08	1.97E+00	6.71E-06	1.28E-08	1.49E-01	5.05E-07	9.67E-10	2.83E+00	9.61E-06	1.84E-08
1-Methylnaphthalene	8.71E+00	8.08E-02	NA	ND	ND	ND	4.20E+00	3.90E-02	NA	4.46E+00	4.14E-02	NA	3.46E+01	3.21E-01	NA
2-Methylnaphthalene	9.84E+00	7.05E-02	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.48E+01	2.50E-01	NA
Naphthalene	3.11E+01	3.28E-01	NA	9.06E+01	9.57E-01	NA	1.76E+01	1.86E-01	NA	1.35E+00	1.43E-02	NA	5.85E+00	6.18E-02	NA
Phenanthrene	1.11E+02	1.73E-01	NA	1.30E+02	2.03E-01	NA	1.35E+01	2.11E-02	NA	4.81E+00	7.49E-03	NA	7.74E+00	1.21E-02	NA
Pyrene	4.34E+01	1.28E-04	NA	4.80E+01	1.42E-04	NA	5.57E+01	1.65E-04	NA	1.77E+00	5.24E-06	NA	1.53E+01	4.53E-05	NA
BaP-TE	1.60E+01	4.37E-04	1.05E-06	2.07E+01	5.65E-04	1.36E-06	1.54E+01	4.21E-04	1.01E-06	6.21E-01	1.70E-05	4.07E-08	7.64E+00	2.09E-04	5.01E-07
Pentachlorophenol	1.28E+01	3.03E-04	1.39E-08	2.03E+00	4.83E-05	2.22E-09	3.62E+00	8.60E-05	3.95E-09	9.71E-01	2.31E-05	1.06E-09	1.88E+01	4.46E-04	2.05E-08
Total		9.25E-01	1.46E-06		1.45E+00	1.58E-06		4.17E-01	1.49E-06		1.04E-01	7.24E-08		7.83E-01	9.85E-07

Table C-21
SITE-WIDE & AREA-SPECIFIC RISKS
TOTAL RISKS: CONSTRUCTION WORKER

Constituent	Area G			Area H			Area S			Area B/F		
	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	1.09E-04	7.91E-10	3.00E-03	1.09E-04	7.91E-10	3.00E-03	1.09E-04	7.91E-10	3.00E-03	1.09E-04	7.91E-10
Barium	2.99E+02	2.51E-03	NA	2.99E+02	2.51E-03	NA	2.99E+02	2.51E-03	NA	2.99E+02	2.51E-03	NA
Chlorobenzene	3.00E-03	1.25E-05	NA	3.00E-03	1.25E-05	NA	3.00E-03	1.25E-05	NA	3.00E-03	1.25E-05	NA
Chloromethane	2.00E-03	3.85E-05	NA	2.00E-03	3.85E-05	NA	2.00E-03	3.85E-05	NA	2.00E-03	3.85E-05	NA
4-Chloro-3-methylphenol	2.50E-01	5.93E-06	NA	2.50E-01	5.93E-06	NA	2.50E-01	5.93E-06	NA	2.50E-01	5.93E-06	NA
Chromium	6.80E+01	2.26E-03	NA	6.80E+01	2.26E-03	NA	6.80E+01	2.26E-03	NA	6.80E+01	2.26E-03	NA
4,4'-DDD	3.60E-02	NA	1.17E-10	3.60E-02	NA	1.17E-10	3.60E-02	NA	1.17E-10	3.60E-02	NA	1.17E-10
4,4'-DDE	8.00E-03	NA	3.68E-11	8.00E-03	NA	3.68E-11	8.00E-03	NA	3.68E-11	8.00E-03	NA	3.68E-11
4,4'-DDT	1.90E-02	3.59E-05	8.71E-11	1.90E-02	3.59E-05	8.71E-11	1.90E-02	3.59E-05	8.71E-11	1.90E-02	3.59E-05	8.71E-11
delta-BHC	3.00E-03	1.19E-05	5.64E-11	3.00E-03	1.19E-05	5.64E-11	3.00E-03	1.19E-05	5.64E-11	3.00E-03	1.19E-05	5.64E-11
Dibenzofuran	2.45E+01	9.42E-02	NA	2.67E+01	1.03E-01	NA	1.90E+00	7.30E-03	NA	3.22E+01	1.24E-01	NA
1,2-Dichlorobenzene	2.00E-03	1.01E-05	NA	2.00E-03	1.01E-05	NA	2.00E-03	1.01E-05	NA	2.00E-03	1.01E-05	NA
1,4-Dichlorobenzene	2.00E-03	5.96E-06	4.67E-10	2.00E-03	5.96E-06	4.67E-10	2.00E-03	5.96E-06	4.67E-10	2.00E-03	5.96E-06	4.67E-10
1,2-Dichloropropane	4.00E-03	5.68E-04	3.60E-12	4.00E-03	5.68E-04	3.60E-12	4.00E-03	5.68E-04	3.60E-12	4.00E-03	5.68E-04	3.60E-12
4,6-Dinitro-2-methylphenol	1.50E+00	7.51E-03	NA	1.50E+00	7.51E-03	NA	1.50E+00	7.51E-03	NA	1.50E+00	7.51E-03	NA
2,4-Dinitrophenol	6.30E-01	2.04E-03	NA	6.30E-01	2.04E-03	NA	6.30E-01	2.04E-03	NA	6.30E-01	2.04E-03	NA
Endosulfan II	1.40E-02	3.61E-06	NA	1.40E-02	3.61E-06	NA	1.40E-02	3.61E-06	NA	1.40E-02	3.61E-06	NA
Endosulfan Sulfate	1.40E-02	3.61E-06	NA	1.40E-02	3.61E-06	NA	1.40E-02	3.61E-06	NA	1.40E-02	3.61E-06	NA
Endrin	3.60E-02	1.49E-04	NA	3.60E-02	1.49E-04	NA	3.60E-02	1.49E-04	NA	3.60E-02	1.49E-04	NA
Endrin Aldehyde	3.30E-02	1.36E-04	NA	3.30E-02	1.36E-04	NA	3.30E-02	1.36E-04	NA	3.30E-02	1.36E-04	NA
Ethylbenzene	2.10E+00	7.03E-04	NA	2.10E+00	7.03E-04	NA	2.10E+00	7.03E-04	NA	2.10E+00	7.03E-04	NA
Isopropylbenzene	3.30E-02	2.39E-05	NA	3.30E-02	2.39E-05	NA	3.30E-02	2.39E-05	NA	3.30E-02	2.39E-05	NA
Manganese	8.52E+02	1.24E-02	NA	8.52E+02	1.24E-02	NA	8.52E+02	1.24E-02	NA	8.52E+02	1.24E-02	NA
Methylene Chloride	7.40E-02	2.30E-05	4.50E-10	7.40E-02	2.30E-05	4.50E-10	7.40E-02	2.30E-05	4.50E-10	7.40E-02	2.30E-05	4.50E-10
4-Nitrophenol	2.50E-01	1.43E-04	NA	2.50E-01	1.43E-04	NA	2.50E-01	1.43E-04	NA	2.50E-01	1.43E-04	NA
Phenol	1.20E-02	1.55E-07	NA	1.20E-02	1.55E-07	NA	1.20E-02	1.55E-07	NA	1.20E-02	1.55E-07	NA
Tetrachloroethene	8.00E-03	1.54E-05	5.53E-10	8.00E-03	1.54E-05	5.53E-10	8.00E-03	1.54E-05	5.53E-10	8.00E-03	1.54E-05	5.53E-10
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	1.79E-06	NA	1.55E-01	1.79E-06	NA	1.55E-01	1.79E-06	NA	1.55E-01	1.79E-06	NA
Toluene	2.80E-02	2.64E-06	NA	2.80E-02	2.64E-06	NA	2.80E-02	2.64E-06	NA	2.80E-02	2.64E-06	NA
1,2,4-Trichlorobenzene	1.00E-03	1.07E-05	NA	1.00E-03	1.07E-05	NA	1.00E-03	1.07E-05	NA	1.00E-03	1.07E-05	NA
1,1,1-Trichloroethane	5.00E-03	1.98E-06	NA	5.00E-03	1.98E-06	NA	5.00E-03	1.98E-06	NA	5.00E-03	1.98E-06	NA
Trichlorofluoromethane	2.00E-03	5.06E-06	NA	2.00E-03	5.06E-06	NA	2.00E-03	5.06E-06	NA	2.00E-03	5.06E-06	NA
2,4,5-Trichlorophenol	1.60E-01	1.27E-06	NA	1.60E-01	1.27E-06	NA	1.60E-01	1.27E-06	NA	1.60E-01	1.27E-06	NA
2,4,6-Trichlorophenol	3.50E-01	1.39E-06	2.16E-10	3.50E-01	1.39E-06	2.16E-10	3.50E-01	1.39E-06	2.16E-10	3.50E-01	1.39E-06	2.16E-10
1,2,4-Trimethylbenzene	4.40E-02	1.07E-03	NA	4.40E-02	1.07E-03	NA	4.40E-02	1.07E-03	NA	4.40E-02	1.07E-03	NA
Total Xylenes	2.00E-03	5.80E-06	NA	2.00E-03	5.80E-06	NA	2.00E-03	5.80E-06	NA	2.00E-03	5.80E-06	NA
1,2,3,4,6,7,8-HpCDD	2.35E-02	NA	3.42E-07	1.43E-02	NA	2.08E-07	8.85E-03	NA	1.29E-07	1.01E-02	NA	1.48E-07
1,2,3,4,6,7,8-HpCDF	3.85E-03	NA	5.62E-08	2.90E-03	NA	4.22E-08	3.17E-03	NA	4.61E-08	1.86E-03	NA	2.71E-08
1,2,3,4,7,8,9-HpCDF	3.25E-04	NA	4.74E-09	2.58E-04	NA	3.75E-09	3.19E-04	NA	4.66E-09	1.35E-04	NA	1.97E-09
1,2,3,4,7,8-HxCDD	6.80E-05	NA	9.91E-09	5.46E-05	NA	7.96E-09	3.78E-05	NA	5.51E-09	1.08E-04	NA	1.57E-08
1,2,3,4,7,8-HxCDF	2.91E-04	NA	4.25E-08	2.47E-04	NA	3.60E-08	4.47E-04	NA	6.52E-08	1.12E-04	NA	1.64E-08
1,2,3,6,7,8-HxCDD	6.00E-04	NA	8.74E-08	4.65E-04	NA	6.78E-08	3.52E-04	NA	5.13E-08	3.75E-04	NA	5.47E-08
1,2,3,6,7,8-HxCDF	8.93E-05	NA	1.30E-08	6.94E-05	NA	1.01E-08	9.97E-05	NA	1.45E-08	4.70E-05	NA	6.85E-09
1,2,3,7,8,9-HxCDD	1.37E-04	NA	2.00E-08	9.55E-05	NA	1.39E-08	7.44E-05	NA	1.08E-08	1.70E-04	NA	2.48E-08
1,2,3,7,8,9-HxCDF	1.12E-04	NA	1.63E-08	1.12E-04	NA	1.64E-08	9.85E-05	NA	1.44E-08	2.83E-05	NA	4.12E-09
1,2,3,7,8-PeCDD	1.69E-05	NA	2.47E-08	1.46E-05	NA	2.13E-08	1.10E-05	NA	1.61E-08	3.48E-05	NA	5.07E-08
1,2,3,7,8-PeCDF	3.01E-05	NA	1.31E-09	3.84E-05	NA	1.68E-09	2.59E-05	NA	1.13E-09	1.13E-05	NA	4.95E-10
2,3,4,6,7,8-HxCDF	1.36E-04	NA	1.98E-08	1.15E-04	NA	1.68E-08	1.68E-04	NA	2.45E-08	6.83E-05	NA	9.96E-09
2,3,4,7,8-PeCDF	5.91E-05	NA	2.58E-08	8.12E-05	NA	3.55E-08	8.79E-05	NA	3.84E-08	2.09E-05	NA	9.13E-09
2,3,7,8-TCDD	2.54E-06	NA	3.71E-09	2.36E-06	NA	3.44E-09	ND	ND	ND	2.98E-06	NA	4.34E-09
2,3,7,8-TCDF	3.55E-06	NA	5.17E-10	7.61E-06	NA	1.11E-09	5.04E-06	NA	7.34E-10	2.45E-06	NA	3.57E-10
OCDD	2.00E-01	NA	8.73E-08	1.38E-01	NA	6.04E-08	9.12E-02	NA	3.99E-08	8.88E-02	NA	3.88E-08
OCDF	1.79E-02	NA	7.83E-09	1.34E-02	NA	5.87E-09	1.17E-02	NA	5.13E-09	7.12E-03	NA	3.11E-09
TCDD TEQ	5.05E-04	NA	7.37E-07	3.73E-04	NA	5.43E-07	3.20E-04	NA	4.67E-07	2.81E-04	NA	4.10E-07
Acenaphthene	5.24E+00	2.68E-05	NA	5.07E+00	2.59E-05	NA	1.17E+00	5.99E-06	NA	1.13E+01	5.77E-05	NA
Acenaphthylene	2.14E+00	5.13E-03	NA	2.68E+00	6.43E-03	NA	3.35E-01	8.03E-04	NA	6.79E+00	1.63E-02	NA
Anthracene	1.48E+00	6.93E-07	NA	4.25E+00	1.98E-06	NA	4.85E+00	2.27E-06	NA	6.91E+00	3.23E-06	NA
Benzo(a)anthracene	1.22E+00	5.97E-06	8.16E-09	2.59E+00	1.27E-05	1.74E-08	1.80E+00	8.81E-06	1.20E-08	3.23E+00	1.58E-05	2.16E-08
Benzo(a)pyrene	5.06E-01	1.92E-06	3.32E-08	1.20E+00	4.56E-06	7.88E-08	9.00E-01	3.41E-06	5.90E-08	4.55E+00	1.73E-05	2.98E-07
Benzo(b)fluoranthene	6.24E-01	4.23E-06	4.34E-09	1.78E+00	1.21E-05	1.24E-08	2.08E+00	1.41E-05	1.44E-08	3.61E+00	2.45E-05	2.51E-08
Benzo(g,h,i)perylene	8.65E-01	2.93E-05	NA	1.74E+00	5.87E-05	NA	1.63E+00	5.52E-05	NA	4.17E+00	1.41E-04	NA
Benzo(k)fluoranthene	3.27E-01	1.16E-06	2.13E-10	1.65E+00	5.82E-06	1.07E-09	7.09E-01	2.51E-06	4.62E-10	1.44E+00	5.09E-06	9.39E-10
Chrysene	4.35E+00	4.04E-05	3.17E-10	5.09E+00	4.73E-05	3.71E-10	2.74E+00	2.55E-05	2.00E-10	7.63E+00	7.10E-05	5.56E-10
Dibenz(a,h)anthracene	1.35E+00	4.41E-06	8.76E-08	2.20E+00	7.19E-06	1.43E-07	2.52E+00	8.25E-06	1.64E-07	5.97E+00	1.95E-05	3.87E-07
Fluoranthene	4.11E+00	9.46E-06	NA	1.11E+01	2.55E-05	NA	7.00E+00	1.61E-05	NA	1.68E+01	3.87E-05	NA
Fluorene	2.17E+00	9.41E-06	NA	5.25E+00	2.28E-05	NA	1.73E+00	7.51E-06	NA	5.14E+00	2.23E-05	NA
Indeno(1,2,3-cd)pyrene	2.81E-01	9.56E-07	1.83E-09	1.52E+00	5.17E-06	9.89E-09	1.10E+00	3.73E-06	7.13E-09	2.19E+00	7.43E-06	1.42E-08
1-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.23E+01	1.15E-01	NA
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.79E+01	1.29E-01	NA
Naphthalene	1.13E+00	1.20E-02	NA	5.32E+00	5.62E-02	NA	3.62E-01	3.82E-03	NA	1.10E+01	1.16E-01	NA
Phenanthrene	2.32E+00	3.61E-03	NA	1.43E+01	2.23E-02	NA	2.18E+00	3.40E-03	NA	9.58E+00	1.49E-02	NA
Pyrene	1.13E+00	3.36E-06	NA	7.92E+00	2.35E-05	NA	5.28E+00	1.56E-05	NA	3.44E+01	1.02E-04	NA
BaP-TE	2.07E+00	5.66E-05	1.36E-07	3.64E+00	9.93E-05	2.38E-07	3.91E+00	1.07E-04	2.56E-07	1.09E+01	2.97E-04	7.13E-07
Pentachlorophenol	2.15E+01	5.12E-04	2.35E-08	5.30E+01	1.26E-03	5.78E-08	4.15E+01	9.86E-04	4.53E-08	1.01E+01	2.40E-04	1.10E-08
Total		1.45E-01	8.99E-07		2.19E-01	8.42E-07		4.63E-02	7.72E-07		5.45E-01	1.14E-06

Table C-22 Unitized Risk Calculation

Scenario:	Current
Receptor:	Utility Worker
Medium:	Subsurface Soil (0-5')
Exposure Pathway:	Ingestion and Dermal Contact

ADM (mg/kg-day) = $\frac{CS \times [(IR \times FI \times AAF) + (SA \times AF \times FA \times AAF)] \times EF \times ED \times CF}{BW \times AT}$

Hazard Quotient (HQ) = ADD (mg/kg-day) / RfD (mg/kg-d)

Cancer Risk (ELCR) = ADD (mg/kg-day) * CSF [1/(mg/kg-day)]

Parameter (units)	Value
ADD: Average Daily Dose (mg/kg-day)	See Below
CS: Constituent Concentration in Soil (mg/kg)	Constituent-Specific
IR: Ingestion Rate (mg/day)	330
AAF: Absorption Adjustment Factor (Oral-Soil) (unitless)	Constituent-Specific
FI: Fraction Ingested from Site (unitless)	1
SA: Skin Surface Area (cm2/event)	2478
AF: Adherence Factor (mg/cm2)	0.242
AAF: Absorption Adjustment Factor (Dermal-Soil) (unitless)	Constituent-Specific
FA: Fraction Absorbed from Site (unitless)	1
EF: Exposure Frequency (days/year)	5
ED: Exposure Duration (years)	25
BW: Body Weight (kg)	71.8
AT: Averaging Time (days) (ED x 365 days/yr, noncancer)	9125
AT: Averaging Time (days) (75 yr. x 365 days/yr, cancer)	25550
RfD: Reference Dose (mg/kg-day)	Constituent-Specific
CSF: Cancer Slope Factor [1/(mg/kg-day)]	Constituent-Specific
CF: Conversion factor (kg/mg)	1.00E-06

		Noncancer Hazard Quotient					Excess Lifetime Cancer Risk				
Constituent	Soil Concentration (mg/kg)	Oral-Soil RAF (noncancer) Chronic	Dermal-Soil RAF (noncancer) Chronic	ADD (noncancer) (mg/kg-day)	Chronic RfD (mg/kg-day)	Soil HQ	Oral-Soil AAF (cancer)	Dermal-Soil AAF (cancer)	ADD (cancer) (mg/kg-day)	CSF [1/(mg/kg-day)]	Soil Risk (mg/kg)
Aldrin	1	1	0.25	9.16E-08	3.00E-05	3.05E-03	1	0.25	3.27E-08	1.70E+01	5.56E-07
Barium	1	1	0.001	6.31E-08	2.00E-01	3.15E-07	NA	NA	NA	NA	NA
Chlorobenzene	1	1	0	6.30E-08	2.00E-02	3.15E-06	NA	0	NA	NA	NA
Chloromethane	1	1	0	6.30E-08	2.60E-02	2.42E-06	NA	0	NA	NA	NA
4-Chloro-3-methylphenol	1	1	0.03	6.64E-08	5.00E-02	1.33E-06	NA	NA	NA	NA	NA
Chromium	1	1	0.04	6.75E-08	3.00E-03	2.25E-05	NA	NA	NA	NA	NA
4,4'-DDD	1	NA	NA	NA	NA	NA	1	0.2	3.07E-08	2.40E-01	7.36E-09
4,4'-DDE	1	NA	NA	NA	NA	NA	1	0.2	3.07E-08	3.40E-01	1.04E-08
4,4'-DDT	1	1	0.2	8.58E-08	5.00E-04	1.72E-04	1	0.2	3.07E-08	3.40E-01	1.04E-08
delta-BHC	1	1	0.25	9.16E-08	3.00E-04	3.05E-04	1	0.25	3.27E-08	1.30E+00	4.25E-08
Dibenzofuran	1	1	0.1	7.44E-08	2.00E-03	3.72E-05	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	1	1	0	6.30E-08	9.00E-02	7.00E-07	NA	0	NA	NA	NA
1,4-Dichlorobenzene	1	1	0	6.30E-08	3.00E-02	2.10E-06	1	0	2.25E-08	2.40E-02	5.40E-10
1,2-Dichloropropane	1	1	0.2	8.58E-08	1.10E-03	7.80E-05	1	0.2	3.07E-08	6.80E-02	2.08E-09
4,6-Dinitro-2-methylphenol	1	1	0.03	6.64E-08	1.00E-04	6.64E-04	NA	NA	NA	NA	NA
2,4-Dinitrophenol	1	1	0.03	6.64E-08	2.00E-03	3.32E-05	NA	NA	NA	NA	NA
Endosulfan II	1	1	0.2	8.58E-08	6.00E-03	1.43E-05	NA	NA	NA	NA	NA
Endosulfan Sulfate	1	1	0.2	8.58E-08	6.00E-03	1.43E-05	NA	NA	NA	NA	NA
Endrin	1	1	0.25	9.16E-08	3.00E-04	3.05E-04	NA	NA	NA	NA	NA
Endrin Aldehyde	1	1	0.25	9.16E-08	3.00E-04	3.05E-04	NA	NA	NA	NA	NA
Ethylbenzene	1	1	0	6.30E-08	1.00E-01	6.30E-07	NA	0	NA	NA	NA
Isopropylbenzene	1	1	0	6.30E-08	1.00E-01	6.30E-07	NA	0	NA	NA	NA
Manganese	1	1	0.05	6.87E-08	1.40E-01	4.91E-07	NA	NA	NA	NA	NA
Methylene Chloride	1	1	0.1	7.44E-08	6.00E-02	1.24E-06	1	0.1	2.66E-08	7.50E-03	1.99E-10
4-Nitrophenol	1	1	0.03	6.64E-08	8.00E-03	8.30E-06	NA	NA	NA	NA	NA
Phenol	1	1	0.1	7.44E-08	3.00E-01	2.48E-07	NA	NA	NA	NA	NA
Tetrachloroethene	1	1	0.1	7.44E-08	1.00E-02	7.44E-06	1	0.1	2.66E-08	5.40E-01	1.43E-08
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1	1	0.03	6.64E-08	3.00E-02	2.21E-06	NA	NA	NA	NA	NA
Toluene	1	1	0.04	6.75E-08	8.00E-02	8.44E-07	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	1	1	0	6.30E-08	1.00E-02	6.30E-06	NA	0	NA	NA	NA
1,1,1-Trichloroethane	1	1	0.1	7.44E-08	2.80E-02	2.66E-06	NA	NA	NA	NA	NA
Trichlorofluoromethane	1	1	0.1	7.44E-08	2.80E-02	2.66E-06	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	1	1	0.03	6.64E-08	1.00E-01	6.64E-07	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	1	1	0.03	6.64E-08	1.00E-04	6.64E-04	1	0.03	2.37E-08	1.10E-02	2.61E-10
1,2,4-Trimethylbenzene	1	1	0.1	7.44E-08	5.00E-02	1.49E-06	NA	NA	NA	NA	NA
Total Xylenes	1	1	0.04	6.75E-08	2.00E+00	3.38E-08	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HpCDD	1	NA	NA	NA	NA	NA	1	0.04	2.41E-08	1.50E+03	3.62E-05
1,2,3,4,6,7,8-HpCDF	1	NA	NA	NA	NA	NA	1	0.04	2.41E-08	1.50E+03	3.62E-05
1,2,3,4,7,8,9-HpCDF	1	NA	NA	NA	NA	NA	1	0.04	2.41E-08	1.50E+03	3.62E-05
1,2,3,4,7,8-HxCDD	1	NA	NA	NA	NA	NA	1	0.04	2.41E-08	1.50E+04	3.62E-04
1,2,3,4,7,8-HxCDF	1	NA	NA	NA	NA	NA	1	0.04	2.41E-08	1.50E+04	3.62E-04
1,2,3,6,7,8-HxCDD	1	NA	NA	NA	NA	NA	1	0.04	2.41E-08	1.50E+04	3.62E-04
1,2,3,6,7,8-HxCDF	1	NA	NA	NA	NA	NA	1	0.04	2.41E-08	1.50E+04	3.62E-04
1,2,3,7,8,9-HxCDD	1	NA	NA	NA	NA	NA	1	0.04	2.41E-08	1.50E+04	3.62E-04
1,2,3,7,8,9-HxCDF	1	NA	NA	NA	NA	NA	1	0.04	2.41E-08	1.50E+04	3.62E-04
1,2,3,7,8-PeCDD	1	NA	NA	NA	NA	NA	1	0.04	2.41E-08	1.50E+05	3.62E-03
1,2,3,7,8-PeCDF	1	NA	NA	NA	NA	NA	1	0.04	2.41E-08	4.50E+03	1.09E-04
2,3,4,6,7,8-HxCDF	1	NA	NA	NA	NA	NA	1	0.04	2.41E-08	1.50E+04	3.62E-04
2,3,4,7,8-PeCDF	1	NA	NA	NA	NA	NA	1	0.04	2.41E-08	4.50E+04	1.09E-03
2,3,7,8-TCDD	1	NA	NA	NA	NA	NA	1	0.04	2.41E-08	1.50E+05	3.62E-03
2,3,7,8-TCDF	1	NA	NA	NA	NA	NA	1	0.04	2.41E-08	1.50E+04	3.62E-04
OCDD	1	NA	NA	NA	NA	NA	1	0.04	2.41E-08	4.50E+01	1.09E-06
OCDF	1	NA	NA	NA	NA	NA	1	0.04	2.41E-08	4.50E+01	1.09E-06
TCDD TEQ	1	NA	NA	NA	NA	NA	1	0.04	2.41E-08	1.50E+05	3.62E-03
Acenaphthene	1	1	0.1	7.44E-08	6.00E-02	1.24E-06	NA	NA	NA	NA	NA
Acenaphthylene	1	1	0.1	7.44E-08	2.00E-02	3.72E-06	NA	NA	NA	NA	NA
Anthracene	1	1	0.1	7.44E-08	3.00E-01	2.48E-07	NA	NA	NA	NA	NA
Benzo(a)anthracene	1	1	0.02	6.52E-08	2.00E-02	3.26E-06	1	0.02	2.33E-08	7.30E-01	1.70E-08
Benzo(a)pyrene	1	1	0.02	6.52E-08	2.00E-02	3.26E-06	1	0.02	2.33E-08	7.30E+00	1.70E-07
Benzo(b)fluoranthene	1	1	0.02	6.52E-08	2.00E-02	3.26E-06	1	0.02	2.33E-08	7.30E-01	1.70E-08
Benzo(g,h,i)perylene	1	1	0.1	7.44E-08	2.00E-02	3.72E-06	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	1	1	0.02	6.52E-08	2.00E-02	3.26E-06	1	0.02	2.33E-08	7.30E-02	1.70E-09
Chrysene	1	1	0.02	6.52E-08	2.00E-02	3.26E-06	1	0.02	2.33E-08	7.30E-03	1.70E-10
Dibenz(a,h)anthracene	1	1	0.02	6.52E-08	2.00E-02	3.26E-06	1	0.02	2.33E-08	7.30E+00	1.70E-07
Fluoranthene	1	1	0.1	7.44E-08	4.00E-02	1.86E-06	NA	NA	NA	NA	NA
Fluorene	1	1	0.1	7.44E-08	4.00E-02	1.86E-06	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1	1	0.02	6.52E-08	2.00E-02	3.26E-06	1	0.02	2.33E-08	7.30E-01	1.70E-08
1-Methylnaphthalene	1	1	0.1	7.44E-08	2.00E-02	3.72E-06	NA	NA	NA	NA	NA
2-Methylnaphthalene	1	1	0.1	7.44E-08	2.00E-02	3.72E-06	NA	NA	NA	NA	NA
Naphthalene	1	1	0.1	7.44E-08	2.00E-02	3.72E-06	NA	NA	NA	NA	NA
Phenanthrene	1	1	0.1	7.44E-08	2.00E-02	3.72E-06	NA	NA	NA	NA	NA
Pyrene	1	1	0.1	7.44E-08	3.00E-02	2.48E-06	NA	NA	NA	NA	NA
BaP-TE	1	1	0.02	6.52E-08	2.00E-02	3.26E-06	1	0.02	2.33E-08	7.30E+00	1.70E-07
Pentachlorophenol	1	1	0.03	6.64E-08	3.00E-02	2.21E-06	1	0.03	2.37E-08	1.20E-01	2.85E-09

Table C-23 Unitized Risk Calculation

Scenario:	Current
Receptor:	Utility Worker
Medium:	Subsurface Soil (0-5')
Exposure Pathway:	Particulate Inhalation

ADD (mg/kg-d) = $\frac{CS \times RPC \times RAF \times ET \times EF \times ED \times CF}{BW \times AT}$

Hazard Quotient (HQ) = ADD (mg/kg-d) / RfDi (mg/kg-d)
Cancer Risk (ELCR) = ADD (mg/kg-d) * CSFi [1/(mg/kg-d)]

Parameter (units)	Value
ADD: Average Daily Dose (mg/kg-d)	See Below
CS: Constituent Concentration in Soil (mg/kg)	Constituent-Specific
RPC: Respirable Particulate Concentration (mg/m3)	0.0014
IF: Inhalation Rate (m3/hr)	2.5
ET: Exposure Time (hr/day)	8
EF: Exposure Frequency (days/year)	5
ED: Exposure Duration (years)	25
ATn: Averaging Time (days) (ED x 365 days/yr, noncancer)	9125
ATc: Averaging Time (days) (70 yr. x 365 days/yr, cancer)	25550
CF: Conversion Factor (kg/mg)	1.00E-06
RfDi: Inhalation Reference Dose (mg/kg-d)	Constituent-Specific
CSFi: Inhalation Cancer Slope Factor [1/(mg/kg-d)]	Constituent-Specific
BW: Body Weight (kg)	71.8

	0-5 ft.		Noncancer Hazard Quotient				Excess Lifetime Cancer Risk			
Constituent	Soil Concentration (mg/kg)	Dust Concentration (mg/m3)	Inhalation RAF (noncancer)	ADD (noncancer) (mg/kg-d)	chronic RfDi (mg/kg-d)	Dust HQ	Inhalation AAF (cancer)	LADD (cancer) (mg/kg-d)	CSFi [1/(mg/kg-d)]	Dust Risk
Aldrin	1	1.4E-09	1	5.34E-12	3.00E-05	1.78E-07	1	1.90789E-12	17	3.24E-11
Barium	1	1.4E-09	1	5.34E-12	2.00E-01	2.67E-11	NA	NA	NA	NA
Chlorobenzene	1	1.4E-09	1	5.34E-12	1.40E-02	3.82E-10	NA	NA	NA	NA
Chloromethane	1	1.4E-09	1	5.34E-12	2.60E-02	2.05E-10	NA	NA	NA	NA
4-Chloro-3-methylphenol	1	1.4E-09	1	5.34E-12	5.00E-02	1.07E-10	NA	NA	NA	NA
Chromium	1	1.4E-09	1	5.34E-12	2.86E-05	1.87E-07	1	1.90789E-12	42	8.01E-11
4,4'-DDD	1	1.4E-09	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	1	1.4E-09	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	1	1.4E-09	1	5.34E-12	5.00E-04	1.07E-08	1	1.90789E-12	0.34	6.49E-13
delta-BHC	1	1.4E-09	1	5.34E-12	3.00E-04	1.78E-08	1	1.90789E-12	NA	NA
Dibenzofuran	1	1.4E-09	1	5.34E-12	2.00E-03	2.67E-09	NA	NA	NA	NA
1,2-Dichlorobenzene	1	1.4E-09	1	5.34E-12	6.90E-03	7.74E-10	NA	NA	NA	NA
1,4-Dichlorobenzene	1	1.4E-09	1	5.34E-12	2.30E-01	2.32E-11	1	1.90789E-12	0.022	4.20E-14
1,2-Dichloropropane	1	1.4E-09	1	5.34E-12	1.10E-03	4.86E-09	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	1	1.4E-09	1	5.34E-12	1.00E-04	5.34E-08	NA	NA	NA	NA
2,4-Dinitrophenol	1	1.4E-09	1	5.34E-12	2.00E-03	2.67E-09	NA	NA	NA	NA
Endosulfan II	1	1.4E-09	1	5.34E-12	6.00E-03	8.90E-10	NA	NA	NA	NA
Endosulfan Sulfate	1	1.4E-09	1	5.34E-12	6.00E-03	8.90E-10	NA	NA	NA	NA
Endrin	1	1.4E-09	1	5.34E-12	3.00E-04	1.78E-08	NA	NA	NA	NA
Endrin Aldehyde	1	1.4E-09	1	5.34E-12	3.00E-04	1.78E-08	NA	NA	NA	NA
Ethylbenzene	1	1.4E-09	1	5.34E-12	2.90E-01	1.84E-11	NA	NA	NA	NA
Isopropylbenzene	1	1.4E-09	1	5.34E-12	1.00E-01	5.34E-11	NA	NA	NA	NA
Manganese	1	1.4E-09	1	5.34E-12	1.43E-05	3.74E-07	NA	NA	NA	NA
Methylene Chloride	1	1.4E-09	1	5.34E-12	8.60E-01	6.21E-12	1	1.90789E-12	0.001645	3.14E-15
4-Nitrophenol	1	1.4E-09	1	5.34E-12	8.00E-03	6.68E-10	NA	NA	NA	NA
Phenol	1	1.4E-09	1	5.34E-12	3.00E-01	1.78E-11	NA	NA	NA	NA
Tetrachloroethene	1	1.4E-09	1	5.34E-12	1.10E-01	4.86E-11	1	1.90789E-12	0.02	3.82E-14
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1	1.4E-09	1	5.34E-12	3.00E-02	1.78E-10	NA	NA	NA	NA
Toluene	1	1.4E-09	1	5.34E-12	1.40E+00	3.82E-12	NA	NA	NA	NA
1,2,4-Trichlorobenzene	1	1.4E-09	1	5.34E-12	1.10E-03	4.86E-09	NA	NA	NA	NA
1,1,1-Trichloroethane	1	1.4E-09	1	5.34E-12	6.30E-01	8.48E-12	NA	NA	NA	NA
Trichlorofluoromethane	1	1.4E-09	1	5.34E-12	2.00E-01	2.67E-11	NA	NA	NA	NA
2,4,5-Trichlorophenol	1	1.4E-09	1	5.34E-12	1.00E-01	5.34E-11	NA	NA	NA	NA
2,4,6-Trichlorophenol	1	1.4E-09	1	5.34E-12	1.00E-04	5.34E-08	1	1.90789E-12	0.01085	2.07E-14
1,2,4-Trimethylbenzene	1	1.4E-09	1	5.34E-12	1.70E-03	3.14E-09	NA	NA	NA	NA
Total Xylenes	1	1.4E-09	1	5.34E-12	2.86E-02	1.87E-10	NA	NA	NA	NA
1,2,3,4,6,7,8-HpCDD	1	1.4E-09	NA	NA	NA	NA	1	1.90789E-12	1500.00	2.86E-09
1,2,3,4,6,7,8-HpCDF	1	1.4E-09	NA	NA	NA	NA	1	1.90789E-12	1500.00	2.86E-09
1,2,3,4,7,8,9-HpCDF	1	1.4E-09	NA	NA	NA	NA	1	1.90789E-12	1500	2.86E-09
1,2,3,4,7,8-HxCDD	1	1.4E-09	NA	NA	NA	NA	1	1.90789E-12	15000	2.86E-08
1,2,3,4,7,8-HxCDF	1	1.4E-09	NA	NA	NA	NA	1	1.90789E-12	15000	2.86E-08
1,2,3,6,7,8-HxCDD	1	1.4E-09	NA	NA	NA	NA	1	1.90789E-12	15000	2.86E-08
1,2,3,6,7,8-HxCDF	1	1.4E-09	NA	NA	NA	NA	1	1.90789E-12	15000	2.86E-08
1,2,3,7,8,9-HxCDD	1	1.4E-09	NA	NA	NA	NA	1	1.90789E-12	15000	2.86E-08
1,2,3,7,8,9-HxCDF	1	1.4E-09	NA	NA	NA	NA	1	1.90789E-12	15000	2.86E-08
1,2,3,7,8-PeCDD	1	1.4E-09	NA	NA	NA	NA	1	1.90789E-12	150000	2.86E-07
1,2,3,7,8-PeCDF	1	1.4E-09	NA	NA	NA	NA	1	1.90789E-12	4500	8.59E-09
2,3,4,6,7,8-HxCDF	1	1.4E-09	NA	NA	NA	NA	1	1.90789E-12	15000	2.86E-08
2,3,4,7,8-PeCDF	1	1.4E-09	NA	NA	NA	NA	1	1.90789E-12	45000	8.59E-08
2,3,7,8-TCDD	1	1.4E-09	NA	NA	NA	NA	1	1.90789E-12	150000	2.86E-07
2,3,7,8-TCDF	1	1.4E-09	NA	NA	NA	NA	1	1.90789E-12	15000	2.86E-08
OCDD	1	1.4E-09	NA	NA	NA	NA	1	1.90789E-12	45	8.59E-11
OCDF	1	1.4E-09	NA	NA	NA	NA	1	1.90789E-12	45	8.59E-11
TCDD TEQ	1	1.4E-09	NA	NA	NA	NA	1	1.90789E-12	150000	2.86E-07
Acenaphthene	1	1.4E-09	1	5.34E-12	6.00E-02	8.90E-11	NA	NA	NA	NA
Acenaphthylene	1	1.4E-09	1	5.34E-12	3.00E-02	1.78E-10	NA	NA	NA	NA
Anthracene	1	1.4E-09	1	5.34E-12	3.00E-01	1.78E-11	NA	NA	NA	NA
Benzo(a)anthracene	1	1.4E-09	1	5.34E-12	3.00E-02	1.78E-10	1	1.90789E-12	0.31	5.91E-13
Benzo(a)pyrene	1	1.4E-09	1	5.34E-12	3.00E-02	1.78E-10	1	1.90789E-12	3.1	5.91E-12
Benzo(b)fluoranthene	1	1.4E-09	1	5.34E-12	3.00E-02	1.78E-10	1	1.90789E-12	0.31	5.91E-13
Benzo(g,h,i)perylene	1	1.4E-09	1	5.34E-12	3.00E-02	1.78E-10	NA	NA	NA	NA
Benzo(k)fluoranthene	1	1.4E-09	1	5.34E-12	3.00E-02	1.78E-10	1	1.90789E-12	0.031	5.91E-14
Chrysene	1	1.4E-09	1	5.34E-12	3.00E-02	1.78E-10	1	1.90789E-12	0.0031	5.91E-15
Dibenz(a,h)anthracene	1	1.4E-09	1	5.34E-12	3.00E-02	1.78E-10	1	1.90789E-12	3.1	5.91E-12
Fluoranthene	1	1.4E-09	1	5.34E-12	4.00E-02	1.34E-10	NA	NA	NA	NA
Fluorene	1	1.4E-09	1	5.34E-12	4.00E-02	1.34E-10	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1	1.4E-09	1	5.34E-12	3.00E-02	1.78E-10	1	1.90789E-12	0.31	5.91E-13
1-Methylnaphthalene	1	1.4E-09	1	5.34E-12	8.57E-04	6.23E-09	NA	NA	NA	NA
2-Methylnaphthalene	1	1.4E-09	1	5.34E-12	8.57E-04	6.23E-09	NA	NA	NA	NA
Naphthalene	1	1.4E-09	1	5.34E-12	8.57E-04	6.23E-09	NA	NA	NA	NA
Phenanthrene	1	1.4E-09	1	5.34E-12	8.60E-04	6.21E-09	NA	NA	NA	NA
Pyrene	1	1.4E-09	1	5.34E-12	3.00E-02	1.78E-10	NA	NA	NA	NA
BaP-TE	1	1.4E-09	1	5.34E-12	3.00E-02	1.78E-10	1	1.90789E-12	3.1	5.91E-12
Pentachlorophenol	1	1.4E-09	1	5.34E-12	3.00E-02	1.78E-10	NA	NA	NA	NA

Table C-24 Unitized Risk Calculation

Scenario:	Current
Receptor:	Utility Worker
Medium:	Subsurface Soil (0-5')
Exposure Pathway:	Inhalation of Volatiles in Soil

$$VF = \frac{Q/C * (\pi * D_A * T)^{1/2}}{2 * \rho_b * D_A} * C \quad ([mg/m^3]/[mg/kg])$$

$$Risk = \frac{C_a * IR * EF * ED * CSFi}{ATc * BW}$$

$$D_A = \frac{[(\theta_a^{10/3} * D_a * H' + \theta_w^{10/3} * D_w) * 1/n^2]}{\rho_b * K_d + \theta_w + \theta_a * H'}$$

$$HQ = \frac{C_a * IR * EF * ED}{ATnc * BW * RfDi}$$

$$K_d = K_{oc} * F_{oc}$$

Air Concentration (ug/m3) = Soil Conc. (mg/kg) * VF [(mg/m3)/(mg/kg)]

Parameter	Value	Comment
Q/C: Inverse of the mean concentration at center of square source ((g/m2-s) / (kg/m3)) (cm)	46.92	Value for 30-acre source area in Minneapolis, MN (SSL 96)
C: Conversion factor (m2/cm2)	0.0001	
D_A: Apparent diffusivity (cm^2/s)	see below	
H': Henry's Law Coefficient (cm^3-water/cm^3-air)	see below	
ρ_b: Soil bulk density (g/cm3)	1.5	
θ_w: Water-filled soil porosity (unitless)	0.15	
θ_a: Air-filled soil porosity (unitless)	0.28	
n: Total soil porosity (cm3/cm3)	0.43	
K_d: Soil-water sorption coefficient (K/kg)	see below	
K_{oc}: organic carbon-water sorption coefficient (K/kg)	see below	
F_{oc}: Fraction organic carbon	0.015	
D_a: Molecular diffusion coefficient in air (cm^2/s)	see below	
D_w: Molecular diffusion coefficient in water (cm^2/s)	see below	
T: Exposure interval (s)	788400000	
IR: Inhalation rate (m3/d)	20	
EF: Exposure frequency (days/year)	5	
ED: Exposure duration (years)	25	
Li: Lifetime (years)	25550	
ATnc: Averaging time - noncancer (days)	9125	
BW: Body weight (kg)	71.8	

							Subsurface Soil (0-5')					
Constituent	H	K_{oc}	D_a	D_w	D_A	VF	CSFi (1/(mg/kg-d)	chronicRfDi (mg/m3)	Conc (mg/kg)	Air conc. (mg/m3)	Risk	HQ
Aldrin	7.0E-03	2450000	1.3E-02	4.9E-06	1.30E-10	6.81E+06	1.7E+01	3.00E-05	1.0	0.0000001	3.40E-09	1.87E-05
Barium	NA	NA	NA	NA	NA	NA	NA	2.00E-01	1.0	NA	NA	NA
Chlorobenzene	1.5E-01	219	7.3E-02	8.7E-06	1.68E-04	6.00E+03	NA	1.40E-02	1.0	0.0001667	NA	4.54E-05
Chloromethane	3.6E-01	14	1.3E-01	6.5E-06	6.17E-03	9.91E+02	NA	2.60E-02	1.0	0.0010090	NA	1.48E-04
4-Chloro-3-methylphenol	1.4E-05	878	6.5E-02	8.0E-06	7.43E-09	9.03E+05	NA	5.00E-02	1.0	0.0000011	NA	8.45E-08
Chromium	NA	NA	NA	NA	NA	NA	4.2E+01	2.86E-05	1.0	NA	NA	NA
4,4'-DDD	1.6E-04	1000000	1.7E-02	4.8E-06	1.16E-11	2.28E+07	NA	NA	1.0	0.0000000	NA	NA
4,4'-DDE	8.6E-04	4470000	1.4E-02	5.9E-06	1.01E-11	2.44E+07	NA	NA	1.0	0.0000000	NA	NA
4,4'-DDT	3.3E-04	2630000	1.4E-02	5.0E-06	6.78E-12	2.99E+07	3.4E-01	5.00E-04	1.0	0.0000000	1.55E-11	2.55E-07
delta-BHC	5.7E-04	1070	1.4E-02	7.3E-06	2.91E-08	4.57E+05	NA	3.00E-04	1.0	0.0000022	NA	2.79E-05
Dibenzofuran	5.3E-02	8490	5.5E-02	7.0E-06	1.18E-06	7.16E+04	NA	2.00E-03	1.0	0.0000140	NA	2.67E-05
1,2-Dichlorobenzene	7.8E-02	617	6.9E-02	7.9E-06	2.97E-05	1.43E+04	NA	6.90E-03	1.0	0.0000700	NA	3.87E-05
1,4-Dichlorobenzene	7.4E+01	617	6.9E-02	7.9E-06	1.14E-02	7.29E+02	2.2E-02	2.30E-01	1.0	0.0013717	4.11E-08	2.28E-05
1,2-Dichloropropane	1.2E-01	44	7.8E-02	8.7E-06	5.99E-04	3.18E+03	NA	1.10E-03	1.0	0.0003145	NA	1.09E-03
4,6-Dinitro-2-methylphenol	1.1E-07	0.03	5.3E-02	7.3E-06	4.71E-07	1.13E+05	NA	1.00E-04	1.0	0.0000088	NA	3.36E-04
2,4-Dinitrophenol	1.8E-05	0.01	2.7E-02	9.1E-06	8.42E-07	8.48E+04	NA	2.00E-03	1.0	0.0000118	NA	2.25E-05
Endosulfan II	4.6E-04	2140	1.2E-02	4.6E-06	9.40E-09	8.03E+05	NA	6.00E-03	1.0	0.0000012	NA	7.92E-07
Endosulfan Sulfate	4.6E-04	2140	1.2E-02	4.6E-06	9.40E-09	8.03E+05	NA	6.00E-03	1.0	0.0000012	NA	7.92E-07
Endrin	3.1E-04	12300	1.3E-02	4.7E-06	1.25E-09	2.21E+06	NA	3.00E-04	1.0	0.0000005	NA	5.77E-06
Endrin Aldehyde	3.1E-04	12300	1.3E-02	4.7E-06	1.25E-09	2.21E+06	NA	3.00E-04	1.0	0.0000005	NA	5.77E-06
Ethylbenzene	3.2E-01	363	7.5E-02	7.8E-06	2.24E-04	5.20E+03	NA	2.90E-01	1.0	0.0001922	NA	2.53E-06
Isopropylbenzene	4.7E-01	817	6.5E-02	7.1E-06	1.27E-04	6.90E+03	NA	1.00E-01	1.0	0.0001448	NA	5.53E-06
Manganese	NA	NA	NA	NA	NA	NA	NA	1.43E-05	1.0	NA	NA	NA
Methylene Chloride	9.0E-02	12	1.0E-01	1.2E-05	1.61E-03	1.94E+03	1.6E-03	8.60E-01	1.0	0.0005150	1.15E-09	2.29E-06
4-Nitrophenol	3.2E-08	3	6.7E-02	8.7E-06	3.81E-07	1.26E+05	NA	8.00E-03	1.0	0.0000079	NA	3.78E-06
Phenol	1.6E-05	29	8.2E-02	9.1E-06	2.41E-07	1.59E+05	NA	3.00E-01	1.0	0.0000063	NA	8.02E-08
Tetrachloroethene	7.5E-01	155	7.2E-02	8.2E-06	1.10E-03	2.35E+03	2.0E-02	1.10E-01	1.0	0.0004253	1.16E-08	1.48E-05
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	2.5E-04	105	2.2E-02	7.1E-06	1.98E-07	1.75E+05	NA	3.00E-02	1.0	0.0000057	NA	7.27E-07
Toluene	2.7E-01	182	8.7E-02	8.6E-06	4.25E-04	3.77E+03	NA	1.40E+00	1.0	0.0002650	NA	7.22E-07
1,2,4-Trichlorobenzene	5.8E-02	1780	3.0E-02	8.2E-06	3.37E-06	4.24E+04	NA	1.10E-03	1.0	0.0000236	NA	8.19E-05
1,1,1-Trichloroethane	7.1E-01	110	7.8E-02	8.8E-06	1.51E-03	2.00E+03	NA	6.30E-01	1.0	0.0004998	NA	3.03E-06
Trichlorofluoromethane	4.0E+00	135	8.7E-02	9.7E-06	6.31E-03	9.80E+02	NA	2.00E-01	1.0	0.0010205	NA	1.95E-05
2,4,5-Trichlorophenol	1.8E-04	1600	2.9E-02	7.0E-06	1.30E-08	6.82E+05	NA	1.00E-01	1.0	0.0000015	NA	5.59E-08
2,4,6-Trichlorophenol	3.2E-04	131	3.2E-02	6.3E-06	2.74E-07	1.49E+05	1.1E-02	1.00E-04	1.0	0.0000067	9.94E-11	2.57E-04
1,2,4-Trimethylbenzene	1.8E-01	933	6.2E-02	7.3E-06	4.19E-05	1.20E+04	NA	1.70E-03	1.0	0.0000832	NA	1.87E-04
Total Xylenes	3.0E-01	407	7.0E-02	7.8E-06	1.74E-04	5.90E+03	NA	2.86E-02	1.0	0.0001696	NA	2.26E-05
1,2,3,4,6,7,8-HpCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+03	NA	1.0	0.0000001	1.09E-07	NA
1,2,3,4,6,7,8-HpCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+03	NA	1.0	0.0000001	1.09E-07	NA
1,2,3,4,7,8,9-HpCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+03	NA	1.0	0.0000001	1.09E-07	NA
1,2,3,4,7,8-HxCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+04	NA	1.0	0.0000001	1.09E-06	NA
1,2,3,4,7,8-HxCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+04	NA	1.0	0.0000001	1.09E-06	NA
1,2,3,6,7,8-HxCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+04	NA	1.0	0.0000001	1.09E-06	NA
1,2,3,6,7,8-HxCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+04	NA	1.0	0.0000001	1.09E-06	NA
1,2,3,7,8,9-HxCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+04	NA	1.0	0.0000001	1.09E-06	NA
1,2,3,7,8,9-HxCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+04	NA	1.0	0.0000001	1.09E-06	NA
1,2,3,7,8-PeCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+05	NA	1.0	0.0000001	1.09E-05	NA
1,2,3,7,8-PeCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	4.5E+03	NA	1.0	0.0000001	3.26E-07	NA
2,3,4,6,7,8-HxCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+04	NA	1.0	0.0000001	1.09E-06	NA
2,3,4,7,8-PeCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	4.5E+04	NA	1.0	0.0000001	3.26E-06	NA
2,3,7,8-TCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+05	NA	1.0	0.0000001	1.09E-05	NA
2,3,7,8-TCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+04	NA	1.0	0.0000001	1.09E-06	NA
OCDD	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	4.5E+01	NA	1.0	0.0000001	3.26E-09	NA
OCDF	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	4.5E+01	NA	1.0	0.0000001	3.26E-09	NA
TCDD TEQ	1.5E-03	14100000	4.7E-02	8.0E-06	1.72E-11	1.88E+07	1.5E+05	NA	1.0	0.0000001	1.09E-05	NA
Acenaphthene	6.4E-03	7079	4.2E-02	7.7E-06	1.31E-07	2.15E+05	NA	6.00E-02	1.0	0.0000047	NA	2.96E-07
Acenaphthylene	4.7E-03	6918	4.4E-02	7.1E-06	1.04E-07	2.42E+05	NA	3.00E-02	1.0	0.0000041	NA	5.26E-07
Anthracene	2.7E-03	29512	3.2E-02	7.7E-06	1.02E-08	7.70E+05	NA	3.00E-01	1.0	0.0000013	NA	1.65E-08
Benzo(a)anthracene	1.4E-04	398107	5.1E-02	9.0E-06	7.17E-11	9.20E+06	3.1E-01	3.00E-02	1.0	0.0000001	4.59E-11	1.38E-08
Benzo(a)pyrene	4.6E-05	1023293	4.3E-02	9.0E-06	1.05E-11	2.41E+07	3.1E+00	3.00E-02	1.0	0.0000000	1.76E-10	5.29E-09
Benzo(b)fluoranthene	4.6E-03	1230269	2.3E-02	5.6E-06	2.99E-10	4.50E+06	3.1E-01	3.00E-02	1.0	0.0000002	9.38E-11	2.82E-08
Benzo(g,h,i)perylene	5.8E-06	1584893	4.9E-02	5.7E-05	1.61E-11	1.94E+07	NA	3.00E-02	1.0	0.0000001	NA	6.56E-09
Benzo(k)fluoranthene	3.4E-05	1230269	2.3E-02	5.6E-06	4.16E-12	3.82E+07	3.1E-02	3.00E-02	1.0	0.0000000	1.11E-12	3.33E-09
Chrysene	3.9E-03	398107	2.5E-02	6.2E-06	8.52E-10	2.67E+06	3.1E-03	3.00E-02	1.0	0.0000004	1.58E-12	4.77E-08
Dibenz(a,h)anthracene	6.0E-07	3801894	2.0E-02	5.2E-06	6.00E-13	1.00E+08	3.1E+00	3.00E-02	1.0	0.00000001	4.21E-11	1.27E-09
Fluoranthene	6.6E-04	107152	3.0E-02	6.4E-06	6.64E-10	3.02E+06	NA	4.00E-02	1.0	0.0000003	NA	3.16E-08
Fluorene	2.6E-03	13804	3.6E-02	7.9E-06	2.36E-08	5.06E+05	NA	4.00E-02	1.0	0.0000020	NA	1.88E-07
Indeno(1,2,3-cd)pyrene	6.6E-05	3467368	1.9E-02	5.7E-06	1.96E-12	5.56E+07	3.1E-01	3.00E-02	1.0	0.00000002	7.59E-12	2.29E-09
1-Methylnaphthalene	1.6E-02	2290	6.3E-02	7.1E-06	1.56E-06	6.24E+04	NA	8.57E-04	1.0	0.0000160	NA	7.14E-05
2-Methylnaphthalene	1.9E-02	4320	6.3E-02	7.2E-06	9.29E-07	8.08E+04	NA	8.57E-04	1.0	0.0000124	NA	5.51E-05
Naphthalene	2.0E-02	1995	5.9E-02	7.5E-06	2.02E-06	5.48E+04	NA	8.57E-04	1.0	0.0000182	NA	8.12E-05
Phenanthrene	5.4E-03	14125	3.3E-02	7.5E-06	4.38E-08	3.72E+05	NA	8.60E-04	1.0	0.0000027	NA	1.19E-05
Pyrene	4.5E-04	104713	2.7E-02	7.2E-06	4.30E-10	3.75E+06	NA	3.00E-02	1.0	0.0000003	NA	3.39E-08
BaP-TE	4.6E-05	1023293	4.3E-02	9.0E-06	1.05E-11	2.41E+07	3.1E+00	3.00E-02	1.0	0.0000000	1.76E-10	5.29E-09
Pentachlorophenol	1.0E-06	19953	5.6E-02	6.1E-06	1.41E-10	6.55E+06	NA	3.00E-02	1.0	0.0000002	NA	1.94E-08

Table C-25
SITE-WIDE & AREA-SPECIFIC RISKS
INGESTION/DERMAL CONTACT
UTILITY WORKER

Constituent	Site-Wide			Area A			Area B			Area C			Area F		
	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	9.16E-06	1.67E-09	3.00E-03	9.16E-06	1.67E-09	3.00E-03	9.16E-06	1.67E-09	3.00E-03	9.16E-06	1.67E-09	3.00E-03	9.16E-06	1.67E-09
Barium	2.99E+02	9.43E-05	NA	2.99E+02	9.43E-05	NA	2.99E+02	9.43E-05	NA	2.99E+02	9.43E-05	NA	2.99E+02	9.43E-05	NA
Chlorobenzene	3.00E-03	9.44E-09	NA	3.00E-03	9.44E-09	NA	3.00E-03	9.44E-09	NA	3.00E-03	9.44E-09	NA	3.00E-03	9.44E-09	NA
Chloromethane	2.00E-03	4.84E-09	NA	2.00E-03	4.84E-09	NA	2.00E-03	4.84E-09	NA	2.00E-03	4.84E-09	NA	2.00E-03	4.84E-09	NA
4-Chloro-3-methylphenol	2.50E-01	3.32E-07	NA	2.50E-01	3.32E-07	NA	2.50E-01	3.32E-07	NA	2.50E-01	3.32E-07	NA	2.50E-01	3.32E-07	NA
Chromium	6.80E+01	1.53E-03	NA	6.80E+01	1.53E-03	NA	6.80E+01	1.53E-03	NA	6.80E+01	1.53E-03	NA	6.80E+01	1.53E-03	NA
4,4'-DDD	3.60E-02	NA	2.65E-10	3.60E-02	NA	2.65E-10	3.60E-02	NA	2.65E-10	3.60E-02	NA	2.65E-10	3.60E-02	NA	2.65E-10
4,4'-DDE	8.00E-03	NA	8.34E-11	8.00E-03	NA	8.34E-11	8.00E-03	NA	8.34E-11	8.00E-03	NA	8.34E-11	8.00E-03	NA	8.34E-11
4,4'-DDT	1.90E-02	3.26E-06	1.98E-10	1.90E-02	3.26E-06	1.98E-10	1.90E-02	3.26E-06	1.98E-10	1.90E-02	3.26E-06	1.98E-10	1.90E-02	3.26E-06	1.98E-10
delta-BHC	3.00E-03	9.16E-07	1.28E-10	3.00E-03	9.16E-07	1.28E-10	3.00E-03	9.16E-07	1.28E-10	3.00E-03	9.16E-07	1.28E-10	3.00E-03	9.16E-07	1.28E-10
Dibenzofuran	5.17E+01	1.92E-03	NA	5.17E+01	1.92E-03	NA	3.22E+01	1.20E-03	NA	1.90E+00	7.07E-05	NA	2.26E+01	8.41E-04	NA
1,2-Dichlorobenzene	2.00E-03	1.40E-09	NA	2.00E-03	1.40E-09	NA	2.00E-03	1.40E-09	NA	2.00E-03	1.40E-09	NA	2.00E-03	1.40E-09	NA
1,4-Dichlorobenzene	2.00E-03	4.20E-09	1.08E-12	2.00E-03	4.20E-09	1.08E-12	2.00E-03	4.20E-09	1.08E-12	2.00E-03	4.20E-09	1.08E-12	2.00E-03	4.20E-09	1.08E-12
1,2-Dichloropropane	4.00E-03	3.12E-07	8.34E-12	4.00E-03	3.12E-07	8.34E-12	4.00E-03	3.12E-07	8.34E-12	4.00E-03	3.12E-07	8.34E-12	4.00E-03	3.12E-07	8.34E-12
4,6-Dinitro-2-methylphenol	1.50E+00	9.96E-04	NA	1.50E+00	9.96E-04	NA	1.50E+00	9.96E-04	NA	1.50E+00	9.96E-04	NA	1.50E+00	9.96E-04	NA
2,4-Dinitrophenol	6.30E-01	2.09E-05	NA	6.30E-01	2.09E-05	NA	6.30E-01	2.09E-05	NA	6.30E-01	2.09E-05	NA	6.30E-01	2.09E-05	NA
Endosulfan II	1.40E-02	2.00E-07	NA	1.40E-02	2.00E-07	NA	1.40E-02	2.00E-07	NA	1.40E-02	2.00E-07	NA	1.40E-02	2.00E-07	NA
Endosulfan Sulfate	1.40E-02	2.00E-07	NA	1.40E-02	2.00E-07	NA	1.40E-02	2.00E-07	NA	1.40E-02	2.00E-07	NA	1.40E-02	2.00E-07	NA
Endrin	3.60E-02	1.10E-05	NA	3.60E-02	1.10E-05	NA	3.60E-02	1.10E-05	NA	3.60E-02	1.10E-05	NA	3.60E-02	1.10E-05	NA
Endrin Aldehyde	3.30E-02	1.01E-05	NA	3.30E-02	1.01E-05	NA	3.30E-02	1.01E-05	NA	3.30E-02	1.01E-05	NA	3.30E-02	1.01E-05	NA
Ethylbenzene	2.10E+00	1.32E-06	NA	2.10E+00	1.32E-06	NA	2.10E+00	1.32E-06	NA	2.10E+00	1.32E-06	NA	2.10E+00	1.32E-06	NA
Isopropylbenzene	3.30E-02	2.08E-08	NA	3.30E-02	2.08E-08	NA	3.30E-02	2.08E-08	NA	3.30E-02	2.08E-08	NA	3.30E-02	2.08E-08	NA
Manganese	8.52E+02	4.18E-04	NA	8.52E+02	4.18E-04	NA	8.52E+02	4.18E-04	NA	8.52E+02	4.18E-04	NA	8.52E+02	4.18E-04	NA
Methylene Chloride	7.40E-02	9.18E-08	1.47E-11	7.40E-02	9.18E-08	1.47E-11	7.40E-02	9.18E-08	1.47E-11	7.40E-02	9.18E-08	1.47E-11	7.40E-02	9.18E-08	1.47E-11
4-Nitrophenol	2.50E-01	2.07E-06	NA	2.50E-01	2.07E-06	NA	2.50E-01	2.07E-06	NA	2.50E-01	2.07E-06	NA	2.50E-01	2.07E-06	NA
Phenol	1.20E-02	2.98E-09	NA	1.20E-02	2.98E-09	NA	1.20E-02	2.98E-09	NA	1.20E-02	2.98E-09	NA	1.20E-02	2.98E-09	NA
Tetrachloroethene	8.00E-03	5.95E-08	1.15E-10	8.00E-03	5.95E-08	1.15E-10	8.00E-03	5.95E-08	1.15E-10	8.00E-03	5.95E-08	1.15E-10	8.00E-03	5.95E-08	1.15E-10
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	3.43E-07	NA	1.55E-01	3.43E-07	NA	1.55E-01	3.43E-07	NA	1.55E-01	3.43E-07	NA	1.55E-01	3.43E-07	NA
Toluene	2.80E-02	2.36E-08	NA	2.80E-02	2.36E-08	NA	2.80E-02	2.36E-08	NA	2.80E-02	2.36E-08	NA	2.80E-02	2.36E-08	NA
1,2,4-Trichlorobenzene	1.00E-03	6.30E-09	NA	1.00E-03	6.30E-09	NA	1.00E-03	6.30E-09	NA	1.00E-03	6.30E-09	NA	1.00E-03	6.30E-09	NA
1,1,1-Trichloroethane	5.00E-03	1.33E-08	NA	5.00E-03	1.33E-08	NA	5.00E-03	1.33E-08	NA	5.00E-03	1.33E-08	NA	5.00E-03	1.33E-08	NA
Trichlorofluoromethane	2.00E-03	5.31E-09	NA	2.00E-03	5.31E-09	NA	2.00E-03	5.31E-09	NA	2.00E-03	5.31E-09	NA	2.00E-03	5.31E-09	NA
2,4,5-Trichlorophenol	1.60E-01	1.06E-07	NA	1.60E-01	1.06E-07	NA	1.60E-01	1.06E-07	NA	1.60E-01	1.06E-07	NA	1.60E-01	1.06E-07	NA
2,4,6-Trichlorophenol	3.50E-01	2.32E-04	9.13E-11	3.50E-01	2.32E-04	9.13E-11	3.50E-01	2.32E-04	9.13E-11	3.50E-01	2.32E-04	9.13E-11	3.50E-01	2.32E-04	9.13E-11
1,2,4-Trimethylbenzene	4.40E-02	6.55E-08	NA	4.40E-02	6.55E-08	NA	4.40E-02	6.55E-08	NA	4.40E-02	6.55E-08	NA	4.40E-02	6.55E-08	NA
Total Xylenes	2.00E-03	6.75E-11	NA	2.00E-03	6.75E-11	NA	2.00E-03	6.75E-11	NA	2.00E-03	6.75E-11	NA	2.00E-03	6.75E-11	NA
1,2,3,4,6,7,8-HpCDD	1.11E-02	NA	4.00E-07	7.05E-03	NA	2.55E-07	1.23E-02	NA	4.45E-07	5.40E-04	NA	1.95E-08	1.12E-02	NA	4.06E-07
1,2,3,4,6,7,8-HpCDF	2.05E-03	NA	7.41E-08	1.11E-03	NA	4.02E-08	2.68E-03	NA	9.68E-08	2.80E-04	NA	1.01E-08	1.97E-03	NA	7.12E-08
1,2,3,4,7,8,9-HpCDF	1.72E-04	NA	6.21E-09	1.01E-04	NA	3.64E-09	2.15E-04	NA	7.79E-09	1.90E-05	NA	6.87E-10	1.33E-04	NA	4.83E-09
1,2,3,4,7,8-HxCDD	6.11E-05	NA	2.21E-08	2.90E-05	NA	1.05E-08	7.21E-05	NA	2.61E-08	2.50E-06	NA	9.05E-10	1.33E-04	NA	4.83E-08
1,2,3,4,7,8-HxCDF	1.64E-04	NA	5.92E-08	9.90E-05	NA	3.58E-08	1.97E-04	NA	7.11E-08	2.60E-05	NA	9.41E-09	1.03E-04	NA	3.71E-08
1,2,3,6,7,8-HxCDD	3.36E-04	NA	1.22E-07	2.10E-04	NA	7.60E-08	3.43E-04	NA	1.24E-07	2.00E-05	NA	7.24E-09	4.45E-04	NA	1.61E-07
1,2,3,6,7,8-HxCDF	4.98E-05	NA	1.80E-08	1.60E-05	NA	5.79E-09	4.90E-05	NA	1.77E-08	4.10E-06	NA	1.48E-09	5.39E-05	NA	1.95E-08
1,2,3,7,8,9-HxCDD	1.03E-04	NA	3.71E-08	2.40E-05	NA	8.68E-09	1.22E-04	NA	4.42E-08	2.15E-06	NA	7.78E-10	2.11E-04	NA	7.64E-08
1,2,3,7,8,9-HxCDF	5.47E-05	NA	1.98E-08	4.50E-06	NA	1.63E-09	4.53E-05	NA	1.64E-08	5.90E-06	NA	2.13E-09	2.85E-05	NA	1.03E-08
1,2,3,7,8-PeCDD	1.83E-05	NA	6.63E-08	3.10E-06	NA	1.12E-08	2.35E-05	NA	8.50E-08	ND	ND	ND	4.30E-05	NA	1.56E-07
1,2,3,7,8-PeCDF	1.68E-05	NA	1.82E-09	9.30E-06	NA	1.01E-09	1.57E-05	NA	1.71E-09	1.80E-06	NA	1.95E-10	1.16E-05	NA	1.26E-09
2,3,4,6,7,8-HxCDF	7.61E-05	NA	2.76E-08	1.34E-05	NA	4.85E-09	9.15E-05	NA	3.31E-08	2.00E-06	NA	7.24E-10	7.52E-05	NA	2.72E-08
2,3,4,7,8-PeCDF	3.53E-05	NA	3.83E-08	9.10E-06	NA	9.88E-09	3.67E-05	NA	3.99E-08	2.10E-06	NA	2.28E-09	1.92E-05	NA	2.08E-08
2,3,7,8-TCDD	2.05E-06	NA	7.43E-09	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.34E-06	NA	1.21E-08
2,3,7,8-TCDF	2.92E-06	NA	1.06E-09	8.75E-07	NA	3.17E-10	3.46E-06	NA	1.25E-09	ND	ND	ND	2.37E-06	NA	8.59E-10
OCDD	9.78E-02	NA	1.06E-07	7.45E-02	NA	8.09E-08	1.38E-01	NA	1.50E-07	7.30E-03	NA	7.92E-09	8.96E-02	NA	9.73E-08
OCDF	8.69E-03	NA	9.44E-09	4.50E-03	NA	4.88E-09	1.21E-02	NA	1.31E-08	7.90E-04	NA	8.57E-10	7.05E-03	NA	7.65E-09
TCDD TEQ	2.73E-04	NA	9.88E-07	1.52E-04	NA	5.51E-07	3.26E-04	NA	1.18E-06	1.91E-05	NA	6.91E-08	3.16E-04	NA	1.14E-06
Acenaphthene	4.93E+01	6.11E-05	NA	6.50E+01	8.06E-05	NA	1.23E+01	1.53E-05	NA	2.08E+00	2.58E-06	NA	1.39E+01	1.73E-05	NA
Acenaphthylene	1.76E+01	6.55E-05	NA	2.51E+01	9.34E-05	NA	7.00E+00	2.60E-05	NA	1.42E+00	5.27E-06	NA	8.94E+00	3.33E-05	NA
Anthracene	2.81E+01	6.97E-06	NA	3.30E+01	8.18E-06	NA	6.45E+00	1.60E-06	NA	7.60E-01	1.88E-07	NA	9.23E+00	2.29E-06	NA
Benzo(a)anthracene	8.03E+00	2.62E-05	1.37E-07	9.20E+00	3.00E-05	1.57E-07	3.28E+00	1.07E-05	5.57E-08	3.58E-01	1.17E-06	6.09E-09	3.97E+00	1.30E-05	6.75E-08
Benzo(a)pyrene	6.47E+00	2.11E-05	1.10E-06	9.10E+00	2.97E-05	1.55E-06	6.63E+00	2.16E-05	1.13E-06	1.85E-01	6.04E-07	3.15E-08	2.90E+00	9.45E-06	4.93E-07
Benzo(b)fluoranthene	6.94E+00	2.27E-05	1.18E-07	9.90E+00	3.23E-05	1.68E-07	3.43E+00	1.12E-05	5.84E-08	2.92E-01	9.54E-07	4.98E-09	4.51E+00	1.47E-05	7.68E-08
Benzo(g,h,i)perylene	5.62E+00	2.09E-05	NA	6.90E+00	2.57E-05	NA	5.67E+00	2.11E-05	NA	2.35E-01	8.75E-07	NA	3.15E+00	1.17E-05	NA
Benzo(k)fluoranthene	2.55E+00	8.33E-06	4.35E-09	2.90E+00	9.46E-06	4.93E-09	1.02E+00	3.32E-06	1.73E-09	1.27E-01	4.15E-07	2.17E-10	2.18E+00	7.10E-06	3.70E-09
Chrysene	1.63E+01	5.32E-05	2.77E-09	2.20E+01	7.18E-05	3.74E-09	9.09E+00	2.96E-05	1.55E-09	6.90E-01	2.25E-06	1.17E-10	7.88E+00	2.57E-05	1.34E-09
Dibenz(a,h)anthracene	7.87E+00	2.57E-05	1.34E-06	9.50E+00	3.10E-05	1.62E-06	8.90E+00	2.90E-05	1.51E-06	3.69E-01	1.20E-06	6.27E-08	3.75E+00	1.22E-05	6.39E-07
Fluoranthene	7.46E+01	1.39E-04	NA	8.40E+01	1.56E-04	NA	1.47E+01	2.73E-05	NA	3.00E+00	5.57E-06	NA	2.42E+01	4.50E-05	NA
Fluorene	3.87E+01	7.19E-05	NA	4.70E+01	8.74E-05	NA	7.38E+00	1.37E-05	NA	1.64E+00	3.05E-06	NA	3.81E+00	7.08E-06	NA
Indeno(1,2,3-cd)pyrene	2.11E+00	6.89E-06	3.59E-08	2.90E+00	9.46E-06	4.93E-08	1.97E+00	6.44E-06	3.36E-08	1.49E-01	4.85E-07	2.53E-09	2.83E+00	9.22E-06	4.81E-08
1-Methylnaphthalene	8.71E+00	3.24E-05	NA	ND	ND	ND	4.20E+00	1.56E-05	NA	4.46E+00	1.66E-05	NA	3.46E+01	1.29E-04	NA
2-Methylnaphthalene	9.84E+00	3.66E-05	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.48E+01	1.29E-04	NA
Naphthalene	3.11E+01	1.16E-04	NA	9.06E+01	3.37E-04	NA	1.76E+01	6.55E-05	NA	1.35E+00	5.03E-06	NA	5.85E+00	2.18E-05	NA
Phenanthrene	1.11E+02	4.13E-04	NA	1.30E+02	4.84E-04	NA	1.35E+01	5.02E-05	NA	4.81E+00	1.79E-05	NA	7.74E+00	2.88E-05	NA
Pyrene	4.34E+01	1.08E-04	NA	4.80E+01	1.19E-04	NA	5.57E+01	1.38E-04	NA	1.77E+00	4.39E-06	NA	1.53E+01	3.80E-05	NA
BaP-TE	1.60E+01	5.22E-05	2.72E-06	2.07E+01	6.75E-05	3.52E-06	1.54E+01	5.02E-05	2.62E-06	6.21E-01	2.03E-06	1.06E-07	7.64E+00	2.49E-05	1.30E-06
Pentachlorophenol	1.28E+01	2.82E-05	3.63E-08	2.03E+00	4.50E-06	5.78E-09	3.62E+00	8.01E-06	1.03E-08	9.71E-01	2.15E-06	2.76E-09	1.88E+01	4.16E-05	5.35E-08
Total		6.41E-03	3.75E-06		6.72E-03	4.08E-06		4.96E-03	3.81E-06		3.47E-03	1.80E-07		4.70E-03	2.50E-06

Table C-25
SITE-WIDE & AREA-SPECIFIC RISKS
INGESTION/DERMAL CONTACT
UTILITY WORKER

Constituent	Area G			Area H			Area S			Area B/F		
	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	9.16E-06	1.67E-09	3.00E-03	9.16E-06	1.67E-09	3.00E-03	9.16E-06	1.67E-09	3.00E-03	9.16E-06	1.67E-09
Barium	2.99E+02	9.43E-05	NA	2.99E+02	9.43E-05	NA	2.99E+02	9.43E-05	NA	2.99E+02	9.43E-05	NA
Chlorobenzene	3.00E-03	9.44E-09	NA	3.00E-03	9.44E-09	NA	3.00E-03	9.44E-09	NA	3.00E-03	9.44E-09	NA
Chloromethane	2.00E-03	4.84E-09	NA	2.00E-03	4.84E-09	NA	2.00E-03	4.84E-09	NA	2.00E-03	4.84E-09	NA
4-Chloro-3-methylphenol	2.50E-01	3.32E-07	NA	2.50E-01	3.32E-07	NA	2.50E-01	3.32E-07	NA	2.50E-01	3.32E-07	NA
Chromium	6.80E+01	1.53E-03	NA	6.80E+01	1.53E-03	NA	6.80E+01	1.53E-03	NA	6.80E+01	1.53E-03	NA
4,4'-DDD	3.60E-02	NA	2.65E-10	3.60E-02	NA	2.65E-10	3.60E-02	NA	2.65E-10	3.60E-02	NA	2.65E-10
4,4'-DDE	8.00E-03	NA	8.34E-11	8.00E-03	NA	8.34E-11	8.00E-03	NA	8.34E-11	8.00E-03	NA	8.34E-11
4,4'-DDT	1.90E-02	3.26E-06	1.98E-10	1.90E-02	3.26E-06	1.98E-10	1.90E-02	3.26E-06	1.98E-10	1.90E-02	3.26E-06	1.98E-10
delta-BHC	3.00E-03	9.16E-07	1.28E-10	3.00E-03	9.16E-07	1.28E-10	3.00E-03	9.16E-07	1.28E-10	3.00E-03	9.16E-07	1.28E-10
Dibenzofuran	2.45E+01	9.11E-04	NA	2.67E+01	9.93E-04	NA	1.90E+00	7.07E-05	NA	3.22E+01	1.20E-03	NA
1,2-Dichlorobenzene	2.00E-03	1.40E-09	NA	2.00E-03	1.40E-09	NA	2.00E-03	1.40E-09	NA	2.00E-03	1.40E-09	NA
1,4-Dichlorobenzene	2.00E-03	4.20E-09	1.08E-12	2.00E-03	4.20E-09	1.08E-12	2.00E-03	4.20E-09	1.08E-12	2.00E-03	4.20E-09	1.08E-12
1,2-Dichloropropane	4.00E-03	3.12E-07	8.34E-12	4.00E-03	3.12E-07	8.34E-12	4.00E-03	3.12E-07	8.34E-12	4.00E-03	3.12E-07	8.34E-12
4,6-Dinitro-2-methylphenol	1.50E+00	9.96E-04	NA	1.50E+00	9.96E-04	NA	1.50E+00	9.96E-04	NA	1.50E+00	9.96E-04	NA
2,4-Dinitrophenol	6.30E-01	2.09E-05	NA	6.30E-01	2.09E-05	NA	6.30E-01	2.09E-05	NA	6.30E-01	2.09E-05	NA
Endosulfan II	1.40E-02	2.00E-07	NA	1.40E-02	2.00E-07	NA	1.40E-02	2.00E-07	NA	1.40E-02	2.00E-07	NA
Endosulfan Sulfate	1.40E-02	2.00E-07	NA	1.40E-02	2.00E-07	NA	1.40E-02	2.00E-07	NA	1.40E-02	2.00E-07	NA
Endrin	3.60E-02	1.10E-05	NA	3.60E-02	1.10E-05	NA	3.60E-02	1.10E-05	NA	3.60E-02	1.10E-05	NA
Endrin Aldehyde	3.30E-02	1.01E-05	NA	3.30E-02	1.01E-05	NA	3.30E-02	1.01E-05	NA	3.30E-02	1.01E-05	NA
Ethylbenzene	2.10E+00	1.32E-06	NA	2.10E+00	1.32E-06	NA	2.10E+00	1.32E-06	NA	2.10E+00	1.32E-06	NA
Isopropylbenzene	3.30E-02	2.08E-08	NA	3.30E-02	2.08E-08	NA	3.30E-02	2.08E-08	NA	3.30E-02	2.08E-08	NA
Manganese	8.52E+02	4.18E-04	NA	8.52E+02	4.18E-04	NA	8.52E+02	4.18E-04	NA	8.52E+02	4.18E-04	NA
Methylene Chloride	7.40E-02	9.18E-08	1.47E-11	7.40E-02	9.18E-08	1.47E-11	7.40E-02	9.18E-08	1.47E-11	7.40E-02	9.18E-08	1.47E-11
4-Nitrophenol	2.50E-01	2.07E-06	NA	2.50E-01	2.07E-06	NA	2.50E-01	2.07E-06	NA	2.50E-01	2.07E-06	NA
Phenol	1.20E-02	2.98E-09	NA	1.20E-02	2.98E-09	NA	1.20E-02	2.98E-09	NA	1.20E-02	2.98E-09	NA
Tetrachloroethene	8.00E-03	5.95E-08	1.15E-10	8.00E-03	5.95E-08	1.15E-10	8.00E-03	5.95E-08	1.15E-10	8.00E-03	5.95E-08	1.15E-10
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	3.43E-07	NA	1.55E-01	3.43E-07	NA	1.55E-01	3.43E-07	NA	1.55E-01	3.43E-07	NA
Toluene	2.80E-02	2.36E-08	NA	2.80E-02	2.36E-08	NA	2.80E-02	2.36E-08	NA	2.80E-02	2.36E-08	NA
1,2,4-Trichlorobenzene	1.00E-03	6.30E-09	NA	1.00E-03	6.30E-09	NA	1.00E-03	6.30E-09	NA	1.00E-03	6.30E-09	NA
1,1,1-Trichloroethane	5.00E-03	1.33E-08	NA	5.00E-03	1.33E-08	NA	5.00E-03	1.33E-08	NA	5.00E-03	1.33E-08	NA
Trichlorofluoromethane	2.00E-03	5.31E-09	NA	2.00E-03	5.31E-09	NA	2.00E-03	5.31E-09	NA	2.00E-03	5.31E-09	NA
2,4,5-Trichlorophenol	1.60E-01	1.06E-07	NA	1.60E-01	1.06E-07	NA	1.60E-01	1.06E-07	NA	1.60E-01	1.06E-07	NA
2,4,6-Trichlorophenol	3.50E-01	2.32E-04	9.13E-11	3.50E-01	2.32E-04	9.13E-11	3.50E-01	2.32E-04	9.13E-11	3.50E-01	2.32E-04	9.13E-11
1,2,4-Trimethylbenzene	4.40E-02	6.55E-08	NA	4.40E-02	6.55E-08	NA	4.40E-02	6.55E-08	NA	4.40E-02	6.55E-08	NA
Total Xylenes	2.00E-03	6.75E-11	NA	2.00E-03	6.75E-11	NA	2.00E-03	6.75E-11	NA	2.00E-03	6.75E-11	NA
1,2,3,4,6,7,8-HpCDD	2.35E-02	NA	8.50E-07	1.43E-02	NA	5.16E-07	8.85E-03	NA	3.20E-07	1.01E-02	NA	3.67E-07
1,2,3,4,6,7,8-HpCDF	3.85E-03	NA	1.39E-07	2.90E-03	NA	1.05E-07	3.17E-03	NA	1.15E-07	1.86E-03	NA	6.74E-08
1,2,3,4,7,8,9-HpCDF	3.25E-04	NA	1.18E-08	2.58E-04	NA	9.32E-09	3.19E-04	NA	1.16E-08	1.35E-04	NA	4.90E-09
1,2,3,4,7,8-HxCDD	6.80E-05	NA	2.46E-08	5.46E-05	NA	1.98E-08	3.78E-05	NA	1.37E-08	1.08E-04	NA	3.89E-08
1,2,3,4,7,8-HxCDF	2.91E-04	NA	1.05E-07	2.47E-04	NA	8.93E-08	4.47E-04	NA	1.62E-07	1.12E-04	NA	4.06E-08
1,2,3,6,7,8-HxCDD	6.00E-04	NA	2.17E-07	4.65E-04	NA	1.68E-07	3.52E-04	NA	1.27E-07	3.75E-04	NA	1.36E-07
1,2,3,6,7,8-HxCDF	8.93E-05	NA	3.23E-08	6.94E-05	NA	2.51E-08	9.97E-05	NA	3.61E-08	4.70E-05	NA	1.70E-08
1,2,3,7,8,9-HxCDD	1.37E-04	NA	4.96E-08	9.55E-05	NA	3.46E-08	7.44E-05	NA	2.69E-08	1.70E-04	NA	6.16E-08
1,2,3,7,8,9-HxCDF	1.12E-04	NA	4.05E-08	1.12E-04	NA	4.07E-08	9.85E-05	NA	3.57E-08	2.83E-05	NA	1.02E-08
1,2,3,7,8-PeCDD	1.69E-05	NA	6.12E-08	1.46E-05	NA	5.28E-08	1.10E-05	NA	3.99E-08	3.48E-05	NA	1.26E-07
1,2,3,7,8-PeCDF	3.01E-05	NA	3.26E-09	3.84E-05	NA	4.17E-09	2.59E-05	NA	2.81E-09	1.13E-05	NA	1.23E-09
2,3,4,6,7,8-HxCDF	1.36E-04	NA	4.92E-08	1.15E-04	NA	4.16E-08	1.68E-04	NA	6.07E-08	6.83E-05	NA	2.47E-08
2,3,4,7,8-PeCDF	5.91E-05	NA	6.41E-08	8.12E-05	NA	8.81E-08	8.79E-05	NA	9.54E-08	2.09E-05	NA	2.27E-08
2,3,7,8-TCDD	2.54E-06	NA	9.21E-09	2.36E-06	NA	8.55E-09	ND	ND	ND	2.98E-06	NA	1.08E-08
2,3,7,8-TCDF	3.55E-06	NA	1.28E-09	7.61E-06	NA	2.75E-09	5.04E-06	NA	1.82E-09	2.45E-06	NA	8.86E-10
OCDD	2.00E-01	NA	2.17E-07	1.38E-01	NA	1.50E-07	9.12E-02	NA	9.90E-08	8.88E-02	NA	9.63E-08
OCDF	1.79E-02	NA	1.94E-08	1.34E-02	NA	1.46E-08	1.17E-02	NA	1.27E-08	7.12E-03	NA	7.73E-09
TCDD TEQ	5.05E-04	NA	1.83E-06	3.73E-04	NA	1.35E-06	3.20E-04	NA	1.16E-06	2.81E-04	NA	1.02E-06
Acenaphthene	5.24E+00	6.50E-06	NA	5.07E+00	6.28E-06	NA	1.17E+00	1.45E-06	NA	1.13E+01	1.40E-05	NA
Acenaphthylene	2.14E+00	7.96E-06	NA	2.68E+00	9.98E-06	NA	3.35E-01	1.25E-06	NA	6.79E+00	2.53E-05	NA
Anthracene	1.48E+00	3.68E-07	NA	4.25E+00	1.05E-06	NA	4.85E+00	1.20E-06	NA	6.91E+00	1.71E-06	NA
Benzo(a)anthracene	1.22E+00	3.97E-06	2.07E-08	2.59E+00	8.45E-06	4.41E-08	1.80E+00	5.87E-06	3.06E-08	3.23E+00	1.05E-05	5.49E-08
Benzo(a)pyrene	5.06E-01	1.65E-06	8.61E-08	1.20E+00	3.93E-06	2.05E-07	9.00E-01	2.94E-06	1.53E-07	4.55E+00	1.49E-05	7.75E-07
Benzo(b)fluoranthene	6.24E-01	2.04E-06	1.06E-08	1.78E+00	5.81E-06	3.03E-08	2.08E+00	6.77E-06	3.53E-08	3.61E+00	1.18E-05	6.15E-08
Benzo(g,h,i)perylene	8.65E-01	3.22E-06	NA	1.74E+00	6.46E-06	NA	1.63E+00	6.07E-06	NA	4.17E+00	1.55E-05	NA
Benzo(k)fluoranthene	3.27E-01	1.07E-06	5.56E-10	1.65E+00	5.37E-06	2.80E-09	7.09E-01	2.31E-06	1.21E-09	1.44E+00	4.70E-06	2.45E-09
Chrysene	4.35E+00	1.42E-05	7.39E-10	5.09E+00	1.66E-05	8.66E-10	2.74E+00	8.94E-06	4.66E-10	7.63E+00	2.49E-05	1.30E-09
Dibenz(a,h)anthracene	1.35E+00	4.41E-06	2.30E-07	2.20E+00	7.18E-06	3.74E-07	2.52E+00	8.24E-06	4.29E-07	5.97E+00	1.95E-05	1.02E-06
Fluoranthene	4.11E+00	7.64E-06	NA	1.11E+01	2.06E-05	NA	7.00E+00	1.30E-05	NA	1.68E+01	3.13E-05	NA
Fluorene	2.17E+00	4.03E-06	NA	5.25E+00	9.76E-06	NA	1.73E+00	3.22E-06	NA	5.14E+00	9.55E-06	NA
Indeno(1,2,3-cd)pyrene	2.81E-01	9.17E-07	4.78E-09	1.52E+00	4.96E-06	2.59E-08	1.10E+00	3.58E-06	1.87E-08	2.19E+00	7.13E-06	3.72E-08
1-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.23E+01	4.59E-05	NA
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.79E+01	6.67E-05	NA
Naphthalene	1.13E+00	4.22E-06	NA	5.32E+00	1.98E-05	NA	3.62E-01	1.35E-06	NA	1.10E+01	4.10E-05	NA
Phenanthrene	2.32E+00	8.62E-06	NA	1.43E+01	5.32E-05	NA	2.18E+00	8.10E-06	NA	9.58E+00	3.56E-05	NA
Pyrene	1.13E+00	2.81E-06	NA	7.92E+00	1.97E-05	NA	5.28E+00	1.31E-05	NA	3.44E+01	8.53E-05	NA
BaP-TE	2.07E+00	6.76E-06	3.52E-07	3.64E+00	1.19E-05	6.19E-07	3.91E+00	1.28E-05	6.66E-07	1.09E+01	3.55E-05	1.85E-06
Pentachlorophenol	2.15E+01	4.77E-05	6.13E-08	5.30E+01	1.17E-04	1.51E-07	4.15E+01	9.19E-05	1.18E-07	1.01E+01	2.23E-05	2.87E-08
Total		4.34E-03	2.24E-06		4.60E-03	2.12E-06		3.56E-03	1.95E-06		4.96E-03	2.90E-06

Table C-26
SITE-WIDE & AREA-SPECIFIC RISKS
INHALATION OF PARTICULATES
UTILITY WORKER

Constituent	Site-Wide			Area A			Area B			Area C			Area F		
	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	5.34E-10	9.73E-14	3.00E-03	5.34E-10	9.73E-14	3.00E-03	5.34E-10	9.73E-14	3.00E-03	5.34E-10	9.73E-14	3.00E-03	5.34E-10	9.73E-14
Barium	2.99E+02	7.99E-09	NA	2.99E+02	7.99E-09	NA	2.99E+02	7.99E-09	NA	2.99E+02	7.99E-09	NA	2.99E+02	7.99E-09	NA
Chlorobenzene	3.00E-03	1.14E-12	NA	3.00E-03	1.14E-12	NA	3.00E-03	1.14E-12	NA	3.00E-03	1.14E-12	NA	3.00E-03	1.14E-12	NA
Chloromethane	2.00E-03	4.11E-13	NA	2.00E-03	4.11E-13	NA	2.00E-03	4.11E-13	NA	2.00E-03	4.11E-13	NA	2.00E-03	4.11E-13	NA
4-Chloro-3-methylphenol	2.50E-01	2.67E-11	NA	2.50E-01	2.67E-11	NA	2.50E-01	2.67E-11	NA	2.50E-01	2.67E-11	NA	2.50E-01	2.67E-11	NA
Chromium	6.80E+01	1.27E-05	5.45E-09	6.80E+01	1.27E-05	5.45E-09	6.80E+01	1.27E-05	5.45E-09	6.80E+01	1.27E-05	5.45E-09	6.80E+01	1.27E-05	5.45E-09
4,4'-DDD	3.60E-02	NA	NA	3.60E-02	NA	NA	3.60E-02	NA	NA	3.60E-02	NA	NA	3.60E-02	NA	NA
4,4'-DDE	8.00E-03	NA	NA	8.00E-03	NA	NA	8.00E-03	NA	NA	8.00E-03	NA	NA	8.00E-03	NA	NA
4,4'-DDT	1.90E-02	2.03E-10	1.23E-14	1.90E-02	2.03E-10	1.23E-14	1.90E-02	2.03E-10	1.23E-14	1.90E-02	2.03E-10	1.23E-14	1.90E-02	2.03E-10	1.23E-14
delta-BHC	3.00E-03	5.34E-11	NA	3.00E-03	5.34E-11	NA	3.00E-03	5.34E-11	NA	3.00E-03	5.34E-11	NA	3.00E-03	5.34E-11	NA
Dibenzofuran	5.17E+01	1.38E-07	NA	5.17E+01	1.38E-07	NA	3.22E+01	8.60E-08	NA	1.90E+00	5.07E-09	NA	2.26E+01	6.04E-08	NA
1,2-Dichloropropane	2.00E-03	1.55E-12	NA	2.00E-03	1.55E-12	NA	2.00E-03	1.55E-12	NA	2.00E-03	1.55E-12	NA	2.00E-03	1.55E-12	NA
1,2-Dichlorobenzene	2.00E-03	4.65E-14	8.39E-17	2.00E-03	4.65E-14	8.39E-17	2.00E-03	4.65E-14	8.39E-17	2.00E-03	4.65E-14	8.39E-17	2.00E-03	4.65E-14	8.39E-17
1,4-Dichlorobenzene	4.00E-03	1.94E-11	NA	4.00E-03	1.94E-11	NA	4.00E-03	1.94E-11	NA	4.00E-03	1.94E-11	NA	4.00E-03	1.94E-11	NA
4,6-Dinitro-2-methylphenol	1.50E+00	8.01E-08	NA	1.50E+00	8.01E-08	NA	1.50E+00	8.01E-08	NA	1.50E+00	8.01E-08	NA	1.50E+00	8.01E-08	NA
2,4-Dinitrophenol	6.30E-01	1.68E-09	NA	6.30E-01	1.68E-09	NA	6.30E-01	1.68E-09	NA	6.30E-01	1.68E-09	NA	6.30E-01	1.68E-09	NA
Endosulfan II	1.40E-02	1.25E-11	NA	1.40E-02	1.25E-11	NA	1.40E-02	1.25E-11	NA	1.40E-02	1.25E-11	NA	1.40E-02	1.25E-11	NA
Endosulfan Sulfate	1.40E-02	1.25E-11	NA	1.40E-02	1.25E-11	NA	1.40E-02	1.25E-11	NA	1.40E-02	1.25E-11	NA	1.40E-02	1.25E-11	NA
Endrin	3.60E-02	6.41E-10	NA	3.60E-02	6.41E-10	NA	3.60E-02	6.41E-10	NA	3.60E-02	6.41E-10	NA	3.60E-02	6.41E-10	NA
Endrin Aldehyde	3.30E-02	5.88E-10	NA	3.30E-02	5.88E-10	NA	3.30E-02	5.88E-10	NA	3.30E-02	5.88E-10	NA	3.30E-02	5.88E-10	NA
Ethylbenzene	2.10E+00	3.87E-11	NA	2.10E+00	3.87E-11	NA	2.10E+00	3.87E-11	NA	2.10E+00	3.87E-11	NA	2.10E+00	3.87E-11	NA
Isopropylbenzene	3.30E-02	1.76E-12	NA	3.30E-02	1.76E-12	NA	3.30E-02	1.76E-12	NA	3.30E-02	1.76E-12	NA	3.30E-02	1.76E-12	NA
Manganese	8.52E+02	3.18E-04	NA	8.52E+02	3.18E-04	NA	8.52E+02	3.18E-04	NA	8.52E+02	3.18E-04	NA	8.52E+02	3.18E-04	NA
Methylene Chloride	7.40E-02	4.60E-13	2.32E-16	7.40E-02	4.60E-13	2.32E-16	7.40E-02	4.60E-13	2.32E-16	7.40E-02	4.60E-13	2.32E-16	7.40E-02	4.60E-13	2.32E-16
4-Nitrophenol	2.50E-01	1.67E-10	NA	2.50E-01	1.67E-10	NA	2.50E-01	1.67E-10	NA	2.50E-01	1.67E-10	NA	2.50E-01	1.67E-10	NA
Phenol	1.20E-02	2.14E-13	NA	1.20E-02	2.14E-13	NA	1.20E-02	2.14E-13	NA	1.20E-02	2.14E-13	NA	1.20E-02	2.14E-13	NA
Tetrachloroethene	8.00E-03	3.89E-13	3.05E-16	8.00E-03	3.89E-13	3.05E-16	8.00E-03	3.89E-13	3.05E-16	8.00E-03	3.89E-13	3.05E-16	8.00E-03	3.89E-13	3.05E-16
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	2.76E-11	NA	1.55E-01	2.76E-11	NA	1.55E-01	2.76E-11	NA	1.55E-01	2.76E-11	NA	1.55E-01	2.76E-11	NA
Toluene	2.80E-02	1.07E-13	NA	2.80E-02	1.07E-13	NA	2.80E-02	1.07E-13	NA	2.80E-02	1.07E-13	NA	2.80E-02	1.07E-13	NA
1,2,4-Trichlorobenzene	1.00E-03	4.86E-12	NA	1.00E-03	4.86E-12	NA	1.00E-03	4.86E-12	NA	1.00E-03	4.86E-12	NA	1.00E-03	4.86E-12	NA
1,1,1-Trichloroethane	5.00E-03	4.24E-14	NA	5.00E-03	4.24E-14	NA	5.00E-03	4.24E-14	NA	5.00E-03	4.24E-14	NA	5.00E-03	4.24E-14	NA
Trichlorofluoromethane	2.00E-03	5.34E-14	NA	2.00E-03	5.34E-14	NA	2.00E-03	5.34E-14	NA	2.00E-03	5.34E-14	NA	2.00E-03	5.34E-14	NA
2,4,5-Trichlorophenol	1.60E-01	8.55E-12	NA	1.60E-01	8.55E-12	NA	1.60E-01	8.55E-12	NA	1.60E-01	8.55E-12	NA	1.60E-01	8.55E-12	NA
2,4,6-Trichlorophenol	3.50E-01	1.87E-08	7.25E-15	3.50E-01	1.87E-08	7.25E-15	3.50E-01	1.87E-08	7.25E-15	3.50E-01	1.87E-08	7.25E-15	3.50E-01	1.87E-08	7.25E-15
1,2,4-Trimethylbenzene	4.40E-02	1.38E-10	NA	4.40E-02	1.38E-10	NA	4.40E-02	1.38E-10	NA	4.40E-02	1.38E-10	NA	4.40E-02	1.38E-10	NA
Total Xylenes	2.00E-03	3.74E-13	NA	2.00E-03	3.74E-13	NA	2.00E-03	3.74E-13	NA	2.00E-03	3.74E-13	NA	2.00E-03	3.74E-13	NA
1,2,3,4,6,7,8-HpCDD	1.11E-02	NA	3.17E-11	7.05E-03	NA	2.02E-11	1.23E-02	NA	3.52E-11	5.40E-04	NA	1.55E-12	1.12E-02	NA	3.21E-11
1,2,3,4,6,7,8-HpCDF	2.05E-03	NA	5.86E-12	1.11E-03	NA	3.18E-12	2.68E-03	NA	7.66E-12	2.80E-04	NA	8.01E-13	1.97E-03	NA	5.63E-12
1,2,3,4,7,8,9-HpCDF	1.72E-04	NA	4.91E-13	1.01E-04	NA	2.88E-13	2.15E-04	NA	6.16E-13	1.90E-05	NA	5.44E-14	1.33E-04	NA	3.82E-13
1,2,3,4,7,8-HxCDD	6.11E-05	NA	1.75E-12	2.90E-05	NA	8.30E-13	7.21E-05	NA	2.06E-12	2.50E-06	NA	7.15E-14	1.33E-04	NA	3.82E-12
1,2,3,4,7,8-HxCDF	1.64E-04	NA	4.68E-12	9.90E-05	NA	2.83E-12	1.97E-04	NA	5.62E-12	2.60E-05	NA	7.44E-13	1.03E-04	NA	2.94E-12
1,2,3,6,7,8-HxCDD	3.36E-04	NA	9.61E-12	2.10E-04	NA	6.01E-12	3.43E-04	NA	9.82E-12	2.00E-05	NA	5.72E-13	4.45E-04	NA	1.27E-11
1,2,3,6,7,8-HxCDF	4.98E-05	NA	1.42E-12	1.60E-05	NA	4.58E-13	4.90E-05	NA	1.40E-12	4.10E-06	NA	1.17E-13	5.39E-05	NA	1.54E-12
1,2,3,7,8,9-HxCDD	1.03E-04	NA	2.94E-12	2.40E-05	NA	6.87E-13	1.22E-04	NA	3.50E-12	2.15E-06	NA	6.15E-14	2.11E-04	NA	6.04E-12
1,2,3,7,8,9-HxCDF	5.47E-05	NA	1.57E-12	4.50E-06	NA	1.29E-13	4.53E-05	NA	1.30E-12	5.90E-06	NA	1.69E-13	2.85E-05	NA	8.17E-13
1,2,3,7,8-PeCDD	1.83E-05	NA	5.24E-12	3.10E-06	NA	8.87E-13	2.35E-05	NA	6.72E-12	ND	ND	ND	4.30E-05	NA	1.23E-11
1,2,3,7,8-PeCDF	1.68E-05	NA	1.44E-13	9.30E-06	NA	7.98E-14	1.57E-05	NA	1.35E-13	1.80E-06	NA	1.55E-14	1.16E-05	NA	9.98E-14
2,3,4,6,7,8-HxCDF	7.61E-05	NA	2.18E-12	1.34E-05	NA	3.83E-13	9.15E-05	NA	2.62E-12	2.00E-06	NA	5.72E-14	7.52E-05	NA	2.15E-12
2,3,4,7,8-PeCDF	3.53E-05	NA	3.03E-12	9.10E-06	NA	7.81E-13	3.67E-05	NA	3.15E-12	2.10E-06	NA	1.80E-13	1.92E-05	NA	1.65E-12
2,3,7,8-TCDD	2.05E-06	NA	5.88E-13	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.34E-06	NA	9.56E-13
2,3,7,8-TCDF	2.92E-06	NA	8.37E-14	8.75E-07	NA	2.50E-14	3.46E-06	NA	9.90E-14	ND	ND	ND	2.37E-06	NA	6.79E-14
OCDD	9.78E-02	NA	8.40E-12	7.45E-02	NA	6.40E-12	1.38E-01	NA	1.19E-11	7.30E-03	NA	6.27E-13	8.96E-02	NA	7.70E-12
OCDF	8.69E-03	NA	7.47E-13	4.50E-03	NA	3.86E-13	1.21E-02	NA	1.03E-12	7.90E-04	NA	6.78E-14	7.05E-03	NA	6.05E-13
TCDD TEQ	2.73E-04	NA	7.81E-11	1.52E-04	NA	4.36E-11	3.26E-04	NA	9.33E-11	1.91E-05	NA	5.47E-12	3.16E-04	NA	9.05E-11
Acenaphthene	4.93E+01	4.39E-09	NA	6.50E+01	5.79E-09	NA	1.23E+01	1.10E-09	NA	2.08E+00	1.85E-10	NA	1.39E+01	1.24E-09	NA
Acenaphthylene	1.76E+01	3.14E-09	NA	2.51E+01	4.47E-09	NA	7.00E+00	1.25E-09	NA	1.42E+00	2.52E-10	NA	8.94E+00	1.59E-09	NA
Anthracene	2.81E+01	5.00E-10	NA	3.30E+01	5.88E-10	NA	6.45E+00	1.15E-10	NA	7.60E-01	1.35E-11	NA	9.23E+00	1.64E-10	NA
Benzo(a)anthracene	8.03E+00	1.43E-09	4.75E-12	9.20E+00	1.64E-09	5.44E-12	3.28E+00	5.83E-10	1.94E-12	3.58E-01	6.38E-11	2.12E-13	3.97E+00	7.07E-10	2.35E-12
Benzo(a)pyrene	6.47E+00	1.15E-09	3.82E-11	9.10E+00	1.62E-09	5.38E-11	6.63E+00	1.18E-09	3.92E-11	1.85E-01	3.30E-11	1.10E-12	2.90E+00	5.16E-10	1.71E-11
Benzo(b)fluoranthene	6.94E+00	1.24E-09	4.11E-12	9.90E+00	1.76E-09	5.86E-12	3.43E+00	6.11E-10	2.03E-12	2.92E-01	5.21E-11	1.73E-13	4.51E+00	8.04E-10	2.67E-12
Benzo(g,h,i)perylene	5.62E+00	1.00E-09	NA	6.90E+00	1.23E-09	NA	5.67E+00	1.01E-09	NA	2.35E-01	4.19E-11	NA	3.15E+00	5.61E-10	NA
Benzo(k)fluoranthene	2.55E+00	4.55E-10	1.51E-13	2.90E+00	5.16E-10	1.72E-13	1.02E+00	1.81E-10	6.02E-14	1.27E-01	2.27E-11	7.53E-15	2.18E+00	3.87E-10	1.29E-13
Chrysene	1.63E+01	2.90E-09	9.64E-14	2.20E+01	3.92E-09	1.30E-13	9.09E+00	1.62E-09	5.37E-14	6.90E-01	1.23E-10	4.08E-15	7.88E+00	1.40E-09	4.66E-14
Dibenz(a,h)anthracene	7.87E+00	1.40E-09	4.66E-11	9.50E+00	1.69E-09	5.62E-11	8.90E+00	1.58E-09	5.26E-11	3.69E-01	6.57E-11	2.18E-12	3.75E+00	6.68E-10	2.22E-11
Fluoranthene	7.46E+01	9.97E-09	NA	8.40E+01	1.12E-08	NA	1.47E+01	1.96E-09	NA	3.00E+00	4.00E-10	NA	2.42E+01	3.23E-09	NA
Fluorene	3.87E+01	5.16E-09	NA	4.70E+01	6.28E-09	NA	7.38E+00	9.85E-10	NA	1.64E+00	2.19E-10	NA	3.81E+00	5.09E-10	NA
Indeno(1,2,3-cd)pyrene	2.11E+00	3.76E-10	1.25E-12	2.90E+00	5.16E-10	1.72E-12	1.97E+00	3.51E-10	1.17E-12	1.49E-01	2.65E-11	8.79E-14	2.83E+00	5.04E-10	1.67E-12
1-Methylnaphthalene	8.71E+00	5.43E-08	NA	ND	ND	ND	4.20E+00	2.62E-08	NA	4.46E+00	2.78E-08	NA	3.46E+01	2.16E-07	NA
2-Methylnaphthalene	9.84E+00	6.13E-08	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.48E+01	2.17E-07	NA
Naphthalene	3.11E+01	1.94E-07	NA	9.06E+01	5.65E-07	NA	1.76E+01	1.10E-07	NA	1.35E+00	8.43E-09	NA	5.85E+00	3.65E-08	NA
Phenanthrene	1.11E+02	6.90E-07	NA	1.30E+02	8.08E-07	NA	1.35E+01	8.39E-08	NA	4.81E+00	2.98E-08	NA	7.74E+00	4.81E-08	NA
Pyrene	4.34E+01	7.73E-09	NA	4.80E+01	8.55E-09	NA	5.57E+01	9.91E-09	NA	1.77E+00	3.15E-10	NA	1.53E+01	2.73E-09	NA
BaP-TE	1.60E+01	2.85E-09	9.46E-11	2.07E+01	3.69E-09	1.22E-10	1.54E+01	2.74E-09	9.11E-11	6.21E-01	1.11E-10	3.67E-12	7.64E+00	1.36E-09	4.52E-11
Pentachlorophenol	1.28E+01	2.27E-09	NA	2.03E+00	3.62E-10	NA	3.62E+00	6.45E-10	NA	9.71E-01	1.73E-10	NA	1.88E+01	3.35E-09	NA
Total		3.32E-04	5.62E-09		3.33E-04	5.62E-09		3.31E-04	5.63E-09		3.31E-04	5.46E-09		3.32E-04	5.58E-09

Table C-26
SITE-WIDE & AREA-SPECIFIC RISKS
INHALATION OF PARTICULATES
UTILITY WORKER

Constituent	Area G			Area H			Area S			Area B/F		
	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	5.34E-10	9.73E-14	3.00E-03	5.34E-10	9.73E-14	3.00E-03	5.34E-10	9.73E-14	3.00E-03	5.34E-10	9.73E-14
Barium	2.99E+02	7.99E-09	NA	2.99E+02	7.99E-09	NA	2.99E+02	7.99E-09	NA	2.99E+02	7.99E-09	NA
Chlorobenzene	3.00E-03	1.14E-12	NA	3.00E-03	1.14E-12	NA	3.00E-03	1.14E-12	NA	3.00E-03	1.14E-12	NA
Chloromethane	2.00E-03	4.11E-13	NA	2.00E-03	4.11E-13	NA	2.00E-03	4.11E-13	NA	2.00E-03	4.11E-13	NA
4-Chloro-3-methylphenol	2.50E-01	2.67E-11	NA	2.50E-01	2.67E-11	NA	2.50E-01	2.67E-11	NA	2.50E-01	2.67E-11	NA
Chromium	6.80E+01	1.27E-05	5.45E-09	6.80E+01	1.27E-05	5.45E-09	6.80E+01	1.27E-05	5.45E-09	6.80E+01	1.27E-05	5.45E-09
4,4'-DDD	3.60E-02	NA	NA	3.60E-02	NA	NA	3.60E-02	NA	NA	3.60E-02	NA	NA
4,4'-DDE	8.00E-03	NA	NA	8.00E-03	NA	NA	8.00E-03	NA	NA	8.00E-03	NA	NA
4,4'-DDT	1.90E-02	2.03E-10	1.23E-14	1.90E-02	2.03E-10	1.23E-14	1.90E-02	2.03E-10	1.23E-14	1.90E-02	2.03E-10	1.23E-14
delta-BHC	3.00E-03	5.34E-11	NA	3.00E-03	5.34E-11	NA	3.00E-03	5.34E-11	NA	3.00E-03	5.34E-11	NA
Dibenzofuran	2.45E+01	6.54E-08	NA	2.67E+01	7.13E-08	NA	1.90E+00	5.07E-09	NA	3.22E+01	8.60E-08	NA
1,2-Dichloropropane	2.00E-03	1.55E-12	NA	2.00E-03	1.55E-12	NA	2.00E-03	1.55E-12	NA	2.00E-03	1.55E-12	NA
1,2-Dichlorobenzene	2.00E-03	4.65E-14	8.39E-17	2.00E-03	4.65E-14	8.39E-17	2.00E-03	4.65E-14	8.39E-17	2.00E-03	4.65E-14	8.39E-17
1,4-Dichlorobenzene	4.00E-03	1.94E-11	NA	4.00E-03	1.94E-11	NA	4.00E-03	1.94E-11	NA	4.00E-03	1.94E-11	NA
4,6-Dinitro-2-methylphenol	1.50E+00	8.01E-08	NA	1.50E+00	8.01E-08	NA	1.50E+00	8.01E-08	NA	1.50E+00	8.01E-08	NA
2,4-Dinitrophenol	6.30E-01	1.68E-09	NA	6.30E-01	1.68E-09	NA	6.30E-01	1.68E-09	NA	6.30E-01	1.68E-09	NA
Endosulfan II	1.40E-02	1.25E-11	NA	1.40E-02	1.25E-11	NA	1.40E-02	1.25E-11	NA	1.40E-02	1.25E-11	NA
Endosulfan Sulfate	1.40E-02	1.25E-11	NA	1.40E-02	1.25E-11	NA	1.40E-02	1.25E-11	NA	1.40E-02	1.25E-11	NA
Endrin	3.60E-02	6.41E-10	NA	3.60E-02	6.41E-10	NA	3.60E-02	6.41E-10	NA	3.60E-02	6.41E-10	NA
Endrin Aldehyde	3.30E-02	5.88E-10	NA	3.30E-02	5.88E-10	NA	3.30E-02	5.88E-10	NA	3.30E-02	5.88E-10	NA
Ethylbenzene	2.10E+00	3.87E-11	NA	2.10E+00	3.87E-11	NA	2.10E+00	3.87E-11	NA	2.10E+00	3.87E-11	NA
Isopropylbenzene	3.30E-02	1.76E-12	NA	3.30E-02	1.76E-12	NA	3.30E-02	1.76E-12	NA	3.30E-02	1.76E-12	NA
Manganese	8.52E+02	3.18E-04	NA	8.52E+02	3.18E-04	NA	8.52E+02	3.18E-04	NA	8.52E+02	3.18E-04	NA
Methylene Chloride	7.40E-02	4.60E-13	2.32E-16	7.40E-02	4.60E-13	2.32E-16	7.40E-02	4.60E-13	2.32E-16	7.40E-02	4.60E-13	2.32E-16
4-Nitrophenol	2.50E-01	1.67E-10	NA	2.50E-01	1.67E-10	NA	2.50E-01	1.67E-10	NA	2.50E-01	1.67E-10	NA
Phenol	1.20E-02	2.14E-13	NA	1.20E-02	2.14E-13	NA	1.20E-02	2.14E-13	NA	1.20E-02	2.14E-13	NA
Tetrachloroethene	8.00E-03	3.89E-13	3.05E-16	8.00E-03	3.89E-13	3.05E-16	8.00E-03	3.89E-13	3.05E-16	8.00E-03	3.89E-13	3.05E-16
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	2.76E-11	NA	1.55E-01	2.76E-11	NA	1.55E-01	2.76E-11	NA	1.55E-01	2.76E-11	NA
Toluene	2.80E-02	1.07E-13	NA	2.80E-02	1.07E-13	NA	2.80E-02	1.07E-13	NA	2.80E-02	1.07E-13	NA
1,2,4-Trichlorobenzene	1.00E-03	4.86E-12	NA	1.00E-03	4.86E-12	NA	1.00E-03	4.86E-12	NA	1.00E-03	4.86E-12	NA
1,1,1-Trichloroethane	5.00E-03	4.24E-14	NA	5.00E-03	4.24E-14	NA	5.00E-03	4.24E-14	NA	5.00E-03	4.24E-14	NA
Trichlorofluoromethane	2.00E-03	5.34E-14	NA	2.00E-03	5.34E-14	NA	2.00E-03	5.34E-14	NA	2.00E-03	5.34E-14	NA
2,4,5-Trichlorophenol	1.60E-01	8.55E-12	NA	1.60E-01	8.55E-12	NA	1.60E-01	8.55E-12	NA	1.60E-01	8.55E-12	NA
2,4,6-Trichlorophenol	3.50E-01	1.87E-08	7.25E-15	3.50E-01	1.87E-08	7.25E-15	3.50E-01	1.87E-08	7.25E-15	3.50E-01	1.87E-08	7.25E-15
1,2,4-Trimethylbenzene	4.40E-02	1.38E-10	NA	4.40E-02	1.38E-10	NA	4.40E-02	1.38E-10	NA	4.40E-02	1.38E-10	NA
Total Xylenes	2.00E-03	3.74E-13	NA	2.00E-03	3.74E-13	NA	2.00E-03	3.74E-13	NA	2.00E-03	3.74E-13	NA
1,2,3,4,6,7,8-HpCDD	2.35E-02	NA	6.72E-11	1.43E-02	NA	4.08E-11	8.85E-03	NA	2.53E-11	1.01E-02	NA	2.90E-11
1,2,3,4,6,7,8-HpCDF	3.85E-03	NA	1.10E-11	2.90E-03	NA	8.29E-12	3.17E-03	NA	9.06E-12	1.86E-03	NA	5.33E-12
1,2,3,4,7,8,9-HpCDF	3.25E-04	NA	9.30E-13	2.58E-04	NA	7.37E-13	3.19E-04	NA	9.14E-13	1.35E-04	NA	3.87E-13
1,2,3,4,7,8-HxCDD	6.80E-05	NA	1.95E-12	5.46E-05	NA	1.56E-12	3.78E-05	NA	1.08E-12	1.08E-04	NA	3.08E-12
1,2,3,4,7,8-HxCDF	2.91E-04	NA	8.34E-12	2.47E-04	NA	7.07E-12	4.47E-04	NA	1.28E-11	1.12E-04	NA	3.22E-12
1,2,3,6,7,8-HxCDD	6.00E-04	NA	1.72E-11	4.65E-04	NA	1.33E-11	3.52E-04	NA	1.01E-11	3.75E-04	NA	1.07E-11
1,2,3,6,7,8-HxCDF	8.93E-05	NA	2.56E-12	6.94E-05	NA	1.99E-12	9.97E-05	NA	2.85E-12	4.70E-05	NA	1.35E-12
1,2,3,7,8,9-HxCDD	1.37E-04	NA	3.92E-12	9.55E-05	NA	2.73E-12	7.44E-05	NA	2.13E-12	1.70E-04	NA	4.87E-12
1,2,3,7,8,9-HxCDF	1.12E-04	NA	3.20E-12	1.12E-04	NA	3.22E-12	9.85E-05	NA	2.82E-12	2.83E-05	NA	8.10E-13
1,2,3,7,8-PeCDD	1.69E-05	NA	4.84E-12	1.46E-05	NA	4.18E-12	1.10E-05	NA	3.15E-12	3.48E-05	NA	9.95E-12
1,2,3,7,8-PeCDF	3.01E-05	NA	2.58E-13	3.84E-05	NA	3.30E-13	2.59E-05	NA	2.22E-13	1.13E-05	NA	9.72E-14
2,3,4,6,7,8-HxCDF	1.36E-04	NA	3.89E-12	1.15E-04	NA	3.29E-12	1.68E-04	NA	4.80E-12	6.83E-05	NA	1.95E-12
2,3,4,7,8-PeCDF	5.91E-05	NA	5.07E-12	8.12E-05	NA	6.97E-12	8.79E-05	NA	7.54E-12	2.09E-05	NA	1.79E-12
2,3,7,8-TCDD	2.54E-06	NA	7.28E-13	2.36E-06	NA	6.76E-13	ND	ND	ND	2.98E-06	NA	8.52E-13
2,3,7,8-TCDF	3.55E-06	NA	1.02E-13	7.61E-06	NA	2.18E-13	5.04E-06	NA	1.44E-13	2.45E-06	NA	7.01E-14
OCDD	2.00E-01	NA	1.71E-11	1.38E-01	NA	1.19E-11	9.12E-02	NA	7.83E-12	8.88E-02	NA	7.62E-12
OCDF	1.79E-02	NA	1.54E-12	1.34E-02	NA	1.15E-12	1.17E-02	NA	1.01E-12	7.12E-03	NA	6.11E-13
TCDD TEQ	5.05E-04	NA	1.45E-10	3.73E-04	NA	1.07E-10	3.20E-04	NA	9.17E-11	2.81E-04	NA	8.05E-11
Acenaphthene	5.24E+00	4.67E-10	NA	5.07E+00	4.51E-10	NA	1.17E+00	1.04E-10	NA	1.13E+01	1.01E-09	NA
Acenaphthylene	2.14E+00	3.81E-10	NA	2.68E+00	4.78E-10	NA	3.35E-01	5.96E-11	NA	6.79E+00	1.21E-09	NA
Anthracene	1.48E+00	2.64E-11	NA	4.25E+00	7.57E-11	NA	4.85E+00	8.64E-11	NA	6.91E+00	1.23E-10	NA
Benzo(a)anthracene	1.22E+00	2.17E-10	7.20E-13	2.59E+00	4.61E-10	1.53E-12	1.80E+00	3.20E-10	1.06E-12	3.23E+00	5.75E-10	1.91E-12
Benzo(a)pyrene	5.06E-01	9.01E-11	2.99E-12	1.20E+00	2.14E-10	7.12E-12	9.00E-01	1.60E-10	5.32E-12	4.55E+00	8.11E-10	2.69E-11
Benzo(b)fluoranthene	6.24E-01	1.11E-10	3.69E-13	1.78E+00	3.17E-10	1.05E-12	2.08E+00	3.70E-10	1.23E-12	3.61E+00	6.43E-10	2.14E-12
Benzo(g,h,i)perylene	8.65E-01	1.54E-10	NA	1.74E+00	3.09E-10	NA	1.63E+00	2.91E-10	NA	4.17E+00	7.43E-10	NA
Benzo(k)fluoranthene	3.27E-01	5.82E-11	1.93E-14	1.65E+00	2.93E-10	9.73E-14	7.09E-01	1.26E-10	4.19E-14	1.44E+00	2.57E-10	8.52E-14
Chrysene	4.35E+00	7.74E-10	2.57E-14	5.09E+00	9.06E-10	3.01E-14	2.74E+00	4.88E-10	1.62E-14	7.63E+00	1.36E-09	4.52E-14
Dibenz(a,h)anthracene	1.35E+00	2.41E-10	7.99E-12	2.20E+00	3.92E-10	1.30E-11	2.52E+00	4.50E-10	1.49E-11	5.97E+00	1.06E-09	3.53E-11
Fluoranthene	4.11E+00	5.49E-10	NA	1.11E+01	1.48E-09	NA	7.00E+00	9.35E-10	NA	1.68E+01	2.25E-09	NA
Fluorene	2.17E+00	2.89E-10	NA	5.25E+00	7.01E-10	NA	1.73E+00	2.31E-10	NA	5.14E+00	6.86E-10	NA
Indeno(1,2,3-cd)pyrene	2.81E-01	5.01E-11	1.66E-13	1.52E+00	2.71E-10	9.00E-13	1.10E+00	1.95E-10	6.49E-13	2.19E+00	3.89E-10	1.29E-12
1-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.23E+01	7.69E-08	NA
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.79E+01	1.12E-07	NA
Naphthalene	1.13E+00	7.06E-09	NA	5.32E+00	3.32E-08	NA	3.62E-01	2.26E-09	NA	1.10E+01	6.87E-08	NA
Phenanthrene	2.32E+00	1.44E-08	NA	1.43E+01	8.88E-08	NA	2.18E+00	1.35E-08	NA	9.58E+00	5.95E-08	NA
Pyrene	1.13E+00	2.02E-10	NA	7.92E+00	1.41E-09	NA	5.28E+00	9.40E-10	NA	3.44E+01	6.12E-09	NA
BaP-TE	2.07E+00	3.69E-10	1.23E-11	3.64E+00	6.47E-10	2.15E-11	3.91E+00	6.97E-10	2.31E-11	1.09E+01	1.94E-09	6.44E-11
Pentachlorophenol	2.15E+01	3.84E-09	NA	5.30E+01	9.43E-09	NA	4.15E+01	7.39E-09	NA	1.01E+01	1.80E-09	NA
Total		3.31E-04	5.61E-09		3.31E-04	5.58E-09		3.31E-04	5.56E-09		3.32E-04	5.59E-09

Table C-27
SITE-WIDE & AREA-SPECIFIC RISKS
INHALATION OFVOLATILES
UTILITY WORKER

	Site-Wide			Area A			Area B			Area C			Area F		
Constituent	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	5.60E-08	1.02E-11	3.00E-03	5.60E-08	1.02E-11	3.00E-03	5.60E-08	1.02E-11	3.00E-03	5.60E-08	1.02E-11	3.00E-03	5.60E-08	1.02E-11
Barium	2.99E+02	NA	NA	2.99E+02	NA	NA	2.99E+02	NA	NA	2.99E+02	NA	NA	2.99E+02	NA	NA
Chlorobenzene	3.00E-03	1.36E-07	NA	3.00E-03	1.36E-07	NA	3.00E-03	1.36E-07	NA	3.00E-03	1.36E-07	NA	3.00E-03	1.36E-07	NA
Chloromethane	2.00E-03	2.96E-07	NA	2.00E-03	2.96E-07	NA	2.00E-03	2.96E-07	NA	2.00E-03	2.96E-07	NA	2.00E-03	2.96E-07	NA
4-Chloro-3-methylphenol	2.50E-01	2.11E-08	NA	2.50E-01	2.11E-08	NA	2.50E-01	2.11E-08	NA	2.50E-01	2.11E-08	NA	2.50E-01	2.11E-08	NA
Chromium	6.80E+01	NA	NA	6.80E+01	NA	NA	6.80E+01	NA	NA	6.80E+01	NA	NA	6.80E+01	NA	NA
4,4'-DDD	3.60E-02	NA	NA	3.60E-02	NA	NA	3.60E-02	NA	NA	3.60E-02	NA	NA	3.60E-02	NA	NA
4,4'-DDE	8.00E-03	NA	NA	8.00E-03	NA	NA	8.00E-03	NA	NA	8.00E-03	NA	NA	8.00E-03	NA	NA
4,4'-DDT	1.90E-02	4.85E-09	2.95E-13	1.90E-02	4.85E-09	2.95E-13	1.90E-02	4.85E-09	2.95E-13	1.90E-02	4.85E-09	2.95E-13	1.90E-02	4.85E-09	2.95E-13
delta-BHC	3.00E-03	8.36E-08	NA	3.00E-03	8.36E-08	NA	3.00E-03	8.36E-08	NA	3.00E-03	8.36E-08	NA	3.00E-03	8.36E-08	NA
Dibenzofuran	5.17E+01	1.38E-03	NA	5.17E+01	1.38E-03	NA	3.22E+01	8.58E-04	NA	1.90E+00	5.06E-05	NA	2.26E+01	6.02E-04	NA
1,2-Dichlorobenzene	2.00E-03	7.75E-08	NA	2.00E-03	7.75E-08	NA	2.00E-03	7.75E-08	NA	2.00E-03	7.75E-08	NA	2.00E-03	7.75E-08	NA
1,4-Dichlorobenzene	2.00E-03	4.55E-08	8.22E-11	2.00E-03	4.55E-08	8.22E-11	2.00E-03	4.55E-08	8.22E-11	2.00E-03	4.55E-08	8.22E-11	2.00E-03	4.55E-08	8.22E-11
1,2-Dichloropropane	4.00E-03	4.36E-06	NA	4.00E-03	4.36E-06	NA	4.00E-03	4.36E-06	NA	4.00E-03	4.36E-06	NA	4.00E-03	4.36E-06	NA
4,6-Dinitro-2-methylphenol	1.50E+00	5.05E-04	NA	1.50E+00	5.05E-04	NA	1.50E+00	5.05E-04	NA	1.50E+00	5.05E-04	NA	1.50E+00	5.05E-04	NA
2,4-Dinitrophenol	6.30E-01	1.42E-05	NA	6.30E-01	1.42E-05	NA	6.30E-01	1.42E-05	NA	6.30E-01	1.42E-05	NA	6.30E-01	1.42E-05	NA
Endosulfan II	1.40E-02	1.11E-08	NA	1.40E-02	1.11E-08	NA	1.40E-02	1.11E-08	NA	1.40E-02	1.11E-08	NA	1.40E-02	1.11E-08	NA
Endosulfan Sulfate	1.40E-02	1.11E-08	NA	1.40E-02	1.11E-08	NA	1.40E-02	1.11E-08	NA	1.40E-02	1.11E-08	NA	1.40E-02	1.11E-08	NA
Endrin	3.60E-02	2.08E-07	NA	3.60E-02	2.08E-07	NA	3.60E-02	2.08E-07	NA	3.60E-02	2.08E-07	NA	3.60E-02	2.08E-07	NA
Endrin Aldehyde	3.30E-02	1.90E-07	NA	3.30E-02	1.90E-07	NA	3.30E-02	1.90E-07	NA	3.30E-02	1.90E-07	NA	3.30E-02	1.90E-07	NA
Ethylbenzene	2.10E+00	5.31E-06	NA	2.10E+00	5.31E-06	NA	2.10E+00	5.31E-06	NA	2.10E+00	5.31E-06	NA	2.10E+00	5.31E-06	NA
Isopropylbenzene	3.30E-02	1.82E-07	NA	3.30E-02	1.82E-07	NA	3.30E-02	1.82E-07	NA	3.30E-02	1.82E-07	NA	3.30E-02	1.82E-07	NA
Manganese	8.52E+02	NA	NA	8.52E+02	NA	NA	8.52E+02	NA	NA	8.52E+02	NA	NA	8.52E+02	NA	NA
Methylene Chloride	7.40E-02	1.69E-07	8.54E-11	7.40E-02	1.69E-07	8.54E-11	7.40E-02	1.69E-07	8.54E-11	7.40E-02	1.69E-07	8.54E-11	7.40E-02	1.69E-07	8.54E-11
4-Nitrophenol	2.50E-01	9.45E-07	NA	2.50E-01	9.45E-07	NA	2.50E-01	9.45E-07	NA	2.50E-01	9.45E-07	NA	2.50E-01	9.45E-07	NA
Phenol	1.20E-02	9.62E-10	NA	1.20E-02	9.62E-10	NA	1.20E-02	9.62E-10	NA	1.20E-02	9.62E-10	NA	1.20E-02	9.62E-10	NA
Tetrachloroethene	8.00E-03	1.18E-07	9.27E-11	8.00E-03	1.18E-07	9.27E-11	8.00E-03	1.18E-07	9.27E-11	8.00E-03	1.18E-07	9.27E-11	8.00E-03	1.18E-07	9.27E-11
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	1.13E-07	NA	1.55E-01	1.13E-07	NA	1.55E-01	1.13E-07	NA	1.55E-01	1.13E-07	NA	1.55E-01	1.13E-07	NA
Toluene	2.80E-02	2.02E-08	NA	2.80E-02	2.02E-08	NA	2.80E-02	2.02E-08	NA	2.80E-02	2.02E-08	NA	2.80E-02	2.02E-08	NA
1,2,4-Trichlorobenzene	1.00E-03	8.19E-08	NA	1.00E-03	8.19E-08	NA	1.00E-03	8.19E-08	NA	1.00E-03	8.19E-08	NA	1.00E-03	8.19E-08	NA
1,1,1-Trichloroethane	5.00E-03	1.51E-08	NA	5.00E-03	1.51E-08	NA	5.00E-03	1.51E-08	NA	5.00E-03	1.51E-08	NA	5.00E-03	1.51E-08	NA
Trichlorofluoromethane	2.00E-03	3.89E-08	NA	2.00E-03	3.89E-08	NA	2.00E-03	3.89E-08	NA	2.00E-03	3.89E-08	NA	2.00E-03	3.89E-08	NA
2,4,5-Trichlorophenol	1.60E-01	8.95E-09	NA	1.60E-01	8.95E-09	NA	1.60E-01	8.95E-09	NA	1.60E-01	8.95E-09	NA	1.60E-01	8.95E-09	NA
2,4,6-Trichlorophenol	3.50E-01	8.98E-05	3.48E-11	3.50E-01	8.98E-05	3.48E-11	3.50E-01	8.98E-05	3.48E-11	3.50E-01	8.98E-05	3.48E-11	3.50E-01	8.98E-05	3.48E-11
1,2,4-Trimethylbenzene	4.40E-02	8.22E-06	NA	4.40E-02	8.22E-06	NA	4.40E-02	8.22E-06	NA	4.40E-02	8.22E-06	NA	4.40E-02	8.22E-06	NA
Total Xylenes	2.00E-03	4.53E-08	NA	2.00E-03	4.53E-08	NA	2.00E-03	4.53E-08	NA	2.00E-03	4.53E-08	NA	2.00E-03	4.53E-08	NA
1,2,3,4,6,7,8-HpCDD	1.11E-02	NA	1.20E-09	7.05E-03	NA	7.67E-10	1.23E-02	NA	1.34E-09	5.40E-04	NA	5.87E-11	1.12E-02	NA	1.22E-09
1,2,3,4,6,7,8-HpCDF	2.05E-03	NA	2.23E-10	1.11E-03	NA	1.21E-10	2.68E-03	NA	2.91E-10	2.80E-04	NA	3.05E-11	1.97E-03	NA	2.14E-10
1,2,3,4,7,8,9-HpCDF	1.72E-04	NA	1.87E-11	1.01E-04	NA	1.09E-11	2.15E-04	NA	2.34E-11	1.90E-05	NA	2.07E-12	1.33E-04	NA	1.45E-11
1,2,3,4,7,8-HxCDD	6.11E-05	NA	6.65E-11	2.90E-05	NA	3.15E-11	7.21E-05	NA	7.85E-11	2.50E-06	NA	2.72E-12	1.33E-04	NA	1.45E-10
1,2,3,4,7,8-HxCDF	1.64E-04	NA	1.78E-10	9.90E-05	NA	1.08E-10	1.97E-04	NA	2.14E-10	2.60E-05	NA	2.83E-11	1.03E-04	NA	1.12E-10
1,2,3,6,7,8-HxCDD	3.36E-04	NA	3.65E-10	2.10E-04	NA	2.28E-10	3.43E-04	NA	3.73E-10	2.00E-05	NA	2.18E-11	4.45E-04	NA	4.85E-10
1,2,3,6,7,8-HxCDF	4.98E-05	NA	5.41E-11	1.60E-05	NA	1.74E-11	4.90E-05	NA	5.33E-11	4.10E-06	NA	4.46E-12	5.39E-05	NA	5.86E-11
1,2,3,7,8,9-HxCDD	1.03E-04	NA	1.12E-10	2.40E-05	NA	2.61E-11	1.22E-04	NA	1.33E-10	2.15E-06	NA	2.34E-12	2.11E-04	NA	2.30E-10
1,2,3,7,8,9-HxCDF	5.47E-05	NA	5.95E-11	4.50E-06	NA	4.90E-12	4.53E-05	NA	4.93E-11	5.90E-06	NA	6.42E-12	2.85E-05	NA	3.11E-11
1,2,3,7,8-PeCDD	1.83E-05	NA	1.99E-10	3.10E-06	NA	3.37E-11	2.35E-05	NA	2.56E-10	ND	ND	ND	4.30E-05	NA	4.68E-10
1,2,3,7,8-PeCDF	1.68E-05	NA	5.48E-12	9.30E-06	NA	3.04E-12	1.57E-05	NA	5.13E-12	1.80E-06	NA	5.87E-13	1.16E-05	NA	3.79E-12
2,3,4,6,7,8-HxCDF	7.61E-05	NA	8.28E-11	1.34E-05	NA	1.46E-11	9.15E-05	NA	9.95E-11	2.00E-06	NA	2.18E-12	7.52E-05	NA	8.18E-11
2,3,4,7,8-PeCDF	3.53E-05	NA	1.15E-10	9.10E-06	NA	2.97E-11	3.67E-05	NA	1.20E-10	2.10E-06	NA	6.85E-12	1.92E-05	NA	6.26E-11
2,3,7,8-TCDD	2.05E-06	NA	2.23E-11	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.34E-06	NA	3.63E-11
2,3,7,8-TCDF	2.92E-06	NA	3.18E-12	8.75E-07	NA	9.52E-13	3.46E-06	NA	3.76E-12	ND	ND	ND	2.37E-06	NA	2.58E-12
OCDD	9.78E-02	NA	3.19E-10	7.45E-02	NA	2.43E-10	1.38E-01	NA	4.51E-10	7.30E-03	NA	2.38E-11	8.96E-02	NA	2.93E-10
OCDF	8.69E-03	NA	2.84E-11	4.50E-03	NA	1.47E-11	1.21E-02	NA	3.93E-11	7.90E-04	NA	2.58E-12	7.05E-03	NA	2.30E-11
TCDD TEQ	2.73E-04	NA	2.97E-09	1.52E-04	NA	1.66E-09	3.26E-04	NA	3.55E-09	1.91E-05	NA	2.08E-10	3.16E-04	NA	3.44E-09
Acenaphthene	4.93E+01	1.46E-05	NA	6.50E+01	1.93E-05	NA	1.23E+01	3.65E-06	NA	2.08E+00	6.15E-07	NA	1.39E+01	4.12E-06	NA
Acenaphthylene	1.76E+01	9.26E-06	NA	2.51E+01	1.32E-05	NA	7.00E+00	3.68E-06	NA	1.42E+00	7.45E-07	NA	8.94E+00	4.70E-06	NA
Anthracene	2.81E+01	4.64E-07	NA	3.30E+01	5.45E-07	NA	6.45E+00	1.07E-07	NA	7.60E-01	1.26E-08	NA	9.23E+00	1.52E-07	NA
Benzo(a)anthracene	8.03E+00	1.11E-07	3.69E-10	9.20E+00	1.27E-07	4.23E-10	3.28E+00	4.53E-08	1.50E-10	3.58E-01	4.95E-09	1.65E-11	3.97E+00	5.49E-08	1.82E-10
Benzo(a)pyrene	6.47E+00	3.42E-08	1.14E-09	9.10E+00	4.81E-08	1.60E-09	6.63E+00	3.51E-08	1.16E-09	1.85E-01	9.79E-10	3.25E-11	2.90E+00	1.53E-08	5.08E-10
Benzo(b)fluoranthene	6.94E+00	1.96E-07	6.51E-10	9.90E+00	2.80E-07	9.29E-10	3.43E+00	9.70E-08	3.22E-10	2.92E-01	8.26E-09	2.74E-11	4.51E+00	1.28E-07	4.24E-10
Benzo(g,h,i)perylene	5.62E+00	3.69E-08	NA	6.90E+00	4.53E-08	NA	5.67E+00	3.72E-08	NA	2.35E-01	1.54E-09	NA	3.15E+00	2.07E-08	NA
Benzo(k)fluoranthene	2.55E+00	8.51E-09	2.83E-12	2.90E+00	9.66E-09	3.21E-12	1.02E+00	3.39E-09	1.13E-12	1.27E-01	4.24E-10	1.41E-13	2.18E+00	7.25E-09	2.41E-12
Chrysene	1.63E+01	7.78E-07	2.58E-11	2.20E+01	1.05E-06	3.49E-11	9.09E+00	4.33E-07	1.44E-11	6.90E-01	3.29E-08	1.09E-12	7.88E+00	3.76E-07	1.25E-11
Dibenz(a,h)anthracene	7.87E+00	9.97E-09	3.31E-10	9.50E+00	1.20E-08	4.00E-10	8.90E+00	1.13E-08	3.74E-10	3.69E-01	4.67E-10	1.55E-11	3.75E+00	4.75E-09	1.58E-10
Fluoranthene	7.46E+01	2.36E-06	NA	8.40E+01	2.65E-06	NA	1.47E+01	4.63E-07	NA	3.00E+00	9.46E-08	NA	2.42E+01	7.64E-07	NA
Fluorene	3.87E+01	7.29E-06	NA	4.70E+01	8.86E-06	NA	7.38E+00	1.39E-06	NA	1.64E+00	3.09E-07	NA	3.81E+00	7.18E-07	NA
Indeno(1,2,3-cd)pyrene	2.11E+00	4.83E-09	1.60E-11	2.90E+00	6.63E-09	2.20E-11	1.97E+00	4.51E-09	1.50E-11	1.49E-01	3.40E-10	1.13E-12	2.83E+00	6.46E-09	2.15E-11
1-Methylnaphthalene	8.71E+00	6.21E-04	NA	ND	ND	ND	4.20E+00	3.00E-04	NA	4.46E+00	3.19E-04	NA	3.46E+01	2.47E-03	NA
2-Methylnaphthalene	9.84E+00	5.42E-04	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.48E+01	1.92E-03	NA
Naphthalene	3.11E+01	2.53E-03	NA	9.06E+01	7.36E-03	NA	1.76E+01	1.43E-03	NA	1.35E+00	1.10E-04	NA	5.85E+00	4.75E-04	NA
Phenanthrene	1.11E+02	1.33E-03	NA	1.30E+02	1.55E-03	NA	1.35E+01	1.61E-04	NA	4.81E+00	5.73E-05	NA	7.74E+00	9.23E-05	NA
Pyrene	4.34E+01	1.47E-06	NA	4.80E+01	1.63E-06	NA	5.57E+01	1.89E-06	NA	1.77E+00	6.00E-08	NA	1.53E+01	5.19E-07	NA
BaP-TE	1.60E+01	8.45E-08	2.81E-09	2.07E+01	1.09E-07	3.63E-09	1.54E+01	8.14E-08	2.70E-09	6.21E-01	3.28E-09	1.09E-10	7.64E+00	4.04E-08	1.34E-09
Pentachlorophenol	1.28E+01	2.48E-07	NA	2.03E+00	3.95E-08	NA	3.62E+00	7.03E-08	NA	9.71E-01	1.89E-08	NA	1.88E+01	3.65E-07	NA
Total		7.06E-03	6.08E-09		1.10E-02	5.60E-09		3.39E-03	6.55E-09		1.17E-03	6.23E-10		6.20E-03	5.09E-09

Table C-27
SITE-WIDE & AREA-SPECIFIC RISKS
INHALATION OFVOLATILES
UTILITY WORKER

	Area G			Area H			Area S			Area B/F		
Constituent	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	5.60E-08	1.02E-11	3.00E-03	5.60E-08	1.02E-11	3.00E-03	5.60E-08	1.02E-11	3.00E-03	5.60E-08	1.02E-11
Barium	2.99E+02	NA	NA	2.99E+02	NA	NA	2.99E+02	NA	NA	2.99E+02	NA	NA
Chlorobenzene	3.00E-03	1.36E-07	NA	3.00E-03	1.36E-07	NA	3.00E-03	1.36E-07	NA	3.00E-03	1.36E-07	NA
Chloromethane	2.00E-03	2.96E-07	NA	2.00E-03	2.96E-07	NA	2.00E-03	2.96E-07	NA	2.00E-03	2.96E-07	NA
4-Chloro-3-methylphenol	2.50E-01	2.11E-08	NA	2.50E-01	2.11E-08	NA	2.50E-01	2.11E-08	NA	2.50E-01	2.11E-08	NA
Chromium	6.80E+01	NA	NA	6.80E+01	NA	NA	6.80E+01	NA	NA	6.80E+01	NA	NA
4,4'-DDD	3.60E-02	NA	NA	3.60E-02	NA	NA	3.60E-02	NA	NA	3.60E-02	NA	NA
4,4'-DDE	8.00E-03	NA	NA	8.00E-03	NA	NA	8.00E-03	NA	NA	8.00E-03	NA	NA
4,4'-DDT	1.90E-02	4.85E-09	2.95E-13	1.90E-02	4.85E-09	2.95E-13	1.90E-02	4.85E-09	2.95E-13	1.90E-02	4.85E-09	2.95E-13
delta-BHC	3.00E-03	8.36E-08	NA	3.00E-03	8.36E-08	NA	3.00E-03	8.36E-08	NA	3.00E-03	8.36E-08	NA
Dibenzofuran	2.45E+01	6.53E-04	NA	2.67E+01	7.12E-04	NA	1.90E+00	5.06E-05	NA	3.22E+01	8.58E-04	NA
1,2-Dichlorobenzene	2.00E-03	7.75E-08	NA	2.00E-03	7.75E-08	NA	2.00E-03	7.75E-08	NA	2.00E-03	7.75E-08	NA
1,4-Dichlorobenzene	2.00E-03	4.55E-08	8.22E-11	2.00E-03	4.55E-08	8.22E-11	2.00E-03	4.55E-08	8.22E-11	2.00E-03	4.55E-08	8.22E-11
1,2-Dichloropropane	4.00E-03	4.36E-06	NA	4.00E-03	4.36E-06	NA	4.00E-03	4.36E-06	NA	4.00E-03	4.36E-06	NA
4,6-Dinitro-2-methylphenol	1.50E+00	5.05E-04	NA	1.50E+00	5.05E-04	NA	1.50E+00	5.05E-04	NA	1.50E+00	5.05E-04	NA
2,4-Dinitrophenol	6.30E-01	1.42E-05	NA	6.30E-01	1.42E-05	NA	6.30E-01	1.42E-05	NA	6.30E-01	1.42E-05	NA
Endosulfan II	1.40E-02	1.11E-08	NA	1.40E-02	1.11E-08	NA	1.40E-02	1.11E-08	NA	1.40E-02	1.11E-08	NA
Endosulfan Sulfate	1.40E-02	1.11E-08	NA	1.40E-02	1.11E-08	NA	1.40E-02	1.11E-08	NA	1.40E-02	1.11E-08	NA
Endrin	3.60E-02	2.08E-07	NA	3.60E-02	2.08E-07	NA	3.60E-02	2.08E-07	NA	3.60E-02	2.08E-07	NA
Endrin Aldehyde	3.30E-02	1.90E-07	NA	3.30E-02	1.90E-07	NA	3.30E-02	1.90E-07	NA	3.30E-02	1.90E-07	NA
Ethylbenzene	2.10E+00	5.31E-06	NA	2.10E+00	5.31E-06	NA	2.10E+00	5.31E-06	NA	2.10E+00	5.31E-06	NA
Isopropylbenzene	3.30E-02	1.82E-07	NA	3.30E-02	1.82E-07	NA	3.30E-02	1.82E-07	NA	3.30E-02	1.82E-07	NA
Manganese	8.52E+02	NA	NA	8.52E+02	NA	NA	8.52E+02	NA	NA	8.52E+02	NA	NA
Methylene Chloride	7.40E-02	1.69E-07	8.54E-11	7.40E-02	1.69E-07	8.54E-11	7.40E-02	1.69E-07	8.54E-11	7.40E-02	1.69E-07	8.54E-11
4-Nitrophenol	2.50E-01	9.45E-07	NA	2.50E-01	9.45E-07	NA	2.50E-01	9.45E-07	NA	2.50E-01	9.45E-07	NA
Phenol	1.20E-02	9.62E-10	NA	1.20E-02	9.62E-10	NA	1.20E-02	9.62E-10	NA	1.20E-02	9.62E-10	NA
Tetrachloroethene	8.00E-03	1.18E-07	9.27E-11	8.00E-03	1.18E-07	9.27E-11	8.00E-03	1.18E-07	9.27E-11	8.00E-03	1.18E-07	9.27E-11
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	1.13E-07	NA	1.55E-01	1.13E-07	NA	1.55E-01	1.13E-07	NA	1.55E-01	1.13E-07	NA
Toluene	2.80E-02	2.02E-08	NA	2.80E-02	2.02E-08	NA	2.80E-02	2.02E-08	NA	2.80E-02	2.02E-08	NA
1,2,4-Trichlorobenzene	1.00E-03	8.19E-08	NA	1.00E-03	8.19E-08	NA	1.00E-03	8.19E-08	NA	1.00E-03	8.19E-08	NA
1,1,1-Trichloroethane	5.00E-03	1.51E-08	NA	5.00E-03	1.51E-08	NA	5.00E-03	1.51E-08	NA	5.00E-03	1.51E-08	NA
Trichlorofluoromethane	2.00E-03	3.89E-08	NA	2.00E-03	3.89E-08	NA	2.00E-03	3.89E-08	NA	2.00E-03	3.89E-08	NA
2,4,5-Trichlorophenol	1.60E-01	8.95E-09	NA	1.60E-01	8.95E-09	NA	1.60E-01	8.95E-09	NA	1.60E-01	8.95E-09	NA
2,4,6-Trichlorophenol	3.50E-01	8.98E-05	3.48E-11	3.50E-01	8.98E-05	3.48E-11	3.50E-01	8.98E-05	3.48E-11	3.50E-01	8.98E-05	3.48E-11
1,2,4-Trimethylbenzene	4.40E-02	8.22E-06	NA	4.40E-02	8.22E-06	NA	4.40E-02	8.22E-06	NA	4.40E-02	8.22E-06	NA
Total Xylenes	2.00E-03	4.53E-08	NA	2.00E-03	4.53E-08	NA	2.00E-03	4.53E-08	NA	2.00E-03	4.53E-08	NA
1,2,3,4,6,7,8-HpCDD	2.35E-02	NA	2.56E-09	1.43E-02	NA	1.55E-09	8.85E-03	NA	9.63E-10	1.01E-02	NA	1.10E-09
1,2,3,4,6,7,8-HpCDF	3.85E-03	NA	4.19E-10	2.90E-03	NA	3.15E-10	3.17E-03	NA	3.44E-10	1.86E-03	NA	2.03E-10
1,2,3,4,7,8,9-HpCDF	3.25E-04	NA	3.53E-11	2.58E-04	NA	2.80E-11	3.19E-04	NA	3.47E-11	1.35E-04	NA	1.47E-11
1,2,3,4,7,8-HxCDD	6.80E-05	NA	7.40E-11	5.46E-05	NA	5.94E-11	3.78E-05	NA	4.11E-11	1.08E-04	NA	1.17E-10
1,2,3,4,7,8-HxCDF	2.91E-04	NA	3.17E-10	2.47E-04	NA	2.69E-10	4.47E-04	NA	4.87E-10	1.12E-04	NA	1.22E-10
1,2,3,6,7,8-HxCDD	6.00E-04	NA	6.52E-10	4.65E-04	NA	5.06E-10	3.52E-04	NA	3.83E-10	3.75E-04	NA	4.08E-10
1,2,3,6,7,8-HxCDF	8.93E-05	NA	9.72E-11	6.94E-05	NA	7.55E-11	9.97E-05	NA	1.08E-10	4.70E-05	NA	5.12E-11
1,2,3,7,8,9-HxCDD	1.37E-04	NA	1.49E-10	9.55E-05	NA	1.04E-10	7.44E-05	NA	8.09E-11	1.70E-04	NA	1.85E-10
1,2,3,7,8,9-HxCDF	1.12E-04	NA	1.22E-10	1.12E-04	NA	1.22E-10	9.85E-05	NA	1.07E-10	2.83E-05	NA	3.08E-11
1,2,3,7,8-PeCDD	1.69E-05	NA	1.84E-10	1.46E-05	NA	1.59E-10	1.10E-05	NA	1.20E-10	3.48E-05	NA	3.78E-10
1,2,3,7,8-PeCDF	3.01E-05	NA	9.81E-12	3.84E-05	NA	1.25E-11	2.59E-05	NA	8.45E-12	1.13E-05	NA	3.69E-12
2,3,4,6,7,8-HxCDF	1.36E-04	NA	1.48E-10	1.15E-04	NA	1.25E-10	1.68E-04	NA	1.83E-10	6.83E-05	NA	7.43E-11
2,3,4,7,8-PeCDF	5.91E-05	NA	1.93E-10	8.12E-05	NA	2.65E-10	8.79E-05	NA	2.87E-10	2.09E-05	NA	6.81E-11
2,3,7,8-TCDD	2.54E-06	NA	2.77E-11	2.36E-06	NA	2.57E-11	ND	ND	ND	2.98E-06	NA	3.24E-11
2,3,7,8-TCDF	3.55E-06	NA	3.86E-12	7.61E-06	NA	8.28E-12	5.04E-06	NA	5.48E-12	2.45E-06	NA	2.67E-12
OCDD	2.00E-01	NA	6.52E-10	1.38E-01	NA	4.51E-10	9.12E-02	NA	2.98E-10	8.88E-02	NA	2.90E-10
OCDF	1.79E-02	NA	5.84E-11	1.34E-02	NA	4.38E-11	1.17E-02	NA	3.83E-11	7.12E-03	NA	2.32E-11
TCDD TEQ	5.05E-04	NA	5.50E-09	3.73E-04	NA	4.06E-09	3.20E-04	NA	3.49E-09	2.81E-04	NA	3.06E-09
Acenaphthene	5.24E+00	1.55E-06	NA	5.07E+00	1.50E-06	NA	1.17E+00	3.47E-07	NA	1.13E+01	3.35E-06	NA
Acenaphthylene	2.14E+00	1.13E-06	NA	2.68E+00	1.41E-06	NA	3.35E-01	1.76E-07	NA	6.79E+00	3.57E-06	NA
Anthracene	1.48E+00	2.45E-08	NA	4.25E+00	7.02E-08	NA	4.85E+00	8.02E-08	NA	6.91E+00	1.14E-07	NA
Benzo(a)anthracene	1.22E+00	1.68E-08	5.59E-11	2.59E+00	3.58E-08	1.19E-10	1.80E+00	2.49E-08	8.26E-11	3.23E+00	4.46E-08	1.48E-10
Benzo(a)pyrene	5.06E-01	2.68E-09	8.88E-11	1.20E+00	6.36E-09	2.11E-10	9.00E-01	4.76E-09	1.58E-10	4.55E+00	2.41E-08	7.99E-10
Benzo(b)fluoranthene	6.24E-01	1.76E-08	5.86E-11	1.78E+00	5.03E-08	1.67E-10	2.08E+00	5.87E-08	1.95E-10	3.61E+00	1.02E-07	3.39E-10
Benzo(g,h,i)perylene	8.65E-01	5.68E-09	NA	1.74E+00	1.14E-08	NA	1.63E+00	1.07E-08	NA	4.17E+00	2.74E-08	NA
Benzo(k)fluoranthene	3.27E-01	1.09E-09	3.62E-13	1.65E+00	5.48E-09	1.82E-12	7.09E-01	2.36E-09	7.84E-13	1.44E+00	4.80E-09	1.59E-12
Chrysene	4.35E+00	2.07E-07	6.89E-12	5.09E+00	2.43E-07	8.06E-12	2.74E+00	1.31E-07	4.34E-12	7.63E+00	3.64E-07	1.21E-11
Dibenz(a,h)anthracene	1.35E+00	1.71E-09	5.68E-11	2.20E+00	2.79E-09	9.25E-11	2.52E+00	3.20E-09	1.06E-10	5.97E+00	7.56E-09	2.51E-10
Fluoranthene	4.11E+00	1.30E-07	NA	1.11E+01	3.50E-07	NA	7.00E+00	2.21E-07	NA	1.68E+01	5.32E-07	NA
Fluorene	2.17E+00	4.08E-07	NA	5.25E+00	9.89E-07	NA	1.73E+00	3.26E-07	NA	5.14E+00	9.68E-07	NA
Indeno(1,2,3-cd)pyrene	2.81E-01	6.43E-10	2.13E-12	1.52E+00	3.48E-09	1.16E-11	1.10E+00	2.51E-09	8.33E-12	2.19E+00	5.00E-09	1.66E-11
1-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.23E+01	8.81E-04	NA
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.79E+01	9.88E-04	NA
Naphthalene	1.13E+00	9.20E-05	NA	5.32E+00	4.32E-04	NA	3.62E-01	2.94E-05	NA	1.10E+01	8.95E-04	NA
Phenanthrene	2.32E+00	2.76E-05	NA	1.43E+01	1.71E-04	NA	2.18E+00	2.60E-05	NA	9.58E+00	1.14E-04	NA
Pyrene	1.13E+00	3.84E-08	NA	7.92E+00	2.69E-07	NA	5.28E+00	1.79E-07	NA	3.44E+01	1.17E-06	NA
BaP-TE	2.07E+00	1.10E-08	3.64E-10	3.64E+00	1.92E-08	6.38E-10	3.91E+00	2.07E-08	6.87E-10	1.09E+01	5.75E-08	1.91E-09
Pentachlorophenol	2.15E+01	4.19E-07	NA	5.30E+01	1.03E-06	NA	4.15E+01	8.07E-07	NA	1.01E+01	1.96E-07	NA
Total		1.41E-03	6.17E-09		1.95E-03	5.00E-09		7.37E-04	4.48E-09		4.38E-03	5.28E-09

Table C-28
SITE-WIDE & AREA-SPECIFIC RISKS
TOTAL RISKS: UTILITY WORKER

Constituent	Site-Wide			Area A			Area B			Area C			Area F		
	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	9.21E-06	1.68E-09	3.00E-03	9.21E-06	1.68E-09	3.00E-03	9.21E-06	1.68E-09	3.00E-03	9.21E-06	1.68E-09	3.00E-03	9.21E-06	1.68E-09
Barium	2.99E+02	9.43E-05	NA	2.99E+02	9.43E-05	NA	2.99E+02	9.43E-05	NA	2.99E+02	9.43E-05	NA	2.99E+02	9.43E-05	NA
Chlorobenzene	3.00E-03	1.46E-07	NA	3.00E-03	1.46E-07	NA	3.00E-03	1.46E-07	NA	3.00E-03	1.46E-07	NA	3.00E-03	1.46E-07	NA
Chloromethane	2.00E-03	3.01E-07	NA	2.00E-03	3.01E-07	NA	2.00E-03	3.01E-07	NA	2.00E-03	3.01E-07	NA	2.00E-03	3.01E-07	NA
4-Chloro-3-methylphenol	2.50E-01	3.53E-07	NA	2.50E-01	3.53E-07	NA	2.50E-01	3.53E-07	NA	2.50E-01	3.53E-07	NA	2.50E-01	3.53E-07	NA
Chromium	6.80E+01	1.54E-03	NA	6.80E+01	1.54E-03	NA	6.80E+01	1.54E-03	NA	6.80E+01	1.54E-03	NA	6.80E+01	1.54E-03	NA
4,4'-DDD	3.60E-02	NA	2.65E-10	3.60E-02	NA	2.65E-10	3.60E-02	NA	2.65E-10	3.60E-02	NA	2.65E-10	3.60E-02	NA	2.65E-10
4,4'-DDE	8.00E-03	NA	8.34E-11	8.00E-03	NA	8.34E-11	8.00E-03	NA	8.34E-11	8.00E-03	NA	8.34E-11	8.00E-03	NA	8.34E-11
4,4'-DDT	1.90E-02	3.27E-06	1.98E-10	1.90E-02	3.27E-06	1.98E-10	1.90E-02	3.27E-06	1.98E-10	1.90E-02	3.27E-06	1.98E-10	1.90E-02	3.27E-06	1.98E-10
delta-BHC	3.00E-03	9.99E-07	1.28E-10	3.00E-03	9.99E-07	1.28E-10	3.00E-03	9.99E-07	1.28E-10	3.00E-03	9.99E-07	1.28E-10	3.00E-03	9.99E-07	1.28E-10
Dibenzofuran	5.17E+01	3.30E-03	NA	5.17E+01	3.30E-03	NA	3.22E+01	2.06E-03	NA	1.90E+00	1.21E-04	NA	2.26E+01	1.44E-03	NA
1,2-Dichlorobenzene	2.00E-03	7.89E-08	NA	2.00E-03	7.89E-08	NA	2.00E-03	7.89E-08	NA	2.00E-03	7.89E-08	NA	2.00E-03	7.89E-08	NA
1,4-Dichlorobenzene	2.00E-03	4.97E-08	8.33E-11	2.00E-03	4.97E-08	8.33E-11	2.00E-03	4.97E-08	8.33E-11	2.00E-03	4.97E-08	8.33E-11	2.00E-03	4.97E-08	8.33E-11
1,2-Dichloropropane	4.00E-03	4.68E-06	8.34E-12	4.00E-03	4.68E-06	8.34E-12	4.00E-03	4.68E-06	8.34E-12	4.00E-03	4.68E-06	8.34E-12	4.00E-03	4.68E-06	8.34E-12
4,6-Dinitro-2-methylphenol	1.50E+00	1.50E-03	NA	1.50E+00	1.50E-03	NA	1.50E+00	1.50E-03	NA	1.50E+00	1.50E-03	NA	1.50E+00	1.50E-03	NA
2,4-Dinitrophenol	6.30E-01	3.51E-05	NA	6.30E-01	3.51E-05	NA	6.30E-01	3.51E-05	NA	6.30E-01	3.51E-05	NA	6.30E-01	3.51E-05	NA
Endosulfan II	1.40E-02	2.11E-07	NA	1.40E-02	2.11E-07	NA	1.40E-02	2.11E-07	NA	1.40E-02	2.11E-07	NA	1.40E-02	2.11E-07	NA
Endosulfan Sulfate	1.40E-02	2.11E-07	NA	1.40E-02	2.11E-07	NA	1.40E-02	2.11E-07	NA	1.40E-02	2.11E-07	NA	1.40E-02	2.11E-07	NA
Endrin	3.60E-02	1.12E-05	NA	3.60E-02	1.12E-05	NA	3.60E-02	1.12E-05	NA	3.60E-02	1.12E-05	NA	3.60E-02	1.12E-05	NA
Endrin Aldehyde	3.30E-02	1.03E-05	NA	3.30E-02	1.03E-05	NA	3.30E-02	1.03E-05	NA	3.30E-02	1.03E-05	NA	3.30E-02	1.03E-05	NA
Ethylbenzene	2.10E+00	6.63E-06	NA	2.10E+00	6.63E-06	NA	2.10E+00	6.63E-06	NA	2.10E+00	6.63E-06	NA	2.10E+00	6.63E-06	NA
Isopropylbenzene	3.30E-02	2.03E-07	NA	3.30E-02	2.03E-07	NA	3.30E-02	2.03E-07	NA	3.30E-02	2.03E-07	NA	3.30E-02	2.03E-07	NA
Manganese	8.52E+02	7.36E-04	NA	8.52E+02	7.36E-04	NA	8.52E+02	7.36E-04	NA	8.52E+02	7.36E-04	NA	8.52E+02	7.36E-04	NA
Methylene Chloride	7.40E-02	2.61E-07	1.00E-10	7.40E-02	2.61E-07	1.00E-10	7.40E-02	2.61E-07	1.00E-10	7.40E-02	2.61E-07	1.00E-10	7.40E-02	2.61E-07	1.00E-10
4-Nitrophenol	2.50E-01	3.02E-06	NA	2.50E-01	3.02E-06	NA	2.50E-01	3.02E-06	NA	2.50E-01	3.02E-06	NA	2.50E-01	3.02E-06	NA
Phenol	1.20E-02	3.94E-09	NA	1.20E-02	3.94E-09	NA	1.20E-02	3.94E-09	NA	1.20E-02	3.94E-09	NA	1.20E-02	3.94E-09	NA
Tetrachloroethene	8.00E-03	1.78E-07	2.08E-10	8.00E-03	1.78E-07	2.08E-10	8.00E-03	1.78E-07	2.08E-10	8.00E-03	1.78E-07	2.08E-10	8.00E-03	1.78E-07	2.08E-10
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	4.56E-07	NA	1.55E-01	4.56E-07	NA	1.55E-01	4.56E-07	NA	1.55E-01	4.56E-07	NA	1.55E-01	4.56E-07	NA
Toluene	2.80E-02	4.39E-08	NA	2.80E-02	4.39E-08	NA	2.80E-02	4.39E-08	NA	2.80E-02	4.39E-08	NA	2.80E-02	4.39E-08	NA
1,2,4-Trichlorobenzene	1.00E-03	8.82E-08	NA	1.00E-03	8.82E-08	NA	1.00E-03	8.82E-08	NA	1.00E-03	8.82E-08	NA	1.00E-03	8.82E-08	NA
1,1,1-Trichloroethane	5.00E-03	2.84E-08	NA	5.00E-03	2.84E-08	NA	5.00E-03	2.84E-08	NA	5.00E-03	2.84E-08	NA	5.00E-03	2.84E-08	NA
Trichlorofluoromethane	2.00E-03	4.43E-08	NA	2.00E-03	4.43E-08	NA	2.00E-03	4.43E-08	NA	2.00E-03	4.43E-08	NA	2.00E-03	4.43E-08	NA
2,4,5-Trichlorophenol	1.60E-01	1.15E-07	NA	1.60E-01	1.15E-07	NA	1.60E-01	1.15E-07	NA	1.60E-01	1.15E-07	NA	1.60E-01	1.15E-07	NA
2,4,6-Trichlorophenol	3.50E-01	3.22E-04	1.26E-10	3.50E-01	3.22E-04	1.26E-10	3.50E-01	3.22E-04	1.26E-10	3.50E-01	3.22E-04	1.26E-10	3.50E-01	3.22E-04	1.26E-10
1,2,4-Trimethylbenzene	4.40E-02	8.28E-06	NA	4.40E-02	8.28E-06	NA	4.40E-02	8.28E-06	NA	4.40E-02	8.28E-06	NA	4.40E-02	8.28E-06	NA
Total Xylenes	2.00E-03	4.54E-08	NA	2.00E-03	4.54E-08	NA	2.00E-03	4.54E-08	NA	2.00E-03	4.54E-08	NA	2.00E-03	4.54E-08	NA
1,2,3,4,6,7,8-HpCDD	1.11E-02	NA	4.02E-07	7.05E-03	NA	2.56E-07	1.23E-02	NA	4.47E-07	5.40E-04	NA	1.96E-08	1.12E-02	NA	4.07E-07
1,2,3,4,6,7,8-HpCDF	2.05E-03	NA	7.44E-08	1.11E-03	NA	4.03E-08	2.68E-03	NA	9.71E-08	2.80E-04	NA	1.02E-08	1.97E-03	NA	7.14E-08
1,2,3,4,7,8,9-HpCDF	1.72E-04	NA	6.23E-09	1.01E-04	NA	3.65E-09	2.15E-04	NA	7.82E-09	1.90E-05	NA	6.90E-10	1.33E-04	NA	4.84E-09
1,2,3,4,7,8-HxCDD	6.11E-05	NA	2.22E-08	2.90E-05	NA	1.05E-08	7.21E-05	NA	2.62E-08	2.50E-06	NA	9.07E-10	1.33E-04	NA	4.84E-08
1,2,3,4,7,8-HxCDF	1.64E-04	NA	5.94E-08	9.90E-05	NA	3.59E-08	1.97E-04	NA	7.13E-08	2.60E-05	NA	9.44E-09	1.03E-04	NA	3.72E-08
1,2,3,6,7,8-HxCDD	3.36E-04	NA	1.22E-07	2.10E-04	NA	7.62E-08	3.43E-04	NA	1.24E-07	2.00E-05	NA	7.26E-09	4.45E-04	NA	1.62E-07
1,2,3,6,7,8-HxCDF	4.98E-05	NA	1.81E-08	1.60E-05	NA	5.81E-09	4.90E-05	NA	1.78E-08	4.10E-06	NA	1.49E-09	5.39E-05	NA	1.95E-08
1,2,3,7,8,9-HxCDD	1.03E-04	NA	3.73E-08	2.40E-05	NA	8.71E-09	1.22E-04	NA	4.44E-08	2.15E-06	NA	7.80E-10	2.11E-04	NA	7.66E-08
1,2,3,7,8,9-HxCDF	5.47E-05	NA	1.99E-08	4.50E-06	NA	1.63E-09	4.53E-05	NA	1.65E-08	5.90E-06	NA	2.14E-09	2.85E-05	NA	1.04E-08
1,2,3,7,8-PeCDD	1.83E-05	NA	6.65E-08	3.10E-06	NA	1.13E-08	2.35E-05	NA	8.53E-08	ND	ND	ND	4.30E-05	NA	1.56E-07
1,2,3,7,8-PeCDF	1.68E-05	NA	1.83E-09	9.30E-06	NA	1.01E-09	1.57E-05	NA	1.71E-09	1.80E-06	NA	1.96E-10	1.16E-05	NA	1.27E-09
2,3,4,6,7,8-HxCDF	7.61E-05	NA	2.76E-08	1.34E-05	NA	4.86E-09	9.15E-05	NA	3.32E-08	2.00E-06	NA	7.26E-10	7.52E-05	NA	2.73E-08
2,3,4,7,8-PeCDF	3.53E-05	NA	3.84E-08	9.10E-06	NA	9.91E-09	3.67E-05	NA	4.00E-08	2.10E-06	NA	2.29E-09	1.92E-05	NA	2.09E-08
2,3,7,8-TCDD	2.05E-06	NA	7.45E-09	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.34E-06	NA	1.21E-08
2,3,7,8-TCDF	2.92E-06	NA	1.06E-09	8.75E-07	NA	3.18E-10	3.46E-06	NA	1.26E-09	ND	ND	ND	2.37E-06	NA	8.61E-10
OCDD	9.78E-02	NA	1.06E-07	7.45E-02	NA	8.11E-08	1.38E-01	NA	1.50E-07	7.30E-03	NA	7.95E-09	8.96E-02	NA	9.76E-08
OCDF	8.69E-03	NA	9.47E-09	4.50E-03	NA	4.90E-09	1.21E-02	NA	1.31E-08	7.90E-04	NA	8.60E-10	7.05E-03	NA	7.68E-09
TCDD TEQ	2.73E-04	NA	9.91E-07	1.52E-04	NA	5.53E-07	3.26E-04	NA	1.18E-06	1.91E-05	NA	6.93E-08	3.16E-04	NA	1.15E-06
Acenaphthene	4.93E+01	7.57E-05	NA	6.50E+01	9.99E-05	NA	1.23E+01	1.89E-05	NA	2.08E+00	3.19E-06	NA	1.39E+01	2.14E-05	NA
Acenaphthylene	1.76E+01	7.48E-05	NA	2.51E+01	1.07E-04	NA	7.00E+00	2.97E-05	NA	1.42E+00	6.02E-06	NA	8.94E+00	3.80E-05	NA
Anthracene	2.81E+01	7.43E-06	NA	3.30E+01	8.73E-06	NA	6.45E+00	1.71E-06	NA	7.60E-01	2.01E-07	NA	9.23E+00	2.44E-06	NA
Benzo(a)anthracene	8.03E+00	2.63E-05	1.37E-07	9.20E+00	3.01E-05	1.57E-07	3.28E+00	1.07E-05	5.59E-08	3.58E-01	1.17E-06	6.11E-09	3.97E+00	1.30E-05	6.77E-08
Benzo(a)pyrene	6.47E+00	2.11E-05	1.10E-06	9.10E+00	2.97E-05	1.55E-06	6.63E+00	2.17E-05	1.13E-06	1.85E-01	6.05E-07	3.15E-08	2.90E+00	9.46E-06	4.93E-07
Benzo(b)fluoranthene	6.94E+00	2.28E-05	1.19E-07	9.90E+00	3.26E-05	1.69E-07	3.43E+00	1.13E-05	5.87E-08	2.92E-01	9.62E-07	5.00E-09	4.51E+00	1.49E-05	7.72E-08
Benzo(g,h,i)perylene	5.62E+00	2.09E-05	NA	6.90E+00	2.57E-05	NA	5.67E+00	2.11E-05	NA	2.35E-01	8.77E-07	NA	3.15E+00	1.17E-05	NA
Benzo(k)fluoranthene	2.55E+00	8.34E-06	4.35E-09	2.90E+00	9.47E-06	4.94E-09	1.02E+00	3.32E-06	1.73E-09	1.27E-01	4.16E-07	2.17E-10	2.18E+00	7.10E-06	3.70E-09
Chrysene	1.63E+01	5.40E-05	2.80E-09	2.20E+01	7.28E-05	3.78E-09	9.09E+00	3.01E-05	1.56E-09	6.90E-01	2.28E-06	1.18E-10	7.88E+00	2.61E-05	1.35E-09
Dibenz(a,h)anthracene	7.87E+00	2.57E-05	1.34E-06	9.50E+00	3.10E-05	1.62E-06	8.90E+00	2.90E-05	1.51E-06	3.69E-01	1.20E-06	6.27E-08	3.75E+00	1.23E-05	6.39E-07
Fluoranthene	7.46E+01	1.41E-04	NA	8.40E+01	1.59E-04	NA	1.47E+01	2.77E-05	NA	3.00E+00	5.67E-06	NA	2.42E+01	4.58E-05	NA
Fluorene	3.87E+01	7.92E-05	NA	4.70E+01	9.63E-05	NA	7.38E+00	1.51E-05	NA	1.64E+00	3.36E-06	NA	3.81E+00	7.80E-06	NA
Indeno(1,2,3-cd)pyrene	2.11E+00	6.89E-06	3.59E-08	2.90E+00	9.47E-06	4.94E-08	1.97E+00	6.44E-06	3.36E-08	1.49E-01	4.85E-07	2.53E-09	2.83E+00	9.23E-06	4.81E-08
1-Methylnaphthalene	8.71E+00	6.54E-04	NA	ND	ND	ND	4.20E+00	3.15E-04	NA	4.46E+00	3.35E-04	NA	3.46E+01	2.60E-03	NA
2-Methylnaphthalene	9.84E+00	5.79E-04	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.48E+01	2.05E-03	NA
Naphthalene	3.11E+01	2.64E-03	NA	9.06E+01	7.70E-03	NA	1.76E+01	1.49E-03	NA	1.35E+00	1.15E-04	NA	5.85E+00	4.97E-04	NA
Phenanthrene	1.11E+02	1.74E-03	NA	1.30E+02	2.03E-03	NA	1.35E+01	2.11E-04	NA	4.81E+00	7.52E-05	NA	7.74E+00	1.21E-04	NA
Pyrene	4.34E+01	1.09E-04	NA	4.80E+01	1.21E-04	NA	5.57E+01	1.40E-04	NA	1.77E+00	4.45E-06	NA	1.53E+01	3.85E-05	NA
BaP-TE	1.60E+01	5.23E-05	2.72E-06	2.07E+01	6.76E-05	3.53E-06	1.54E+01	5.03E-05	2.62E-06	6.21E-01	2.03E-06	1.06E-07	7.64E+00	2.50E-05	1.30E-06
Pentachlorophenol	1.28E+01	2.85E-05	3.63E-08	2.03E+00	4.54E-06	5.78E-09	3.62E+00	8.08E-06	1.03E-08	9.71E-01	2.17E-06	2.76E-09	1.88E+01	4.19E-05	5.35E-08
Total		1.38E-02	3.75E-06		1.80E-02	4.09E-06		8.68E-03	3.82E-06		4.97E-03	1.81E-07		1.12E-02	2.51E-06

Table C-28
SITE-WIDE & AREA-SPECIFIC RISKS
TOTAL RISKS: UTILITY WORKER

Constituent	Area G			Area H			Area S			Area B/F		
	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk	0-5 ft (mg/kg)	HI	Risk
Aldrin	3.00E-03	9.21E-06	1.68E-09	3.00E-03	9.21E-06	1.68E-09	3.00E-03	9.21E-06	1.68E-09	3.00E-03	9.21E-06	1.68E-09
Barium	2.99E+02	9.43E-05	NA	2.99E+02	9.43E-05	NA	2.99E+02	9.43E-05	NA	2.99E+02	9.43E-05	NA
Chlorobenzene	3.00E-03	1.46E-07	NA	3.00E-03	1.46E-07	NA	3.00E-03	1.46E-07	NA	3.00E-03	1.46E-07	NA
Chloromethane	2.00E-03	3.01E-07	NA	2.00E-03	3.01E-07	NA	2.00E-03	3.01E-07	NA	2.00E-03	3.01E-07	NA
4-Chloro-3-methylphenol	2.50E-01	3.53E-07	NA	2.50E-01	3.53E-07	NA	2.50E-01	3.53E-07	NA	2.50E-01	3.53E-07	NA
Chromium	6.80E+01	1.54E-03	NA	6.80E+01	1.54E-03	NA	6.80E+01	1.54E-03	NA	6.80E+01	1.54E-03	NA
4,4'-DDD	3.60E-02	NA	2.65E-10	3.60E-02	NA	2.65E-10	3.60E-02	NA	2.65E-10	3.60E-02	NA	2.65E-10
4,4'-DDE	8.00E-03	NA	8.34E-11	8.00E-03	NA	8.34E-11	8.00E-03	NA	8.34E-11	8.00E-03	NA	8.34E-11
4,4'-DDT	1.90E-02	3.27E-06	1.98E-10	1.90E-02	3.27E-06	1.98E-10	1.90E-02	3.27E-06	1.98E-10	1.90E-02	3.27E-06	1.98E-10
delta-BHC	3.00E-03	9.99E-07	1.28E-10	3.00E-03	9.99E-07	1.28E-10	3.00E-03	9.99E-07	1.28E-10	3.00E-03	9.99E-07	1.28E-10
Dibenzofuran	2.45E+01	1.56E-03	NA	2.67E+01	1.70E-03	NA	1.90E+00	1.21E-04	NA	3.22E+01	2.06E-03	NA
1,2-Dichlorobenzene	2.00E-03	7.89E-08	NA	2.00E-03	7.89E-08	NA	2.00E-03	7.89E-08	NA	2.00E-03	7.89E-08	NA
1,4-Dichlorobenzene	2.00E-03	4.97E-08	8.33E-11	2.00E-03	4.97E-08	8.33E-11	2.00E-03	4.97E-08	8.33E-11	2.00E-03	4.97E-08	8.33E-11
1,2-Dichloropropane	4.00E-03	4.68E-06	8.34E-12	4.00E-03	4.68E-06	8.34E-12	4.00E-03	4.68E-06	8.34E-12	4.00E-03	4.68E-06	8.34E-12
4,6-Dinitro-2-methylphenol	1.50E+00	1.50E-03	NA	1.50E+00	1.50E-03	NA	1.50E+00	1.50E-03	NA	1.50E+00	1.50E-03	NA
2,4-Dinitrophenol	6.30E-01	3.51E-05	NA	6.30E-01	3.51E-05	NA	6.30E-01	3.51E-05	NA	6.30E-01	3.51E-05	NA
Endosulfan II	1.40E-02	2.11E-07	NA	1.40E-02	2.11E-07	NA	1.40E-02	2.11E-07	NA	1.40E-02	2.11E-07	NA
Endosulfan Sulfate	1.40E-02	2.11E-07	NA	1.40E-02	2.11E-07	NA	1.40E-02	2.11E-07	NA	1.40E-02	2.11E-07	NA
Endrin	3.60E-02	1.12E-05	NA	3.60E-02	1.12E-05	NA	3.60E-02	1.12E-05	NA	3.60E-02	1.12E-05	NA
Endrin Aldehyde	3.30E-02	1.03E-05	NA	3.30E-02	1.03E-05	NA	3.30E-02	1.03E-05	NA	3.30E-02	1.03E-05	NA
Ethylbenzene	2.10E+00	6.63E-06	NA	2.10E+00	6.63E-06	NA	2.10E+00	6.63E-06	NA	2.10E+00	6.63E-06	NA
Isopropylbenzene	3.30E-02	2.03E-07	NA	3.30E-02	2.03E-07	NA	3.30E-02	2.03E-07	NA	3.30E-02	2.03E-07	NA
Manganese	8.52E+02	7.36E-04	NA	8.52E+02	7.36E-04	NA	8.52E+02	7.36E-04	NA	8.52E+02	7.36E-04	NA
Methylene Chloride	7.40E-02	2.61E-07	1.00E-10	7.40E-02	2.61E-07	1.00E-10	7.40E-02	2.61E-07	1.00E-10	7.40E-02	2.61E-07	1.00E-10
4-Nitrophenol	2.50E-01	3.02E-06	NA	2.50E-01	3.02E-06	NA	2.50E-01	3.02E-06	NA	2.50E-01	3.02E-06	NA
Phenol	1.20E-02	3.94E-09	NA	1.20E-02	3.94E-09	NA	1.20E-02	3.94E-09	NA	1.20E-02	3.94E-09	NA
Tetrachloroethene	8.00E-03	1.78E-07	2.08E-10	8.00E-03	1.78E-07	2.08E-10	8.00E-03	1.78E-07	2.08E-10	8.00E-03	1.78E-07	2.08E-10
2,3,4,6 & 2,3,5,6-Tetrachlorophenol	1.55E-01	4.56E-07	NA	1.55E-01	4.56E-07	NA	1.55E-01	4.56E-07	NA	1.55E-01	4.56E-07	NA
Toluene	2.80E-02	4.39E-08	NA	2.80E-02	4.39E-08	NA	2.80E-02	4.39E-08	NA	2.80E-02	4.39E-08	NA
1,2,4-Trichlorobenzene	1.00E-03	8.82E-08	NA	1.00E-03	8.82E-08	NA	1.00E-03	8.82E-08	NA	1.00E-03	8.82E-08	NA
1,1,1-Trichloroethane	5.00E-03	2.84E-08	NA	5.00E-03	2.84E-08	NA	5.00E-03	2.84E-08	NA	5.00E-03	2.84E-08	NA
Trichlorofluoromethane	2.00E-03	4.43E-08	NA	2.00E-03	4.43E-08	NA	2.00E-03	4.43E-08	NA	2.00E-03	4.43E-08	NA
2,4,5-Trichlorophenol	1.60E-01	1.15E-07	NA	1.60E-01	1.15E-07	NA	1.60E-01	1.15E-07	NA	1.60E-01	1.15E-07	NA
2,4,6-Trichlorophenol	3.50E-01	3.22E-04	1.26E-10	3.50E-01	3.22E-04	1.26E-10	3.50E-01	3.22E-04	1.26E-10	3.50E-01	3.22E-04	1.26E-10
1,2,4-Trimethylbenzene	4.40E-02	8.28E-06	NA	4.40E-02	8.28E-06	NA	4.40E-02	8.28E-06	NA	4.40E-02	8.28E-06	NA
Total Xylenes	2.00E-03	4.54E-08	NA	2.00E-03	4.54E-08	NA	2.00E-03	4.54E-08	NA	2.00E-03	4.54E-08	NA
1,2,3,4,6,7,8-HpCDD	2.35E-02	NA	8.52E-07	1.43E-02	NA	5.18E-07	8.85E-03	NA	3.21E-07	1.01E-02	NA	3.68E-07
1,2,3,4,6,7,8-HpCDF	3.85E-03	NA	1.40E-07	2.90E-03	NA	1.05E-07	3.17E-03	NA	1.15E-07	1.86E-03	NA	6.76E-08
1,2,3,4,7,8,9-HpCDF	3.25E-04	NA	1.18E-08	2.58E-04	NA	9.35E-09	3.19E-04	NA	1.16E-08	1.35E-04	NA	4.91E-09
1,2,3,4,7,8-HxCDD	6.80E-05	NA	2.47E-08	5.46E-05	NA	1.98E-08	3.78E-05	NA	1.37E-08	1.08E-04	NA	3.90E-08
1,2,3,4,7,8-HxCDF	2.91E-04	NA	1.06E-07	2.47E-04	NA	8.96E-08	4.47E-04	NA	1.62E-07	1.12E-04	NA	4.08E-08
1,2,3,6,7,8-HxCDD	6.00E-04	NA	2.18E-07	4.65E-04	NA	1.69E-07	3.52E-04	NA	1.28E-07	3.75E-04	NA	1.36E-07
1,2,3,6,7,8-HxCDF	8.93E-05	NA	3.24E-08	6.94E-05	NA	2.52E-08	9.97E-05	NA	3.62E-08	4.70E-05	NA	1.71E-08
1,2,3,7,8,9-HxCDD	1.37E-04	NA	4.97E-08	9.55E-05	NA	3.47E-08	7.44E-05	NA	2.70E-08	1.70E-04	NA	6.18E-08
1,2,3,7,8,9-HxCDF	1.12E-04	NA	4.06E-08	1.12E-04	NA	4.08E-08	9.85E-05	NA	3.58E-08	2.83E-05	NA	1.03E-08
1,2,3,7,8-PeCDD	1.69E-05	NA	6.14E-08	1.46E-05	NA	5.30E-08	1.10E-05	NA	4.00E-08	3.48E-05	NA	1.26E-07
1,2,3,7,8-PeCDF	3.01E-05	NA	3.27E-09	3.84E-05	NA	4.18E-09	2.59E-05	NA	2.82E-09	1.13E-05	NA	1.23E-09
2,3,4,6,7,8-HxCDF	1.36E-04	NA	4.94E-08	1.15E-04	NA	4.17E-08	1.68E-04	NA	6.09E-08	6.83E-05	NA	2.48E-08
2,3,4,7,8-PeCDF	5.91E-05	NA	6.43E-08	8.12E-05	NA	8.84E-08	8.79E-05	NA	9.56E-08	2.09E-05	NA	2.27E-08
2,3,7,8-TCDD	2.54E-06	NA	9.24E-09	2.36E-06	NA	8.58E-09	ND	ND	ND	2.98E-06	NA	1.08E-08
2,3,7,8-TCDF	3.55E-06	NA	1.29E-09	7.61E-06	NA	2.76E-09	5.04E-06	NA	1.83E-09	2.45E-06	NA	8.89E-10
OCDD	2.00E-01	NA	2.17E-07	1.38E-01	NA	1.50E-07	9.12E-02	NA	9.93E-08	8.88E-02	NA	9.66E-08
OCDF	1.79E-02	NA	1.95E-08	1.34E-02	NA	1.46E-08	1.17E-02	NA	1.28E-08	7.12E-03	NA	7.75E-09
TCDD TEQ	5.05E-04	NA	1.83E-06	3.73E-04	NA	1.35E-06	3.20E-04	NA	1.16E-06	2.81E-04	NA	1.02E-06
Acenaphthene	5.24E+00	8.05E-06	NA	5.07E+00	7.79E-06	NA	1.17E+00	1.80E-06	NA	1.13E+01	1.74E-05	NA
Acenaphthylene	2.14E+00	9.09E-06	NA	2.68E+00	1.14E-05	NA	3.35E-01	1.42E-06	NA	6.79E+00	2.88E-05	NA
Anthracene	1.48E+00	3.93E-07	NA	4.25E+00	1.12E-06	NA	4.85E+00	1.28E-06	NA	6.91E+00	1.83E-06	NA
Benzo(a)anthracene	1.22E+00	3.99E-06	2.08E-08	2.59E+00	8.49E-06	4.42E-08	1.80E+00	5.89E-06	3.07E-08	3.23E+00	1.06E-05	5.51E-08
Benzo(a)pyrene	5.06E-01	1.65E-06	8.62E-08	1.20E+00	3.93E-06	2.05E-07	9.00E-01	2.94E-06	1.53E-07	4.55E+00	1.49E-05	7.75E-07
Benzo(b)fluoranthene	6.24E-01	2.05E-06	1.07E-08	1.78E+00	5.86E-06	3.05E-08	2.08E+00	6.83E-06	3.55E-08	3.61E+00	1.19E-05	6.18E-08
Benzo(g,h,i)perylene	8.65E-01	3.23E-06	NA	1.74E+00	6.48E-06	NA	1.63E+00	6.08E-06	NA	4.17E+00	1.55E-05	NA
Benzo(k)fluoranthene	3.27E-01	1.07E-06	5.57E-10	1.65E+00	5.37E-06	2.80E-09	7.09E-01	2.31E-06	1.21E-09	1.44E+00	4.71E-06	2.45E-09
Chrysene	4.35E+00	1.44E-05	7.46E-10	5.09E+00	1.68E-05	8.74E-10	2.74E+00	9.07E-06	4.71E-10	7.63E+00	2.53E-05	1.31E-09
Dibenz(a,h)anthracene	1.35E+00	4.41E-06	2.30E-07	2.20E+00	7.18E-06	3.74E-07	2.52E+00	8.24E-06	4.30E-07	5.97E+00	1.95E-05	1.02E-06
Fluoranthene	4.11E+00	7.77E-06	NA	1.11E+01	2.10E-05	NA	7.00E+00	1.32E-05	NA	1.68E+01	3.19E-05	NA
Fluorene	2.17E+00	4.44E-06	NA	5.25E+00	1.08E-05	NA	1.73E+00	3.54E-06	NA	5.14E+00	1.05E-05	NA
Indeno(1,2,3-cd)pyrene	2.81E-01	9.18E-07	4.78E-09	1.52E+00	4.97E-06	2.59E-08	1.10E+00	3.58E-06	1.87E-08	2.19E+00	7.14E-06	3.72E-08
1-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.23E+01	9.27E-04	NA
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.79E+01	1.05E-03	NA
Naphthalene	1.13E+00	9.63E-05	NA	5.32E+00	4.52E-04	NA	3.62E-01	3.07E-05	NA	1.10E+01	9.36E-04	NA
Phenanthrene	2.32E+00	3.63E-05	NA	1.43E+01	2.24E-04	NA	2.18E+00	3.41E-05	NA	9.58E+00	1.50E-04	NA
Pyrene	1.13E+00	2.85E-06	NA	7.92E+00	1.99E-05	NA	5.28E+00	1.33E-05	NA	3.44E+01	8.65E-05	NA
BaP-TE	2.07E+00	6.77E-06	3.53E-07	3.64E+00	1.19E-05	6.19E-07	3.91E+00	1.28E-05	6.66E-07	1.09E+01	3.56E-05	1.85E-06
Pentachlorophenol	2.15E+01	4.81E-05	6.13E-08	5.30E+01	1.18E-04	1.51E-07	4.15E+01	9.27E-05	1.18E-07	1.01E+01	2.25E-05	2.87E-08
Total		6.08E-03	2.25E-06		6.88E-03	2.13E-06		4.62E-03	1.95E-06		9.67E-03	2.91E-06

Appendix D

Derivation of Dermal Permeability Constants for PAHs

Derivation of K_p Values from Experiments with PAHS in Aqueous Solutions

K_p values for surface water and groundwater dermal risk assessment of PAHs can be derived from an experiment in which PAHs in aqueous solutions were administered to human volunteers. van Schooten et al. (1994) performed an experiment with aqueous solutions of PAHs that allows a K_p for one PAH, pyrene, to be estimated. In this experiment, 11 healthy human volunteers (4 male, 7 female, aged 21-26) shampooed with a coal tar-containing shampoo, and the level of 1-hydroxypyrene in their urine was monitored as an indicator of PAH exposure. Two additional volunteers served as controls (1 male, 1 female).

The shampoo contained 2,840 mg/kg total PAH and 285 mg/kg pyrene. Shampooing was done in the evening (twice for 30 seconds). Urine was collected during the day before treatment and for two days after treatment. The average amount of 1-hydroxypyrene in the urine was 28 nmol.

To determine the amount of pyrene absorbed during the shampooing, additional information is required from the literature. An estimate is required for the fraction of absorbed pyrene that is excreted in the urine as free and conjugated 1-hydroxypyrene. Viau et al. (1995) administered 500 ug of pyrene dissolved in 3 mL of olive oil to two human volunteers (healthy nonsmoking males, aged 37 and 45). Urine was then collected for 48 hours. Free and conjugated 1-hydroxypyrene were measured in the urine. A toxicokinetic model was developed that yields estimates of the fraction of the exposure dose of pyrene that was eliminated by urinary excretion as 1-hydroxypyrene. The average fraction excreted in the urine as 1-hydroxypyrene was 3.7%. The fraction of an oral dose of pyrene that is absorbed has been estimated by Withey et al. (1991) to be 87% (see Magee et al., 1996). Thus, the fraction of the absorbed dose that is excreted as 1-hydroxypyrene is 3.7%/87% = 4.3%.

The average amount of pyrene that was absorbed in the coal tar shampoo experiment was thus, 28 nmol/0.043 = 651 nmol, or 132 ug of pyrene. Given the concentration of pyrene in the shampoo (285 ug/g), the skin area dosed (assumed to be 1140 cm^2), and the exposure time (0.017 hours), a K_p value can be derived for the van Schooten et al. (1994) experiment. The K_p value is 0.02 cm/hr assuming that the shampoo was used full strength. If the shampoo was diluted 50/50 with water when used, the experimentally derived K_p value is 0.04 cm/hr.

These experimentally derived K_p values are for pyrene, which is much less lipophilic than benzo(a)pyrene and other potentially carcinogenic PAH. Based on the results of VanRooij *et al.* (1995) and Roy et al. (1997), one would expect the K_p for potentially carcinogenic PAHs to be significantly less than 0.02 - 0.04 cm/hr. In the experiment of Roy et al. (1997), the dermal absorption of benzo(a)pyrene was 0.5 times the value for pyrene. In the experiment of VanRooij *et al. (*1995), the dermal absorption of benzo(a)pyrene was <0.13 times the value for pyrene. Thus, an estimated K_p for benzo(a)pyrene would range from 0.003 cm/hr to 0.02 cm/hr.

Summary

A K_p value for pyrene from aqueous solution has been derived from empirical experiments to be 0.02 cm/hr if the shampoo was used full strength and 0.04 cm/hr if the shampoo was diluted 50/50 with water. A reasonable K_p to use for risk assessment of pyrene and other noncarcinogenic PAHs is the more conservative value for pyrene, 0.04 cm/hr.

Dermal permeability of benzo(a)pyrene and other potentially carcinogenic PAHs has been

shown to be less than that of pyrene and other noncarcinogenic PAHs. Using comparative data from the literature, estimates of the K_p for benzo(a)pyrene and other potentially carcinogenic PAHs would range from 0.003 cm/hr to 0.02 cm/hr. A reasonable K_p to use for risk assessment of benzo(a)pyrene and other potentially carcinogenic PAHs is the more conservative value of 0.02 cm/hr.

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