Estimated Human Health and Ecological Combustion Risk For the Umatilla Chemical Agent Disposal Facility Hermiston, Oregon

Draft Report

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Prepared by:
Confederated Tribes of the Umatilla Indian Reservation
P.O. Box 638
Pendleton, Oregon 97801

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1 Executive Summary

The CTUIR has completed a human health and ecological risk assessment for operations at the Umatilla Chemical Agent Disposal Facility (UMCDF) based on the 2004 RWAP (Risk Assessment Work Plan) (DEQ, 2004). The base model for both assessments were identical to the CHPPM/RAWP analysis described by Ecology and Environment (E&E) in their January 31, 2008 report to the Oregon Department of Environmental Quality (DEQ) with the exception that the acute exposure criteria values for the three unidentified TOE fractions were increased by a factor of 1000 in the CTUIR human health model. This increase was to correct an apparent error in the E&E report. The body of the E&E document reported the larger values while their modeling input files contained the smaller values. Evaluation of the data sources used to generate the TOE acute values indicate the larger values were correct.

Six additional human health risk scenarios were evaluated to better clarify the impacts of several base model assumptions on the predicted chronic risks. These special cases are as follows:

1. Case 1 – Area Average: Examined the effects of collocating the highest values for deposition rates and air concentrations for off-site analysis.
2. Case 2 – Single Point, Actual Data: The impacts of collocating the highest values for the air deposition rates and air concentrations for the off-site location were further evaluated using AERMOD calculated air parameters for the off-site location. This case corresponds to the EPA recommended evaluation method (EPA, 2005).
3. Case 3 – Updated COPC Emission Rates: Chemical agent concentration were modified to reflect DAAMS[1] stack data. In addition, the amount of carbon to be processed as secondary waste in the deactivation furnace system was reduced from base model estimates of 706,035 lbs to current estimates of 55,320 lbs. Finally, operation of the brine reduction area was assumed to be eliminated for HD processing.
4. Case 4 – Evaluating Dioxin and Furans at Detection Limits: Eleven dioxin and furan compounds which were monitored in the trial burns, but never detected, were moved from the non-volatile TOE fraction and placed on the emissions list for the common stack at their detection limits. The toxicity of the non-volatile TOE fraction was re-evaluated without these eleven compounds.
5. Case 5 – On-Site Risk After Incineration: The base model was modified by removing exposure pathways which only occur during operation of the incineration system. Pathways resulting from residual soil contamination were retained. The purpose of this analysis was to examine the on-site risks to future populations that might use the depot lands after closure.
6. Case 6 – Combined Special Cases 3, 4, and 5: Assumptions in Special Cases 3, 4 and 5 were combined.

[1] DAAMS stands for Depot Area Agent Monitoring System.

1.1 Human Health Risk Results

Table ES-1 summarizes the results of the base model and the six special cases when compared to the action levels established by the DEQ in the 2004 RAWP. Table ES-2 provides a summary of the action levels described in the 2004 RAWP. A "Pass" in Table ES-1 implies that all exposure scenarios evaluated at the specified location were below DEQ action levels. A "No" value in Table ES-1 indicates that at least one exposure scenarios was above the action level at the specified evaluation point. It is evident from Table ES-1 that the base model resulted in chronic cancer and non-cancer risks above action levels at both the on-site and off-site locations. In contrast, the acute risks and the risks to infants from dioxin and furans in breast milk were below action levels. Special Case 6 resulted in the lowest risks with all but the on-site chronic cancer risk falling below the DEQ established action levels.

Table ES-1: Summary of Risk Results for All Models Tested

Model	On-Site Receptor				Off-Site Receptor			
	Chronic Cancer	Chronic Non-Cancer	Infant Dioxin/ Furan Dose	Acute	Chronic Cancer	Chronic Non-Cancer	Infant Dioxin/ Furan Dose	Acute
Base Model	No [a]	No	Pass [b]	Pass	No	No	Pass	Pass
Special Case 1	No	No	Pass	Pass	No	No	Pass	Pass
Special Case 2	No	No	Pass	Pass	No	No	Pass	Pass
Special Case 3	No	Pass	Pass	Pass	No	Pass	Pass	Pass
Special Case 4	No	No	Pass	Pass	Pass	No	Pass	Pass
Special Case 5	No	No	Pass	Pass	--	--	Pass	Pass
Special Case 6	No	Pass	Pass	Pass	Pass	Pass	Pass	Pass

[a] A "No" indicates that at least one exposure scenarios was above the action level for the indicated measurement of risk.
[b] A "Pass" implies that all exposure scenarios evaluated at the specified location were below DEQ action levels.

Table ES-2: Risk Action Levels Described 2004 RAWP

Risk Assessment	Risk Measurement	2004 RAWP Action Level
Human Health	Chronic Cancer Risk	< 1.0E-05
Human Health	Chronic Non-cancer Risk	< 0.25
Human Health	Infant exposure to Dioxin and Furan in Breast Milk	< 0.25 pg-TEQ/kg-day
Human Health	Acute Risk	< 1.0 for individual compounds
Ecological	Ecological Screening Quotient	<1.0

Cancer risks in the base model resulted mostly from ingesting foods containing the measured, but unspeciated non-volatile TOE. The non-cancer risks were dominated by ingesting foods contaminated with chemical agent. It is evident from these results that two key assumptions are causing the cancer and non-cancer risks in the base model to exceed the predetermined action levels. First, the decision to assume emission of the chemical agents at the detection level of the continuous monitoring system (termed an

ACAMS, or automatic continuous air monitoring system) drives the non-cancer chronic health risk. Second, the choice to quantitatively assign geometric mean toxicities to the unspeciated non-volatile TOE resulted in cancer risks that exceed the action levels.

Results from Special Cases 1 and 2 indicate that collating the highest air parameters resulted in an increase in the chronic cancer and non-cancer risks by an average of 30% to 40% over models that used either area average air parameters or a single location in the region of highest off-site deposition.

Special Case 3 modifications to the risk model had a dramatic effect on non-cancer chronic risks. For Special Case 3 there was an average reduction of 98.7% in non-cancer risks at both the on-site and off-site locations over the base model. All non-cancer risks (both on-site and off-site locations) were below the DEQ established action level for Special Case 3. Chronic cancer risks for Special Case 3 were an average of 43% below the base model, but all exposure scenarios which exceeded the action level for cancer risks in the base model also exceeded the action level for Special Case 3.

Special Case 4 was evaluated since chronic cancer risk in the base model is dominated by the geometric mean value for the oral cancer slope factor (CSFo) of the non-volatile TOE fraction, and this parameter is highly influenced by eleven dioxins and furans which were measured during all the trial burns, but never detected. Results from the Special Case 4 analysis indicated that only the on-site farmer and on-site Native American (adult and child in both cases) appear to have chronic cancer risks above the DEQ action level. The off-site farmer adult and Native American adult have cancer risks equal to the action level of 1×10^{-5}. Moving the eleven dioxins from the non-volatile TOE fraction to the COPC list also did not cause unacceptable levels of PCDDs and PCDFs in breast milk. For the on-site and off-site evaluation locations, the predicted infant dioxin and furan exposure was below the DEQ action level of 0.25 pg-TEQ/kg-day for all exposure scenarios.

For Special Case 5 the base model was modified to remove the exposure pathways that only occur during incineration operations. The exposure pathways removed were inhalation exposure, above ground produce exposure by direct deposition of particles, and air-to-leaf transfer. Results from Special Case 5 reveal a reduction in on-site chronic risks (cancer and non-cancer) by between 60% and 70% over the base model. The resulting on-site non-cancer risks are below the DEQ action level, but the cancer risks are still more than an order of magnitude above the action level.

The assumptions included in Special Cases 3, 4, and 5 were combined in the Special Case 6 analysis. Special Case 6 represents site conditions that more closely reflect actual operations than those used in the base model. The Special Case 6 model predicts chronic off-site risks (both cancer and non-cancer) below the DEQ action levels. The infant average daily dose for dioxins and furans for Case 6 were also below their action levels for all evaluation locations and exposure scenarios. On-site chronic cancer risks are still more than an order of magnitude above action levels, but on-site non-cancer risks are below their action level.

From these results it is evident that the off-site risks (both chronic cancer and non-cancer risks) reported for the base model are reduced to values below action levels by including more accurate estimates of chemical agent and dioxin and furan emissions. These modified emission values are based on experimental measurements of stack emissions which were not included in the base model. Including this data creates emission rates that more accurately estimate the potential levels of these compounds being released by the UMCDF to the environment. On-site cancer risks are also reduced by these improved estimates, but still remain above action levels and so are still of concern to the CTUIR. In contrast, on-site non-cancer risks are below action levels with the improved data set represented by Special Case 6.

From the human health risk results it is evident that future risk management activities at the UMCDF should include an attempt to speciate the non-volatile TOE fraction and to determine its chemical composition and its true toxicity. In addition, site sampling should be conducted within the immediate region of the UMCDF to ensure residual contamination does not create unacceptable risks for those who will be using these lands after closure.

1.2 Ecological Risk Results

Two separate habitats were evaluated for the ecological risk assessment; a shrub-steppe ecosystem and a freshwater ecosystem (DEQ, 2004). The shrub-steppe ecosystem was evaluated to simulate current conditions on the UMCD and represents the area with the highest potential to impact this type of community since deposition rates are highest in this region. The freshwater habitat was evaluated to simulate the impacts of the UMCDF on the river systems that lie near the facility. The Umatilla River was chosen as the freshwater evaluation area because its close proximity to the UMCDF and its low flow rate create the potential for larger impacts from incineration emissions than for the Columbia River.

An ESQ above the EPA action level of 1.0 was predicted for several ecological receptors in both habitats. In the shrub-steppe habitat the impacted guilds were the herbivorous bird, the omnivorous bird, and the omnivorous mammal. The freshwater habitat had high impacts for the carnivorous shore bird, the omnivorous bird and the omnivorous mammal. The primary COPC contributing to the high ESQ values was the unspeciated non-volatile TOE for all but the omnivorous mammal living in the shrub-steppe. For this latter guild the high ESQ was caused by VX. The food sources contributing the non-volatile TOE and VX to these higher order animals were benthic invertebrates for the freshwater habitat and soil invertebrates and terrestrial plants for the shrub-steppe habitat.

Examining the parameter specific data behind these predictions suggests that, for the freshwater habitat, the impacts of the non-volatile TOE fraction are the result of both a high emission rate for this COPC and a high bioconcentration factor. It should be noted that while the emission rate value is based on site emissions data, the bioconcentration factor was developed using the geometric mean octanol-water partition coefficient (k_{ow}) and a predictive equation recommended by the EPA (EPA, 1999). The validity of using

this predictive equation is questionable since the k_{ow} value used to represent the non-volatile TOE fraction is an order of magnitude greater than the range of compounds used to develop the empirical relationship (Southworth et al., 1978). A similar conclusion can be made for the cases where ingestion of soil invertebrates drives the ESQ.

The large impact of the VX on the ESQ for omnivorous mammals eating soil invertebrates results from a relatively high soil concentration (Figure 6-5) and a low *TRV*[2]. As indicted in Figure 6-7, only five other compounds[3] have a TRV values lower than VX, and these compounds are present at concentrations many orders of magnitude below that assumed for VX.

Two factors are the most likely cause of the high ESQ for the cases where consumption of terrestrial plants in the shrub-steppe habitat are the source of the offending COPCs. These two factors are the high emission rate for the non-volatile TOE fraction and the high residual soil concentrations that result.

The results of the ecological risk assessment suggests that, as with the human health risk assessment, on-site impacts may be above levels of concern and that methods for sampling for the unspeciated non-volatile TOE in site soils and vegetation need to be developed and applied during the site closure process. If no methods can be developed to quantify this material in the environment then it may be necessary to design toxicity studies using site soil and vegetation to ensure the land is safe for the intended future use. In addition, the same methodologies (whether TOE analysis, or toxicity studies) should be applied to samples from the Umatilla River both near to, and distal from, the UMCDF.

[2] TRV stands for toxicity reference value.
[3] These compounds are 2,3,7,8-Tetrachlorodibenzo-p-dioxin, 2,3,7,8-Tetrachlorodibenzofuran, 3,4,5,3',4'-Pentachlorobiphenyl, 1,2,3,4,7,8,9-Heptachlorodibenzofuran, 1,2,3,4,6,7,8-Heptachlorodibenzofuran.

2 Introduction

2.1 Document Organization

The risk assessment process applied in this study relies on a large quantity of diverse and complex information. Figures 2-1 and 2-2 depict the general organization of information for both the human health and ecological risk assessment processes, respectively. The section numbers indicated in each figure refer to the locations in this document where the individual model components are described. These figures will be repeated periodically throughout the document to help remind the reader how the information in each section of this document fits into the full risk process.

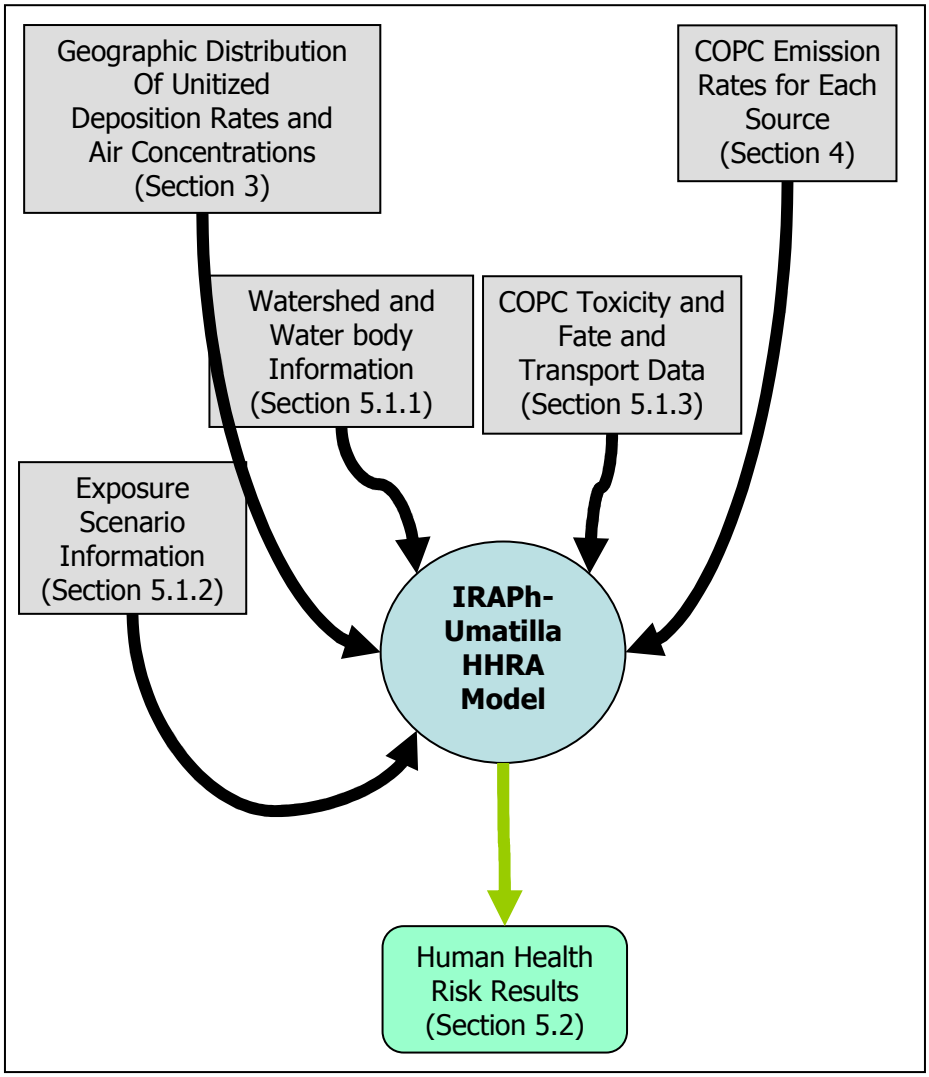


Figure 2-1: Information necessary to complete the Umatilla HHRA using the IRAP-h software developed (Lakes Environmental, 2008). Sections within this document that describe the details of the input data and results are indicated.

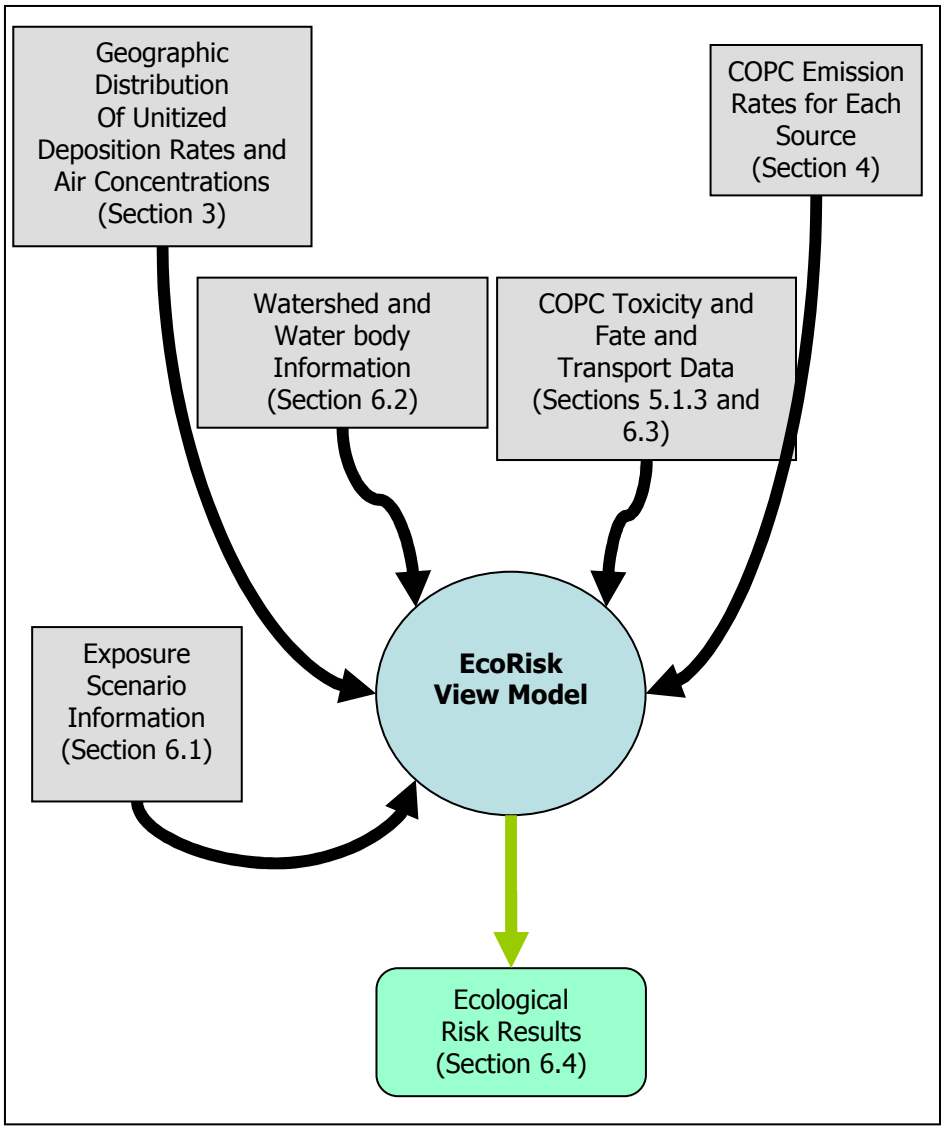


Figure 2-2: Information necessary to complete the Umatilla ERA using EcoRisk View. Sections with this document that describe the details of the input data and results are indicated.

2.2 History of the Umatilla Chemical Depot

NOTE: *The information presented in this section has been extracted from the 2004 RWAP (DEQ, 2004). This information has been reproduced here to provide a stand-alone document.*

The Umatilla Chemical Depot (UMCD) is located in northeast Oregon. The northern boundary of the UMCD is 5 km south of the Columbia River, which forms the border between Washington State and Oregon State. The UMCD is comprised of 19,729 acres of which approximately 17,000 acres is government owned and the remainder is private lands which have restricted easements (U.S. Army 1996). During its now 60-year history, The UMCD has supported multiple war efforts, including the Korean Conflict,

Vietnam, Grenada, Panama, Operation Desert Shield, and Operation Desert Storm. Besides its conventional ammunition and general supply missions, the depot received a new mission in 1962 – receiving and storing chemical ammunition. Between 1962 and 1969, the depot received various types of ammunition with the chemical nerve agents VX and GB, and the mustard blister agent HD (called mustard gas). A list of the chemical weapons stockpiled at the UMCD by 2000 is listed in Table 2-1.

Table 2-1: Chemical Weapons Stockpile at the Start of Weapons

Munitions	Agent	UMCDF Stockpile (Number of Munitions)
155mm projectile, M121A1	GB	47,406
155mm projectile, M121A1	VX	32,313
8-inch projectile, M426	GB	14,246
8-in projectile, M426	VX	3,752
M55 rocket	GB	91,375
M55 rocket	VX	14,513
M56 rocket warhead	GB	67
M56 rocket warhead	VX	6
M23 land mine	VX	11,685
MC-1 bomb (750 pounds)	GB	2,418
MK-94 bomb (500 pounds)	GB	27
Spray tanks	VX	156
Ton container	HD	2,635
Ton container	GB	4
Ton container	VX	1

Source: 2004 Risk Assessment Work Plan

In the mid-1980s, Congress directed the Army to dispose of the nation's aging chemical weapons stockpile. In 1988 the UMCD was placed on the Department of Defense Base Realignment and Closure list to review the future of the facility. It was decided that the base would be realigned and remain open until the chemical stockpile at the facility was destroyed. On April 25, 1997, the United States Senate ratified the Chemical Weapons Convention, an international treaty mandating stockpile destruction. In June 1997, construction started on the Umatilla Chemical Agent Disposal Facility (UMCDF) – the facility that would destroy the chemical ammunition stored at the UMCD. Construction was substantially complete in August 2001 and weapons destruction began 2004. The mission to destroy the UMCD stockpile of chemical weapons is scheduled to be complete by late 2010. Subsequent decontamination, decommissioning, and closure will last till approximately 2013. The Department of Defense Base Realignment and Closure law of 2005 has the UMCD scheduled to be closed after the incineration facility has completed its mission.

The CTUIR have an ancient relationship with the lands and resources throughout the Columbia Plateau, including within the UMCD, as documented by the extensive archaeological record, traditional stories, and oral histories. Usual and accustomed fishing sites, villages and camps, religious, funerary and other spiritual sites, plant gathering areas, grazing, and other sites are known to exist on, or near in this area. For

this reason, the resources on the UMCD must be protected and preserved in a manner that meets the United States (US) Trust responsibility to the CTUIR which was established in the Treaty of 1855. The US government must protect the interests of the CTUIR by ensuring that lands, water, soil, air, biological, and cultural resources are clean and safe to use. The US government must also ensure to the CTUIR that, after clean-up, human health is not adversely affected from chemical and physical impacts that are related to operations or management of the UMCD site. It is for the above mentioned reasons that the CTUIR has undertaken the risk assessment efforts outlined in this report.

2.3 Site Setting for UMCD

NOTE: *The information presented in this section has been extracted from the 2004 RWAP (DEQ, 2004). This information has been reproduced here to provide a stand-alone document.*

2.3.1 Location and Topography

The UMCD is located in northeastern Oregon and straddles the boundary of Umatilla and Morrow Counties. The northern boundary of the UMCD is 5 kilometers (3 miles) south of the Columbia River, which forms the border with Washington. The UMCD encompasses 7,980 hectares (19,729 acres), of which 6,880 hectares (17,000 acres) is government-owned, with the remainder consisting of restrictive easements on private property (U.S. Army, 1996). The easements serve as a buffer for UMCD activities. Owners retain the right to farm their property and graze livestock, but the easement allows the United States Government to prohibit human habitation and structures.

The 6,332-hectare (15,650-acre) Umatilla Indian Reservation is located approximately 60 kilometers (37 miles) southeast of the UMCD, and the 145,000-hectare (358,300-acre) United States Department of Energy (DOE) Hanford site is immediately northwest of Richland, Washington.

The UMCD lies within a level to gently rolling plain that slopes generally to the northwest toward the Columbia River (Dames & Moore 1993). The landscape is dominated by two distinct features: parallel, lacustrine-deposited dune lines and Coyote Coulee. The dune lines are oriented along a north 69º east axis with a crest-to-crest interval ranging from approximately 60 meters to 300 meters (200 feet to 1,000 feet). Interdunal relief varies from 1.5 meters to 9 meters (5 feet to 30 feet), depending on the configuration of the plain on which the dunes were deposited. Winds have been instrumental in reshaping the surface in recent times, streamlining and rounding the dunes.

The second prominent surface feature, Coyote Coulee, is a valley that cuts across the facility along a north 30º east axis (Dames & Moore 1993). The western edge of Coyote Coulee has a 5% to 10% slope. The eastern edge is an escarpment that rises approximately 18 meters (60 feet) at a 30% to 45% slope. The coulee appears to be a large relict sand wave. Its exceptional size is likely due to extraordinary river discharge during historical catastrophic floods.

2.3.2 Climate

The UMCD has a moderate, semi-arid climate within the rain shadow of the Cascade Mountains (Dames & Moore 1993). From 1961 through 1990, at Hermiston, 6 kilometers (4 miles) east of the UMCD, the mean annual temperature was 11.4 ºC (52.5 ºF). The mean monthly temperatures varied from 0.6 ºC (33.1 ºF) in January to 22.7 ºC (72.9 ºF) in July. Precipitation at Hermiston is relatively low, with an annual mean of 22.9 centimeters (9 inches). Approximately 10% of the annual precipitation falls during summer. From November through March, some of the precipitation falls as snow. The area receives an average of 21.6 centimeters (8.5 inches) of snow annually (Oregon Climate Center 2003).

The Columbia River Valley is the major ingress point for the Pacific cyclonic weather systems through the Coastal and Cascade mountain ranges west of the facility (Dames & Moore 1993). Its location ensures that the site experiences nearly continuous winds. Prevailing winds are from the southwest (Figure 2-3). However, morning winds from the Blue Mountains to the southeast are common. The mean annual wind velocity, calculated from the on-post wind monitoring station between 1995 and 2000 is 14.0 kilometers per hour (kph). Wind velocity and direction are subject to rapid change.

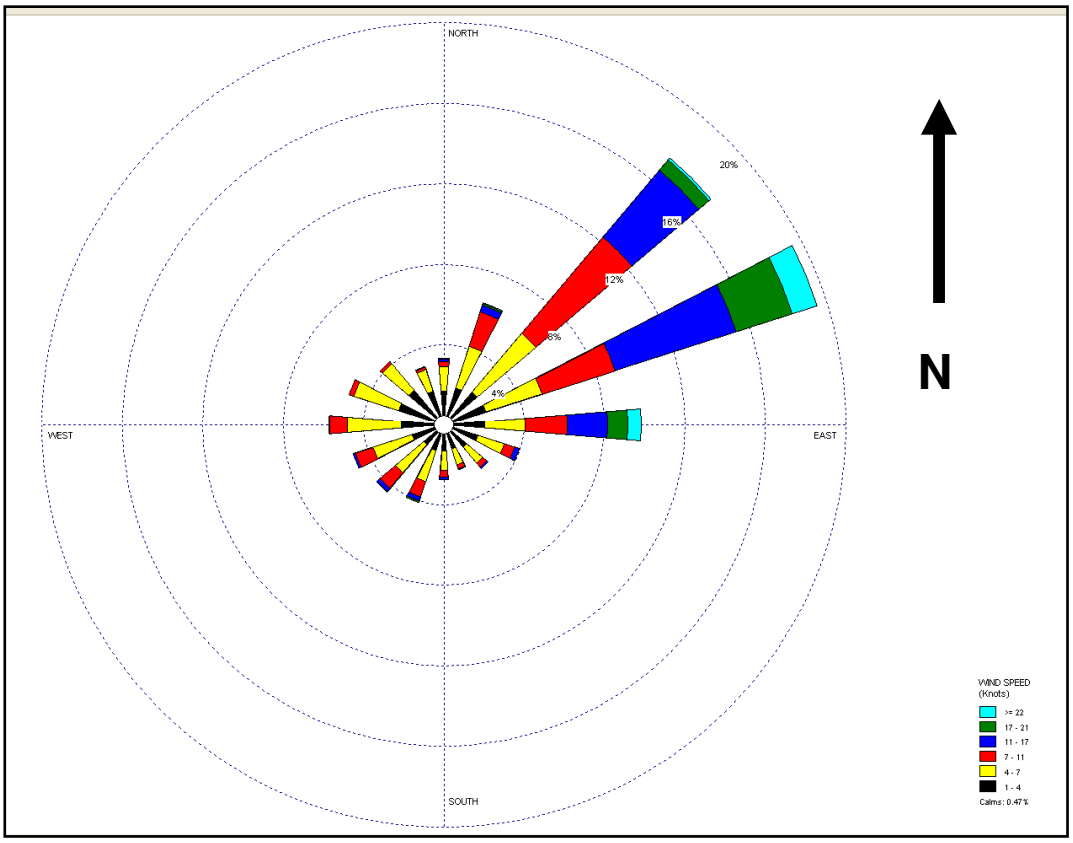


Figure 2-3: Average wind direction and velocity.

2.3.3 Geology and Soils

The Columbia River basin is a basaltic plain overlain by sand, gravel, and silt deposited during the Pleistocene Missoula floods (Dames & Moore 1993).

The three soil series identified at the UMCD are Burbank loamy fine sand, Quincy fine sand, and Quincy loamy fine sand (Dames & Moore 1993). All series are of eolian origin (deposited by the wind), are unconsolidated, and therefore are susceptible to severe wind erosion when vegetative cover is removed. Burbank loamy fine sand is very deep, excessively drained soil formed in gravelly deposits and wind-worked material. Organic matter in the upper layer is low. Below this, a dense, very cobbley and gravelly layer restricts root penetration. Permeability is rapid throughout the column, and the water-holding capacity is low. Soil pH in the upper layer is near neutral (6.4 to 7.8), but beginning in the gravel layer, the pH increases to 8.4.

Quincy fine sand is very deep, excessively drained soil formed in mixed sand. Permeability is rapid, and water-holding capacity is low (Dames & Moore 1993). Effective rooting depth is greater than 1.5 meters (5 feet). However, 80% of roots are found in the upper 30.5 centimeters (12 inches). Soil pH gradually increases with depth from near neutral to 8.5 at 1.5 meters (5 feet). Organic matter content is low.

Quincy loamy fine sand is very similar to the Quincy fine sand but occurs on slightly flatter slopes and has slightly more silt and clay in the upper layer, resulting in a higher water-holding capacity (Dames & Moore 1993).

2.3.4 Hydrology

The UMCD area lies entirely within the Columbia River basin, the principal watershed near the UMCD. The mid-Columbia River flows west 5.3 kilometers (3.3 miles) from the northern UMCD boundary. McNary Dam, northeast of the UMCD, regulates the flow of the Columbia River near the UMCD. Additional dams are located upstream and downstream of McNary Dam. Snowmelt in the mountainous watershed results in high flows in late spring and early summer, while autumn and winter months are characterized by low flow. The average discharge of the Columbia River at McNary Dam is 3,500 cubic meters per second (m^3/s) (126,400 cubic feet per second [ft^3/s]). There are numerous pumping stations located along the Columbia River for irrigation (U.S. Army, 1996).

The surface area of the Columbia River that falls within a 50-kilometer radius of the UMCDF is 150 square kilometers (km^2), and the average water column depth is 10 meters (Ecology and Environment, 1997). The surface area of the Columbia River watershed that lies within the assessment area is 4,400 km^2, and 5% is assumed to be impervious to rainfall (Ecology and Environment, 1997). The surface area of the Umatilla River that lies within the assessment area is 9.8 km^2, and the average water column depth is 0.5 meter (Ecology and Environment, 1997). The surface area of the Umatilla River watershed is 2,700 km^2, and 5% is assumed to be impervious to rainfall (Ecology and Environment, 1997).

Within the Columbia River basin, the UMCD area is within the drainage area of the Umatilla River, Middle Columbia–Lake Wallula, and Willow Creek sub-basins (or watersheds). The Umatilla River is located approximately 10 kilometers (6.25 miles) east of the UMCD. This river discharges to the Columbia River (U.S. Army, 1996). The Umatilla River is regulated by dams and reservoirs and is used for irrigation of agricultural land within the river basin. The average annual flow of the Umatilla River near Umatilla, Oregon, from 1990 through 2000 was approximately 16 m^3/s (568 ft^3/s) (United States Geological Survey [USGS] 2003a). The minimum mean monthly flow, which typically occurs in August or September, was 0.9 m^3/s (33 ft^3/s) from 1990 through 2000 (USGS 2003b). Butter Creek is an intermittent tributary of the Umatilla River that converges with the river approximately 2 miles southeast of the UMCD (U.S. Army, 1996). The Middle Columbia–Lake Wallula watershed encompasses acreage in Klickitat, Walla Walla, Yakima, and Benton Counties in Washington, and Gilliam, Morrow, and Umatilla Counties in Oregon. The Willow Creek watershed includes portions of Gilliam and Morrow Counties in Oregon. Willow Creek, with its headwaters upstream of Heppner, Oregon, flows north until its confluence with the mid-Columbia River in Boardman, Oregon.

Within the boundary of the UMCD, surface water runoff generally flows north to northwest toward the Columbia River (U.S. Army, 1996). Except for Coyote Coulee, which crosses the UMCD from the northeast to the southwest, no well-defined drainage system exists at the UMCD. Much of the precipitation percolates into the groundwater, where it eventually flows to a structural dip (bench) of basalt and then to the northwest to the Columbia River.

The north-central portion of the UMCD is situated on a subdued topographic high (U.S. Army, 1996). The terrain slopes gently away from this high to the southeast in the eastern portion of the UMCD, to the south in the central portion, and to the northwest in the western portion. Runoff from the western portion of the site tends to flow toward the West Extension Irrigation Canal, while runoff along the eastern portion is collected by a shallow, elongated depression that parallels the Union Pacific Railroad and Interstate 84. Irrigation canals enclose the eastern, western, and northern sides of the UMCD in a horseshoe-shaped pattern. Water is diverted from the Umatilla River into the canals for irrigation of crops.

Beneficial uses of surface waters within a 50-kilometer radius of the UMCD include irrigation, public water supply, industrial water supply, livestock watering, salmon and steelhead fish passage, salmonid fish spawning and rearing, resident fish and aquatic life habitat, wildlife habitat, hunting, fishing, boating, and hydropower. Irrigation is the main use for stream water withdrawal. The City of Hermiston draws water from the Columbia River above McNary Dam for drinking water use. The City of Boardman obtains drinking water from a subsurface water collection system located near the banks of the Columbia River. River and rain water enter the collection system via the subsurface soils.

2.3.5 Land Use

The UMCD is slated for closure after the completion of the chemical agent stockpile disposal program. A Local Reuse Authority (LRA) was established to make decisions regarding the beneficial use of the UMCD property upon closure of the base. The LRA comprises 12 members, two each from Umatilla County, the Port of Umatilla, Morrow County, and the Port of Morrow, and four representatives from CTUIR. In 1993, the LRA commissioned a study by Benkendorf Associates Corporation (BAC) titled *Comprehensive Plan* (BAC et al. 1993a) (a supplemental *Technical Report* [BAC et al. 1993b] was also produced). The *Comprehensive Plan* provides part of the planning framework for the future use scenarios in this RAWP.

Current and potential future land uses were identified by reviewing land use land classification maps, topographic maps, and aerial photographs; conducting a site visit; and consulting with representatives of private and government organizations that routinely collect and evaluate land use data.. Current and reasonable potential future land uses, when combined with the air dispersion modeling results, will form the basis for identifying which exposure scenarios and locations will be evaluated in the PostRA. Reasonable potential future land uses are important to identify in addition to current land uses because the PostRA will estimate risk from exposure to UMCDF emissions constituents for a time period exceeding the operation duration of the facility.

Most of the land surrounding the UMCD is used in irrigated agriculture and, to a lesser extent, livestock grazing. Land north, west, and south of the UMCD is zoned Exclusive Farmland Use (EFU) by Umatilla and Morrow Counties (BAC et al. 1993b; U.S. Army, 1996; Umatilla County Planning Department 1987; Morrow County 1986). EFU zoning mandates a minimum parcel size of 65 hectares (160 acres) (BAC et al. 1993b). Southeast of the UMCD boundary and south of Hermiston, the land is within Umatilla County's Industrial Plan Designation, which is dedicated to promoting industrial land uses (Umatilla County Planning Department 1987). Land southeast of the UMCD is also included in the Agribusiness Plan Designation and Commercial Plan Designation (Umatilla County Planning Department 1987). Cities and urban growth areas are mentioned above and are often surrounded by rural residential plan designations (Umatilla County Planning Department 1987; Morrow County 1986). Since the last revision of the *Umatilla County Comprehensive Plan* in 1987, changes to the zoning of property surrounding the UMCD within Umatilla County include the change in minimum lot size of 40 acres to 160 acres for land zoned for EFU east of the UMCD. There have been little or no changes to the zoning of properties surrounding the UMCD within Morrow County since the adoption of the Morrow County *Comprehensive Land Use Plan* in 1986.

State-owned land parcels lie south of the UMCD and to the north in Washington, and BLM-owned lands lie northeast, east, and west of the UMCD. Other land use designations within a 50-kilometer radius of the UMCD include the Irrigon Wildlife Area located 5 kilometers (3.1 miles) north of the UMCD, the Cold Springs National Wildlife Refuge located 11 kilometers (6.8 miles) to the east, the Wanaket Wildlife Area located 12 kilometers (7.4 miles) to the northeast, the Umatilla National Wildlife Refuge located

15 kilometers (9.3 miles) to the west, and the McNary National Wildlife Refuge and McNary Dam located 12 kilometers (7.4 miles) northeast of the UMCD. These areas are important for recreational uses (hunting, boating, and fishing), as well as for wildlife habitat.

Reasonable potential future land use is likely to continue as agricultural for most of the land surrounding the UMCD. Agricultural uses may include raising crops for human and animal consumption, livestock grazing, feedlots, and storing and processing agricultural goods. The EFU designation prohibits the development of subdivisions and urban growth. This designation is part of a statewide initiative to preserve valuable farmlands, which are a significant part of the economy for Umatilla and Morrow Counties (Umatilla County Planning Department 1987).

Much of the undeveloped land within the UMCD boundary is suitable and likely would be used for agricultural activities and/or livestock grazing if the UMCD were demilitarized and returned to public use (BAC et al. 1993b).

Other potential future non-agricultural uses of land currently for administrative use in the southern portion of the UMCD and along the southern boundary include retail and commercial, such as service stations, motels, and restaurants; recreation, such as recreational vehicle (RV) parks; and light to heavy industrial (BAC et al. 1993a). Other miscellaneous land uses for the UMCD may include interpretive and educational centers, land banking, roadway construction, and research (BAC et al. 1993a). The *Umatilla Army Depot Comprehensive Plan* (BAC et al. 1993a) also suggests that Coyote Coulee and the land west of the Chemical Agent Storage Area are unsuitable for commercial farmland use and may be set aside as nature reserves.

2.3.6 Demographics

The closest population center, Irrigon, Oregon, is located approximately 6 kilometers (4 miles) northwest of the UMCD Chemical Agent Storage Area, and has 1,700 residents (United States Census Bureau, 2001). The closest residence is 4 kilometers (2.5 miles) east of the UMCD fence line (U.S. Army, 1996). Population centers near the UMCD are listed in Table 2-2.

Table 2-2: Populations of Towns and Cities Surrounding UMCD

Town or City	Population	Distance from Chemical Agent Storage Area to Closest Urban Boundary	Direction from UMCD
Irrigon, Oregon	1,700	6 kilometers (4 miles)	Northwest
Hermiston, Oregon	13,000	6 kilometres (4 miles)	East
Umatilla, Oregon	5,000	9 kilometers (6 miles)	Northeast
Boardman, Oregon	2,800	24 kilometers (15 miles)	West
Pendleton, Oregon	16,400	44 kilometers (28 miles)	Southeast
Tri-Cities, Washington	125,400	56 kilometers (35 miles)	North

Source: United States Census Bureau 2001

The main ethnicity of the populations residing in Morrow and Umatilla Counties in Oregon and Benton and Franklin Counties in Washington is Caucasian. The secondary ethnicity is Hispanic or Latino (see Table 2-3).

Tabl2 2-3: Ethnicity Percentages for Residents Surrounding UMCD

Ethnicity	Morrow County, Oregon	Umatilla County, Oregon	Benton County, Washington	Franklin County, Washington
Caucasian	72	77.5	81.7	47.6
Native American	1.4	3.4	0.8	0.7
Hispanic or Latino	24.4	16.1	12.5	46.7

Source: United States Census Bureau 2001.

Native American populations in the vicinity of the UMCD include CTUIR in Oregon and the Yakama Indian Nation in Washington (U.S. Army, 1996). There are more than 2,300 registered members of CTUIR. Approximately two-thirds of the registered members live on the reservation 62 kilometers (40 miles) southeast of the UMCD, along with 1,400 non-Indian residents (CTUIR, 2003). The Umatilla Reservation is 172,000 acres. CTUIR had entered into a treaty with the United States Government in 1855, when 2.6 million hectares (6.4 million acres) was ceded by the tribes (CTUIR, 1995). The 2.6-million-hectare (6.4-million-acre) ceded area includes the UMCD. These ceded lands include public areas to which Native Americans continue to have treaty-mandated rights for hunting, fishing, herding, gathering, and ceremonial activities.

There is a large transient recreational population that visits the Umatilla area each year for fishing, boating, water skiing, camping, and hunting along the Columbia River (U.S. Army, 1996). Also, large numbers of Spanish-speaking migrant farm workers locate in Oregon and Washington each year for seasonal employment. The number of migrant workers in the UMCD vicinity fluctuates with the farming season. In Morrow and Umatilla Counties, there are approximately 90 and 1,000 migrant workers per year, respectively. These values are approximations based on the difference of annual average number of agricultural workers and the peak number of agricultural workers. It is assumed that the difference is due to an influx of migrant workers. It is also assumed that these migrant workers do not bring household members. The latest estimates for Washington counties are from 1997. In 1997, approximately 6,400 and 5,400 workers were employed in agriculture in Benton and Franklin Counties, respectively. Most agricultural jobs in these counties are highly seasonal and often involve import of migrant farm workers (Washington State Employment Security 2001). Therefore, it may be assumed that most of these workers were migrant.

Other significant transient populations include visitors to the Umatilla County Fair in Hermiston in August each year, and approximately 50,000 people at the annual Pendleton Roundup in mid-September (U.S. Army, 1996). Transient populations also visit the Wild Horse Resort, located approximately 5 miles east of Pendleton, which is operated by CTUIR and includes a casino, restaurant, hotel, RV park, and golf course.

2.4 UMCDF Operations

NOTE: *The information presented in this section has been extracted from the 2004 RWAP (DEQ, 2004). This information has been reproduced here to provide a stand-alone document.*

The UMCDF is a multi-furnace incineration facility designed to dispose of the stockpile of chemical warfare munitions stored at the UMCD. The UMCDF is owned by the United States Department of the Army and is contractor-operated by URS. The UMCDF consists of several buildings, each providing a specific function for process support, maintenance, utilities, munitions handling and disassembly, agent destruction, and management of residual waste (Figure 2-4).

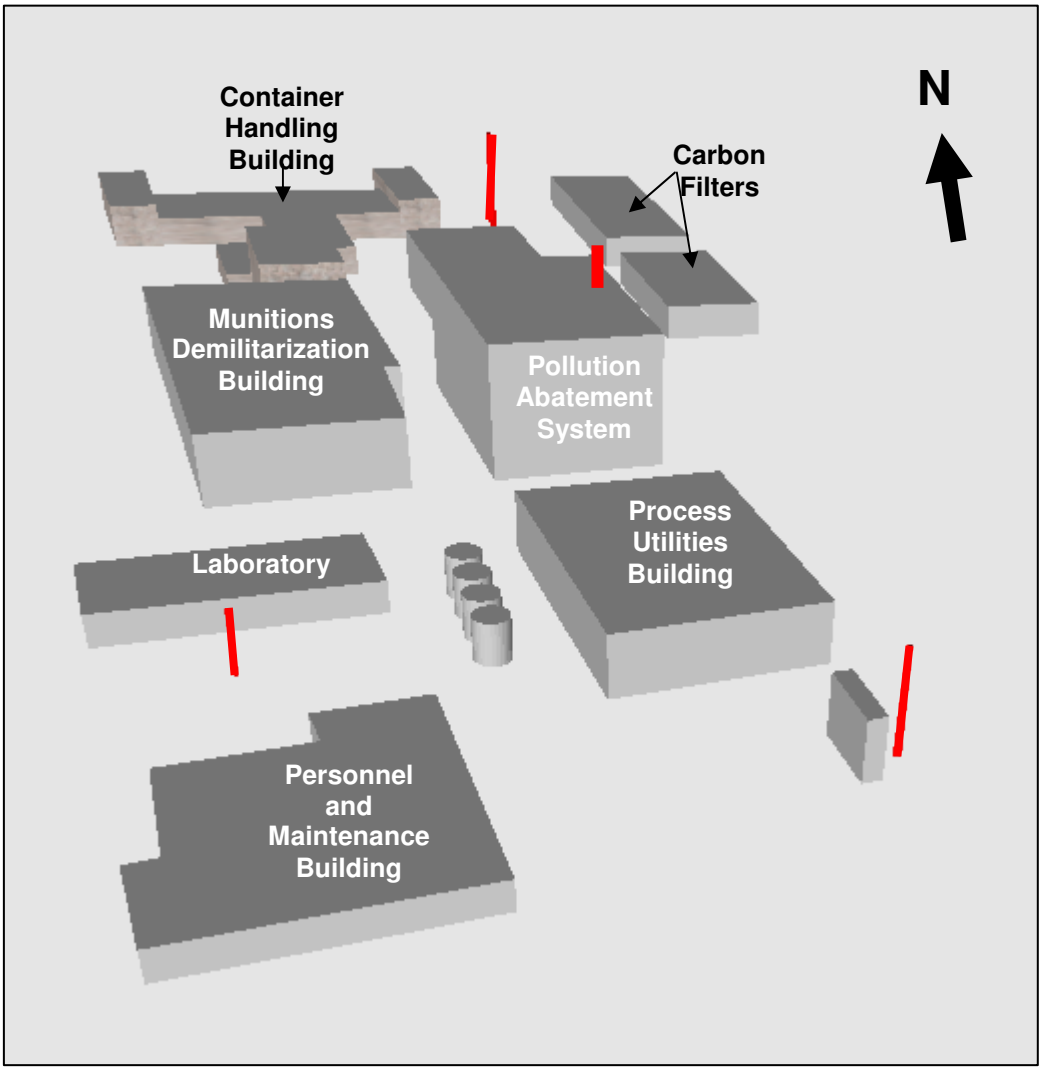


Figure 2-4: General site layout for the UMCDF (to scale). Red lines indicate the four point sources while the gray boxes indicate site buildings.

2.4.1 Umatilla Chemical Agent Disposal Facility (UMCDF)

The facility within the fenced compound comprises a Container Handling Building (CHB); a Munitions Demilitarization Building (MDB), which houses the four furnaces and related equipment; a Process and Utilities Building; a Laboratory; and a Personnel Maintenance Complex and Entry Control Facility located just inside the perimeter fence. A Process Support Building for facility operations is located outside the fenced compound. This subsection describes the purpose of each building and the process that occurs in each:

- The Container Handling Building (CHB) is the entry point for munitions being transported to the UMCDF from the storage igloos. Except for spray tanks (which have their own transport containers), all munitions and containers are moved from the igloos and placed in a sealed transport container called an Enhanced On-Site Container (EONC). EONCs are double-wall cylindrical steel containers designed to resist impact, puncture, and fire. EONCs are transported to the CHB by truck and placed on roller conveyors for movement into the Munitions Demilitarization Building (MDB)
- The Munitions Demilitarization Building (MDB) houses four major functional areas: (1) the unpack area, where munitions are removed from the EONCs and placed on processing lines; (2) the munitions processing area, where munitions are dismantled as necessary, drained of liquid chemical agent, and prepared for incineration and decontamination; (3) the four incinerators; and (4) miscellaneous process control, personnel, and maintenance areas, including the plant control room;
- The Process and Utilities Building includes systems to support processing operations, such as the Brine Reduction Area (BRA), Residue Handling Area (RHA), boiler room, bulk chemical storage area, and central decontamination supply tank. The BRA and its associated pollution abatement system (PAS) include evaporators and drum dryers used to dewater the brine solution collected from the furnace PAS operations. The RHA is an area dedicated for temporary storage and containerization of slag and ash from the furnaces, and salts from the BRA;
- The Laboratory houses the on-site sample preparation and analytical laboratory areas used for monitoring processes and emissions. The Laboratory has a ventilation system designed to keep the laboratory areas at a negative pressure compared to the ambient atmosphere. Exhaust air from the Laboratory is vented through a carbon filter system and is continuously monitored for the presence of chemical agents;
- The Personnel Maintenance Complex is located just inside the security fence, and includes the lunchroom, the radio room, the medical area, locker rooms and showers, the repair area, and the mechanical/electrical support equipment areas;
- The Entry Control Facility at the security fence houses security personnel who screen, monitor, and control personnel and vehicular access into the secured area; and
- The Process Support Building is located outside the UMCDF security fence, and houses administrative and support staff.

2.4.2 Wastes to be Treated at the UMCDF

The stockpile at the UMCDF includes munitions the nerve agents GB (Sarin) and VX, and bulk containers with the blister agent HD (mustard). Nerve agents belong to a chemical group known as organophosphates that effect the transmission of nerve impulses in the nervous system. Nerve agents are highly toxic and have rapid effects when absorbed through the skin or inhaled. In a pure state, GB and VX are odorless and colorless liquids. GB evaporates easily and is mainly an inhalation hazard, while VX has a much lower vapor pressure and is mainly a contact hazard. Mustard agent is classified as a blister agent because of the skin damage it causes with direct contact. Mustard agent can also cause severe damage to the eyes, respiratory system, and internal organs. Sixty-three percent of the stockpile at the UMCD (by weight) consists of mustard agent stored in bulk containers.

In addition to the munitions (and their associated explosives and propellants) and containers, the UMCDF also processes chemical-agent-related wastes that have been generated and stored by the UMCD over the many years of maintaining the chemical weapons stockpile. In addition, operation of the incinerators at the UMCDF generates secondary waste that must be treated on-site. These wastes include everything from used gas mask filters to laboratory glassware. The operational duration used for risk assessment purposes will include the time necessary for the UMCDF to process all the chemical-agent-related wastes stored at the UMCD. Table 2-4 proves an estimate of the secondary wastes that will be processed over the lifetime of the UMCDF.

Table 2-4: Secondary Waste Estimates Used in the Risk Analysis

Waste Stream	Quantity for Furnace Processing (lbs)	Fate Stated in Waste Analysis Plan	Campaign Generated
Misc Agent Contaminated Liquid (lbs)	9372	LIC	GB, VX, HD
ECR Maint. Wastes (lbs)	9586	DFS	GB, VX
ACS/AQS/SDS Maint. Waste (lbs)	10000	MPF	GB, VX, HD
Noncombustible MDB Maint. Waste (lbs)	57639	MPF	GB, VX, HD
Combustible MDB Maint. Waste (lbs)	81579	MPF	GB, VX, HD
Ventilation System Filters (lbs)	27772	MPF	GB, VX, HD
Spent Carbon (lbs)	706035	DFS/CMS	GB, VX, HD
PPE Carbon Filter Canisters (lbs)	0.00 [a]	MPF	GB, VX, HD
Lab Solid Waste (lbs)	19606	MPF	GB, VX, HD
Misc. Agent Contaminated Dunnage (lbs)	15223	Off-Site/MPF	GB, VX
DPE Suits (lbs)	257372	MPF	GB, VX, HD
TAP Gear (lbs)	44820	MPF	GB, VX, HD

[a] Included in Spent Carbon Estimate.

2.4.3 UMCDF Incinerator Systems

Each of the four incinerator systems at the UMCDF is designed for a specific treatment function. The two liquid incinerators (LICs) are used to destroy the liquid agent and

spent decontamination liquids generated during decontamination of personnel and equipment. The DFS is used to burn explosives and propellant materials and residual agent. The MPF is used to decontaminate projectile and bulk munitions bodies by evaporating and burning the residual agent. Packing materials and other minor waste materials are sent to the DFS or MPF, as appropriate, for incineration or decontamination.

2.4.3.1 Liquid Incinerators (LICs)

The UMCDF has two identical LICs (Figure 2-5) designed to dispose of agent and spent decontamination solution (SDS) through high-temperature incineration. Each LIC consists of a primary and secondary furnace chamber, primary and secondary combustion air blowers, secondary fuel supplies, and a PAS.

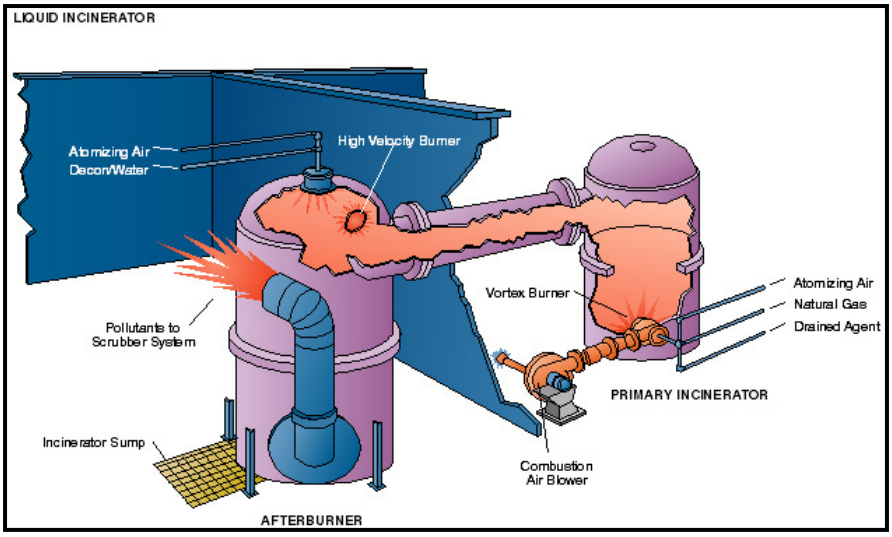


Figure 2-5: Liquid incinerator system.

The LIC primary chamber is used for burning the chemical warfare agent drained from rockets, projectiles, mines, and bulk containers. Liquid agent from munitions draining is first collected in a tank and then pumped into the incinerator, where it is mixed with combustion air and "sprayed" into the incinerator through injection nozzles. Fuel gas is used as necessary to ensure a stable flame pattern within the primary chamber and to keep the primary chamber temperature within permitted operating limits (approximately 2,500 ˚F to 2,700˚F [982 ˚C to 1,482 ˚C]). Furnace draft is supplied by the LIC induced-draft (ID) fan, located at the end of the LIC. Flue gases from the LIC primary chamber pass through a refractory-lined crossover duct to the LIC secondary chamber, which serves as an afterburner to the primary chamber to further treat any residual organics. Combustion air blowers provide excess air to the primary and secondary chambers to ensure complete combustion of the fuel gas and complete destruction of the agent. The temperature of the secondary chamber is kept at approximately 2,000 ˚F (1,093 ˚C).

2.4.3.2 Deactivation Furnace System (DFS)

The DFS (Figure 2-6) is used to incinerate residual chemical agent and explosives and propellants (termed energetics) from munitions. The DFS is a rotary kiln (5 feet in diameter and approximately 32 feet long) that slowly rotates to move wastes through the

barrel of the kiln. Munitions pieces are fed through two chutes leading into the DFS from the ECR. Each chute has an upper gate and lower gate that are opened in sequence so that the ECR is not exposed directly to the heat from the furnace. Munitions pieces are dropped onto the upper gate, the upper gate is opened to allow the pieces to drop onto the lower gate, the upper gate is then closed, and the lower gate is opened, allowing the pieces to fall into the furnace.

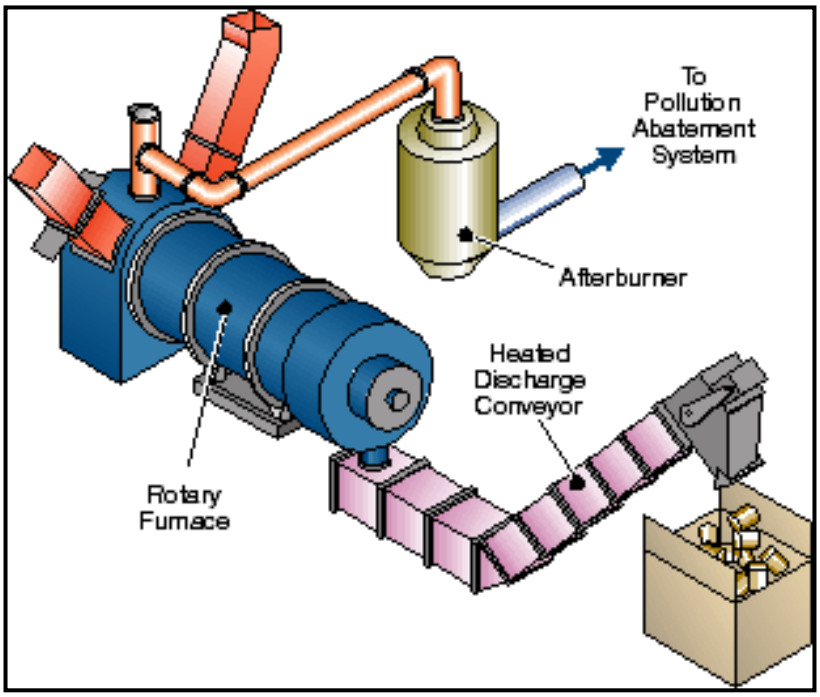


Figure 2-6: Deactivation Furnace System.

The pieces move through the kiln and remain separated with help from an internal spiral baffle, which looks like the edge of a screw. Material typically takes 7 minutes to 10 minutes to travel the length of the kiln. The burner at the discharge end of the kiln maintains a minimum temperature of approximately 1,100 ˚F (593 ˚C). At the discharge end of the kiln, the metal and ash residues drop onto a heated discharge conveyor (HDC), where they are heated to a temperature of at least 1,000 ˚F (538 ˚C) for at least 15 minutes to ensure complete decontamination. The hot ash residues are then discharged into waste bins that can be removed, emptied, and replaced.

Combustion gases from the kiln process flow through a cyclone, where the gases swirl to remove fiber glass pieces and other ash caught in the gases. The cyclone causes the waste particles to separate from the gas and drop into a collection hopper positioned below the cyclone. The ash is then packed into drums for disposal. After passing through the cyclone, the gases flow to a secondary combustion chamber (or afterburner) for further treatment to incinerate any remaining organic material (including chemical agent) or products of incomplete combustion (PICs). Temperatures in the afterburner are maintained at a minimum of approximately 2,150 ˚F (1,177 ˚C). The exhaust gases then flow to the PAS for removal of any remaining pollutants before leaving the stack.

2.4.3.3 Metal Pats Furnace (MPF)

The MPF (Figure 2-7) is used to thermally decontaminate drained projectiles, bomb casings, and other metal containers that have had all explosives components removed. The MPF also processes secondary wastes such as maintenance wastes and used protective suits. The MPF is a natural-gas-fired incinerator with three distinct burner zones connected by roller conveyors. Airlock chambers on both ends of the incinerator allow items to enter and leave the furnace without agent vapor escaping.

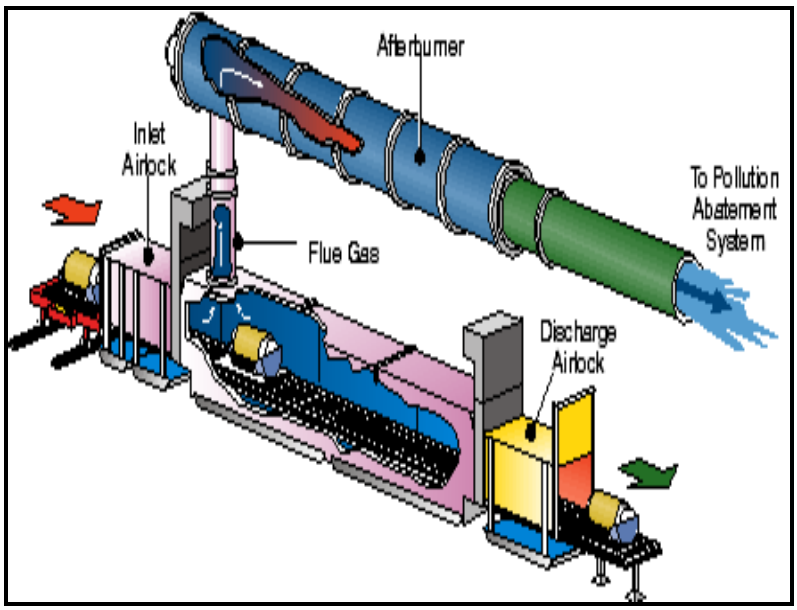


Figure 2-7: Metal Parts Furnace System.

Items are moved from the feed airlock into the first burner zone, where they are heated by gas-fired burners for a preset amount of time, which varies depending on the type of munitions being processed. Operating temperatures in Zone 1 vary from 1,450 ˚F to 1,600 ˚F (788 ˚C to 871 ˚C). After the heating in Zone 1 for the preset time, the roller conveyors advance the items into Zone 2, where the items are heated for an extended period of time at the same temperature as that in Zone 1. When the items move from Zone 1 to Zone 2, new items are introduced into Zone 1. After being heated in Zone 2, the wastes are advanced to Zone 3, where heating continues at high temperatures (up to 1,800 ˚F [982 ˚C], depending on the waste being processed) until all organics, including chemical agent, are destroyed.

When items complete the heating cycle in Zone 3, they are moved into the discharge airlock. The airlock door is shut to isolate the items from the high furnace temperatures. Air is then blown into the discharge airlock to begin cooling the items. Air coming out of the airlock is monitored to confirm that all agent is destroyed. If no agent is detected, the items can be transferred from the discharge airlock to the cool-down conveyor. If agent is detected, the conveyors reverse to return the items to the MPF for additional treatment.

Exhaust combustion gases from Zones 1, 2, and 3 flow to the MPF afterburner, where they are heated to approximately 2,000 ˚F (1,093 ˚C) to ensure complete destruction of

any residual organic compounds or PICs before the gases continue onward to the PAS. The UMCDF is required to continuously monitor numerous operating parameters whenever the MPF is processing hazardous waste. If operating parameters are not kept within the ranges specified in the UMCDF's permits, an AWFCO is triggered and feed to the furnace is stopped.

2.4.4 Incinerator Pollution Abatement Systems (PAS)

Each furnace system (LIC1, LIC2, the DFS, and the MPF) has its own PAS to cool and clean the exhaust gases before release to the atmosphere. Each PAS consists of five major components: a quench tower, venturi scrubber, packed bed scrubber tower, mist eliminator, and PAS carbon filter system (Figure 2-8). The exhaust gas stream is pulled, rather than blown, through the PAS with a multi-stage ID fan located after the carbon filter units. After the ID fan, the duct work carrying the exhaust gases from the various furnaces is merged and the gases are directed to a common emissions stack.

Because the gases exit the incinerators at temperatures of approximately 2,000 ˚F (1,093 ˚C), the first stage of the PAS is the quench tower, which cools the gases to approximately 180 ˚F (82 ˚C) (helping to prevent the formation of dioxin) and neutralizes the acids in the gases. The quench tower is approximately 45 feet high and 8 feet in diameter. The furnace flue gases enter near the bottom of the tower and flow up through a caustic mist created by multiple banks of spray nozzles. Exhaust gases and vapor exit the top of the quench tower into a venturi scrubber. Unevaporated liquid falls to the bottom of the tower, where it drains by gravity into the bottom of the scrubber tower sumps.

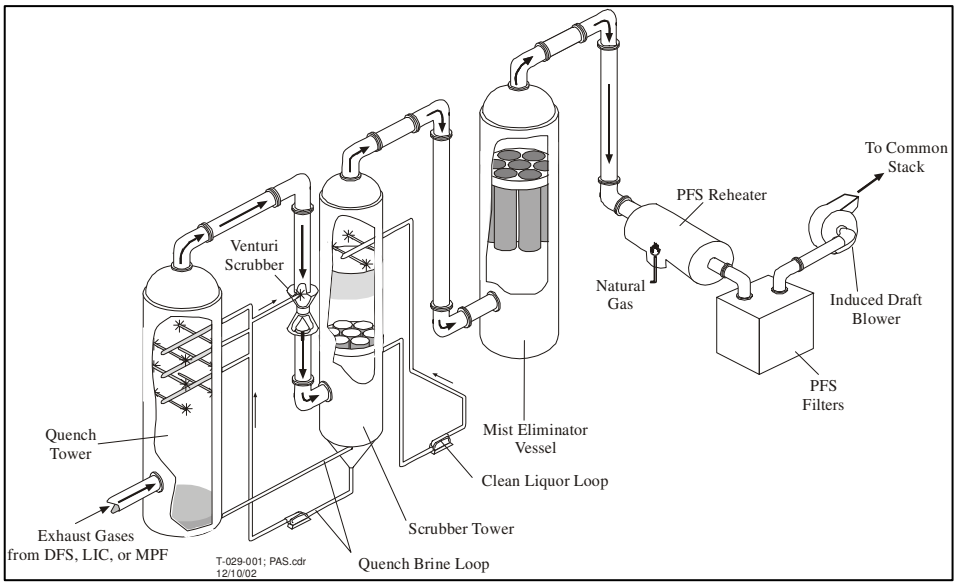


Figure 2-8: Pollution Abatement System.

The venturi scrubber is used to remove heavier particles caught in the exhaust gas (99% efficiency for particles 0.5 micron in size or larger). The venturi scrubber speeds up the gas as it is forced through the narrow throat. The high velocity, combined with a 90º

change in direction, causes heavier particles to impact the bottom of the venturi, where they are captured by liquid brine. The brine solution containing the particles drains into the bottom of the scrubber tower sumps, and the gas moves on to the scrubber tower.

The scrubber tower is designed to remove the rest of the acids and further cool the exhaust gases. The scrubber tower has several internal components: the scrubber sump, the chimney, and the packed bed. The scrubber sump collects and stores brine from the quench tower and the venturi scrubber, and overflow from the chimney sump. Exhaust gas enters the scrubber tower and is drawn through the chimney portion of the tower, separating the fresh brine being sprayed from the top of the scrubber tower from the spent brine collected in the scrubber sump. The exhaust gases proceed upward in the scrubber tower and enter the packed bed portion. The packed bed is made up of hundreds of metallic pall rings resting on a support plate approximately halfway up in the scrubber tower. Mixing of the exhaust and the fresh brine in the packed bed removes more of the acidic gases. The exhaust gases exit through the top of the scrubber tower and move through the mist eliminator.

The mist eliminator, or demister, is the next-to-last stage of the PAS "cleansing" process, and consists of a dome-top vessel with multiple vertically mounted filter elements called candles. The candles remove phosphoric acid (H_3PO_4), metal oxides, and other solid and liquid particulates from the gas stream. Trapped liquids and solids form droplets on the candles (like wax dripping down a burning candle) and flow to the sump at the bottom of the mist eliminator. Particles that are not dissolved in the liquid become embedded in the candles. The contaminated liquid collected in the mist eliminator is pumped to the scrubber tower sumps (the candles in the mist eliminator must be periodically replaced as they become clogged with particles).

The final stage of the flue gas scrubbing process is the PFS, which consists of a reheater that raises the exhaust gas temperature and reduces the humidity of the stream (excess water vapor reduces the efficiency of the carbon filter beds), and carbon filter units. The carbon filter units consist of a prefilter; high-efficiency particle filters; and two banks of activated carbon to remove remaining traces of chemical agent, organic vapors, or particulate matter from the exhaust gas. Exhaust gases then flow through the ID fan and out the common stack.

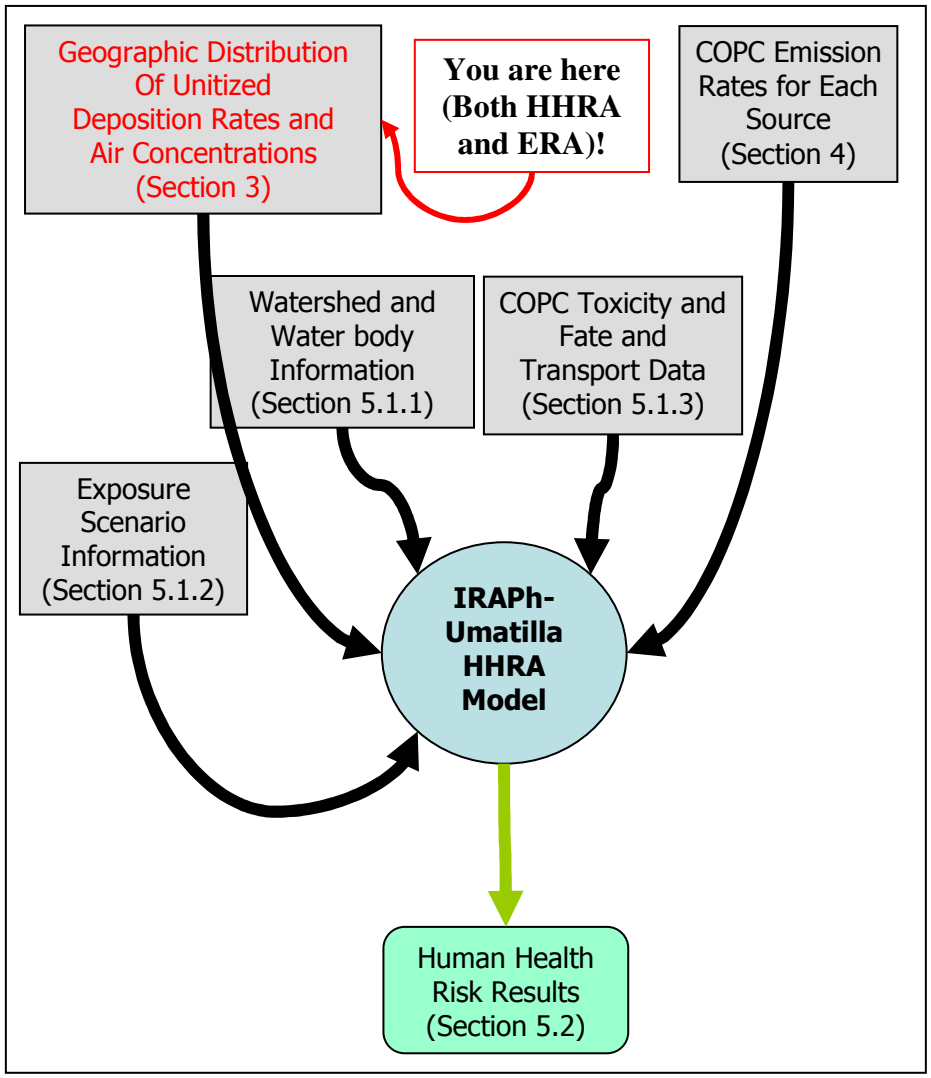
2.4.5 Brine Reduction Area (BRA)

The function of the BRA is to process brine from the water treatment system and brine solutions collected in the PAS scrubber tower sumps. From the PAS scrubber tower sumps, the brine is pumped and stored in brine surge tanks, where it is sampled and checked for the presence of chemical agent, metals, and organic compounds. After confirmation that the brine is free of any chemical agent, the brine is pumped to the brine evaporator, which removes a significant amount of water and prepares the brine for drying. This step can be bypassed if the density of the liquid is sufficiently high for direct processing. The brine is then sent to the drum dryers, which reduce the brine to a dried salt.

Steam is generated by steam boilers and piped to the evaporators and drum dryers. A drum dryer consists of two drums that rotate toward the center of the dryer. The brine solution is sprayed into the space between the drums. The steam flowing through the center of the drums heats them up and causes the brine to dry, which causes a film of dried salts to form on the outside of the drums. The dried material is scraped off the drums and deposited into a conveyor that transfers the dried salt into a container for eventual transfer to an off-site disposal facility.

As the water in the brine vaporizes, salt becomes entrained with the steam. The BRA PAS is used to remove these salt particles before discharging the exhaust gases and steam to the atmosphere. The BRA PAS is a "dry" system, because the salt particles are physically separated using a knockout box and filters, rather than by scrubbing with liquid sprays. The BRA PAS includes an air heater, a dryer knockout box (where the stream is slowed to allow heavier particles to drop out), a burner to prevent condensation from forming in the system, baghouses (where the exhaust gas is filtered and particulates collected), and an ID fan similar to those in the incinerator PASs. The gases then flow to the BRA stack and are exhausted to the atmosphere. The UMCDF is required to continuously monitor numerous operating parameters whenever the BRA is in operation. Feed to the BRA must be stopped if the specified operating ranges cannot be met.

3 Air Dispersion Modeling



3.1 Overview of UMCDF Point Sources

The Umatilla Chemical Agent Disposal Facility (UMCDF) is a multi-furnace processing plant designed to dispose of the chemical warfare agent stored at the Umatilla Chemical Depot (UMCD). The stockpile at the UMCD is comprised of two nerve agents (GB and VX) and one blister agent (HD) in a variety of weapons configurations. Weapons configurations stored at the UMCD included projectiles, bombs, rockets, mines, spray tanks, and ton containers (See Table 2-1 for a complete list of munitions).

Weapons disposal activities take place predominately within a highly contained building termed the Munitions Demilitarization Building (MDB). Within this structure individual weapons are disassembled, and their various components are treated to acceptable levels in one of four furnace systems. These systems are:

- Liquid Incinerator 1 (LIC1)
- Liquid Incinerator 2 (LIC2)
- Deactivation Furnace System (DFS)
- Metal Parts Furnace (MPF)

The off-gas from each of these furnaces are processed in separate wet pollution abatement systems, and are subsequently passed through carbon filters before being combined and released to the environment in the common stack (COMSTK). The liquid brine used in the pollution abatement systems is sent to storage tanks and ultimately dried in the Brine Reduction Area (BRA). The gases given off during the drying process are passed through a bag filter to remove particles and subsequently released to the atmosphere in the Brine Reduction Area stack (BRASTK).

The COMSTK and the BRASTK are two of the four point sources modeled in this UMCDF risk assessment. The remaining two point sources are the exhaust stack for the on-site laboratory where dilute chemical agents are handled (LABSTK), and the MDB ventilation stack (MDBSTK). Both the LABSTK and the MDBSTK emissions are passed through carbon filters before being released to the atmosphere. A summary of the characteristics of the four point sources are provided in Table 3-1. Figure 3-1 depicts the location and heights of the four point sources in relation to the UMCDF buildings. In this figure the point sources are indicated in red while the UMCDF Buildings are shown as shaded boxes and are to scale.

Table 3-1: Characteristics of the Four UMCDF Point Sources

Parameter	**COMSTK**	**BRASTK**	**MDBSTK**	**LABSTK**
UTM Eastling (m)	312042.7	311992.4	312077.4	311924.1
UTM Northing (m)	5079907	5079764	5080000	5079844
Elevation (m)	200	196	200	197
Stack Height (m)	30.5	19.8	36.6	12.2
Exit Temperature (K)	353.15	415	294	299
Exit Velocity (m/s)	3.5	14.7	12.7	21
Exit Diameter (m)	1.52	1.37	2.19	0.64
Exit Flow Rate (ACMM)	380	1301	2870	405

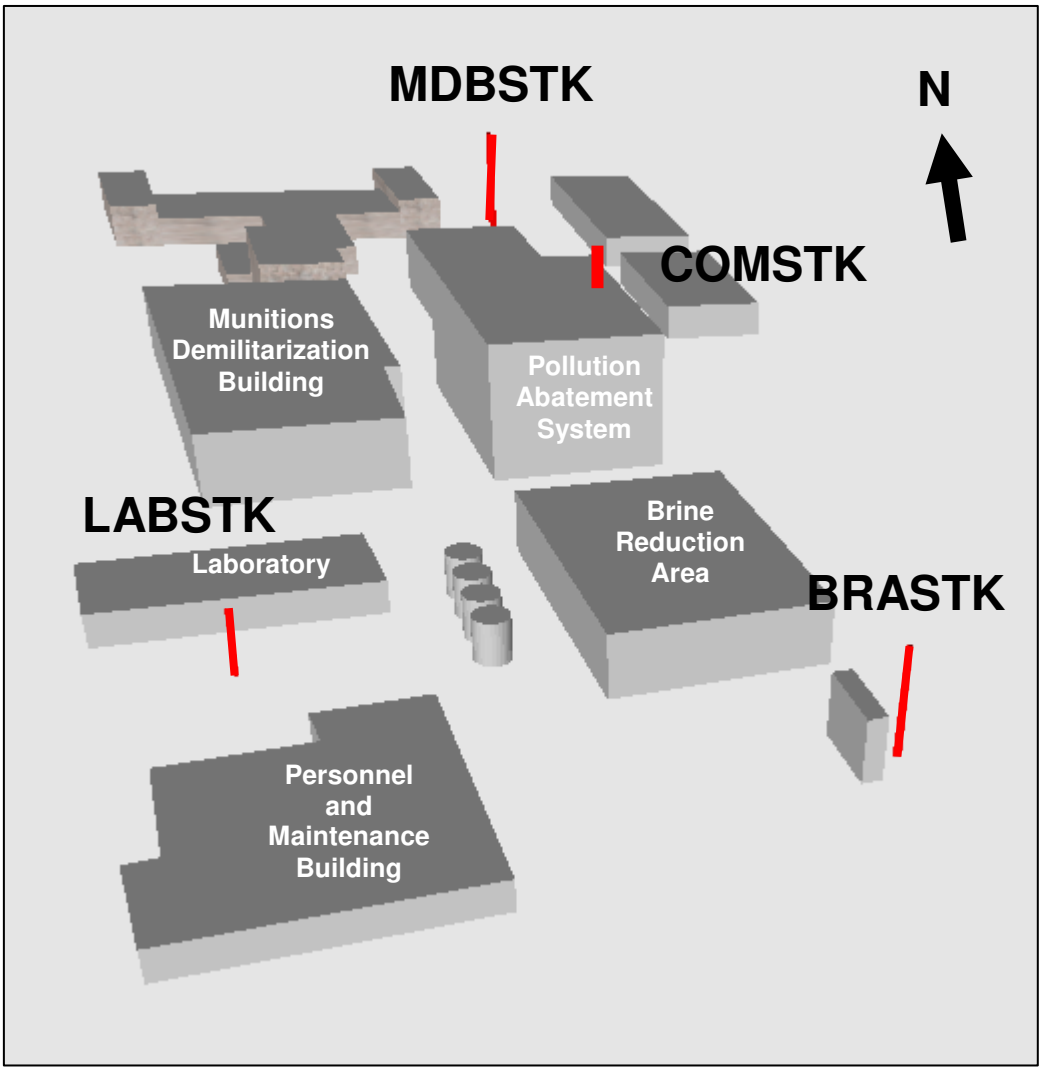


Figure 3-1: General site layout for the UMCDF (to scale). Red lines indicate the four point sources while the gray boxes indicate site buildings.

3.2 Description of Air Dispersion and Deposition Modeling

Both the HHRA and ERA risk assessment processes for hazardous waste combustors require predicting the movement of emitted chemicals as a vapor and bound to particles. This prediction requires the use of air dispersion modeling software such as the EPA promulgated AERMOD model that was applied in this analysis. AERMOD is a steady-state plume model that uses Gaussian distribution for plume growth in the vertical and horizontal directions in the near surface stable boundary layer. The upper convective boundary layer is modeled using a Gaussian distributions in the horizontal direction and a bi-Gaussian probability density function in the vertical dimension. The basic types of information necessary to implement AERMOD to predict contaminant transport are depicted in Figure 3-2.

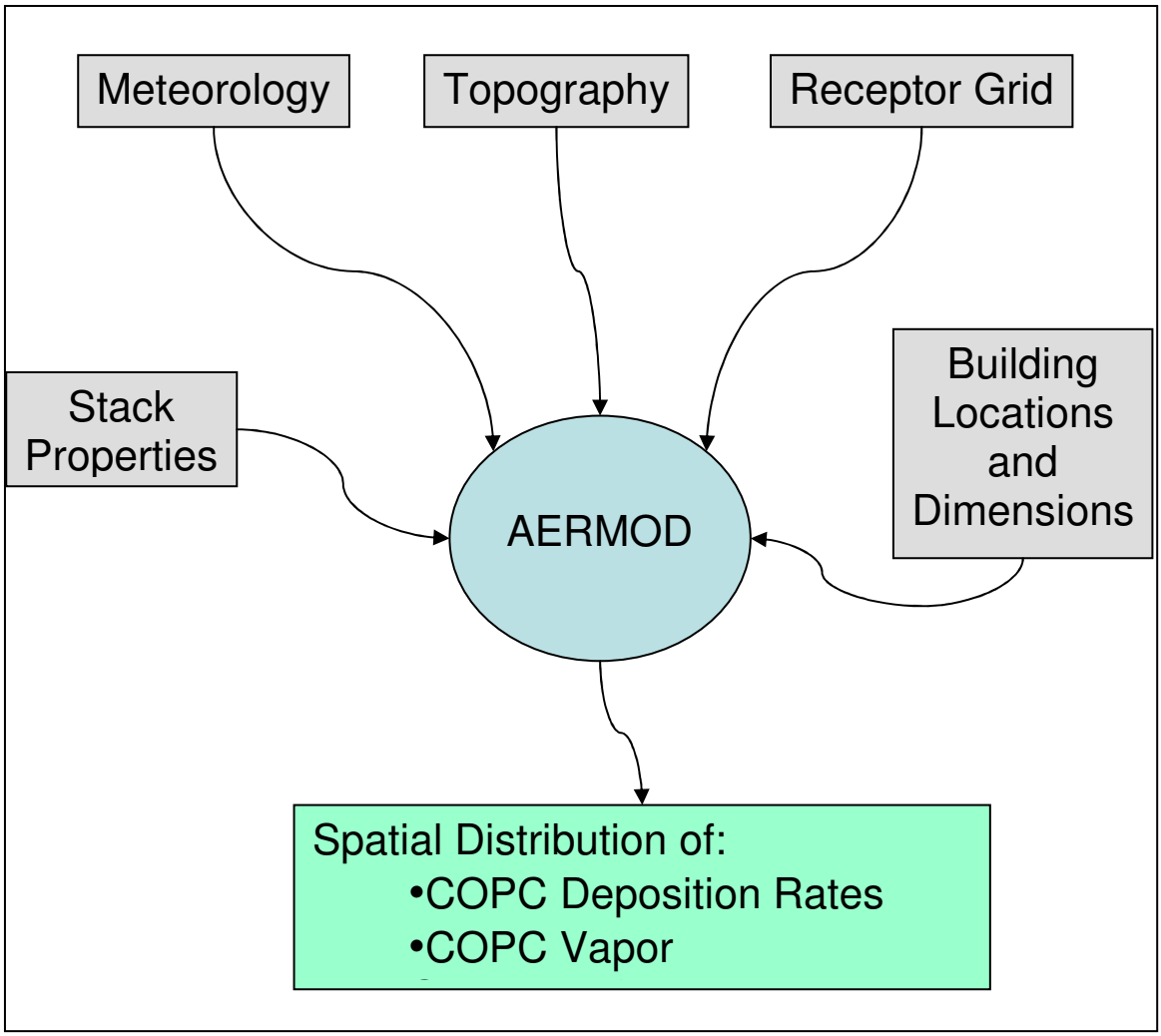


Figure 3-2: Depiction of data requirements for AERMOD analysis of hazardous waste combustors.

As indicated in Figure 3-2, the results of the modeling process are values for various deposition rates and air concentrations at spatial-distributed calculation points throughout the region of interest.

A total of 6841 calculation nodes were applied in this analysis and were placed as follows:

- From the stacks to a radial distance of 3 km nodes were evenly space 100 m apart.
- From a radial distance of 3 km to 10 km from the stacks nodes were spaced 500 m apart.
- From a radial distance between 10 km and 50 km from the stacks the nodes were spaced 2000 m apart.
- Nodes were placed with a spacing of 50 m along the UMCD fence line.
- 200 m spacing placed inside the easement area of the UMCD property where off-site deposition is highest.
- 100 m spacing within the UMCD administration area.

Figures 3-3 and 3-4 depict the spatial distribution of the calculation grid nodes.

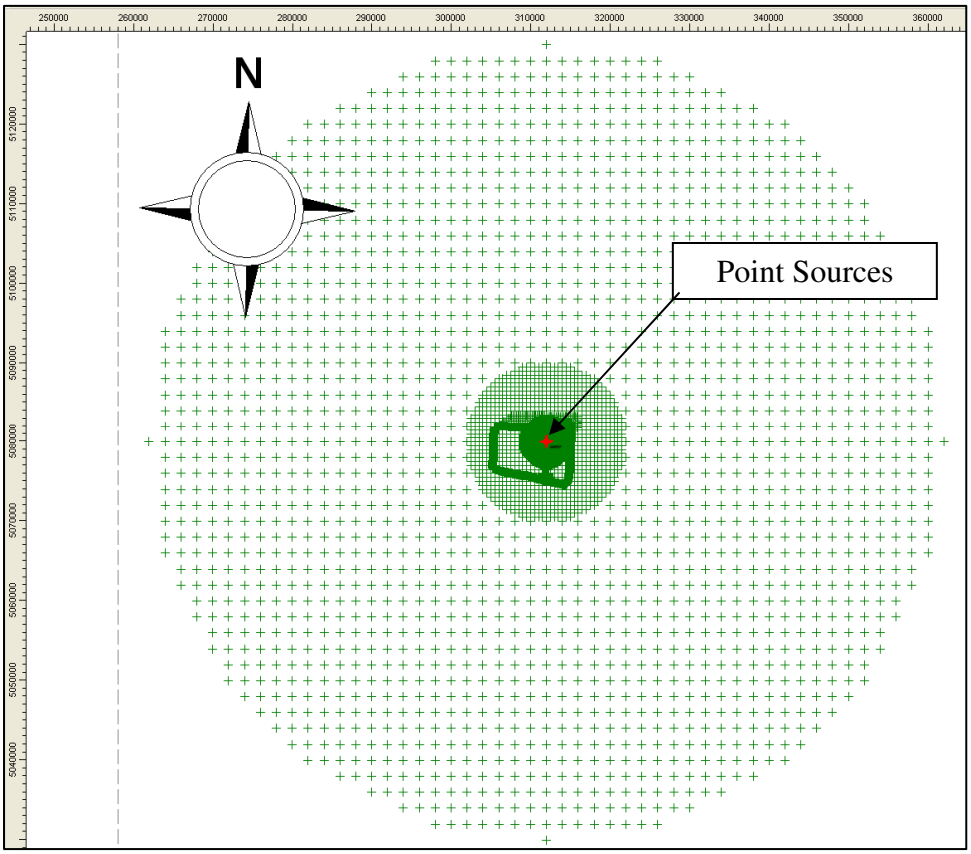


Figure 3-3: Calculation grid nodes over the 50 km analysis region.

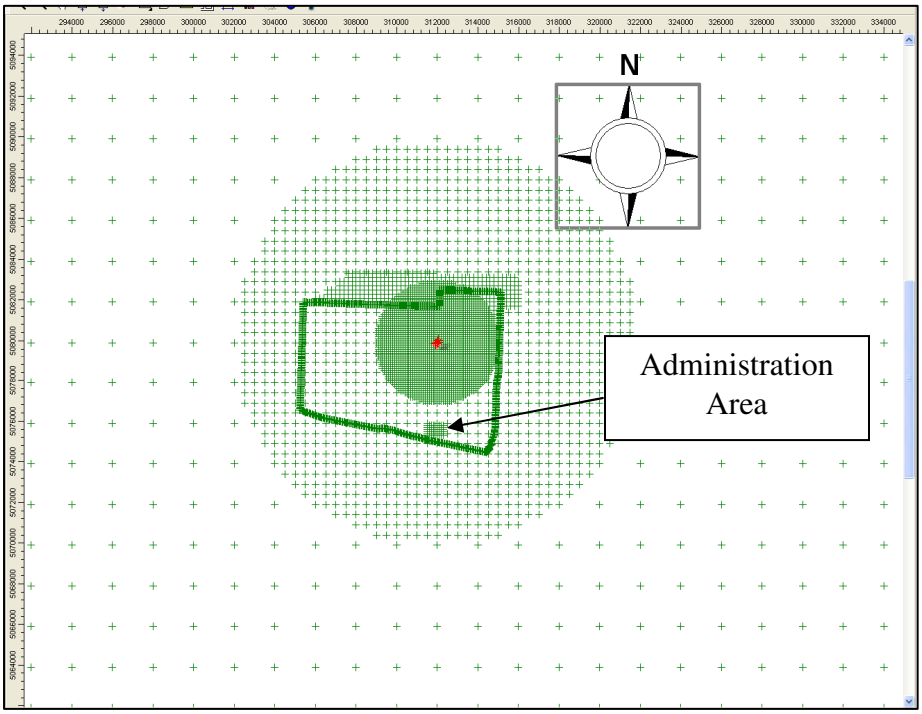


Figure 3-4: Expanded view of calculation grid near the UMCD.

A description of the parameters computed by AERMOD at each calculation point is provided in Table 3-2. The hourly maximum files indicated in Table 3-2 are applied to the acute risk analysis while the average data sets are used in the long-term exposure risk calculations. As indicated in this table, there are four distinct phases (a vapor phase, a mercury vapor phase, a particle phase, and a particle bound-phase) necessary for the risk analysis. These four phases are modeled in separate AERMOD runs. The vapor phase results are used in the risk assessment process to describe the movement of highly volatile compounds which will remain in the gas phase at ambient conditions. The mercury vapor phase results are used to describe the emission and movement of the volatile mercury containing compounds. The particle phase results describe the movement and deposition of compounds with low volatility while the particle-bound phase is applied to compounds which have an intermediate volatility. The speciation of a particular chemical between these phases is conducted in the human health and ecological risk assessment calculations and not in the air transport computations.

Table 3-2: Deposition and Concentration Parameters Calculated by AERMOD

Description	**Symbol**	**Unit**
Unitized hourly maximum air concentration - particle phase	chp	ug-s/g-m^3
Unitized hourly maximum air concentration - particle bound	chp_pb	ug-s/g-m^3
Unitized hourly maximum air concentration - vapor phase	chv	ug-s/g-m^3
Unitized hourly maximum air concentration - vapor phase hg	chv_hg	ug-s/g-m^3
Unitized average air concentration - particle phase	cyp	ug-s/g-m^3
Unitized average air concentration - particle bound	cyp_pb	ug-s/g-m^3
Unitized average air concentration - vapor phase	cyv	ug-s/g-m^3
Unitized average air concentration - vapor phase hg	cyv_hg	ug-s/g-m^3
Unitized average dry deposition - particle phase	dydp	s/m^2 year
Unitized average dry deposition - particle bound	dydp_pb	s/m^2 year
Unitized average dry deposition - vapor phase	dydv	s/m^2 year
Unitized average dry deposition - vapor phase hg	dydv_hg	s/m^2 year
Unitized average wet deposition - particle phase	dywp	s/m^2 year
Unitized average wet deposition - particle bound	dywp_pb	s/m^2 year
Unitized average wet deposition - vapor phase	dywv	s/m^2 year
Unitized average wet deposition - vapor phase hg	dywv_hg	s/m^2 year

The unitized emission rates generated from AERMOD are converted to compound specific values by the multiplication of the individual results to the compound specific emission rate. Thus, for the i^{th} COPC (Compound of Potential Concern) at the j^{th} spatial note, the hourly air maximum air concentration for the particle phase would be calculated as:

$$chp_{j,i} = chp_j * ER_i$$

Where $chp_{i,j}$ is the particle phase hourly maximum air concentration for the i^{th} contaminant at the j^{th} node, chp_j is the particle phase unitized hourly maximum air concentration at the j^{th} node, and ER_i is the emission rate for the i^{th} contaminant for the point source in question. It is these COPC specific deposition rates and concentrations parameters that serve as the basis for computing site-specific human health and ecological risk.

Section 3.3 describes the methods used to compute UMCDF specific unitized concentrations and deposition rates while Section 4 describes how COPC emission rates for each of the four point sources were determined.

3.3 Air Dispersion and Deposition Modeling Results

For consistency between USACHPPM (United States Army Center for Health Promotion and Preventative Medicine), the Oregon DEQ (Department of Environmental Quality), and the CTUIR modeling efforts, the CTUIR HHRA and ERA relied upon the AERMOD modeling results provided to the DEQ by EnviroMet, LLC in December 2007. A detailed report discussing the EnviroMet model is provided in Appendix A. The geographic distribution of vapor concentrations and wet and dry deposition rates are presented in Figures 3-5 to 3-20. Underlying data for these representations are presented in Appendix B.

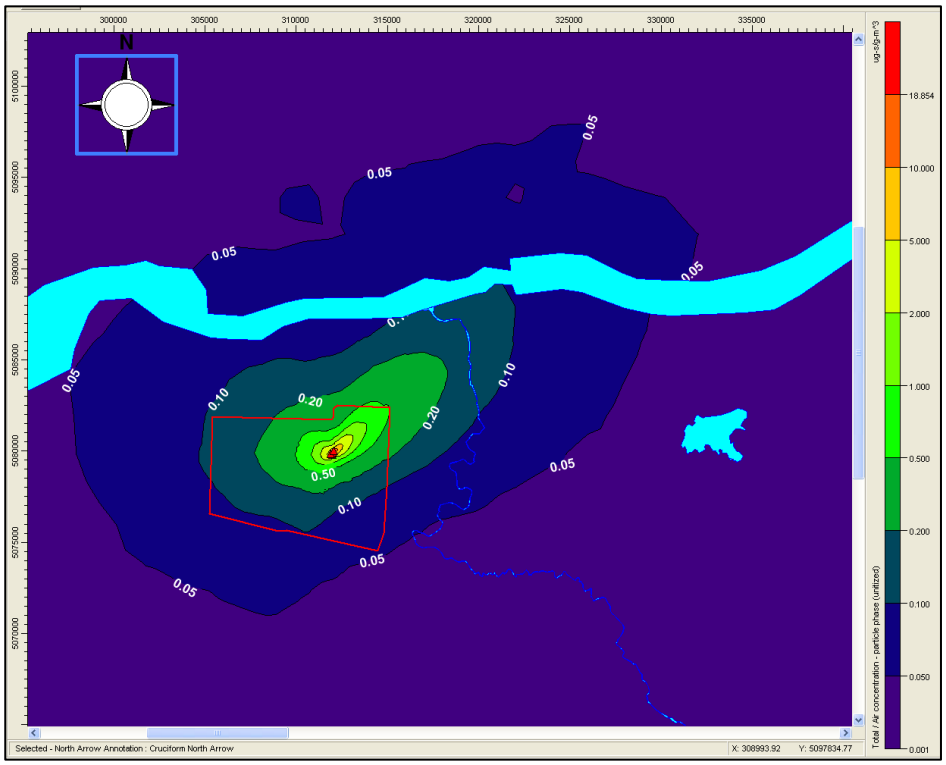


Figure 3-5: Isopleths for the particle phase average air concentration calculated from the six year composite meteorological data.

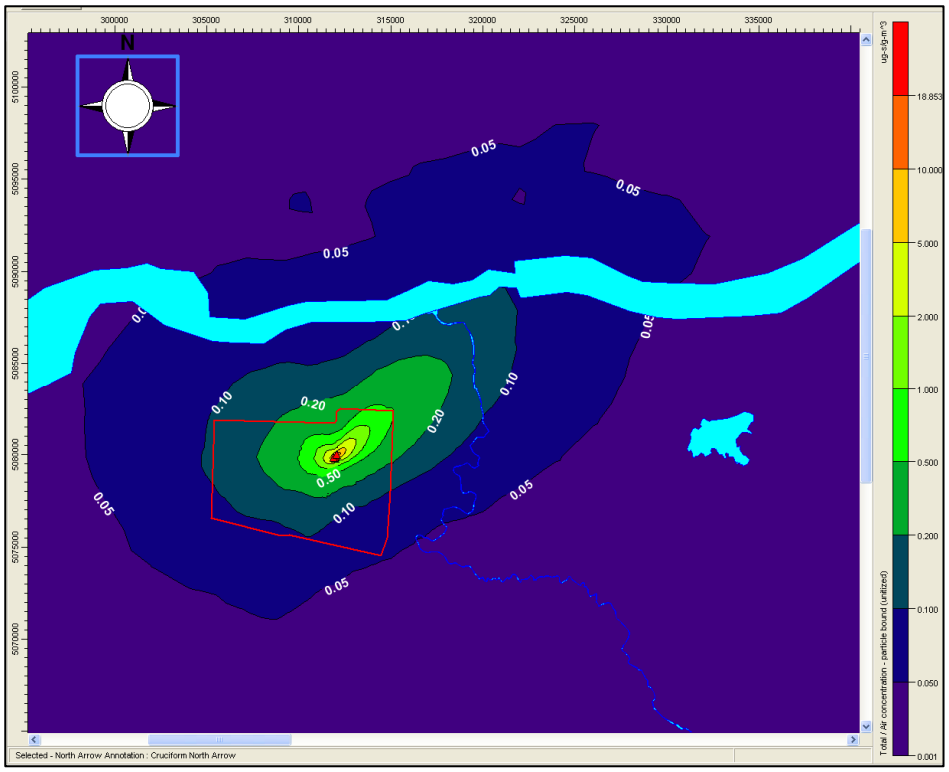


Figure 3-6: Isopleths for the particle-bound phase average air concentration calculated from the six year composite meteorological data.

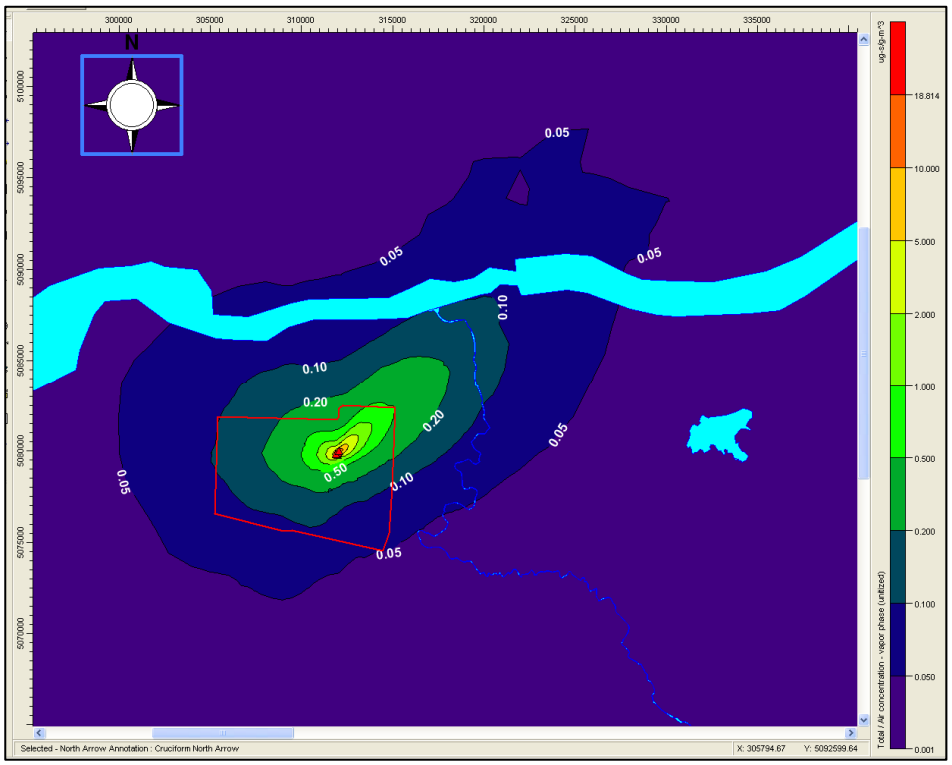


Figure 3-7: Isopleths for the vapor phase average air concentration calculated from the six year composite meteorological data.

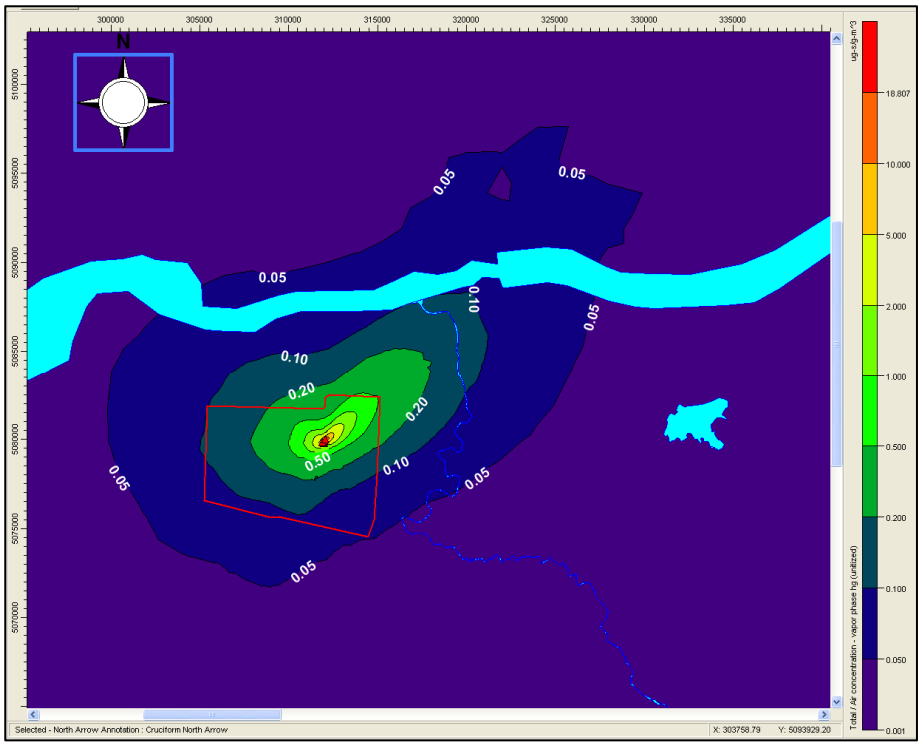


Figure 3-8: Isopleths for the vapor phase mercury average air concentration calculated from the six year composite meteorological data.

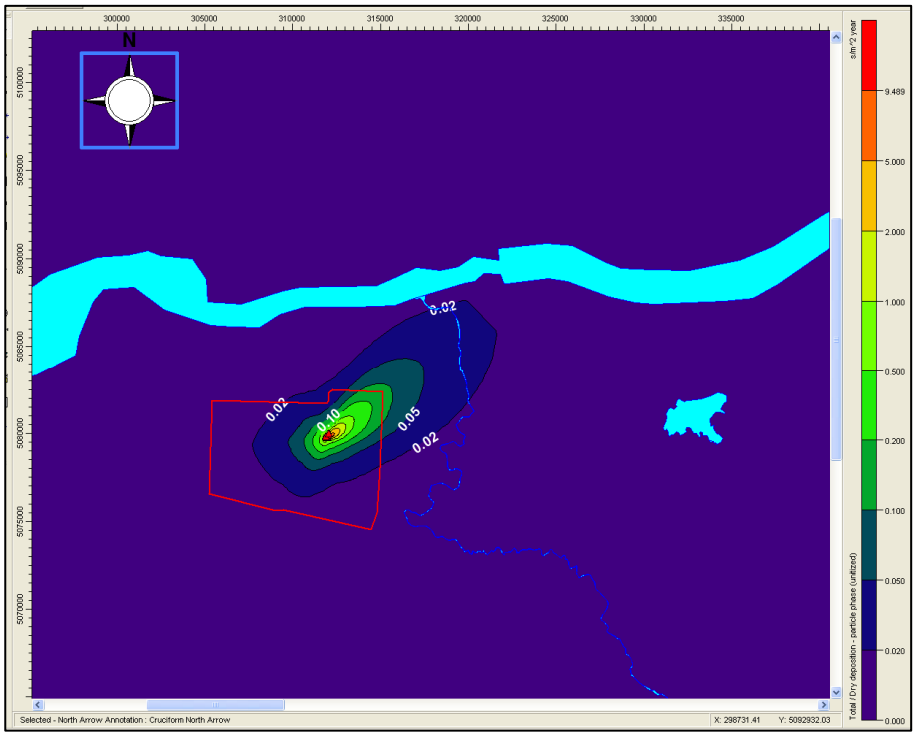


Figure 3-9: Isopleths for the particle phase average dry deposition rates calculated from the six year composite meteorological data.

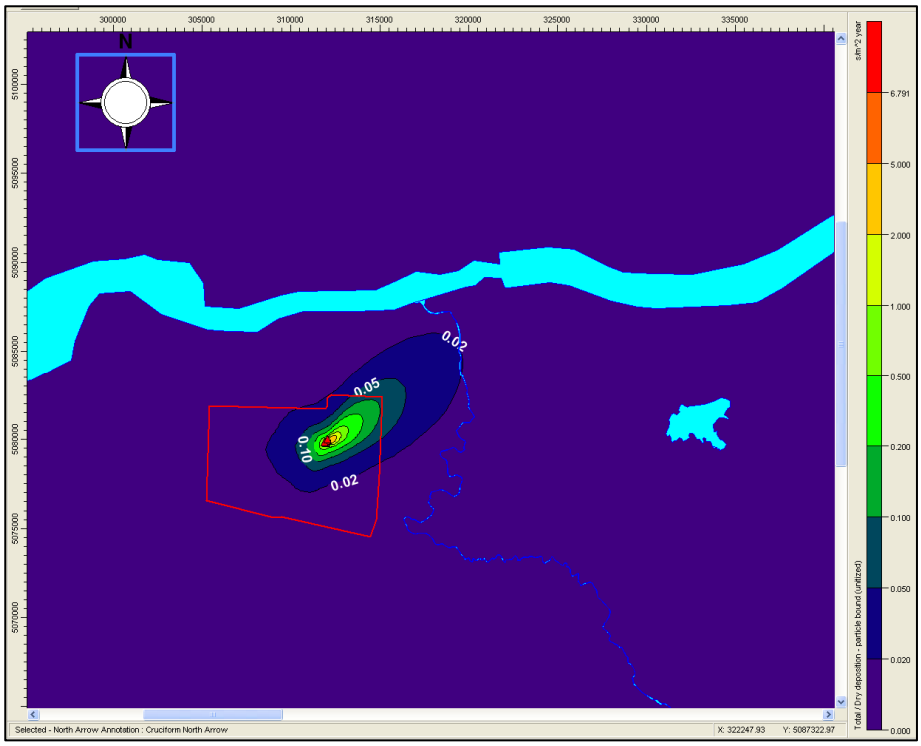


Figure 3-10: Isopleths for the particle-bound phase average dry deposition rates calculated from the six year composite meteorological data.

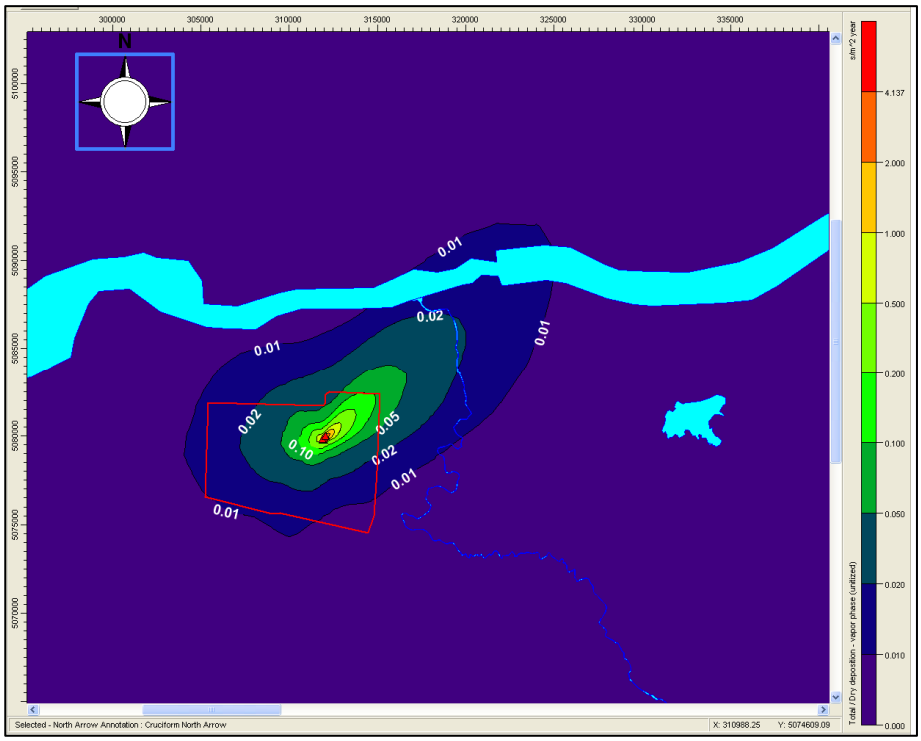


Figure 3-11: Isopleths for the vapor phase average dry deposition rates calculated from the six year composite meteorological data.

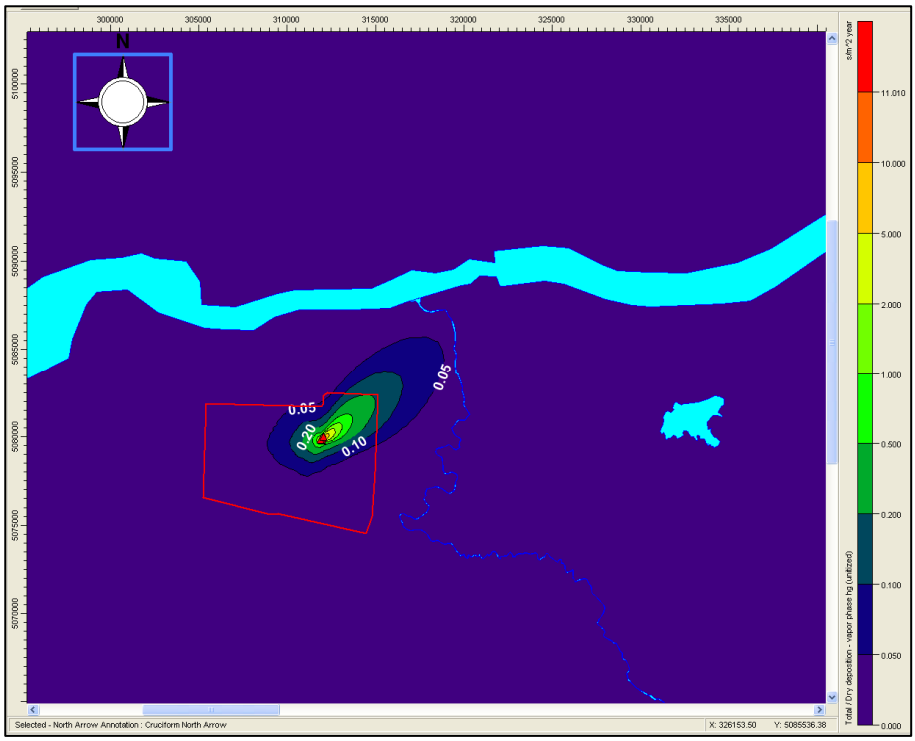


Figure 3-12: Isopleths for the vapor phase mercury average dry deposition rates calculated from the six year composite meteorological data.

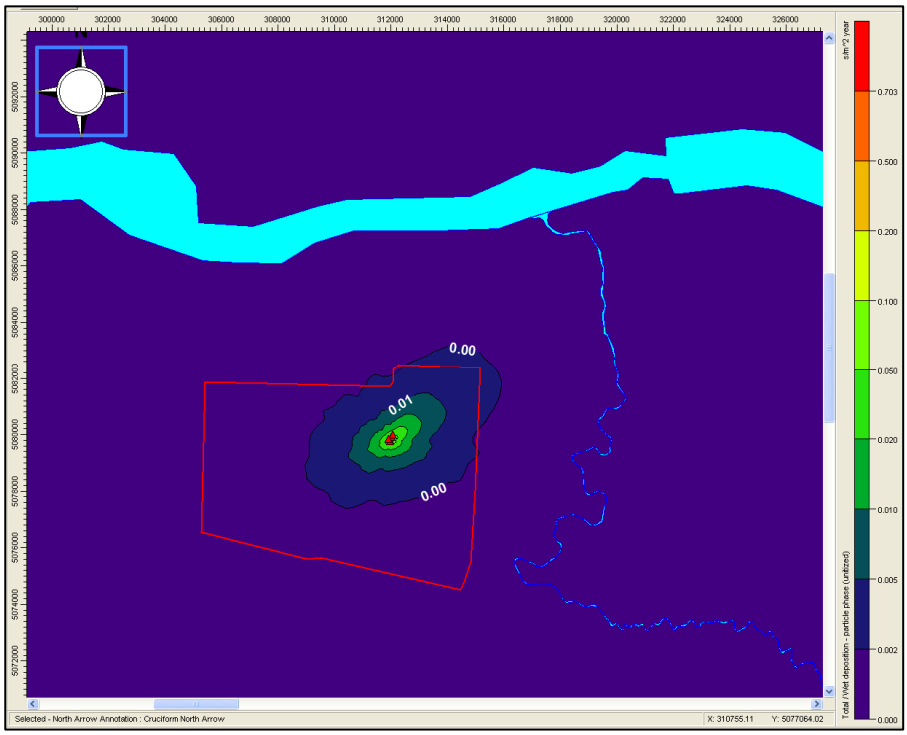


Figure 3-13: Isopleths for the particle phase average wet deposition rates calculated from the six year composite meteorological data.

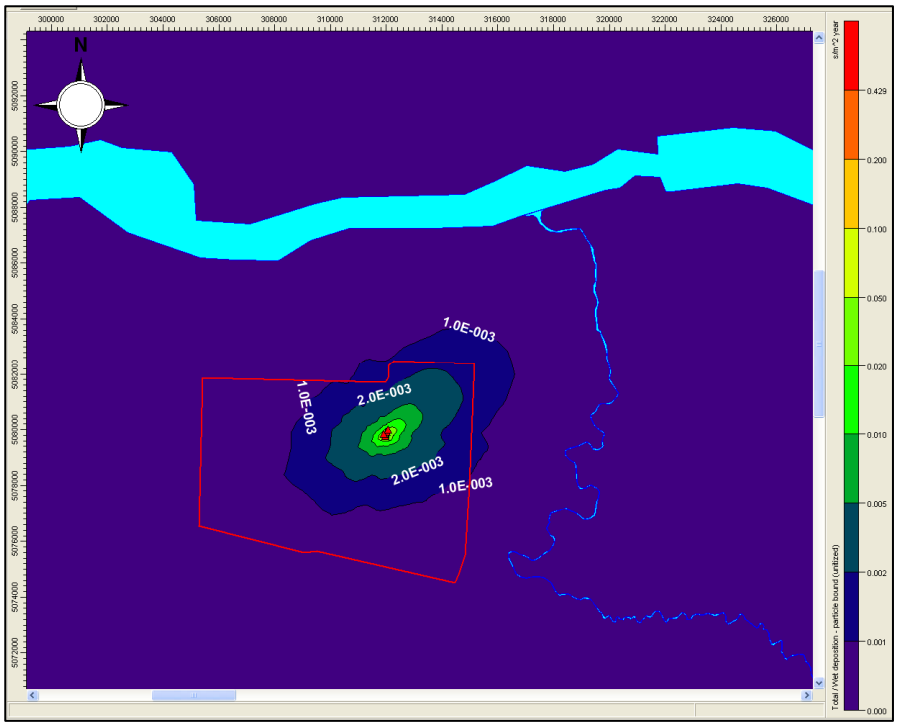


Figure 3-14: Isopleths for the particle-bound phase average wet deposition rates calculated from the six year composite meteorological data.

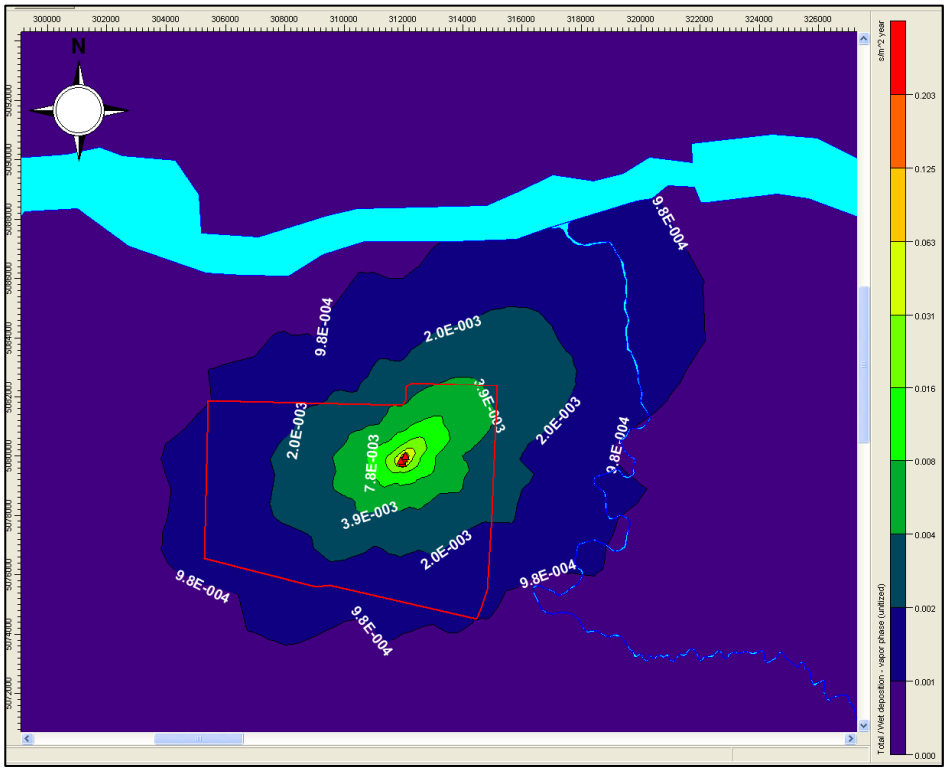


Figure 3-15: Isopleths for the vapor phase average wet deposition rates calculated from the six year composite meteorological data.

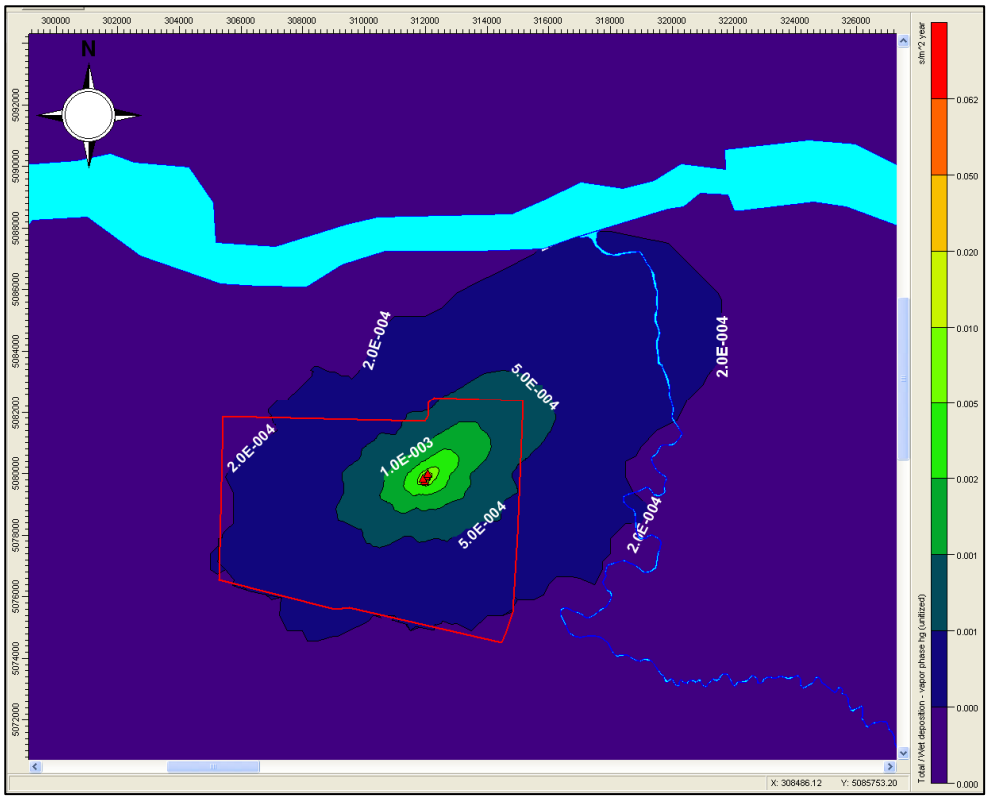


Figure 3-16: Isopleths for the vapor phase mercury average wet deposition rates calculated from the six year composite meteorological data.

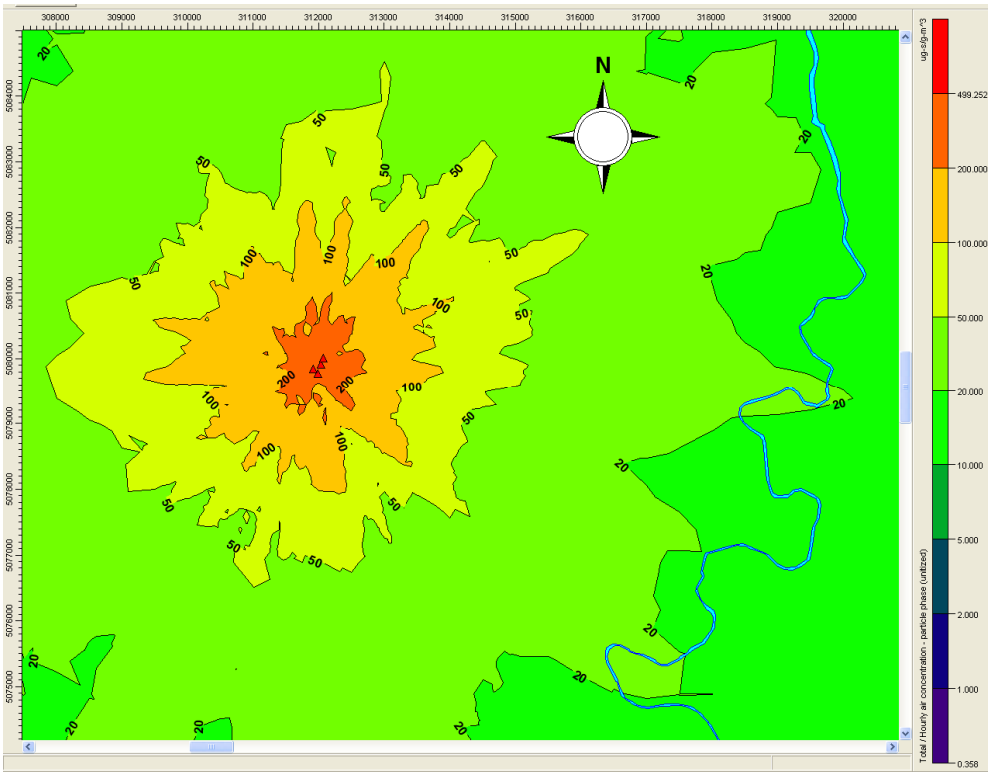


Figure 3-17: Isopleths for the particle phase 1-hr maximum air concentrations calculated for the six year composite meteorological data.

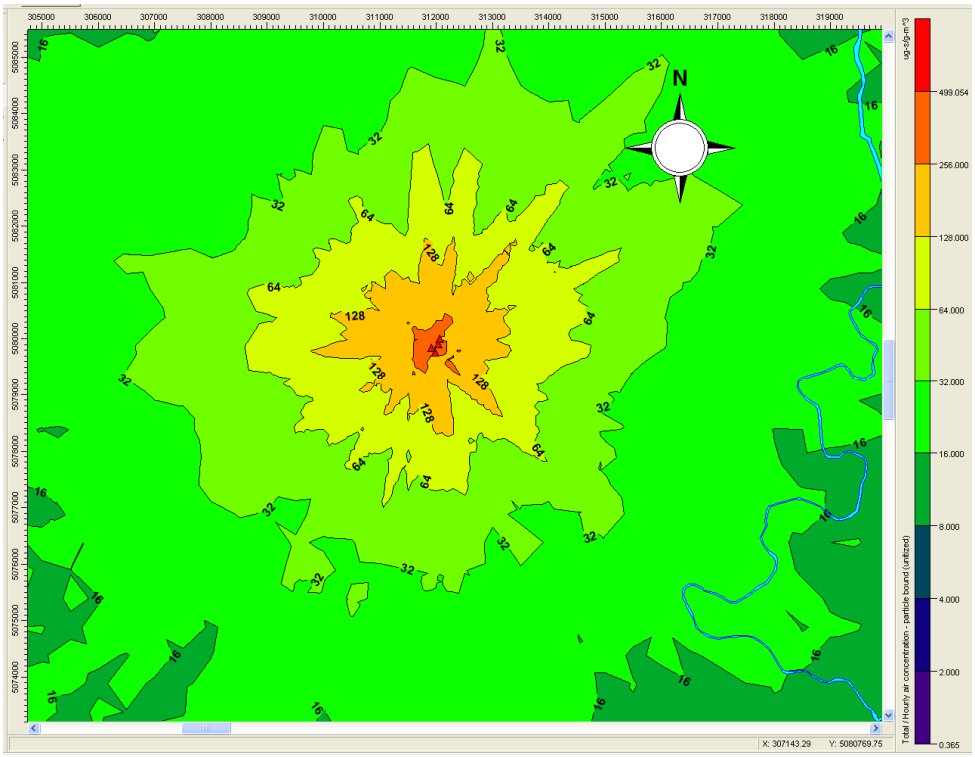


Figure 3-18: Isopleths for the particle-bound phase 1-hr maximum air concentrations calculated for the six year composite meteorological data.

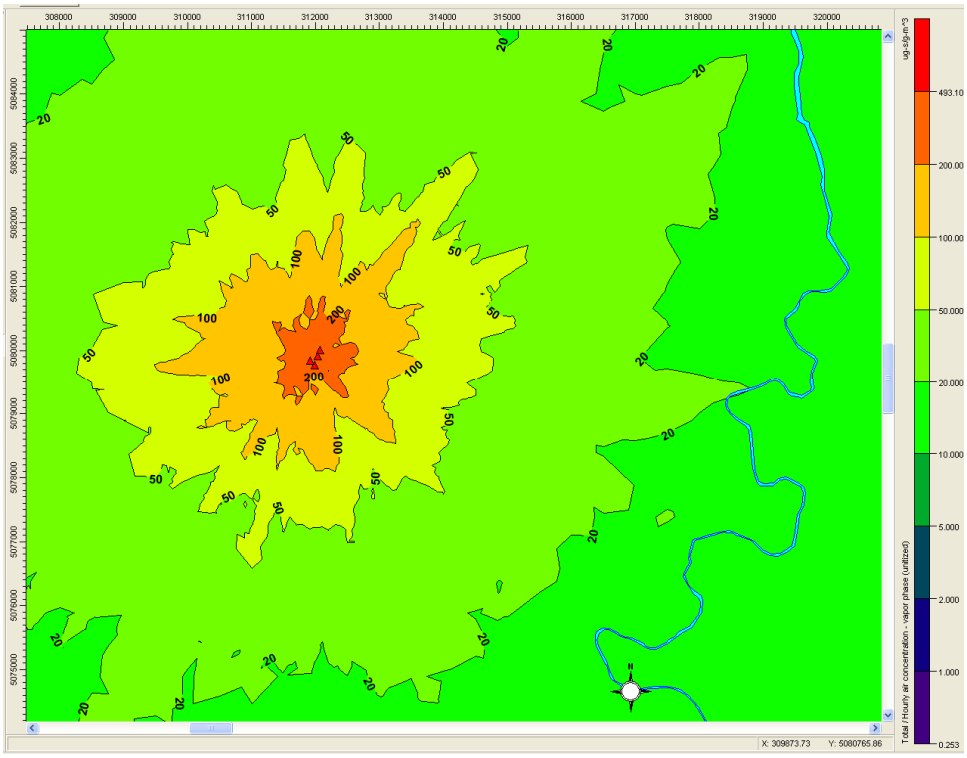


Figure 3-19: Isopleths for the vapor phase 1-hr maximum air concentrations calculated for the six year composite meteorological data.

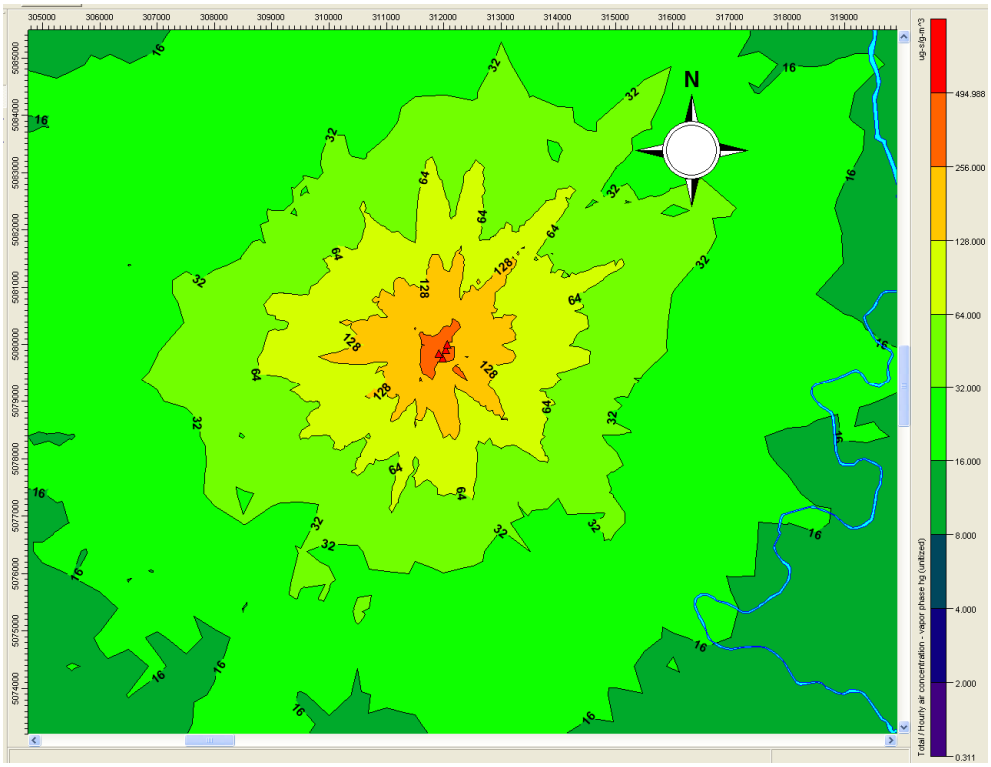
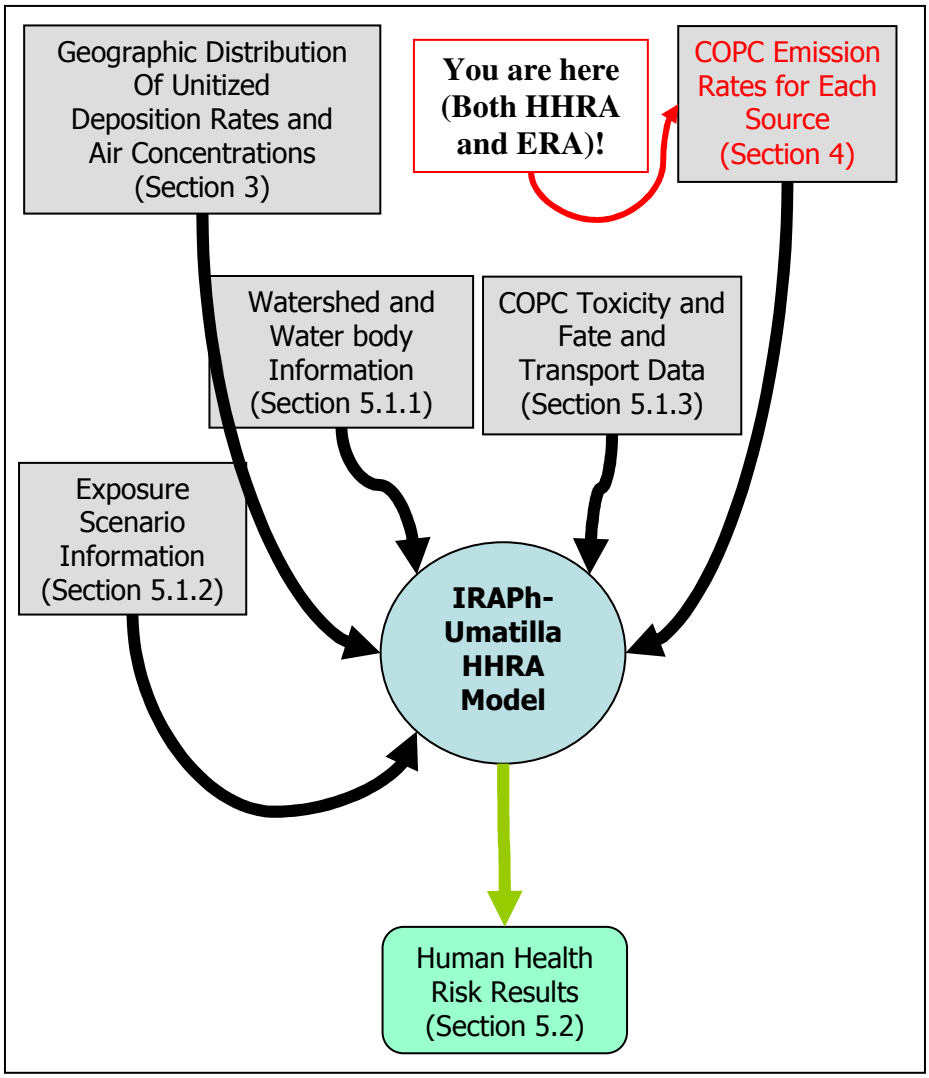


Figure 3-20: Isopleths for the vapor phase mercury 1-hr maximum air concentrations calculated for the six year composite meteorological data.

4 Estimation of Point Source Emission Rates



4.1 MDB and LAB Stacks

Emission rates for each of the four point sources were established in the CTUIR model using the same protocol applied in the USACHPPM and DEQ modeling efforts. For the LABSTK and the MDBSTK, chemical agents were assumed to be the only hazardous compounds released and the concentration of each agent was at the detection limits of the automatic continuous air monitor system (ACAMS) for the entire 10 years of assumed operation of the UMCDF. No upset factors were applied to LABSTK or MDBSTK emissions since the units are equipped with automatic shut-off systems if agent concentrations are detected above the detection limit. Table 4-1 lists the ACAMS detection limits for each agent and the resulting stack emission rates.

Table 4-1: LABSTK and MDBSTK
Chemical Agent Emission Rates for Risk Modeling

Agent	ACAMS Detection Limit (mgm^3).	Emission Rate (g/s)	
		LABSTK	MDBSTK
GB	6.0×10^{-5}	4.08×10^{-7}	2.89×10^{-6}
VX	6.0×10^{-5}	4.08×10^{-7}	2.89×10^{-6}
HD	6.0×10^{-4}	4.08×10^{-6}	2.89×10^{-5}

4.2 Brine Reduction Area Stack

Metals emission rates for the 20 species identified in Chapter 5 of the UMCDF Resources Conservation and Recovery Act (RCRA) Hazard Waste Permit were estimated using average brine metal concentrations and measured metal removal efficiencies for the UMCDF brine reduction area (BRA). Metals removal efficiencies were measured in the UMCDF BRA Performance Test (UMCDF, 2005). Table 4-2 details the average metal emission for each agent while Table 4-3 provides removal efficiency measured in the UMCDF BRA performance test.

Table 4-4 indicates resulting metals emission rates computed for the BRASTK and applied in the HHRA and ERA. The values listed in Table 4-4 were calculated as follows:

$$ER_i = Q_{brine} \cdot C_{brine,i} \cdot \rho_{brine} \cdot (1-\eta_i) \cdot CF$$

Where ER_i is the emission rate of the emission rate of the i^{th} metal (g/s), Q_{brine} is the feed rate to the brine evaporators (assumed as 35.6 gpm for each of two evaporators), $C_{brine,i}$ is the brine concentration of the i^{th} metal (mg/kg), ρ_{brine} is the density of the brine feed to the evaporator (assumed at 1.1 g/ml), η_i is the removal efficiency for the i^{th} metal, and CF is the appropriate unit conversion factor (6.32×10^{-5} [ml-min–kg]/[gal-sec-mg]). Table 4-4 lists two estimated metals emissions rates. The first estimate applies the highest estimated concentration for each metal (indicated in bold in Table 4-2) through all campaigns (10 years total) while the second represents a time averaged value and is computed as:

$$ER_i = \frac{\theta_{GB} \cdot ER_{GB,i} + \theta_{VX} \cdot ER_{VX,i} + \theta_{HD} \cdot ER_{HD,i} + \theta_{SW} \cdot ER_{SW,i}}{\theta_{total}}$$

Where θ_{GB}, θ_{VX}, θ_{HD}, and θ_{SW} are the individual campaign durations (3.68 yr, 2.32 yr, 2 yr, and 2 yr for GB, VX, HD, SW, respectively), θ_{total} is the total operation time (10 years), and $ER_{GB,i}$, $ER_{VX,i}$, $ER_{HD,i}$, and $ER_{SW,i}$, are the campaign specific emission rates. If no data was available for a given campaign, then the average emission rate was computed by assuming the time of the campaign without data was equally distributed among the other campaigns. The higher of the two estimates (those based on campaign maximum

values) were applied in this risk analysis. No upset multiplier was used for BRASTK metals emissions.

Table 4-2: Average Metals Concentration in PAS Brines for Various Processing Campaigns

Metal	Average Brine Concentration (mg/kg)			
	GB Campaign	VX Campaign	HD Campaign	Secondary Waste Campaign
Antimony	6.90E-01	2.25E-01	1.00E-01	**2.46E+00** [a]
Arsenic	3.85E-01	**2.09E+00** [a]	1.01E+02	6.43E-01
Barium	2.18E-01	1.18E-01	7.86E-02	**7.70E-01** [a]
Beryllium	ND	6.38E-03	ND	**1.20E-02** [a]
Boron	1.52E+00	1.43E+01	ND	**3.10E+01** [a]
Cadmium	4.41E-01	2.26E-01	1.62E+01	**3.67E+00** [a]
Chromium	8.66E+00	8.83E+00	2.20E+00	**1.81E+01** [a]
Cobalt	**8.11E-02** [a]	4.00E-02	3.61E-01	5.92E-02
Copper	6.85E-01	1.27E+00	**9.45E+00** [a]	6.44E+00
Lead	**3.66E+01** [a]	2.57E+00	1.02E+01	6.44E+00
Manganese	2.42E-01	3.11E-01	**4.95E+00** [a]	7.17E-01
Mercury	2.27E-03	**2.85E-03** [a]	1.95E-03	1.76E-03
Nickel	5.13E-01	1.24E-01	**2.20E+00** [a]	1.23E+00
Phosphorus	3.99E+03	4.96E+03	ND	2.26E+02
Selenium	**4.64E-01** [a]	2.67E-01	8.16E-02	3.04E-01
Silver	**2.73E-01** [a]	5.29E-02	ND	2.57E-01
Thallium	5.55E-03	2.68E-01	ND	**2.83E-01** [a]
Tin	1.90E-01	4.30E-01	2.91E-01	**2.34E+00** [a]
Vanadium	**1.49E-01** [a]	6.33E-02	ND	5.49E-02
Zinc	5.14E+00	2.77E+00	2.13E+01	**4.89E+01** [a]

[a] Bold values indicate the maximum brine concentration for a given metal.

Table 4-3: BRA Performance Test
Metal Removal Efficiencies

Metal	Removal Efficiency
Antimony	0.99984
Arsenic	0.99999
Barium	0.99823
Beryllium	0.99823
Boron	0.99648
Cadmium	0.99984
Chromium	0.99998
Cobalt	0.99823
Copper	0.99823
Lead	0.999999
Manganese	0.9944
Mercury	0.13653
Nickel	0.99823
Phosphorus	0.999995
Selenium	0.99693
Silver	0.99823
Thallium	0.99954
Tin	0.99823
Vanadium	0.99823
Zinc	0.99984

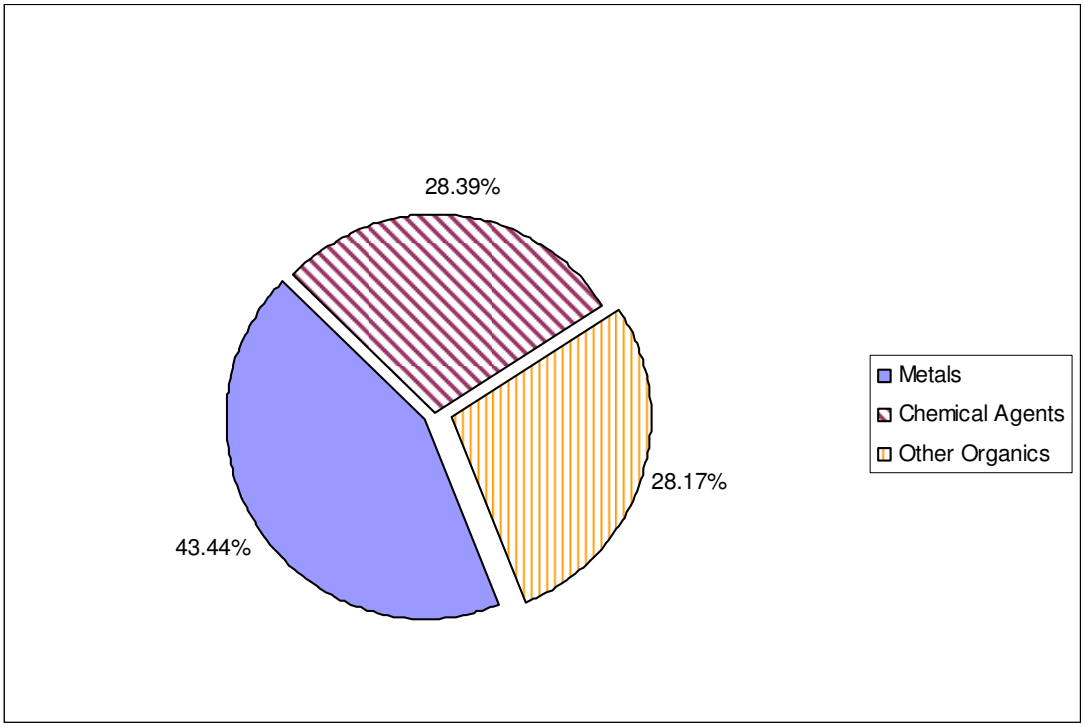


Figure 4-1: Distribution of types of emissions from the BRASTK.

Table 4-4: Estimated Metals Emission Rates for the BRASTK

Metal	Emission Rate (g/s)	
	Based on Campaign Maximum [a]	Based on Scaled by Campaign Duration
Antimony	1.94E-06	6.47E-07
Arsenic	4.99E-06	1.04E-06
Barium	6.74E-06	2.43E-06
Beryllium	1.05E-07	7.94E-08
Boron	5.39E-04	2.30E-04
Cadmium	1.28E-05	3.32E-06
Chromium	1.79E-06	9.19E-07
Cobalt	3.16E-06	1.08E-06
Copper	8.27E-05	3.26E-05
Lead	1.81E-07	8.59E-08
Manganese	1.37E-04	3.58E-05
Mercury	1.22E-05	9.56E-06
Nickel	1.93E-05	7.91E-06
Phosphorus	1.22E-04	8.09E-05
Selenium	7.03E-06	4.70E-06
Silver	2.39E-06	1.77E-06
Thallium	6.42E-07	3.59E-07
Tin	2.05E-05	6.10E-06
Vanadium	1.31E-06	8.61E-07
Zinc	3.87E-05	1.31E-05

[a] Values used in HHRA and ERA.

BRASTK organic emissions included the three chemical agents (GB, VX, and HD), an agent-like by product of VX decontamination (S-2-Diisopropylaminoethyl methylphosphonothioic acid, EA2192), and o-cresol. As required by the RAWP, the chemical agents were assumed to be continually emitted for the full 10 years of operation at the maximum permitted level found in Module 5 of the UMCDF Resources RCRA Hazard Waste Permit. The permitted concentrations are 3.0×10^{-4} mg/m^3 for GB and VX and 3.0×10^{-2} mg/m^3 for HD and equate to the emission rates shown in Table 4-5. The maximum possible EA2192 emission rate from the BRASTK was estimated to be 3.58×10^{-13} g/s (Volume 2, Appendix G of USACHPPM, 2008). O-cresol (2-Methylphenol) was the only organic compound detected in the UMCDF BRA performance test and was included at the detected level. Figure 4-1 summarizes the BRA emissions by chemical type (metals, chemical agents, other organics).

Table 4-5: BRASTK Organic Emission Rates Used in the HHRA and ERA

COMPOUND	EMISSION RATE (G/S)
GB	6.5×10^{-6}
VX	6.5×10^{-6}
HD	6.5×10^{-4}
EA2192	3.58×10^{-13}
O-cresol	6.28×10^{-4}

4.3 Common Stack Emission Rates

4.3.1 Common Stack COPC List

The fits step in developing emission rates for the common stack was to identify what COPCs should be included in the analysis. Figure 4-2 provides a simplified depiction of the process used to arrive at the final list of 101 COPCs evaluated in the HHRA and ERA. Briefly, an initial list of 703[4] compounds were identified as possible feeds to the UMCDF incinerators; compounds identified, or tentatively identified (termed a TIC, or tentatively identified compound), in emissions from chemical demilitarization facilities; and compounds identified as potential products of incomplete combustion (PIC). This list of 703 compounds was subsequently reduced by eliminating compounds which had never been detected in a trial burn at any chemical demilitarization facility and also by eliminating composite compounds when their individual contributors were already included in the analysis (i.e. Polychlorinated biphenyls homologues since individual congeners were included). Several chemical species were retained even thought they have not been detected in trial burns because of their highly toxic nature. These compounds were the three chemical agents (GB, VX, and HD), EA2192, methyl mercury, and mercuric chloride.

[4] This list is identical to that reported in DEQ January 2008 UMCDF risk assessment (Ecology and Environment, 2008) except that the duplicate entries for total volatile, semi-volatile, and non-volatile organics were removed from the Group 2 list since they are also included on the Group 1 list.

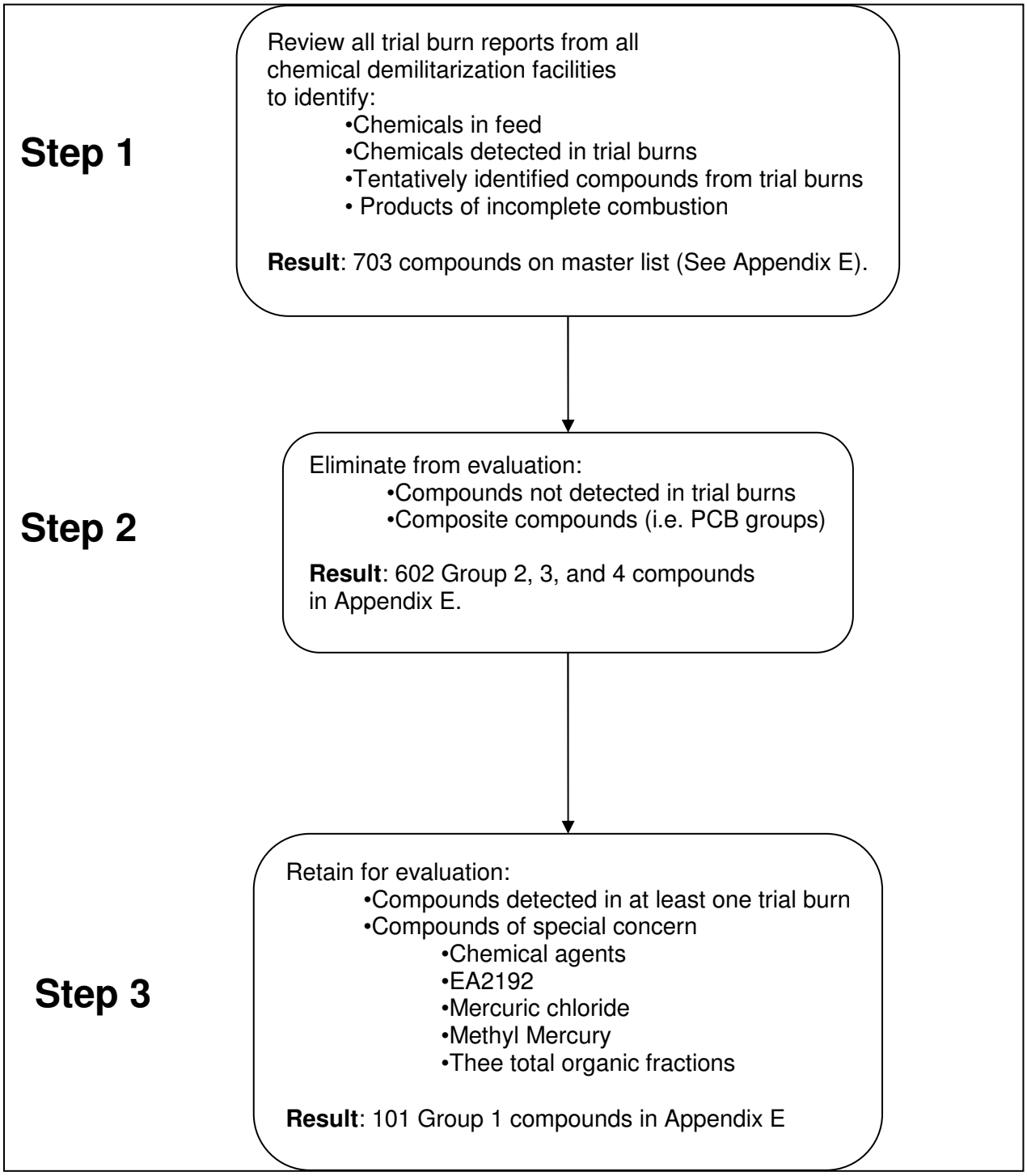


Figure 4-2: Depiction of methodology used to generate the COPC list for the common stack.

The methodology applied in Figure 4-2 deviates from that specified in the 2004 RAWP which required that non-detected compounds, TICs, and PICs be included in the

quantitative analysis with a concentration equal to its detection limit[5] (See Figure 2-1 of the 2004 RAWP). In addition, the RAWP specified the total organic measurements be used to uniformly adjust the COPC emission rates to bring the sum of the modeled emission rates up to the total measured amount of emitted organics. Thus, a total organic emissions (TOE) factor was to be computed for each organic fraction as:

$$F_{TOE}^{fraction} = \frac{TO_{Total}^{fraction}}{\sum_i Q_i^{fraction}}$$

Where F_{TOE} is the TOE factor for a specified organic fraction[6] (unitless), TO_{Total} is the total stack emission measured for a specified fraction (g/s), and Q_i is the emission rate for the i^{th} compound within the specified fraction (g/s). The emission rates applied in the risk model were then to be corrected as follows:

$$Q_i^{corrected} = \left(F_{TOE}^{fraction}\right) \cdot Q_i^{fraction}$$

Since more organic material is measured in the bulk TOE measurements than can be accounted for is in the individual identified compounds, F_{TOE} is greater than 1.0 and the above computation results in increase the modeled emission rates. The effect is to distribute the unknown mass equally among the identified compounds within the same boiling point group. The assumption being applied is that the unknown material will have a distribution of risk similar to the known fraction.

It should be noted that the RAWP approach of retaining non-detected PICs and TICs at their detection limit and applying a scaling factor for measured, but unspeciated, TOE is consistent with the suggested EPA methodology (EPA, 2005). However, the EPA recommends evaluating the risk both with and without the TOE correction and discussing the difference as an uncertainty in the analysis while the RAWP included the TOE in the quantitative results. Non-detected PICs and TICs are included in the quantitative evaluation in both the EPA 2005 guidance and the 2004 RAWP.

It was collectively decided by the DEQ, CTUIR, and USACHPPM at a meeting in Hermiston on October 1, 2008 that it would be more consistent to divide the emissions into the two categories; the known emitted compounds (detected compounds) and an unknown fraction represented by the volatile, semi-volatile, and non-volatile TOE measurements. The known compounds would be evaluated at their measured emission rates (representing the known fraction of risk). The unidentified, but quantified component of the organic material would be represented using the measured emission rates for the three TOE fractions and surrogate transport and toxicity data calculated as the geometric mean of the non-detected PICs and TICs. Use of a geometric mean rather

[5] The detection limit was defined in the 2004 RAWP as the reliable detection limit (RDL).
[6] TOE fractions are determined by boiling point (BP) and are defined as volatile (BP $\leq$ 100 ˚C), semi-volatile (100 ˚C < BP $\leq$ 300 ˚C), and non-volatile (BP > 300 ˚C). Thus, three F_{TOE} values are calculated, one for each fraction.

than a standard arithmetic mean was suggested since it is an applicable approach to finding the central tendency of a group of numbers that range over orders of magnitude.

It is important to note that the method used to describe the measured, but unspeciated organic material is a critical issue for the UMCDF risk assessment since only a small fraction of organic materials is actually identified in the individual trial burn tests. For example, for the UMCDF MPF GB agent trial burn, the total amount of identified organic compounds equated to an emission rate of 6.0×10^{-5} g/s while the sum of the three TOE fractions were emitted at a rate equal to 4.2×10^{-3} g/s. Hence, 98.6% of all emitted organics were unidentified in this trial burn. Table 4-6 summarizes the quantity of measured organic materials that were reported as identified compounds in several trial burns. The emission rates for speciated organics reported in Table 4-6 represent the sum of all fully quantified[7] values from the trial burn reports. Cleary, the only a small fraction of the emitted organic material is associated with known compounds and the remaining material is only accounted for in the TOE fractions.

Table 4-6: Amount of Speciated Organic Material Reported in Agent Trial Burns

Site, Furnace	Agent	Emission Rate (g/s)		Percent Speciated
		Speciated Organics	Total Organics	
UMCDF, DFS	GB	2.91×10^{-4}	9.1×10^{-3}	3.2%
UMCDF, LIC1	GB	0.0	2.4×10^{-3}	0.0%
UMCDF, LIC2	GB	7.12×10^{-5}	1.6×10^{-2}	0.4%
UMCDF, MPF	GB	6.0×10^{-5}	4.2×10^{-3}	1.4%
UMCDF, MPF	SW	2.97×10^{-5}	2.4×10^{-3}	1.2%
TOCDF [a], MPF	HD	0.0	5.1×10^{-3}	0.0%
ANCDF [b], LIC	VX	9.9×10^{-5}	3.2×10^{-3}	3.1%
ANCDF, DFS	VX	3.48×10^{-4}	1.1×10^{-2}	3.2%
ANCDF, MPF	VX	0.0	3.2×10^{-3}	0.0%

[a] TOCDF stands for Toole Chemical Agent Disposal Facility.
[b] ANCDF stands for the Anniston Chemical Agent Disposal Facility.

[7] Data is reported in three ways in the trial burn reports. Compounds which were not detected in any portion of a sampling train are reported with a < and ND qualifier and represent the sum of the detection limits for the analysis of all aliquots from the sampling train. Compounds which were detected in at least one, but not all, portions of the sampling train are reported with a < qualifier. Values are then the sum of the measured value and the detection limits for the other portions of the sampling train. Compounds which were detected in all portions of the sampling train are reported with no qualifier. It is this third category of values that is represented in the speciated organics column of Table 4-6.

4.3.2 Common Stack COPC Emission Rates

The UMCDF common stack combines emissions from four furnace systems; liquid incinerators 1 and 2 (LIC1 and LIC2), the deactivation furnace system (DFS), and the metal parts furnace (MPF). The temporal characteristic of the emissions from the COMSTK is highly variable during operations since there are large differences in the chemical composition of the materials being processed and substantial variation in the types of furnaces used for processing different types of munitions. Unfortunately, current risk assessment software is not capable of incorporating temporal variability in emission rates. As such, it was necessary to estimate a single emission rate for each of the 101 COMSTK COPCs and apply this emission rate over the duration of the full operating period (10 years).

Appendix D provides a detailed description of the procedure used to develop a single, representative emission for each common stack COCP. In brief, individual furnace trial burn results for the various agents and munitions were combined though a weighting process that accounted for the number of each type of munitions to be processed, the furnaces necessary to process the components within the munitions, and the average feed rate required to process the munitions over the estimated campaign durations[8].

Application of the computations in Appendix D required the development of emission rate table for each furnace and each campaign. Trial burn data from all the chemical demilitarization facilities was reviewed and the highest detected value for a given COPC for a given furnace and agent campaign were selected to represent the emission rate for that condition. If a given COPC was never detected for a given furnace and agent, then the emission rate in the table would be 0.0. Chemical agents were assumed to be present at their detection limit during their individual campaigns. During closure it was assumed that all three agents would be present at their detection limits since multi-agent wastes will be processed during this campaign. The result of this analysis was a series of 15 tables (Appendix G) which were applied as indicated in Appendix D to create a single common stack composite emission rate for each COPC. Table 4-7 provides a description of these 15 tables while Table 4-8 shows how they were applied to the various processing campaigns. Table 4-9 provides a list of the composite COPC emission rates for the COMSTK. These values are also included in Appendix C. Values in Table 4-9 include a site specific upset factor of 1.01 for organics and 1.0 for metals. These upset factors were derived from analysis of site operating data as described in Appendix S.

[8] The campaign durations used in this analysis (3.68 years for GB, 2.32 years for VX, 2 years for HD, and 2 years for closure) were derived from those reported in the 2004 RAWP by assuming a separate 2 year closure phase, but leaving the total plant life at 10 years. Hence, each of the agent campaign durations reported in the RAWP were multiplied by (8/10) and a 2 year closure campaign was added. This modification was necessary to model secondary waste processing during plant closure.

Table 4-7: List Emission Rate Tables

Table Number	Campaign	Furnace
1	GB	LIC 1
2	VX	LIC 1
3	HD	LIC 1
4	GB	LIC 2
5	VX	LIC 2
6	HD	LIC 2
7	GB	MPF (combustible and noncombustible materials)
8	VX	MPF (combustible and noncombustible materials)
9	HD	MPF (combustible and noncombustible materials)
10	GB	DFS
11	VX	DFS
12	Closure	MPF (combustible materials)
13	Closure	LIC 1
14	Closure	MPF (noncombustible materials)
15	Closure	DFS

Table 4-8: Application of Emission Rate Tables by Processing Campaign

Source	Table Numbers						
	GB Campaign		VX Campaign		HD Campaign		Closure Campaign
	Agent	SW	Agent	SW	Agent	SW	SW
LIC1	1	Max of 1 & 4	2	Max of 2 & 5	3	Max of 3 & 6	13
LIC2	4	NU [b]	5	NU [b]	6	NU [b]	NU [b]
MPF	7	7	8	8	9	9	12
MPFnc [a]	NU [b]	7	NU [b]	8	NU [b]	9	14
DFS	10	10	11	11	12	12	15

[a] MPFnc represents the processing of noncombustible secondary waste in the MPF.
[b] NU implies the furnace is assumed to not be used for the indicated campaign.

Table 4-9: COMSTK Emission Rates Applied in the HHRA and ERA Base Model

CAS Number	CAS Name	Emission Rate (g/s)
Metals		
00-01-2	Aluminum compounds	2.722E-05
00-01-3	Antimony compounds	1.648E-06
00-01-4	Arsenic compounds	7.517E-07
00-01-5	Barium compounds	2.134E-06
00-01-6	Beryllium compounds	1.159E-08
00-01-7	Cadmium compounds	3.463E-07
00-01-8	Chromium compounds	4.000E-07
00-01-9	Copper compounds	6.080E-07
00-02-0	Lead compounds	1.853E-06
00-02-2	Manganese compounds	6.613E-06
00-02-4	Nickel compounds	1.477E-06
00-02-5	Selenium compounds	5.244E-07
00-02-6	Silver compounds	1.997E-07
00-02-7	Thallium compounds	4.586E-07
00-02-8	Vanadium compounds	4.313E-08
00-02-9	Zinc compounds	7.565E-05
00-16-6	Boron compounds	1.086E-05
00-16-9	Tin compounds	1.284E-06
00-15-3	Cobalt compounds	6.432E-08
7439-97-6	Mercury	1.122E-09
7487-94-7	Mercuric Chloride	2.692E-07
22967-92-6	Methyl Mercury	0.000E+00
Organics		
00-15-5	m,p-Xylene	1.263E-05
00-16-3	Composite TOE - Volatile	4.636E-02
00-16-4	Composite TOE - Semivolatile	1.555E-03
00-16-5	Composite TOE - Nonvolatile	2.059E-03
56-23-5	Carbon tetrachloride	1.765E-06
65-85-0	Benzoic acid	2.595E-05
67-64-1	Acetone	2.807E-04
67-66-3	Chloroform	3.524E-06
71-43-2	Benzene	1.032E-05
74-83-9	Methyl bromide	1.202E-05
74-87-3	Methyl chloride	6.254E-06
74-88-4	Methyl iodide	8.803E-07
74-96-4	Bromoethane	1.165E-07
74-97-5	Bromochloromethane	1.564E-07
75-00-3	Ethyl chloride	7.181E-07
75-01-4	Vinyl chloride	6.778E-07
75-09-2	Dichloromethane	1.891E-05
75-25-2	Tribromomethane	2.592E-06
75-27-4	Bromodichloromethane	2.176E-06

CAS Number	CAS Name	Emission Rate (g/s)
75-35-4	1,1-Dichloroethylene	1.550E-07
75-69-4	Trichlorofluoromethane	2.291E-06
75-71-8	Dichlorodifluoromethane	9.355E-07
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	4.588E-08
78-93-3	Methyl ethyl ketone	1.209E-05
79-01-6	Trichloroethylene	4.630E-08
84-66-2	Diethyl phthalate	5.569E-06
84-74-2	Dibutyl phthalate	3.283E-06
91-20-3	Naphthalene	2.080E-06
91-57-6	2-Methylnaphthalene	1.646E-06
95-47-6	2-Xylene	3.706E-06
95-48-7	o-Cresol	0.000E+00
95-50-1	1,2-Dichlorobenzene	8.981E-07
100-41-4	Ethylbenzene	2.181E-06
100-42-5	Styrene	1.008E-06
100-51-6	Benzyl alcohol	2.082E-06
100-52-7	Benzaldehyde	3.470E-05
106-46-7	1,4-Dichlorobenzene	2.341E-06
107-44-8	GB	2.257E-07
108-05-4	Vinyl acetate	3.498E-07
108-10-1	Methyl isobutyl ketone	7.976E-06
108-88-3	Toluene	2.611E-06
108-90-7	Chlorobenzene	2.555E-07
110-54-3	n-Hexane	1.103E-06
117-81-7	Bis(2-ethylhexyl)phthalate	1.138E-04
118-96-7	2,4,6-Trinitrotoluene	1.061E-07
121-14-2	2,4-Dinitrotoluene	5.878E-08
124-48-1	Chlorodibromomethane	1.160E-06
131-11-3	Dimethylphthalate	4.555E-07
505-60-2	Sulfur mustard (or H/HD)	1.050E-05
50782-69-9	VX	1.369E-07
73207-98-4	EA 2192	0.000E+00
1330-20-7	Xylene (mixed)	1.816E-06
10061-01-5	cis-1,3-Dichloropropene	1.028E-06
10061-02-6	trans-1,3-Dichloropropene	5.369E-07
Inorganics		
7446-09-5	Sulfur dioxide	4.983E-05
10102-44-0	Nitrogen dioxide	1.734E-03
7647-01-0	Hydrochloric acid	2.672E-04
7664-38-2	Phosphoric acid	7.682E-06
7664-39-3	Hydrofluoric acid	2.187E-05
7782-50-5	Chlorine [b]	2.959E-04
75-15-0	Carbon disulfide	6.933E-06
Dioxin/Furans/PCBs		
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin	8.320E-14

CAS Number	CAS Name	Emission Rate (g/s)
3268-87-9	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	1.355E-11
31508-00-6	2,3',4,4',5-Pentachlorobiphenyl	3.148E-10
32598-13-3	3,3',4,4'-Tetrachlorobiphenyl	3.656E-10
32598-14-4	2,3,3',4,4'-Pentachlorobiphenyl	4.134E-10
38380-08-4	2,3,3',4,4',5-Hexachlorobiphenyl	1.269E-10
39001-02-0	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	8.298E-12
39635-31-9	2,3,4,5,3',4',5'-Heptachlorobiphenyl	4.461E-13
51207-31-9	2,3,7,8-Tetrachlorodibenzofuran	6.210E-11
52663-72-6	2,3',4,4',5,5'-Hexachlorobiphenyl	8.091E-11
55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran	3.512E-13
57465-28-8	3,4,5,3',4'-Pentachlorobiphenyl	3.750E-11
67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran	1.440E-12
69782-90-7	2,3,3',4,4',5'-Hexachlorobiphenyl	3.892E-11
70362-50-4	3,4,4',5-Tetrachlorobiphenyl	2.662E-11
00-07-2	PCB Mixture (non-dioxin like, 5+ chlorines) [a]	2.701E-07
74472-37-0	2,3,4,4'5-Pentachlorobiphenyl	1.828E-09

[a] PCB Mixture (non-dioxin like, 5+ chlorines) is represented as Aroclor 1254
[b] Chlorine is represented as Cl_2 (chlorine gas).

Mercury emission estimates have been speciated in the COMSTK COPC list according to the EPA 2005 hazardous waste combustion guidance (EPA, 2005). Briefly, total mercury emissions were speciated into a volatile fraction (80%, represented as elemental mercury) and a particle bound fraction (20%, represented as mercuric chloride). Global cycling removes a portion of each fraction before deposition rates are calculated. For this analysis it was assumed that 51.25% of volatile mercury and 32% of the particle bound mercury emitted from the facility is deposited in the assessment region (EPA, 2005). The remainder of the material is lost to global cycling. Methyl mercury concentrations are calculated by IRAP-h from the deposited concentrations of mercuric chloride as described in the EPA guidance, but using an 8% fraction of methyl mercury created from mercuric chloride that contacts water and runoff (USACHPPM, 2008).

Figure 4-3 depicts the distribution of contaminant types in the composite COMSTK composite emission rates. The speciated organics make up 1.14% of the total COPC emissions while the speciated inorganics make up 4.72%. The three unspeciated organic fractions compose the remaining 94.14% of the COMSTK emissions. While this value represents a large fraction of the emitted material, it is not without precedent. Others have reported TOE levels ranging from 50% to 97.5% of total emissions (EPA, 2001).

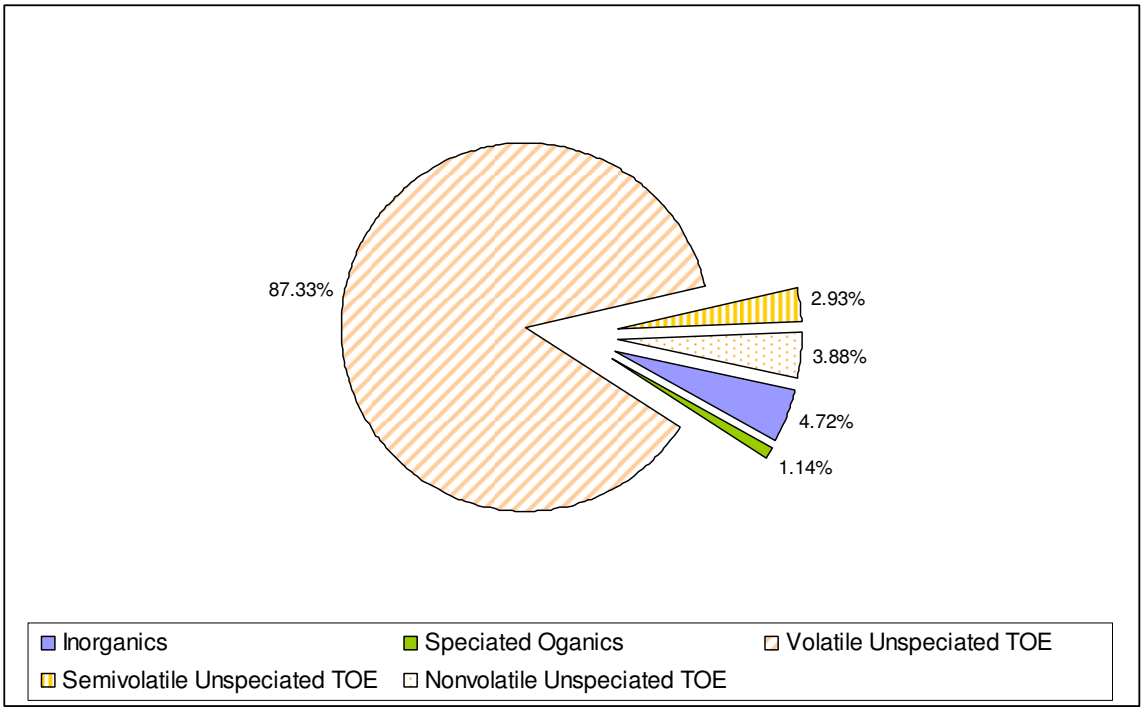


Figure 4-3: Distribution of types of emission rates for various types of contaminants.

4.4 Acute Emission Rates

Emission rate for analysis of acute hazards were developed using the approached described in *Framework for Developing and Unitizing Emission Rates in the Umatilla Post-Trial Burn Health Risk Assessment* (USACHPPM 2007c). This document is included in Appendix M. Emission rate estimates for the four sources were developed for nine potential upset conditions. These upset conditions are:

- Condition 1 – All furnaces and stacks operating under worst case conditions.
- Condition 2 – LIC1 in upset (10x worst case emissions) and all other furnaces and stacks operating with worst-case emissions.
- Condition 3 – LIC2 in upset (10x worst case emissions) and all other furnaces and stacks operating with worst-case emissions.
- Condition 4 – DFS in upset (10x worst case emissions) and all other furnaces and stacks operating with worst-case emissions.
- Condition 5 – MPF processing combustible materials is in upset (10x worst case emissions) and all other furnaces and stacks operating with worst-case emissions.
- Condition 6 – MPF processing noncombustible materials is in upset (10x worst case emissions) and all other furnaces and stacks operating with worst-case emissions.
- Condition 7 – BRA in upset (10x worst case emissions) and all other furnaces and stacks operating with worst-case emissions.
- Condition 8 – LAB in upset (10x worst case emissions) and all other furnaces and stacks operating with worst-case emissions.

- Condition 9 – MDB in upset (10x worst case emissions) and all other furnaces and stacks operating with worst-case emissions.

The worst case emissions data sets for each for each furnace correspond to an emission rate file containing the highest emission rate value for each COPC measured for any processing campaign. For example, for LIC1, the highest emission rate for each COPC found in Appendix G Tables 1, 2, 3, and 13 (see Table 4-8) was selected as the worst case value. Condition 1 emissions rate corresponded to the worst case emissions for all four sources. The COMSTK combined emission rate for each COPC was the sum of the furnace specific worst case emission rate, or:

$$ER_{i,total} = ER_{i,LIC1} + ER_{i,LIC2} + ER_{i,DFS} + ER^{\max}_{i,MPF}$$

Where $ER_{i,total}$ is the combined emission rate for the i^{th} COPC, $ER_{i,LIC1}$ is the worst case emission rate for LIC1, $ER_{i,LIC2}$ is the worst case emission rate for LIC2, $ER_{i,DFS}$ is the worst case emission rate for the DFS, and $ER^{max}_{i,MPF}$ is the larger of the worst case emission rates for the MPF processing combustible or noncombustible materials. It should be noted that this methodology resulted in a base condition (Condition 1) with a total emission rate from the COMSTK of 2.26 g/s which is 43 times higher that the chronic COMSTK emission rate total of 0.053 g/s. Given the tight process controls on the UMCDF and the fact that the worst case emissions for individual COPCs are derived from processing strategies which cannot occur simultaneously[9], it is questionable whether this estimate of emission rate is realistic.

Common stack COPC emission for upset Conditions 2 through 6 were estimated using 10 times the worst case emission rates for the furnace in question and worst case emission rates for all other furnaces. The composite emission rate was then computed as the sum of the furnace specific emission rates. For example, for Condition 4 with the DFS in upset the common stack emission rate for the i^{th} COPC would be expressed as:

$$ER_{i,total} = ER_{i,LIC1} + ER_{i,LIC2} + 10 \cdot ER_{i,DFS} + ER^{\max}_{i,MPF}$$

As indicated in Table 4-10, the total emission rates for the acute case are substantially higher than for the chronic analysis. The resulting upset emission rate files required by IRAP-h is provided in Appendix H.

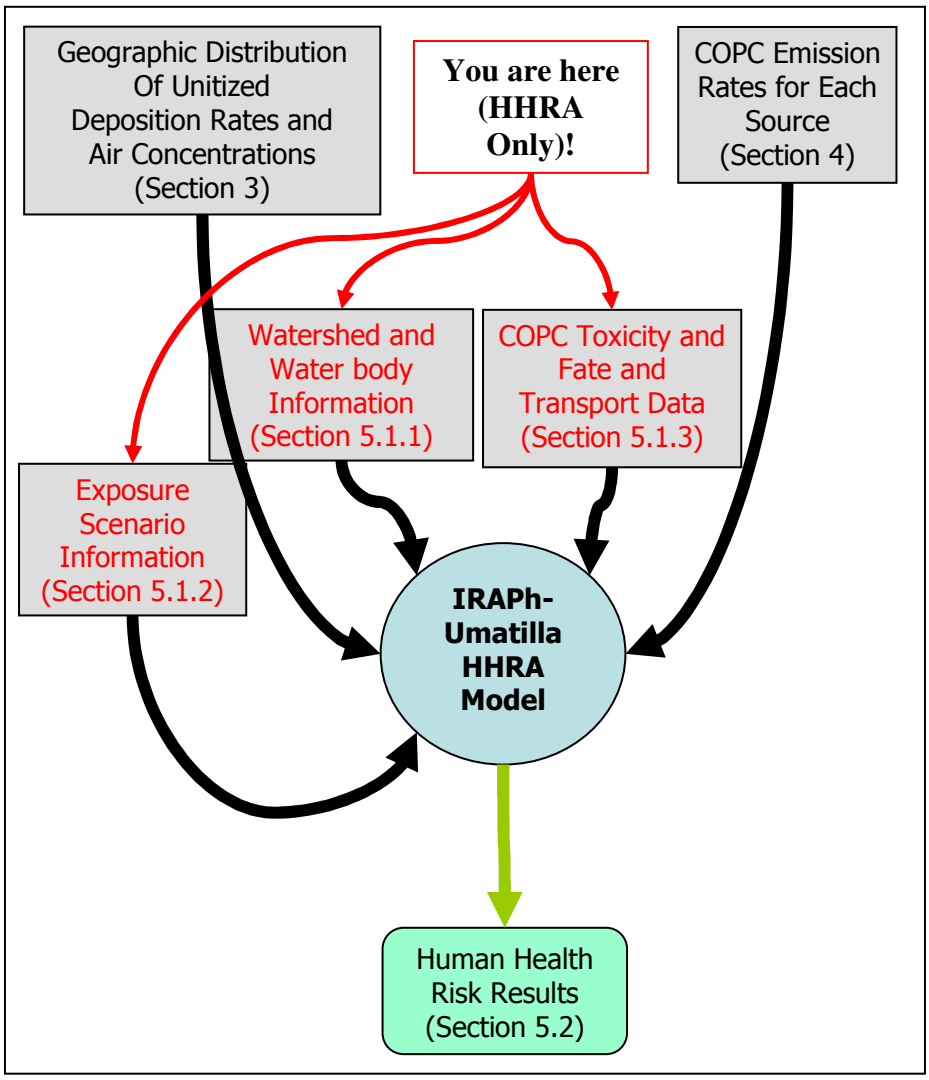
[9] The various maximum values are a combination of values from multiple agent campaigns which occur sequentially in time and not simultaneously.

Table 4-10: Total Emission Rate by stack for Upset Conditions

Condition	**Total Emission Rate (g/s)**			
	COMSTK	**BRASTK**	**LABSTK**	**MDBSTK**
Chronic Analysis	0.053	1.72×10^{-3}	4.90×10^{-6}	3.5×10^{-5}
Condition 1	2.26	1.72×10^{-3}	4.90×10^{-6}	3.5×10^{-5}
Condition 2	2.95	1.72×10^{-3}	4.90×10^{-6}	3.5×10^{-5}
Condition 3	2.94	1.72×10^{-3}	4.90×10^{-6}	3.5×10^{-5}
Condition 4	19.66	1.72×10^{-3}	4.90×10^{-6}	3.5×10^{-5}
Condition 5	3.32	1.72×10^{-3}	4.90×10^{-6}	3.5×10^{-5}
Condition 6	3.75	1.72×10^{-3}	4.90×10^{-6}	3.5×10^{-5}
Condition 7	2.26	1.73×10^{-2}	4.90×10^{-6}	3.5×10^{-5}
Condition 8	2.95	1.72×10^{-3}	4.90×10^{-5}	3.5×10^{-5}
Condition 9	2.94	1.72×10^{-3}	4.90×10^{-6}	3.5×10^{-4}

5 Human Health Risk Assessment

5.1 Human Health Risk Model



The Umatilla specific version of IRAP-h implements the 2005 EPA Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities, but was modified to incorporate unique components of the 2004 RAWP (Lakes Environmental, 2008). Appendix F provides the numerical framework for the standard EPA protocol. Appendix I provides a detailed description of the modifications made to IRAP-h for the Umatilla analysis. These modifications included five additional exposure scenarios. These scenarios are the Native American adult and child subsistence scenario, the depot worker scenario, and the depot military resident scenario. In addition, seven additional exposure pathways were added to account for local activities. These seven exposure pathways are:

1. Ingestion of surface water
2. Dermal contact with surface water

3. Consumption of goat meat
4. Inhalation exposure during sweat lodge use
5. Dermal contact during sweat lodge use
6. Dermal contact with surface soils
7. Addition of dioxin-like PCBs to breast milk pathway

5.1.1 Water bodies and Watersheds

Figures 5-1 and 5-2 depict the portions of the Columbia and Umatilla River watersheds that lie within the 50 km analysis region. Average deposition rates and air concentrations were calculated using the same air dispersion model as described in Section 3, but with a uniform calculation grid pattern (1000 meter spacing) to ensure proper area averaging was accomplished within the IRAP-h software. Watershed properties used by IRAP-h are show in Table 5-1 and the average deposition rates for both the Columbia River watershed and the Umatilla River watershed are shown in Appendix T, Table T-1 The values in these two tables are consistent with other UMDCF risk assessments (Ecology and Environment, 2008; USACHPPM, 2008).

Values for the water body parameters used by IRAP-h for the Columbia and Umatilla Rivers are provided in Table 5-2 while Appendix T, Table T-2, provides the average deposition rates and air concentrations for these two water bodies. The average properties provided in Appendix T were calculated in a manner analogues to that used for the watersheds parameters (Appendix T, Table T-1). The water body properties reported in Tables 5-2 are consistent with those reported in other UMDCF risk assessments (Ecology and Environment, 2008; USACHPPM, 2008).

Table 5-1: Watershed Properties Used in IRAP-h

Parameter	Watershed		Units
	Columbia River	Umatilla River	
Empirical Slope Coefficient [a]	0.125	0.125	Unitless
USLE Cover Management Factor [a]	0.1	0.1	Unitless
USLE Erodibility Factor [a]	0.39	0.39	ton/acre
USLE Length-Slope Factor [a]	1.5	1.5	Unitless
USLE Supporting Practice Factor [a]	1	1	Unitless
USLE Rainfall (or Erosivity) Factor [b]	20	20	yr^{-1}
Impervious Watershed Area Receiving Pollutant Deposition [c]	3.11E+08	2.69E+07	m^2
Watershed Area Receiving Fallout [c]	7.78E+09	2.69E+09	m^2

[a] Default value in EPA, 2005
[b] Value used in UMCDF Pre-Trial Burn Risk Assessment
[c] Calculated from watershed geometry

Table 5-2: Columbia and Umatilla River Properties Used in IRAP-h

Parameter	Units	Water Body	
		Columbia River	Umatilla River
Surface Area Of Affected Area [a]	m^2	1	1
Bed Sediment Concentration [b]	g/cm^3	1	1
Drag Coefficient [b]	--	0.0011	0.0011
Depth Of Upper Benthic Layer [b]	m	0.03	0.03
Depth Of Water Column	m	10	2
Dimensionless Viscous Sublayer Thickness [b]	--	4	4
Von Karman's Constant [b]	--	0.4	0.4
Fraction Of Mercury Speciated Into MeHg In Water [c]	--	0.08	0.08
Fraction Of Runoff Hg Speciated Into MeHg [c]		0.08	0.08
Current Velocity	m/s	0.58	0.35
Viscosity Of Water Corresponding To Water Temp. [b]	g/cm-s	1.69E-02	1.69E-02
Fraction Organic Carbon In Bottom Sediment [b]	--	0.04	0.04
Density Of Water Corresponding To Water Temp. [b]	g/cm^3	1	1
Water Body Temperature	K	286	286
Bed Sediment Porosity [b]	Lwater/Lsedim.	0.6	0.6
Total Suspended Solids Concentration [b]	mg/L	10	10
Average Volumetric Flow Rate Through Water Body [d]	m^3/yr	1.37E+11	3.93E+08
Water Body Surface Area [e]	m^2	2.82E+08	2.91E+06

[a] IRAP-h parameter that is not used in calculations.
[b] Default values from EPA 2005
[c] USACHPPM 2008
[d] Value used in UMCDF Pre-Trial Burn Risk Assessment
[e] Calculated from map projections

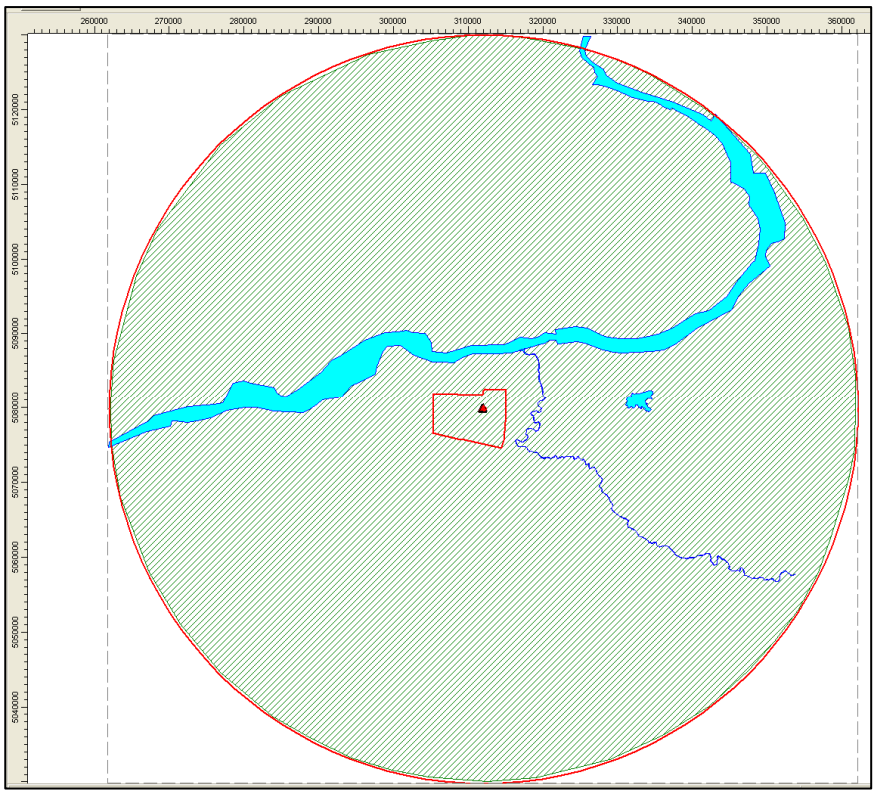


Figure 5-1: Columbia River watershed (green) within the 50 km evaluation area.

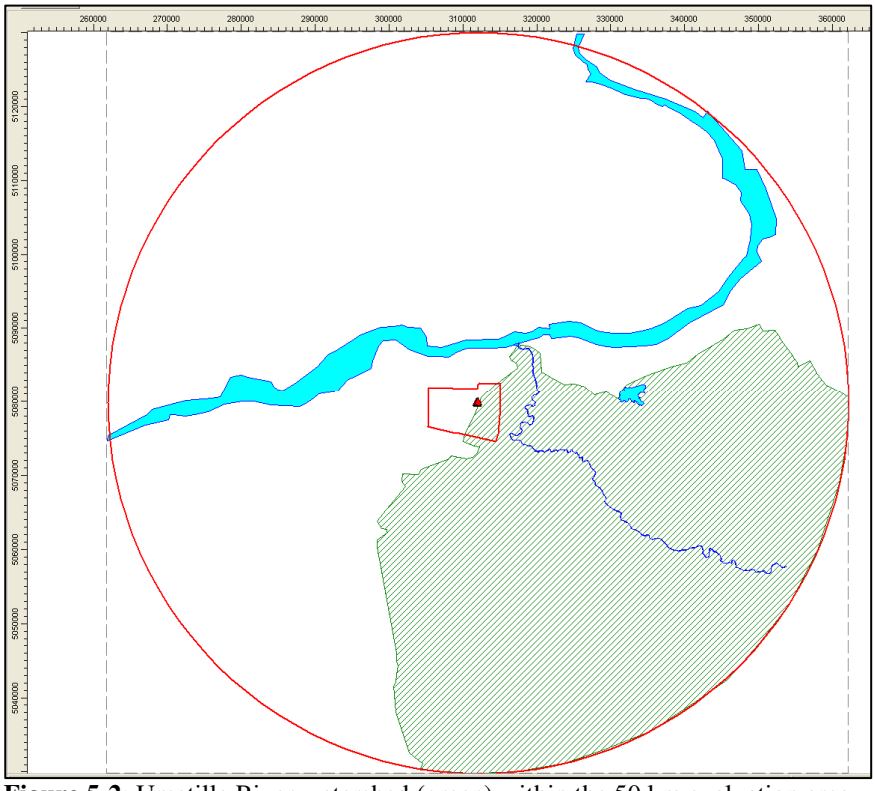


Figure 5-2: Umatilla River watershed (green) within the 50 km evaluation area.

5.1.2 Exposure Scenarios

As outlined in the 2004 RAWP, the following exposure scenarios were evaluated in this risk assessment:

- Suburban resident adult and child
- Depot worker adult
- Military resident adult
- Subsistence farmer adult and child
- Subsistence fisher adult and child
- Native American adult and child
- Breast-feeding infant
- Acute exposure

The pathways of exposure considered for each of these receptors are summarized in Table 5-3. Table 5-4 indicates the locations where each exposure scenario was evaluated. Parameters describing each of these exposure scenarios are provided in Tables 5-5 for adults and 5-6 for children. The exposure values are identical to those applied by others (Ecology and Environment, 2008). Table 5-7 provides the site exposure properties that apply to all exposure scenarios. The geographic locations of each receptor are shown in Figure 5-3. The deposition rates and air concentrations applied at each of the four evaluation points are listed in Appendix T, Tables T-4 through T-7. Each value in these tables corresponds to the maximum found anywhere within the geographic region represented by the exposure evaluation point. Thus, the values for the off-site evaluation point are the maximums found at any calculation node throughout the full 50 km evaluation area, excluding those nodes that fall within the UMCD fence line. Similarly, the on-site values correspond to the maximums found within the UMCD fence line. The deposition rate and air concentration values for the on-site and UMCDF evaluation points are identical since the maximum air parameters for the UMCD all occurred within the UMCDF boundary.

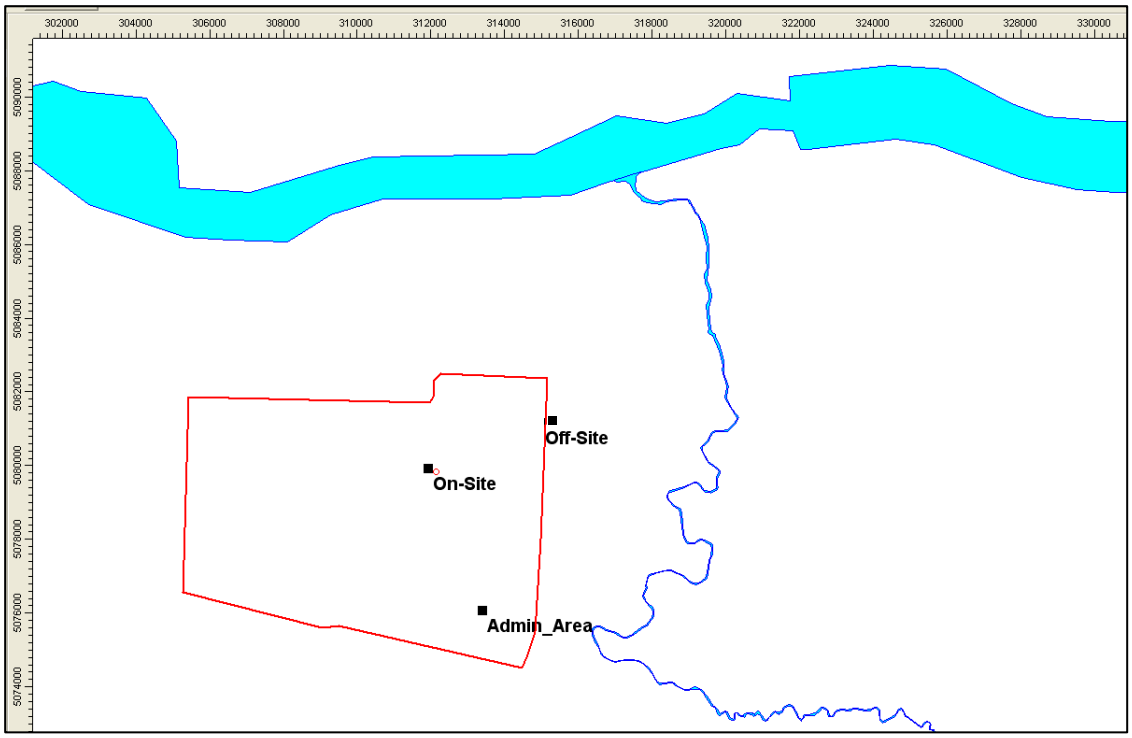


Figure 5-3: Hypothetical locations for evaluating exposure scenarios. All deposition parameters at each location represented the maximum values found within the areas the locations represent (on the UMCD, off the UMCD, within the Administration Area).

Table 5-3: Exposure Pathways Evaluated for Each Receptor Type.

Exposure Pathway	Subsistence Farmer Adult/Child	Resident Adult/Child	Subsistence Fisher Adult/Child	Native American Adult	Native American Child	On-Site Worker	Military Resident	Breast-Feeding Infant	Acute
Inhalation of vapors and particles [a]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Ingestion of soil and dust	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Dermal contact with soil	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Ingestion of surface water [c]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Dermal contact with surface water [c]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Ingestion of local produce	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Ingestion of local animals	Yes	No	No	Yes	Yes	No	No	No	No
Ingestion of local fish	No	No	Yes	Yes	Yes	No	No	No	No
Inhalation and dermal adsorption during sweat lodge use	No	No	No	Yes	No	No	No	No	No
Ingestion of breast milk	No	No	No	No	No	No	No	Yes	No

[a] Assessed only for the operation period (10 years).

[b] Exposure as an infant to mothers milk containing dibenzo-p-dioxins and polychlorinated dibenzofurans and co-planar, dioxin-like polychlorinated biphenyls (PCBs) is included in the adult scenarios. The pathway is then evaluated separately.

[c] The Umatilla River was assumed as the surface water source since it has a higher COPC concentration than the Columbia River.

Table 5-4: Exposure Scenario Evaluation Points

Exposure Scenario	Evaluation Point			
	UMCD Administration Area	**Off-Site**	**On-Site**	**UMCDF**
Subsistence Farmer	No	Yes	Yes	No
Subsistence Fisher	No	Yes	Yes	No
Native American	No	Yes	Yes	No
Suburban Resident	No	Yes	Yes	No
Depot Worker	No	Yes [b]	No	Yes [b]
Military Resident	Yes [a]	Yes [a]	No	No

[a] Military resident scenario modeled living 2 years in the administration area and 28 years at the off-site co-location point.

[b] The depot worker scenario assumed the individual was within the boundary of the UMCDF for 8 hours per day and at the off-site co-location point for 16 hours per day. While at the UMCDF industrial exposure parameters were applied and suburban resident parameters were applied while the individual was off-site.

Table 5-5: Exposure Scenario Parameters for Adults

Parameter	Unit	Resident Adult	UMDF Worker	Military Adult	Farmer Adult	Fisher Adult	Native Adult
Adherence factor of soil to skin	mg-soil/cm^2-event	0.07	0.07	0.07	0.1	0.07	0.1
Averaging time for carcinogens	yr	70	70	70	70	70	70
Averaging time for noncarcinogens	yr	30	25	2	40	30	70
Consumption rate of BEEF (WILD GAME for Natives)	kg/kg-day FW	0	0	0	0.00417	0	0.00198
Body weight	kg	70	70	70	70	70	70
Consumption rate of POULTRY (FOWL for Natives)	kg/kg-day FW	0	0	0	0.00227	0	0.000154
Consumption rate of ABOVEGROUND PRODUCE	kg/kg-day DW	0.00032	0.00032	0.00032	0.00176	0.00032	0.00124
Consumption rate of BELOWGROUND PRODUCE	kg/kg-day DW	0.00014	0.00014	0.00014	0.000552	0.00014	0.000706
Consumption rate of DRINKING WATER	L/day	2	2	2	2	2	3
Consumption rate of PROTECTED ABOVEGROUND PRODUCE	kg/kg-day DW	0.00061	0.00061	0.00061	0.00064	0.00061	0.00183
Consumption rate of SOIL	kg/d	0.0001	0.0002	0.0001	0.0002	0.0001	0.0002
Exposure duration	yr	30	25	2	40	30	70
Exposure frequency	day/yr	350	250	250	350	350	365
Exposure frequency of bathing	day/year	350	250	250	350	350	365
Exposure frequency during sweat lodge use	events/year	0	0	0	0	0	365
Exposure frequency of dermal contact with soil	events/year	350	250	250	350	350	365
Exposure frequency of swimming	day/year	10.5	0	10.5	10.5	10.5	10.95
Consumption rate of EGGS	kg/kg-day FW	0	0	0	0.00185	0	0.0003
Exposure time during sweat lodge use	hr/event	0	0	0	0	0	2
Event frequency of dermal contact with water and soil	events/day	1	1	1	1	1	1
The number of sweat lodge use	events/day	0	0	0	0	0	1
Fraction contaminated ABOVEGRD PRODUCE	--	1	1	1	1	1	1
Fraction of contaminated DRINKING WATER	--	1	1	1	1	1	1
Fraction contaminated SOIL	--	1	1	1	1	1	1
Consumption rate of FISH	kg/kg-day FW	0	0	0	0	0.0035	0.00849

Parameter	Unit	Resident Adult	UMDF Worker	Military Adult	Farmer Adult	Fisher Adult	Native Adult
Fraction of contaminated FISH	--	1	1	1	1	1	1
Consumption rate of GOAT	kg/kg-day FW	0	0	0	0.0017	0	0
Inhalation exposure duration	yr	10	10	2	10	10	10
Inhalation exposure frequency	day/yr	350	250	250	350	350	365
Inhalation exposure time	hr/day	24	8	8	24	24	24
Fraction of contaminated BEEF (WILD GAME for Natives)	--	1	1	1	1	1	1
Fraction of contaminated POULTRY (FOWL for Natives)	--	1	1	1	1	1	1
Fraction of contaminated EGGS	--	1	1	1	1	1	1
Fraction of contaminated GOAT	--	1	1	1	1	1	1
Fraction of contaminated MILK	--	1	1	1	1	1	1
Fraction of contaminated PORK	--	1	1	1	1	1	1
Inhalation rate	m^3/hr	0.83	1.5	1.5	0.83	0.83	1.25
Consumption rate of MILK	kg/kg-day FW	0	0	0	0.0044	0	0.0044
Consumption rate of PORK	kg/kg-day FW	0	0	0	0	0	0
Skin surface area available for contact with soil	cm^2	5700	5700	5700	5700	5700	5700
Skin surface area available for contact with water	cm^2	18000	18000	18000	18000	18000	18000
Body surface area available for contact during a sweat	m^2	0	0	0	0	0	1.8
Time period at the beginning of combustion	yr	0	0	0	0	0	0
Length of exposure duration	yr	30	25	2	40	30	70

Table 5-6: Exposure Scenario Parameters for Children

Parameter	Unit	Resident Child	Farmer Child	Fisher Child	Native Child
Adherence factor of soil to skin	mg-soil/cm^2-event	0.2	0.2	0.2	0.2
Averaging time for carcinogens	yr	70	70	70	70
Averaging time for noncarcinogens	yr	6	6	6	6
Consumption rate of BEEF (WILD GAME for Natives)	kg/kg-day FW	0	0.00256	0	0.00131
Body weight	kg	15	15	15	15
Consumption rate of POULTRY (FOWL for Natives)	kg/kg-day FW	0	0.00155	0	0.000105
Consumption rate of ABOVEGROUND PRODUCE	kg/kg-day DW	0.00077	0.00176	0.00077	0.00124
Consumption rate of BELOWGROUND PRODUCE	kg/kg-day DW	0.00023	0.00052	0.00023	0.000706
Consumption rate of DRINKING WATER	L/day	1	1	0.67	1.5
Consumption rate of PROTECTED ABOVEGROUND PRODUCE	kg/kg-day DW	0.0015	0.00136	0.0015	0.00183
Consumption rate of SOIL	kg/d	0.0002	0.0002	0.0002	0.0002
Exposure duration	yr	6	6	6	6
Exposure frequency	day/yr	350	350	350	365
Exposure frequency of bathing	day/year	350	350	350	365
Exposure frequency during sweat lodge use	events/year	0	0	0	0
Exposure frequency of dermal contact with soil	events/year	350	350	350	365
Exposure frequency of swimming	day/year	10.5	10.5	10.5	10.95
Consumption rate of EGGS	kg/kg-day FW	0	0.00133	0	0.000216
Exposure time during sweat lodge use	hr/event	0	0	0	0
Event frequency of dermal contact with water and soil	events/day	1	1	1	1
The number of sweat lodge use	events/day	0	0	0	1
Fraction contaminated ABOVEGRD PRODUCE	--	1	1	1	1
Fraction of contaminated DRINKING WATER	--	1	1	1	1
Fraction contaminated SOIL	--	1	1	1	1

Parameter	Unit	Resident Child	Farmer Child	Fisher Child	Native Child
Consumption rate of FISH	kg/kg-day FW	0	0	0.00088	0.00598
Fraction of contaminated FISH	--	1	1	1	1
Consumption rate of GOAT	kg/kg-day FW	0	0.0013	0	0
Inhalation exposure duration	yr	6	6	6	6
Inhalation exposure frequency	day/yr	350	350	350	365
Inhalation exposure time	hr/day	24	24	24	24
Fraction of contaminated BEEF (WILD GAME for Natives)	--	1	1	1	1
Fraction of contaminated POULTRY (FOWL for Natives)	--	1	1	1	1
Fraction of contaminated EGGS	--	1	1	1	1
Fraction of contaminated GOAT	--	1	1	1	1
Fraction of contaminated MILK	--	1	1	1	1
Fraction of contaminated PORK	--	1	1	1	1
Inhalation rate	m^3/hr	0.5	0.5	0.5	0.5
Consumption rate of MILK	kg/kg-day FW	0	0.0073	0	0.0073
Consumption rate of PORK	kg/kg-day FW	0	0	0	0
Skin surface area available for contact with soil	cm^2	2800	2800	2800	2800
Skin surface area available for contact with water	cm^2	6600	6600	6600	6600
Body surface area available for contact during a sweat	m^2	0	0	0	0
Time period at the beginning of combustion	yr	0	0	0	0
Length of exposure duration	yr	6	6	6	6

Table 5-7: Site Parameters Required by IRAP-h.

Description	Symbol	Units	Value
Soil dry bulk density	bd	g/cm^3	1.5
Forage fraction grown on contaminated soil eaten by CATTLE	beef_fi_forage	--	1
Grain fraction grown on contaminated soil eaten by CATTLE	beef_fi_grain	--	1
Silage fraction grown on contaminated eaten by CATTLE	beef_fi_silage	--	1
Qty of forage eaten by CATTLE each day	beef_qp_forage	kg DW/day	11.3
Qty of grain eaten by CATTLE each day	beef_qp_grain	kg DW/day	0.47
Qty of silage eaten by CATTLE each day	beef_qp_silage	kg DW/day	0
Grain fraction grown on contaminated soil eaten by CHICKEN	chick_fi_grain	--	1
Qty of grain eaten by CHICKEN each day	chick_qp_grain	kg DW/day	0.2
Average annual evapotranspiration	e_v	cm/yr	81.3
Duration of bathing event	event_t_bathing	hr/event	0.58
Duration of swimming event	event_t_swimming	hr/event	1
Fish lipid content	f_lipid	--	0.07
Fraction of CHICKEN's diet that is soil	fd_chicken	--	0.11
Fraction of skin area (SA) in contact with water during a sweat	fsa	--	1
Universal gas constant	gas_r	atm-m^3/mol-K	0.0000821
Forage fraction grown on contaminated soil eaten by GOAT	goat_fi_forage	--	1
Grain fraction grown on contaminated soil eaten by GOAT	goat_fi_grain	--	1
Silage fraction grown on contaminated eaten by GOAT	goat_fi_silage	--	1
Qty of forage eaten by GOAT each day	goat_qp_forage	kg DW/day	0.98
Qty of grain eaten by GOAT each day	goat_qp_grain	kg DW/day	0.041
Qty of silage eaten by GOAT each day	goat_qp_silage	kg DW/day	0
Average annual irrigation	i	cm/yr	55
Plant surface loss coefficient	kp	yr^{-1}	18
Fraction of mercury emissions NOT lost to the global cycle	merc_q_corr	--	0.48
Fraction of mercury speciated into methyl mercury in produce	mercmethyl_ag	--	0.22
Fraction of mercury speciated into methyl mercury in soil	mercmethyl_sc	--	0.02
Forage fraction grown contaminated soil, eaten by MILK CATTLE	milk_fi_forage	--	1
Grain fraction grown contaminated soil, eaten by MILK CATTLE	milk_fi_grain	--	1

Description	Symbol	Units	Value
Silage fraction grown contaminated soil, eaten by MILK CATTLE	milk_fi_silage	--	1
Qty of forage eaten by MILK CATTLE each day	milk_qp_forage	kg DW/day	17.3
Qty of grain eaten by MILK CATTLE each day	milk_qp_grain	kg DW/day	3
Qty of silage eaten by MILK CATTLE each day	milk_qp_silage	kg DW/day	0
Averaging time	milkfat_at	yr	1
Body weight of infant	milfat_bw_infant	kg	9.4
Exposure duration of infant to breast milk	milkfat_ed	yr	1
Proportion of ingested dioxin that is stored in fat	milkfat_f1	--	0.9
Proportion of mothers weight that is fat	milkfat_f2	--	0.3
Fraction of fat in breast milk	milkfat_f3	--	0.04
Fraction of ingested contaminant that is absorbed	milkfat_f4	--	0.9
Half-life of dioxin in adults	milkfat_h	days	2560
Ingestion rate of breast milk	milkfat_ir_milk	kg/day	0.688
Viscosity of air corresponding to air temp.	mu_a	g/cm-s	0.000181
Average annual precipitation	p	cm/yr	21.59
Fraction of grain grown on contaminated soil eaten by PIGS	pork_fi_grain	--	1
Fraction of silage grown on contaminated soil and eaten by PIGS	pork_fi_silage	--	1
Qty of grain eaten by PIGS each day	pork_qp_grain	kg DW/day	3.3
Qty of silage eaten by PIGS each day	pork_qp_silage	kg DW/day	1.4
Qty of soil eaten by CATTLE	qs_beef	kg/day	0.5
Qty of soil eaten by CHICKEN	qs_chick	kg/day	0.022
Qty of soil eaten by GOAT	qs_goat	kg/day	0.04
Qty of soil eaten by DAIRY CATTLE	qs_milk	kg/day	0.4
Qty of soil eaten by PIGS	qs_pork	kg/day	0.37
Average annual runoff	r	cm/yr	2.54
Density of air	rho_a	g/cm^3	0.0012
Solids particle density	rho_s	g/cm^3	2.7
Interception fraction - edible portion ABOVEGROUND	rp	--	0.39
Interception fraction - edible portion FORAGE	rp_forage	--	0.5
Interception fraction - edible portion SILAGE	rp_silage	--	0.46

Description	Symbol	Units	Value
Radius of sweat lodge	slr	m	1
Ambient air temperature	t	K	285
Temperature correction factor	theta	--	1.026
Soil volumetric water content	theta_s	mL/cm^3	0.244
Length of plant exposure to deposition - ABOVEGROUND	tp	Yr	0.16
Length of plant exposure to deposition - FORAGE	tp_forage	Yr	0.12
Length of plant exposure to deposition - SILAGE	tp_silage	Yr	0.16
Average annual wind speed	u	m/s	3.9
Dry deposition velocity	vdv	cm/s	0.5
Volume of water used in a sweat lodge (nonvolatile)	vw_nonvol	liters	0.34
Volume of water used in a sweat lodge (volatile)	vw_vol	liters	4
Wind velocity	w	m/s	4.5
Yield/standing crop biomass - edible portion ABOVEGROUND	yp	kg DW/m^2	2.24
Yield/standing crop biomass - edible portion FORAGE	yp_forage	kg DW/m^2	0.24
Yield/standing crop biomass - edible portion SILAGE	yp_silage	kg DW/m^2	0.8
Soil mixing zone depth	z	cm	2

5.1.3 COPC Toxicity and Fate and Transport Database

The COPC database containing the chemical and toxicological input parameters used by IRAP-h is provided in Appendix K. All values within this data set are identical to those used by others to evaluate UMCDF human health risk (Ecology and Environment, 2008). Values in this data set were developed using the protocol outlined in "*Development of Fate and Transport Datasets for Use in Environmental Health Risk Assessments*" which is provided in Appendix M (USACHPPM, 2007a).

Surrogate toxicity values for the three TOE fractions were developed by others[10] using the following methodology:

1. The remaining compounds from the original COPC list (The 591 Group 3 and 4 compounds in Appendix E) were screened to determine those with available toxicity data. The result was a list of 287 COPC.

2. These 287 compounds were subdivided by boiling point into three groups; 47 volatile chemicals (BP<100 ˚C), 163 semi-volatile chemicals (100 ˚C ≤ BP≤ 300 ˚C), and 77 non-volatile chemicals (BP> 300˚C). Appendix L lists the compounds by group along with their associated and boiling points and other physical properties. Data in Appendix L was taken from others[11].

3. A geometric mean for molecular weight, vapor pressure, boiling point, melting point, aqueous solubility, Octanol-water partition coefficient, and soil half-life was calculated for each boiling point group. These geometric mean values were then used to subsequently calculate pertinent fate and transport parameters required by the IRAP-h and EcoRisk software. Calculation methods are provided in Appendix M and were compiled by others (USACHPPM, 2007a). Table 5-8 summarizes the resulting average parameter for each of the three TOE fractions.

4. Human health toxicity values for the three TOE fractions were computed as the geometric mean of the compounds in the corresponding boiling point group. Table 5-9 provides a summary of these values while Appendix N lists values for the individual compounds. The data contained in Appendix N was derived based on the August 27, 2007 Process Input Data (PIDS) (USACHPPM, 2007b).

[10] Ecology and Environment developed these parameters for their January 31, 2008 Risk Assessment report for the DEQ. Their methods, however, were not included in their report, but were subsequently provided to the CTUIR.

[11] Data was mainly obtained from USACHPPM and was contained in their database filed titled, "RAWP PIDS-F&E-UMDF (2007_08_29).mdb". A few additional data points were added by E&E from unknown sources.

Table 5-8: Estimated Physical Properties and Transport Properties For the Three TOE Fractions

Parameter	Units	Volatile TOE	Semi-volatile TOE	Non-volatile TOE
Molecular Weight	AMU	7.77E+01	1.47E+02	2.72E+02
Melting Point	K	1.59E+02	2.70E+02	3.77E+02
Boiling Point	K	3.11E+02	4.60E+02	6.70E+02
Aqueous Solubility	mg/L	9.43E+02	1.24E+02	1.82E-03
Vapor Pressure	atm	5.40E-01	1.52E-04	4.94E-10
Henry's Constant	(atm-m^3/mol)	4.45E-02	1.81E-04	7.39E-05
Vapor Fraction	(unitless)	1.00E+00	1.00E+00	8.34E-01
Diffusivity, Air	(cm^2/s)	1.04E-01	6.82E-02	4.53E-02
Diffusivity, Water	(cm^2/s)	1.21E-05	7.90E-06	5.24E-06
Octanol/Water Coefficient	(unitless)	1.34E+02	1.20E+03	1.47E+07
Soil Carbon/Water Coefficient	(ml-w/g-s)	9.93E+02	1.06E+03	1.11E+07
Soil/Water Coefficient	(cm^3/g)	9.93E+00	1.06E+01	1.11E+05
Sediment/Water Coefficient	(L/kg)	7.44E+01	7.99E+01	8.34E+05
Bed Sediment/Water Coefficient	(cm^3/g)	3.97E+01	4.26E+01	4.45E+05
Soil Degradation Coefficient	(1/yr)	5.25E+00	7.07E+00	3.78E-01
Root Concentration Factor	(µg/g-DW)/(µg/ml-water)	1.31E+00	7.10E+00	9.98E+03
Bioconcentration Factor, Root Vegetables	(µg/g-DW)/(µg /g-soil)	1.32E-01	6.67E-01	8.97E-02
Bioconcentration Factor, Aboveground Produce	(µg/g-DW)/(µg /g-soil)	2.29E+00	6.43E-01	2.79E-03
Bioconcentration Factor, Forage	(µg/g-DW)/(µg /g-soil)	2.29E+00	6.43E-01	2.79E-03
Bioconcentration Factor, Grain	(µg/g-DW)/(µg /g-soil)	2.29E+00	6.43E-01	2.79E-03
Biotransfer Factor, Aboveground Produce	(µg/g-DW)/(µg /g-air)	2.31E-04	5.87E-01	3.25E+04
Biotransfer Factor, Forage	(µg/g-DW)/(µg /g-air)	2.31E-04	5.87E-01	3.25E+04
Biotransfer Factor, Beef	(day/kg-FW)	3.57E-03	1.21E-02	2.04E-02
Biotransfer Factor, Milk	(day/kg-FW)	7.41E-04	2.50E-03	4.22E-03
Biotransfer Factor, Pork	(day/kg-FW)	4.26E-03	1.44E-02	2.43E-02
Biotransfer Factor, Chicken	(day/kg-FW)	2.59E-03	8.76E-03	1.48E-02
Biotransfer Factor, Eggs	(day/kg-FW)	1.48E-03	5.00E-03	8.44E-03
Biotransfer Factor, Mammal [a]	(day/kg FW tissue)	3.57E-03	1.21E-02	2.04E-02
Biotransfer Factor, Bird [a]	(day/kg FW tissue)	2.59E-03	8.76E-03	1.48E-02
Bioconcentration Factor, Game Fish	(L/kg-FW)	8.66E+00	4.69E+01	3.81E+04
Bioconcentration Factor, Tropic Level Fish	(L/kg-FW)	1.91E+01	1.08E+02	1.83E+05
Bioaccumulation Factor, Game Fish	(L/kg-FW)	0.00E+00	0.00E+00	9.26E+05
Soil-Skin Dermal Absorption Coefficient	(unitless)	0.00E+00	1.00E-01	1.00E-01
Fraction Absorbed, Dermal/Water Contact	(unitless)	1.00E+00	1.00E+00	6.00E-01
Dermal Water Permeability Coefficient	(cm/hr)	0.00E+00	0.00E+00	0.00E+00

[a] Value used exclusively by EcoRisk View.

Table 5-9: Estimated Human Health Toxicity for the Three TOE Fractions

Parameter	Units	Volatile TOE	Semi-volatile TOE	Non-volatile TOE
Oral CSF [a]	$(mg/kg\text{-}day)^{-1}$	6.70E-02	4.00E-01	2.50E+01
Inhalation UR [b]	(m^3/ug)	1.10E-05	1.20E-04	4.10E-04
Inhalation CSF	$(mg/kg\text{-}day)^{-1}$	3.70E-02	4.40E-01	5.50E+01
Oral RfD [c]	(mg/kg-day)	8.00E-01	3.00E-02	9.00E-02
RfC [d]	(ug/m^3)	2.00E+00	4.00E-01	1.00E-01
Inhalation RfD	(mg/kg-day)	5.00E-01	1.00E-01	4.00E-02
AIEC [e,f]	(mg/m^3)	1.00E+02	3.00E+01	2.00E-01

[a] CSF is an acronym for cancer slope factor
[b] UR is an acronym for unit risk
[c] RfD is an acronym for reference dose
[d] RfC is an acronym for reference concentration
[e] AIEC is an acronym for Acute Inhalation Exposure Criteria.
[f] Note that the E&E January 31, 2008 report had these values listed in their text, but their modeling files used values 1000 times lower. No explanation for this difference is given in the report.

5.2 HHRA Results

5.2.1 Base Model

The Base Model evaluated for the UMCDF used all the air modeling, emissions, fate and transport, toxicity, and exposure scenario data sets described in the preceding sections. Results for both chronic and acute toxicity are described in the subsequent two sections. Note that the adult risk results assume exposure starts after age six. The child cancer risk values are the life time cancer risk for an individual with exposure only during the first six years of life.

5.2.1.1 Chronic Evaluation

Results for the estimated chronic cancer risks, hazard index, and infant average daily dose for PCDD and PCDFs (polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans, termed the ($ADD_{D/F}$) from the modeled UMCDF emissions are provided in Table 5-10. Values that exceed the HHRA established action levels of 1×10^{-5} (1E-05) for cancer risk, 0.25 for the hazard index, and 0.25 pg-TEQ/kg-day for the $ADD_{D/F}$ are indicated by shaded entries. For the off-site evaluation point, the Native American and resident farmer adult and child exposure scenarios exceed both the cancer risk and hazard index action levels. The hazard index for the resident and fisher child are also slightly above the action level at the off-site location. All scenarios exceed the cancer risk and hazard index at the on-site evaluation point. In contrast no exposure scenario has an infant $ADD_{D/F}$ in excess of the DEQ established action level of 0.25 pg-TEQ/kg-day.

The relative contributions of each exposure pathway to the cancer risk and hazard index for those exposure scenarios which exceeded the action levels at the off-site evaluation point are indicated in Tables 5-11 and 5-12, respectively. Tables 5-13 and 5-14 detail the cancer and non-cancer risks by pathway for those exposure scenarios which exceeded the

action levels at the on-site evaluation point. Bold values in each table indicate the major risk contributors. It is evident from these tables that both cancer and non-cancer risks are driven predominately by ingestion of locally grown foods. The only exception is the contribution of soil ingestion for the fisher adult and child residing at the on-site receptor.

Table 5-10: Summary of Base Model Chronic Health Impacts

Location	Scenario	Cancer Risk	Hazard Index	$ADD_{D/F}$ [a] (pg-TEQ/kg-day)
Off Site	Farmer Adult	2.6E-04 [b]	0.33	2.3E-03
Off Site	Farmer Child	3.0E-05	0.41	--
Off Site	Fisher Adult	2.1E-06	0.11	3.0E-05
Off Site	Fisher Child	1.4E-06	0.28	--
Off Site	Native Adult	3.0E-04	0.41	1.4E-03
Off Site	Native Child	2.3E-05	0.42	--
Off Site	Resident Adult	2.0E-06	0.11	2.6E-05
Off Site	Resident Child	1.4E-06	0.28	--
On Site	Farmer Adult	1.5E-02	7.80	1.2E-01
On Site	Farmer Child	1.6E-03	9.84	--
On Site	Fisher Adult	1.2E-04	2.73	1.6E-03
On Site	Fisher Child	8.0E-05	6.65	--
On Site	Native Adult	1.6E-02	9.83	7.6E-02
On Site	Native Child	1.3E-03	10.00	--
On Site /Off Site	Worker Adult	5.2E-06	0.15	1.5E-04
Admin Area/Off Site	Military Adult	2.0E-06	0.11	2.5E-05

[a] $ADD_{D/F}$ is an acronym for average daily dose and is expressed using the 2,3,7,8-tetrachlorodibenzodioxin toxicity equivalent (TEQ). TEQ values are included in the COPC data base in Appendix K.

[b] Shaded entries indicate values above DEQ action levels.

It should be noted that while no fisher, farmer, or Native American will reside on the UMCD during operations, these populations could use the land after the base has closed. Risk predictions provided in Table 5-10 are an overstatement for this second scenario since the only exposure pathways from use of the land after closure are tied to residual soil contamination. Exposure pathways from these soils will include dermal contact, soil ingestion, the ingestion of plants that have accumulated soil contaminants through their roots, and the ingestion of animals that have eaten contaminated plants. Section 5.2.2.5 details an analysis for the on-site receptor location that only includes the above soil contamination derived pathways. Results in Section 5.2.2.5 show an average reduction in the chronic cancer risk of 45% over those reported in Table 5-10. These reduced risks are still one to two orders of magnitude above the DEQ established action levels and so are of concern to the CTUIR.

Table 5-11: Contribution of Each Exposure Pathway to the Cancer Risk at the Off-Site Evaluation Point

Pathway	Cancer Risk (% of Total)			
	Native Adult	**Native Child**	**Farmer Adult**	**Farmer Child**
Inhalation	0.0%	0.1%	0.0%	0.1%
Produce Ingestion	2.4%	1.9%	1.5%	1.7%
Bathing Exposure	0.1%	0.2%	0.0%	0.1%
Beef/Game Ingestion	**56.8%** [a]	**34.0%**	**72.2%**	**49.3%**
Chicken Ingestion	0.0%	0.0%	0.1%	0.0%
Drinking Water	0.0%	0.0%	0.0%	0.0%
Egg Ingestion	0.0%	0.0%	0.0%	0.0%
Fish Ingestion	0.0%	0.0%	0.0%	0.0%
Goat Ingestion	0.0%	0.0%	1.6%	1.4%
Sweat Lodge Exposure	0.1%	0.0%	0.0%	0.0%
Milk Ingestion	**39.0%**	**59.0%**	**23.6%**	**43.8%**
Pork Ingestion	0.0%	0.0%	0.0%	0.0%
Soil Ingestion	1.7%	4.9%	1.0%	3.5%
Swimming Exposure	0.0%	0.0%	0.0%	0.0%
Total Cancer Risk	*2.96E-04*	*2.31E-05*	*2.64E-04*	*2.98E-05*

[a] Bold values indicate major contributors to risk

Table 5-12: Contribution of Each Exposure Pathway to the Hazard Index at the Off-Site Evaluation Point

Pathway	Hazard Index (% of Total)					
	Native Adult	**Native Child**	**Fisher Child**	**Resident Child**	**Farmer Adult**	**Farmer Child**
Inhalation	0.3%	1.7%	2.5%	2.5%	0.5%	1.7%
Produce Ingestion	**95.1%** [a]	**93.3%**	**97.2%**	**97.2%**	**90.8%**	**92.0%**
Bathing Exposure [b]	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Beef/Game Ingestion	2.4%	1.6%	0.0%	0.0%	6.1%	3.0%
Chicken Ingestion	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Drinking Water [b]	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Egg Ingestion	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fish Ingestion	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%
Goat Ingestion	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
Sweat Lodge Exposure [b]	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Milk Ingestion	1.9%	3.1%	0.0%	0.0%	2.3%	3.0%
Pork Ingestion	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Soil Ingestion	0.1%	0.2%	0.3%	0.3%	0.1%	0.2%
Swimming Exposure [b]	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Hazard Index	*0.41*	*0.42*	*0.28*	*0.28*	*0.33*	*0.41*

[a] Bold values indicate major contributors to risk
[b] Umatilla River is assumed to be source of water

Table 5-13: Contribution of Each Exposure Pathway to the Cancer Risk at the On-Site Evaluation Point

Pathway	Cancer Risk (% of Total)					
	Farmer Adult	**Farmer Child**	**Fisher Adult**	**Fisher Child**	**Native Adult**	**Native Child**
Inhalation	0.0%	0.1%	1.4%	1.3%	0.0%	0.1%
Produce Ingestion	1.5%	1.8%	**36.8%**	**19.6%**	2.4%	2.0%
Bathing Exposure	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Beef/Game Ingestion	**72.2%**	**49.2%**	0.0%	0.0%	**56.8%**	**33.8%**
Chicken Ingestion	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Drinking Water	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Egg Ingestion	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fish Ingestion	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Goat Ingestion	1.6%	1.4%	0.0%	0.0%	0.0%	0.0%
Sweat Lodge Exposure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Milk Ingestion	**23.5%**	**43.6%**	0.0%	0.0%	**38.9%**	**58.6%**
Pork Ingestion	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Soil Ingestion	1.1%	3.9%	**61.6%**	**79.1%**	1.9%	5.5%
Swimming Exposure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Cancer Risk	1.5E-02	1.6E-03	1.2E-04	8.0E-05	1.6E-02	1.3E-03

[a] Bold values indicate major contributors to risk

Table 5-14: Contribution of Each Exposure Pathway to the Hazard Index at the On-Site Evaluation Point

Pathway	Hazard Index (% of Total)					
	Farmer Adult	**Farmer Child**	**Fisher Adult**	**Fisher Child**	**Native Adult**	**Native Child**
Inhalation	0.4%	1.3%	1.6%	2.0%	0.2%	1.4%
Produce Ingestion	**90.7%**	**92.2%**	**98.2%**	**97.7%**	**95.3%**	**93.7%**
Bathing Exposure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Beef/Game Ingestion	6.2%	3.0%	0.0%	0.0%	2.4%	1.6%
Chicken Ingestion	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Drinking Water	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Egg Ingestion	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fish Ingestion	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Goat Ingestion	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%
Sweat Lodge Exposure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Milk Ingestion	2.3%	3.1%	0.0%	0.0%	1.9%	3.2%
Pork Ingestion	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Soil Ingestion	0.1%	0.2%	0.2%	0.3%	0.1%	0.2%
Swimming Exposure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Hazard Index	7.8	9.8	2.7	6.7	9.8	10.0

[a] Bold values indicate major contributors to risk

The relative contribution of each point source to total cancer and non-cancer risks are indicated in Tables 5-15 through 5-18 for those exposure scenarios which exceeded the action levels. From these tables it is evident that the COMSTK is the significant contributor to cancer risk for both the on-site and off-site evaluation points. In contrast, non-cancer risks are a result of emission from the other sources (BRASTK, LABSTK, and MDBSTK).

Table 5-15: Relative Contribution of Each Point Source to Off-Site Cancer Risk

Stack	Cancer Risk (% of Total)			
	Native Adult	**Native Child**	**Farmer Adult**	**Farmer Child**
BRASTK	0.0%	0.0%	0.0%	0.0%
COMSTK	100.0%	100.0%	100.0%	100.0%
LABSTK	0.0%	0.0%	0.0%	0.0%
MDBSTK	0.0%	0.0%	0.0%	0.0%
Total CR	*3.0E-04*	*2.3E-05*	*2.6E-04*	*3.0E-05*

Table 5-16: Relative Contribution of Each Point Source to Off-Site Non-Cancer Risk

Stack	Hazard Index (% of Total)					
	Native Adult	**Native Child**	**Fisher Child**	**Farmer Adult**	**Farmer Child**	**Resident Child**
BRASTK	59.4%	59.6%	59.7%	59.4%	59.5%	59.7%
COMSTK	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%
LABSTK	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%
MDBSTK	32.9%	32.7%	32.6%	32.9%	32.7%	32.6%
Total HI	*0.41*	*0.42*	*0.28*	*0.33*	*0.41*	*0.28*

Table 5-17: Relative Contribution of Each Point Source to On-Site Cancer Risk

Stack	Cancer Risk (% of Total)					
	Farmer Adult	**Farmer Child**	**Fisher Adult**	**Fisher Child**	**Native Adult**	**Native Child**
BRASTK	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
COMSTK	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
LABSTK	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
MDBSTK	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total CR	*1.5E-02*	*1.6E-03*	*1.2E-04*	*8.0E-05*	*1.6E-02*	*1.2E-03*

Table 5-18: Relative Contribution of Each Point Source to On-Site Non-Cancer Risk

Stack	Hazard Index (% of Total)					
	Farmer Adult	**Farmer Child**	**Fisher Adult**	**Fisher Child**	**Native Adult**	**Native Child**
BRASTK	66.6%	66.6%	66.7%	66.7%	66.6%	66.7%
COMSTK	4.6%	4.6%	4.5%	4.6%	4.4%	4.6%
LABSTK	15.4%	15.3%	15.3%	15.3%	15.4%	15.3%
MDBSTK	13.5%	13.4%	13.4%	13.4%	13.5%	13.4%
Total HI	*7.8*	*9.8*	*2.7*	*6.6*	*9.8*	*10.0*

The risk driving COPCs for exposure scenarios that exceeded action levels at the off-site evaluation point are provided in Tables 5-19 and 5-20. Each table lists the ten COPCs with the largest contribution to risk for each exposure scenario. The top three contributors for a given scenario are indicated with a numerical ranking while the remaining seven are simply indicated with an "x" designator. In all cases more than 99% of the risks are contained in these top three compounds with the top compound contributing at least 95% of the total risk. From these tables it is clear that cancer risk is dominated by the non-volatile TOE fraction while the three chemical agents are the dominant non-cancer risk driving COPCs. For comparison, all identified dioxin and furan compounds combined contribute at most 0.006% of the chronic cancer risk (Table 5-21).

The on-site evaluation point has similar risk driving COPCs. At this location, more than 99% of the cancer risk is contained in the non-volatile TOE fraction for all exposure scenarios. Non-cancer risks at this location are driven entirely by the assumed emissions of VX, GB, and HD at their detection limit. These three compounds contribute more than 99.5% of the HI for every exposure scenario. The agent VX provides the single greatest contribution to the HI, approximately 97% of the total, for every exposure scenario at the on-site evaluation point.

It is evident from these results that, at the off-site evaluation point, two key assumptions in the risk assessment process are causing the cancer and non-cancer risks to exceed the predetermined action levels. First, the decision to assume emission of the chemical agents at the detection level of the continuous monitoring system (termed an ACAMS, or automatic continuous air monitoring system) drives the non-cancer chronic health risk. Second, the choice to assign geometric mean toxicities to the unspeciated non-volatile TOE is creating cancer risks that exceed the action levels. Although both assumptions are technically reasonable, both are based on incomplete knowledge, and so add a large degree of uncertainty to the result.

Table 5-19: Top Ten Contributors to Cancer Risk at the Off-Site Evaluation Point

COPC	Farmer Adult	Farmer Child	Native Adult	Native Child
Composite TOE - Nonvolatile	1	1	1	1
3,4,5,3',4'-Pentachlorobiphenyl	2	x	2	x
2,3,7,8-Tetrachlorodibenzofuran	3	x	3	x
Composite TOE - Volatile	x	2	x	2
Composite TOE - Semivolatile	x	3	x	3
Arsenic compounds	x	x	x	x
Sulfur mustard (or H/HD)	x	x	x	x
Bis(2-ethylhexyl)phthalate	x	x	x	x
PCB Mixture	x	x	x	x
2,3,7,8-Tetrachlorodibenzo-p-dioxin	x	--[a]	x	--[a]
Cadmium compounds	--[a]	x	--[a]	x

[a] A dashed line implies that the compound was not in the top 10 for the indicated condition.

Table 5-20: Top Ten Contributors to Non-Cancer Risk at the Off-Site Evaluation Point

COPC	Farmer Adult	Farmer Child	Fisher Child	Native Adult	Native Child	Resident Child
VX	1	1	1	1	1	1
GB	2	2	2	2	2	2
Sulfur mustard (or H/HD)	3	3	3	x	3	3
Composite TOE - Nonvolatile	x	x	--	x	x	x
Thallium compounds	x	x	--	x	x	--
Chlorine	x	x	x	x	x	x
Mercuric chloride	x	x	x	x	x	x
Manganese compounds	x	x	x		x	x
PCB Mixture	x	--	--	x	x	--
Silver compounds	x	x	--	x	--	--
Cadmium compounds	--	x	x	--	--	x
Arsenic compounds	--	--	x	--	--	x
Methyl mercury	--	--	x	3	x	--
Nickel compounds	--	--	x	--	--	x

[a] A dashed line implies that the compound was not in the top 10 for the indicated condition.

Table 5-21: Summary of Base Model Chronic Cancer Risk for Dioxin and Furan Compounds

Location	Scenario	Cancer Risk	% Total CR
Off Site	Farmer Adult	1.2E-08	0.005%
Off Site	Farmer Child	1.7E-09	0.006%
Off Site	Fisher Adult	1.0E-10	0.005%
Off Site	Fisher Child	5.4E-11	0.004%
Off Site	Native Adult	1.4E-08	0.005%
Off Site	Native Child	1.3E-09	0.006%
Off Site	Resident Adult	8.2E-11	0.004%
Off Site	Resident Child	5.3E-11	0.004%
On Site	Farmer Adult	6.7E-07	0.005%
On Site	Farmer Child	8.8E-08	0.005%
On Site	Fisher Adult	5.5E-09	0.005%
On Site	Fisher Child	3.3E-09	0.004%
On Site	Native Adult	7.2E-07	0.004%
On Site	Native Child	6.9E-08	0.005%
On Site /Off Site	Worker Adult	3.3E-10	0.006%
Admin Area/Off Site	Military Adult	8.2E-11	0.004%

5.2.1.2 Acute Evaluation

Results for the nine acute conditions described in Section 4.4 are listed in Table 5-22. Only a single set of results is reported at each of the evaluation points since acute results are independent of the exposure scenario. Hence, the on-site results reported in Table 5-22 apply to all the adult and child scenarios evaluated at this location. Similarly, the off-site results apply to all the adult and child scenarios evaluated at the off-site location. The fact that the acute hazard index is independent of the exposure scenarios can be clearly seen in the following equation which represents the combined information provided in Tables B-6-1 and C-4-1 of Volume 2 of the 2005 EPA hazardous waste risk combustor guidance (EPA, 2005).

$$AHQ_i = \frac{(0.001)\cdot\left(Q_i \cdot \left[F_{v,i}\cdot Chv_i + (1.0 - F_{v,i})\cdot Chp_i\right]\right)}{AIEC_i}$$

Table 5-22: Acute Hazard Index Results

Descriptor	Furnace in Upset	Off Site HI	On-Site HI	Off-Site/Admin. Area [a]	Off-Site/On-Site [b]
Condition 1	Base Acute Emissions	0.03	0.12	0.03	0.04
Condition 2	LIC1	0.05	0.19	0.05	0.06
Condition 3	LIC2	0.05	0.19	0.04	0.06
Condition 4	DFS	0.15	0.62	0.14	0.19
Condition 5	MPF Processing Combustible Materials	0.11	0.44	0.10	0.13
Condition 6	MPF Processing Non-combustible Materials	0.11	0.46	0.11	0.14
Condition 7	BRA	0.05	0.21	0.05	0.07
Condition 8	LAB	0.05	0.20	0.05	0.06
Condition 9	MDB	0.05	0.20	0.05	0.06

[a] Off-Site/Administration Area combined location depicts results for the military worker scenario.
[b] Off-Site/On-Site combined location depicts results for the plant worker scenario.

Where AHQ_i is the acute hazard quotient for inhalation of the i^{th} COPC (unitless), $AIEC_i$ is the acute exposure criteria for the i^{th} COPC (mg/m^3), Q_i is emission rate for the i^{th} COPC (g/s), $F_{v,i}$ is the fraction of the i^{th} COPC in the vapor phase, Chv_i is the unitized hourly air concentration from the vapor phase($\mu g\text{-}s/g\text{-}m^3$), and Chp_i is the unitized hourly air concentration from the particle phase ($\mu g\text{-}s/g\text{-}m^3$). The total hazard index for a given evaluation location is calculated as the sum of the individual hazard quotients from each of the four sources. AIEC values used in this analysis are provided in Appendix Q.

From the results presented in Table 5-22 it can be observed that all locations predict an acute hazard index below the DEQ action level of 1.0. It should be noted that the values reported in Table 5-22 are substantially below those reported by others (Ecology and Environment, 2008. Values have been reproduced in Table 5-23). A review of the model input files used in the earlier work indicated that the acute reference values for the three TOE fractions were 1000 times lower that those reported in the main body of the report (see Table 3-4 of Ecology and Environment, 2008). A review of the data sets used to generate these values indicated that the larger values were correct and were subsequently used in this analysis

Table 5-23: Acute Hazard Index Results Reported by Ecology and Environment in 2008

Descriptor	Furnace in Upset	Off Site HI	On-Site HI	Off-Site/Admin. Area [a]	Off-Site/On-Site [b]
Condition 1	Base Acute Emissions	12	50	12	15
Condition 2	LIC1	16	64	15	19
Condition 3	LIC2	16	64	15	19
Condition 4	DFS	105	429	101	130
Condition 5	MPF Processing Combustible Materials	23	94	22	29
Condition 6	MPF Processing Non-combustible Materials	23	95	22	29
Condition 7	BRA	12	50	12	15
Condition 8	LAB	16	64	15	19
Condition 9	MDB	16	64	15	19

[a] Off-Site/Administration Area combined location depicts results for the military worker scenario.
[b] Off-Site/On-Site combined location depicts results for the plant worker scenario.

5.2.2 Special Cases

Six additional risk scenarios were evaluated to better clarify the impacts of certain base model assumptions on the predicted chronic risks. These special cases are as follows:

- Case 1 – Area Average: Examined the effects of collocating the highest values for deposition rates and air concentrations for off-site analysis.
- Case 2 – Single Point, Actual Data: The impacts of collocating the highest values for the air deposition rates and air concentrations for the off-site location were further evaluated using AERMOD calculated air parameters for the off-site location. This case corresponds to the EPA recommended evaluation method (EPA, 2005).
- Case 3 – Updated COPC Emission Rates: Chemical agent concentration were modified to reflect DAAMS[12] stack data. In addition, the amount of carbon to be processed as secondary waste in the deactivation furnace system was reduced from base model estimates of 706,035 lbs to current estimates of 55,320 lbs. Finally, operation of the brine reduction area was assumed to be eliminated for HD processing.
- Case 4 – Evaluating Dioxin and Furans at Detection Limits: Eleven dioxin and furan compounds which were monitored in the trial burns, but never detected, were moved from the non-volatile TOE fraction and placed on the emissions list for the common stack at their detection limits. The toxicity of the non-volatile TOE fraction was re-evaluated without these eleven compounds.
- Case 5 – On-Site Risk After Incineration: The base model was modified by removing exposure pathways which only occur during operation of the incineration system. Pathways resulting from residual soil contamination were retained. The purpose of this analysis was to examine the on-site risks to future populations that might use the depot lands after closure.
- Case 6 – Combined Special Cases 3, 4, and 5: Assumptions in Special Cases 3, 4 and 5 were combined.

5.2.2.1 Special Case 1 – Area Average

Figure 5-4 depicts the region used to generate average deposition rates and air concentrations. This region has an approximate area of 3.6 km^2 and is located off the NE corner of the UMCDF, the direction of the predominate winds (See Figures 3-5 through 3-16). Averaged air parameters were calculated from parameter values at 30 evenly spaced grid nods throughout this region. The location of these grid nodes is indicated as black squares in Figure 5-5. Table 5-24 details the averaged air parameters calculated from these 30 node locations. All other IRAP-h model inputs were identical to the base model.

[12] DAAMS stands for Depot Area Agent Monitoring System.

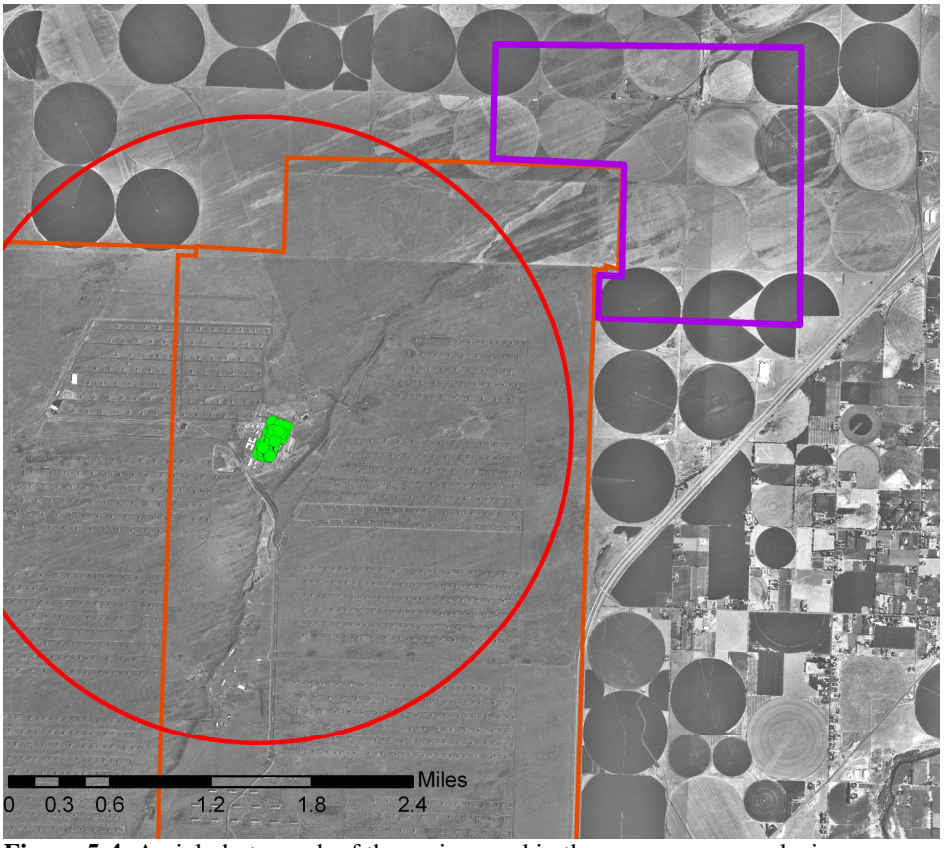


Figure 5-4: Aerial photograph of the region used in the area average analysis.

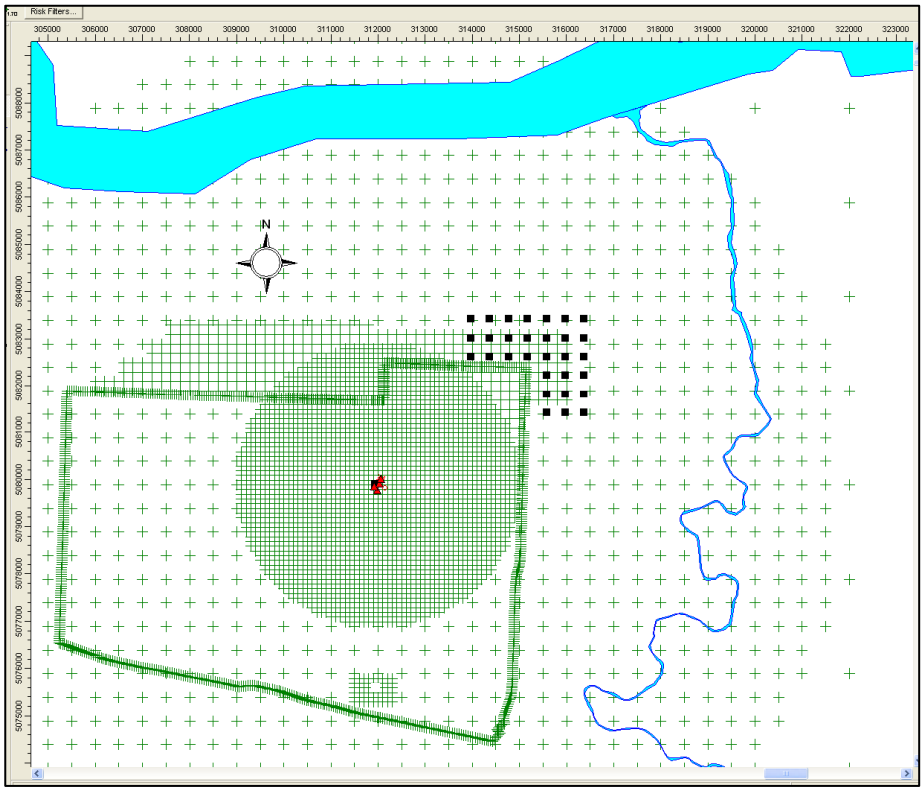


Figure 5-5: Location of nodes used in the area average calculations.

Table 5-24: Average Air Parameters Calculated from Nodes in Figure 5-5

Parameter	Unit	Source			
		BRASTK	COMSTK	LABSTK	MDBSTK
Hourly air concentration - particle phase	ug-s/g-m^3	3.810626	6.38775	22.62913	7.137747
Hourly air concentration - particle bound	ug-s/g-m^3	3.65096	6.368823	22.23979	7.105437
Hourly air concentration - vapor phase	ug-s/g-m^3	3.401366	6.228343	18.53001	6.722492
Hourly air concentration - vapor phase hg	ug-s/g-m^3	3.106791	5.639304	18.9102	6.381234
Air concentration - particle phase	ug-s/g-m^3	0.057891	0.091651	0.139782	0.077229
Air concentration - particle bound	ug-s/g-m^3	0.06157	0.091462	0.139181	0.077117
Air concentration - vapor phase	ug-s/g-m^3	0.064504	0.088233	0.131054	0.075368
Air concentration - vapor phase hg	ug-s/g-m^3	0.061268	0.075715	0.125507	0.071194
Dry deposition - particle phase	s/m^2 year	0.065572	0.004311	0.004515	0.004192
Dry deposition - particle bound	s/m^2 year	0.039986	0.005134	0.00547	0.004912
Dry deposition - vapor phase	s/m^2 year	0.015609	0.018833	0.018261	0.014967
Dry deposition - vapor phase hg	s/m^2 year	0.039565	0.044954	0.013487	0.011595
Wet deposition - particle phase	s/m^2 year	0.001813	0	0	0
Wet deposition - particle bound	s/m^2 year	0.001132	5.63E-05	5.87E-05	5.33E-05
Wet deposition - vapor phase	s/m^2 year	0.000653	0.000739	0.000741	0.000692
Wet deposition - vapor phase hg	s/m^2 year	0.6176	1.570541	0.572106	0.274182

Chronic cancer and hazard risks for the area average model are provided in Table 5-25. Shaded entries correspond to those which exceed the DEQ action level of 1.0E-5 for chronic cancer risk and 0.25 for the chronic hazard index. Comparison of values in Table 5-25 with the base model results (see Table 5-10) reveals an average reduction of approximately 35% for both parameters in the area average data set. The highest HI value under the area average condition is only 0.27 which is very close to the action cut-off of 2.5. However, the cancer risks are still more than ten times the action level. The distribution of risks by source, COPC, and exposure pathway in the area average model are similar to that of the base model.

Table 5-25: Summary of The Area Average Case Chronic Health Impacts

Location	Scenario	Cancer Risk	Hazard Index
Off Site	Farmer Adult	1.6E-04 [a]	2.1E-01
Off Site	Farmer Child	1.7E-05	2.6E-01
Off Site	Fisher Adult	1.4E-06	7.4E-02
Off Site	Fisher Child	8.9E-07	1.8E-01
Off Site	Native Adult	1.8E-04	2.6E-01
Off Site	Native Child	1.4E-05	2.7E-01
Off Site	Resident Adult	1.4E-06	7.4E-02
Off Site	Resident Child	8.9E-07	1.8E-01

[a] Shaded entries indicate values above DEQ action levels.

5.2.2.2 Case 2 – Single Point, Actual Data

Table 5-26 details the air parameters calculated by AERMOD at the off-site evaluation point. All other risk model inputs were identical to the base model. Risk results for the single point, actual data case are provided in Table 5-27. Values that exceed the DEQ action level are indicated by shaded entries in this table.

Table 5-26: Air Parameters for the Single Point, Actual Data Case

Parameter	Unit	Source			
		BRASTK	COMSTK	LABSTK	MDBSTK
Hourly air concentration - particle phase	ug-s/g-m^3	4.91481	12.55885	21.99511	10.52989
Hourly air concentration - particle bound	ug-s/g-m^3	4.84544	12.55885	21.99511	10.52989
Hourly air concentration - vapor phase	ug-s/g-m^3	4.60318	12.33877	16.8776	10.01171
Hourly air concentration - vapor phase hg	ug-s/g-m^3	4.42141	12.38521	20.05543	10.2556
Air concentration - particle phase	ug-s/g-m^3	0.06463	0.11045	0.16679	0.07847
Air concentration - particle bound	ug-s/g-m^3	0.06859	0.11045	0.16679	0.07847
Air concentration - vapor phase	ug-s/g-m^3	0.074	0.10816	0.1584	0.07737
Air concentration - vapor phase hg	ug-s/g-m^3	0.06858	0.10135	0.16228	0.07788
Dry deposition - particle phase	s/m^2 year	0.10839	0.00631	0.00665	0.006
Dry deposition - particle bound	s/m^2 year	0.07169	0.00631	0.00665	0.006
Dry deposition - vapor phase	s/m^2 year	0.01546	0.01881	0.02264	0.01606
Dry deposition - vapor phase hg	s/m^2 year	0.0611	0.06563	0.01811	0.01387
Wet deposition - particle phase	s/m^2 year	0.00272	0	0	0
Wet deposition - particle bound	s/m^2 year	0.00169	0	0	0
Wet deposition - vapor phase	s/m^2 year	0.00091	0.00098	0.001	0.00092
Wet deposition - vapor phase hg	s/m^2 year	0.00033	0.00034	0	0

Table 5-27: Summary of the Chronic Health Impacts for The Single Point, Actual Data Case

Location	Scenario	Cancer Risk	Hazard Index
Off Site	Farmer Adult	1.8E-04 [a]	2.2E-01
Off Site	Farmer Child	2.0E-05	2.8E-01
Off Site	Fisher Adult	1.4E-06	7.7E-02
Off Site	Fisher Child	9.2E-07	1.9E-01
Off Site	Native Adult	2.0E-04	2.8E-01
Off Site	Native Child	1.6E-05	2.8E-01
Off Site	Resident Adult	1.4E-06	7.7E-02
Off Site	Resident Child	9.2E-07	1.9E-01

[a] Shaded entries indicate values above DEQ action levels.

Comparison of values in Table 5-27 with the base model results (see Table 5-10) reveals an average reduction of approximately 32% for both parameters in the. The highest HI value for Special Case 2 is only 0.28 which is very close to the action level of 0.25.

However, the cancer risks are still more than ten times the action level. The distribution of risks by source, COPC, and exposure pathway in Special Case 2 are similar to that of the base model.

5.2.2.3 Special Case 3 – Updated COPC Emission Rates

Several changes have occurred in the operating procedures at the UMCDF since the development of the 2004 RAWP (see Appendix P for details). To include these changes in the risk assessment process, three modifications were made to procedures used to calculate the base model emission rates. First, since the amount of agent-contaminated carbon that is currently projected to be processed on-site has been reduced from the 706,035 lbs used in the base model to 55,320 lbs. This change corresponds to a reduction in the fraction of time the DFS will spend processing this material during closure from 0.0733 to 0.00574. Second, the operating time for the brine reduction area was set to zero for HD processing since it is unlikely that this system will operate during this campaign. HD brines may contain unacceptable levels of mercury and off-site shipment of agent-free brine does not pose a substantial risk to the public (CTUIR, 2008). Third, chemical agent levels from the four sources were reduced to reflect all site monitoring data, not just the ACAMS units. This adjustment was based on a review of the data from the Depot Area Agent Monitoring Systems (DAAMS) that are installed on the four stacks. While the DAAMS do not provide continuous, on-line monitoring of chemical agent like the ACAMS, they are continuously collected samples, though are only analyzed periodically. The DAAMS units have a much lower detection limit since they rely on a composite sample collected over many hours. Including the sensitivity of the DAAMS units in the analysis results the following changes:

- Common stack, BRA stack GB and VX emissions reduced by a factor of 300
- Common stack, BRA stack HD emissions reduced by a factor of 55
- MDB HVC and LAB HVC GB and VX emissions reduced by a factor of 60
- MDB HVC and LAB HVC HD emissions reduced by a factor of 1.1

The composite chemical agent emission rates that result from these three modifications are provided in Table 5-28. Appendix C, Table C-2, lists the emission rates for all COPCs from the four sources for this model run. All other model input parameters were identical to the base model.

Table 5-28: Chemical Agent Emission Rates for the Base Model and Updated COPC Emission Rate Model

Source	CAS Number	Chemical Agent	Base Model Emission Rate (g/s)	Special Case 3 Model Emission Rate (g/s)
COMSTK	107-44-8	GB	2.26E-07	6.49E-10
COMSTK	505-60-2	HD	1.05E-05	1.35E-07
COMSTK	50782-69-9	VX	1.37E-07	3.52E-10
BRASTK	107-44-8	GB	6.50E-06	3.85E-08
BRASTK	505-60-2	HD	6.50E-04	2.12E-05
BRASTK	50782-69-9	VX	6.50E-06	3.85E-08
LABSTK	107-44-8	GB	4.08E-07	6.80E-09
LABSTK	505-60-2	HD	4.08E-06	3.74E-06
LABSTK	50782-69-9	VX	4.08E-07	6.80E-09
MDBSTK	107-44-8	GB	2.89E-06	4.81E-08
MDBSTK	505-60-2	HD	2.89E-05	2.65E-05
MDBSTK	50782-69-9	VX	2.89E-06	4.81E-08

A summary of the risk results for this modified model are provided in Table 5-29 for each exposure scenario and each evaluation location. Shaded entries indicate values above the DEQ established action levels of 1.0E-5 (chronic cancer risk) and 0.25 (chronic non-cancer risk). Comparison of Table 5-29 with Table 5-10 (base model) reveals that the HI values, which were driven by chemical agent emissions in the base model, have been dramatically reduced to below the action level. Again, it should be noted that the modification in chemical agent emissions is based on measured site data.

Chronic cancer risks are also reduced in the updated model. The average reduction for both the adult and child populations is by a factor of 1.8. The highest off-site risk for Case 3, 1.6E-04, is for the Native American adult while the resident farmer adult has a similar risk of 1.5E-04. As with the base model, the remaining chronic cancer risk is dominated by the non-volatile TOE fraction in the COMSTK. In every case, the cancer risk represented in the non-volatile TOE is 99.997% of the total cancer risk while the top five COPCs represent greater than 99.998% of total cancer risk. This result can be seen in Tables 5-30 and 5-31 which show the breakdown of cancer risk by source and COPC for the Native American adult exposure scenario. Similar results are obtained for other exposure scenarios. The last column in each table indicates the contribution of that table entry to the reduction in risk. For example, 99.9987% of the reduction in chronic cancer risk to the Native American adult at the off-site location was created by changes in the COMSTK emissions. This suggests that not processing HD brines has little impact on the overall cancer risk while the reducing the amount of carbon processed in the DFS resulted in substantial risk reduction.

Table 5-29: Summary of Chronic Health Impacts for Updated COPC Emission Rate Model

Location	Scenario	Cancer Risk	Hazard Index
Off Site	Farmer Adult	1.5E-04	0.0038
Off Site	Farmer Child	1.7E-05	0.0051
Off Site	Fisher Adult	1.2E-06	0.0016
Off Site	Fisher Child	7.7E-07	0.0035
Off Site	Native Adult	1.6E-04	0.0050
Off Site	Native Child	1.3E-05	0.0055
Off Site	Resident Adult	1.1E-06	0.0013
Off Site	Resident Child	7.7E-07	0.0035
On Site	Farmer Adult	8.1E-03 [a]	0.0988
On Site	Farmer Child	8.9E-04	0.1284
On Site	Fisher Adult	6.6E-05	0.0323
On Site	Fisher Child	4.5E-05	0.0816
On Site	Native Adult	9.0E-03	0.1088
On Site	Native Child	6.9E-04	0.1270
On Site /Off Site	Worker Adult	4.0E-06	0.0031
Admin Area/Off Site	Military Adult	1.1E-06	0.0013

[a] Shaded entries indicate values above DEQ action levels.

Table 5-30: Native American Chronic Cancer Risks for Base Model and Updated COPC Emission Rate Model

Off-Site Location Cancer Risks			
Stack	**Base Model**	**Updated COPC ER [a] Model**	**% Total Reduction**
BRASTK	4.44E-09	2.78E-09	0.0013%
COMSTK	2.96E-04	1.64E-04	99.9987%
LABSTK	7.98E-12	7.31E-12	0.0000%
MDBSTK	5.26E-11	4.83E-11	0.0000%
Total	*2.96E-04*	*1.64E-04*	--
On-Site Location Cancer Risks			
BRASTK	2.37E-07	1.80E-07	0.0008%
COMSTK	1.63E-02	9.04E-03	99.9992%
LABSTK	3.26E-10	2.99E-10	0.0000%
MDBSTK	3.03E-10	2.78E-10	0.0000%
Total	*1.63E-02*	9.04E-03	--

[a] ER denotes Emission Rate.

Table 5-31: Contribution of Individual COPCs to Native American Cancer Risks for COMSTK emissions in the Base Model and Updated COPC Emission Rate Model

Off-Site Location Cancer Risks			
Compound	**Updated COPC ER [a] Model**	**Base Model**	**% Total Reduction**
TOE - Nonvolatile	1.6E-04	3.0E-04	99.99673%
TOE - Volatile	9.4E-09	1.2E-08	0.00180%
TOE – Semi-volatile	7.4E-09	9.3E-09	0.00147%
3,4,5,3',4'-Pentachlorobiphenyl	3.8E-08	3.8E-08	0.00000%
2,3,7,8-Tetrachlorodibenzofuran	1.3E-08	1.3E-08	0.00000%
Total	1.6E-04	*3.0E-04*	--
On-Site Location Cancer Risks			
TOE - Nonvolatile	9.0E-03	1.6E-02	99.99688%
3,4,5,3',4'-Pentachlorobiphenyl	3.7E-06	3.7E-06	0.00000%
TOE - Volatile	4.8E-07	6.0E-07	0.00166%
TOE – Semi-volatile	4.0E-07	5.1E-07	0.00147%
2,3,7,8-Tetrachlorodibenzofuran	7.1E-07	7.1E-07	0.00000%
Total	9.0E-03	*1.6E-02*	--

[a] ER denotes Emission Rate.

5.2.2.4 Case 4 – Evaluating Dioxin and Furans at Detection Limit

A large component of the chronic cancer risk results from the non-volatile TOE and the assumption to use a geometric mean value for the oral cancer slope factor (CSFo). Examination of the data used to generate CSF value indicates that the data falls into two distinct groups with eleven dioxin and furan compounds and one polychlorinated biphenyl (PCB) having CSFo values greater than an order of magnitude above the other compound within this class. Figure 5-6 shows the CSFo data for the non-volatile compounds used to represent the TOE fraction. The geometric mean value is represented in the figure by a dashed, pink line while the individual CSFo values are shown by the blue points. Table 5-32 provides a list of the eleven dioxin and furans and one PCB compounds indicted within the red circle on the Figure. Excluding these twelve compounds from the data set reduces the geometric mean value of the CSFo from 25 to 0.8 (kg-day/mg) which subsequently reduces the off-site chronic cancer risks to below the action level as indicated in Table 5-33. On-site chronic cancer risks for the farmer and Native American adult and child are still above the DEQ established action levels as indicated by the shaded entries in Table 5-33.

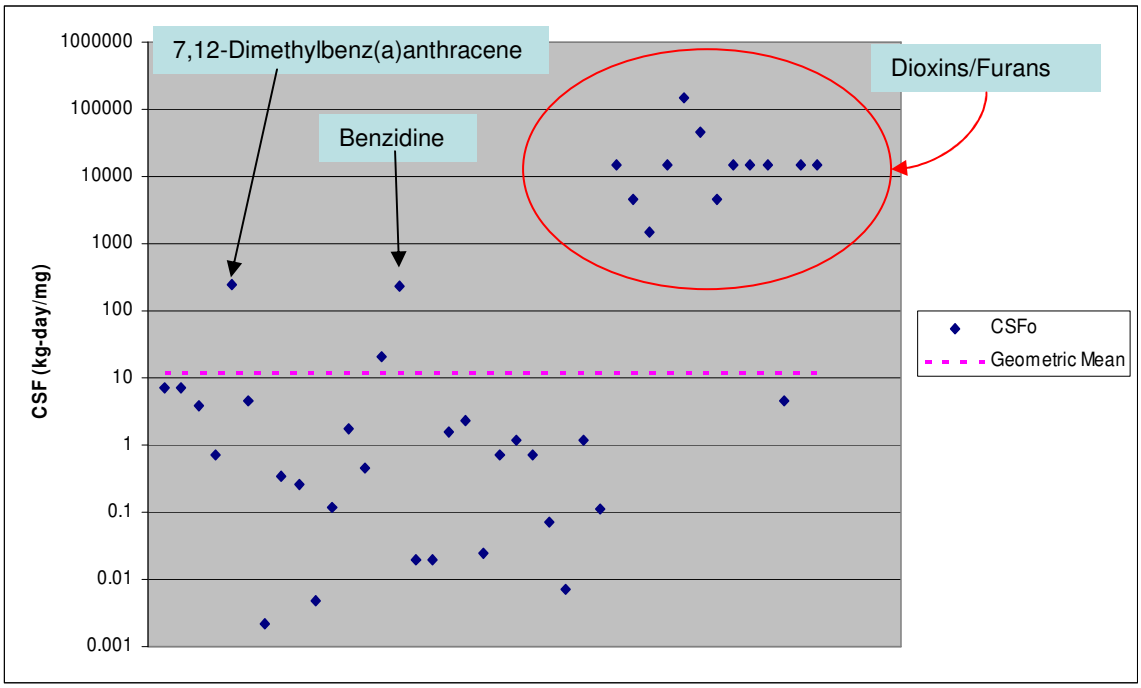


Figure 5-6: Cancer slope factor data for non-volatile TOE fraction.

Table 5-32: Dioxin and Furan Compounds Indicated in Figure 5-6.

CAS Number	Name	CSFo (kg-day/mg)
40321-76-4	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	150000
39227-28-6	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	15000
57653-85-7	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	15000
19408-74-3	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	15000
35822-46-9	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	1500
57117-41-6	1,2,3,7,8-Pentachlorodibenzofuran	4500
57117-31-4	2,3,4,7,8-Pentachlorodibenzofuran	45000
70648-26-9	1,2,3,4,7,8-Hexachlorodibenzofuran	15000
57117-44-9	1,2,3,6,7,8-Hexachlorodibenzofuran	15000
60851-34-5	2,3,4,6,7,8-Hexachlorodibenzofuran	15000
72918-21-9	1,2,3,7,8,9-Hexachlorodibenzofuran	15000
32774-16-6	3,3',4,4',5,5'-Hexachlorobiphenyl	4500

Table 5-33: Summary of Chronic Health Impacts for Base Model with Non-volatile TOE CSF of 0.8 (kg-day/mg)

Location	Scenario	Cancer Risk
Off Site	Farmer Adult	9E-06
Off Site	Farmer Child	1E-06
Off Site	Fisher Adult	1E-07
Off Site	Fisher Child	7E-08
Off Site	Native Adult	1E-05
Off Site	Native Child	8E-07
Off Site	Resident Adult	1E-07
Off Site	Resident Child	1E-07
On Site	Farmer Adult	5E-04 [a]
On Site	Farmer Child	5E-05
On Site	Fisher Adult	6E-06
On Site	Fisher Child	4E-06
On Site	Native Adult	5E-04
On Site	Native Child	4E-05
On Site /Off Site	Worker Adult	4E-07
Admin Area/Off Site	Military Adult	1E-07

[a] Shaded entries indicate values above DEQ action levels.

An additional model run was conducted to evaluate the decision in the base model to include the dioxins and furans listed in Table 5-32 with the non-volatile TOE fraction rather than leaving them on the COPCs emissions list at their detection limit. This analysis was conducted since the dioxin and furans listed in Table 5-32 were measured during all the trial burns and were never detected. Detection limits for these compounds in the various trial burn tests were on the order of 10^{-10} to 10^{-12} g/s which is substantially below the base model emission rate of the non-volatile TOE fraction (0.002 g/s). Appendix C, Table C-3 lists the COPC emission rate file used in this model run. The detection limit values used to generate the COMSTK COPC emission rate are provided in Appendix R. Toxicity and fate and transport data for the eleven dioxin and furans is provided in Appendix K, Table K-8 through K-14. The CSFo for the non-volatile TOE fraction was recalculated to be 1.2 (kg-day/mg) with the eleven dioxins and furans removed from the data set. This value was used in the subsequent analysis. All other IRAP-h input data were identical to the base model.

Summary cancer risk results are provided in Table 5-34 for the model run which included the eleven dioxin and furans in the COPC emissions along with a recalculated non-volatile TOE CSFo (1.2 kg-day/mg). Under these conditions, only the on-site Farmer and on-site Native American (adult and child in both cases) appear to have chronic cancer risks above the DEQ action level. The off-site farmer adult and Native American adult have cancer risks equal to the action level of 1×10^{-5} when rounded to one significant figure (EPA, 2005).

Cancer risk for both the on-site and off-site farmer and Native American scenarios are dominated by food intake pathways. Beef (farmer scenario), wild game (Native American scenario) and milk (both scenarios) ingestion represent more than 90% of the total risk in all cases.

Table 5-34: Summary of Chronic Cancer Risk for the Base Model with Dioxins and Furans Moved to the COMSTK COPC List

Location	Scenario	Cancer Risk
Off Site	Farmer Adult	1.3E-05
Off Site	Farmer Child	1.5E-06
Off Site	Fisher Adult	1.4E-07
Off Site	Fisher Child	8.7E-08
Off Site	Native Adult	1.4E-05
Off Site	Native Child	1.1E-06
Off Site	Resident Adult	1.3E-07
Off Site	Resident Child	8.7E-08
On Site	Farmer Adult	7.0E-04 [a]
On Site	Farmer Child	7.9E-05
On Site	Fisher Adult	7.4E-06
On Site	Fisher Child	4.9E-06
On Site	Native Adult	7.9E-04
On Site	Native Child	6.2E-05
On Site /Off Site	Worker Adult	4.7E-07
Admin Area/Off Site	Military Adult	1.3E-07

[a] Shaded entries indicate values above DEQ action levels.

Cancer risks by COPC for the off-site and on-site exposure scenarios that are equal to, or exceed, the DEQ action levels are shown in Tables 5-35 and 5-36. The five COPCs with the highest cancer risks are shown for each condition. In all cases more than 99.9% of the risk is represented in these compounds. Non-volatile TOE still is the largest contributor to risk in each case and the other two TOE fractions also are among the top five potential cancer causing COPCs for all scenarios.

Table 5-35: Off-Site Chronic Cancer Risks by COPC for the Base Model with Dioxins and Furans Moved to the COMSTK COPC List

Exposure Scenario	COPC	CR	CR (% total)
Farmer Adult	Composite TOE - Nonvolatile	1.27E-05	99.47%
Farmer Adult	3,4,5,3',4'-Pentachlorobiphenyl	2.65E-08	0.21%
Farmer Adult	2,3,7,8-Tetrachlorodibenzofuran	1.23E-08	0.10%
Farmer Adult	Composite TOE - Volatile	1.12E-08	0.09%
Farmer Adult	Composite TOE - Semi-volatile	8.22E-09	0.06%
Native Adult	Composite TOE - Nonvolatile	1.4E-05	99.41%
Native Adult	3,4,5,3',4'-Pentachlorobiphenyl	3.8E-08	0.27%
Native Adult	2,3,7,8-Tetrachlorodibenzofuran	1.3E-08	0.09%
Native Adult	Composite TOE - Volatile	1.2E-08	0.08%
Native Adult	Composite TOE - Semi-volatile	9.3E-09	0.07%

Table 5-36: On-Site Chronic Cancer Risks by COPC for the Base Model with Dioxins and Furans Moved to COMSTK COPC List

Exposure Scenario	COPC	CR	CR (% total)
Farmer Adult	Composite TOE - Nonvolatile	7.0E-04	99.32%
Farmer Adult	3,4,5,3',4'-Pentachlorobiphenyl	2.5E-06	0.36%
Farmer Adult	2,3,7,8-Tetrachlorodibenzofuran	6.6E-07	0.09%
Farmer Adult	Composite TOE - Volatile	5.7E-07	0.08%
Farmer Adult	Composite TOE – Semi-volatile	4.6E-07	0.07%
Farmer Child	Composite TOE - Nonvolatile	7.8E-05	98.36%
Farmer Child	3,4,5,3',4'-Pentachlorobiphenyl	4.8E-07	0.61%
Farmer Child	Composite TOE - Volatile	3.4E-07	0.44%
Farmer Child	Composite TOE - Semi-volatile	3.0E-07	0.38%
Farmer Child	2,3,7,8-Tetrachlorodibenzofuran	8.7E-08	0.11%
Native Adult	Composite TOE - Nonvolatile	7.9E-04	99.23%
Native Adult	3,4,5,3',4'-Pentachlorobiphenyl	3.7E-06	0.46%
Native Adult	2,3,7,8-Tetrachlorodibenzofuran	7.1E-07	0.09%
Native Adult	Composite TOE - Volatile	6.0E-07	0.08%
Native Adult	Composite TOE - Semi-volatile	5.1E-07	0.06%
Native Child	Composite TOE - Nonvolatile	6.0E-05	97.96%
Native Child	3,4,5,3',4'-Pentachlorobiphenyl	4.5E-07	0.73%
Native Child	Composite TOE - Volatile	3.6E-07	0.58%
Native Child	Composite TOE - Semi-volatile	3.1E-07	0.50%
Native Child	2,3,7,8-Tetrachlorodibenzofuran	6.8E-08	0.11%

It should also be noted that moving the eleven dioxins from the non-volatile TOE fraction to the COPC list does not cause unacceptable predicted levels of PCDDs and PCDFs in breast milk. For both the on-site and off-site evaluation location the predicted infant $ADD_{D/F}$ is below the DEQ action level of 0.25 pg-TEQ/kg-day for all exposure scenarios. The $ADD_{D/F}$ results for Special Case 4 are provided in Table 5-37.

Table 5-37: Summary of Average Daily Dose of PCDDs and PCDFs for the Base Model with Dioxins and Furans Moved to the COMSTK COPC List

Location	**Scenario**	**$ADD_{D/F}$ (pg-TEQ/kg-day)**
Off Site	Farmer Adult	3.8E-03
Off Site	Farmer Child	--
Off Site	Fisher Adult	4.8E-05
Off Site	Fisher Child	--
Off Site	Native Adult	2.4E-03
Off Site	Native Child	--
Off Site	Resident Adult	3.9E-05
Off Site	Resident Child	--
On Site	Farmer Adult	2.2E-01
On Site	Farmer Child	--
On Site	Fisher Adult	2.6E-03
On Site	Fisher Child	--
On Site	Native Adult	1.3E-01
On Site	Native Child	--
On Site /Off Site	Worker Adult	8.4E-03
Admin Area/Off Site	Military Adult	3.6E-05

5.2.2.5 Special Case 5 – On-Site Risk after Incineration

The base model was modified to remove the exposure pathways that only occur during incineration operations. These exposure pathways are inhalation exposure, above ground produce exposure by direct deposition of particles, and air-to leaf transfer. The intent of this model run was to estimate the risks from the reuse of the UMCDF lands after site closure. These three modifications were accomplished by setting to zero the following three IRAP-h parameters, inhalation exposure time ($ED_{inhalation}$), length of plant exposure to deposition per harvest of edible portions of plant (t_p), and the COPC specific air-to-leaf biotransfer factor (Bv_{leaf}). All other parameters were equal to those of the base model. In IRAP-h the parameter, $ED_{inhalation}$, is specific to each exposure scenario and is found under the Scenario Parameter tab of the IRAP-h Risk Receptor Parameter pop-up menu. The t_p values (for forage, silage, and human consumed plants) are specific to the receptor evaluation location and are found in IRAP-h under the Site Parameters tab of the Risk Receptor Parameter pop-up menu. Bv_{leaf} for human consumed plants, forage, and silage are located in the user defined COPC database.

Table 5-38 lists the on-site chronic cancer risks for the future use scenario along with the base model risks from Table 5-10 and the percentage reduction represented between the two data sets. Although the future use scenario represents less predicted risk than the base model, the results are still well above the DEQ action level of 1×10^{-5} for all on-site scenarios. The highest on-site risk for the future use scenario is 7.4×10^{-3} for the Native American adult; a value that is 740 times above the DEQ action level.

Table 5-38: Chronic Cancer Risks for Use of the UMCDF Lands after Closure (Special Case 5)

Location	Scenario	Future Use Model Cancer Risk	Base Model Cancer Risks	% Reduction in Cancer Risk
On Site	Farmer Adult	6.4×10^{-3}	1.5×10^{-2}	57%
On Site	Farmer Child	5.4×10^{-4}	1.6×10^{-3}	66%
On Site	Fisher Adult	1.0×10^{-4}	1.2×10^{-4}	17%
On Site	Fisher Child	7.2×10^{-5}	8.0×10^{-5}	10%
On Site	Native Adult	7.4×10^{-3}	1.6×10^{-2}	54%
On Site	Native Child	4.3×10^{-4}	1.3×10^{-3}	67%

5.2.2.6 Case 6 – Combined Special Cases 3, 4, and 5

The modifications in Special Cases 3, 4, and 5 were combined to determine their collective impacts on risk. The COPC emission rate file for this analysis is provided in Table C-4 in Appendix C. This combined analysis was completed since both Cases 3 and 4 are based on updating the emission rate files using additional stack emission measurements that were not included in the base model (agent DAAMS data for Case 3 and trial burn dioxin and furan data for Case 4). In addition, the carbon processing estimates in Case 3 are a more current prediction of what will actually be processed at the facility. Finally, the exposure pathway adjustments of Case 5 more accurately reflect the future use of UMCD lands. Hence, this combined case represents site conditions that more closely reflect actual conditions than those used in the base model.

A summary of the results for the chronic cancer and non-cancer risks are presented in Table 5-39. It is evident from this table that combining the Special Case 3 and Case 4 refinements results in chronic off-site risks (both cancer and non-cancer) below the DEQ action levels. On-site chronic cancer risks are still more than an order of magnitude action levels, but on-site non-cancer risks are below their action level. The infant average daily dose for dioxins and furans for Special Case 6 are also below their action levels for all locations and exposure scenarios (Table 5-40).

From these results it is evident that the off-site risks reported for the base model are reduced to values below the action levels by accounting for more accurate estimates of chemical agent and dioxin and furan emissions. These modified emission values are based on experimental measurements of stack emissions which were not included in the base model. Including this new data creates emission rates that more accurately estimate of the potential levels of these compounds being released to the environment. On-sites

risks are also reduced, but still remain above action levels and so are still of concern to the CTUIR. Future risk management activities should include an attempt to speciate the non-volatile TOE fraction and to determine the true toxicity of these compounds. In addition, site sampling should be conducted within the immediate region of the UMCDF to ensure residual contamination does not create unacceptable risks for those who will be using these lands after closure.

Table 5-39: Summary of Chronic Cancer and Non-cancer Risks for Special Case 6

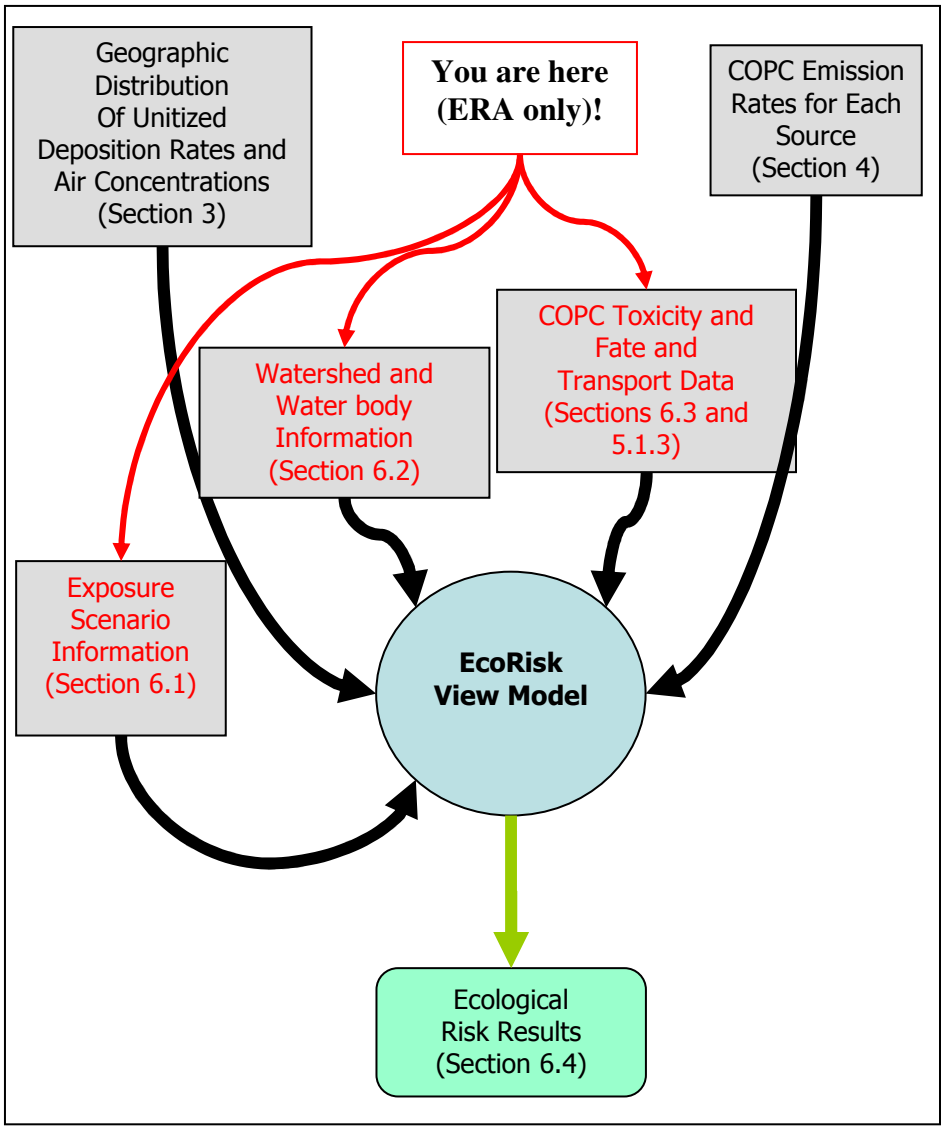
Location	Scenario	Cancer Risk	Hazard Index
Off Site	Farmer Adult	7.1E-06	0.003
Off Site	Farmer Child	8.2E-07	0.004
Off Site	Fisher Adult	7.9E-08	0.001
Off Site	Fisher Child	5.1E-08	0.003
Off Site	Native Adult	8.0E-06	0.005
Off Site	Native Child	6.4E-07	0.005
Off Site	Resident Adult	7.4E-08	0.001
Off Site	Resident Child	5.1E-08	0.003
On Site	Farmer Adult	1.7E-04 [a]	0.065
On Site	Farmer Child	1.5E-05	0.079
On Site	Fisher Adult	2.8E-06	0.021
On Site	Fisher Child	2.0E-06	0.050
On Site	Native Adult	2.0E-04	0.079
On Site	Native Child	1.2E-05	0.080
On Site /Off Site	Worker Adult	2.8E-07	0.003
Admin Area/Off Site	Military Adult	7.4E-08	0.001

[a] Shaded entries indicate values above DEQ action levels.

Table 5-40: Summary of Average Daily Dose of PCDDs and PCDFs for Special Case 6

Location	**Scenario**	**$ADD_{D/F}$ (pg-TEQ/kg-day)**
Off Site	Farmer Adult	3.6E-03
Off Site	Farmer Child	--
Off Site	Fisher Adult	4.6E-05
Off Site	Fisher Child	--
Off Site	Native Adult	2.2E-03
Off Site	Native Child	--
Off Site	Resident Adult	3.7E-05
Off Site	Resident Child	--
On Site	Farmer Adult	2.0E-01
On Site	Farmer Child	--
On Site	Fisher Adult	2.5E-03
On Site	Fisher Child	--
On Site	Native Adult	1.2E-01
On Site	Native Child	--
On Site /Off Site	Worker Adult	8.0E-03
Admin Area/Off Site	Military Adult	3.5E-05

6 Ecological Risk Results and Discussion



The above figure provides a simplified depiction of the information necessary to complete the UMCDF ERA using the EcoRisk View Software (Lakes Environmental, 2003). The sections within this document that discusses each of the input data sets and the resulting ecological risk results are indicated in the figure. The EcoRisk View Software implements the 1999 EPA Screening Level Ecological Risk Assessment Protocol (SLERAP).

6.1 Exposure Scenario

Two separate habitats, depicted spatially in Figure 6-1, were evaluated in this analysis; a shrub-steppe ecosystem and a freshwater ecosystem (DEQ, 2004). The shrub-steppe ecosystem was evaluated to simulate current conditions on the UMCD and represents the area with the highest potential to impact this type of community since deposition rates are

highest in this region. The region used in the shrub-steppe analysis is depicted by the purple region within the UMCD. The Umatilla River was chosen as the freshwater evaluation area because its close proximity to the UMCDF and its low flow rate create the potential for larger impacts from incineration emissions than for the Columbia River. The purple region along the Umatilla River in Figure 6-1 represents a 1 km wide assessment zone used to determine maximum deposition rates and air concentrations for the freshwater ecosystem. Deposition rates and air concentrations used in this analysis are provided in Tables T-7 throughT-9 of Appendix T. Properties used in EcoRisk View to describe the Umatilla River and associated watershed are identical to those applied in the human health risk analysis are provided in Tables 5-1 and 5-2 of this report.

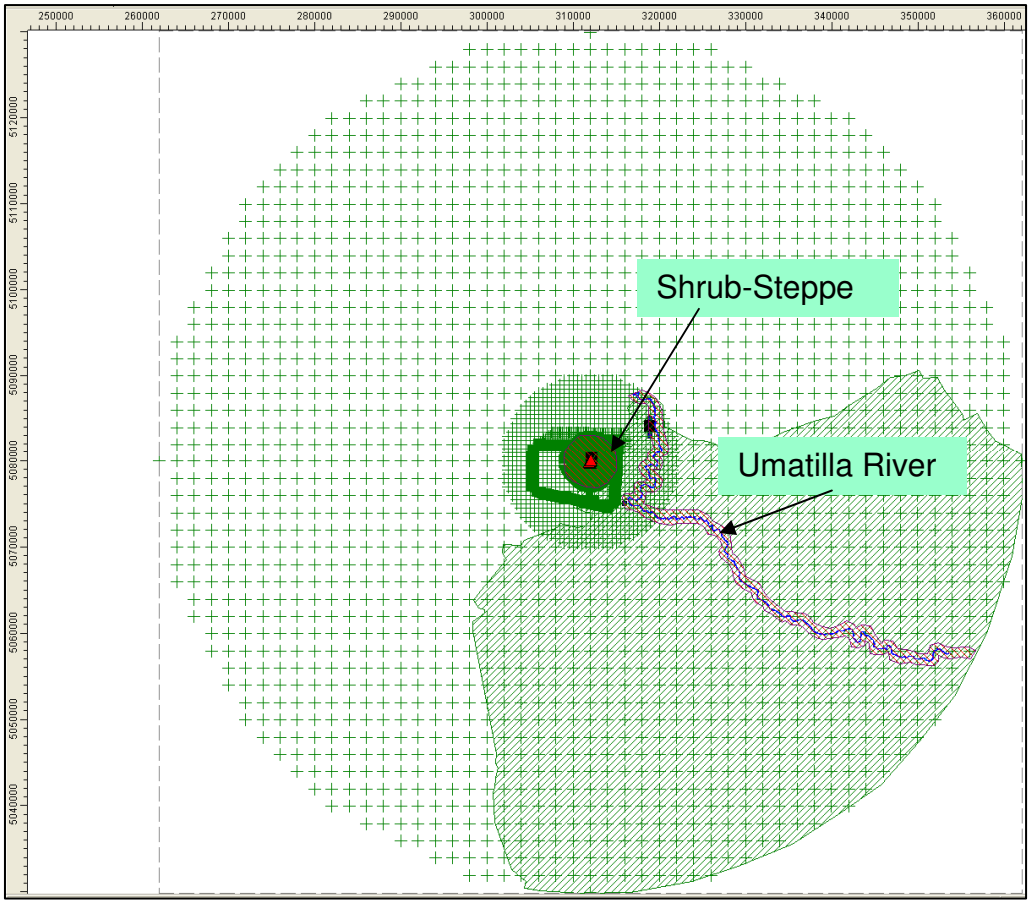


Figure 6-1: Ecological Risk Assessment Model Layout. The purple region along the Umatilla River represents the 1 km wide assessment zone used to determine maximum deposition rates and air concentrations for the freshwater ecosystem. The purple region within the UMCD corresponds to the region evaluated for the shrub-steppe habitat.

Table 6-1 indicates values for the general site properties used by EcoRisk View for both ecosystems. The values indicated in Table 6-1 are identical to those used in the human health risk evaluation described in Section 5 of this document.

Table 6-1: Site Properties Required by EcoRisk View.

Parameter Description	Unit	Value
Soil dry bulk density	g/cm^3	1.5
Average annual evapotranspiration	cm/yr	81.3
Fish lipid content	--	0.07
Universal gas constant	$atm\text{-}m^3/mol\text{-}K$	8.21E-05
Average annual irrigation	cm/yr	55
Plant surface loss coefficient	yr^{-1}	18
Fraction of mercury emissions NOT lost to the global cycle	--	0.48
Fraction of mercury speciated into methyl mercury in produce	--	0.22
Fraction of mercury speciated into methyl mercury in soil	--	0.02
Fraction of mercury speciated into methyl mercury in wetland soil	--	0.08
Viscosity of air corresponding to air temp.	g/cm-s	0.000181
Average annual precipitation	cm/yr	21.59
Average annual runoff	cm/yr	2.54
Density of air	g/cm^3	0.0012
Solids particle density	g/cm^3	2.7
Interception fraction - edible portion FORAGE	--	0.5
Ambient air temperature	K	285
Temperature correction factor	--	1.026
Soil volumetric water content	mL/cm^3	0.2
Length of plant exposure to deposition - FORAGE	Yr	0.12
Average annual wind speed	m/s	3.9
Dry deposition velocity	cm/s	0.5
Wind velocity	m/s	4.5
Yield/standing crop biomass - edible portion FORAGE	$kg\ DW/m^2$	0.24
Soil mixing zone depth	cm	2

6.1.1 Shrub-Steppe Habitat

Shrub-steppe ecosystems characteristically contain shrubs in association with grasses. Grasses found in the shrub-steppe ecosystem can include bluebunch wheat grasses, sandberg's bluegrass, needle-and-thread grass, Indian rice grass, and prairie June grass (DOE, 1996). Within the Columbia River plain, the dominant shrub-steppe plant communities include:

- Sagebrush with Sandberg's bluegrass or cheatgrass;
- Bitterbrush with Sandberg's bluegrass;
- Greasewood with Sandberg's bluegrass;

- Spiny hopsage / Sandberg's bluegrass.

Stands of mature big sagebrush support nesting populations of loggerhead shrike while recovering shrubs in this habitat provide nesting habitat for long-billed curlews. Mammals that use this habitat include mule deer, badger, coyote, black-tailed jackrabbits, deer mince, and pocket mice. Ferruginous hawks, northern harriers, red-tailed hawks, Swainson's hawks, prairie falcons, and golden eagles. Other terrestrial birds found in this habitat include meadowlarks, horned larks and common ravens.

COPCs were assumed to enter the shrub-steppe habitat through vapor and particulate deposition onto soils, plants, and surface waters. Soil contamination also contributes to the contamination of plants by root uptake and to the contamination of terrestrial invertebrates living in the soils. Soil contamination also contributes to water concentrations through run-off. Higher order organisms subsequently consume the contaminated plants, invertebrates, water, and soils as well as each other. Table 6-2 depicts the repetitive food web applied in this analysis for the shrub-steppe habitat. Table 6-3 provides the ingestion rates and body weights for each marker species. Equal diet ingestion rates for each food item were used in this analysis and are calculated as follows:

$$IR_{i,j} = \frac{IR_{total\ j}}{n_{food\ j}}$$

Where $IR_{i,j}$ is the ingestion rate of the i^{th} food item for the j^{th} marker species, $IR_{total,j}$ is the total food ingestion rate for the j^{th} marker species, and $n_{food,j}$ is the number of food items for the j^{th} marker species. Umatilla River water was assumed as the sole source of drinking water for the shrub-steppe community.

Table 6-2: Shrub-Steppe Habitat Food Web For the UMCDF ERA

Guild	Marker Species	Food
Carnivorous Bird	Peregrine Falcon	Herbivorous Bird
		Herbivorous Mammal
		Omnivorous Bird
		Omnivorous Mammal
Carnivorous Mammal	Coyote	Herbivorous Bird
		Herbivorous Mammal
		Omnivorous Bird
		Omnivorous Mammal
Herbivorous Bird	Mourning Dove	Terrestrial Plants
Herbivorous Mammal	Pronghorn Antelope	Terrestrial Plants
Omnivorous Bird	Western Meadowlark	Terrestrial Plants
		Terrestrial Invertebrates
Omnivorous Mammal	Deer Mouse	Terrestrial Plants
		Terrestrial Invertebrates

Table 6-3: Ingestion Rates and Body Weights for Ecological Risk Marker Species

Marker Species	Body Weight (kg)	Food Ingestion (kg-FW/kg-BW-day)	Water Ingestion (L/kg-BW-day)	Soil Ingestion (kg-DW/kg-BW-day)
Bald Eagle	4.01	1.20E-01	3.70E-02	7.20E-04
Canada Goose	1.40	2.35E-01	5.30E-02	4.30E-03
Long Tailed Vole	0.05	9.50E-02	1.34E-01	2.74E-04
Mallard Duck	0.25	1.79E-01	5.82E-02	3.18E-03
Raccoon	6.70	2.23E-01	8.20E-02	4.60E-03
River Otter	6.78	1.53E-01	8.20E-02	9.80E-04
Spotted Sandpiper	0.04	5.69E-01	1.74E-01	4.15E-02
Coyote	12.90	3.50E-02	7.70E-02	3.10E-04
Deer Mouse	0.01	5.99E-01	1.51E-01	1.44E-03
Mourning Dove	0.15	3.49E-01	1.09E-01	7.01E-03
Peregrine Falcon	1.00	1.82E-01	5.90E-02	1.16E-03
Pronghorn Antelope	46.10	1.03E-01	6.75E-02	6.20E-04
Western Meadowlark	0.09	4.21E-01	1.31E-01	1.39E-02

6.1.2 Freshwater Habitat

The Umatilla River freshwater ecosystem is comprised of the river and riparian region. Terrestrial and aquatic insects live in the emergent vegetation and provide food for the fish and birds which populate the zone. Piscivorous mammals and birds (including mink, raccoons, and bald eagles) feed on the fish while herbivorous mammals including otters and deer feed on the abundant riparian vegetation. COPCs from the UMCDF are assumed to enter the Umatilla River ecosystem through direct vapor and particulate

deposition into the river and through run-off of watershed soils. Aquatic plants, benthic invertebrates, and fish all acquire COPCs though contact with contaminated sediments and river water. Higher order organisms subsequently consume the contaminated plants, invertebrates, fish, water, and sediments as well as each other. Table 6-4 depicts the repetitive food web applied in this analysis for the freshwater habitat. Table 6-3 provides the ingestion rates and body weights for each marker species. Equal diet ingestion rates for each food item were used in this analysis and are calculated as described in Section 6.1.

Table 6-4: Freshwater Habitat Food Web For the UMCDF ERA

Guild	Marker Species	Food
Carnivorous Bird	Bald Eagle	Herbivorous Bird
		Herbivorous Mammal
		Carnivorous Fish
		Omnivorous Fish
Carnivorous Mammal	River Otter	Carnivorous Fish
		Omnivorous Fish
Carnivorous Shore Bird	Spotted Sandpiper	Benthic Invertebrates
Herbivorous Bird	Canada Goose	Aquatic Plants
Herbivorous Mammal	Long Tailed Vole	Aquatic Plants
Omnivorous Bird	Mallard Duck	Aquatic Plants
Omnivorous Mammal	Raccoon	Aquatic Plants
		Benthic Invertebrates

6.2 Water Body and Watershed Data

The Umatilla River was assumed as the water source ERA. Air deposition rates applied to the Umatilla River watershed and water body are provided in Tables T-7 and T-9 of Appendix T. Numerical values for the properties necessary to describe the watershed and water body in EcoRisk View are identical to those used in the human health risk assessment and are provided in Tables 5-1 and 5-2. The spatial extent of the Umatilla River watershed is indicated in Figure 5-2 (Oregon Watershed Council, 2001).

6.3 COPC Emission Rates, Toxicity, Fate, and Transport Data

The ERA relied on the human health risk assessment base model COPC list and associated emissions rates for the four point sources as described in Section 4. Similarly, fate and transport properties used in the ERA are identical to those reported in Tables K-1 through K-7 of Appendix K. Values for Ba_{bird} and Ba_{mammal} for the ERA model were set equal to $Ba_{chicken}$ and Ba_{beef}, respectively.

Two unique data sets were also required by EcoRisk View for the ERA; the Bioconcentration Factor (BCF) data set and the Toxicity Reference Value (TRV) data set. Bioconcentration factors are COPC and media specific and describe the relative concentration of a COPC within a food material as a result of equilibrium uptake from the surrounding environment. Toxicity Reference Values are also COPC and media

specific and serve as the reference point to gauge the potential for a given dose or concentration to create adverse health effects. Table 6-5 provides a description of the COPC specific TRV and BCF data required for the ERA Analysis. Values for these parameters are provided in Appendix O.

Table 6-5: COPC Specific Parameters Required for the ERA, but not the HHRA

Parameter	Unit	Description
$BFC_{Soil\text{-}to\text{-}Invertebrate}$	(mg/kg-WW)/(mg/kgDW)	Soil to Terrestrial Invertebrate BCF
$BCF_{Soil\text{-}to\text{-}Plant}$	(mg/kg-DW)/(mg/kgDW)	Soil to Terrestrial Plant BCF
$BCF_{Water\text{-}to\text{-}Invertebrate}$	(mg/kg-WW)/(mg/L)	Water to Aquatic Invertebrate BCF
$BCF_{Water\text{-}to\text{-}Algae}$	(mg/kg-WW)/(mg/L)	Water to Algae BCF
$BCF_{Water\text{-}to\text{-}Fish}$	(mg/kg-WW)/(mg/L)	Water to Fish BCF
$BCF_{Sediment\text{-}to\text{-}Invertebrate}$	(mg/kg-WW)/(mg/kgDW)	Sediment to Benthic Invertebrate BCF
TRV_{water}	mg/L	Chronic water quality benchmark
$TRV_{sediment}$	mg/kg	Low-effect sediment quality benchmark
TRV_{plants}	mg/kg	Low-effect soil quality benchmark - plants
$TRV_{invertebrates}$	mg/kg	Low-effect soil quality benchmark - invertebrates
TRV_{mammal}	mg/kg-BW/day	Mammalian Test Species NOAEL
TRV_{bird}	mg/kg-BW/day	Avian no-effect oral TRV

The BCF values indicated in Appendix O were developed based on the calculation protocol described by others (USACHPPM, 2007a). This document is provided in Appendix M. The TRV data applied in this analysis was identical to that used by Ecology and Environment in their Umatilla ERA analysis (Ecology and Environment, 2008).

6.4 Ecological Risk Assessment

Ecological screening quotient results (ESQ) for the shrub-steppe and freshwater habitats are provided in Tables 6-6 and 6-7 respectively. Appendix U details the soil, water, and sediment concentrations which underlie these predications. The contribution of each source to the total ESQ for each marker species is provided in these tables. Values which exceed an ESQ of 1.0 are highlighted as shaded entries. For the shrub-steppe habitat the herbivorous bird, omnivorous bird, and omnivorous mammal all exceeded an ESQ of 1.0. For the freshwater habitat an ESQ greater than 1.0 was predicted for the carnivorous shore bird, the omnivorous bird, and the omnivorous mammal. In all cases a single sources was responsible for exceeded an ESQ of 1.0.

Table 6-6: Equal Diet Ecological Screening Quotient Results for the Shrub-Steppe Habitat [a]

Guild	Marker Species	Source	ESQ
Carnivorous Bird	Peregrine Falcon	BRASTK	6.55E-04
		COMSTK	7.33E-01
		LABSTK	0.00E+00
		MDBSTK	0.00E+00
		Total	***7.34E-01***
Carnivorous Mammal	Coyote	BRASTK	1.22E-03
		COMSTK	5.27E-03
		LABSTK	1.66E-04
		MDBSTK	1.48E-04
		Total	***6.80E-03***
Herbivorous Bird	Mourning Dove	BRASTK	2.00E-03
		COMSTK	1.55E+01
		LABSTK	0.00E+00
		MDBSTK	0.00E+00
		Total	***1.55E+01***
Herbivorous Mammal	Pronghorn Antelope	BRASTK	7.45E-02
		COMSTK	9.36E-02
		LABSTK	1.67E-02
		MDBSTK	1.44E-02
		Total	***1.99E-01***
Omnivorous Bird	Western Meadowlark	BRASTK	4.24E-03
		COMSTK	1.47E+01
		LABSTK	0.00E+00
		MDBSTK	0.00E+00
		Total	***1.47E+01***
Omnivorous Mammal	Deer Mouse	BRASTK	2.38E+00
		COMSTK	4.05E-01
		LABSTK	5.35E-01
		MDBSTK	4.65E-01
		Total	***3.79E+00***

[a] Shaded entries indicate values from individual sources that are above the ESQ action level of 1.0.

Table 6-7: Equal Diet Ecological Screening Quotient Results for the Freshwater Habitat [a]

Guild	Marker Species	Source	ESQ
Carnivorous Bird	Bald Eagle	BRASTK	6.73E-07
		COMSTK	4.09E-01
		LABSTK	0.00E+00
		MDBSTK	0.00E+00
		Total	***4.09E-01***
Carnivorous Mammal	River Otter	BRASTK	5.86E-05
		COMSTK	2.45E-02
		LABSTK	1.38E-06
		MDBSTK	5.79E-06
		Total	***2.46E-02***
Carnivorous Shore Bird	Spotted Sandpiper	BRASTK	1.08E-06
		COMSTK	2.63E+04
		LABSTK	0.00E+00
		MDBSTK	0.00E+00
		Total	***2.63E+04***
Herbivorous Bird	Canada Goose	BRASTK	1.62E-07
		COMSTK	4.32E-03
		LABSTK	0.00E+00
		MDBSTK	0.00E+00
		Total	***4.32E-03***
Herbivorous Mammal	Long Tailed Vole	BRASTK	3.89E-04
		COMSTK	2.19E-05
		LABSTK	4.39E-05
		MDBSTK	1.85E-04
		Total	***6.40E-04***
Omnivorous Bird	Mallard Duck	BRASTK	1.81E-07
		COMSTK	4.13E+03
		LABSTK	0.00E+00
		MDBSTK	0.00E+00
		Total	***4.13E+03***
Omnivorous Mammal	Raccoon	BRASTK	4.57E-04
		COMSTK	8.07E+01
		LABSTK	5.16E-05
		MDBSTK	2.17E-04
		Total	***8.07E+01***

[a] Shaded entries indicate values from individual sources that are above the ESQ action level of 1.0.

Tables 6-8 and 6-9 list the top five risk contributing compounds for the marker species/emission source combinations which exceeded an ESQ of 1.0. Unspeciated, nonvolatile TOE from the COMSTK generated more than 99.99% of the risk for all but the shrub-steppe omnivorous mammal. Risk in this latter case was generated by VX emissions from the BRASTK.

Table 6-8: Top Five Risk Contribution Compounds for Cases in the Shrub-Steppe Habitat That Exceed an ESQ of 1.0

Guild	Source	COPC	ESQ	%Total ESQ
Herbivorous Bird	COMSTK	Composite TOE - Nonvolatile	1.55E+01	99.9885%
		Bis(2-ethylhexyl)phthalate	8.28E-04	0.0053%
		2,3,7,8-Tetrachlorodibenzofuran	8.03E-04	0.0052%
		Composite TOE - Semivolatile	6.18E-05	0.0004%
		Dibutyl phthalate	2.80E-05	0.0002%
Omnivorous Bird	COMSTK	Composite TOE - Nonvolatile	1.47E+01	99.5120%
		Bis(2-ethylhexyl)phthalate	6.39E-02	0.4341%
		2,3,7,8-Tetrachlorodibenzofuran	6.15E-03	0.0417%
		Composite TOE - Semivolatile	1.28E-03	0.0087%
		PCB Mixture (non-dioxin like, 5+ chlorines)	2.84E-04	0.0019%
Omnivorous Mammal	BRASTK	VX	2.36E+00	99.0858%
		Thallium compounds	1.10E-02	0.4627%
		GB	3.52E-03	0.1479%
		Methyl mercury	3.32E-03	0.1395%
		Copper compounds	1.69E-03	0.0707%

Table 6-9: Top Five Risk Contribution Compounds for Cases in the Freshwater Habitat That Exceed an ESQ of 1.0

Guild	Source	COPC	ESQ	%Total ESQ
Carnivorous Shore Bird	COMSTK	Composite TOE - Nonvolatile	2.63E+04	99.999687%
		2,3,7,8-Tetrachlorodibenzofuran	5.21E-02	0.000198%
		Bis(2-ethylhexyl)phthalate	1.81E-02	0.000069%
		3,3',4,4'-Tetrachlorobiphenyl	1.16E-02	0.000044%
		2,3,4,4'5-Pentachlorobiphenyl	1.70E-04	0.000001%
Omnivorous Bird	COMSTK	Composite TOE - Nonvolatile	4.13E+03	99.999687%
		2,3,7,8-Tetrachlorodibenzofuran	8.20E-03	0.000198%
		Bis(2-ethylhexyl)phthalate	2.84E-03	0.000069%
		3,3',4,4'-Tetrachlorobiphenyl	1.82E-03	0.000044%
		2,3,4,4'5-Pentachlorobiphenyl	2.67E-05	0.000001%
Omnivorous Mammal	COMSTK	Composite TOE - Nonvolatile	8.07E+01	99.998525%
		2,3,7,8-Tetrachlorodibenzofuran	6.81E-04	0.000844%
		Bis(2-ethylhexyl)phthalate	1.42E-04	0.000176%
		2,3,4,4'5-Pentachlorobiphenyl	9.32E-05	0.000116%
		2,3,7,8-Tetrachlorodibenzo-p-dioxin	9.15E-05	0.000113%

Exclusive diet results are provided in Tables 6-10 and 6-11 for the marker species/emission source combinations which exceeded an ESQ of 1.0 to indicate which ingestion pathways are involved with the exceedences. For the shrub-steppe habitat (Table 6-10), ingestion of both terrestrial plants and invertebrates contribute significantly to the ESQ. However, high ESQ values for the freshwater habitat (Table 6-11) are solely the result of the ingestion of benthic invertebrates.

Table 6-10: Exclusive Diet Results for Shrub-Steppe Habitat Cases That Exceed an ESQ of 1.0

Source	Guild	Food Item	ESQ
COMSTK	Herbivorous Bird	Terrestrial Plants	1.55E+01
COMSTK	Omnivorous Bird	Terrestrial Plants	2.17E+01
		Terrestrial Invertebrate	7.76E+00
BRASTK	Omnivorous Mammal	Terrestrial Invertebrate	4.34E+00
		Terrestrial Plants	4.28E-01

Table 6-11: Exclusive Diet Results for
Freshwater Habitat Cases That Exceed an ESQ of 1.0

Source	Guild	Diet	ESQ
COMSTK	Carnivorous Shore Bird	Benthic Invertebrate	2.63E+04
COMSTK	Omnivorous Bird	Aquatic Vegetation	3.21E-03
		Benthic Invertebrate	8.26E+03
COMSTK	Omnivorous Mammal	Herbivorous Mammal	9.49E-05
		Herbivorous Bird	9.48E-05
		Benthic Invertebrate	2.42E+02

The contribution of benthic invertebrates to the ESQ for a given animal is expressed as follows (from SLERAP Equations F-2-10 and 6-1):

$$ESQ_{A,bi} = \sum_i \frac{\left[C_{sed,i} \cdot BCF_{bi,i}\right] \cdot \left[P_{bi} \cdot F_{bi} \cdot NIRF_A\right]}{TRV_{A,i}}$$

Where $ESQ_{A,bi}$ represents the contribution of benthic invertebrates to the ESQ for animal "A", $C_{sed,i}$ is the concentration of the i^{th} COPC in sediment, $BCF_{bi,i}$ is the bioconcentration factor for benthic invertebrates for the i^{th} COPC, P_{bi} is the fraction of benthic invertebrates ingested that are contaminated, F_{bi} is the fraction of the animals diet that is composed of benthic invertebrates, $NIRF_A$ is the normalized food ingestion rate, and $TRV_{A,i}$ is the toxicity reference value for the i^{th} COPC and the A^{th} animal. Table 6-12 lists the values of the parameters on the right-hand-side of the proceeding equation for the UMCDF freshwater habitat scenarios listed in Table 6-11.

Table 6-12: Values Contributing to Benthic Invertebrate
Contribution to Unspeciated Non-volatile TOE portion of ESQ
for the Freshwater Habitat

Parameter	Units	Carnivorous Shore Bird	Omnivorous Bird	Omnivorous Mammal
C_{sed}	mg-COPC/kg_{DW}	1.42E-03	1.42E-03	1.42E-03
$BCF_{bi,i}$	(mg-COPC/kg_{BW})/ (mg-COPC/kg_{DW})	5.3E+04	5.3E+04	5.3E+04
P_{bi}	(kg_{DW}/kg_{DW})	1	1	1
F_{bi}	(unitless)	1	0.5	0.33
$NIRF_A$	kg_{FW}/kg_{BW}-day	0.569	0.179	0.223
$TRV_{A,i}$	mg/kg_{BW}-day	0.00163	0.00163	0.0692

The values of C_{sed} and $BCF_{bi,i}$, for unspeciated non-volatile TOE both represent extreme levels that combine to create the predicted high ESQ. Figure 6-2 indicates the predicted values for C_{sed} for all compounds emitted by the UMCDF while Figure 6-3 shows the $BCF_{bi,i}$ values for these compounds. The y-axis in both figures are logarithmic and values for individual compounds are represented by the data points. The large red data point indicates the unspeciated non-volatile TOE value. The orders that compounds are presented in the two figures are not equivalent since both figures present their respective data sets in descending order. As is evident from the figures, the unspeciated non-volatile TOE C_{sed} value is the highest of any compound by almost two orders of magnitude while the unspeciated non-volatile TOE $BCF_{bi,i}$ value is the fourth largest. Only the PCBs 2,3,4,5,3',4',5'-Heptachlorobiphenyl, 2,3,3',4,4',5-Hexachlorobiphenyl, and 2,3',4,4',5,5'-Hexachlorobiphenyl have larger $BCF_{bi,}i$ values. The product of C_{sed} and $BCF_{bi,i}$, show in Figure 6-4, reveals the combined effects of these parameters on the ESQ. The product of these parameters for the unspeciated non-volatile TOE are the highest of any compound by more than three orders of magnitude.

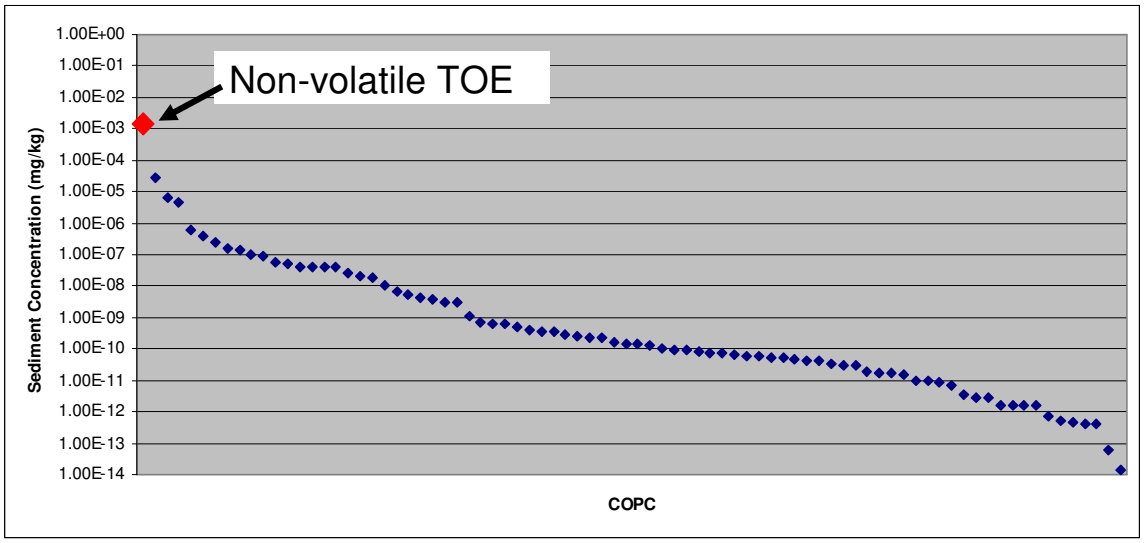


Figure 6-2: Predicted sediment concentrations for all compounds presented on a logarithmic scale. Each point represents a different compound with the large red point indicated the value for unspeciated non-volatile TOE. Compound-specific data is sorted in descending order.

It should be noted that while the C_{sed} value is based on site emissions data, the $BCF_{bi,i}$ value was developed using the geometric mean octanol-water partition coefficient (1.47E+07, see Table 5-8) and a predictive equation recommended by the EPA (EPA, 1999). The validity of using this predictive equation is questionable since the k_{ow} value used to represent the unspeciated non-volatile TOE is an order of magnitude greater than the range of compounds used to develop the empirical relationship (Southworth et al., 1978).

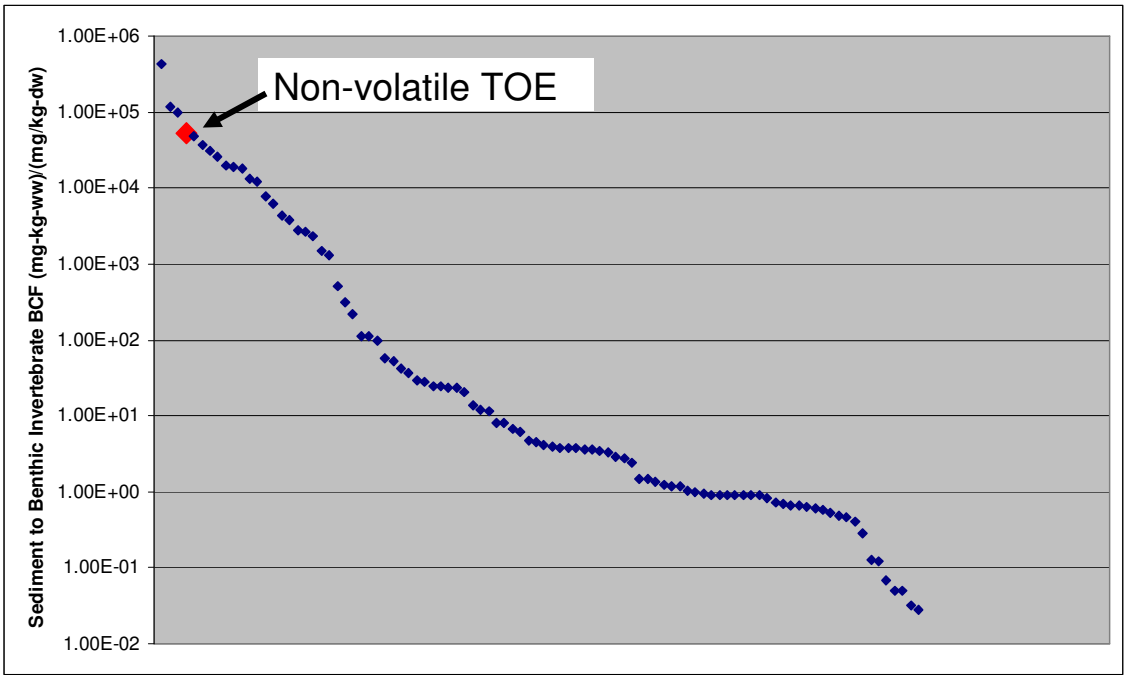


Figure 6-3: $BCF_{bi,i}$ values for all compounds presented on a logarithmic scale. The large red point indicates the value for the unspeciated non-volatile TOE. Compound-specific data is sorted in descending order.

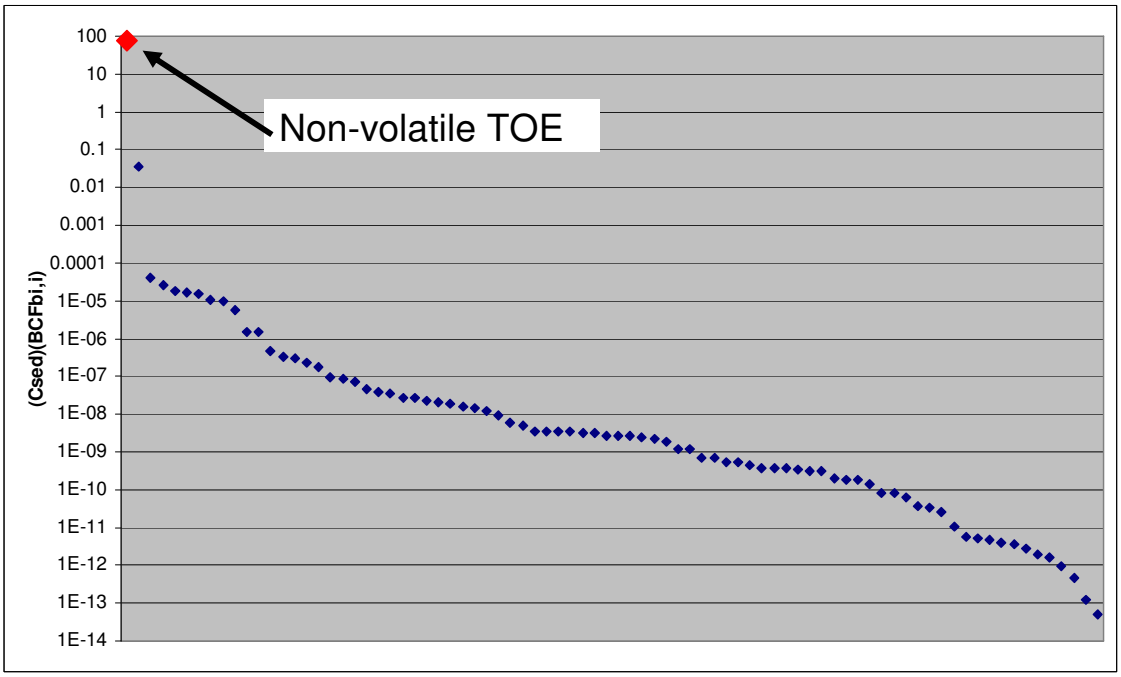


Figure 6-4: Product of compound-specific *Csed* and *BCFbi,i* values presented on a logarithmic scale. The large red point indicates the value for the unspeciated non-volatile TOE. Compound-specific data is sorted in descending order.

The contribution of individual COPCs in soil invertebrates to the ESQ for both omnivorous birds and omnivorous mammals is described by an equation analogous to that presented above for benthic invertebrates. Briefly,

$$ESQ_{A,si} = \sum_i \frac{\left[C_{soil,i} \cdot BCF_{si,i}\right] \cdot \left[P_{si} \cdot F_{si} \cdot NIRF_A\right]}{TRV_{A,i}}$$

Where $ESQ_{A,si}$ represents the contribution of soil invertebrates t the ESQ for animal "A", $C_{soil,i}$ is the concentration of the i^{th} COPC in soil, $BCF_{si,i}$ is the bioconcentration factor for soil invertebrates for the i^{th} COPC, P_{si} is the fraction of soil invertebrates ingested that are contaminated, F_{si} is the fraction of the animals diet that is composed of benthic invertebrates, $NIRF_A$ is the normalized food ingestion rate, and $TRV_{A,i}$ is the toxicity reference value for the i^{th} COPC and the A^{th} animal.

The large predicted impact of the unspeciated non-volatile TOE on the ESQ for omnivorous birds eating soil invertebrates (Tables 6-8 and 6-10) results from both high soil concentrations of this COPC and a large $BCF_{si,i}$. This fact is demonstrated in Figures 6-5 and 6-6 which indicate the predicted soil concentrations for all COPCs at the shrub-step evaluation point and the $BCF_{si,i}$ values for each COPC, respectively.

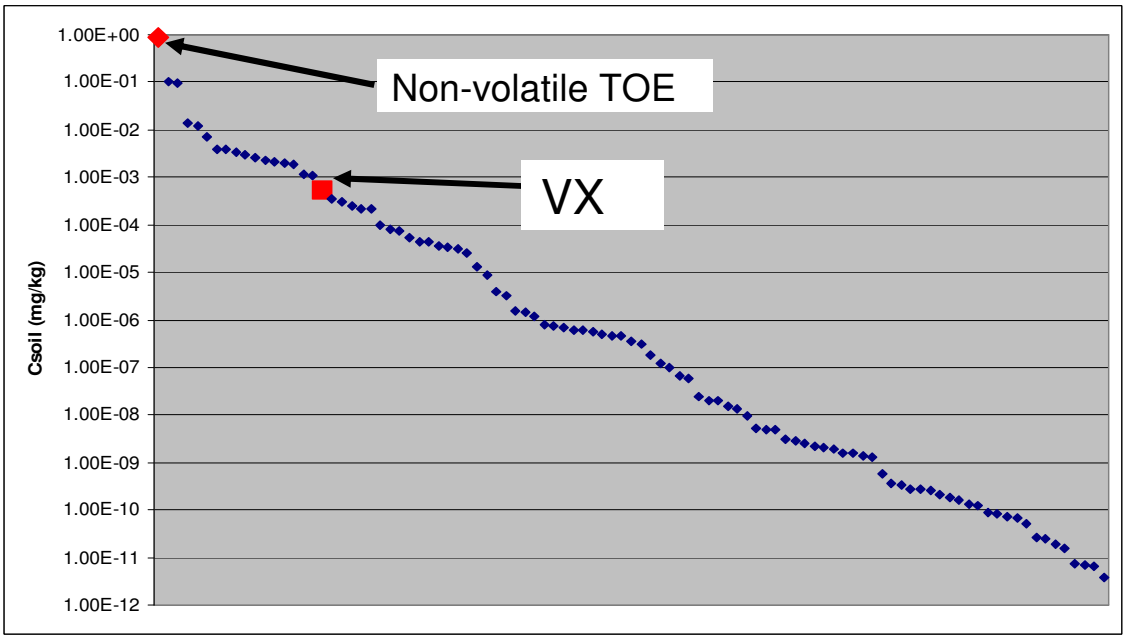


Figure 6-5: Predicted soil concentrations for all compounds presented on a logarithmic scale. Each point represents a different compound with the large red diamond indicated the value for unspeciated non-volatile TOE while the large red square indicates the value for VX. Compound-specific data is sorted in descending order.

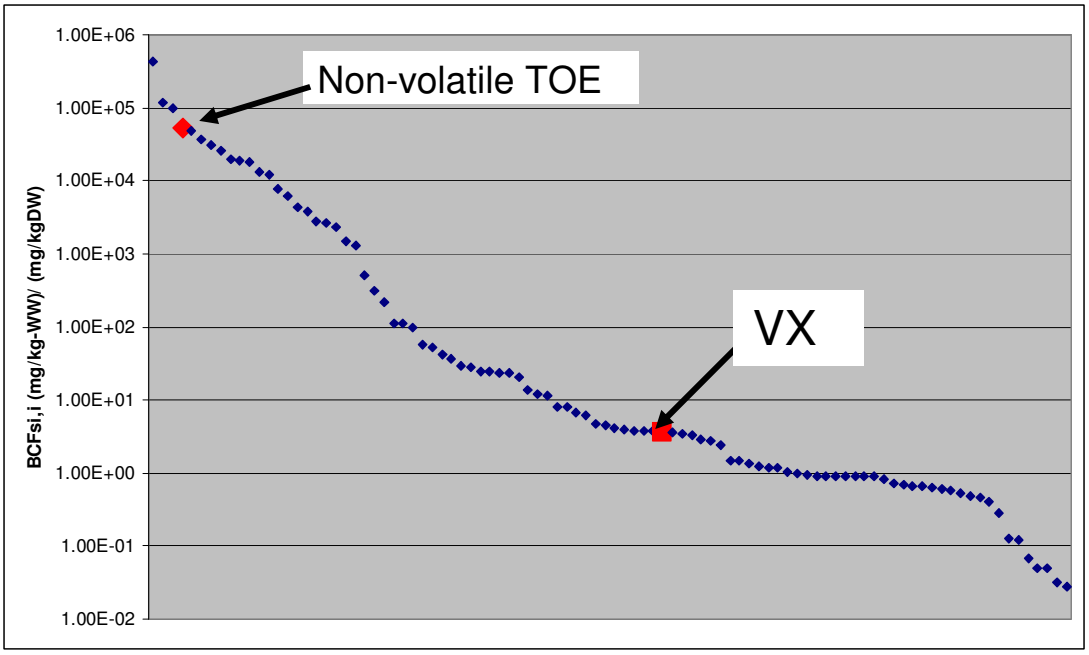


Figure 6-6: $BCF_{si,i}$ values for all compounds presented on a logarithmic scale. The large red diamond indicates the value for the unspeciated non-volatile TOE while the large red square indicates the value for VX. Compound-specific data is sorted in descending order.

The large impact of VX on the ESQ for omnivorous mammals eating soil invertebrates (Tables 6-8 and 6-10) results from a relatively high soil concentration of VS (Figure 6-5) and a low $TRV_{A,i}$ (Figure 6-7). As indicted in Figure 6-7, only five other compounds[13] have a TRV values lower than VX, and these compounds are modeled at concentrations many orders of magnitude below VX.

In this analysis the predicted level of VX in soils is based the assumption that VX is emitted at the ACAMS detection level. As indicated in Section 5.2.2.3 of this report, this assumption does not reflect all site monitoring data and the actual levels of chemical agent emissions are likely much lower (See Table 5-28). If these lower levels were included in the ERA analysis the predicted health impacts of VX would be reduced proportionally and the ESQ would fall below the action level of 1.0.

[13] These compounds are 2,3,7,8-Tetrachlorodibenzo-p-dioxin, 2,3,7,8-Tetrachlorodibenzofuran, 3,4,5,3',4'-Pentachlorobiphenyl, 1,2,3,4,7,8,9-Heptachlorodibenzofuran, 1,2,3,4,6,7,8-Heptachlorodibenzofuran.

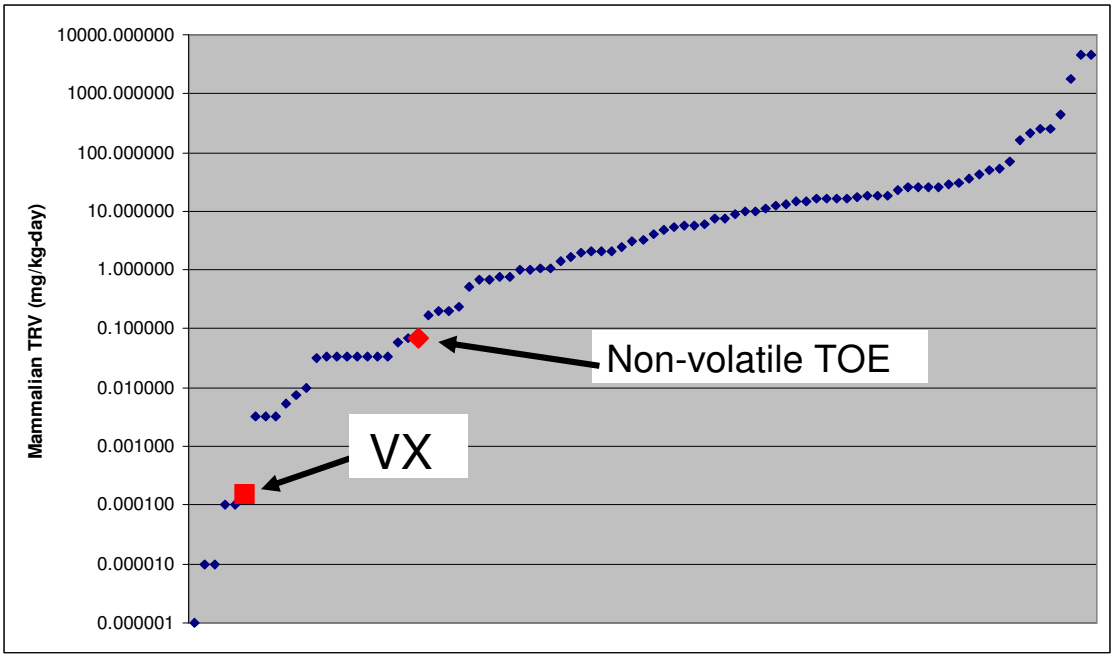


Figure 6-7: Mammalian TRV values for all compounds presented on a logarithmic scale. The large red diamond indicates the value for the unspeciated non-volatile TOE while the large red square indicates the value for VX. Compound-specific data is sorted in descending order.

The contribution of individual COPCs to the terrestrial plant component of the diets of herbivorous and omnivorous birds living in the shrub-steppe habitat is more difficult to evaluate with the output available from EcoRisk View. This difficulty arises from the fact that EcoRisk View does directly provide plant concentrations. However, it can be surmised that since COPC concentration in plants is dependent on both COPC emission rates and soil concentration and:

- the emission rate for the unspeciated non-volatile TOE is the second highest for all compounds[14] and,
- the soil concentration of the unspeciated non-volatile TOE is the highest of all COPC (Figure 6-5),

that these two factors are likely causing high concentrations of unspeciated non-volatile TOE in terrestrial plants and thus a high ESQ for birds eating this material.

[14]Volatile TOE fraction has the highest emission rate, but will not persist in soils or on plants.

7 Conclusions

The CTUIR has completed a human health and ecological risk assessment for operations at the Umatilla Chemical Agent Disposal Facility (UMCDF) based on the 2004 RWAP (Risk Assessment Work Plan) (DEQ, 2004). The base model for both assessments were identical to the CHPPM/RAWP analysis described by Ecology and Environment (E&E) in their January 31, 2008 report to the Oregon Department of Environmental Quality (DEQ) with the exception that the acute exposure criteria values for the three unidentified TOE fractions were increased by a factor of 1000 in the CTUIR human health model. This increase was to correct an apparent error in the E&E report. The body of the E&E document reported the larger values while their modeling input files contained the smaller values. Evaluation of the data sources used to generate the TOE acute values indicate the larger values were correct.

Six additional human health risk scenarios were evaluated to better clarify the impacts of several base model assumptions on the predicted chronic risks. These special cases are as follows:

- Case 1 – Area Average: Examined the effects of collocating the highest values for deposition rates and air concentrations for off-site analysis.
- Case 2 – Single Point, Actual Data: The impacts of collocating the highest values for the air deposition rates and air concentrations for the off-site location were further evaluated using AERMOD calculated air parameters for the off-site location. This case corresponds to the EPA recommended evaluation method (EPA, 2005).
- Case 3 – Updated COPC Emission Rates: Chemical agent concentration were modified to reflect DAAMS[15] stack data. In addition, the amount of carbon to be processed as secondary waste in the deactivation furnace system was reduced from base model estimates of 706,035 lbs to current estimates of 55,320 lbs. Finally, operation of the brine reduction area was assumed to be eliminated for HD processing.
- Case 4 – Evaluating Dioxin and Furans at Detection Limits: Eleven dioxin and furan compounds which were monitored in the trial burns, but never detected, were moved from the unspeciated non-volatile TOE fraction and placed on the emissions list for the common stack at their detection limits. The toxicity of the unspeciated non-volatile TOE fraction was re-evaluated without these eleven compounds.
- Case 5 – On-Site Risk After Incineration: The base model was modified by removing exposure pathways which only occur during operation of the incineration system. Pathways resulting from residual soil contamination were retained. The purpose of this analysis was to examine the on-site risks to future populations that might use the depot lands after closure.
- Case 6 – Combined Special Cases 3, 4, and 5: Assumptions in Special Cases 3, 4 and 5 were combined.

[15] DAAMS stands for Depot Area Agent Monitoring System.

7.1 Human Health Risk Results

Table 7-1 summarizes the results of the base model and the six special cases when compared to the action levels established by the DEQ in the 2004 RAWP. Table 7-2 provides a summary of the action levels described in the 2004 RAWP. A "Pass" in Table 7-1 implies that all exposure scenarios evaluated at the specified location were below DEQ action levels. A "No" value in Table 7-1 indicates that at least one exposure scenarios was above the action level at the specified evaluation point. It is evident from Table 7-1 that the base model resulted in chronic cancer and non-cancer risks above action levels at both the on-site and off-site locations. In contrast, the acute risks and the risks to infants from dioxin and furans in breast milk were below action levels. Special Case 6 resulted in the lowest risks with all but the on-site chronic cancer risk falling below the DEQ established action levels.

Table 7-1: Summary of Risk Results for All Models Tested

Model	On-Site Receptor				Off-Site Receptor			
	Chronic Cancer	Chronic Non-Cancer	Infant Dioxin/ Furan Dose	Acute	Chronic Cancer	Chronic Non-Cancer	Infant Dioxin/ Furan Dose	Acute
Base Model	No [a]	No	Pass [b]	Pass	No	No	Pass	Pass
Special Case 1	No	No	Pass	Pass	No	No	Pass	Pass
Special Case 2	No	No	Pass	Pass	No	No	Pass	Pass
Special Case 3	No	Pass	Pass	Pass	No	Pass	Pass	Pass
Special Case 4	No	No	Pass	Pass	Pass	No	Pass	Pass
Special Case 5	No	No	Pass	Pass	--	--	Pass	Pass
Special Case 6	No	Pass	Pass	Pass	Pass	Pass	Pass	Pass

[a] A "No" indicates that at least one exposure scenarios was above the action level for the indicated measurement of risk.
[b] A "Pass" implies that all exposure scenarios evaluated at the specified location were below DEQ action levels.

Table 7-2: Risk Action Levels Described 2004 RAWP

Risk Assessment	Risk Measurement	2004 RAWP Action Level
Human Health	Chronic Cancer Risk	< 1.0E-05
Human Health	Chronic Non-cancer Risk	< 0.25
Human Health	Infant exposure to Dioxin and Furan in Breast Milk	< 0.25 pg-TEQ/kg-day
Human Health	Acute Risk	< 1.0 for individual compounds
Ecological	Ecological Screening Quotient	<1.0

Cancer risks in the base model resulted mostly from ingesting foods containing the measured, but unspeciated non-volatile TOE. The non-cancer risks were dominated by ingesting foods contaminated with chemical agent. It is evident from these results that two key assumptions are causing the cancer and non-cancer risks in the base model to exceed the predetermined action levels. First, the decision to assume emission of the chemical agents at the detection level of the continuous monitoring system (termed an

ACAMS, or automatic continuous air monitoring system) drives the non-cancer chronic health risk. Second, the choice to quantitatively assign geometric mean toxicities to the unspeciated non-volatile TOE resulted in cancer risks that exceed the action levels.

Results from Special Cases 1 and 2 indicate that collating the highest air parameters resulted in an increase in the chronic cancer and non-cancer risks by an average of 30% to 40% over models that used either area average air parameters or a single location in the region of highest off-site deposition.

Special Case 3 modifications to the risk model had a dramatic effect on non-cancer chronic risks. For Special Case 3 there was an average reduction of 98.7% in non-cancer risks at both the on-site and off-site locations over the base model. All non-cancer risks (both on-site and off-site locations) were below the DEQ established action level for Special Case 3. Chronic cancer risks for Special Case 3 were an average of 43% below the base model, but all exposure scenarios which exceeded the action level for cancer risks in the base model also exceeded the action level for Special Case 3.

Special Case 4 was evaluated since chronic cancer risk in the base model is dominated by the geometric mean value for the oral cancer slope factor (CSFo) of the non-volatile TOE fraction, and this parameter is highly influenced by eleven dioxins and furans which were measured during all the trial burns, but never detected. Results from the Special Case 4 analysis indicated that only the on-site farmer and on-site Native American (adult and child in both cases) appear to have chronic cancer risks above the DEQ action level. The off-site farmer adult and Native American adult have cancer risks equal to the action level of 1×10^{-5}. Moving the eleven dioxins from the unspeciated non-volatile TOE fraction to the COPC list also did not cause unacceptable levels of PCDDs and PCDFs in breast milk. For the on-site and off-site evaluation locations, the predicted infant dioxin and furan exposure was below the DEQ action level of 0.25 pg-TEQ/kg-day for all exposure scenarios.

For Special Case 5 the base model was modified to remove the exposure pathways that only occur during incineration operations. The exposure pathways removed were inhalation exposure, above ground produce exposure by direct deposition of particles, and air-to-leaf transfer. Results from Special Case 5 reveal a reduction in on-site chronic risks (cancer and non-cancer) by between 60% and 70% over the base model. The resulting on-site non-cancer risks are below the DEQ action level, but the cancer risks are still more than an order of magnitude above the action level.

The assumptions included in Special Cases 3, 4, and 5 were combined in the Special Case 6 analysis. Special Case 6 represents site conditions that more closely reflect actual operations than those used in the base model. The Special Case 6 model predicts chronic off-site risks (both cancer and non-cancer) below the DEQ action levels. The infant average daily dose for dioxins and furans for Case 6 were also below their action levels for all evaluation locations and exposure scenarios. On-site chronic cancer risks are still more than an order of magnitude above action levels, but on-site non-cancer risks are below their action level.

From these results it is evident that the off-site risks (both chronic cancer and non-cancer risks) reported for the base model are reduced to values below action levels by including more accurate estimates of chemical agent and dioxin and furan emissions. These modified emission values are based on experimental measurements of stack emissions which were not included in the base model. Including this data creates emission rates that more accurately estimate the potential levels of these compounds being released by the UMCDF to the environment. On-site cancer risks are also reduced by these improved estimates, but still remain above action levels and so are still of concern to the CTUIR. In contrast, on-site non-cancer risks are below action levels with the improved data set represented by Special Case 6.
From the human health risk results it is evident that future risk management activities at the UMCDF should include an attempt to speciate the non-volatile TOE fraction and to determine its chemical composition and its true toxicity. In addition, site sampling should be conducted within the immediate region of the UMCDF to ensure residual contamination does not create unacceptable risks for those who will be using these lands after closure.

7.2 Ecological Risk Results

Two separate habitats were evaluated for the ecological risk assessment; a shrub-steppe ecosystem and a freshwater ecosystem (DEQ, 2004). The shrub-steppe ecosystem was evaluated to simulate current conditions on the UMCD and represents the area with the highest potential to impact this type of community since deposition rates are highest in this region. The freshwater habitat was evaluated to simulate the impacts of the UMCDF on the river systems that lie near the facility. The Umatilla River was chosen as the freshwater evaluation area because its close proximity to the UMCDF and its low flow rate create the potential for larger impacts from incineration emissions than for the Columbia River.

An ESQ above the EPA action level of 1.0 was predicted for several ecological receptors in both habitats. In the shrub-steppe habitat the impacted guilds were the herbivorous bird, the omnivorous bird, and the omnivorous mammal. The freshwater habitat had high impacts for the carnivorous shore bird, the omnivorous bird and the omnivorous mammal. The primary COPC contributing to the high ESQ values was the unspeciated non-volatile TOE for all but the omnivorous mammal living in the shrub-steppe. For this latter guild the high ESQ was caused by VX. The food sources contributing the non-volatile TOE and VX to these higher order animals were benthic invertebrates for the freshwater habitat and soil invertebrates and terrestrial plants for the shrub-steppe habitat.

Examining the parameter specific data behind these predictions suggests that, for the freshwater habitat, the impacts of the non-volatile TOE fraction are the result of both a high emission rate for this COPC and a high bioconcentration factor. It should be noted that while the emission rate value is based on site emissions data, the bioconcentration factor was developed using the geometric mean octanol-water partition coefficient (k_{ow}) and a predictive equation recommended by the EPA (EPA, 1999). The validity of using this predictive equation is questionable since the k_{ow} value used to represent the non-

volatile TOE fraction is an order of magnitude greater than the range of compounds used to develop the empirical relationship (Southworth et al., 1978). A similar conclusion can be made for the cases where ingestion of soil invertebrates drives the ESQ.

The large impact of the VX on the ESQ for omnivorous mammals eating soil invertebrates results from a relatively high soil concentration (Figure 6-5) and a low *TRV*[16]. As indicted in Figure 6-7, only five other compounds[17] have a TRV values lower than VX, and these compounds are present at concentrations many orders of magnitude below that assumed for VX.

Two factors are the most likely cause of the high ESQ for the cases where consumption of terrestrial plants in the shrub-steppe habitat are the source of the offending COPCs. These two factors are the high emission rate for the non-volatile TOE fraction and the high residual soil concentrations that result.

The results of the ecological risk assessment suggests that, as with the human health risk assessment, on-site impacts may be above levels of concern and that methods for sampling for the unspeciated non-volatile TOE in site soils and vegetation need to be developed and applied during the site closure process. If no methods can be developed to quantify this material in the environment then it may be necessary to design toxicity studies using site soil and vegetation to ensure the land is safe for the intended future use. In addition, the same methodologies (whether TOE analysis, or toxicity studies) should be applied to samples from the Umatilla River both near to, and distal from, the UMCDF.

[16] TRV stands for toxicity reference value.
[17] These compounds are 2,3,7,8-Tetrachlorodibenzo-p-dioxin, 2,3,7,8-Tetrachlorodibenzofuran, 3,4,5,3',4'-Pentachlorobiphenyl, 1,2,3,4,7,8,9-Heptachlorodibenzofuran, 1,2,3,4,6,7,8-Heptachlorodibenzofuran.

8 References

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2. Benkendorf Associates Corporation (BAC), PACAM Engineering, Inc., EDAW, Inc., James Cornelius, Economics Research Associates, URS Consultants, and Applied Geotechnology, Inc., October 1993b, *Umatilla Army Depot Technical Report*, prepared for Umatilla Depot Task Force and Oregon Economic Development Department.

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Appendix A – EnviroMet Air Dispersion and Deposition Modeling Report

Appendix B - Enviromet PLT Files from Air Modeling

Plot files are available on the compact disk provided with this report under the directory titled "Appendix B". Table B-1 provides a description of the data files found in Appendix B.

Table B-1: Summary of Air Modeling Data Files

File Name	Source	Phase	Annual or 1-Hr Maximum	Grid Pattern
BRAHgv01_c.PLT	BRASTK	Hg Vapor	1-Hr	Constant
BRAHgvAN_c.PLT	BRASTK	Hg Vapor	Annual	Constant
BRApb01_c.PLT	BRASTK	Particle Bound	1-Hr	Constant
BRApbAN_c.PLT	BRASTK	Particle Bound	Annual	Constant
BRApt01_c.PLT	BRASTK	Particle	1-Hr	Constant
BRAptAN_c.PLT	BRASTK	Particle	Annual	Constant
BRAv01_c.PLT	BRASTK	Vapor	1-Hr	Constant
BRAvAN_c.PLT	BRASTK	Vapor	Annual	Constant
COMHgv01_c.PLT	COMSTK	Hg Vapor	1-Hr	Constant
COMHgvAN_c.PLT	COMSTK	Hg Vapor	Annual	Constant
COMpb01_c.PLT	COMSTK	Particle Bound	1-Hr	Constant
COMpbAN_c.PLT	COMSTK	Particle Bound	Annual	Constant
COMpt01_c.PLT	COMSTK	Particle	1-Hr	Constant
COMptAN_c.PLT	COMSTK	Particle	Annual	Constant
COMv01_c.PLT	COMSTK	Vapor	1-Hr	Constant
COMvAN_c.PLT	COMSTK	Vapor	Annual	Constant
LABpb01_c.PLT	LABSTK	Particle Bound	1-Hr	Constant
LABpbAN_c.PLT	LABSTK	Particle Bound	Annual	Constant
LABpt01_c.PLT	LABSTK	Particle	1-Hr	Constant
LABptAN_c.PLT	LABSTK	Particle	Annual	Constant
LABv01_c.PLT	LABSTK	Vapor	1-Hr	Constant
LABvAN_c.PLT	LABSTK	Vapor	Annual	Constant
MDBpb01_c.PLT	MDBSTK	Particle Bound	1-Hr	Constant
MDBpbAN_c.PLT	MDBSTK	Particle Bound	Annual	Constant
MDBpt01_c.PLT	MDBSTK	Particle	1-Hr	Constant
MDBptAN_c.PLT	MDBSTK	Particle	Annual	Constant
MDBv01_c.PLT	MDBSTK	Vapor	1-Hr	Constant
MDBvAN_c.PLT	MDBSTK	Vapor	Annual	Constant
BRAHgv01_m.PLT	BRASTK	Hg Vapor	1-Hr	Variable
BRAHgvAN_m.PLT	BRASTK	Hg Vapor	Annual	Variable
BRApb01_m.PLT	BRASTK	Particle Bound	1-Hr	Variable
BRApbAN_m.PLT	BRASTK	Particle Bound	Annual	Variable
BRApt01_m.PLT	BRASTK	Particle	1-Hr	Variable
BRAptAN_m.PLT	BRASTK	Particle	Annual	Variable
BRAv01_m.PLT	BRASTK	Vapor	1-Hr	Variable
BRAvAN_m.PLT	BRASTK	Vapor	Annual	Variable
COMHgv01_m.PLT	COMSTK	Hg Vapor	1-Hr	Variable
COMHgvAN_m.PLT	COMSTK	Hg Vapor	Annual	Variable
COMpb01_m.PLT	COMSTK	Particle Bound	1-Hr	Variable
COMpbAN_m.PLT	COMSTK	Particle Bound	Annual	Variable

File Name	Source	Phase	Annual or 1-Hr Maximum	Grid Pattern
COMpt01_m.PLT	COMSTK	Particle	1-Hr	Variable
COMptAN_m.PLT	COMSTK	Particle	Annual	Variable
COMv01_m.PLT	COMSTK	Vapor	1-Hr	Variable
COMvAN_m.PLT	COMSTK	Vapor	Annual	Variable
LABpb01_m.PLT	LABSTK	Particle Bound	1-Hr	Variable
LABpbAN_m.PLT	LABSTK	Particle Bound	Annual	Variable
LABpt01_m.PLT	LABSTK	Particle	1-Hr	Variable
LABptAN_m.PLT	LABSTK	Particle	Annual	Variable
LABv01_m.PLT	LABSTK	Vapor	1-Hr	Variable
LABvAN_m.PLT	LABSTK	Vapor	Annual	Variable
MDBpb01_m.PLT	MDBSTK	Particle Bound	1-Hr	Variable
MDBpbAN_m.PLT	MDBSTK	Particle Bound	Annual	Variable
MDBpt01_m.PLT	MDBSTK	Particle	1-Hr	Variable
MDBptAN_m.PLT	MDBSTK	Particle	Annual	Variable
MDBv01_m.PLT	MDBSTK	Vapor	1-Hr	Variable
MDBvAN_m.PLT	MDBSTK	Vapor	Annual	Variable

Appendix C – Emission Rate Data Files

Table C-1: Base Model Emission Rates

Source	CAS Number	Name	Emission Rate (g/s)
COMSTK	00-01-2	Aluminum compounds	2.72E-05
COMSTK	00-01-3	Antimony compounds	1.65E-06
COMSTK	00-01-4	Arsenic compounds	7.52E-07
COMSTK	00-01-5	Barium compounds	2.13E-06
COMSTK	00-01-6	Beryllium compounds	1.16E-08
COMSTK	00-01-7	Cadmium compounds	3.46E-07
COMSTK	00-01-8	Chromium compounds	4.00E-07
COMSTK	00-01-9	Copper compounds	6.08E-07
COMSTK	00-02-0	Lead compounds	1.85E-06
COMSTK	00-02-2	Manganese compounds	6.61E-06
COMSTK	00-02-4	Nickel compounds	1.48E-06
COMSTK	00-02-5	Selenium compounds	5.24E-07
COMSTK	00-02-6	Silver compounds	2.00E-07
COMSTK	00-02-7	Thallium compounds	4.59E-07
COMSTK	00-02-8	Vanadium compounds	4.31E-08
COMSTK	00-02-9	Zinc compounds	7.57E-05
COMSTK	00-07-2	PCB Mixture (non-dioxin like, 5+ chlorines)	2.70E-07
COMSTK	00-15-3	Cobalt compounds	6.43E-08
COMSTK	00-15-5	m,p-Xylene	1.26E-05
COMSTK	00-16-3	Composite TOE - Volatile	4.64E-02
COMSTK	00-16-4	Composirte TOE - Semivolatile	1.56E-03
COMSTK	00-16-5	Composirte TOE - Nonvolatile	2.06E-03
COMSTK	00-16-6	Boron compounds	1.09E-05
COMSTK	00-16-9	Tin compounds	1.28E-06
COMSTK	56-23-5	Carbon tetrachloride	1.77E-06
COMSTK	65-85-0	Benzoic acid	2.60E-05
COMSTK	67-64-1	Acetone	2.81E-04
COMSTK	67-66-3	Chloroform	3.52E-06
COMSTK	71-43-2	Benzene	1.03E-05
COMSTK	74-83-9	Methyl bromide	1.20E-05
COMSTK	74-87-3	Methyl chloride	6.25E-06
COMSTK	74-88-4	Methyl iodide	8.80E-07
COMSTK	74-96-4	Bromoethane	1.17E-07
COMSTK	74-97-5	Bromochloromethane	1.56E-07
COMSTK	75-00-3	Ethyl chloride	7.18E-07
COMSTK	75-01-4	Vinyl chloride	6.78E-07
COMSTK	75-09-2	Dichloromethane	1.89E-05
COMSTK	75-15-0	Carbon disulfide	6.93E-06
COMSTK	75-25-2	Tribromomethane	2.59E-06
COMSTK	75-27-4	Bromodichloromethane	2.18E-06
COMSTK	75-35-4	1,1-Dichloroethylene	1.55E-07

Source	CAS Number	Name	Emission Rate (g/s)
COMSTK	75-69-4	Trichlorofluoromethane	2.29E-06
COMSTK	75-71-8	Dichlorodifluoromethane	9.36E-07
COMSTK	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	4.59E-08
COMSTK	78-93-3	Methyl ethyl ketone	1.21E-05
COMSTK	79-01-6	Trichloroethylene	4.63E-08
COMSTK	84-66-2	Diethyl phthalate	5.57E-06
COMSTK	84-74-2	Dibutyl phthalate	3.28E-06
COMSTK	91-20-3	Naphthalene	2.08E-06
COMSTK	91-57-6	2-Methylnaphthalene	1.65E-06
COMSTK	95-47-6	2-Xylene	3.71E-06
COMSTK	95-50-1	1,2-Dichlorobenzene	8.98E-07
COMSTK	100-41-4	Ethylbenzene	2.18E-06
COMSTK	100-42-5	Styrene	1.01E-06
COMSTK	100-51-6	Benzyl alcohol	2.08E-06
COMSTK	100-52-7	Benzaldehyde	3.47E-05
COMSTK	106-46-7	1,4-Dichlorobenzene	2.34E-06
COMSTK	107-44-8	GB	2.26E-07
COMSTK	108-05-4	Vinyl acetate	3.50E-07
COMSTK	108-10-1	Methyl isobutyl ketone	7.98E-06
COMSTK	108-88-3	Toluene	2.61E-06
COMSTK	108-90-7	Chlorobenzene	2.56E-07
COMSTK	110-54-3	n-Hexane	1.10E-06
COMSTK	117-81-7	Bis(2-ethylhexyl)phthalate	1.14E-04
COMSTK	118-96-7	2,4,6-Trinitrotoluene	1.06E-07
COMSTK	121-14-2	2,4-Dinitrotoluene	5.88E-08
COMSTK	124-48-1	Chlorodibromomethane	1.16E-06
COMSTK	131-11-3	Dimethylphthalate	4.56E-07
COMSTK	505-60-2	Sulfur mustard (or H/HD)	1.05E-05
COMSTK	1330-20-7	Xylene (mixed)	1.82E-06
COMSTK	1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin	8.32E-14
COMSTK	3268-87-9	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	1.36E-11
COMSTK	7439-97-6	Mercury	1.12E-09
COMSTK	7446-09-5	Sulfur dioxide	4.98E-05
COMSTK	7487-94-7	Mercuric Chloride	2.69E-07
COMSTK	7647-01-0	Hydrochloric acid	2.67E-04
COMSTK	7664-38-2	Phosphoric acid	7.68E-06
COMSTK	7664-39-3	Hydrofluoric acid	2.19E-05
COMSTK	7782-50-5	Chlorine	2.96E-04
COMSTK	10061-01-5	cis-1,3-Dichloropropene	1.03E-06
COMSTK	10061-02-6	trans-1,3-Dichloropropene	5.37E-07
COMSTK	10102-44-0	Nitrogen dioxide	1.73E-03
COMSTK	31508-00-6	2,3',4,4',5-Pentachlorobiphenyl	3.15E-10
COMSTK	32598-13-3	3,3',4,4'-Tetrachlorobiphenyl	3.66E-10
COMSTK	32598-14-4	2,3,3',4,4'-Pentachlorobiphenyl	4.13E-10
COMSTK	38380-08-4	2,3,3',4,4',5-Hexachlorobiphenyl	1.27E-10

Source	CAS Number	Name	Emission Rate (g/s)
COMSTK	39001-02-0	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	8.30E-12
COMSTK	39635-31-9	2,3,4,5,3',4',5'-Heptachlorobiphenyl	4.46E-13
COMSTK	50782-69-9	VX	1.37E-07
COMSTK	51207-31-9	2,3,7,8-Tetrachlorodibenzofuran	6.21E-11
COMSTK	52663-72-6	2,3',4,4',5,5'-Hexachlorobiphenyl	8.09E-11
COMSTK	55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran	3.51E-13
COMSTK	57465-28-8	3,4,5,3',4'-Pentachlorobiphenyl	3.75E-11
COMSTK	67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran	1.44E-12
COMSTK	69782-90-7	2,3,3',4,4',5'-Hexachlorobiphenyl	3.89E-11
COMSTK	70362-50-4	3,4,4',5-Tetrachlorobiphenyl	2.66E-11
COMSTK	74472-37-0	2,3,4,4'5-Pentachlorobiphenyl	1.83E-09
BRASTK	00-01-3	Antimony compounds	6.47E-07
BRASTK	00-01-4	Arsenic compounds	1.04E-06
BRASTK	00-01-5	Barium compounds	2.43E-06
BRASTK	00-01-6	Beryllium compounds	7.94E-08
BRASTK	00-01-7	Cadmium compounds	3.32E-06
BRASTK	00-01-8	Chromium compounds	9.19E-07
BRASTK	00-01-9	Copper compounds	3.26E-05
BRASTK	00-02-0	Lead compounds	8.59E-08
BRASTK	00-02-2	Manganese compounds	3.58E-05
BRASTK	00-02-4	Nickel compounds	7.91E-06
BRASTK	00-02-5	Selenium compounds	4.70E-06
BRASTK	00-02-6	Silver compounds	1.77E-06
BRASTK	00-02-7	Thallium compounds	3.59E-07
BRASTK	00-02-8	Vanadium compounds	8.61E-07
BRASTK	00-02-9	Zinc compounds	1.31E-05
BRASTK	00-15-3	Cobalt compounds	1.08E-06
BRASTK	00-16-6	Boron compounds	2.30E-04
BRASTK	00-16-9	Tin compounds	6.10E-06
BRASTK	95-48-7	o-Cresol	6.28E-04
BRASTK	107-44-8	GB	6.50E-06
BRASTK	505-60-2	Sulfur mustard (or H/HD)	6.50E-04
BRASTK	7439-97-6	Mercury	1.91E-08
BRASTK	7487-94-7	Mercuric Chloride	4.59E-06
BRASTK	7664-38-2	Phosphoric acid	8.09E-05
BRASTK	50782-69-9	VX	6.50E-06
BRASTK	73207-98-4	EA 2192	3.58E-13
LABSTK	107-44-8	GB	4.08E-07
LABSTK	505-60-2	Sulfur mustard (or H/HD)	4.08E-06
LABSTK	50782-69-9	VX	4.08E-07
MDBSTK	107-44-8	GB	2.89E-06
MDBSTK	505-60-2	Sulfur mustard (or H/HD)	2.89E-05
MDBSTK	50782-69-9	VX	2.89E-06

Table C-2: Emission Rates for "Updated COPC Emission Rates" Model

Source	CAS Number	Name	Emission Rate (g/s)
COMSTK	00-01-2	Aluminum compounds	2.72E-05
COMSTK	00-01-3	Antimony compounds	1.65E-06
COMSTK	00-01-4	Arsenic compounds	7.49E-07
COMSTK	00-01-5	Barium compounds	1.98E-06
COMSTK	00-01-6	Beryllium compounds	1.16E-08
COMSTK	00-01-7	Cadmium compounds	3.12E-07
COMSTK	00-01-8	Chromium compounds	3.71E-07
COMSTK	00-01-9	Copper compounds	6.07E-07
COMSTK	00-02-0	Lead compounds	1.64E-06
COMSTK	00-02-2	Manganese compounds	6.59E-06
COMSTK	00-02-4	Nickel compounds	1.38E-06
COMSTK	00-02-5	Selenium compounds	5.13E-07
COMSTK	00-02-6	Silver compounds	2.00E-07
COMSTK	00-02-7	Thallium compounds	4.57E-07
COMSTK	00-02-8	Vanadium compounds	4.31E-08
COMSTK	00-02-9	Zinc compounds	7.56E-05
COMSTK	00-07-2	PCB Mixture (non-dioxin like, 5+ chlorines)	2.70E-07
COMSTK	00-15-3	Cobalt compounds	6.43E-08
COMSTK	00-15-5	m,p-Xylene	1.26E-05
COMSTK	00-16-3	Composite TOE - Volatile	3.70E-02
COMSTK	00-16-4	Composirte TOE - Semivolatile	1.23E-03
COMSTK	00-16-5	Composirte TOE - Nonvolatile	1.14E-03
COMSTK	00-16-6	Boron compounds	1.08E-05
COMSTK	00-16-9	Tin compounds	1.28E-06
COMSTK	56-23-5	Carbon tetrachloride	1.77E-06
COMSTK	65-85-0	Benzoic acid	2.59E-05
COMSTK	67-64-1	Acetone	2.81E-04
COMSTK	67-66-3	Chloroform	3.52E-06
COMSTK	71-43-2	Benzene	1.03E-05
COMSTK	74-83-9	Methyl bromide	1.20E-05
COMSTK	74-87-3	Methyl chloride	6.25E-06
COMSTK	74-88-4	Methyl iodide	8.80E-07
COMSTK	74-96-4	Bromoethane	1.16E-07
COMSTK	74-97-5	Bromochloromethane	1.56E-07
COMSTK	75-00-3	Ethyl chloride	7.18E-07
COMSTK	75-01-4	Vinyl chloride	6.78E-07
COMSTK	75-09-2	Dichloromethane	1.89E-05
COMSTK	75-15-0	Carbon disulfide	6.93E-06
COMSTK	75-25-2	Tribromomethane	2.59E-06
COMSTK	75-27-4	Bromodichloromethane	2.18E-06
COMSTK	75-35-4	1,1-Dichloroethylene	1.55E-07
COMSTK	75-69-4	Trichlorofluoromethane	2.29E-06
COMSTK	75-71-8	Dichlorodifluoromethane	9.35E-07
COMSTK	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	4.59E-08

Source	CAS Number	Name	Emission Rate (g/s)
COMSTK	78-93-3	Methyl ethyl ketone	1.21E-05
COMSTK	79-01-6	Trichloroethylene	4.63E-08
COMSTK	84-66-2	Diethyl phthalate	5.57E-06
COMSTK	84-74-2	Dibutyl phthalate	3.28E-06
COMSTK	91-20-3	Naphthalene	2.08E-06
COMSTK	91-57-6	2-Methylnaphthalene	1.65E-06
COMSTK	95-47-6	2-Xylene	3.71E-06
COMSTK	95-50-1	1,2-Dichlorobenzene	8.98E-07
COMSTK	100-41-4	Ethylbenzene	2.18E-06
COMSTK	100-42-5	Styrene	1.01E-06
COMSTK	100-51-6	Benzyl alcohol	2.08E-06
COMSTK	100-52-7	Benzaldehyde	3.47E-05
COMSTK	106-46-7	1,4-Dichlorobenzene	2.34E-06
COMSTK	107-44-8	GB	6.49E-10
COMSTK	108-05-4	Vinyl acetate	3.50E-07
COMSTK	108-10-1	Methyl isobutyl ketone	7.98E-06
COMSTK	108-88-3	Toluene	2.61E-06
COMSTK	108-90-7	Chlorobenzene	2.56E-07
COMSTK	110-54-3	n-Hexane	1.10E-06
COMSTK	117-81-7	Bis(2-ethylhexyl)phthalate	1.14E-04
COMSTK	118-96-7	2,4,6-Trinitrotoluene	1.06E-07
COMSTK	121-14-2	2,4-Dinitrotoluene	5.88E-08
COMSTK	124-48-1	Chlorodibromomethane	1.16E-06
COMSTK	131-11-3	Dimethylphthalate	4.56E-07
COMSTK	505-60-2	Sulfur mustard (or H/HD)	1.35E-07
COMSTK	1330-20-7	Xylene (mixed)	1.82E-06
COMSTK	1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin	8.32E-14
COMSTK	3268-87-9	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	1.36E-11
COMSTK	7439-97-6	Mercury	1.09E-09
COMSTK	7446-09-5	Sulfur dioxide	4.98E-05
COMSTK	7487-94-7	Mercuric Chloride	2.62E-07
COMSTK	7647-01-0	Hydrochloric acid	2.44E-04
COMSTK	7664-38-2	Phosphoric acid	6.82E-06
COMSTK	7664-39-3	Hydrofluoric acid	2.19E-05
COMSTK	7782-50-5	Chlorine	2.69E-04
COMSTK	10061-01-5	cis-1,3-Dichloropropene	1.03E-06
COMSTK	10061-02-6	trans-1,3-Dichloropropene	5.37E-07
COMSTK	10102-44-0	Nitrogen dioxide	1.73E-03
COMSTK	31508-00-6	2,3',4,4',5-Pentachlorobiphenyl	3.15E-10
COMSTK	32598-13-3	3,3',4,4'-Tetrachlorobiphenyl	3.66E-10
COMSTK	32598-14-4	2,3,3',4,4'-Pentachlorobiphenyl	4.13E-10
COMSTK	38380-08-4	2,3,3',4,4',5-Hexachlorobiphenyl	1.27E-10
COMSTK	39001-02-0	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	8.30E-12
COMSTK	39635-31-9	2,3,4,5,3',4',5'-Heptachlorobiphenyl	4.46E-13
COMSTK	50782-69-9	VX	3.52E-10

Source	CAS Number	Name	Emission Rate (g/s)
COMSTK	51207-31-9	2,3,7,8-Tetrachlorodibenzofuran	6.21E-11
COMSTK	52663-72-6	2,3',4,4',5,5'-Hexachlorobiphenyl	8.09E-11
COMSTK	55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran	3.51E-13
COMSTK	57465-28-8	3,4,5,3',4'-Pentachlorobiphenyl	3.75E-11
COMSTK	67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran	1.44E-12
COMSTK	69782-90-7	2,3,3',4,4',5'-Hexachlorobiphenyl	3.89E-11
COMSTK	70362-50-4	3,4,4',5-Tetrachlorobiphenyl	2.66E-11
COMSTK	74472-37-0	2,3,4,4'5-Pentachlorobiphenyl	1.83E-09
BRASTK	00-01-3	Antimony compounds	5.18E-07
BRASTK	00-01-4	Arsenic compounds	8.32E-07
BRASTK	00-01-5	Barium compounds	1.94E-06
BRASTK	00-01-6	Beryllium compounds	6.35E-08
BRASTK	00-01-7	Cadmium compounds	2.66E-06
BRASTK	00-01-8	Chromium compounds	7.35E-07
BRASTK	00-01-9	Copper compounds	2.61E-05
BRASTK	00-02-0	Lead compounds	6.87E-08
BRASTK	00-02-2	Manganese compounds	2.86E-05
BRASTK	00-02-4	Nickel compounds	6.33E-06
BRASTK	00-02-5	Selenium compounds	3.76E-06
BRASTK	00-02-6	Silver compounds	1.42E-06
BRASTK	00-02-7	Thallium compounds	2.87E-07
BRASTK	00-02-8	Vanadium compounds	6.89E-07
BRASTK	00-02-9	Zinc compounds	1.05E-05
BRASTK	00-15-3	Cobalt compounds	8.64E-07
BRASTK	00-16-6	Boron compounds	1.84E-04
BRASTK	00-16-9	Tin compounds	4.88E-06
BRASTK	95-48-7	o-Cresol	5.02E-04
BRASTK	107-44-8	GB	3.85E-08
BRASTK	505-60-2	Sulfur mustard (or H/HD)	2.12E-05
BRASTK	7439-97-6	Mercury	1.53E-08
BRASTK	7487-94-7	Mercuric Chloride	3.67E-06
BRASTK	7664-38-2	Phosphoric acid	6.47E-05
BRASTK	50782-69-9	VX	3.85E-08
BRASTK	73207-98-4	EA 2192	2.86E-13
LABSTK	107-44-8	GB	6.80E-09
LABSTK	505-60-2	Sulfur mustard (or H/HD)	3.74E-06
LABSTK	50782-69-9	VX	6.80E-09
MDBSTK	107-44-8	GB	4.81E-08
MDBSTK	505-60-2	Sulfur mustard (or H/HD)	2.65E-05
MDBSTK	50782-69-9	VX	4.81E-08

Table C-3: Emission Rates for Model Run With Dioxin and Furans

Source	CAS Number	Name	Emission Rate (g/s)
COMSTK	00-01-2	Aluminum compounds	2.722E-05
COMSTK	00-01-3	Antimony compounds	1.648E-06
COMSTK	00-01-4	Arsenic compounds	7.517E-07
COMSTK	00-01-5	Barium compounds	2.134E-06
COMSTK	00-01-6	Beryllium compounds	1.159E-08
COMSTK	00-01-7	Cadmium compounds	3.463E-07
COMSTK	00-01-8	Chromium compounds	4.000E-07
COMSTK	00-01-9	Copper compounds	6.080E-07
COMSTK	00-02-0	Lead compounds	1.853E-06
COMSTK	00-02-2	Manganese compounds	6.613E-06
COMSTK	00-02-4	Nickel compounds	1.477E-06
COMSTK	00-02-5	Selenium compounds	5.244E-07
COMSTK	00-02-6	Silver compounds	1.997E-07
COMSTK	00-02-7	Thallium compounds	4.586E-07
COMSTK	00-02-8	Vanadium compounds	4.313E-08
COMSTK	00-02-9	Zinc compounds	7.565E-05
COMSTK	00-07-2	PCB Mixture (non-dioxin like, 5+ chlorines)	2.701E-07
COMSTK	00-15-3	Cobalt compounds	6.432E-08
COMSTK	00-15-5	m,p-Xylene	1.263E-05
COMSTK	00-16-3	Composite TOE - Volatile	4.636E-02
COMSTK	00-16-4	Composirte TOE - Semivolatile	1.555E-03
COMSTK	00-16-5	Composirte TOE - Nonvolatile	2.059E-03
COMSTK	00-16-6	Boron compounds	1.086E-05
COMSTK	00-16-9	Tin compounds	1.284E-06
COMSTK	56-23-5	Carbon tetrachloride	1.765E-06
COMSTK	65-85-0	Benzoic acid	2.595E-05
COMSTK	67-64-1	Acetone	2.807E-04
COMSTK	67-66-3	Chloroform	3.524E-06
COMSTK	71-43-2	Benzene	1.032E-05
COMSTK	74-83-9	Methyl bromide	1.202E-05
COMSTK	74-87-3	Methyl chloride	6.254E-06
COMSTK	74-88-4	Methyl iodide	8.803E-07
COMSTK	74-96-4	Bromoethane	1.165E-07
COMSTK	74-97-5	Bromochloromethane	1.564E-07
COMSTK	75-00-3	Ethyl chloride	7.181E-07
COMSTK	75-01-4	Vinyl chloride	6.778E-07
COMSTK	75-09-2	Dichloromethane	1.891E-05
COMSTK	75-15-0	Carbon disulfide	6.933E-06
COMSTK	75-25-2	Tribromomethane	2.592E-06
COMSTK	75-27-4	Bromodichloromethane	2.176E-06
COMSTK	75-35-4	1,1-Dichloroethylene	1.550E-07
COMSTK	75-69-4	Trichlorofluoromethane	2.291E-06
COMSTK	75-71-8	Dichlorodifluoromethane	9.355E-07
COMSTK	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	4.588E-08

COMSTK	78-93-3	Methyl ethyl ketone	1.209E-05
COMSTK	79-01-6	Trichloroethylene	4.630E-08
COMSTK	84-66-2	Diethyl phthalate	5.569E-06
COMSTK	84-74-2	Dibutyl phthalate	3.283E-06
COMSTK	91-20-3	Naphthalene	2.080E-06
COMSTK	91-57-6	2-Methylnaphthalene	1.646E-06
COMSTK	95-47-6	2-Xylene	3.706E-06
COMSTK	95-50-1	1,2-Dichlorobenzene	8.981E-07
COMSTK	100-41-4	Ethylbenzene	2.181E-06
COMSTK	100-42-5	Styrene	1.008E-06
COMSTK	100-51-6	Benzyl alcohol	2.082E-06
COMSTK	100-52-7	Benzaldehyde	3.470E-05
COMSTK	106-46-7	1,4-Dichlorobenzene	2.341E-06
COMSTK	107-44-8	GB	2.257E-07
COMSTK	108-05-4	Vinyl acetate	3.498E-07
COMSTK	108-10-1	Methyl isobutyl ketone	7.976E-06
COMSTK	108-88-3	Toluene	2.611E-06
COMSTK	108-90-7	Chlorobenzene	2.555E-07
COMSTK	110-54-3	n-Hexane	1.103E-06
COMSTK	117-81-7	Bis(2-ethylhexyl)phthalate	1.138E-04
COMSTK	118-96-7	2,4,6-Trinitrotoluene	1.061E-07
COMSTK	121-14-2	2,4-Dinitrotoluene	5.878E-08
COMSTK	124-48-1	Chlorodibromomethane	1.160E-06
COMSTK	131-11-3	Dimethylphthalate	4.555E-07
COMSTK	505-60-2	Sulfur mustard (or H/HD)	1.050E-05
COMSTK	1330-20-7	Xylene (mixed)	1.816E-06
COMSTK	1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin	8.320E-14
COMSTK	3268-87-9	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	1.355E-11
COMSTK	7439-97-6	Mercury	1.122E-09
COMSTK	7446-09-5	Sulfur dioxide	4.983E-05
COMSTK	7487-94-7	Mercuric Chloride	2.692E-07
COMSTK	7647-01-0	Hydrochloric acid	2.672E-04
COMSTK	7664-38-2	Phosphoric acid	7.682E-06
COMSTK	7664-39-3	Hydrofluoric acid	2.187E-05
COMSTK	7782-50-5	Chlorine	2.959E-04
COMSTK	10061-01-5	cis-1,3-Dichloropropene	1.028E-06
COMSTK	10061-02-6	trans-1,3-Dichloropropene	5.369E-07
COMSTK	10102-44-0	Nitrogen dioxide	1.734E-03
COMSTK	31508-00-6	2,3',4,4',5-Pentachlorobiphenyl	3.148E-10
COMSTK	32598-13-3	3,3',4,4'-Tetrachlorobiphenyl	3.656E-10
COMSTK	32598-14-4	2,3,3',4,4'-Pentachlorobiphenyl	4.134E-10
COMSTK	38380-08-4	2,3,3',4,4',5-Hexachlorobiphenyl	1.269E-10
COMSTK	39001-02-0	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	8.298E-12
COMSTK	39635-31-9	2,3,4,5,3',4',5'-Heptachlorobiphenyl	4.461E-13
COMSTK	50782-69-9	VX	1.369E-07
COMSTK	51207-31-9	2,3,7,8-Tetrachlorodibenzofuran	6.210E-11
COMSTK	52663-72-6	2,3',4,4',5,5'-Hexachlorobiphenyl	8.091E-11

COMSTK	55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran	3.512E-13
COMSTK	57465-28-8	3,4,5,3',4'-Pentachlorobiphenyl	3.750E-11
COMSTK	67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran	1.440E-12
COMSTK	69782-90-7	2,3,3',4,4',5'-Hexachlorobiphenyl	3.892E-11
COMSTK	70362-50-4	3,4,4',5-Tetrachlorobiphenyl	2.662E-11
COMSTK	74472-37-0	2,3,4,4'5-Pentachlorobiphenyl	1.828E-09
COMSTK	35822-46-9	HeptaCDD, 1,2,3,4,6,7,8-	4.184E-12
COMSTK	39227-28-6	HexaCDD, 1,2,3,4,7,8-	3.651E-12
COMSTK	57653-85-7	HexaCDD, 1,2,3,6,7,8-	3.166E-12
COMSTK	19408-74-3	HexaCDD, 1,2,3,7,8,9-	3.314E-12
COMSTK	70648-26-9	HexaCDF, 1,2,3,4,7,8-	2.427E-12
COMSTK	57117-44-9	HexaCDF, 1,2,3,6,7,8-	2.127E-12
COMSTK	72918-21-9	HexaCDF, 1,2,3,7,8,9-	2.551E-12
COMSTK	60851-34-5	HexaCDF, 2,3,4,6,7,8-	2.331E-12
COMSTK	40321-76-4	PentaCDD, 1,2,3,7,8-	4.837E-12
COMSTK	57117-41-6	PentaCDF, 1,2,3,7,8-	2.679E-12
COMSTK	57117-31-4	PentaCDF, 2,3,4,7,8-	2.694E-12
BRASTK	00-01-3	Antimony compounds	6.470E-07
BRASTK	00-01-4	Arsenic compounds	1.040E-06
BRASTK	00-01-5	Barium compounds	2.430E-06
BRASTK	00-01-6	Beryllium compounds	7.940E-08
BRASTK	00-01-7	Cadmium compounds	3.320E-06
BRASTK	00-01-8	Chromium compounds	9.190E-07
BRASTK	00-01-9	Copper compounds	3.260E-05
BRASTK	00-02-0	Lead compounds	8.590E-08
BRASTK	00-02-2	Manganese compounds	3.580E-05
BRASTK	00-02-3	Mercury compounds	9.560E-06
BRASTK	00-02-4	Nickel compounds	7.910E-06
BRASTK	00-02-5	Selenium compounds	4.700E-06
BRASTK	00-02-6	Silver compounds	1.770E-06
BRASTK	00-02-7	Thallium compounds	3.590E-07
BRASTK	00-02-8	Vanadium compounds	8.610E-07
BRASTK	00-02-9	Zinc compounds	1.310E-05
BRASTK	00-15-3	Cobalt compounds	1.080E-06
BRASTK	00-16-6	Boron compounds	2.300E-04
BRASTK	00-16-9	Tin compounds	6.100E-06
BRASTK	95-48-7	o-Cresol	6.280E-04
BRASTK	107-44-8	GB	6.500E-06
BRASTK	505-60-2	Sulfur mustard (or H/HD)	6.500E-04
BRASTK	7439-97-6	Mercury	1.912E-08
BRASTK	7487-94-7	Mercuric Chloride	4.589E-06
BRASTK	7664-38-2	Phosphoric acid	8.090E-05
BRASTK	50782-69-9	VX	6.500E-06
BRASTK	73207-98-4	EA 2192	3.580E-13
LABSTK	107-44-8	GB	4.080E-07
LABSTK	505-60-2	Sulfur mustard (or H/HD)	4.080E-06
LABSTK	50782-69-9	VX	4.080E-07

MDBSTK	107-44-8	GB	2.890E-06
MDBSTK	505-60-2	Sulfur mustard (or H/HD)	2.890E-05
MDBSTK	50782-69-9	VX	2.890E-06

Table C-4: Emission Rates for Special Case 5

Source	CAS Number	COPC Name	Emission Rate (g/s)
COMSTK	00-01-2	Aluminum compounds	2.72E-05
COMSTK	00-01-3	Antimony compounds	1.65E-06
COMSTK	00-01-4	Arsenic compounds	7.49E-07
COMSTK	00-01-5	Barium compounds	1.98E-06
COMSTK	00-01-6	Beryllium compounds	1.16E-08
COMSTK	00-01-7	Cadmium compounds	3.12E-07
COMSTK	00-01-8	Chromium compounds	3.71E-07
COMSTK	00-01-9	Copper compounds	6.07E-07
COMSTK	00-02-0	Lead compounds	1.64E-06
COMSTK	00-02-2	Manganese compounds	6.59E-06
COMSTK	00-02-4	Nickel compounds	1.38E-06
COMSTK	00-02-5	Selenium compounds	5.13E-07
COMSTK	00-02-6	Silver compounds	2.00E-07
COMSTK	00-02-7	Thallium compounds	4.57E-07
COMSTK	00-02-8	Vanadium compounds	4.31E-08
COMSTK	00-02-9	Zinc compounds	7.56E-05
COMSTK	00-07-2	PCB Mixture (non-dioxin like, 5+ chlorines)	2.70E-07
COMSTK	00-15-3	Cobalt compounds	6.43E-08
COMSTK	00-15-5	m,p-Xylene	1.26E-05
COMSTK	00-16-3	Composite TOE - Volatile	0.036991
COMSTK	00-16-4	Composirte TOE - Semivolatile	0.001232
COMSTK	00-16-5	Composirte TOE - Nonvolatile	0.001142
COMSTK	00-16-6	Boron compounds	1.08E-05
COMSTK	00-16-9	Tin compounds	1.28E-06
COMSTK	56-23-5	Carbon tetrachloride	1.77E-06
COMSTK	65-85-0	Benzoic acid	2.59E-05
COMSTK	67-64-1	Acetone	0.000281
COMSTK	67-66-3	Chloroform	3.52E-06
COMSTK	71-43-2	Benzene	1.03E-05
COMSTK	74-83-9	Methyl bromide	1.20E-05
COMSTK	74-87-3	Methyl chloride	6.25E-06
COMSTK	74-88-4	Methyl iodide	8.80E-07
COMSTK	74-96-4	Bromoethane	1.16E-07
COMSTK	74-97-5	Bromochloromethane	1.56E-07
COMSTK	75-00-3	Ethyl chloride	7.18E-07
COMSTK	75-01-4	Vinyl chloride	6.78E-07
COMSTK	75-09-2	Dichloromethane	1.89E-05
COMSTK	75-15-0	Carbon disulfide	6.93E-06
COMSTK	75-25-2	Tribromomethane	2.59E-06
COMSTK	75-27-4	Bromodichloromethane	2.18E-06
COMSTK	75-35-4	1,1-Dichloroethylene	1.55E-07
COMSTK	75-69-4	Trichlorofluoromethane	2.29E-06
COMSTK	75-71-8	Dichlorodifluoromethane	9.35E-07
COMSTK	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	4.59E-08

Source	CAS Number	COPC Name	Emission Rate (g/s)
COMSTK	78-93-3	Methyl ethyl ketone	1.21E-05
COMSTK	79-01-6	Trichloroethylene	4.63E-08
COMSTK	84-66-2	Diethyl phthalate	5.57E-06
COMSTK	84-74-2	Dibutyl phthalate	3.28E-06
COMSTK	91-20-3	Naphthalene	2.08E-06
COMSTK	91-57-6	2-Methylnaphthalene	1.65E-06
COMSTK	95-47-6	2-Xylene	3.71E-06
COMSTK	95-50-1	1,2-Dichlorobenzene	8.98E-07
COMSTK	100-41-4	Ethylbenzene	2.18E-06
COMSTK	100-42-5	Styrene	1.01E-06
COMSTK	100-51-6	Benzyl alcohol	2.08E-06
COMSTK	100-52-7	Benzaldehyde	3.47E-05
COMSTK	106-46-7	1,4-Dichlorobenzene	2.34E-06
COMSTK	107-44-8	GB	6.49E-10
COMSTK	108-05-4	Vinyl acetate	3.50E-07
COMSTK	108-10-1	Methyl isobutyl ketone	7.98E-06
COMSTK	108-88-3	Toluene	2.61E-06
COMSTK	108-90-7	Chlorobenzene	2.56E-07
COMSTK	110-54-3	n-Hexane	1.10E-06
COMSTK	117-81-7	Bis(2-ethylhexyl)phthalate	0.000114
COMSTK	118-96-7	2,4,6-Trinitrotoluene	1.06E-07
COMSTK	121-14-2	2,4-Dinitrotoluene	5.88E-08
COMSTK	124-48-1	Chlorodibromomethane	1.16E-06
COMSTK	131-11-3	Dimethylphthalate	4.56E-07
COMSTK	505-60-2	Sulfur mustard (or H/HD)	1.35E-07
COMSTK	1330-20-7	Xylene (mixed)	1.82E-06
COMSTK	1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin	8.32E-14
COMSTK	3268-87-9	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	1.36E-11
COMSTK	7439-97-6	Mercury	1.09E-09
COMSTK	7446-09-5	Sulfur dioxide	4.98E-05
COMSTK	7487-94-7	Mercuric Chloride	2.62E-07
COMSTK	7647-01-0	Hydrochloric acid	0.000244
COMSTK	7664-38-2	Phosphoric acid	6.82E-06
COMSTK	7664-39-3	Hydrofluoric acid	2.19E-05
COMSTK	7782-50-5	Chlorine	0.000269
COMSTK	10061-01-5	cis-1,3-Dichloropropene	1.03E-06
COMSTK	10061-02-6	trans-1,3-Dichloropropene	5.37E-07
COMSTK	10102-44-0	Nitrogen dioxide	0.001734
COMSTK	31508-00-6	2,3',4,4',5-Pentachlorobiphenyl	3.15E-10
COMSTK	32598-13-3	3,3',4,4'-Tetrachlorobiphenyl	3.66E-10
COMSTK	32598-14-4	2,3,3',4,4'-Pentachlorobiphenyl	4.13E-10
COMSTK	38380-08-4	2,3,3',4,4',5-Hexachlorobiphenyl	1.27E-10
COMSTK	39001-02-0	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	8.30E-12
COMSTK	39635-31-9	2,3,4,5,3',4',5'-Heptachlorobiphenyl	4.46E-13
COMSTK	50782-69-9	VX	3.51E-10

Source	CAS Number	COPC Name	Emission Rate (g/s)
COMSTK	51207-31-9	2,3,7,8-Tetrachlorodibenzofuran	6.21E-11
COMSTK	52663-72-6	2,3',4,4',5,5'-Hexachlorobiphenyl	8.09E-11
COMSTK	55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran	3.51E-13
COMSTK	57465-28-8	3,4,5,3',4'-Pentachlorobiphenyl	3.75E-11
COMSTK	67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran	1.44E-12
COMSTK	69782-90-7	2,3,3',4,4',5'-Hexachlorobiphenyl	3.89E-11
COMSTK	70362-50-4	3,4,4',5-Tetrachlorobiphenyl	2.66E-11
COMSTK	74472-37-0	2,3,4,4'5-Pentachlorobiphenyl	1.83E-09
COMSTK	35822-46-9	HeptaCDD, 1,2,3,4,6,7,8-	3.70E-12
COMSTK	39227-28-6	HexaCDD, 1,2,3,4,7,8-	3.20E-12
COMSTK	57653-85-7	HexaCDD, 1,2,3,6,7,8-	2.79E-12
COMSTK	19408-74-3	HexaCDD, 1,2,3,7,8,9-	2.91E-12
COMSTK	70648-26-9	HexaCDF, 1,2,3,4,7,8-	2.16E-12
COMSTK	57117-44-9	HexaCDF, 1,2,3,6,7,8-	1.90E-12
COMSTK	72918-21-9	HexaCDF, 1,2,3,7,8,9-	2.26E-12
COMSTK	60851-34-5	HexaCDF, 2,3,4,6,7,8-	2.08E-12
COMSTK	40321-76-4	PentaCDD, 1,2,3,7,8-	4.22E-12
COMSTK	57117-41-6	PentaCDF, 1,2,3,7,8-	2.37E-12
COMSTK	57117-31-4	PentaCDF, 2,3,4,7,8-	2.39E-12
BRASTK	00-01-3	Antimony compounds	6.47E-07
BRASTK	00-01-4	Arsenic compounds	1.04E-06
BRASTK	00-01-5	Barium compounds	2.43E-06
BRASTK	00-01-6	Beryllium compounds	7.94E-08
BRASTK	00-01-7	Cadmium compounds	3.32E-06
BRASTK	00-01-8	Chromium compounds	9.19E-07
BRASTK	00-01-9	Copper compounds	3.26E-05
BRASTK	00-02-0	Lead compounds	8.59E-08
BRASTK	00-02-2	Manganese compounds	3.58E-05
BRASTK	00-02-3	Mercury compounds	9.56E-06
BRASTK	00-02-4	Nickel compounds	7.91E-06
BRASTK	00-02-5	Selenium compounds	4.7E-06
BRASTK	00-02-6	Silver compounds	1.77E-06
BRASTK	00-02-7	Thallium compounds	3.59E-07
BRASTK	00-02-8	Vanadium compounds	8.61E-07
BRASTK	00-02-9	Zinc compounds	1.31E-05
BRASTK	00-15-3	Cobalt compounds	1.08E-06
BRASTK	00-16-6	Boron compounds	0.00023
BRASTK	00-16-9	Tin compounds	6.1E-06
BRASTK	95-48-7	o-Cresol	0.000628
BRASTK	107-44-8	GB	2.17E-08
BRASTK	505-60-2	Sulfur mustard (or H/HD)	1.19E-05
BRASTK	7439-97-6	Mercury	1.91E-08
BRASTK	7487-94-7	Mercuric Chloride	4.59E-06
BRASTK	7664-38-2	Phosphoric acid	8.09E-05
BRASTK	50782-69-9	VX	2.17E-08

Source	CAS Number	COPC Name	Emission Rate (g/s)
BRASTK	73207-98-4	EA 2192	3.58E-13
LABSTK	107-44-8	GB	6.80E-09
LABSTK	505-60-2	Sulfur mustard (or H/HD)	3.74E-06
LABSTK	50782-69-9	VX	6.80E-09
MDBSTK	107-44-8	GB	4.81E-08
MDBSTK	505-60-2	Sulfur mustard (or H/HD)	2.65E-05
MDBSTK	50782-69-9	VX	4.81E-08

Appendix D - Scaling Methodology for Common Stack

Estimating Common Stack Emission Rates for the UMCDF for the Human Health and Ecological Risk Assessment
Version 1.1
26 February 2007

Rodney S. Skeen, Ph.D., P.E.
Confederated Tribes of the Umatilla Reservation

The Umatilla Chemical Agent Disposal Facility (UMCDF) common stack combines emissions from four furnace systems: liquid incinerators 1 and 2 (LIC1 and LIC2), the deactivation furnace system (DFS), and the metal parts furnace (MPF). To estimate annual emissions for the purpose of evaluating chronic and acute health impacts it is necessary to evaluate the individual contributions from each source and then sum these components to derive the total release rate for individual compound of potential concern (COPC). The following is a description of the approach used to derive this combined emission rate. Secondary waste processing will be initially ignored to simplify the discussion, but is incorporated in the final sections of this document.

Derivation of Average Common Stack Emission Rates

Let $ER^{max}_{i,k,j}$ represent the emission rate (g/s) for the i^{th} COPC from the j^{th} furnace (LIC1, LIC2, DFS, MPF) during k^{th} campaign (GB, VX, and HD) measured at the maximum permitted feed rate. These values correspond to the emission rates measured during trial burns.

Using the assumption that emission rates are proportional to feed rates (prescribed by the UMCDF PostRA Risk Assessment Work Plan [Umatilla RAWP] (p. 2-53)) allows the following relationship to be written:

$$ER_{i,k,j} = ER^{\max}_{i,k,j} \cdot \left(\frac{Q_{k,j}}{Q^{\max}_{k,j}} \right) \qquad (1)$$

Where:

$ER^{\max}_{i,k,j}$ =	Emission rate for the i^{th} COPC in the k^{th} campaign while the j^{th} furnace is being feed at the maximum rate (g/s) measured in trial burns.
$ER_{i,k,j}$ =	Emission rate for the i^{th} COPC in the k^{th} campaign while the j^{th} furnace is fed at a rate of $Q_{k,j}$ (g/s).
$Q^{\max}_{k,j}$ =	Maximum feed rate for the j^{th} furnace in the k^{th} campaign (units vary by munition sub-component, but typically lb/hr or item/hr). Set by trial burns.
$Q_{k,j}$ =	Feed rate for the j^{th} furnace in the k^{th} campaign (units vary by munition sub-component, but typically lb/hr or item/hr).

Recognizing that, in a given agent campaign the feed to an individual furnace will be a compilation of feeds from multiple types of munition sub-components, then the time weighted average emission rate can be described from the individual feeds as follows:

$$ER_{i,k,j} = \frac{\sum_{l} (ER^{\max}_{i,k,j})_l \cdot \left(\frac{Q_{k,j}}{Q^{\max}_{k,j}} \right)_l \cdot \left(\theta_{k,j} \right)_l}{\left(\theta^{Total}_{k} \right)} \qquad (2)$$

With $(\theta_{k,j})_l$ representing the time to process the feed from the l^{th} sub-component (at a rate equal to $[Q_{k,j}]_l$) in the j^{th} furnace and k^{th} campaign. The term $\left(\theta^{Total}_{k} \right)$ represents the total duration of the k^{th} campaign. Table 2-4 of the Umatilla RAWP lists the duration of the GB, VX, and HD campaigns as 3.68 yr, 2.32 yr, 2 yr, respectively. A secondary waste (SW) campaign is also listed in Table 2-4 and a duration of 2 years is reported. It is assumed for this analysis that post agent campaign SW waste processing will occur during closure and these final two years of processing will be included in that phase.

It should be noted that the numerator in the above equation represents the total mass of the i^{th} material emitted while the denominator represents the total time over which the material is emitted. The choice to average over the duration of the campaign rather than the sum of the use time on the indicated furnace is necessary to be consistent with the how the air modeling software (AERMOD) computes concentrations and deposition rates. AERMOD assumes a constant, continuous release over the full duration of the period being modeled.

Table 1 provides a list of the munition sub-components which are processed in each agent campaign at the UMCDF. An example of the proper application of the information in Table 1 to Equation 2 is shown in Equation 3 which describes the time-weighted average emission rate for the i^{th} COPC from the DFS during the GB agent campaign

$$ER_{i,GB,DFS} = \left[\left[\frac{(ER^{\max}_{i,GB,DFS})_{M\,55} \cdot \left(\frac{Q_{k,j}}{Q^{\max}_{k,j}} \right)_{M\,55} \left(\theta_{k,j} \right)_{M\,55} + (ER^{\max}_{i,GB,DFS})_{M\,121} \cdot \left(\frac{Q_{k,j}}{Q^{\max}_{k,j}} \right)_{M\,121} \left(\theta_{k,j} \right)_{M\,121}}{\left(\theta^{Total}_{GB} \right)} \right] + \left[\frac{(ER^{\max}_{i,GB,DFS})_{M\,426} \cdot \left(\frac{Q_{k,j}}{Q^{\max}_{k,j}} \right)_{M\,426} \left(\theta_{k,j} \right)_{M\,426}}{\left(\theta^{Total}_{GB} \right)} \right] \right] \qquad (3)$$

Table 1: Furnace Feeds by Munition and Agent Campaign.

Munition	Agent Campaign	LIC 1 and 2 Feed	DFS Feed	MPF Feed
M55 Rocket	GB	GB Agent	Rocket Pieces	None
M121/A1 Projectiles	GB	GB Agent	Explosives	Projectile Body
M426 Projectiles	GB	GB Agent	Explosives	Projectile Body
MK-94 Bomb	GB	GB Agent	None	Bomb Shell
MC-1 Bomb	GB	GB Agent	None	Bomb Shell
M55 Rocket	VX	VX Agent	Rocket Pieces	None
M23 Mines	VX	VX Agent	Explosives	Drum
M121/A1 Projectiles	VX	VX Agent	Explosives	Projectile Body
M426 Projectiles	VX	VX Agent	Explosives	Projectile Body
Spray Tank	VX	VX Agent	None	Spray Tank
Ton Containers	HD	HD Agent	None	Container

Feed rate values $(Q_{k,j})_l$ will vary unpredictably during a processing campaign. However, an average feed rate can be estimated as the total quantity of material to be processed divided by the total time taken to process the material. This relationship can be written as:

$$(Q_{k,j})_l = \frac{N_l \cdot (m_j)_l}{(\theta_{k,j})_l} \tag{4}$$

Where N_l is the total number of munitions containing the l^{th} subcomponent to be processed in the j^{th} furnace in the k^{th} campaign. The term $m_{j,l}$ represents the amount of the l^{th} subcomponent in a single munition. The following table provides values for both N_l and $m_{j,l}$ for all munitions stored at the UMCDF (UMCDF RCRA Permit Application, Volume I, Attachment C-1).

Table 2: Quantities of munitions and Subcomponents.

Munition Type	Number for Processing (N_l)	LIC Feed per Munition ($m_{LIC,l}$)[c,e]	DFS Feed per Munition ($m_{DFS,l}$)	MPF Feed per Munition ($m_{MPF,l}$)[d]
GB M55 Rocket	91442	10.70	1[a]	0
GB MK-94 Bombs	27	108.00	0	1
GB MC-1 Bombs	2418	220.00	0	1
GB M426 Projectiles	14246	14.50	7.3[b]	1
GB M121A1 Projectiles	47406	6.50	2.75[b]	1
VX M55 Rockets	14519	10.00	1[a]	0
VX Spray Tanks	156	1356.00	0b	1
VX M121A1 Projectiles	32313	6.00	2.75[b]	1
VX M426 Projectiles	3752	14.50	7.3[b]	1
VX M23 Mines	11685	10.50	0.8[b]	1/3
HD Ton Containers	2635	1700.00	0	1

[a] Units for M55 rockets are rockets/munition since the whole rocket is fed to the DFS after shearing.
[b] Units for DFS feed for all but M55 rockets are lb-explosives/munition.
[c] Units for $m_{LIC,l}$ are lb-agent/munition.
[d] Units for $m_{MPF,l}$ are casing/munition or drum/munition.
[e] Assumes 100% of agent in munitions is processed in the LIC

Table 3: Maximum Permitted Feed Rates (UMCDF RCRA Permit, Section VII).

Munition Type	LIC Maximum Permitted Feed Rate (lb/hr) [a]	DFS Maximum Permitted Feed Rate[b]	MPF Minimum Permitted Tray Interval (minutes)	MPF Munitions per Tray	MPF Maximum Permitted Feed Rate [d] (munitions/hour)
GB M55 Rocket	2,060	36.6	NA [c]	NA [c]	NA [c]
GB MK-94 Bombs	2,060	NA	35.5	2	3.38
GB MC-1 Bombs	2,060	NA	35.5	2	3.38
GB M426 Projectiles	2,060	113.6	35.5	27	45.63
GB M121A1 Projectiles	2,060	113.6	35.5	48	81.13
VX M55 Rockets	1,360	36.6	NA [c]	NA [c]	NA [c]
VX Spray Tanks	1,360	NA	60	1	1.00
VX M121A1 Projectiles	1,360	113.6	35.5	48	81.13
VX M426 Projectiles	1,360	113.6	35.5	27	45.63
VX M23 Mines	1,360	113.6	35.5	8	13.52
HD Ton Containers	2,610	NA	35.5	1	1.69

[a] Values represent the sum of LIC1 and LIC2 maximums.
[b] Units for DFS feed for M55 rockets is rockets/hour. Units for all others are lb-explosives/hour.
[c] NA implies not an applicable value
[d] Value calculated from the minimum tray interval and number of munitions per tray.

Combining Equations (2) and (4) yield:

$$ER_{i,k,j} = \frac{\sum_{l} (ER_{i,k,j}^{\max})_l \cdot \left(\frac{N_l \cdot m_{j,l}}{Q_{k,j}^{\max}} \right)_l}{\left(\theta_k^{Total} \right)} \quad (5)$$

This can also be written as:

$$ER_{i,k,j} = \sum_{l} (ER_{i,k,j}^{\max})_l \cdot \left(\frac{N_l \cdot m_{j,l}}{Q_{k,j}^{\max} \cdot \left(\theta_k^{Total} \right)} \right)_l \quad (6)$$

With the second term on the right-hand side of the equation equaling the ratio between the time-averaged processing rate and the maximum processing rate. Table 4 provides values for the aforementioned ratio by furnace and agent campaign. These values were calculated from using the data provided Tables 2 and 3. In Table 4 the LIC1 and LIC2 have been assigned a separate value equal to half the total LIC requirement.

Table 4: Estimated Average Furnace Use Expressed as a Percentage of the Maximum Permitted Feed Rate.

Munition Type	LIC 1 Average Use (% Max)	LIC 2 Average Use (% Max)	DFS Average Use (% Max)	MPF Average Use (% Max)
GB Campaign				
GB M55 Rocket	0.74%	0.74%	7.75%	0.00%
GB MK-94 Bombs	0.002%	0.002%	0.00%	0.02%
GB MC-1 Bombs	0.40%	0.40%	0.00%	2.22%
GB M426 Projectiles	0.16%	0.16%	2.84%	0.97%
GB M121A1 Projectiles	0.23%	0.23%	3.56%	1.81%
GB Campaign Total	**1.53%**	**1.53%**	**14.15%**	**5.02%**
VX Campaign				
VX M55 Rockets	0.26%	0.26%	1.95%	0.00%
VX Spray Tanks	0.38%	0.38%	0.00%	0.77%
VX M121A1 Projectiles	0.35%	0.35%	3.85%	1.96%
VX M426 Projectiles	0.10%	0.10%	1.19%	0.41%
VX M23 Mines	0.22%	0.22%	0.40%	4.25%
VX Campaign Total	**1.32%**	**1.32%**	**7.39%**	**7.38%**
HD Campaign				
HD Ton Containers	4.90%	4.90%	0.00%	8.90%
HD Campaign Total	**4.90%**	**4.90%**	**0.00%**	**8.90%**

Computation of the individual furnace emission rates for each COPC can be accomplished using Equation (6) to combine the trial burn results for j^{th} furnace and the k^{th} campaign along with the values in Table 4. The average common stack emission rate for the k^{th} campaign is then the sum of the individual furnace emission rates, as shown in Equation (7).

$$ER_{i,k} = ER_{i,k,LIC1} + ER_{i,k,LIC2} + ER_{i,k,DFS} + ER_{i,k,MPF} \quad (7)$$

The average the emission rate for the i^{th} COPC over all campaigns can now be estimated as the time-weighted average for the three agent campaigns:

$$\overline{ER_i} = \frac{ER_{i,GB} \cdot \left(\theta_{GB}^{Total}\right) + ER_{i,VX} \cdot \left(\theta_{VX}^{Total}\right) + ER_{i,HD} \cdot \left(\theta_{HD}^{Total}\right)}{\theta_{GB}^{Total} + \theta_{VX}^{Total} + \theta_{HD}^{Total}} \quad (8)$$

Incorporating Secondary Waste Processing

Secondary waste will be generated during agent processing and during site closure. To accelerate the closure process it is the desire of site management to process as much agent campaign waste as possible during the campaign in which it is generated. To estimate the quantity of secondary waste that can be processed in each agent campaign it is necessary to evaluate the types of waste generated, the availability of the permitted treatment system that will process the waste, and the permitted rate at which the material can be processed.

The Waste Analysis Plan (WAP) of the UMCDF RCRA permit outlines the types of secondary waste that will be generated at the facility and described the methods to be used to treat the waste. Table 5 provides a summary of this information along with an estimate of the quantity of each waste that will be generated during the agent campaigns. Table 6 provides closure waste estimates. Values in Table 5 were taken from site estimates generated in calendar year 2000 and reported in the permit modification request UMCDF-00-016-WAST(3). Some entries were modified to more accurately reflect actual waste generation rates. Table 6 values were taken from JACADS closure waste records. Table 7 provides an estimate of the furnace times needed to treat the agent campaign related waste if the material is processed at the maximum rate indicated in the Section VII of the RCRA permit. The noncombustible secondary waste in Table 7 which is destined for the MPF corresponds to the noncombustible MPF maintenance waste and the ACS/AQS/SDS maintenance waste (agent collection system [ACS], agent quantification system [AQS], and spent decontamination system [SDS]). All other MPF destined waste was classified as combustible waste.

Table 5: Agent Campaign Secondary Waste Estimates.

Waste Stream	Quantity for Furnace Processing (lbs)	Fate Stated in WAP	Campaign Generated
Misc Agent Contaminated Liquid (lbs)	9372	LIC	GB, VX, HD
ECR Maint. Wastes (lbs)	9586	DFS	GB, VX
ACS/AQS/SDS Maint. Waste (lbs)	10000	MPF	GB, VX, HD
Noncombustible MDB Maint. Waste (lbs)	57639	MPF	GB, VX, HD
Combustible MDB Maint. Waste (lbs)	81579	MPF	GB, VX, HD
Ventilation System Filters (lbs)	27772	MPF	GB, VX, HD
Spent Carbon (lbs)	706035	DFS/CMS	GB, VX, HD
PPE Carbon Filter Canisters (lbs)	0.00 [a]	MPF	GB, VX, HD
Lab Solid Waste (lbs)	19606	MPF	GB, VX, HD
Misc. Agent Contaminated Dunnage (lbs)	15223	Off-Site/MPF	GB, VX
DPE Suits (lbs)	257372	MPF	GB, VX, HD
TAP Gear (lbs)	44820	MPF	GB, VX, HD

[a] Included in Spent Carbon Estimate.

Table 6: Secondary Waste Generated During Closure [a]

Waste Stream	Estimate Quantity, $M_{j,sw}$ (lbs)	Maximum Permitted Feed Rate, $Q_{closure,j}^{\max}$ (lb/hr)	$\left(\frac{M_{j,sw}}{Q_{closure,j}^{\max} \cdot \left(\theta_{closure}^{Total} \right)} \right)_{sw}$
MPF Non-combustible secondary waste	2,191,863.8	6176	2.03E-02
MPF Combustible secondary waste	457,493.6	410	6.37E-02
LIC Treated Waste	262,641.2	4071	3.68E-03
DFS/CMS Treated Carbon	706,035.0	550	7.33E-02

[a] The last column represents the fraction of closure period (assumed as 2 years) needed to process the indicated waste type at maximum processing rates.

Table 7: Waste Processing Times for SW Processed During Agent Campaigns

Waste Type	Required Processing Time - GB (hr)	Required Processing Time - VX (hr)	Required Processing Time - HD (hr)
MPF Non-combustible secondary waste	1.68E+01	1.06E+01	9.15E+00
MPF Combustible secondary waste	5.07E+02	3.19E+02	2.63E+02
LIC Treated Waste	1.06E+00	6.68E-01	5.76E-01
DFS Treated Waste	2.06E+02	1.30E+02	0.00E+00

A comparison of the hours needed to process the agent campaign secondary waste with available furnace time during the corresponding campaign reveals that ample time is available to process all waste. Hence, for the purpose of this analysis we will assume that all campaign generated waste (except activated carbon which requires DFS modifications before treatment) is processed during the corresponding campaign.

The contribution of secondary waste processing during agent operations to individual furnace emission can be incorporated by adding an additional term to Equation (6) as follows:

$$ER_{i,k,j} = \sum_{l} (ER^{\max}_{i,k,j})_l \cdot \left(\frac{N_l \cdot m_{j,l}}{Q^{\max}_{k,j} \cdot \left(\theta^{Total}_k\right)} \right)_l + \sum_{sw} \left(ER^{\max}_{i,k,j} \right)_{sw} \cdot \left(\frac{\theta_{k,j,sw}}{\theta^{Total}_k} \right) \quad (9)$$

With $\theta_{k,j,sw}$ representing the amount of time the j^{th} furnace would need to processing the all the sw^{th} secondary waste stream generated in the k^{th} campaign at the maximum permitted feed rate. Values of $\left(\frac{\theta_{k,j,sw}}{\theta^{Total}_k} \right)$ are given in Table 8.

Table 8: Fraction of Campaign Needed to Process Secondary waste at Maximum Permitted Feed Rates

Waste Stream	$\left(\frac{\theta_{GB,j,sw}}{\theta^{Total}_{GB}} \right)$	$\left(\frac{\theta_{VX,j,sw}}{\theta^{Total}_{VX}} \right)$	$\left(\frac{\theta_{HD,j,sw}}{\theta^{Total}_{HD}} \right)$
MPF Non-combustible secondary waste	5.22E-04	5.22E-04	5.22E-04
MPF Combustible secondary waste	1.57E-02	1.57E-02	1.50E-02
LIC Treated Waste	3.28E-05	3.28E-05	3.28E-05
DFS Treated Waste	6.40E-03	6.40E-03	0.00E+00

Equation (9) replaces Equation (6) in calculating the furnace specific emission rates for each agent campaign which are then applied to Equation (7) to calculate the average common stack emission rate for each campaign.

Including the impact on emission rates from processing secondary waste during closure requires modification of Equation (8) as follows:

$$\overline{ER_i} = \frac{ER_{i,GB} \cdot \left(\theta_{GB}^{Total}\right) + ER_{i,VX} \cdot \left(\theta_{VX}^{Total}\right) + ER_{i,HD} \cdot \left(\theta_{HD}^{Total}\right) + ER_{i,Closure} \cdot \left(\theta_{Closure}^{Total}\right)}{\theta_{GB}^{Total} + \theta_{VX}^{Total} + \theta_{HD}^{Total} + \theta_{Closure}^{Total}} \quad (10)$$

Where $\theta_{Closure}^{Total}$ represents the time required to complete closure (assumed as 2 yr) and $ER_{i,closure}$ is the average emission rate for the i[th] COPC during closure. This average rate is given by Equation (7) with *k* equal to closure:

$$ER_{i,closure} = ER_{i,closure,LIC1} + ER_{i,closure,LIC2} + ER_{i,closure,DFS} + ER_{i,closure,MPF} \quad (11)$$

The individual contributions of each furnace to the average common stack emission rate during closure can be calculated in a manner analogous to Equation (6) by recognizing that the term ($N_l \cdot m_{j,l}$) represents the total quantity of a material to be processed in the j[th] furnace and can be represented by ($M_{j,l}$). Equation (6) can be written for closure as:

$$ER_{i,closure,j} = \sum_{sw} \left(ER_{i,closure,j}^{\max}\right)_{sw} \cdot \left(\frac{M_{j,sw}}{Q_{closure,j}^{\max} \cdot \left(\theta_{closure}^{Total}\right)} \right)_{sw} \quad (12)$$

Table 6 provides values for $\left(\frac{M_{j,sw}}{Q_{closure,j}^{\max} \cdot \left(\theta_{closure}^{Total}\right)} \right)_{sw}$ for all secondary waste streams identified for processing during closure.

Application of Emission Rate Estimates to Media Concentration Equations

Air dispersion model outputs (air concentrations and deposition rates) are provided on a unit emission rate (1.0 g/s) basis. These values are converted to COPC specific concentrations and deposition rates by multiplying by the emission rates for a given source. Implicit in this approach is the assumption of continuous, constant emissions from the contributing sources. This assumption is far from reality for a facility like the UMCDF where types and amounts of individual furnace feeds vary, and where there are limitations on the number of hours per year a furnace can operate. However, the assumption is necessary given the state of computational tools for air dispersion modeling and risk assessment. It should be noted that the values of $\overline{ER_i}$ computed using the approach outlined above are consistent with the assumption of continuous, constant emissions since $\overline{ER_i}$ represents an average over the duration of plant operation. That is, the emission rate for the i[th] component is computed as the sum of the mass generated in all campaigns divided by the combined duration of all campaigns. In this way a mass balance over the life of the plant is maintained since the mass of the i[th] COPC applied to

risk assessment is equal to the amount calculated from estimates of furnace use and the trial burn results.

Recognizing this compatibility allows the direct application of $\overline{ER_i}$ in the EPA Equations without further scaling for down-time. For example, $\overline{ER_i}$ can be directly substituted for Q in Table B-5-1 of EPA 2005 (Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities, EPA530-R-05-006) allowing the chronic air concentration for the ith COPC to be described as:

$$C_{a,i}^{chronic} = \overline{ER_i} \cdot \left(F_{v,i} \cdot C_{yv} + (1 - F_{v,i}) \cdot C_{yp} \right) \quad (13)$$

Where:

$F_{v,i}$ =	Fraction of the ith COPC present in the vapor phase.
C_{yv} =	Unitized yearly average air concentration from the vapor phase (µg-s/g-m^3).
C_{yp} =	Unitized yearly average air concentration from the particle phase (µg-s/g-m^3).

The one exception to the direct application of the values of $\overline{ER_i}$ calculated in Equation 13 is with the acute air concentrations where we want to evaluate a worst case, short term exposure. For this application it is more appropriate to estimate a high emission rate condition and apply this to the unitized one-hour maximum concentrations generated by the air model. For example, since all four furnaces are used for the demolition of GB and VX projectiles, it can be assumed that all might be operating simultaneously at maximum feed rates for a brief period of time. In addition, to comply with the 2004 Umatilla Risk Assessment Work Plan, it is necessary to account for one furnace operating under upset conditions. This criterion can be incorporated by multiplying the emissions from one of the furnaces by a factor of ten. Under these conditions the possible values for $ER_{i,GB}$ and $ER_{i,VX}$ are represented by:

$$ER_{i,GB} = 10 \cdot \sum_l (ER_{i,GB,LIC1}^{\max})_l + \sum_l (ER_{i,GB,LIC2}^{\max})_l + \sum_l (ER_{i,GB,DFS}^{\max})_l + \sum_l (ER_{i,GB,MPF}^{\max})_l \quad (14a)$$

$$ER_{i,GB} = \sum_l (ER_{i,GB,LIC1}^{\max})_l + 10 \cdot \sum_l (ER_{i,GB,LIC2}^{\max})_l + \sum_l (ER_{i,GB,DFS}^{\max})_l + \sum_l (ER_{i,GB,MPF}^{\max})_l \quad (14b)$$

$$ER_{i,GB} = \sum_l (ER_{i,GB,LIC1}^{\max})_l + \sum_l (ER_{i,GB,LIC2}^{\max})_l + 10 \cdot \sum_l (ER_{i,GB,DFS}^{\max})_l + \sum_l (ER_{i,GB,MPF}^{\max})_l \quad (14c)$$

$$ER_{i,GB} = \sum_l (ER_{i,GB,LIC1}^{\max})_l + \sum_l (ER_{i,GB,LIC2}^{\max})_l + \sum_l (ER_{i,GB,DFS}^{\max})_l + 10 \cdot \sum_l (ER_{i,GB,MPF}^{\max})_l \quad (14d)$$

$$ER_{i,VX} = 10 \cdot \sum_l (ER^{\max}_{i,VX,LIC1})_l + \sum_l (ER^{\max}_{i,VX,LIC2})_l + \sum_l (ER^{\max}_{i,VX,DFS})_l + \sum_l (ER^{\max}_{i,VX,MPF})_l \quad (15a)$$

$$ER_{i,VX} = \sum_l (ER^{\max}_{i,VX,LIC1})_l + 10 \cdot \sum_l (ER^{\max}_{i,VX,LIC2})_l + \sum_l (ER^{\max}_{i,VX,DFS})_l + \sum_l (ER^{\max}_{i,VX,MPF})_l \quad (15b)$$

$$ER_{i,VX} = \sum_l (ER^{\max}_{i,VX,LIC1})_l + \sum_l (ER^{\max}_{i,VX,LIC2})_l + 10 \cdot \sum_l (ER^{\max}_{i,VX,DFS})_l + \sum_l (ER^{\max}_{i,VX,MPF})_l \quad (15c)$$

$$ER_{i,VX} = \sum_l (ER^{\max}_{i,VX,LIC1})_l + \sum_l (ER^{\max}_{i,VX,LIC2})_l + \sum_l (ER^{\max}_{i,VX,DFS})_l + 10 \cdot \sum_l (ER^{\max}_{i,VX,MPF})_l \quad (15d)$$

Similarly, the worst case conditions for the HD campaign and for the closure campaign corresponds to maximum emissions from all applicable furnaces with one furnace in upset. Applicable furnaces for the HD campaign are the LIC1, LIC2, and the MPF. Applicable furnaces for closure are the LIC1, LIC2, DFS, and MPF. Possible values of $ER_{i,HD}$ and $ER_{i,closure}$ are given by:

$$ER_{i,HD} = 10 \cdot \sum_l (ER^{\max}_{i,HD,LIC1})_l + \sum_l (ER^{\max}_{i,HD,LIC2})_l + \sum_l (ER^{\max}_{i,HD,MPF})_l \quad (16a)$$

$$ER_{i,HD} = \sum_l (ER^{\max}_{i,HD,LIC1})_l + 10 \cdot \sum_l (ER^{\max}_{i,HD,LIC2})_l + \sum_l (ER^{\max}_{i,HD,MPF})_l \quad (16b)$$

$$ER_{i,HD} = \sum_l (ER^{\max}_{i,HD,LIC1})_l + \sum_l (ER^{\max}_{i,HD,LIC2})_l + 10 \cdot \sum_l (ER^{\max}_{i,HD,MPF})_l \quad (16c)$$

$$ER_{i,closure} = \left[\begin{array}{l} 10 \cdot \sum_l (ER^{\max}_{i,closure,LIC1})_l + \sum_l (ER^{\max}_{i,closure,LIC2})_l + \\ \sum_l (ER^{\max}_{i,closure,DFS})_l + \sum_l (ER^{\max}_{i,closure,MPF})_l \end{array} \right] \quad (17a)$$

$$ER_{i,closure} = \left[\begin{array}{l} \sum_l (ER^{\max}_{i,closure,LIC1})_l + 10 \cdot \sum_l (ER^{\max}_{i,closure,LIC2})_l + \\ \sum_l (ER^{\max}_{i,closure,DFS})_l + \sum_l (ER^{\max}_{i,closure,MPF})_l \end{array} \right] \quad (17b)$$

$$ER_{i,closure} = \left[\begin{array}{l} \sum_l (ER^{\max}_{i,closure,LIC1})_l + \sum_l (ER^{\max}_{i,closure,LIC2})_l + \\ 10 \cdot \sum_l (ER^{\max}_{i,closure,DFS})_l + \sum_l (ER^{\max}_{i,closure,MPF})_l \end{array} \right] \quad (17c)$$

$$ER_{i,closure} = \left[\begin{array}{l} \sum_l (ER^{\max}_{i,closure,LIC1})_l + \sum_l (ER^{\max}_{i,closure,LIC2})_l + \\ \sum_l (ER^{\max}_{i,closure,DFS})_l + 10 \cdot \sum_l (ER^{\max}_{i,closure,MPF})_l \end{array} \right] \quad (17d)$$

Since the emission rate, $\overline{ER_i}$, is a combination of individual campaign emission rates (see Equation 10), it will be necessary to evaluate all possible combinations of campaign emission rates to find the worst case acute exposure. This yields 192 separate evaluations (4 GB cases, 4 VX cases, 3 HD cases, 4 closure cases) that must be completed unless other simplifying assumption are made.

Example Calculation of Average Common Stack Emission Rate

Assume that the site has the following five COPCs: acetone, benzene, bromodichloromethane, bromoform, bromomethane, 2-butanone (MEK) and that the following trial burns have been conducted:

Table 9: Trial Burns for Example Problems

Trial Burns	GB	VX	HD	Secondary Waste
LIC 1 Agent	X	X	X	
LIC 2 Agent	X	X	X	
MPF Agent	X	X	X	
DFS Agent	X	X		
MPF - Non Combustible SW	X	X	X	
MPF – Combustible SW				X
DFS/CMS SW Processing				X

In Table 9 it is assumed, for simplicity, that a single trial burn will represent an agent/furnace combination. For example a single, worst case, trial burn result will be used for the processing of all GB munitions in the MPF (projectiles, bombs, ton containers). Also, it is assumed that SW processing in the LIC1 and LIC2 during closure can be represented by worst case emissions from all the LIC1 and LIC2 agent trial burns. Finally, emission rates for non-combustible MPF SW that is treated during closure will be estimated from the worst case MPF agent trial burn. Non-combustible SW processed in the MPF during an agent campaign will rely on the emission rates from the corresponding MFP agent trial burn. Secondary waste processed in the DFS during the HD campaign will rely on worst case emission rates from the VX and GB DFS-agent trial burns.

Hypothetical emission rates for the trial burns shown in Table 9 are provided in Tables 10 through 13.

Table 10: Example GB Campaign Trial Burn Results

Compound	LIC1 [a] (g/s)	LIC2 [a] (g/s)	MPF [b] (g/s)	DFS [c] (g/s)
Acetone	1.50E-03	1.88E-03	2.74E-04	6.21E-03
Benzene	6.86E-05	8.58E-05	2.12E-05	5.40E-04
Bromodichloromethane	2.53E-05	3.16E-05	2.33E-05	1.09E-04
Bromoform	2.90E-05	3.62E-05	2.33E-05	9.23E-05
Bromomethane (Methyl Bromide)	1.28E-04	1.60E-04	5.52E-05	6.66E-04
2-Butanone (MEK)	1.45E-04	1.81E-04	1.17E-04	5.42E-04

[a] The maximum emission rate from the LIC1 and LIC2 agent trial burns will be applied to SW processed in either LIC during the agent campaign.
[b] Values will also be used for non-combustible SW processed in the MPF during the agent campaign.
[c] Values will also be used for SW processed in the DFS during the agent campaign.

Table 11: Example VX Campaign Trial Burn Results

Compound	LIC1 [a] (g/s)	LIC2 [a] (g/s)	MPF [b] (g/s)	DFS [c] (g/s)
Acetone	2.74E-04	3.43E-04	3.29E-04	2.74E-04
Benzene	2.12E-05	2.65E-05	2.54E-05	2.12E-05
Bromodichloromethane	2.33E-05	2.91E-05	2.80E-05	2.33E-05
Bromoform	2.33E-05	2.91E-05	2.80E-05	2.33E-05
Bromomethane (Methyl Bromide)	5.52E-05	6.90E-05	6.62E-05	5.52E-05
2-Butanone (MEK)	1.17E-04	1.46E-04	1.40E-04	1.17E-04

[a] The maximum emission rate from the LIC1 and LIC2 agent trial burns will be applied to SW processed in either LIC during the agent campaign.
[b] Values will also be used for non-combustible SW processed in the MPF during the agent campaign.
[c] Values will also be used for SW processed in the DFS during the agent campaign.

Table 12: Example HD Campaign Trial Burn Results [c]

Compound	LIC1 [a] (g/s)	LIC2 [a] (g/s)	MPF [b] (g/s)
Acetone	2.98E-04	3.73E-04	1.06E-02
Benzene	3.12E-04	3.90E-04	2.24E-03
Bromodichloromethane	1.97E-06	2.46E-06	5.22E-04
Bromoform	1.11E-04	1.38E-04	5.26E-04
Bromomethane (Methyl Bromide)	1.97E-06	2.46E-06	1.04E-03
2-Butanone (MEK)	1.47E-03	1.83E-03	2.34E-03

[a] The maximum emission rate from the LIC1 and LIC2 agent trial burns will be applied to SW processed in either LIC during the agent campaign.

[b] Values will also be used for non-combustible SW processed in the MPF during the agent campaign.

[c] Secondary waste processed in the DFS during the agent campaign will use worst case emission rates from the GB and VX DFS agent trial burns.

Table 13: Example Secondary Waste Campaign Trial Burn Results [c]

Compound	MPF Combustible SW (g/s)	DFS/CMS (g/s)
Acetone	5.48E-04	6.21E-03
Benzene	4.24E-05	5.40E-04
Bromodichloromethane	4.66E-05	1.09E-04
Bromoform	4.66E-05	9.23E-05
Bromomethane (Methyl Bromide)	1.10E-04	6.66E-04
2-Butanone (MEK)	2.33E-04	5.42E-04

[c] Secondary waste other than carbon processed in the DFS during the closure campaign will use worst case emission rates from the GB and VX DFS agent trial burns.

Tables 14 and 15 provides the multipliers for trial burn emission rates necessary to calculate $ER_{i,k,j}$ using Equation (9).

Table 14: Multipliers on Emission Rates for Agent Campaigns for application of Equation (9) [a]

Munition Type	$\left(\frac{N_l \cdot m_{LIC1,l}}{Q^{\max}_{k,LIC1} \cdot \left(\theta^{Total}_k\right)}\right)_l$	$\left(\frac{N_l \cdot m_{LIC2,l}}{Q^{\max}_{k,LIC2} \cdot \left(\theta^{Total}_k\right)}\right)_l$	$\left(\frac{N_l \cdot m_{DFS,l}}{Q^{\max}_{k,DFS} \cdot \left(\theta^{Total}_k\right)}\right)_l$	$\left(\frac{N_l \cdot m_{MPF,l}}{Q^{\max}_{k,MPF} \cdot \left(\theta^{Total}_k\right)}\right)_l$
k = GB Campaign, $\theta^{Total}_{GB} = 3.68\,years$				
l = GB M55 Rocket	7.37E-03	7.37E-03	7.37E-03	0.00E+00
l = GB MK-94 Bombs	2.20E-05	2.20E-05	0.00E+00	2.48E-04
l = GB MC-1 Bombs	4.01E-03	4.01E-03	0.00E+00	2.22E-02
l = GB M426 Projectiles	1.56E-03	1.56E-03	2.84E-02	9.68E-03
l = GB M121A1 Projectiles	2.32E-03	2.32E-03	3.56E-02	1.81E-02
k = VX Campaign, $\theta^{Total}_{VX} = 2.32\,years$				
l = VX M55 Rockets	2.63E-03	2.63E-03	1.95E-02	0.00E+00
l = VX Spray Tanks	3.83E-03	3.83E-03	0.00E+00	7.68E-03
l = VX M121A1 Projectiles	3.51E-03	3.51E-03	3.85E-02	1.96E-02
l = VX M426 Projectiles	9.84E-04	9.84E-04	1.19E-02	4.05E-03
l = VX M23 Mines	2.22E-03	2.22E-03	4.05E-03	4.25E-02
k = HD Campaign, $\theta^{Total}_{HD} = 2.0\,years$				
l = HD Ton Containers	4.90E-02	4.90E-02	0.00E+00	8.90E-02

[a] The data in this table is a duplication of Table 4, but is repeated here for clarity.

Table 15: Emission Rate Multipliers for Secondary Waste Processed During Agent Campaigns [a]

Waste Stream	$\left(\frac{\theta_{GB,j,sw}}{\theta_{GB}^{Total}}\right)$	$\left(\frac{\theta_{VX,j,sw}}{\theta_{VX}^{Total}}\right)$	$\left(\frac{\theta_{HD,j,sw}}{\theta_{HD}^{Total}}\right)$
MPF Non-combustible secondary waste (j=MPF)	5.22E-04	5.22E-04	5.22E-04
MPF Combustible secondary waste (i=MPF)	1.57E-02	1.57E-02	1.50E-02
LIC Treated Waste (j=LIC1)	3.28E-05	3.28E-05	3.28E-05
DFS Treated Waste (j=DFS)	6.40E-03	6.40E-03	0.00E+00

[a] The data in this table is a duplication of Table 8, but is repeated here for clarity.

For the LIC1 GB campaign the calculation would be as follows:

$$ER_{i,GB,LIC1} = (ER_{i,GB,LIC1}^{\max}) \cdot \left[\begin{array}{l} \left(\frac{N_{M55} \cdot m_{LIC1,M55}}{Q_{GB,LIC1}^{\max} \cdot \left(\theta_{GB}^{Total}\right)} \right) + \\ \left(\frac{N_{MK94} \cdot m_{LIC1,Mk94}}{Q_{GB,LIC1}^{\max} \cdot \left(\theta_{GB}^{Total}\right)} \right) + \\ \left(\frac{N_{MC1} \cdot m_{LIC1,MC1}}{Q_{GB,LIC1}^{\max} \cdot \left(\theta_{GB}^{Total}\right)} \right) + \\ \left(\frac{N_{M426} \cdot m_{LIC1,M426}}{Q_{GB,LIC1}^{\max} \cdot \left(\theta_{GB}^{Total}\right)} \right) + \\ \left(\frac{N_{M212A1} \cdot m_{LIC1,M212A1}}{Q_{GB,LIC1}^{\max} \cdot \left(\theta_{GB}^{Total}\right)} \right) \end{array} \right] + \left(Max[ER_{i,GB,LIC1}^{\max}, ER_{i,GB,LIC2}^{\max}] \right)_{sw} \cdot \left(\frac{\theta_{GB,LIC1,sw}}{\theta_{GB}^{Total}} \right)$$

The second term on the right hand side of the above equation reflects the selection of the larger of the LIC1 or LIC2 emission rate. For acetone, benzene, and MEK we can; using Tables 10, 14, and 15; write the following (remember, it was assumed the LIC secondary waste maximum emission rates are taken from the agent trial burns in Table 10):

$$ER_{acetone,GB,LIC1} = (1.50E-03) \cdot \left[\begin{array}{l} 7.37E-03 + 2.2E-05 + \\ 4.01E-03 + 1.56E-03 + \\ 2.32E-03 \end{array} \right] + (1.88E-03) \cdot \left[3.28E-05\right]$$

$$ER_{Benzene,GB,LIC1} = (6.86E-05) \cdot \left[\begin{array}{l} 7.37E-03 + 2.2E-05 + \\ 4.01E-03 + 1.56E-03 + \\ 2.32E-03 \end{array} \right] + (8.58E-05) \cdot [3.28E-05]$$

$$ER_{MEK,GB,LIC1} = (1.45E-04)\cdot\begin{bmatrix}7.37E-03+2.2E-05+\\4.01E-03+1.56E-03+\\2.32E-03\end{bmatrix}+(1.81E-04)\cdot\left[3.28E-05\right]$$

Where the first term on the right hand side represents the agent processing contribution to the emission rate and the second term represents secondary waste processing.

For the DFS GB campaign the calculation would be as follows:

$$ER_{i,GB,DFS} = (ER^{\max}_{i,GB,DFS})\cdot\begin{bmatrix}\left(\frac{N_{M55}\cdot m_{DFS,M55}}{Q^{\max}_{GB,DFS}\cdot\left(\theta^{Total}_{GB}\right)}\right)+\left(\frac{N_{MK94}\cdot m_{DFS,Mk94}}{Q^{\max}_{GB,DFS}\cdot\left(\theta^{Total}_{GB}\right)}\right)+\\\left(\frac{N_{MC1}\cdot m_{DFS,MC1}}{Q^{\max}_{GB,DFS}\cdot\left(\theta^{Total}_{GB}\right)}\right)+\left(\frac{N_{M426}\cdot m_{DFS,M426}}{Q^{\max}_{GB,DFS}\cdot\left(\theta^{Total}_{GB}\right)}\right)+\\\left(\frac{N_{M212A1}\cdot m_{DFS,M212A1}}{Q^{\max}_{GB,DFS}\cdot\left(\theta^{Total}_{GB}\right)}\right)\end{bmatrix}+\left(ER^{\max}_{i,GB,DFS}\right)_{sw}\cdot\left(\frac{\theta_{GB,DFS,sw}}{\theta^{Total}_{GB}}\right)$$

Or, for acetone, benzene, and MEK we can; using Tables 10, 13, 14, and 15; write:

$$ER_{acetone,GB,DFS} = (6.21E-03)\cdot\begin{bmatrix}7.37E-03+2.84E-02+\\3.56E-02\end{bmatrix}+(6.21E-03)\cdot\left[6.40E-03\right]$$

$$ER_{Benzene,GB,DFS} = (5.40E-04)\cdot\begin{bmatrix}7.37E-03+2.84E-02+\\3.56E-02\end{bmatrix}+(5.40E-04)\cdot\left[6.40E-03\right]$$

$$ER_{MEK,GB,DFS} = (5.42E-04)\cdot\begin{bmatrix}7.37E-03+2.84E-02+\\3.56E-02\end{bmatrix}+(5.42E-04)\cdot\left[6.40E-03\right]$$

For the MPF GB campaign the calculation would be as follows:

$$ER_{i,GB,MPF} = (ER^{\max}_{i,GB,MPF}) \cdot \left[\begin{array}{l} \left(\dfrac{N_{M55} \cdot m_{MPF,M55}}{Q^{\max}_{GB,MPF} \cdot \left(\theta^{Total}_{GB}\right)} \right) + \\ \left(\dfrac{N_{MK94} \cdot m_{MPF,Mk94}}{Q^{\max}_{GB,MPF} \cdot \left(\theta^{Total}_{GB}\right)} \right) + \\ \left(\dfrac{N_{MC1} \cdot m_{MPF,MC1}}{Q^{\max}_{GB,MPF} \cdot \left(\theta^{Total}_{GB}\right)} \right) + \\ \left(\dfrac{N_{M426} \cdot m_{MPF,M426}}{Q^{\max}_{GB,MPF} \cdot \left(\theta^{Total}_{GB}\right)} \right) + \\ \left(\dfrac{N_{M212A1} \cdot m_{MPF,M212A1}}{Q^{\max}_{GB,MPF} \cdot \left(\theta^{Total}_{GB}\right)} \right) \end{array} \right] + \left[\begin{array}{l} \left(ER^{\max}_{i,GB,MPF}\right)_{combust-sw} \cdot \left(\dfrac{\theta_{GB,MPF,combust-sw}}{\theta^{Total}_{GB}} \right) + \\ \left(ER^{\max}_{i,GB,MPF}\right)_{noncombust-sw} \cdot \left(\dfrac{\theta_{GB,MPF,noncombust-sw}}{\theta^{Total}_{GB}} \right) \end{array} \right]$$

For acetone, benzene, and MEK we can; using Tables 10, 13, 14, and 15; write:

$$ER_{acetone,GB,MPF} = (2.74E-04) \cdot \left[\begin{array}{l} 2.48E-04 + \\ 2.22E-02 + \\ 9.68E-03 + \\ 1.81E-02 \end{array} \right] + (2.74E-04) \cdot [5.22E-04] + (5.48E-04) \cdot [1.57E-02]$$

$$ER_{Benzene,GB,MPF} = (2.12E-05) \cdot \left[\begin{array}{l} 2.48E-04 + \\ 2.22E-02 + \\ 9.68E-03 + \\ 1.81E-02 \end{array} \right] + (2.12E-05) \cdot [5.22E-04] + (4.24E-05) \cdot [1.57E-02]$$

$$ER_{MEK,GB,MPF} = (1.17E-04) \cdot \left[\begin{array}{l} 2.48E-04 + \\ 2.22E-02 + \\ 9.68E-03 + \\ 1.81E-02 \end{array} \right] + (1.17E-04) \cdot [5.22E-04] + (2.33E-04) \cdot [1.57E-02]$$

Estimates for $ER_{i,k,j}$ for secondary waste processing during closure can be calculated from Equation (12) and the data in Tables 6 and 10 through 13. Table 16 provides values of $\left(\dfrac{M_{j,sw}}{Q^{\max}_{closure,j} \cdot \left(\theta^{Total}_{closure}\right)} \right)_{sw}$ presented in Table 6.

Table 16: Fraction of Closure Period Needed to Process Waste at Maximum Feed Rates

Waste Type	$\left(\frac{M_{j,sw}}{Q_{closure,j}^{\max} \cdot \left(\theta_{closure}^{Total} \right)} \right)_{sw}$
MPF Non-combustible secondary waste (j=MPF)	2.03E-02
MPF Combustible secondary waste (j=MPF)	6.37E-02
LIC Treated Waste (j=LIC)	3.68E-03
CMS Carbon Processing (j=DFS/CMS)	7.33E-02

Assuming we apply the maximum value of emission rates for each COPC for the LIC and MPF non-combustible waste then Equation 12 for acetone becomes:

$$ER_{acetone,closure,LIC} = (1.88E-03) \cdot [3.68E-03]$$

$$ER_{acetone,closure,DFS/CMS} = (6.21E-03) \cdot [7.33E-02]$$

$$ER_{acetone,closure,MPF} = (1.06E-02) \cdot [2.03E-02] + (5.48E-04) \cdot [6.37E-02]$$

Table 17 provides a complete summary of the results for $ER_{i,k,j}$ for all campaigns and all COPCs used this example.

Table 17: $ER_{i,k,j}$ Values for All Campaigns

Compound	$ER_{i,k,LIC1}$	$ER_{i,k,LIC2}$	$ER_{i,k,MPF}$	$ER_{i,k,DFS}$
k = GB Campaign				
Acetone	2.30E-05	2.86E-05	2.83E-05	1.35E-04
Benzene	1.05E-06	1.31E-06	2.19E-06	1.17E-05
Bromodichloromethane	3.87E-07	4.82E-07	2.41E-06	2.36E-06
Bromoform	4.44E-07	5.53E-07	2.41E-06	2.00E-06
Bromomethane (Methyl Bromide)	1.96E-06	2.45E-06	5.70E-06	1.44E-05
2-Butanone (MEK)	2.22E-06	2.77E-06	1.21E-05	1.17E-05
k = VX Campaign				
Acetone	3.62E-06	4.51E-06	3.31E-05	2.20E-05
Benzene	2.80E-07	3.49E-07	2.56E-06	1.70E-06
Bromodichloromethane	3.08E-07	3.83E-07	2.81E-06	1.87E-06
Bromoform	3.08E-07	3.83E-07	2.81E-06	1.87E-06
Bromomethane (Methyl Bromide)	7.29E-07	9.08E-07	6.66E-06	4.43E-06
2-Butanone (MEK)	1.54E-06	1.92E-06	1.41E-05	9.37E-06
k = HD Campaign				
Acetone	1.46E-05	1.83E-05	1.38E-05	0.00E+00
Benzene	1.53E-05	1.91E-05	1.81E-06	0.00E+00
Bromodichloromethane	9.65E-08	1.21E-07	9.72E-07	0.00E+00
Bromoform	5.43E-06	6.78E-06	9.74E-07	0.00E+00
Bromomethane (Methyl Bromide)	9.66E-08	1.21E-07	2.20E-06	0.00E+00
2-Butanone (MEK)	7.19E-05	8.99E-05	4.73E-06	0.00E+00
k = Closure				
Acetone	6.91E-06	0.00E+00 [a]	2.50E-04 [b]	4.55E-04
Benzene	1.44E-06	0.00E+00	4.81E-05	3.95E-05
Bromodichloromethane	1.16E-07	0.00E+00	1.35E-05	7.97E-06
Bromoform	5.10E-07	0.00E+00	1.36E-05	6.77E-06
Bromomethane (Methyl Bromide)	5.90E-07	0.00E+00	2.82E-05	4.88E-05
2-Butanone (MEK)	6.76E-06	0.00E+00	6.24E-05	3.97E-05

[a] All materials are assumed to be processed in a single LIC since less than 100 hours of processing time are needed to treat all liquid wastes.

[b] $ER_{i,k,MPF}$ for secondary waste is the sum of the contributions from both combustible and noncombustible waste.

The average emission rate for each campaign can now be calculated from the values in Table 17 using Equation (7). Values for $ER_{i,k}$ are shown in Table 18 along with the averages . Example calculations for $ER_{i,k}$ and $\overline{ER_i}$ (from Equation [10]) for acetone are as follows:

$$ER_{acetone,GB} = (2.30E-05) + (2.86E-05) + (2.83E-05) + (1.35E-04) = 2.15E-04$$

$$ER_{acetone,VX} = (3.62E-06) + (4.51E-06) + (3.31E-05) + (2.20E-05) = 6.32E-05$$

$$ER_{acetone,HD} = (1.46E-05) + (1.83E-05) + (1.38E-05) = 4.67E-05$$

$$ER_{acetone,closure} = (6.91E-06) + (2.50E-04) + (4.55E-04) = 7.12E-04$$

$$\overline{ER_{acetone}} = \left[\frac{(2.15E-04)\cdot(3.68) + (6.32E-05)\cdot(2.32)}{10} + \frac{(4.67E-05)\cdot(2.0) + (7.12E-04)\cdot(2.0)}{10} \right] = 2.45E-04$$

Note that, in the latter equation, campaign durations of 3.68, 2.32, 2.0, and 2.0 years have been assumed for the GB, VX, HD, and closure campaigns, respectively.

Table 18: Campaign and Overall Average Emission Rates.

Compound	$ER_{i,GB}$ (g/s)	$ER_{i,VX}$ (g/s)	$ER_{i,HD}$ (g/s)	$ER_{i,closure}$ (g/s)	$\overline{ER_i}$ (g/s)
Acetone	2.15E-04	6.32E-05	4.67E-05	7.12E-04	2.45E-04
Benzene	1.62E-05	4.89E-06	3.62E-05	8.90E-05	3.22E-05
Bromodichloromethane	5.63E-06	5.37E-06	1.19E-06	2.16E-05	7.88E-06
Bromoform	5.40E-06	5.37E-06	1.32E-05	2.09E-05	1.01E-05
Bromomethane (Methyl Bromide)	2.45E-05	1.27E-05	2.42E-06	7.76E-05	2.80E-05
2-Butanone (MEK)	2.88E-05	2.69E-05	1.67E-04	1.09E-04	7.19E-05

Appendix E – Master COPC List

COPC Number	Compound Name	CAS Number	Group Number[18]
1	Acetone	67-64-1	1
2	Benzene	71-43-2	1
3	Bromodichloromethane	75-27-4	1
5	Bromoform (Tribromomethane)	75-25-2	1
6	Bromomethane (Methyl Bromide)	74-83-9	1
7	2-Butanone (MEK)	78-93-3	1
9	Carbon Disulfide	75-15-0	1
10	Carbon Tetrachloride	56-23-5	1
11	Chlorobenzene	108-90-7	1
12	Chloroethane (Ethyl Chloride)	75-00-3	1
13	Trichloromethane (Chloroform)	67-66-3	1
14	Chloromethane (Methyl Chloride)	74-87-3	1
16	Dibromochloromethane	124-48-1	1
21	Dichlorodifluoromethane (Freon 12)	75-71-8	1
24	1,1-Dichloroethene	75-35-4	1
27	cis-1,3-Dichloropropene	10061-01-5	1
28	trans-1,3-Dichloropropene	10061-02-6	1
29	Ethylbenzene	100-41-4	1
30	n-Hexane	110-54-3	1
32	Iodomethane (Methyl iodide)	74-88-4	1
33	Methylene Chloride (Dichloromethane)	75-09-2	1
34	4-Methyl-2-pentanone (Methyl IsoButyl Ketone, MIBK)	108-10-1	1
38	Toluene	108-88-3	1
41	Trichloroethene (TCE)	79-01-6	1
43	Trichlorofluoromethane	75-69-4	1
44	Vinyl acetate	108-05-4	1
45	Styrene (Vinyl benzene)	100-42-5	1
46	Vinyl chloride	75-01-4	1
49	m,p-Xylene	1330-20-7	1
50	o-Xylene	95-47-6	1
51	Total Xylenes	999-999-999[19]	1
62	Benzoic acid	65-85-0	1
70	Benzyl alcohol	100-51-6	1
71	Benzaldehyde	100-52-7	1
74	Bis(2-Ethylhexyl)-phthalate (BEHP)	117-81-7	1
91	Di-n-butyl phthalate	84-74-2	1
93	1,2-Dichlorobenzene	95-50-1	1

[18] Total COPC are 101, 12, 409, and 181 for groups 1, 2, 3, and 4, respectively.

[19] A 999-999-999 Chemical Abstract Service (CAS) Number indicates that no CAS number could be found for this compound. Unique CAS numbers of the format 0-xx-x (where xx-x represent numerical digest) were later assigned to the Group 1 compounds without pre-assigned CAS numbers. These CAS numbers are shown in other tables in this report.

COPC Number	Compound Name	CAS Number	Group Number[18]
95	1,4-Dichlorobenzene	106-46-7	1
99	Diethyl phthalate	84-66-2	1
104	Dimethyl phthalate	131-11-3	1
108	2,4-Dinitrotoluene	121-14-2	1
127	2-Methylnaphthalene	91-57-6	1
128	2-Methylphenol (o-Cresol)	95-48-7	1
132	Naphthalene	91-20-3	1
160	2,4,6-Trinitrotoluene	118-96-7	1
162	2,3,7,8-TCDD	1746-01-6	1
172	OCDD	3268-87-9	1
173	2,3,7,8-TCDF	51207-31-9	1
183	1,2,3,4,6,7,8-HpCDF	67562-39-4	1
184	1,2,3,4,7,8,9-HpCDF	55673-89-7	1
186	OCDF	39001-02-0	1
187	Total PCBs (no congeners)	1336-36-3	1
191	3,3',4,4'- Tetra CB (77)	32598-13-3	1
193	2,3',4,4',5-Penta CB (118)	31508-00-6	1
194	2,3,3',4,4'-Penta CB (105)	32598-14-4	1
195	2,3,4,4',5-Penta CB (114)	74472-37-0	1
197	3,3',4,4',5-Penta CB (126)	57465-28-8	1
199	2,3,3',4,4',5-Hexa CB (156)	38380-08-4	1
200	2,3',4,4',5,5'-Hexa CB (167)	52663-72-6	1
203	2,3,3',4,4',5,5'-Hepta CB (189)	39635-31-9	1
204	2,3,3',4,4',5'-Hexa CB (157)	69782-90-7	1
205	3,4,4',5-Tetra CB (81)	70362-50-4	1
209	Aluminum	7429-90-5	1
210	Antimony	7440-36-0	1
211	Arsenic	7440-38-2	1
212	Barium	7440-39-3	1
213	Beryllium	7440-41-7	1
214	Boron	7440-42-8	1
215	Cadmium	7440-43-9	1
216	Chromium	7440-47-3	1
218	Cobalt	7440-48-4	1
219	Copper	7440-50-8	1
220	Lead	7439-92-1	1
221	Manganese	7439-96-5	1
222	Total Mercury	7439-97-6	1
223	Nickel	7440-02-0	1
224	Phosphorus	7723-14-0	1
225	Selenium	7782-49-2	1
226	Silver	7440-22-4	1
227	Thallium	7440-28-0	1
228	Tin	7440-31-5	1
229	Vanadium	7440-62-2	1

COPC Number	Compound Name	CAS Number	Group Number[18]
230	Zinc	7440-66-6	1
231	Agent: GB (Sarin)	107-44-8	1
232	Agent: HD (Mustard) Bis (2-chloroethyl sulfide)	505-60-2	1
233	Agent: VX	50782-69-9	1
234	Acid Gases: Hydrogen chloride (HCl)	7647-01-0	1
235	Acid Gases: Hydrogen fluoride (HF)	7664-39-3	1
236	Chlorine	7782-50-5	1
238	Criteria Pollutant: Nitrogen Oxides (NOx)	10102-44-0	1
239	Criteria Pollutant: Sulfur Oxides (SOx)	7446-09-5	1
382	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	1
615	Bromoethane	74-96-4	1
631	Bromochloromethane	74-97-5	1
719	Elemental Mercury		1
720	Mercuric Chloride		1
721	Methyl Mercury		1
722	Composite TOE - Volatile	999-999-999	1
723	Composite TOE - Semivolatile	999-999-999	1
724	Composite TOE - Nonvolatile	999-999-999	1
725	EA2192	73207-98-4	1
188	Total monochlorobiphenyls	27323-18-8	2
189	Total dichlorobiphenyls	25512-42-9	2
190	Total trichlorobiphenyls	25323-68-6	2
192	Total Tetrachlorobiphenyls	26914-33-0	2
198	Total Pentachlorobiphenyls	25429-29-2	2
202	Total Hexachlorobiphenyls	26601-64-9	2
206	Total Heptachlorobiphenyls	28655-71-2	2
207	Total Octachlorobiphenyls	55722-26-4	2
208	Total Nonachlorobiphenyls	53742-07-7	2
241	Particulate Matter (PM10 and PM2.5)	999-999-999	2
496	Total Decachlorobiphenyls	2051-24-3	2
540	TOC -- Total	999-999-999	2
4	Bromoethene (Vinyl Bromide)	593-60-2	3
8	1,3-Butadiene	106-99-0	3
15	2-Chloropropane (Isopropyl chloride)	75-29-6	3
17	1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3
18	Dibromomethane (Methylene Bromide)	74-95-3	3
19	cis-1,4-Dichloro-2-butene	1476-11-5	3
20	trans-1,4-Dichloro-2-butene	110-57-6	3
22	1,1-Dichloroethane	75-34-3	3
23	1,2-Dichloroethane (EDC)	107-06-2	3
25	trans-1,2-Dichloroethene	156-60-5	3
26	1,2-Dichloropropane (Propylene dichloride)	78-87-5	3
31	2-Hexanone (Methyl butyl ketone)	591-78-6	3
35	1,1,1,2-Tetrachloroethane	630-20-6	3
36	1,1,2,2-Tetrachloroethane	79-34-5	3

COPC Number	Compound Name	CAS Number	Group Number[18]
37	Tetrachloroethene (Tetrachloroethylene)	127-18-4	3
39	1,1,1-Trichloroethane (TCA or methyl chloroform)	71-55-6	3
40	1,1,2-Trichloroethane	79-00-5	3
42	1,2,3-Trichloropropane	96-18-4	3
52	Acenaphthene	83-32-9	3
53	Acenaphthylene	208-96-8	3
54	Acetophenone	98-86-2	3
55	2-Acetylaminofluorene	53-96-3	3
56	4-Aminobiphenyl (p-Biphenylamine)	92-67-1	3
57	3-Amino-9-ethylcarbazole	132-32-1	3
58	Aniline	62-53-3	3
59	Anthracene	120-12-7	3
60	Aramite	140-57-8	3
61	Benzidine	92-87-5	3
63	Benzo (a) anthracene	56-55-3	3
64	Benzo (b) fluoranthene	205-99-2	3
65	Benzo (j) fluoranthene	205-82-3	3
66	Benzo (k) fluoranthene	207-08-9	3
67	Benzo (g,h,i) perylene	191-24-2	3
68	Benzo (a) pyrene	50-32-8	3
69	Benzo (e) pyrene	192-97-2	3
72	Benzenethiol (Phenylmercaptan or Thiophenol)	108-98-5	3
73	1,1'-Biphenyl (Phenylbenzene or Diphenyl)	92-52-4	3
75	Butyl benzyl phthalate	85-68-7	3
76	2-sec-Butyl-4,6-dinitro-phenol (Dinoseb)	88-85-7	3
77	4-Chloroaniline	106-47-8	3
78	bis(2-Chloroethoxy)-methane	111-91-1	3
79	bis(2-Chloroethyl)ether	111-44-4	3
80	2,2'-Oxybis[1-chloropropane] (bis-chloroisopropyl-ether)	108-60-1	3
81	Chlorobenzilate	510-15-6	3
82	4-Chloro-3-methylphenol	59-50-7	3
83	1-Chloronaphthalene	90-13-1	3
84	2-Chloronaphthalene	91-58-7	3
85	2-Chlorophenol	95-57-8	3
86	4-Chlorophenyl-phenyl ether	7005-72-3	3
87	Chrysene	218-01-9	3
88	Dibenz(a,h)anthracene	53-70-3	3
89	Dibenz(a,j)acridine	224-42-0	3
90	Dibenzofuran	132-64-9	3
92	bis(n-octyl) phthalate	117-84-0	3
94	1,3-Dichlorobenzene	541-73-1	3
96	3,3'-Dichlorobenzidine	91-94-1	3
97	2,4-Dichlorophenol	120-83-2	3
98	2,6-Dichlorophenol	87-65-0	3
100	4-(Dimethylamino)azobenzene	60-11-7	3

COPC Number	Compound Name	CAS Number	Group Number[18]
101	7,12-Dimethylbenz[a]-anthracene (DMBA)	57-97-6	3
102	a,a-Dimethylphenethyl-amine (Phentermine)	122-09-8	3
103	2,4-Dimethylphenol	105-67-9	3
105	1,3-Dinitrobenzene	99-65-0	3
106	4,6-Dinitro-2-methylphenol (Dinitro-o-cresol)	534-52-1	3
107	2,4-Dinitrophenol	51-28-5	3
109	2,6-Dinitrotoluene	606-20-2	3
110	Diphenylamine	122-39-4	3
111	1,2-Diphenylhydrazine	122-66-7	3
113	Ethyl methanesulfonate	62-50-0	3
114	Ethyl parathion (Parathion)	56-38-2	3
115	Fluoranthene	206-44-0	3
116	Fluorene	86-73-7	3
117	Hexachlorobenzene	118-74-1	3
118	Hexachlorobutadiene (Hexachloro-1,3-butadiene)	87-68-3	3
119	Hexachlorocyclopentadiene	77-47-4	3
120	Hexachloroethane	67-72-1	3
122	Hexachloropropene	1888-71-7	3
123	Indeno(1,2,3-cd)pyrene	193-39-5	3
124	Isophorone	78-59-1	3
125	3-Methylcholanthrene	56-49-5	3
126	Methyl methanesulfonate	66-27-3	3
129	3-Methylphenol (m-Cresol)	108-39-4	3
130	4-Methylphenol (p-Cresol)	106-44-5	3
131	3,4-Methylphenol	999-999-999	3
133	1-Naphthylamine	134-32-7	3
134	2-Naphthylamine	91-59-8	3
135	2-Nitroaniline	88-74-4	3
136	3-Nitroaniline	99-09-2	3
137	Nitrobenzene	98-95-3	3
138	2-Nitrophenol	88-75-5	3
139	4-Nitrophenol	100-02-7	3
140	N-Nitroso-di-n-butylamine	924-16-3	3
141	N-Nitrosodimethylamine	62-75-9	3
142	N-Nitrosodiphenylamine	86-30-6	3
143	N-Nitroso-di-n-propylamine	621-64-7	3
144	N-Nitrosopiperidine	100-75-4	3
146	Pentachlorobenzene	608-93-5	3
147	Pentachloronitrobenzene (PCNB)	82-68-8	3
148	Pentachlorophenol	87-86-5	3
149	Phenacetin	62-44-2	3
150	Phenanthrene	85-01-8	3
151	Phenol	108-95-2	3
152	2-Picoline	109-06-8	3
153	Pronamide	23950-58-5	3

COPC Number	Compound Name	CAS Number	Group Number[18]
154	Pyrene	129-00-0	3
155	1,2,4,5-Tetrachlorobenzene	95-94-3	3
156	2,3,4,6-Tetrachlorophenol	58-90-2	3
157	1,2,4-Trichlorobenzene	120-82-1	3
158	2,4,5-Trichlorophenol	95-95-4	3
159	2,4,6-Trichlorophenol	88-06-2	3
164	1,2,3,7,8-PeCDD	40321-76-4	3
166	1,2,3,4,7,8-HxCDD	39227-28-6	3
167	1,2,3,6,7,8-HxCDD	57653-85-7	3
168	1,2,3,7,8,9-HxCDD	19408-74-3	3
170	1,2,3,4,6,7,8-HpCDD	35822-46-9	3
175	1,2,3,7,8-PeCDF	57117-41-6	3
176	2,3,4,7,8-PeCDF	57117-31-4	3
178	1,2,3,4,7,8-HxCDF	70648-26-9	3
179	1,2,3,6,7,8-HxCDF	57117-44-9	3
180	2,3,4,6,7,8-HxCDF	60851-34-5	3
181	1,2,3,7,8,9-HxCDF	72918-21-9	3
196	2',3,4,4',5-Penta CB (123)	65510-44-3	3
201	3,3',4,4',5,5'-Hexa CB (169)	32774-16-6	3
240	Nitroglycerine	55-63-0	3
242	RDX (Cyclonite, Cyclotrimethylene trinitramine)	121-82-4	3
258	N,N'-Diisopropylcarbodimide (DICDI)	693-13-0	3
299	Diisopropyl methyl phosphonate (DIMP)	1445-75-6	3
307	Isopropanol	67-63-0	3
324	Decane, n-	124-18-5	3
352	4-Bromophenyl phenyl ether	101-55-3	3
353	4-Nitroaniline	100-01-6	3
354	1,3,5-Trinitrobenzene	99-35-4	3
355	2-Methyl-5-nitroaniline b	99-55-8	3
356	2-Toluidine	95-53-4	3
357	3,3'-Dimethylbenzidine	119-93-7	3
358	4,4'-DDE	72-55-9	3
359	4-Nitroquinoline 1-oxide	56-57-5	3
360	5-Nitroacenaphthene	602-87-9	3
361	DBCP (1,2-Dibromo-3-chloropropane)	96-12-8	3
362	Diallate	2303-16-4	3
363	Dihydrosafrole	94-58-6	3
364	Dioxathion	78-34-2	3
365	Heptachlor	76-44-8	3
366	Isosafrole	120-58-1	3
367	Methapyrilene	91-80-5	3
368	Methoxychlor	72-43-5	3
369	Methylcyclohexane	108-87-2	3
370	N-Nitrosomethylethylamine (NMEA)	10595-95-6	3
371	N-Nitrosomorpholine	59-89-2	3

COPC Number	Compound Name	CAS Number	Group Number[18]
372	N-Nitrosopyrrolidine	930-55-2	3
374	para-Phenylenediamine	106-50-3	3
375	Pentachloroethane	76-01-7	3
376	p-Toludine	106-49-0	3
377	Pyridine	110-86-1	3
378	Quinoline	91-22-5	3
379	Safrole	94-59-7	3
380	Tributylamine	102-82-9	3
383	1,2-Benzenedicarboxylic acid	88-99-3	3
386	1,4-Naphthoquinone	130-15-4	3
389	1-Octanol, 2-butyl	3913-02-8	3
397	2-Fluoro-6-nitrophenol	1526-17-6	3
403	Acetic acid, (triphenylphosphoranylidene)-,methyl ester	2605-67-6	3
405	Benzene, (1-methylethyl)-	98-82-8	3
406	Benzene, propyl-	103-65-1	3
407	Benzonitrile	100-47-0	3
408	Benzyaldehyde, ethyl-	53951-50-1	3
413	bis(2-Ethylhexl)adipate	103-23-1	3
414	Butanoic acid, 2-methyl-, methyl ester	868-57-5	3
416	Butonic acid, methyl ester	623-42-7	3
418	Carbonyl Sulfide	463-58-1	3
420	Cyclohexane, 1-methyl-2-propyl	4291-79-6	3
430	Cyclotetrasiloxane, Octamethyl (TIC)	556-67-2	3
432	Decane,2,2,6-trimethyl-	999-999-999	3
433	Decane,2,2-dimethyl	17302-37-3	3
437	Decane,3-methyl	13151-34-3	3
441	Dodecane	112-40-3	3
443	Erucylamide	112-84-5	3
446	Heptacosane	593-49-7	3
447	Heptane (TIC)	142-82-5	3
457	Hexacosane	630-01-3	3
458	Hexadecane,2,6,10,14-tetramet	638-36-8	3
459	Hexadecanoic acid	57-10-3	3
462	Hexatriacontane	630-06-8	3
466	N-Nitrosodiethylamine	55-18-5	3
468	Nonane	111-84-2	3
470	Nonane,2-methyl-	871-83-0	3
471	Nonane,3-methyl-	5911-04-6	3
472	Nonane,4-methyl-	17301-94-9	3
474	Octacosane	630-02-4	3
475	Octadeconoic acid	57-11-4	3
476	Octane,2,2,6-trimethyl-	62016-28-8	3
482	Octane,3,6-dimethyl-	15869-94-0	3
488	Squalene	7683-64-9	3
490	Tridecane	629-50-5	3

COPC Number	Compound Name	CAS Number	Group Number[18]
491	Triphenyl phosphine oxide	791-28-6	3
492	Undecane	1120-21-4	3
494	HMX	2691-41-0	3
500	Tricosane	638-67-5	3
501	Tetracosane	646-31-1	3
502	Phenol, 2,2'-methylenebis[6-(1,1-dimethylethyl)-4-methyl-	119-47-1	3
503	Docosane	629-97-0	3
504	Heptadecane	629-78-7	3
505	Tetratriacontane	14167-59-0	3
506	2,6,10,14,18,22-Tetracosahexaene, 2,6,10,15,19,23-hexamethyl-, (all-E)-	111-02-4	3
507	Triacontane	638-68-6	3
508	Heptadecane, 9-octyl-	7225-64-1	3
509	3-Pentanone	96-22-0	3
510	R-(-)-1,2-propanediol	4254-14-2	3
511	2-Pentanol, 4-methyl	108-11-2	3
512	7-Oxabicyclo[4.1.0]heptane	286-20-4	3
513	2-Cyclohexen-1-one	930-68-7	3
514	Ethanol, 2-(2-ethoxyethoxy)-	111-90-0	3
515	Nonanal	124-19-6	3
516	Ethanone, 1-(4-ethylphenyl)-	937-30-4	3
517	Benzaldehyde, 4-hydroxy-3-methoxy-	121-33-5	3
518	4-Cyanocyclohexene	100-45-8	3
519	Tetratetracontane	7098-22-8	3
520	Dotriacontane	544-85-4	3
521	2-Hexanol	626-93-7	3
522	Phenol, 2-(2-propenyl)-	1745-81-9	3
524	Nonanoic acid	112-05-0	3
525	Eicosane	112-95-8	3
526	2-Propanone, 1-nitro-	10230-68-9	3
527	Pentacosane	629-99-2	3
528	Cyclopentasiloxane, decamethyl-	541-02-6	3
529	Benzaldehyde, 3-hydroxy-4-methoxy-	621-59-0	3
530	Pentadecane	629-62-9	3
531	Silane, difluorodimethyl-	353-66-2	3
532	Butane	106-97-8	3
533	Silane, fluorotrimethyl-	420-56-4	3
534	Silane, chlorotrimethyl-	75-77-4	3
535	Dodecane, 4,6-dimethyl-	61141-72-8	3
536	Ethane, 1,1-difluoro-	75-37-6	3
537	Decane, 2,3,5-trimethyl-	62238-11-3	3
538	Silane, (2-methoxyethyl)trimethyl-	18173-63-2	3
539	Silane, methoxytrimethyl-	1825-61-2	3
541	9-Octadecenamide, (z)-	301-02-0	3
542	Isophthalaldehyde	626-19-7	3

COPC Number	Compound Name	CAS Number	Group Number[18]
543	Formyl methylene triphenyl phosphorane	2136-75-6	3
544	Heneicosane	629-94-7	3
545	Thiophene, tetrahydro-, 1,1-dioxide	126-33-0	3
546	Nonadecane	629-92-5	3
547	Pentatriacontane	630-07-9	3
548	Butane, 2-methoxy-2-methyl-	994-05-8	3
549	Benzene, 1-ethenyl-4-ethyl-	3454-07-7	3
550	2-Pentanone	107-87-9	3
551	Silanol, trimethyl-	1066-40-6	3
552	2H-1,4Benzothiazine, 3,4-dihydro-	3080-99-7	3
553	Pyrido[4,3-d]pyrimidin-4(3H)-one	16952-64-0	3
554	Silane, 1,4-phenylenebis[trimethyl-]	13183-70-5	3
555	Benzeneacetonitrile	140-29-4	3
556	Benzeneacetonitrile, .alpha.-oxo-	613-90-1	3
558	Furan, tetrahydro-2-methyl-	96-47-9	3
559	2,3-Butanediol	513-85-9	3
560	1-Phenyl-1-butene	824-90-8	3
561	Tridecanal	10486-19-8	3
562	Hexadecanoic acid, methyl ester	112-39-0	3
563	Octadecanoic acid, methyl ester	112-61-8	3
564	Hexadecanal	629-80-1	3
565	Propanoic acid, 2-methyl-, methyl ester	547-63-7	3
566	1,3-Butanediol	107-88-0	3
567	Adamantane, 1,3-dimethyl	702-79-4	3
568	Decanal	112-31-2	3
569	Undecanal	112-44-7	3
570	Cyclodecane	293-96-9	3
571	Diisobutyl phthalate	84-69-5	3
572	Butane, 2-methyl (TIC)	78-78-4	3
573	Pentane (TIC)	109-66-0	3
574	Propane, 2-methyl (TIC)	75-28-5	3
575	1-Propyne (TIC)	74-99-7	3
576	1-Propene (TIC)	115-07-1	3
577	Triethyl phosphate	78-40-0	3
578	1-Naphthalenepropanol, alpha	1438-62-6	3
579	Pentane, 2-methyl-	107-83-5	3
580	2-Pentene, (E)-	646-04-8	3
581	1,3,5-Cycloheptatriene	544-25-2	3
582	5-Methyldecane	13151-35-4	3
583	7-Hexyltridecane	7225-66-3	3
584	4-Ethylbenzoic Acid	619-64-7	3
585	1-Eicosanol	629-96-9	3
586	1,1,1,2-Tetrafluoroethane	811-97-2	3
587	Nitromethane	75-52-5	3
588	2-Butene, (Z)-	590-18-1	3

COPC Number	Compound Name	CAS Number	Group Number[18]
589	2-Butene, (E)-	624-64-6	3
590	Pentane, 3-methyl-	96-14-0	3
591	Hexane, 3-methyl-	589-34-4	3
592	1,1'-Bicyclopropyl	5685-46-1	3
593	2-Butene	107-01-7	3
594	1,2-Benzenediol, 4-(1,1-dimethylethyl)-	98-29-3	3
595	1-Decene	872-05-9	3
596	5-Tetradecene, (E)-	41446-66-6	3
597	a-Nitroacetophenone	614-21-1	3
598	Carbonic acid, dimethyl ester	616-38-6	3
599	Cinnamaldehyde, (E)-	14371-10-9	3
600	Cyclododecane	294-62-2	3
601	Cyclopropane, nonyl	74663-85-7	3
602	Decane, 2-methyl-	6975-98-0	3
603	Phenol, 2,3-dimethyl-	526-75-0	3
604	Tetradecane	629-59-4	3
605	1-Propene, 2-methyl-	115-11-7	3
606	1,2,4-Trioxolane, 3,5-diphenyl-	23888-15-5	3
607	1,4-Benzenedicarboaldehyde	623-27-8	3
608	Benzenemethanol, 4-(1-methylethyl)-	536-60-7	3
609	Cyclohexadecane	295-65-8	3
610	3,7-Dimethyldecane	17312-54-8	3
611	D-Limonene	5989-27-5	3
612	1-Hexanol, 2-ethyl-	104-76-7	3
613	Hexadecanoic acid, 2,3-dihydroxypropyl ester	542-44-9	3
614	Octane, 5-ethyl-2-methyl-	62016-18-6	3
616	bis(2-Chloroisopropyl)ether	39638-32-9	3
617	Hexamethyl-Cyclotrisiloxane	541-05-9	3
618	2,6-Dimethyloctane	2051-30-1	3
619	14-methyl-Pentadecanoic acid	4669-02-7	3
620	4-Ethyl Benzaldehyde	4748-78-1	3
621	Dodecamethyl cyclohexasiloxane	540-97-6	3
622	Dodecanoic acid	143-07-7	3
623	Hexadecanamide	629-54-9	3
624	1,3,5,7-Cyclooctatetraene	629-20-9	3
626	Methyl Cyclodecane	13151-43-4	3
627	Tetradecanamide	638-58-4	3
628	(z)-6-Tridecene	6508-77-6	3
629	Heptafluorobutyric acid, n-trid	375-22-4	3
630	Bromobenzene	108-86-1	3
632	2-Chlorotoluene	95-49-8	3
633	4-Chlorotoluene	106-43-4	3
634	cis-1,2-Dichloroethene	156-59-2	3
635	1,3-Dichloropropane	142-28-9	3
636	2,2-Dichloropropane	594-20-7	3

COPC Number	Compound Name	CAS Number	Group Number[18]
637	1,1-Dichloropropene	563-58-6	3
638	Furan	110-00-9	3
639	2,4,4-trimethyl-1-Pentene	107-39-1	3
640	Octane	111-65-9	3
641	(z)-5,5-Dimethyl 2-Hexene	39761-61-0	3
642	Ether, heptyl hexyl	7289-40-9	3
643	3-Methyl-Hexadecane	6418-43-5	3
644	Isocyano Benzene	931-54-4	3
645	Benzene, 1-phenyl-4-(2-cyano-2-phenylethyl	999-999-999	3
646	Hexadecane	544-76-3	3
647	2,2-Dimethyl Undecane	17312-64-0	3
648	2,2,8-Trimethyl Decane	62238-01-1	3
649	2,6,10,15-Tetramethyl Heptadecane	54833-48-6	3
650	4-Ethyl-2,2,6,6-Tetramethyl Heptane	62108-31-0	3
651	2,2-Dimethyl Heptane	1071-26-7	3
652	4-Methyl-Tetradecane	25117-24-2	3
653	2,3,4-Trimethyl Decane	62238-15-7	3
654	2,3,6-Trimethyl Decane	62238-12-4	3
655	(z)-3-Dodecene	7239-23-8	3
656	1-IODO-2-Methylnonane	849835-12-7	3
657	6-Tridecene	24949-38-0	3
658	2,6,11-Trimethyl Dodecane	31295-56-4	3
659	1-Pentene	109-67-1	3
660	3-Chloro 1-Propene	107-05-1	3
661	1-Butene	106-98-9	3
662	3-Penten-1-yne	2206-23-7	3
663	1,5-Hexadiene	592-42-7	3
664	1-Hexene	592-41-6	3
665	2-Heptene	592-77-8	3
666	1,2,3-Trichloro 1-Propene	96-19-5	3
667	3,3,3-Trichloro 1-Propene	2233-00-3	3
668	(E)-2-Decene	20063-97-2	3
669	Octyl Cyclopropane	1472-09-9	3
670	1,2,3,4-Tetrachloro- 1,3-Cyclopentadiene	695-77-2	3
671	Acetaldehyde	75-07-0	3
672	(E)-2-Butenal	123-73-9	3
673	Cyclobutane, 1,2-diethyl-, trans-	19341-98-1	3
674	1-Methyl-2-Pentyl Cyclopropane	41977-37-1	3
675	1-Dodecene	112-41-4	3
676	(E)-4-Dodecene	7206-15-7	3
677	1-Methyl-2-Octyl-Cyclopropane	37617-26-8	3
678	Octane, 3-Methyl-	2216-33-3	3
679	Dodecanal	112-54-9	3
680	Pregnane-3,20-dione, 11-[(trim	57305-27-8	3
681	Pentadecane, 8-hexyl-	13475-75-7	3

COPC Number	Compound Name	CAS Number	Group Number[18]
682	Diisoctyl Adipate	1330-86-5	3
683	Benzenemethanol, ar-ethenyl-	30584-69-1	3
684	Cyclopropane, ethyl-	1191-96-4	3
686	3-Butenoic Acid	625-38-7	3
687	Cyclopentane	287-92-3	3
688	7,9-Di-tert-butyl-1-oxaspiro(4	82304-66-3	3
689	Cyclic octaatomic sulfur	10544-50-0	3
690	1-Octadecene	112-88-9	3
691	Propylene glycol	57-55-6	3
692	5-Ethyl-2,2,3-trimethyl heptane	62199-06-8	3
693	Tridecanoic acid	638-53-9	3
694	Tris(2,3-dichloropropyl) phosphate	78-43-3	3
695	Undecane, 2,8-dimethyl	17301-25-6	3
696	2-Methyl hexane	591-76-4	3
697	1-Ethyl-3-methyl benzene	620-14-4	3
698	2,4,6-Trimethyl octane	62016-37-9	3
699	1,7,7-trimethyl bicyclo[2.2.1] hept-2-ene	464-17-5	3
700	1,3-Pentadiene	504-60-9	3
701	1-Chloro-1-propene	590-21-6	3
702	2,3,3-Trimethylpentane	560-21-4	3
703	3,4-Dimethyl octane	15869-92-8	3
704	2,2,9-Trimethyl decane	62238-00-0	3
705	2,2,4,6,6-Pentamethyl heptane	13475-82-6	3
706	2-Methyl-5-propyl nonane	31081-17-1	3
707	6-Ethyl-2-methyl octane	62016-19-7	3
708	8-Methyl heptadecane	13287-23-5	3
709	1-Nonadecene	18435-45-5	3
710	1,4-Benzenedicarbonitrile	623-26-7	3
711	Limonene	138-86-3	3
712	2-Butenal	4170-30-3	3
713	1-Methyl-2-(2-propenyl) benzene	1587-04-8	3
714	1-Octadecanol	112-92-5	3
715	Dioctadecyl phosphonic ester	19047-85-9	3
716	2-Methyl tetradecane	1560-95-8	3
717	Dihydro-3-methyl-2,5-furandione	2170-03-8	3
718	Pentachloro-1-propene	1600-37-9	3
121	Hexachlorophene	70-30-4	4
161	2,3,7,8-TCDD TEQ (Dioxin and furan congeners)	999-999-999	4
217	Hexavalent Chromium	18540-29-9	4
237	Criteria Pollutant: Carbon Monoxide (CO)	630-08-0	4
246	Acrolein	107-02-8	4
247	Diesel particulate matter	999-999-999	4
248	Formaldehyde (Formalin)	50-00-0	4
249	Carbon dioxide	124-38-9	4
250	Phosphorus pentoxide	1314-56-3	4

COPC Number	Compound Name	CAS Number	Group Number[18]
251	Chlorinated hydrocarbons	999-999-999	4
252	Ferrous chloride	7758-94-3	4
253	Fluoromethane (MF)	593-53-3	4
254	Sulfuric acid	7664-93-9	4
255	Iron	7439-89-6	4
256	Mercaptan, free	75-08-1	4
257	Difluoromethane	75-10-5	4
259	Pyrodiester	999-999-999	4
260	Sulfur, free	7704-34-9	4
261	Antimony sulfide	1345-04-6	4
262	Barium nitrate	10022-31-8	4
263	Calcium resinate	9007-13-0	4
264	Cellulose Nitrate-Camphor	999-999-999	4
265	Charcoal	999-999-999	4
266	Egyptian Lacquer	999-999-999	4
267	Graphite	7782-42-5	4
268	Lead azide	13424-46-9	4
269	Lead thiocyanate	592-87-0	4
270	Lead stearate	1072-35-1	4
271	Lead styphnate	15245-44-0	4
273	Magnesium	7439-95-4	4
274	Nitrocellulose	9004-70-0	4
275	2-Nitro-diphenylamine	119-75-5	4
276	Potassium chlorate	3811-04-9	4
277	Potassium perchlorate	7778-74-7	4
278	Tetracene	92-24-0	4
279	Tetryl (2,4,6-Trinitrophenyl-methylnitramine)	479-45-8	4
280	Triacetin (Glycerol triacetate)	102-76-1	4
281	1,2-Bis(2-chloro-ethylthio) ethane and oligomers	3563-36-8	4
282	Bis (2-chloroethoxy)-2(2-chloroethylthio)ethane	999-999-999	4
283	Bis-2 (bis(2-hydroxy ethyl-sulfonium ethyl) sulfide dichloride	999-999-999	4
284	Bis (2-Diisopropylaminoethyl) thioether	999-999-999	4
285	Bis (2-Diisopropylaminoethyl) disulfide	65332-44-7	4
286	2-chloroethyl vinyl sulfide	81142-02-1	4
287	2,2'-dichlorodiethyl disulfide	999-999-999	4
288	Diethyl disulfide	110-81-6	4
289	O,O'-diethylmethyl phosphonate	683-08-9	4
290	O,S- diethylmethyl phosphonate	999-999-999	4
291	O,O'-diethylmethyl phosphonthioate	6996-81-2	4
292	O,S- diethylmethyl phosphonthioate	2511-10-6	4
293	Diisopropylamine	108-18-9	4
294	Diisopropylaminoethyl ethyl sulfide	999-999-999	4
295	Diisopropylaminoethyl mercaptan	999-999-999	4
296	S,S- diisopropylaminoethyl methyl phosphonate	999-999-999	4
297	S-ethyl, S-diisopropylaminoethyl methyl phosphonothioate	999-999-999	4

COPC Number	Compound Name	CAS Number	Group Number[18]
298	S,S'-ethyl, S-diisopropylaminoethyl methyl phosphonothioate	999-999-999	4
300	Divinyl sulfide	627-51-0	4
301	Dithiane	51330-42-8	4
302	Ethanol	64-17-5	4
303	2-Chloroethyl ethyl sulfide	693-07-2	4
304	Monoethyl methylphosphonate	1832-53-7	4
305	Hydrogen sulfide	7783-06-4	4
306	2-Hydroxy ethyl vinyl chloride	999-999-999	4
308	Isopropyl methylphosphonic acid	1832-54-8	4
309	Methyl phosphonic acid	993-13-5	4
310	Methyl Phosphonofluoridic Acid	1511-67-7	4
311	Oxathiane	15980-15-1	4
312	Propane	74-98-6	4
313	Thiodiglycol	111-48-8	4
314	Thiolamine (diisopropylamino ethylthiolate)	5842-07-9	4
315	Monosodium salt of isopropyl methylphosphonic acid	999-999-999	4
316	Sodium carbonate	497-19-8	4
317	Sodium chloride	7647-14-5	4
318	Sodium fluoride	7681-49-4	4
319	Sodium O-ethyl methyl phosphonate diisopropylamine	999-999-999	4
320	Sodium sulfate	7757-82-6	4
321	Acetic acid, glacial	64-19-7	4
322	Bromofluorobenzene, 4- (BFB)	460-00-4	4
323	Buffer solutions	999-999-999	4
325	Dibutyl butylphosphonate (DBBP)	78-46-6	4
326	Dimethyl methylphosphonate, 97% (DMMP)	756-79-6	4
328	Hydrogen peroxide, 30%	7722-84-1	4
329	Methanol (methyl alcohol)	67-56-1	4
330	Micro concentrated cleaning solution	999-999-999	4
331	Nitric acid, 68% - 71%	7697-37-2	4
332	Perfluorotributylamine (PFTBA)	311-89-7	4
333	Snoop (leak detector)	999-999-999	4
334	Sodium hypochlorite, 5% (Bleach)	7681-52-9	4
335	Chromosorb P, coated with triethanolamine	999-999-999	4
336	Chromosorb 106	999-999-999	4
338	HayeSep D	999-999-999	4
339	Phenolphthalein Indicator (3,3-bis(p-hydroxyphenyl) phthalide)	77-09-8	4
340	Potassium chloride	7447-40-7	4
341	Potassium iodide	7681-11-0	4
342	Silver fluoride conversion pads	999-999-999	4
343	Sodium arsenite	7784-46-5	4
344	Sodium bicarbonate	144-55-8	4
345	Sodium hydroxide	1310-73-2	4
346	Sodium thiosulfate	7772-98-7	4

COPC Number	Compound Name	CAS Number	Group Number[18]
347	Tenax TA	999-999-999	4
348	Tetryl explosive standard	999-999-999	4
349	Thyodene indicator	9005-84-9	4
350	Trinitrotoluene explosive standard (TNT)	999-999-999	4
351	Chlorodibromoethane	73506-94-2	4
373	O,O,O-Triethylphosphorothioate	126-68-1	4
381	(Carbethoxyethylidine) triphenyl phosphorane	5717-37-3	4
384	1,4-Butanediol (TIC)	110-63-4	4
385	1,4-Dichloro-2-butene	764-41-0	4
387	1-Decene,2,4-dimethyl-	55170-80-4	4
388	1-Hexadecanol	36653-82-4	4
390	1-Propanol, 2-(2-methoxy-1-methylethoxy)	55956-21-3	4
391	1-Propen-1-one,2-methyl	598-26-5	4
392	2,2-Dimethoxybutane	3453-99-4	4
393	2,4-dimethyl-1-heptene	19549-87-2	4
394	2-Butanone, 4-Acetyloxy (TIC)	10150-87-5	4
395	2-Cyclohexene-1-one, 3,5-Dimethyl (TIC)	1123-09-7	4
396	2-Decanal, (z)-	2497-25-8	4
398	2-Naphthalenecarboxaldehyde	66-99-9	4
399	2-Pentene, 3,4,4-trimethyl-	598-96-9	4
400	3-Nonene(c,t)	20063-92-7	4
401	3-Penten-2-one, 4-methyl-	141-79-7	4
402	4-Hydroxy-4-methyl-2-pentanone	123-42-2	4
404	Acetic anhydride	108-24-7	4
409	Benzene,1,2,3-trichloro-	87-61-6	4
410	Benzene,1,2,3-trimethyl	526-73-8	4
411	Benzene, 1-ethyl-2-methyl-	611-14-3	4
415	Butanoic acid, propyl ester	105-66-8	4
417	C3-Naphthalene	999-999-999	4
419	Cyclohexane	110-82-7	4
421	Cyclohexane, Pentyl (TIC)	4292-92-6	4
422	Cyclohexane,1,2,3,-trimethyl-	1678-97-3	4
423	Cyclohexane,butyl-	1678-93-9	4
424	Cyclohexane,diethyl	1331-43-7	4
425	Cyclohexane,methylpropyl-	26967-64-6	4
426	Cyclohexane,propyl-	1678-92-8	4
427	Cyclopentane, 1,2,3,4,5-pentamethyl-	33067-32-2	4
428	Cyclopentane,1,2,3-trimethyl-	2815-57-8	4
429	Cyclopropane,1-butyl-1-methyl	5458-16-2	4
431	Decane,2,2,5-trimethyl	999-999-999	4
434	Decane,2,5,6-trimethyl	999-999-999	4
435	Decane,2,6,6-trimethyl-	999-999-999	4
436	Decane,2,6,8-trimethyl-	999-999-999	4
438	Decane,4-methyl	2847-72-5	4
439	2-ethyl-1-decanol	21078-65-9	4

COPC Number	Compound Name	CAS Number	Group Number[18]
440	Diethylene glycol	111-46-6	4
442	Dodecane 2-cyclohexyl-, 2-cyclohexyl-	999-999-999	4
444	Ethanol, 2-(2-Butoxyethoxy)- (TIC)	112-34-5	4
445	Furan, tetrahydro-2,5-dimethyl	1003-38-9	4
448	Heptadecane, 7-methyl	20959-33-5	4
449	Heptane,2,4-dimethyl-	2213-23-2	4
450	Heptane,2,5,5-trimethyl-	1189-99-7	4
451	Heptane,3,3,5-trimethyl-	7154-80-5	4
452	Heptane,3,4-dimethyl-	922-28-1	4
453	Heptane,3-ethyl-2methyl	14676-29-0	4
454	Heptane,4-ethyl-	2216-32-2	4
455	Heptane,4-ethyl-2,2,6,6-tetra	999-999-999	4
456	Heptane,5-ethyl-2,-methyl-	13475-78-0	4
460	Hexanoic Acid (TIC)	142-62-1	4
461	Hexanoic Acid, 2-Ethyl- (TIC)	149-57-5	4
463	Hexonoic Acid, -Ethyl- (TIC)	999-999-999	4
464	Methyl nitrite	624-91-9	4
465	Naphthalene,decahydro,trans	493-02-7	4
467	Nonacosane	630-03-5	4
469	Nonane,2,6-dimethyl	17302-28-2	4
473	Nonanol	28473-21-4	4
477	Octane,2,3,6-trimethyl-	62016-33-5	4
478	Octane,2,5,6-trimethyl-	62016-14-2	4
479	Octane,2,5-dimethyl-	15869-89-3	4
480	Octane,3,3-dimethyl-	4110-44-5	4
481	Octane,3,5-dimethyl-	15869-93-9	4
483	Oxirane	75-21-8	4
484	Phenol, 2-(2H-benzotriazol-2-yl)4-methyl	2440-22-4	4
485	Phenol, 3-fluoro-4-nitro-	394-41-2	4
486	Phenol,4,4'-butylene bis [2-1,1-dimethylethyl]	999-999-999	4
487	Silicic acid, tetramethyl ester	681-84-5	4
489	Thipene,2,3-dimethyl-	999-999-999	4
493	Undecane, 2,6-dimethyl-	17301-23-4	4
495	Polycyclic organic matter (POM)	999-999-999	4
497	Calcium	7440-70-2	4
498	Potassium	7440-09-7	4
499	Perylene	198-55-0	4
557	1-Propanone, 3-chloro-1-phenyl-	936-59-4	4

Appendix F – Risk Equations

TRhe human health risk assessment equations used in the Lakes Environmental Software are based on Appendix B and C of "Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities" (EPA 2005). These equations included on the companion compact disk provided with this report under the directory named "Appendix F." Modifications to these equations to implement UMCDF specific fuctions are described in Appendix I of this report.

Appendix G – Furnace-Specific Emission Rate Tables

Furnace and agent campaign specific emission rate tables are provided on the compact disk provided with this report under the directory named "Appendix G". The following table provides details for each file:

Table G-1: Reference Table for
Furnace/Agent Specific Emission Rate Tables
for the Base Model

File Name	Furnace	Waste Processed
Table1_REV2.out	LIC 1	GB
Table2_REV2.out	LIC 1	VX
Table3_REV2.out	LIC 1	HD
Table4_REV2.out	LIC 2	GB
Table5_REV2.out	LIC 2	VX
Table6_REV2.out	LIC 2	HD
Table7_REV2.out	MPF	GB
Table8_REV2.out	MPF	VX
Table9_REV2.out	MPF	HD
Table10_REV2.out	DFS	GB
Table11_REV2.out	DFS	VX
Table12_REV2.out	MPF	Combustible Secondary Waste
Table13_REV2.out	LIC 1	Secondary Waste
Table14_REV2.out	MPF	Non-combustible Secondary Waste
Table15_REV2.out	DFS	Secondary Waste
Table16_REV2.out	BRA	GB,VX,HD
Table17_REV2.out	MDB	GB,VX,HD
Table18_REV2.out	LAB	GB,VX,HD

Table G-2: Reference Table for
Furnace/Agent Specific Emission Rate Tables
for Special Case 6

File Name	Furnace	Waste Processed
Table1_REV3.csv	LIC 1	GB
Table2_REV3.csv	LIC 1	VX
Table3_REV3.csv	LIC 1	HD
Table4_REV3.csv	LIC 2	GB
Table5_REV3.csv	LIC 2	VX
Table6_REV3.csv	LIC 2	HD
Table7_REV3.csv	MPF	GB
Table8_REV3.csv	MPF	VX
Table9_REV3.csv	MPF	HD
Table10_REV3.csv	DFS	GB
Table11_REV3.csv	DFS	VX
Table12_REV3.csv	MPF	Combustible Secondary Waste
Table13_REV3.csv	LIC 1	Secondary Waste
Table14_REV3.csv	MPF	Non-combustible Secondary Waste
Table15_REV3.csv	DFS	Secondary Waste
Table16_REV3.csv	BRA	GB,VX,HD
Table17_REV3.csv	MDB	GB,VX,HD
Table18_REV3.csv	LAB	GB,VX,HD

Appendix H – Acute Analysis Emission Rate Tables

The emission rate tables for the nine acute cases are provided on the compact disk provided with this report under the directory named "Appendix H". The following table provides details for each file:

Table H-1: Reference Table for
Furnace/Agent Specific Emission Rate Tables

File Name	Condition
Case1_Base_Case.csv	Base Case
Case2_LIC1_upset.csv	LIC1 in upset
Case3_LIC2_upset.csv	LIC2 in upset
Case4_DFS_upset.csv	DFS in upset
Case5_MPF_upset.csv	MPF processing combustible materials in upset
Case6_MPFnc_upset.csv	MPF processing non-combustible materials in upset
Case7_BRA_upset.csv	BRA in upset
Case8_LAB_upset.csv	LAB exhaust in upset
Case9_MDB_upset.csv	MDB exhaust in upset

Each of the files listed in Table H-1 is in a comma separated format with columns corresponding to the source name, COPC CAS number, COPC Name, and COPC emission rate (g/s). An example of the first line of one of the files is given below.

COMSTK, 00-01-2, Aluminum compounds, 0.008565

Appendix I – IRAP-h Umatilla Design Documents

Version 7
(June 12, 2006)

The following modifications to the Lakes Environmental IRAP-h software are requested to support implementation of the Human Health Risk Assessment (HHRA) for the Umatilla Chemical Weapons Disposal Facility (UMCDF):

Three additional exposure scenarios:

1. Native American adult and child subsistence scenarios
2. Depot worker scenario
3. Depot military resident scenario

Eight additional exposure pathways:

1. Inhalation of resuspended dust using site-specific particulate emission factors
2. Ingestion of surface water
3. Dermal contact with surface water
4. Consumption of goat meat
5. Inhalation exposure of COPCs during sweat lodge use
6. Dermal contact with COPCs during sweat lodge use
7. Dermal contact with surface soils
8. Addition of dioxin-like PCBs to breast milk pathway

Each of these eleven modifications is discussed in detail in subsequent sections.

Native American Adult and Child Subsistence Scenarios

The following text was taken directly from Section 4.1.2.4 of the Post-Trial Burn Risk Assessment Work Plan for the Umatilla Chemical Agent Disposal Facility (Ecology and Environment inc., August 2004) (here after termed the RAWP).

Native Americans are considered a special subpopulation that maintains a lifestyle that is not represented by the exposure scenarios described above. The nearest Native American population center, the Umatilla Indian Reservation, is located 60 kilometers (37 miles) southeast of the UMCDF. The local Tribes maintains treaty-reserved rights for hunting, fishing, and gathering throughout the assessment area. The HHRA assumes that all potential contact with COPCs is within the 50-kilometer (31 mile) assessment area boundary.

The Native American adult may contact UMCDF emissions through pathways that are unique to Native Americans. For example, Native American adults may harvest native vegetation for consumption and other uses, rely on local game for subsistence, and use a sweat lodge. Intake of COPCs via consumption of foods will be estimated using home-grown produce as a surrogate for native vegetation, and home-raised beef, goat, and chicken will be surrogates for wild game and fowl. Local surface water is used in the sweat lodge. The sweat lodge is an ancient custom practiced by Native Americans throughout the United States for purification, spiritual renewal, healing, and education. The lodge itself consists of a small structure in which moist hot air is generated by evaporating water on heated rocks. Traditional medicines are often added to the water or the rocks to create healing vapors that are absorbed through the skin and inhaled.

COPCs in water heated to produce steam are volatilized and/or aerosolized and then subsequently inhaled or absorbed through the skin. Thus, the Native American is assumed to contact UMCDF emissions through the following pathways:

- Direct inhalation of vapours and particulate matter in air;
- Inhalation of resuspended dust;
- Incidental ingestion of and dermal (skin) contact with soil;
- Ingestion of and dermal contact with surface water;
- Ingestion of native vegetation;
- Ingestion of local game and fowl;
- Ingestion of locally caught fish;
- Ingestion of milk and eggs; and
- Inhalation of and dermal (skin) contact with surface water vapor in a sweat lodge.

Exposure assumptions for each of these pathways can be found in Tables 4-3g, 4-3h, and 4-3p of the 2004 RWAP.

The Native American child scenario will be evaluated to represent potential exposures to a child whose family maintains a subsistence lifestyle. Except for the sweat lodge scenario, pathways for the child are the same as those for the Native American adult. Potential contact with COPCs in a sweat lodge will not be evaluated for the child because children typically are not allowed to use a sweat lodge

Depot Worker Scenario

The following text was taken directly from Section 4.1.2.5 of the RWAP (Ecology and Environment inc., 2004).

The on-site worker may participate in various on-site activities, including natural resource management, building maintenance, construction, or other activities related to current and future land use at the UMCD. On-site workers who reside within the assessment area may have high potential for exposure to UMCDF emissions because they will spend a significant amount of time near the facility during and after operation. For this reason, an on-site worker scenario will be evaluated in the HHRA. The on-site worker is assumed to contact facility emissions through the same pathways as those of the resident adult. However, the duration of time spent in an off-site residential location versus an on-site work location will distinguish the worker scenario from the residential scenario. Therefore, the on-site worker is assumed to contact UMCDF emissions through the following pathways:

- Direct inhalation of vapors and particulate matter in air;
- Inhalation of resuspended dust;
- Ingestion of and dermal (skin) contact with surface water as drinking water;
- Incidental ingestion of and dermal contact with soil; and
- Ingestion of home-grown produce.

Exposure assumptions for this pathway can be found in Tables 4-3i, 4-3j, and 4-3k of the 2004 RWAP.

Depot Military Resident Scenario

The following text was taken directly from Section 4.1.2.6 of the RWAP (Ecology and Environment inc., 2004).The on-site military resident scenario will represent a military worker serving a two-year tour of duty who resides in the Administration Area of the Umatilla Depot (UMCD) during the operational period only. The on-site military resident may have direct contact with facility emissions during work and leisure time for a maximum of two years during the UMCDF operational period. During the post-operational period, the on-site military resident will be evaluated only for indirect contact with emissions. The on-site military resident is assumed to have contact with emissions from the UMCDF through the following pathways:

- Direct inhalation of vapors and particulate matter in air,
- Inhalation of resuspended dust,
- Ingestion of and dermal (skin) contact with surface water as drinking water,
- Incidental ingestion of and dermal contact with soil, and
- Ingestion of home-grown produce.

Exposure assumptions for this pathway can be found in Tables 4-3l through 4-3n of the 2004 RWAP.

Inhalation of resuspended dust

Modeling inhalation of resuspended dust will follow the calculation format outlined in Chapter 5 of "Methodology for Assessing Health Risks Associated with Multiple Pathways of Exposure to Combustor Emissions" (EPA, 1998b). As discussed in the Umatilla RAWP only two sources of resuspended dust will be considered in this effort; agricultural wind erosion and agricultural tilling.

***NOTE**: Inhalatino of resuspended dust was not a pathway included in IRAP-h for the 2008 human health risk assessment.*

Wind Erosion

Wind erosion dust generation rates can be estimated based on the approach outlined the NRCS (Natural Resource Conservation Service) Wind Erosion Equation (WEQ) detailed in the National Agronomy Manual (USDA, 2002). This computational approach appears to be equivalent to that shown as Equation 5-1 in EPA 1998b, with the exception that the EPA equation describes the fraction of eroded dust that can be inhaled (i.e. PM_{10}) and the NRCS equations calculate total eroded dust. This difference results in the EPA equations producing a result that is 1.25% of the corresponding NRCS result. The following discussion will refer exclusively to the NRCS approach since several inconsistencies were noted in a detailed review of the EPA equations and more supporting information is available for the NRCS work. In keeping with the EPA calculation approach, the final result from the NRCS equations will be modified with a PM_{10} multiplier (η=0.0125) to account for the fact that not all blown dust is available for inhalation.

The wind erosion estimate, E_p, is the estimated average annual tons of soil per acre that the wind will erode from an area represented by an unsheltered distance, L, and for soil, climate, and site conditions represented by the parameters I, K, C, and V. That is,

$$E_p = f(I \cdot K \cdot C \cdot L \cdot V)$$

The relationship between E_p and I, K, C, and V was developed empirically based on wind tunnel data and field observed erosion rates (Woodruff et al. 1976). The NRCS has compiled tables for E_p. These tables are available for downloading at http://www.weru.ksu.edu/nrcs.

The parameters I, K, C, L, and V are defined in the following table along with suggested values for the Hermiston area. These values are based on the predominance of a loamy fine sand soil type for the UMCD and surrounding area (E & E, 2004; Page 1-12).

Parameter	Description	Default Value
E_p =	Wind erosion estimate (tons/acre/year)	5.3; From NRCS E-Tables, also see figure below which was generated from E-tables
L =	Unsheltered distance (feet)	>2000 ft; value will be specific to wind direction for a given year
I =	Soil erodibility index (tons/acre/year)	134; Range in area from 134-310 USDA, 2002, Exhibit 502-2 for loamy fine sand. Also see NRCS maps and data from Umatilla and Morrow County at www.or.nrcs.usda.gov/pnw_soil/or_data.html
K =	Surface roughness factor (unitless)	0.75; Ranges from 0.1 to 1.0 with 0.75 representing an average for the types of crops grown near Hermiston (Alfalfa, potatoes, wheat, vegetables)
C =	Climatic factor (unitless)	26.4; Calculated as shown below using annual precipitation and temperature data from 2002
V =	Vegetative cover factor (small grain equivalents)	1000; Value for wheat from NRCS manual

The climatic factor, C, is expressed empirically as (USDA, 2002):

$$C = 34.48 \times \left(\frac{v^3}{PE^2} \right)$$

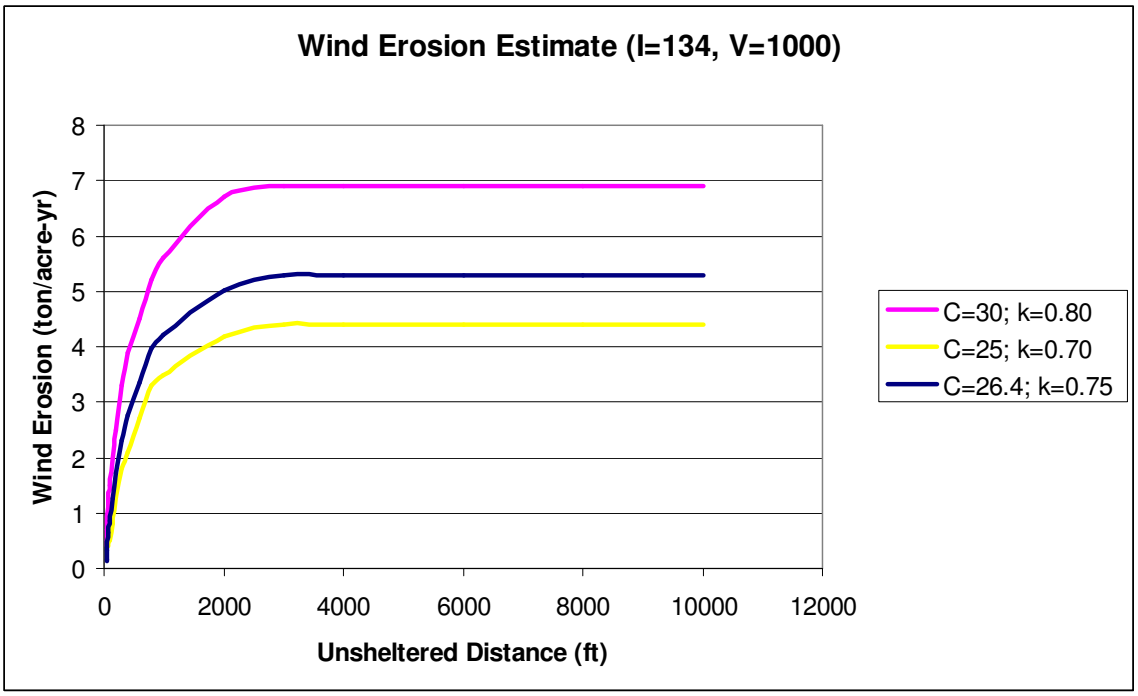
$$PE = \sum_{i=1}^{12} 115 \times \left(\frac{P_i}{(T_i - 10)} \right)^{\frac{10}{9}}$$

Parameter	Description	Default Value
v =	average annual wind velocity (mi/hr)	8.7; Tetra Tech Memorandum to DEQ dated 12 September 2005
PE =	Annual Thornthwaite precipitation effectiveness index (unitless)	Calculated as shown above
P_i =	Average monthly precipitation (in)	Site specific by year, see following table
T_i =	Average monthly temperature (°F)	Site specific by year; see following table

The average monthly weather conditions measured at the Pendleton weather station between 1928 and 2005 are shown in the following table. The adjusted temperature and precipitation data represent values that are capped at a minimum of 28.4 °F and 0.5 in, respectively. This adjustment is consistent with method outlined in NRCS (USDA, 2002) for determining PE. The calculation of PE represented in the following table assumes that the average daily temperature is the mid-point between the minimum and maximum temperature values.

Month	T-min (°F)	T-max (°F)	T-mid (°F)	Precipitation (in)	T-adj (°F)	P-adj (in)	PE_i
Jan	26.1	39.2	32.65	1.48	32.65	1.48	5.55
Feb	30	46.1	38.05	1.14	38.05	1.14	3.27
Mar	30.2	54.6	42.4	1.17	42.4	1.17	2.87
Apr	35	62.4	48.7	1.07	48.7	1.07	2.13
May	39.6	70.8	55.2	1.12	55.2	1.12	1.89
Jun	46	78.7	62.35	0.91	62.35	0.91	1.27
Jul	52.2	88.3	70.25	0.31	70.25	0.5	0.56
Aug	57.7	86.5	72.1	0.39	72.1	0.5	0.54
Sept	56.7	77.4	67.05	0.58	67.05	0.58	0.70
Oct	49.8	64	56.9	1.04	56.9	1.04	1.67
Nov	33.3	48.8	41.05	1.44	41.05	1.44	3.79
Dec	29	41.5	35.25	1.52	35.25	1.52	5.07
						Sum →	29.33

The relationship between wind erosion losses and unsheltered distance for the soil conditions which predominate near the UMCDF are indicated in the following figure. As is evident from this figure, E_p reaches a maximum at unsheltered distances greater than 2000 ft, and is insensitive to this parameter after this point. Hence, for the purposes of the UMCDF risk assessment, values of L > 2000 ft should be chosen.



The fraction of erosion dust that can be inhaled is computed as follows:

$$E_p^{'} = \eta \cdot E_p$$

Where $E_p^{'}$ is the rate of generation of dust that can be inhaled (tons/acre/year) and η is the fraction of erosion that is of a particle size that can penetrate into the lungs. The parameter η is equivalent to the ratio of the mass of PM_{10} to the total mass of eroded material from a given field. From EPA 1988, this is equivalent to the combined terms ($k \cdot a$) in their Equation 7-1. These terms are reported as (EPA, 1988):

$k = 0.5$ (Mass PM_{10}/Mass Total Suspended Particles)
$a = 0.025$ (Mass Total Suspended Particles/Mass Total Eroded Material)

Hence, η=0.0125 (ton-PM10/ton- Total Eroded Material) and the rate that dust generation for the Hermiston area is:

$E_p^{'} = 5.3 \cdot 0.0125 = 0.066$ (tons=PM_{10}/acre/year); or 4.7×10^{-7} g/m^2-sec

Agricultural Tillage

Dust resuspension rates caused by agricultural tillage can be calculated from Equation 5-4 of EPA 1998b as follows:

$$E_f^{'} = \left(3.2 \times 10^{-9}\right)\left(k\right)\left(5.38\right)\left(S_c^{0.6}\right)$$

Parameter	Description	Default Value
$E_f^{'}$ =	Emission of resuspended dust due to agricultural tillage (g/m^2-sec)	2.8×10^{-8}; Calculated as shown above
k =	particle size multiplier for total resuspended particulate matter (unitless)	0.21; Page 7-1, EPA 1988.
S_c =	Silt content of surface soil (%)	30; Loamy fine sand by definition has a silt+2(clay) content of 30% or less
5.38 =	Empirical constant (kg/ha-yr)	NA
3.2×10^{-9} =	Unit conversion factor [(g-ha-yr)/(kg-m^2-yr)]	NA

Contaminant Concentrations in Resuspended Dust – Inhalation Rate Estimates

Conversion of the estimated dust resuspension rates per unit area ($E_p^{'}$ and $E_f^{'}$) to inhalation rates for the various exposure scenarios requires an understanding of the amount of area that will serve as a source for dust, the location of the dust source(s), the contaminant concentration within the source(s), and the size distribution of the dust particles. With this information resuspended dust can be incorporated into the site risk model as area sources with the ISC-AREMOD View modeling framework. The following computation approach can be used to develop the necessary modeling inputs.

Step 1: For each year to be modeled run ISC-AREMOD View with the four point sources (BRA, Common, LAB, Filter) using unit emission rates and other pertinent data as determined from the trial burns. This will result in a normalized concentration distribution for each model year. The predominant wind direction for each year should also be noted.

Step 2: For each year to be modeled the ISC-AREMOD View results should be imported into the IRAP-h software and the appropriate stack contaminant concentration data applied to the unit emissions to determine a concentration profile for surface soils.

Step 3: Maximum soil concentration for each contaminant within the agricultural region that lies outside the UMCDF fence line, and is within the quadrant that contains the predominant wind direction, should be identified for each year modeled. These values should be saved in an Excel or similar file for later use. It should be noted that the region within the fence line is not being evaluated since it is assumed that demolition activities around the facility will result in a large amount soil disturbance and the dilution of contaminated soils with clean backfill. The maximum values will serve as the initial screening soil concentration for both wind and tillage derived resuspended dust for the corresponding model year. If resuspended dust pathway proves to be a significant source of exposure, it will be necessary refine this calculation procedure using an average soil concentration.

Step 4: The source region for dust for a given year should be identified by consulting Figure 1-2 of the Umatilla RWAP (E&E, 2004) and choosing the open agricultural region that lies parallel to the primary wind direction for that year as determined in Step 1. The size of the dust region should correspond to the area that lies between the UMCDF fence line and the nearest major receptor such as a population center. It is assumed that this procedure will result in an unsheltered distance (L) greater than 2000 ft. However, this fact must be verified. If a distance of less than 2000 feet results then the value of E_p would need to be recalculated using the actual value for L. For simplicity, the region used for computing both wind and tillage dust generation

should be the same. With this assumption the total dust resuspension rate per unit area can be computed as:

$$E_{dust} = E_p^{'} + E_f^{'}$$

This computation results in a UMCDF risk assessment dust generation rate of **5.0×10^{-7} (g/m^2-sec)**.

The corresponding contaminant emission flux for the i^{th} contaminant is calculated as:

$$E_c^i = Cs_{\max}^i \cdot E_{dust} \cdot ER \cdot 1\times10^{-6}$$

Parameter	Description	Default Value
E_c^i =	Contaminant emission flux for the i^{th} contaminant (g/m^2-sec)	Contaminant specific
E_{dust} =	Dust emission flux (g/m^2-sec)	5.0×10^{-7}
ER=	Enrichment ratio that accounts for the fact that contaminants concentrate on smaller particles (unitless)	Organics – 3; Page 7-42, EPA 1998b Inorganics – 1; Page 7-42, EPA 1998b
$Cs_{\max}^i$ =	Concentration of i^{th} contaminant within the dust source (µg/g)	Contaminant specific
1×10^{-6} =	Unit conversion factor (g/µg)	NA

Step 5: For the dust source region identified in Step 4, determine the maximum emission rate for each contaminant that is possible within a year. This value is determined from the total mass of a contaminant in the soil in this region.

$$E_{\max}^i = \sum_{k=1}^{\#_operating_years} \left[\left(\frac{\eta \cdot ER \cdot 1\times10^{-2}}{A_T \cdot \theta_T} \right) \cdot \sum_{j=1}^{\#Nodes} \left(Cs_j^i \cdot d \cdot A_{node,j} \cdot \rho_{bulk} \right) \right]_k$$

The outer summation in the above equation accounts for the deposition of contaminants in the current year of operation being modeled and all previous years of operation. The term $A_{node,j}$ is calculated by dividing the dust region into regions of equal surface area with each region represented by a single soil concentration. $A_{node,\,j}$ is then the surface area of j^{th} region.

Parameter	Description	Default Value
$E^i_{\max}$ =	Maximum contaminant emission flux (g/m^2-sec)	Calculated as shown above
A_T =	Total Area of dust generation region (m^2)	Site specific
θ_T =	Number of seconds in a year (sec)	31,536,000
d =	depth of soil that can be contaminated (cm)	1; assumption
$A_{node,j}$ =	Area of the node represented by the node concentration (m^2)	Site specific
ρ_{bulk} =	Bulk density of the soil (g/cm^3)	1.5
Cs^i_j =	Concentration of i^{th} contaminant with in the j^{th} node (µg/g)	Node specific
1×10^{-2} =	Unit conversion factor ($g\text{-}cm^2/\mu g\text{-}m^2$)	NA

Step 6: For each contaminant determine, the emission rate to be used in subsequent computations ($E^i_{analysis}$) as follows:

If $E^i_c \le E^i_{\max}$ then $E^i_{analysis} = E^i_c$.

If $E^i_c > E^i_{\max}$ then $E^i_{analysis} = E^i_{\max}$.

It should be noted that this distinction is necessary to cap the quantity of emissions from a dust source at the amount present in the soil.

Step 7: Rerun the ISC-AERMOD View model for each year with the four point sources and an area source that corresponds in size, location, and orientation to the dust generation region identified in Step 4. An emissions rate of the inverse of the dust area in square meters [1/(area in m^2)] (g/m^2-sec) should be used for the area source along with a release height of 2 meters, which corresponds to the typical breathing zone. The particle size distribution suggested in Table 5-6 of EPA 1998b can be used for the area source if no site specific dust data is available. This table has been reproduced below for reference.

PARTICLE SIZE (MM)		
Range	**Midpoint of Range**	**Mass Fraction**
<1.0	0.5	0.035
1.0 – 2.5	1.75	0.065
2.5 – 10	6.25	0.40
10 – 30	20	0.50

Step 8: For each year to be modeled the corresponding ISC-AREMOD View results from Step 7 should be applied to IRAP-h using the stack contaminant concentration data as in Step 2 and an area source concentration corresponding to:

$$C^i_{as} = E^i_{analysis} \cdot A_T$$

Ingestion of surface water

This pathway will be applied to all exposure scenarios except the breast-feeding infant and acute exposure scenarios (see Table 4-1 of the Umatilla RWAP). IRAP-h will need to be modified to allow for different waterbodies to be designated for drinking, fishing, and sweat lodge use. Computing the impacts of the ingestion of surface water on human health risk it is appropriate to follow the drinking water ingestion computations from Appendix B and C of the "Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities (EPA, 2005). These calculations are detailed in the remainder of this section.

Table C-1-5 indicates the COPC intake from drinking water is described by:

$$I_{dw} = \frac{C_{wctot} \cdot CR_{dw} \cdot F_{dw}}{BW}$$ (From Table C-1-5 of EPA, 2005);

with:

$$C_{wctot} = f_{wc} \cdot C_{wtot} \cdot \frac{d_{wc} + d_{bs}}{d_{wc}}$$ (From Tables B-4-23 of EPA, 2005);

$$f_{wc} = \frac{\left(1 + Kd_{sw} \cdot TSS \cdot 1 \times 10^{-6}\right) \cdot \frac{d_{wc}}{d_z}}{\left(1 + Kd_{sw} \cdot TSS \cdot 1 \times 10^{-6}\right) \cdot \frac{d_{wc}}{d_z} + (\theta_{bs} + Kd_{bs} \cdot C_{BS}) \cdot \frac{d_{bs}}{d_z}}$$ (Table B-4-16 of EPA, 2005);

$$d_z = d_{wc} + d_{bs}$$ (Table B-4-16 of EPA, 2005);

$$Kd_{sw} = f_{oc,sw} \cdot K_{oc}$$ (See Page A-2-13 of EPA, 2005);

$$Kd_{bs} = f_{oc,bs} \cdot K_{oc}$$ (See Page A-2-13 of EPA, 2005).

Parameters used in the above equations are listed in the following table.

Parameter	Description	Default Value
C_{wctot} =	Total COPC in water column (mg/L)	Calculated as shown above
I_{dw} =	Daily intake of COPC from drinking water (mg/kg-day)	Calculated as shown above
CR_{dw} =	Water consumption rate (L/day)	See page 4-43, Umatilla RWAP
F_{dw} =	Fraction of drinking water is contaminated (unitless)	1.0
BW =	Body weight (kg)	See Table 4-3, Umatilla RWAP
f_{wc} =	Fraction of total water body COPC concentration in the water column (unitless)	Calculated as shown above
d_{wc} =	Depth of water column (m)	Umatilla River: 2 Columbia River: 10
d_{bs} =	Depth of upper benthic sediment layer (m)	0.03
C_{wtot} =	Total water body COPC concentration including water column and bed sediments (mg-COPC/L-water)	Calculated as shown below
Kd_{sw} =	Suspended sediments/surface water partition coefficient (L-water/kg-suspended-sediment)	Calculated as shown above
$f_{oc,sw}$ =	Fraction of organic carbon in surface water (unitless)	0.075
$f_{oc,bs}$ =	Fraction of organic carbon in bed sediments (unitless)	0.04
K_{oc} =	Organic carbon partition coefficient (cm^3/g)	Calculated from K_{ow} (see Section 10 of this document)
TSS =	Total suspended solids (mg/L)	2 to 300, need water body data. Columbia River: 5 mg/L (1995-2000 average from measurement station located just above the mouth of the snake river (Station CBP100) (www.epa.gov/storet/index.html).
d_z =	Total water body depth (m)	Calculated as shown above
θ_{bs} =	Bed sediment porosity (L-water/L-sediment)	0.6
Kd_{bs} =	Bed sediment/sediment pore water partition coefficient (L-water/kg-bed sediments)	Calculated as shown above
C_{BS} =	Bed sediment concentration (or bed sediment bulk density) (g/cm^3)	1.0
1×10^{-6} =	Conversion factor (kg/mg)	NA

The total water body COPC concentration (C_{wtot}) which is needed to calculate the water column COPC concentration (C_{wctot}) is given by:

$$C_{wtot} = \frac{L_T}{Vf_x \cdot f_{wc} + k_{wt} \cdot A_w \cdot (d_{wc} + d_{bs})}$$ (Table B-4-15, EPA 2005);

$L_T = L_{DEP} + L_{dif} + L_{RI} + L_R + L_E$ (Table B-4-7, EPA 2005).

Parameters for these two equations which have not been previously defined are listed in the following table.

Parameter	Description	Default Value
L_T =	Total COPC load to the water body (g/yr)	Calculated as shown above
Vf_x =	Average volumetric flow rate through water body (m^3/yr)	Site data required
k_{wt} =	Overall total water body dissipation rate constant (yr^{-1})	Calculated as shown below (See Table B-4-17; EPA, 2005)
f_{wc} =	Fraction of total water body COPC concentration in the water column (unitless)	Calculated as shown above (See Table B-4-16, EPA 2005)
A_w =	Water body surface area (m^2)	Umatilla River: 9.8×10^6 Columbia River: 1.5×10^8
L_{DEP} =	Total (wet and dry) particle phase and wet vapor phase COPC direct deposition load to water body (g/yr)	Calculated, see Table B-4-8 (EPA, 2005)
L_{dif} =	Vapor phase COPC diffusion (dry deposition) load to water body (g/yr)	Calculated, see Table B-4-12 (EPA, 2005)
L_{RI} =	Runoff load from impervious surfaces (g/yr)	Calculated, see Table B-4-9 (EPA, 2005)
L_R =	Runoff load from pervious surfaces (g/yr)	Calculated, see Table B-4-10 (EPA, 2005)
L_E =	Soil erosion load (g/yr)	Calculated, see Table B-4-11 (EPA, 2005)

Tables B-4-8 through B-4-12 of EPA 2005 detail calculations that are based primarily on air modeling results. These equations are as follows:

$L_{DEP} = Q \cdot \left[F_v \cdot Dytwv + (1 - F_v) \cdot Dytwp\right] \cdot A_w$ (Table B-4-8 EPA, 2005; All but Hg);

$L_{DEP} = 0.48 \cdot Q_{(Total)} \cdot \left[F_{v_{(Hg^{2+})}} \cdot Dytwv + (1 - F_{v_{(Hg^{2+})}}) \cdot Dytwp\right] \cdot A_w$ (Total Hg);

$L_{RI} = Q \cdot \left[F_v \cdot Dytwv + (1 - F_v) \cdot Dytwp\right] \cdot A_I$ (Table B-4-9 EPA, 2005; All but Hg);

$L_{RI} = 0.48 \cdot Q_{(Total)} \cdot \left[F_{v_{(Hg^{2+})}} \cdot Dytwv + (1 - F_{v_{(Hg^{2+})}}) \cdot Dytwp\right] \cdot A_I$ (Total Hg);

$L_R = 0.01 \cdot RO \cdot (A_L - A_I) \cdot \dfrac{Cs \cdot BD}{\theta_{sw} + Kd_s \cdot BD}$ (Table B-4-10, EPA, 2005);

$$L_E = 0.001 \cdot X_e \cdot SD \cdot ER \cdot (A_L - A_I) \cdot \frac{Cs \cdot BD \cdot Kd_s}{\theta_{sw} + Kd_s \cdot BD}$$ (Table B-4-11, EPA 2005);

$$L_{dif} = \frac{T_{wk} \cdot R \cdot K_v \cdot Q \cdot F_v \cdot Cywv \cdot A_w \cdot (1 \times 10^{-6})}{H}$$ (Table B-4-12, EPA 2005; All but Hg);

$$L_{dif} = \frac{0.48 \cdot T_{wk} \cdot R \cdot K_v \cdot Q_{(Total)} \cdot F_{v_{(Hg^{2+})}} \cdot Cywv \cdot A_w \cdot (1 \times 10^{-6})}{H}$$ (Total Hg);

The following parameters are also required for implementation of the equations in Tables B-4-8 through B-4-12.

Parameter	Description	Default Value
Q =	COPC-specific emission rate (g/s)	From air modeling
$Q_{(Total)}$ =	Total Mercury emission rate (g/s)	From air modeling
F_v =	Fraction of COPC air concentration in vapor phase (unitless)	Calculated, see Section A2-2.5 of EPA, 2005 (outlined below)
A_w =	Water body surface area (m^2)	Umatilla River: 9.8×10^6 Columbia River: 1.5×10^8
A_I =	Impervious watershed area (m^2)	Umatilla River Watershed: 1.4×10^8 Columbia River Watershed: 2.2×10^8
Dytwv =	Unitized yearly average total deposition from vapor phase (s/m^2-yr)	From air modeling
Dytwp =	Unitized yearly average total deposition from particle phase (s/m^2-yr)	From air modeling
Cywv =	United yearly watershed air concentration from vapor phase (μg-s/g-m^3)	From air modeling
0.01 =	Unit conversion factor (kg-cm^2/mg-m^2)	NA
RO =	Average annual surface runoff from pervious area (cm/yr)	Site data required
0.001 =	Unit conversion factor (g/mg)	NA
A_L =	Total water shed area receiving COPC deposition (m^2)	Site data required
Cs =	Average soil concentration over exposure duration (mg-COPC/kg-soil)	Calculated (see Section 10 of this document)
BD =	Soil bulk density (g/cm^3)	1.5
θ_{sw} =	Soil volumetric water content (mL-water/cm^3-soil)	0.2
Kd_s	Soil-water partition coefficient (cm^3-water/g-soil)	Calculated (see Section 10 of this document)
X_e =	Unit soil loss (kg/m^2-yr)	Calculated as shown below (see Table B-4-13; EPA, 2005).
SD =	Watershed sediment delivery ratio (unitless)	Calculated as shown below (see Table B-4-14; EPA 2005).
ER =	Soil enrichment ratio (unitless)	Inorganics – 1.0 Organics – 3.0
K_v =	Overall transfer rate coefficient (m/yr)	Calculated as shown below (see Tables B-4-19, B-4-20, and B-4-21; EPA, 2005)
H =	Henry's law constant (atm-m^3/gmol)	COPC specific
R =	Universal gas constant (atm-m^3/gmol-K)	8.205×10^{-5}
T_{wk} =	Water body temperature (K)	298
1×10^{-6}	Unit conversion factor ($g/\mu g$)	NA

Tables B-4-13, B-4-14, B-4-19, B-4-20, and B-4-21 which are referenced above contain the following computations:

$X_e = RF \cdot K \cdot LS \cdot C \cdot PF \cdot \frac{907.18}{4047}$ (From Table B-4-13 of EPA, 2005);

$SD = a \cdot (A_L)^{-b}$ (From Table B-4-14 of EPA, 2005);

$K_v = \left[K_L^{-1} + \left(K_G \frac{H}{R \cdot T_{wk}} \right)^{-1} \right]^{-1} \cdot \theta^{(T_{wk}-293)}$ (From Table B-4-19 of EPA, 2005);

$K_L = \sqrt{\frac{(1\times10^{-4}) \cdot D_w \cdot u}{d_z}} \cdot (3.1536\times10^7)$ (From Table B-4-20 of EPA, 2005 streams/rivers);

$K_L = (C_d^{0.5} \cdot W) \cdot (\frac{\rho_a}{\rho_w})^{0.5} \cdot (\frac{k^{0.33}}{\lambda_z}) \cdot (\frac{\mu_w}{\rho_w \cdot D_w})^{-0.67} \cdot (3.1536\times10^7)$ (Table B-4-20 of EPA, 2005 lakes/ponds);

$K_G = 36500$ m/yr (From Table B-4-21 of EPA, 2005 streams/rivers);

$K_G = (C_d^{0.5} \cdot W) \cdot (\frac{k^{0.33}}{\lambda_z}) \cdot (\frac{\mu_w}{\rho_a \cdot D_a})^{-0.67} \cdot (3.1536\times10^7)$ (Table B-4-21 of EPA, 2005 lakes/ponds).

The following are the parameters which have not been previously defined and are required for implementing the equations in Tables B-4-13, B-4-14, B-4-19, B-4-20, and B-4-21.

Parameter	Description	Default Value
RF =	USLE rainfall factor (yr^{-1})	50 to 300
K =	USLE erodibility factor (ton/acre)	0.39; Table B-4-13; EPA, 2005
LS =	USLE length-slope factor (unitless)	1.5; Table B-4-13; EPA, 2005
C =	USLE cover management factor (unitless)	0.1; Table B-4-13; EPA, 2005
PF =	USLE supporting practice factor (unitless)	1.0, or Renard et al. (1996)
907.18 =	Conversion factor (kg/ton)	NA
4047 =	Conversion factor (m^2/acre)	NA
a =	Empirical coefficient (unitless)	Values listed in Table B-4-14 (EPA 2005) by watershed area
b =	Empirical coefficient (unitless)	0.125; Table B-4-14; EPA, 2005
K_L =	Liquid phase transfer coefficient (m/yr)	Calculated as shown above
K_G =	Gas phase transfer coefficient (m/yr)	Calculated as shown above
θ =	Temperature correction factor (unitless)	1.026; Table B-4-19; EPA, 2005
D_w =	Diffusivity of COPC in water (cm^2/s)	COPC specific, see Section A2-2.7 of EPA, 2005
D_a =	Diffusivity of COPC in air (cm^2/s)	COPC specific, see Section A2-2.7 of EPA, 2005
u =	Current velocity (m/s)	Site specific data required
3.1536×10^7 =	Conversion factor (s/yr)	NA
C_d =	Drag coefficient (unitless)	0.0011
W =	Average annual wind speed (m/s)	3.9 (calculated from air modeling data)
ρ_a =	Density of air (g/cm^3)	0.0012; Table B-4-20; EPA, 2005
ρ_w =	Density of water (g/cm^3)	1.0; Table B-4-20; EPA, 2005
k =	von Karman's constant (unitless)	0.4; Table B-4-20; EPA, 2005
λ_z =	Dimensionless viscous sublayer thickness (unitless)	4; Table B-4-20; EPA, 2005
μ_w =	Viscosity of water at T_{wk} (g/cm-s)	1.691×10^{-2}; Table B-4-20; EPA, 2005
μ_a =	Viscosity of air (g/cm-s)	1.81×10^{-4}; Table B-4-21; EPA, 2005
1×10^{-4}	Unit conversion factor (m^2/cm^2)	NA

Computation of the fraction of a pollutant air concentration in the vapor phase (F_v) is described in Section A2-2.5 of EPA, 2005. These calculations are as follows:

F_v = 1.0 (for gases organics at ambient conditions);

$$F_v = 1.0 - \frac{c \cdot S_T}{P_L^\circ + c \cdot S_T}$$ (for liquid organics at ambient conditions, elemental mercury);

$$F_v = 1.0 - \frac{c \cdot S_T}{\left(P_s^\circ \cdot \exp\left[6.79 \cdot \frac{(T_m - T_{air})}{T_{air}} \right] \right) + c \cdot S_T}$$ (for solid organics at ambient conditions);

F_v = 0.0 (for metals).

F_v = 0.85 (for mercuric chloride, Hg^{2+}).

F_v = 0.0 (for methyl mercury).

The following table provides details on the parameters used to calculate F_v.

Parameter	Description	Default Value
c =	Junge constant (atm-cm)	1.7E-04
$P°_L$ =	Liquid phase vapor pressure (atm)	COPC specific property
$P°_s$ =	Solid phase vapor pressure (atm)	COPC specific property
6.79 =	Ratio of entropy of fusion/ideal gas constant (unitless)	NA
S_T =	Whitby's average surface area of particles (cm^2/cm^3)	3.5E-06; Lorber et. al. (1994).
T_m =	Melting point (K)	COPC specific property
T_{air} =	Ambient air temperature (K)	298

Computation of k_{wt} for use in the calculation of C_{wtot} as described in Table B-4-15 relies on the computations detailed in Tables B-4-16, B-4-17, B-4-18, and B-4-22 as follows:

$k_{wt} = f_{wc} \cdot k_v + f_{bs} \cdot k_b$ (From Table B-4-17 of EPA, 2005);

$f_{bs} = 1.0 - f_{wc}$ (From Table B-4-16 of EPA, 2005);

$$k_v = \frac{K_v}{d_z \cdot (1 + Kd_{sw} \cdot TSS \cdot (1 \times 10^{-6}))}$$ (From Table B-4-18 of EPA, 2005);

$$k_b = \left(\frac{1000 \cdot X_e \cdot A_L \cdot SD - Vf_x \cdot TSS}{A_w \cdot TSS} \right) \cdot \left(\frac{TSS \cdot 1 \times 10^{-6}}{C_{BS} \cdot d_{bs}} \right)$$ (From Table B-4-22 of EPA, 2005).

The following are the parameters which have not been previously defined and are required for implementation of the equations in Tables B-4-16, B-4-17, B-4-18, and B-4-22.

Parameter	Description	Default Value
k_v =	Water column volatilization rate (yr^{-1})	Calculated as shown above
f_{bs} =	Fraction of total water body COPC concentration in benthic sediment (unitless)	Calculated as shown above
k_b =	Benthic burial rate constant (yr^{-1})	Calculated as shown above
1×10^{-6}	Unit conversion factor (kg/mg)	NA
1×10^{-6}	Unit conversion factor (cm^3/m^3)	NA
1×10^{3}	Unit conversion factor (g/kg)	NA

Dermal contact with surface water during bathing and swimming

This pathway will be applied to all exposure scenarios except the breast-feeding infant and acute exposure scenarios (see Table 4-1 of the Umatilla RWAP). Computation of dermal COPC intake rates caused by contact with surface water will follow the approached outlined in Section 3.1 of "Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual [Part E, Supplemental Guidance for Dermal Risk Assessment]" (EPA, 2004). It should be noted that both bathing and swimming should accounted for in each scenario. In addition, for the Native American scenario the total dermal exposure will be the sum of bathing, swimming, and sweat lodge use. Daily dermal COPC intake is defined in EPA 2004 as:

$$DAD_w = \frac{DA_{event} \cdot EV \cdot ED \cdot EF \cdot A_s}{BW \cdot AT}$$ (Equation 3.1; EPA 2004).

The following table indicates the parameters used in this equation and provides suggested values or calculation methods for each.

Parameter	Description	Default Values
DAD_w =	Dermal Absorbed Dose (mg/kg-day)	Calculated as shown above
DA_{event} =	Absorbed dose per event (mg/cm^2-event)	Calculated as shown below
EV =	Event frequency (events/day)	Bathing – 1.0 Swimming – 1.0
ED =	Exposure Duration (yr)	Use $ED_{indirect}$ in Table 4-3, Umatilla RWAP
EF =	Exposure frequency (day/year)	Bathing – 350 Swimming - 7
A_s =	Skin surface area available for contact (cm^2)	See Table 4-3, Umatilla RWAP
BW =	Body weight (kg)	See Table 4-3, Umatilla RWAP
AT =	Averaging time (days)	NonCarcinogen: AT = ED×365 Carcinogen: AT = 70×365

For organic chemicals DA_{event} can be calculated as:

If $t_{event} \leq t^*$ then

$$DA_{event} = \frac{2 \cdot Kp_l \cdot FA \cdot C_{wctot} \cdot \sqrt{\frac{6 \cdot \tau_{event} \cdot t_{event}}{\pi}}}{1000}$$ (Equation 3.2; EPA 2004)

If $t_{event} > t^*$ then

$$DA_{event} = \frac{Kp_l \cdot FA \cdot C_{wctot} \cdot \left[\frac{t_{event}}{1+B} + 2 \cdot \tau_{event} \cdot \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]}{1000}$$ (Equation 3.3; EPA 2004).

Required parameters for calculating DA_{event} are indicated in the following table.

Parameter	Description	Default Values
Kp_l =	Water to skin permeability coefficient for contaminant (cm/hr)	Inorganics – See table below Organics – Calculated as shown below
FA =	Fraction absorbed water (dimensionless)	COPC Specific, see Appendix B of EPA 2004
C_{dw} =	Concentration of contaminant dissolved in water (mg/L)	Calculated as shown in Section 5
t_{event} =	Duration of event (hr/event).	Bathing: 0.25 (EPA, 2004) Swimming: 0.5 (EPA, 1998b)
τ_{event} =	Lag time (hr)	Calculated as shown below
t^* =	Time to reach steady-state (hr)	Calculated as shown below
B =	Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless)	Calculated as shown below
1000 =	Conversion factor (cm^3/L)	NA

For <u>inorganic chemicals</u> DA_{event} can be calculated as:

$$DA_{event} = \frac{Kp_l \cdot C_{wctot} \cdot t_{event}}{1000}$$ (Equation 3.4; EPA 2004).

For <u>organic chemicals</u> the skin permeability coefficient can be estimated as:

$$Log(Kp_l) = -2.80 + 0.66 \cdot Log(K_{ow}) - 0.0056 \cdot MW$$ (Equation 3.8 of EPA, 2004).

The skin permeability coefficient for <u>inorganic chemicals</u> is given by Exhibit 3-1 of EPA 2004. This table is reproduced below for convenience:

Compound	Permeability Coefficient, K_p (cm/hr)
Cadmium	1×10^{-3}
Chromium (+6)	2×10^{-3}
Chromium (+3)	1×10^{-3}
Cobalt	4×10^{-4}
Lead	1×10^{-4}
Mercury (+2)	1×10^{-3}
Methyl mercury	1×10^{-3}
Mercury vapor	2.4×10^{-1}
Nickel	2×10^{-4}
Potassium	2×10^{-3}
Silver	6×10^{-4}
Zinc	6×10^{-4}
All other inorganics	1×10^{-3}

Calculation of the lag time (τ_{event}) is detailed in Equations A.3 and A.4 of EPA, 2004 as follows:

$$\tau_{event} = \frac{l_{sc}^2}{6 \cdot D_{sc}}$$ (Equation A.4 of EPA 2004);

$$Log\left(\frac{D_{sc}}{l_{sc}}\right) = -2.80 - 0.0056 \cdot MW$$ (Equation A.3 of EPA 2004);

where l_{sc} is the apparent thickness of the stratum corneum (0.001 cm) and D_{sc} (cm^2/hr) is the diffusion coefficient of the chemical in the stratum corneum.

The ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis, *B*, is given by:

$$B = Kp_l \frac{\sqrt{MW}}{2.6}$$ (Equation A.1, EPA 2004).

The time to reach steady-state (t^*, hr) can be calculated as indicted in Equations A.5 through A.8 of EPA, 2004. These equations are as follows:

If $B \leq 0.6$, *then* $t^* = 2.4 \cdot \tau_{event}$ (Equation A.5, EPA 2004);

If $B > 0.6$, *then* $t^* = (b - \sqrt{b^2 - c^2}) \cdot \left(\frac{l_{sc}^2}{D_{sc}}\right)$ (Equation A.6, EPA 2004);

with;

$$b = \frac{2}{\pi}(1 + B)^2 - c$$ (Equation A.7, EPA 2004);

$$c = \frac{1 + 3 \cdot B + 3 \cdot B^2}{3 \cdot (1 + B)}$$ (Equation A.8, EPA 2004).

Consumption of goat meat

A goat meat exposure pathway is to be added to the subsistence farmer adult and child exposure scenarios. The concentration of COPCs in goat meat should be modeled in a manner analogous to beef cattle. Briefly, the ingestion rate from goat is calculated from:

$$I_{goat} = A_{goat} \cdot CR_{goat} \cdot f_{goat}$$

Required parameters for calculating I_{goat} are indicated in the following table.

Parameter	Description	Default Values
I_{goat} =	Daily intake of COPC from goat consumption (mg/kg-day)	Calculated as shown above
A_{goat} =	Concentration of COPC in goat meat (mg/kg-fw)	Calculated as shown below
CR_{goat} =	Consumption rate of goat (kg-FW/kg-day)	See Table 4-3, Umatilla RWAP
f_{goat} =	Fraction of animal tissue that is contaminated (unitless)	1.0

The concentration of a COPC within goat meat is determined from (c.f. Table B-3-10 of EPA, 2005 for beef equations):

$$A_{goat} = \left(\sum_i (F_i \cdot Qp_i \cdot P_i) + Qs \cdot Cs \cdot Bs\right) \cdot Ba_{goat} \cdot MF$$

where "i" represents the plant type (grain, silage, forage).

The parameters required for the above equation are shown in the following table.

Parameter	Description	Default Values
F_i =	Fraction of plant type (i) grown on contaminated soil and ingested by the goat (unitless)	1.0
Qp_i	Quantity of plant (i) ingested by the goat per day (kg-dw-plant/day)	Forage: 0.76 (scaled on body weight) Grain: 0.041 (scaled on body weight) Silage: 0.22 (scaled on body weight)
P_i =	Concentration of COPC in plant type (i) ingested by the animal (mg/kg-dw-plant)	Calculated as indicated below
Qs =	Quantity of soil ingested by the animal (kg/day)	0.0014 (DOE-ORNL, 2005)
Cs =	Average soil concentration over exposure duration (mg-COPC/kg-soil)	Calculated as shown below
Bs =	Soil bioavailability factor for goat (unitless)	1.0
Ba_{goat}	Biotransfer factor for goat (day/kg-fw)	Calculated as shown below
MF =	Metabolism factor (unitless)	0.01 for bis(2-ethylhexyl)phthalate 1.0 for all other COPCs

Unknown values of animal uptake and bioaccumulation parameters were determined based on scaling parameters for cattle. The following table contains information used to develop scaling factors.

Parameter	Cattle Value	Goat Value	Scaling Factor
Live weight at slaughter	1160 lbs [a]	100 lbs [b]	$\frac{100}{1160} = 0.0862$ (lb/lb)
Fat content	19% [c]	12% [d]	$\frac{0.12}{0.19} = 0.632$ (%/%)

[a] www.beefusa.org/NEWSCattleWeightsUP3450.aspx

[b] www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex1363/$file/435_830-1.pdf?OpenElement

[c] EPA, 2005. Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities, Appendix A, Section A2-2.13.1

[d] Almeida, A.M., L. M. Schwalbach, H.O. deWaal, J.P.C. Greyling, and L.A. Cardoso. 2003. Growth and carcass traits of young boer goat bucks fed a diet of winter veld hay and supplemented. *Arch. Zootec.* **52**: 393-396.

Biotransfer factors for goat (Ba_{goat}) can be calculated (for organics) from Ba_{beef} values in Appendix A of EPA, 2005 as follows:

$$Ba_{goat} = Ba_{beef} \cdot [0.632]$$

Organic compounds not included in Appendix A can be estimated as indicated in the next equation (see Section A2-2.13.1 of EPA, 2005).

Organics:

$$Ba_{goat} = [10^{(-0.099\cdot[\log(K_{ow})]^2+1.07\cdot\log(K_{ow})-3.56)}]\cdot[0.12]$$

Application of this equation is only applicable for K_{ow} values between -0.67 and 8.2. Values below -0.67 and above 8.2 should be assigned a K_{ow} of -0.67 and 8.2, respectively.

Metals:

$$Ba_{goat} = Ba_{beef}$$

The concentration of COPC in plant type "i" (P_i) ingested by an animal can be calculated using the equations in Tables B-3-7 through B-3-9 of EPA 2005:

$$P_i = P_{d_i} + P_{v_i} + P_{r_i} \ ;$$

$$P_{d_i} = \frac{1000 \cdot \left[Q \cdot (1 - F_v) \cdot [Dydp + (F_w \cdot Dywp)\right] \cdot R_{p_i} \cdot \left[1.0 - \exp(-kp \cdot Tp_i)\right]}{Yp_i \cdot kp} \text{ (all but Hg);}$$

$$P_{d_i} = \frac{1000 \cdot \left[0.48 \cdot Q \cdot (1 - F_v) \cdot [Dydp + (F_w \cdot Dywp)\right] \cdot R_{p_i} \cdot \left[1.0 - \exp(-kp \cdot Tp_i)\right]}{Yp_i \cdot kp} \text{ (total Hg);}$$

$$P_{d_i} = \frac{1000 \cdot \left[0.37 \cdot Q \cdot (1 - F_v) \cdot [Dydp + (F_w \cdot Dywp)\right] \cdot R_{p_i} \cdot \left[1.0 - \exp(-kp \cdot Tp_i)\right]}{Yp_i \cdot kp} \text{ (Hg^{++});}$$

$$P_{d_i} = \frac{1000 \cdot \left[0.11 \cdot Q \cdot (1 - F_v) \cdot [Dydp + (F_w \cdot Dywp)\right] \cdot R_{p_i} \cdot \left[1.0 - \exp(-kp \cdot Tp_i)\right]}{Yp_i \cdot kp} \text{ (MHg);}$$

$$P_{v_i} = Q \cdot F_v \cdot \frac{Cyv \cdot Bv_{forage} \cdot VG_{ag_i}}{\rho_a} \text{ (all but mercury);}$$

$$P_{v_i} = 0.48 \cdot Q \cdot F_v \cdot \frac{Cyv \cdot Bv_{forage} \cdot VG_{ag_i}}{\rho_a} \text{ (total mercury);}$$

$$P_{v_i} = 0.37 \cdot Q \cdot F_v \cdot \frac{Cyv \cdot Bv_{forage} \cdot VG_{ag_i}}{\rho_a} \text{ } (Hg^{++});$$

$$P_{v_i} = 0.11 \cdot Q \cdot F_v \cdot \frac{Cyv \cdot Bv_{forage} \cdot VG_{ag_i}}{\rho_a} \text{ (MHg);}$$

$$P_{r_i} = C_s \cdot Br_{forage} \text{ .}$$

The following table provide information on the parameters necessary to calculated P_d, P_v, and P_r.

Parameter	Description	Default Values
P_d =	Concentration of COPC in forage and silage due to direct deposition (mg-COPC/kg-DW)	Calculated as shown above.
1000 =	Conversion factor (mg/g)	NA
Q =	COPC-specific emission rage (g/s)	From air modeling
D_{ydp} =	Unitized yearly average dry deposition from particle phase (s/m^2-yr)	From air modeling
F_w =	Fraction of COPC wet deposition that adheres to plant surfaces (unitless)	Anions – 0.2 Cations/Organics – 0.6
F_v =	Fraction of COPC air concentration in vapor phase (unitless)	Calculated, see Section 5 above
D_{ywp} =	Unitized yearly average wet deposition from particle phase (s/m^2-yr)	From air modeling
Rp_i =	Interception fraction of the edible portion of plant (unitless)	Forage – 0.5 Silage – 0.46
kp =	Plant surface loss coefficient (yr^{-1})	18
Tp_i =	Length of plant exposure to deposition per harvest of edible portion of plant (yr)	Forage – 0.12 Silage – 0.16
Yp_i =	Yield or standing crop biomass of the edible portion of the plant ($kg-DW/m^2$)	Forage – 0.24 Silage – 0.8
P_v =	Forage and silage concentration due to air-to-plant transfer (mg-COPC/kg-DW)	Calculated as shown above
C_{yv} =	Unitized yearly average air concentration from vapor phase ($\mu g-s/g-m^3$)	From air modeling
Bv_{forage} =	Air-to-plant biotransfer factor of forage and silage (mg-COPC/g-plant-DW)/(mg-COPC/g-air)	Calculated as shown below for organics. Value for metals is assumed to be 0.0
$VG_{ag,I}$ =	Empirical correction factor or forage and silage (Unitless)	Forage – 1.0 Silage – 0.5
ρ_a =	Density of air (g/m^3)	1200
Pr =	Concentration of COPC in forage/silage/grain due to root uptake (mg-COPC/kg-DW plant tissue)	Calculated as shown above
Cs =	Average soil concentration over exposure duration (mg/kg)	Calculated by IRAP-h, see Table B-3-1 of EPA, 2005 for methodology
Br_{forage} =	Plant-soil bioconcentration factor for forage, silage, and grain (mg-COPC/g-plant-DW)/(mg-COPC/g-soil)	Calculated as shown below for organics. Values for metals are included in the supplemental database for EPA 2005

The plant-soil concentration factor for organic compounds in forage (Br_{forage}) can be estimated as indicated in Section A2-2.12.3 in Appendix A of the 2005 EPA HHRA guidance. This estimation approach is as follows:

$$\log(Br_{forage}) = 1.588 - 0.578 \cdot \log(K_{ow})$$ (For organics).

The Air-to-plant biotransfer factor of forage and silage are described for organics other than dioxins and furans by Equations A-3-15a and A-3-15b in Appendix A of the 2005 EPA HHRA guidance. These equations are:

$$\log(B_{vol}) = 1.065 \cdot \log(K_{ow}) - \log\left(\frac{H}{R \cdot T}\right) - 1.654$$ (Equation A-2-19 of EPA 2005);

$$Bv_{forage} = \frac{\rho_{air} \cdot B_{vol}}{(1 - f_{water}) \cdot \rho_{forage}}$$ (Equation A-3-20 of EPA 2005).

Suggested values for f_{water}, ρ_{air} and ρ_{forage} are 0.85, 1.19 g/L, and 770 g/L, respectively (EPA, 2005).

Values of Bv_{forage} for dioxins and furans are provided in supplemental database of the 2005 EPA HHRA guidance. For metals Bv_{forage} is assumed to be Zero (Page A-2-22 of EPA, 2005).

Inhalation exposure of COPCs during sweat lodge use

For volatile and semivolatile compounds (defined for this exposure pathway as a compound with a boiling point (T_{boil}) less than, or equal to, 150°F) the following equation describes inhalation exposure for Native American adults inside the sweat lodge.

$$I_{inh} = \frac{C_{wctot} \cdot \left(\frac{V_{w,vol}}{2}\right) \cdot \left(\frac{1}{\frac{2}{3} \cdot \pi \cdot r^3}\right) \cdot IR \cdot ET \cdot EF \cdot ED}{BW \cdot AT \cdot CF}$$ (Compounds w/ $T_{boil} \leq 150$ °F).

Where:

Parameter	Description	Default Values
I_{inh} =	Intake of COPCs from inhalation in the sweat lodge (mg/kg-day)	Calculated as shown above
C_{wctot} =	Total water column concentration of COPCs (mg/L)	Calculated according to EPA 2005, Appendix B (Also see Section 5, above)
$V_{w,vol}$ =	Volume of water used in a single sweat (L)	Volatile/Semivolatiles: 4
$V_{w,nonvol}$ =	Volume of water necessary to obtain 100% humidity in the sweat lodge.	0.34
π =	The constant *pi* (unitless)	3.14159
r =	Radius of sweat lodge (m)	1
IR =	Inhalation rate (m^3/hr)	1.25
ET =	Exposure time (hr/event)	2
ED =	Exposure duration (yr)	70
BW =	Body weight (kg)	70
AT =	Averaging time for carcinogens (AT_C) or noncarcinogens (AT_N) (yr)	70
CF =	Units conversion factor (day/yr)	365
EF =	Exposure frequency (events/yr)	365

For nonvolatile compounds (defined for this exposure pathway as T_{boil} > 150 °F) inhalation exposure is described by:

$$I_{inh} = \frac{C_{wctot} \cdot \left(\frac{V_{w,nonvol}}{\frac{2}{3} \cdot \pi \cdot r^3} \right) \cdot IR \cdot ET \cdot EF \cdot ED}{BW \cdot AT \cdot CF} \text{ (Compounds w/ } T_{boil} > 150 \text{ °F);}$$

with $V_{w,nonvol}$ = 0.34 liters. This value represents the volume of water needed to produce 100% saturation in a hemispherical sweat lodge of radius 1 meter and is calculated from the vapor pressure of water at 150 °F as follows.

$$V_{w,nonvol} = \left[VP_{w,150F} \right] \cdot \left[V_{lodge} \right] \cdot \left[\frac{MW_w}{R \cdot T \cdot \rho_w} \right]$$

where:

Parameter	Description	Default Values
$VP_{w,150F}$ =	Vapor pressure of water at 150 °F (atm)	0.252
V_{lodge} =	Internal volume of the sweat lodge (L)	2100
MW_w =	Molecular Weight of water (AMU)	18
R =	Ideal gas constant (atm-L/gmol-K)	0.08206
T =	Temperature in sweat lodge (K)	339
ρ_w =	Density of water (g/L)	1000

Use of $V_{w,nonvol}$ is based on the assumption that nonvolatile compounds become airborne as an aerosol mist and the quantity of nonvolatile constituents is limited by the amount of water that may be in the air at any given time.

Dermal contact with COPCs during sweat lodge use

Dermal uptake for volatile and semi-volatile compounds (a boiling point less than, or equal to 150 °F) can be represented by the following equation:

$$I_d = \frac{C_{wctot} \cdot \left(\frac{V_{w,vol}}{2} \right) \cdot \left(\frac{1}{\frac{2}{3} \cdot \pi \cdot r^3} \right) \cdot SA \cdot f_{SA,v} \cdot Kp_v \cdot ET \cdot EF \cdot ED \cdot CF_1}{BW \cdot AT \cdot CF_2} \text{ (Compounds w/} T_{boil} \leq 150 \text{ °F).}$$

Dermal uptake for compounds with T_{boil} > 150 °F is represented by:

$$I_d = \frac{C_{wctot} \cdot SA \cdot f_{SA,l} \cdot Kp_l \cdot ET \cdot EF \cdot ED \cdot CF_3}{BW \cdot AT \cdot CF_2} \text{ (Compounds w/ } T_{boil} > 150 \text{ °F).}$$

Where:

Parameter	Description	Default Values
I_d =	Intake of COPC from dermal absorption within the sweat lodge (mg/kg-day)	Calculated as shown above
C_{wctot} =	Total water column concentration of COPC (mg/L)	Calculated according to EPA 1998a, Appendix B
$V_{w,vol}$ =	Volume of water used in a single sweat (L)	4
π =	The constant *pi* (unitless)	3.14159
r =	Radius of sweat lodge (m)	1
Kp_v=	COPC-specific vapor to skin permeability constant (cm/hr)	Values shown in Table 7-7 of Section 7 of EPA 1992
Kp_l=	COPC-specific water to skin permeability constant (cm/hr)	Calculated as shown in Section 6 above
$f_{SA,v}$ =	Fraction of skin area (SA) in contact with water during a sweat (unitless)	1.0 (conservative assumption)
$f_{SA,l}$ =	Fraction of skin area (SA) in contact with water during a sweat (unitless)	1.0 (conservative assumption)
IR =	Inhalation rate (m^3/hr)	1.25
ET =	Exposure time (hr/event)	2
ED =	Exposure duration (yr)	70
EF =	Exposure frequency (events/yr)	365
BW =	Body weight (kg)	70
SA_{water} =	Body surface area available for contact (m^2)	1.8
AT =	Averaging time for carcinogens (AT_C) or noncarcinogens (AT_N) (yr)	70
CF1 =	Unit conversion factor (m/cm)	0.01
CF2 =	Unit conversion factor (day/yr)	365
CF3 =	Unit conversion factor (L/m^2-cm)	10

Dermal contact with surface soils

This pathway will be applied to all exposure scenarios except the breast-feeding infant and acute exposure scenarios (see Table 4-1 of the Umatilla RWAP). Modeling dermal contact with surface soils will follow the calculation format defined in Section 3.2 of "Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual [Part E, Supplemental Guidance for Dermal Risk Assessment]" (EPA, 2004). In this document the daily dermal intake from surface soils is described by:

$$DAD_s = \frac{DA_{event} \cdot EF \cdot ED \cdot EV \cdot SA_{soil}}{AT \cdot BW}$$ (Equation 3.11; EPA, 2004);

$$DA_{event} = (1 \times 10^{-6}) \cdot C_s \cdot AF \cdot ABS$$ (Equation 3.12; EPA, 2004);

The following table details the parameters required for these calculations.

Parameter	Description	Default Values
DAD_s =	Daily dermal intake of contaminated soil (mg/kg-day)	Calculated as shown above
DA_{event} =	Absorbed dose per event (mg/cm^2-event)	Calculated as shown above
EF =	Exposure frequency (events/year)	See EF values in Table 4-3, Umatilla RAWP
SA_{soil} =	Skin surface area available for contact (cm^2)	See Table 4-3, Umatilla RAWP
BW =	Body weight (kg)	70
ED =	Exposure duration (yr)	Use $ED_{indirect}$ in Table 4-3, Umatilla RWAP
EV =	Event frequency (events/day)	1
AT =	Averaging time (days)	Noncarcinogen: AT = ED×365 Carcinogen: AT = 70×365
C_s =	Concentration of contaminant in soil (µg/g-soil)	Calculated according to EPA 1998, Appendix B, Table B-1-1
AF =	Adherence factor of soil to skin (mg-soil/cm^2-event)	See the table that follows
ABS =	Absorption fraction (unitless)	See the table that follows
1×10^{-6} =	Conversion factor (g/µg)	NA

Consistent with the guidance detailed in Section 3.2.2.3 of EPA 2004 the following values for the Adherence factor (AF) are suggested for use in the Umatilla RAWP. These values were obtained by selecting an activity that represents a central tendency for a given exposure scenario and using the high-end weighted value for that activity (i.e. 95th Percentile).

Exposure Scenario	Adherence Factor (mg/cm^2)	Activity
Resident Adult	0.2	Landscaping
Resident Child	0.3	Daycare children
Farmer Adult	0.4	Farming
Farmer Child	0.4	Children playing in dry soil
Fisher Adult	0.4	Farming
Fisher Child	3.3	Children playing in wet soil
Native American Adult	0.5	Commercial Gardening
Native American Child	3.3	Children playing in wet soil[1]
On-site Worker	0.2	Landscaping
Military Resident	0.2	Landscaping

[1]Wet soil is chosen since Native American children often accompany their relatives during plant gathering activities in wet land areas.

According to Section 3.2.2.4 of EPA 2004 the absorption fraction (ABS) has only been determined for the compounds shown in the following table. This table is a reproduction of Exhibit 3-4 of EPA 2004.

Compound	Dermal Absorption Fraction (ABS)
Arsenic	0.03
Cadmium	0.001
Chlordane	0.04
2-4-Dichlorophenoxyacetic acid	0.05
DDT	0.03
TCDD and other dioxins	Organic Content of Soil ≤ 10%: 0.03 Organic Content of Soil > 10%: 0.001
Lindane	0.04
Benzo(a)pyrene and other PAHs	0.13
PCBs	0.14
Pentachlorophenol	0.25
Semivolatile organic compounds	0.1

An ABS value of 0.0 should be assumed for all other chemical species, which effectively removes them from the dermal adsorption calculation process. For the purpose of this exposure pathway a semivolatile organic compound will be defined as a compound which has a vapor pressure between 4.54×10^{-2} and 3.60×10^{-15} atm at ambient temperature. This vapor pressure range corresponds to the span of vapor pressures that encompasses the semivolatile compounds listed in Table 2-1 of the Umatilla RWAP.

The soil COPC concentration (C_s) needed to compute DA_{event} is determined as detailed in Table B-1-1 of the EPA HHRA guidance (EPA, 1998a). This computation procedure is as follows for the average and highest soil concentration:

Soil Concentration Averaged Over Exposure Duration:

$$Cs = \frac{\left(\frac{Ds \cdot tD - Cs_{tD}}{ks}\right) + \left(\frac{Cs_{tD}}{ks} \cdot \left(1 - \exp\left[-ks \cdot (T_2 - tD)\right]\right)\right)}{(T_2 - T_1)} \text{ for } T_1 < tD < T_2 \ ;$$

$$Cs = \frac{Ds}{ks \cdot (tD - T_1)} \cdot \left(\left[tD + \frac{\exp(-ks \cdot tD)}{ks}\right] - \left[T_1 + \frac{\exp(-ks \cdot T_1)}{ks}\right]\right) \text{ for } tD \geq T_2 \ .$$

Highest Annual Average Soil Concentration:

$$Cs_{tD} = \frac{Ds \cdot \left[1 - \exp\left(-ks \cdot tD\right)\right]}{ks} \ ;$$

with;

$$Ds = \frac{100 \cdot Q}{Z_s \cdot BD} \cdot \left[F_v \cdot (Dydv + Dywv) + (Dydp + Dywp) \cdot (1 - F_v)\right] \text{ (all but Hg);}$$

$$Ds_{(Hg)} = \frac{100 \cdot (0.48 \cdot Q)}{Z_s \cdot BD} \cdot \left[F_v \cdot \left(Dydv + Dywv \right) + \left(Dydp + Dywp \right) \cdot (1 - F_v) \right]$$

$Ds_{(Hg^{2+})} = 0.98 \cdot Ds_{(Hg)}$ (divalent mercury)

$Ds_{(MHg)} = 0.02 \cdot Ds_{(Hg)}$ (methyl mercury)

$Ds_{(Hg^0)} = 0.0$ (elemental mercury

Necessary parameters for the above equations are:

Parameter	Description	Default Values
Cs =	Average soil concentration over exposure duration (mg-COPC/kg-soil)	Calculated as shown above
Cs_{tD} =	Soil concentration at time tD (mg-COPC/kg-soil)	Calculated as shown above
Ds =	Deposition term (mg-COPC/kg-soil/yr)	Calculated as shown above
tD =	Time period over which deposition occurs (i.e. time period of combustion) [yr]	See ED_{direct} in Table 4-3a through 4-3p in the UMCDF RWAP
ks =	COPC soil loss constant due to all processes (yr^{-1})	Calculated according to EPA 2005, Appendix B, Table B-1-2
T_2 =	Length of exposure duration (yr)	See $ED_{indirect}$ in Table 4-3a through 4-3p in the UMCDF RWAP
T1 =	Time period at the beginning of combustion (yr)	0.0
100 =	Unit conversion factor (mg-m^2/kg-cm^2)	NA
Q =	COPC-specific emission rate (g/s)	Calculated from air modeling
Z_s =	Soil mixture zone depth (cm)	Untilled soil – 2 Tilled soil – 20
BD	Soil bulk density (g/cm^3)	1.5
F_v =	Fraction of COPC air concentration in vapor phase (unitless)	Calculated, see Section A2-2.5 of EPA, 2005 (See Section 5 above)
Dydv =	Unitized yearly average dry deposition from vapor phase (s/m^2-yr)	From air modeling
Dywv =	Unitized yearly average wet deposition from vapor phase (s/m^2-yr)	From air modeling
Dydp =	Unitized yearly average dry deposition from particulate phase (s/m^2-yr)	From air modeling
Dywp =	Unitized yearly average wet deposition from particulate phase (s/m^2-yr)	From air modeling

Determination of the COPC soil loss constant (ks) relies on the equations outlined in Table B-1-2 through B-1-6 as follows:

$ks = ksg + kse + ksr + ksl + ksv$ (Table B-1-2);

$$kse = \frac{0.1 \cdot X_e \cdot SD \cdot ER}{BD \cdot Z_s} \cdot \left(\frac{Kd_s \cdot BD}{\theta_{sw} + \left(Kd_s \cdot BD \right)} \right)$$ (Table B-1-3);

$$ksr = \frac{RO}{\theta_{sw} \cdot Z_s} \cdot \left(\frac{1}{1 + \left(\frac{Kd_s \cdot BD}{\theta_{sw}} \right)} \right)$$ (Table B-1-4);

$$ksl = \frac{P + I - RO - E_v}{\theta_{sw} \cdot Z_s \cdot \left[1.0 + \left(\frac{Kd_s \cdot BD}{\theta_{sw}} \right) \right]}$$ (Table B-1-5);

$$ksv = \left[\frac{3.1536 \times 10^7 \cdot H}{Z_s \cdot Kd_s \cdot R \cdot T_a \cdot BD} \right] \cdot \left[\frac{D_a}{Z_s} \right] \cdot \left[1 - \frac{BD}{\rho_{soil}} - \theta_{sw} \right]$$ (Table B-1-6);

$Kd_s = f_{oc,s} \cdot K_{oc}$ (Equation A-2-10, Appendix A of EPA 2005).

With:

$K_{oc} = 10^{[0.00028 + (0.983 \cdot \log[K_{ow}])]}$ (for organics with H < 10^{-3} except PCDDs and PCDFs);

$K_{oc} = 10^{[0.0784 + (0.7919 \cdot \log[K_{ow}])]}$ (for organics with H ≥ 10^{-3});

$K_{oc} = 10^{\left[\log[K_{ow}] - 0.21\right]}$ (for PCDDs and PCDFs);

$K_{oc} = 0.0$ (for inorganics).

The following parameters are required for calculation of ksg, kse, ksr, and ksl.

Parameter	Description	Default Values
ksg =	COPC loss constant due to biotic and abiotic degradation (yr^{-1})	0.0 unless data available to support transformation rate
kse =	COPC loss constant due to soil erosion (yr^{-1})	Calculated as shown above (see Table B-1-3)
ksr =	COPC loss constant due to surface runoff (yr^{-1})	Calculated as shown above (see Table B-1-4)
ksl =	COPC loss constant due to leaching (yr^{-1})	Calculated as shown above (see Table B-1-5)
ksv =	COPC loss constant due to volatilization (yr^{-1})	Calculated as shown above (see Table B-1-6)
0.1 =	Unit conversion factor (g-m^2/kg-cm^2)	NA
X_e =	Unit soil loss (kg/m^2-yr)	Calculated using Table B-4-13 (see Section 5 above)
SD =	Sediment delivery ratio (unitless)	Calculated using Table B-4-13 (see Section 5 above)
ER =	Soil enrichment ratio (unitless)	Inorganics: 1.0 Organics: 3.0
BD =	Soil bulk density (g/cm^3)	1.5
Z_s =	Soil mixture zone depth (cm)	Untilled soil – 2 Tilled soil – 20
θ_{sw} =	Soil volumetric water content (mL/cm^3)	0.2
RO =	Average annual surface runoff from pervious areas (cm/yr)	Site data required
Kd_s =	Soil-water partition coefficient (cm^3-water/g-soil)	Calculated as shown above
$f_{oc,s}$ =	Fraction of organic carbon in soils (unitless)	0.002 to 0.024, See Page A-2-13 of EPA, 2005.
K_{oc} =	Organic carbon partition coefficient (cm^3/g)	Calculated as shown above
K_{ow} =	Octanol water partition coefficient (unitless)	COPC specific parameter
P =	Average annual precipitation (cm/yr)	22.9
I =	Average annual irrigation (cm/yr)	75
E_v =	Average annual evapotranspiration (cm/yr)	35 to 100
3.1536×10^7 =	Conversion factor (s/yr)	NA
H =	Henry's law constant (atm/m^3-gmol)	COPC specific parameter
Da =	Diffusivity of COPC in air (cm^2/s)	COPC specific parameter
BD =	Soil bulk density (g/cm^3)	1.5
T_a =	Ambient Temperature (K)	298
ρ_{soil} =	Solids particle density (g/cm^3)	2.7
R =	Ideal gas constant (atm-m^3/gmol-K)	8.205×10^{-5}

Addition of dioxin-like PCBs to breast milk pathway

The fourteen dioxin-like PCBs identified by the World Health Organization (WHO) will be added to the infant breast milk pathway. These fourteen compounds along with their respective toxicity equivalency factors are indicated in the following table:

Specific Isomer	Compound Name	TEF (WHO, 1997)
3,3',4,4'-TeCB	Tetrachlorobiphenyl (PCB 77)	0.0001
3,4,4',5-TCB	Tetrachlorobiphenyl (PCB 81)	0.0001
2,3,3'4,4'-PeCB	Pentachlorobiphenyl (PCB 105)	0.0001
2,3,4,4',5-PeCB	Pentachlorobiphenyl (PCB 114)	0.0005
2,3',4,4',5-PeCB	Pentachlorobiphenyl (PCB 118)	0.0001
2',3,4,4',5-PeCB	Pentachlorobiphenyl (PCB 123)	0.0001
3,3',4,4',5-PeCB	Pentachlorobiphenyl (PCB 126)	0.1
2,3,3',4,4',5-HxCB	Hexachlorobiphenyl (PCB 156)	0.0005
2,3,3',4,4',5'-HxCB	Hexachlorobiphenyl (PCB 157)	0.0005
2,3',4,4',5,5'-HxCB	Hexachlorobiphenyl (PCB 167)	0.00001
3,3',4,4',5,5'-HxCB	Hexachlorobiphenyl (PCB 169)	0.01
2,2',3,3',4,4',5-HpCB	Heptachlorobiphenyl (PCB 170)	0
2,2',3,4,4',5,5'-HpCB	Heptachlorobiphenyl (PCB 180)	0
2,3,3',4,4',5,5'-HpCB	Heptachlorobiphenyl (PCB 189)	0.0001

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Appendix J – HHRA IRAP-h Data Files

Plot files are available on the compact disk provided with this report under the directory titled “Appendix J”.

Appendix K – COPC Fate, Transport, and Toxicity Data

Table K-1: COPC Parameter Set 1

CAS_NUMBER	COPC_NAME	MW (g/mol)	T_m (°K)	V_p (atm)	S (mg/L)	H (atm-m3/mol)	D_a (cm2/sec)	Dw (cm2/sec)
00-01-2	Aluminum compounds	2.700E+01	6.600E+02	0.000E+00	9.500E+04	0.000E+00	0.000E+00	0.000E+00
00-01-3	Antimony compounds	1.250E+02	9.030E+02	9.000E-01	2.300E+04	2.500E-02	7.720E-02	9.570E-06
00-01-4	Arsenic compounds	7.800E+01	1.090E+03	3.300E-12	3.470E+04	7.700E-01	7.720E-02	9.570E-06
00-01-5	Barium compounds	1.390E+02	1.000E+03	5.580E-12	5.480E+04	0.000E+00	7.720E-02	9.570E-06
00-01-6	Beryllium compounds	9.010E+00	1.570E+03	5.580E-12	1.490E+05	1.500E-02	7.720E-02	9.570E-06
00-01-7	Cadmium compounds	1.120E+02	5.930E+02	5.450E-12	1.230E+05	3.100E-02	7.720E-02	9.570E-06
00-01-8	Chromium compounds	5.200E+01	2.170E+03	5.580E-12	8.670E+04	0.000E+00	1.270E-01	1.410E-05
00-01-9	Copper compounds	6.400E+01	1.100E+03	0.000E+00	5.700E+02	0.000E+00	7.720E-02	9.570E-06
00-02-0	Lead compounds	2.090E+02	6.030E+02	3.970E-12	9.580E+03	2.500E-02	7.720E-02	9.570E-06
00-02-2	Manganese compounds	5.500E+01	1.200E+03	0.000E+00	1.100E+03	0.000E+00	0.000E+00	0.000E+00
00-02-3	Mercury compounds	2.010E+02	2.340E+02	2.630E-06	6.000E-02	7.100E-03	1.090E-02	3.010E-05
00-02-4	Nickel compounds	5.870E+01	1.770E+03	5.580E-12	4.220E+05	2.500E-02	7.720E-02	9.570E-06
00-02-5	Selenium compounds	7.900E+01	4.930E+02	1.870E-13	2.060E+03	9.700E-03	7.720E-02	9.570E-06
00-02-6	Silver compounds	1.080E+02	1.230E+03	5.580E-12	7.050E+04	0.000E+00	7.720E-02	9.570E-06
00-02-7	Thallium compounds	2.050E+02	5.730E+02	5.580E-12	2.650E+04	0.000E+00	7.720E-02	9.570E-06
00-02-8	Vanadium compounds	5.100E+01	1.900E+03	0.000E+00	7.000E+02	0.000E+00	0.000E+00	0.000E+00
00-02-9	Zinc compounds	6.540E+01	6.930E+02	5.090E-12	3.440E+05	2.500E-02	7.720E-02	9.570E-06
00-07-2	PCB Mixture (non-dioxin like, 5+ chlorines)	3.260E+02	2.830E+02	1.010E-07	4.300E-02	2.830E-04	1.000E-03	1.000E-05
00-15-3	Cobalt compounds	5.900E+01	1.500E+03	0.000E+00	1.700E+03	0.000E+00	0.000E+00	0.000E+00
00-15-5	m,p-Xylene	0.000E+00	0.000E+00	0.000E+00	1.600E+02	0.000E+00	0.000E+00	0.000E+00
00-16-3	Composite TOE - Volatile	7.771E+01	1.591E+02	5.400E-01	9.428E+02	4.500E-02	1.043E-01	1.208E-05
00-16-4	Composirte TOE - Semivolatile	1.471E+02	2.701E+02	1.520E-04	1.237E+02	1.810E-04	6.820E-02	7.896E-06
00-16-5	Composirte TOE - Nonvolatile	2.720E+02	3.770E+02	4.940E-10	1.818E-03	7.391E-05	4.526E-02	5.240E-06
00-16-6	Boron compounds	1.100E+01	2.100E+03	1.560E-05	3.600E+04	0.000E+00	0.000E+00	0.000E+00
00-16-9	Tin compounds	1.190E+02	5.050E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
56-23-5	Carbon tetrachloride	1.540E+02	2.500E+02	1.580E-01	7.900E+02	3.000E-02	7.800E-02	8.800E-06
65-85-0	Benzoic acid	1.220E+02	3.960E+02	9.210E-07	3.400E+03	2.870E-06	1.000E-03	7.970E-06
67-64-1	Acetone	5.810E+01	1.780E+02	3.030E-01	1.000E+06	3.900E-05	1.240E-01	1.140E-05
67-66-3	Chloroform	1.190E+02	2.090E+02	2.630E-01	7.900E+03	3.700E-03	1.040E-01	1.000E-05

CAS_NUMBER	COPC_NAME	MW (g/mol)	T_m (°K)	V_p (atm)	S (mg/L)	H (atm-m3/mol)	D_a (cm2/sec)	Dw (cm2/sec)
71-43-2	Benzene	7.810E+01	2.790E+02	1.250E-01	1.800E+03	5.600E-03	8.800E-02	1.020E-05
74-83-9	Methyl bromide	9.490E+01	1.790E+02	2.130E+00	1.520E+04	6.240E-03	7.280E-02	1.210E-05
74-87-3	Methyl chloride	5.050E+01	1.750E+02	5.660E+00	5.330E+03	8.820E-03	1.260E-01	6.500E-06
74-88-4	Methyl iodide	1.420E+02	2.070E+02	5.320E-01	1.380E+04	5.260E-03	6.981E-02	8.083E-06
74-96-4	Bromoethane	1.090E+02	1.542E+02	6.100E-01	8.940E+03	7.490E-03	8.328E-02	9.643E-06
74-97-5	Bromochloromethane	1.294E+02	1.853E+02	1.875E-01	1.670E+04	1.460E-03	7.427E-02	8.600E-06
75-00-3	Ethyl chloride	6.450E+01	1.330E+02	1.320E+00	5.700E+03	8.800E-03	2.710E-01	1.150E-05
75-01-4	Vinyl chloride	6.250E+01	1.230E+02	3.950E+00	8.800E+03	2.700E-02	1.060E-01	1.230E-05
75-09-2	Dichloromethane	8.490E+01	1.780E+02	5.660E-01	1.300E+04	2.200E-03	1.010E-01	1.170E-05
75-15-0	Carbon disulfide	7.610E+01	1.530E+02	4.740E-01	1.200E+03	3.000E-02	1.040E-01	1.000E-05
75-25-2	Tribromomethane	2.530E+02	2.810E+02	7.250E-03	3.100E+03	6.500E+00	1.490E-02	1.030E-05
75-27-4	Bromodichloromethane	1.690E+02	2.160E+02	6.580E-02	6.700E+03	1.600E-03	1.000E-03	1.000E-05
75-35-4	1,1-Dichloroethylene	9.900E+01	1.530E+02	7.890E-01	2.300E+03	2.600E-02	9.000E-02	1.040E-05
75-69-4	Trichlorofluoromethane	1.370E+02	1.630E+02	1.050E+00	1.100E+03	9.700E-02	8.700E-02	9.700E-06
75-71-8	Dichlorodifluoromethane	1.210E+02	1.150E+02	6.380E+00	2.800E+02	3.430E-01	1.000E-03	1.000E-05
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1.874E+02	2.368E+02	4.360E-01	1.700E+02	4.809E-01	7.800E-02	8.200E-06
78-93-3	Methyl ethyl ketone	7.210E+01	1.860E+02	1.250E-01	2.200E+05	5.600E-05	8.080E-02	9.800E-06
79-01-6	Trichloroethylene	1.310E+02	1.880E+02	9.610E-02	1.500E+03	1.000E-02	7.900E-02	9.100E-06
84-66-2	Diethyl phthalate	2.220E+02	2.320E+02	2.110E-06	1.100E+03	4.500E-07	1.000E-03	1.000E-05
84-74-2	Dibutyl phthalate	2.780E+02	2.380E+02	9.610E-08	1.100E+01	1.800E-06	4.380E-02	7.860E-06
91-20-3	Naphthalene	1.280E+02	3.530E+02	1.120E-04	3.100E+01	4.800E-04	5.900E-02	7.500E-06
91-57-6	2-Methylnaphthalene	1.400E+02	3.080E+02	8.940E-05	2.500E+01	5.180E-04	7.047E-02	8.160E-06
95-47-6	2-Xylene	1.060E+02	2.480E+02	8.680E-03	1.800E+02	5.200E-03	8.700E-02	1.000E-05
95-48-7	o-Cresol	1.090E+02	3.040E+02	3.930E-04	2.600E+04	1.200E-06	7.400E-02	8.300E-06
95-50-1	1,2-Dichlorobenzene	1.470E+02	2.560E+02	1.790E-03	1.560E+02	1.900E-03	6.900E-02	7.900E-06
100-41-4	Ethylbenzene	1.060E+02	1.780E+02	1.260E-02	1.700E+02	7.900E-03	7.500E-02	7.800E-06
100-42-5	Styrene	1.040E+02	2.420E+02	8.030E-03	3.100E+02	2.700E-03	7.100E-02	8.000E-06
100-51-6	Benzyl alcohol	1.080E+02	2.580E+02	8.240E-05	4.000E+04	3.370E-07	1.000E-03	1.000E-05
100-52-7	Benzaldehyde	1.060E+02	2.470E+02	1.670E-03	3.000E+03	2.670E-05	1.000E-03	1.000E-05
106-46-7	1,4-Dichlorobenzene	1.470E+02	3.260E+02	1.320E-03	7.900E+01	2.400E-03	6.900E-02	7.900E-06
107-44-8	GB	1.400E+02	2.170E+02	2.760E-03	1.000E+06	5.400E-07	7.047E-02	8.160E-06
108-05-4	Vinyl acetate	8.610E+01	1.802E+02	1.180E-01	2.000E+04	5.100E-04	8.500E-02	9.200E-06
108-10-1	Methyl isobutyl ketone	1.000E+02	1.890E+02	2.630E-02	1.900E+04	1.400E-04	7.500E-02	7.800E-06

CAS_NUMBER	COPC_NAME	MW (g/mol)	T_m (°K)	V_p (atm)	S (mg/L)	H (atm-m3/mol)	D_a (cm2/sec)	Dw (cm2/sec)
108-88-3	Toluene	9.210E+01	1.780E+02	3.680E-02	5.300E+02	6.600E-03	8.700E-02	8.600E-06
108-90-7	Chlorobenzene	1.130E+02	2.280E+02	1.580E-02	4.700E+02	3.700E-03	7.300E-02	8.700E-06
110-54-3	n-Hexane	8.620E+01	1.780E+02	1.990E-01	9.500E+00	1.800E+00	9.737E-02	1.127E-05
117-81-7	Bis(2-ethylhexyl)phthalate	3.910E+02	2.180E+02	8.950E-11	3.400E-01	1.000E-07	3.510E-02	3.660E-06
118-96-7	2,4,6-Trinitrotoluene	2.270E+02	3.530E+02	2.660E-09	1.240E+02	4.870E-09	1.000E-03	1.000E-05
121-14-2	2,4-Dinitrotoluene	1.820E+02	3.420E+02	1.930E-07	2.700E+02	9.260E-08	2.030E-01	7.060E-06
124-48-1	Chlorodibromomethane	2.080E+02	2.510E+02	6.450E-03	2.600E+03	7.830E-04	1.000E-03	1.000E-05
131-11-3	Dimethylphthalate	1.940E+02	2.740E+02	2.170E-06	4.000E+03	1.050E-07	5.680E-02	6.290E-06
505-60-2	Sulfur mustard (or H/HD)	1.590E+02	2.870E+02	1.450E-04	9.200E+02	2.100E-05	6.474E-02	7.496E-06
1330-20-7	Xylene (mixed)	1.100E+02	0.000E+00	1.050E-02	1.100E+02	6.630E-03	8.276E-02	9.583E-06
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin	3.220E+02	5.790E+02	1.970E-12	1.930E-05	3.290E-05	1.040E-01	5.600E-06
3268-87-9	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	4.610E+02	5.990E+02	1.090E-15	7.400E-08	6.750E-06	8.690E-02	8.000E-06
7439-97-6	Mercury	2.010E+02	2.340E+02	2.630E-06	6.000E-02	7.100E-03	1.090E-02	3.010E-05
7446-09-5	Sulfur dioxide	6.410E+01	2.010E+02	3.940E+00	1.070E+05	8.100E-04	1.186E-01	1.374E-05
7487-94-7	Mercuric chloride	2.715E+02	5.501E+02	1.200E-04	6.900E+04	7.100E-10	4.530E-02	5.250E-06
7647-01-0	Hydrochloric acid	3.650E+01	1.590E+02	4.660E+01	7.200E+05	2.360E-03	1.000E-03	1.000E-05
7664-38-2	Phosphoric acid	9.800E+01	3.160E+02	2.710E-14	5.390E+05	7.600E-15	8.939E-02	1.035E-05
7664-39-3	Hydrofluoric acid	2.000E+01	0.000E+00	1.210E+00	9.220E+02	5.760E-04	3.880E-01	3.300E-05
7782-50-5	Chlorine	7.090E+01	1.720E+02	7.700E+00	6.300E+03	1.170E-02	1.000E-03	1.000E-05
10061-01-5	cis-1,3-Dichloropropene	1.110E+02	2.230E+02	3.460E-02	2.180E+03	2.710E-03	6.260E-02	1.000E-05
10061-02-6	trans-1,3-Dichloropropene	1.110E+02	0.000E+00	4.470E-02	2.800E+03	8.710E-04	8.226E-02	9.525E-06
10102-44-0	Nitrogen dioxide	4.600E+01	2.640E+02	1.190E+00	1.710E+05	2.450E-02	1.480E-01	1.714E-05
22967-92-6	Methyl mercury	2.160E+02	0.000E+00	0.000E+00	0.000E+00	4.700E-07	5.280E-02	6.110E-06
31508-00-6	2,3',4,4',5-Pentachlorobiphenyl	3.270E+02	0.000E+00	1.180E-08	1.340E-02	2.880E-04	4.003E-02	4.635E-06
32598-13-3	3,3',4,4'-Tetrachlorobiphenyl	2.920E+02	0.000E+00	2.150E-08	5.690E-04	1.103E-02	4.317E-02	4.998E-06
32598-14-4	2,3,3',4,4'-Pentachlorobiphenyl	3.260E+02	0.000E+00	8.570E-09	3.400E-03	8.250E-04	4.011E-02	4.645E-06
38380-08-4	2,3,3',4,4',5-Hexachlorobiphenyl	3.610E+02	0.000E+00	2.110E-09	5.330E-03	1.430E-04	3.748E-02	4.339E-06
39001-02-0	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	4.450E+02	5.320E+02	4.930E-15	1.160E-06	1.880E-06	1.950E-02	8.000E-06
39635-31-9	2,3,4,5,3',4',5'-Heptachlorobiphenyl	3.950E+02	0.000E+00	1.710E-10	7.530E-04	5.070E-05	3.529E-02	4.087E-06
50782-69-9	VX	2.670E+02	2.340E+02	9.210E-07	3.000E+04	3.500E-09	4.582E-02	5.306E-06
51207-31-9	2,3,7,8-Tetrachlorodibenzofuran	3.060E+02	5.010E+02	1.970E-11	4.190E-04	1.440E-05	2.350E-02	6.010E-06
52663-72-6	2,3',4,4',5,5'-Hexachlorobiphenyl	3.610E+02	0.000E+00	7.630E-10	2.230E-03	6.850E-05	3.748E-02	4.339E-06
55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran	4.090E+02	4.950E+02	4.040E-13	1.400E-06	1.400E-05	2.030E-02	8.000E-06

CAS_NUMBER	COPC_NAME	MW (g/mol)	T_m (°K)	V_p (atm)	S (mg/L)	H (atm-m3/mol)	D_a (cm2/sec)	Dw (cm2/sec)
57465-28-8	3,4,5,3',4'-Pentachlorobiphenyl	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran	4.090E+02	5.100E+02	4.610E-14	1.350E-06	1.410E-05	2.030E-02	8.000E-06
69782-90-7	2,3,3',4,4',5'-Hexachlorobiphenyl	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
70362-50-4	3,4,4',5-Tetrachlorobiphenyl	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
73207-98-4	EA 2192	2.393E+02	0.000E+00	6.763E-09	1.400E+04	4.380E-12	4.929E-02	5.707E-06
74472-37-0	2,3,4,4'5-Pentachlorobiphenyl	3.260E+02	3.710E+02	7.180E-09	1.600E-02	9.240E-05	4.011E-02	4.645E-06

Table K-2: COPC Parameter Set 2

CAS_NUMBER	COPC_NAME	K_ow (unitless)	K_oc (mL/g)	Kd_s (cm3/g)	Kd_sw (L/kg)	Kd_bs (cm3/g)	K_sg (per year)	f_v (unitless)
00-01-2	Aluminum compounds	0.000E+00	0.000E+00	9.900E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
00-01-3	Antimony compounds	5.370E+00	0.000E+00	4.500E+01	4.500E+01	4.500E+01	0.000E+00	0.000E+00
00-01-4	Arsenic compounds	4.786E+00	0.000E+00	2.900E+01	2.900E+01	2.900E+01	0.000E+00	0.000E+00
00-01-5	Barium compounds	1.698E+00	0.000E+00	4.100E+01	4.100E+01	4.100E+01	0.000E+00	0.000E+00
00-01-6	Beryllium compounds	2.692E-01	0.000E+00	7.900E+02	7.900E+02	7.900E+02	0.000E+00	0.000E+00
00-01-7	Cadmium compounds	8.511E-01	0.000E+00	7.500E+01	7.500E+01	7.500E+01	0.000E+00	0.000E+00
00-01-8	Chromium compounds	1.698E+00	0.000E+00	1.900E+01	1.900E+01	1.900E+01	0.000E+00	9.000E-03
00-01-9	Copper compounds	2.692E-01	0.000E+00	4.300E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
00-02-0	Lead compounds	5.370E+00	0.000E+00	9.000E+02	9.000E+02	9.000E+02	0.000E+00	0.000E+00
00-02-2	Manganese compounds	1.698E+00	0.000E+00	6.500E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
00-02-3	Mercury compounds	4.169E+00	0.000E+00	1.000E+03	1.000E+03	3.000E+03	0.000E+00	8.500E-01
00-02-4	Nickel compounds	2.692E-01	0.000E+00	6.500E+01	6.500E+01	6.500E+01	0.000E+00	0.000E+00
00-02-5	Selenium compounds	1.738E+00	0.000E+00	5.000E+00	5.000E+00	5.000E+00	0.000E+00	0.000E+00
00-02-6	Silver compounds	1.698E+00	0.000E+00	8.300E+00	8.300E+00	8.300E+00	0.000E+00	0.000E+00
00-02-7	Thallium compounds	1.698E+00	0.000E+00	7.100E+01	7.100E+01	7.100E+01	0.000E+00	0.000E+00
00-02-8	Vanadium compounds	0.000E+00	0.000E+00	1.000E+03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
00-02-9	Zinc compounds	3.388E-01	0.000E+00	6.200E+01	6.200E+01	6.200E+01	0.000E+00	0.000E+00
00-07-2	PCB Mixture (non-dioxin like, 5+ chlorines)	3.162E+06	2.450E+06	2.450E+04	1.840E+05	9.810E+04	3.000E-02	9.920E-01
00-15-3	Cobalt compounds	1.698E+00	0.000E+00	4.500E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
00-15-5	m,p-Xylene	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
00-16-3	Composite TOE - Volatile	1.338E+02	9.926E+02	9.926E+00	7.444E+01	3.970E+01	5.250E+00	1.000E+00
00-16-4	Composirte TOE - Semivolatile	1.201E+03	1.065E+03	1.065E+01	7.987E+01	4.260E+01	7.071E+00	1.000E+00
00-16-5	Composirte TOE - Nonvolatile	1.471E+07	1.112E+07	1.112E+05	8.337E+05	4.447E+05	3.777E-01	8.340E-01
00-16-6	Boron compounds	0.000E+00	0.000E+00	3.000E+00	0.000E+00	0.000E+00	0.000E+00	1.000E+00
00-16-9	Tin compounds	0.000E+00	0.000E+00	2.500E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
56-23-5	Carbon tetrachloride	6.310E+02	1.520E+02	3.500E-01	1.140E+01	6.080E+00	7.000E-01	1.000E+00
65-85-0	Benzoic acid	7.413E+01	6.000E-01	6.000E-03	5.000E-02	2.400E-02	0.000E+00	1.000E+00
67-64-1	Acetone	5.754E-01	5.800E-01	8.700E-02	4.000E-02	2.000E-02	3.610E+01	1.000E+00
67-66-3	Chloroform	1.000E+02	5.250E+01	8.000E-02	3.940E+00	2.100E+00	1.410E+00	1.000E+00
71-43-2	Benzene	1.259E+02	6.170E+01	1.200E-01	4.630E+00	2.470E+00	1.580E+01	1.000E+00
74-83-9	Methyl bromide	1.549E+01	9.000E+00	9.000E-02	6.750E-01	3.600E-01	9.030E+00	1.000E+00
74-87-3	Methyl chloride	8.128E+00	6.300E+00	6.000E-02	4.700E-01	2.500E-01	9.030E+00	1.000E+00

CAS_NUMBER	COPC_NAME	K_ow (unitless)	K_oc (mL/g)	Kd_s (cm3/g)	Kd_sw (L/kg)	Kd_bs (cm3/g)	K_sg (per year)	f_v (unitless)
74-88-4	Methyl iodide	3.236E+01	1.880E+01	1.880E-01	1.410E+00	7.520E-01	9.035E+00	1.000E+00
74-96-4	Bromoethane	4.074E+01	2.256E+01	2.256E-01	1.692E+00	9.024E-01	7.226E+00	1.000E+00
74-97-5	Bromochloromethane	2.570E+01	1.567E+01	1.567E-01	1.175E+00	6.267E-01	0.000E+00	1.000E+00
75-00-3	Ethyl chloride	2.512E+01	1.540E+01	3.200E-02	1.150E+00	6.200E-01	9.030E+00	1.000E+00
75-01-4	Vinyl chloride	2.512E+01	1.540E+01	3.700E-02	1.150E+00	6.200E-01	1.410E+00	1.000E+00
75-09-2	Dichloromethane	1.995E+01	1.000E+01	2.400E-02	7.500E-01	4.000E-01	9.030E+00	1.000E+00
75-15-0	Carbon disulfide	1.585E+02	6.620E+01	9.100E-02	4.960E+00	2.650E+00	0.000E+00	1.000E+00
75-25-2	Tribromomethane	2.344E+02	1.260E+02	1.260E+00	9.450E+00	5.040E+00	1.410E+00	1.000E+00
75-27-4	Bromodichloromethane	1.259E+02	5.510E+01	1.100E-01	4.130E+00	2.210E+00	0.000E+00	1.000E+00
75-35-4	1,1-Dichloroethylene	1.259E+02	6.500E+01	1.200E-01	4.880E+00	2.600E+00	1.410E+00	1.000E+00
75-69-4	Trichlorofluoromethane	3.162E+02	1.140E+02	2.400E-01	8.570E+00	4.570E+00	7.000E-01	1.000E+00
75-71-8	Dichlorodifluoromethane	1.445E+02	6.150E+01	6.200E-01	4.610E+00	2.460E+00	1.410E+00	1.000E+00
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1.445E+03	3.809E+02	3.809E+00	2.857E+01	1.524E+01	0.000E+00	1.000E+00
78-93-3	Methyl ethyl ketone	1.950E+00	1.930E+00	2.900E-01	1.400E-01	8.000E-02	3.610E+01	1.000E+00
79-01-6	Trichloroethylene	2.512E+02	9.430E+01	3.300E-01	7.070E+00	3.770E+00	7.000E-01	1.000E+00
84-66-2	Diethyl phthalate	3.162E+02	8.220E+01	4.400E+01	6.170E+00	3.290E+00	4.520E+00	1.000E+00
84-74-2	Dibutyl phthalate	5.012E+04	1.570E+03	5.200E+03	1.180E+02	6.280E+01	1.100E+01	9.940E-01
91-20-3	Naphthalene	1.995E+03	1.190E+03	3.000E+02	8.930E+01	4.760E+01	5.270E+00	1.000E+00
91-57-6	2-Methylnaphthalene	7.943E+03	6.823E+03	9.500E+02	5.117E+02	2.729E+02	0.000E+00	1.000E+00
95-47-6	2-Xylene	1.259E+03	2.410E+02	7.300E-01	1.810E+01	9.640E+00	9.030E+00	1.000E+00
95-48-7	o-Cresol	8.913E+01	8.260E+01	8.300E-01	6.200E+00	3.310E+00	3.610E+01	1.000E+00
95-50-1	1,2-Dichlorobenzene	2.399E+03	3.790E+02	3.790E+00	2.840E+01	1.520E+01	1.410E+00	1.000E+00
100-41-4	Ethylbenzene	1.259E+03	2.040E+02	7.300E-01	1.530E+01	8.160E+00	2.530E+01	1.000E+00
100-42-5	Styrene	1.000E+03	9.120E+02	1.200E+02	6.840E+01	3.650E+01	9.030E+00	1.000E+00
100-51-6	Benzyl alcohol	1.259E+01	1.210E+01	1.200E-01	9.000E-01	4.800E-01	0.000E+00	1.000E+00
100-52-7	Benzaldehyde	3.020E+01	2.850E+01	2.900E-01	2.140E+00	1.140E+00	0.000E+00	1.000E+00
106-46-7	1,4-Dichlorobenzene	3.162E+03	6.160E+02	1.200E+00	4.620E+01	2.460E+01	1.410E+00	1.000E+00
107-44-8	GB	1.991E+00	5.888E+01	5.888E-01	4.416E+00	2.355E+00	0.000E+00	1.000E+00
108-05-4	Vinyl acetate	5.370E+00	5.220E+00	7.900E-01	3.900E-01	2.100E-01	0.000E+00	1.000E+00
108-10-1	Methyl isobutyl ketone	1.585E+01	1.510E+01	2.200E+00	1.130E+00	6.100E-01	3.610E+01	1.000E+00
108-88-3	Toluene	5.012E+02	1.400E+02	3.600E-01	1.050E+01	5.600E+00	1.150E+01	1.000E+00
108-90-7	Chlorobenzene	6.310E+02	2.240E+02	4.400E-01	1.680E+01	8.960E+00	1.690E+00	1.000E+00
110-54-3	n-Hexane	7.943E+03	1.468E+03	1.468E+01	1.101E+02	5.873E+01	0.000E+00	1.000E+00

CAS_NUMBER	COPC_NAME	K_ow (unitless)	K_oc (mL/g)	Kd_s (cm3/g)	Kd_sw (L/kg)	Kd_bs (cm3/g)	K_sg (per year)	f_v (unitless)
117-81-7	Bis(2-ethylhexyl)phthalate	1.259E+05	1.110E+05	2.300E+06	8.330E+03	4.440E+03	1.100E+01	1.310E-01
118-96-7	2,4,6-Trinitrotoluene	3.981E+01	3.740E+01	3.700E-01	2.800E+00	1.500E+00	1.410E+00	9.400E-01
121-14-2	2,4-Dinitrotoluene	9.550E+01	8.840E+01	8.800E-01	6.630E+00	3.540E+00	1.410E+00	9.990E-01
124-48-1	Chlorodibromomethane	1.698E+02	6.990E+01	7.000E-01	5.240E+00	2.800E+00	1.410E+00	1.000E+00
131-11-3	Dimethylphthalate	3.631E+01	3.420E+01	3.400E-01	2.560E+00	1.370E+00	3.610E+01	1.000E+00
505-60-2	Sulfur mustard (or H/HD)	2.344E+01	1.318E+02	1.318E+00	9.887E+00	5.273E+00	2.333E+04	1.000E+00
1330-20-7	Xylene (mixed)	1.585E+03	1.399E+03	2.900E+02	1.049E+02	5.597E+01	9.040E+00	0.000E+00
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin	6.310E+06	3.890E+06	3.890E+04	2.920E+05	1.560E+05	3.000E-02	6.640E-01
3268-87-9	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	1.585E+08	9.770E+07	9.770E+05	7.330E+06	3.910E+06	3.000E-02	2.000E-03
7439-97-6	Mercury	4.170E+00	0.000E+00	1.000E+03	1.000E+03	3.000E+03	0.000E+00	1.000E+00
7446-09-5	Sulfur dioxide	6.310E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.000E+00
7487-94-7	Mercuric chloride	6.095E-01	0.000E+00	5.800E+04	1.000E+05	5.000E+04	0.000E+00	8.500E-01
7647-01-0	Hydrochloric acid	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.000E+00
7664-38-2	Phosphoric acid	1.698E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.863E-05
7664-39-3	Hydrofluoric acid	1.698E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
7782-50-5	Chlorine	7.079E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.000E+00
10061-01-5	cis-1,3-Dichloropropene	1.148E+02	1.060E+02	1.060E+00	7.949E+00	4.240E+00	1.053E+01	1.000E+00
10061-02-6	trans-1,3-Dichloropropene	1.072E+02	9.903E+01	9.903E-01	7.427E+00	3.961E+00	1.053E+01	0.000E+00
10102-44-0	Nitrogen dioxide	2.630E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.000E+00
22967-92-6	Methyl mercury	2.570E+00	0.000E+00	7.000E+03	1.000E+05	3.000E+03	0.000E+00	0.000E+00
31508-00-6	2,3',4,4',5-Pentachlorobiphenyl	1.318E+07	9.983E+06	9.983E+04	7.487E+05	3.993E+05	2.770E-02	0.000E+00
32598-13-3	3,3',4,4'-Tetrachlorobiphenyl	4.266E+06	3.293E+06	3.293E+04	2.470E+05	1.317E+05	2.770E-02	0.000E+00
32598-14-4	2,3,3',4,4'-Pentachlorobiphenyl	6.166E+06	4.730E+06	4.730E+04	3.547E+05	1.892E+05	2.770E-02	0.000E+00
38380-08-4	2,3,3',4,4',5-Hexachlorobiphenyl	3.981E+07	2.959E+07	2.959E+05	2.219E+06	1.183E+06	2.770E-02	0.000E+00
39001-02-0	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	1.000E+08	6.170E+07	6.170E+05	4.620E+06	2.470E+06	3.000E-02	2.000E-03
39635-31-9	2,3,4,5,3',4',5'-Heptachlorobiphenyl	1.862E+08	1.348E+08	1.348E+06	1.011E+07	5.392E+06	2.770E-02	0.000E+00
50782-69-9	VX	1.230E+02	3.162E+02	3.162E+00	2.372E+01	1.265E+01	0.000E+00	9.994E-01
51207-31-9	2,3,7,8-Tetrachlorodibenzofuran	1.259E+06	7.760E+05	7.760E+03	5.820E+04	3.100E+04	3.000E-02	7.700E-01
52663-72-6	2,3',4,4',5,5'-Hexachlorobiphenyl	3.162E+07	2.359E+07	2.359E+05	1.769E+06	9.437E+05	2.770E-02	0.000E+00
55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran	2.512E+07	1.550E+07	1.550E+05	1.160E+06	6.200E+05	3.000E-02	5.700E-02
57465-28-8	3,4,5,3',4'-Pentachlorobiphenyl	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.770E-02	0.000E+00
67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran	2.512E+07	1.550E+07	1.550E+05	1.160E+06	6.200E+05	3.000E-02	1.000E-02
69782-90-7	2,3,3',4,4',5'-Hexachlorobiphenyl	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.770E-02	0.000E+00

CAS_NUMBER	COPC_NAME	K_ow (unitless)	K_oc (mL/g)	Kd_s (cm3/g)	Kd_sw (L/kg)	Kd_bs (cm3/g)	K_sg (per year)	f_v (unitless)
70362-50-4	3,4,4',5-Tetrachlorobiphenyl	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.770E-02	0.000E+00
73207-98-4	EA 2192	3.311E+01	6.457E+03	6.457E+01	4.842E+02	2.583E+02	0.000E+00	1.000E+00
74472-37-0	2,3,4,4'5-Pentachlorobiphenyl	9.550E+06	7.271E+06	7.271E+04	5.454E+05	2.909E+05	2.770E-02	9.845E-01

Table K-3: COPC Parameter Set 3

CAS_NUMBER	COPC_NAME	RCF ([µg/g DW plant]/[µg/ml soil water])	br_root_veg ([µg/g DW plant]/[µg/g soil])	br_leafy_veg ([µg/g DW plant]/[µg/g soil])	br_forage ([µg/g DW plant]/[µg/g soil])	bv_leafy_veg ([µg/g DW plant]/[µg/g air])	bv_forage ([µg/g DW plant]/[µg/g air])	ba_milk (day/kg FW tissue)
00-01-2	Aluminum compounds	0.000E+00	6.500E-04	6.500E-04	6.500E-04	0.000E+00	0.000E+00	2.000E-04
00-01-3	Antimony compounds	0.000E+00	3.000E-02	3.190E-02	3.190E-02	0.000E+00	0.000E+00	1.000E-04
00-01-4	Arsenic compounds	0.000E+00	8.000E-03	6.330E-03	6.330E-03	0.000E+00	0.000E+00	6.000E-05
00-01-5	Barium compounds	0.000E+00	1.500E-02	3.220E-02	3.220E-02	0.000E+00	0.000E+00	3.500E-04
00-01-6	Beryllium compounds	0.000E+00	1.500E-03	2.580E-03	2.580E-03	0.000E+00	0.000E+00	9.000E-07
00-01-7	Cadmium compounds	0.000E+00	6.400E-02	1.250E-01	1.250E-01	0.000E+00	0.000E+00	6.500E-06
00-01-8	Chromium compounds	0.000E+00	4.500E-03	4.880E-03	4.880E-03	0.000E+00	0.000E+00	1.500E-03
00-01-9	Copper compounds	0.000E+00	2.500E-01	2.500E-01	2.500E-01	0.000E+00	0.000E+00	1.500E-03
00-02-0	Lead compounds	0.000E+00	9.000E-03	1.360E-02	1.360E-02	0.000E+00	0.000E+00	2.500E-04
00-02-2	Manganese compounds	0.000E+00	5.000E-02	5.000E-02	5.000E-02	0.000E+00	0.000E+00	3.500E-04
00-02-3	Mercury compounds	0.000E+00	2.000E-01	2.000E-01	2.000E-01	0.000E+00	0.000E+00	4.500E-04
00-02-4	Nickel compounds	0.000E+00	8.000E-03	9.310E-03	9.310E-03	0.000E+00	0.000E+00	1.000E-03
00-02-5	Selenium compounds	0.000E+00	2.200E-02	1.950E-02	1.950E-02	0.000E+00	0.000E+00	5.860E-03
00-02-6	Silver compounds	0.000E+00	1.000E-01	1.380E-01	1.380E-01	0.000E+00	0.000E+00	2.000E-02
00-02-7	Thallium compounds	0.000E+00	4.000E-04	8.580E-04	8.580E-04	0.000E+00	0.000E+00	2.000E-03
00-02-8	Vanadium compounds	0.000E+00	3.000E-03	3.000E-03	3.000E-03	0.000E+00	0.000E+00	2.000E-05
00-02-9	Zinc compounds	0.000E+00	9.000E-01	9.700E-02	9.700E-02	0.000E+00	0.000E+00	3.250E-05
00-07-2	PCB Mixture (non-dioxin like, 5+ chlorines)	2.350E+04	9.580E-01	6.780E-03	6.780E-03	1.650E+03	1.650E+03	6.500E-03
00-15-3	Cobalt compounds	0.000E+00	7.000E-03	7.000E-03	7.000E-03	0.000E+00	0.000E+00	2.000E-03
00-15-5	m,p-Xylene	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.000E+00
00-16-3	Composite TOE - Volatile	1.310E+00	1.320E-01	2.285E+00	2.285E+00	2.285E-04	2.285E-04	7.408E-04
00-16-4	Composite TOE - Semivolatile	7.098E+00	6.665E-01	6.428E-01	6.428E-01	5.879E-01	5.879E-01	2.502E-03
00-16-5	Composite TOE - Nonvolatile	9.977E+03	8.975E-02	2.787E-03	2.787E-03	3.252E+04	3.252E+04	4.220E-03
00-16-6	Boron compounds	0.000E+00	2.000E+00	2.000E+00	2.000E+00	0.000E+00	0.000E+00	1.500E-03
00-16-9	Tin compounds	0.000E+00	6.000E-03	6.000E-03	6.000E-03	0.000E+00	0.000E+00	1.000E-03
56-23-5	Carbon tetrachloride	3.330E+01	9.510E+01	9.320E-01	9.320E-01	1.790E-03	1.790E-03	1.830E-03
65-85-0	Benzoic acid	1.270E+01	2.120E+03	3.210E+00	3.210E+00	1.910E+00	1.910E+00	1.190E-05
67-64-1	Acetone	6.460E+00	7.420E+01	8.380E+00	8.380E+00	7.960E-04	7.960E-04	6.020E-06
67-66-3	Chloroform	8.050E+00	1.010E+02	2.700E+00	2.700E+00	2.040E-03	2.040E-03	6.110E-04
71-43-2	Benzene	9.620E+00	8.010E+01	2.370E+00	2.370E+00	1.720E-03	1.720E-03	7.120E-04
74-83-9	Methyl bromide	8.220E+00	9.140E+01	7.950E+00	7.950E+00	1.660E-04	1.660E-04	1.500E-04

CAS_NUMBER	COPC_NAME	RCF ([µg/g DW plant]/[µg/ml soil water])	br_root_veg ([µg/g DW plant]/[µg/g soil])	br_leafy_veg ([µg/g DW plant]/[µg/g soil])	br_forage ([µg/g DW plant]/[µg/g soil])	bv_leafy_veg ([µg/g DW plant]/[µg/g air])	bv_forage ([µg/g DW plant]/[µg/g air])	ba_milk (day/kg FW tissue)
74-87-3	Methyl chloride	7.470E+00	1.190E+02	8.380E+00	8.380E+00	5.900E-05	5.900E-05	8.590E-05
74-88-4	Methyl iodide	2.902E+00	1.544E+01	5.191E+00	5.191E+00	4.311E-04	4.311E-04	2.704E-04
74-96-4	Bromoethane	3.465E+00	1.536E+01	4.544E+00	4.544E+00	3.869E-04	3.869E-04	3.222E-04
74-97-5	Bromochloromethane	2.431E+00	1.551E+01	5.930E+00	5.930E+00	1.215E-03	1.215E-03	2.259E-04
75-00-3	Ethyl chloride	9.090E+00	2.840E+02	6.010E+00	6.010E+00	1.970E-04	1.970E-04	2.220E-04
75-01-4	Vinyl chloride	9.090E+00	2.460E+02	6.010E+00	6.010E+00	6.410E-05	6.410E-05	2.220E-04
75-09-2	Dichloromethane	8.640E+00	3.590E+02	6.860E+00	6.860E+00	6.160E-04	6.160E-04	1.840E-04
75-15-0	Carbon disulfide	1.150E+01	1.260E+02	2.070E+00	2.070E+00	4.100E-04	4.100E-04	8.260E-04
75-25-2	Tribromomethane	1.550E+01	1.230E+01	1.650E+00	1.650E+00	2.870E-06	2.870E-06	1.050E-03
75-27-4	Bromodichloromethane	9.620E+00	8.740E+01	2.370E+00	2.370E+00	6.020E-03	6.020E-03	7.120E-04
75-35-4	1,1-Dichloroethylene	9.620E+00	8.010E+01	2.370E+00	2.370E+00	3.710E-04	3.710E-04	7.120E-04
75-69-4	Trichlorofluoromethane	1.950E+01	8.140E+01	1.390E+00	1.390E+00	2.650E-04	2.650E-04	1.250E-03
75-71-8	Dichlorodifluoromethane	1.070E+01	1.740E+01	2.190E+00	2.190E+00	3.250E-05	3.250E-05	7.790E-04
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	8.188E+00	2.150E+00	5.775E-01	5.775E-01	2.696E-04	2.696E-04	2.721E-03
78-93-3	Methyl ethyl ketone	6.700E+00	2.310E+01	8.380E+00	8.380E+00	2.030E-03	2.030E-03	2.210E-05
79-01-6	Trichloroethylene	1.640E+01	4.960E+01	1.590E+00	1.590E+00	2.010E-03	2.010E-03	1.100E-03
84-66-2	Diethyl phthalate	1.950E+01	4.440E-01	1.390E+00	1.390E+00	5.710E+01	5.710E+01	1.250E-03
84-74-2	Dibutyl phthalate	9.660E+02	1.860E-01	7.400E-02	7.400E-02	3.150E+03	3.150E+03	7.660E-03
91-20-3	Naphthalene	8.070E+01	2.690E-01	4.790E-01	4.790E-01	3.810E-01	3.810E-01	3.130E-03
91-57-6	2-Methylnaphthalene	3.041E+01	3.201E-02	2.157E-01	2.157E-01	1.537E+00	1.537E+00	5.120E-03
95-47-6	2-Xylene	5.660E+01	7.760E+01	6.250E-01	6.250E-01	2.150E-02	2.150E-02	2.560E-03
95-48-7	o-Cresol	1.370E+01	1.660E+01	2.890E+00	2.890E+00	5.560E+00	5.560E+00	5.640E-04
95-50-1	1,2-Dichlorobenzene	9.300E+01	2.450E+01	4.310E-01	4.310E-01	1.170E-01	1.170E-01	3.370E-03
100-41-4	Ethylbenzene	5.660E+01	7.760E+01	6.250E-01	6.250E-01	1.420E-02	1.420E-02	2.560E-03
100-42-5	Styrene	4.740E+01	3.950E-01	7.140E-01	7.140E-01	3.240E-02	3.240E-02	2.300E-03
100-51-6	Benzyl alcohol	7.940E+00	6.580E+01	8.380E+00	8.380E+00	2.460E+00	2.460E+00	1.260E-04
100-52-7	Benzaldehyde	9.510E+00	3.340E+01	5.400E+00	5.400E+00	7.890E-02	7.890E-02	2.560E-04
106-46-7	1,4-Dichlorobenzene	1.150E+02	9.590E+01	3.670E-01	3.670E-01	1.240E-01	1.240E-01	3.750E-03
107-44-8	GB	3.390E-01	5.757E-01	2.601E+01	2.601E+01	2.155E-01	2.155E-01	2.255E-05
108-05-4	Vinyl acetate	7.160E+00	9.060E+00	8.380E+00	8.380E+00	6.570E-04	6.570E-04	5.894E-05
108-10-1	Methyl isobutyl ketone	8.260E+00	3.750E+00	7.840E+00	7.840E+00	7.570E-03	7.570E-03	1.530E-04
108-88-3	Toluene	2.790E+01	7.740E+01	1.070E+00	1.070E+00	6.360E-03	6.360E-03	1.620E-03

CAS_NUMBER	COPC_NAME	RCF ([µg/g DW plant]/[µg/ml soil water])	br_root_veg ([µg/g DW plant]/[µg/g soil])	br_leafy_veg ([µg/g DW plant]/[µg/g soil])	br_forage ([µg/g DW plant]/[µg/g soil])	bv_leafy_veg ([µg/g DW plant]/[µg/g air])	bv_forage ([µg/g DW plant]/[µg/g air])	ba_milk (day/kg FW tissue)
108-90-7	Chlorobenzene	3.330E+01	7.560E+01	9.320E-01	9.320E-01	1.450E-02	1.450E-02	1.830E-03
110-54-3	n-Hexane	3.041E+01	2.071E+00	2.157E-01	2.157E-01	4.423E-04	4.423E-04	5.120E-03
117-81-7	Bis(2-ethylhexyl)phthalate	1.960E+03	8.540E-04	4.370E-02	4.370E-02	1.510E+05	1.510E+05	8.400E-03
118-96-7	2,4,6-Trinitrotoluene	1.030E+01	2.740E+01	4.600E+00	4.600E+00	5.810E+02	5.810E+02	3.170E-04
121-14-2	2,4-Dinitrotoluene	1.410E+01	1.590E+01	2.780E+00	2.780E+00	7.750E+01	7.750E+01	5.920E-04
124-48-1	Chlorodibromomethane	1.210E+01	1.730E+01	1.990E+00	1.990E+00	1.690E-02	1.690E-02	8.630E-04
131-11-3	Dimethylphthalate	1.000E+01	2.930E+01	4.860E+00	4.860E+00	2.440E+01	2.440E+01	2.950E-04
505-60-2	Sulfur mustard (or H/HD)	2.264E+00	1.718E+00	6.254E+00	6.254E+00	7.661E-02	7.661E-02	2.100E-04
1330-20-7	Xylene (mixed)	8.790E+00	3.031E-02	5.475E-01	5.475E-01	2.157E-02	2.157E-02	2.833E-03
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin	4.000E+04	1.030E+00	4.550E-03	4.550E-03	6.550E+04	6.550E+04	5.500E-03
3268-87-9	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	4.790E+05	4.900E-01	7.050E-04	7.050E-04	2.360E+06	2.360E+06	1.440E-03
7439-97-6	Mercury	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.500E-04
7446-09-5	Sulfur dioxide	4.036E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.000E+00
7487-94-7	Mercuric chloride	0.000E+00	3.600E-02	1.450E-02	0.000E+00	1.800E+03	1.800E+03	2.262E-03
7647-01-0	Hydrochloric acid	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.100E-05
7664-38-2	Phosphoric acid	5.094E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.000E+00
7664-39-3	Hydrofluoric acid	3.000E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.000E+00
7782-50-5	Chlorine	7.360E+00	7.000E+01	8.380E+00	8.380E+00	0.000E+00	0.000E+00	7.590E-05
10061-01-5	cis-1,3-Dichloropropene	1.165E+00	1.099E+00	2.496E+00	2.496E+00	3.224E-03	3.224E-03	6.701E-04
10061-02-6	trans-1,3-Dichloropropene	1.104E+00	1.115E+00	2.598E+00	2.598E+00	9.319E-03	9.319E-03	6.400E-04
10102-44-0	Nitrogen dioxide	7.135E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.000E+00
22967-92-6	Methyl mercury	0.000E+00	9.900E-02	2.940E-02	0.000E+00	0.000E+00	0.000E+00	3.380E-04
31508-00-6	2,3',4,4',5-Pentachlorobiphenyl	9.171E+03	9.187E-02	2.969E-03	2.969E-03	7.429E+03	7.429E+03	4.382E-03
32598-13-3	3,3',4,4'-Tetrachlorobiphenyl	3.847E+03	1.168E-01	5.700E-03	5.700E-03	5.830E+01	5.830E+01	6.087E-03
32598-14-4	2,3,3',4,4'-Pentachlorobiphenyl	5.109E+03	1.080E-01	4.607E-03	4.607E-03	1.154E+03	1.154E+03	5.534E-03
38380-08-4	2,3,3',4,4',5-Hexachlorobiphenyl	2.148E+04	7.260E-02	1.567E-03	1.567E-03	4.854E+04	4.854E+04	2.856E-03
39001-02-0	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	4.790E+05	7.760E-01	9.200E-04	9.200E-04	2.280E+06	2.280E+06	1.850E-03
39635-31-9	2,3,4,5,3',4',5'-Heptachlorobiphenyl	7.045E+04	5.226E-02	6.426E-04	6.426E-04	7.079E+05	7.079E+05	1.443E-03
50782-69-9	VX	1.228E+00	3.884E-01	2.399E+00	2.399E+00	2.687E+03	2.687E+03	7.013E-04
51207-31-9	2,3,7,8-Tetrachlorodibenzofuran	1.160E+04	1.490E+00	1.150E-02	1.150E-02	4.570E+04	4.570E+04	7.680E-03
52663-72-6	2,3',4,4',5,5'-Hexachlorobiphenyl	1.799E+04	7.625E-02	1.791E-03	1.791E-03	7.930E+04	7.930E+04	3.150E-03
55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran	1.160E+05	7.480E-01	2.050E-03	2.050E-03	8.300E+05	8.300E+05	3.460E-03

CAS_NUMBER	COPC_NAME	RCF ([µg/g DW plant]/[µg/ml soil water])	br_root_veg ([µg/g DW plant]/[µg/g soil])	br_leafy_veg ([µg/g DW plant]/[µg/g soil])	br_forage ([µg/g DW plant]/[µg/g soil])	bv_leafy_veg ([µg/g DW plant]/[µg/g air])	bv_forage ([µg/g DW plant]/[µg/g air])	ba_milk (day/kg FW tissue)
57465-28-8	3,4,5,3',4'-Pentachlorobiphenyl	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.000E+00
67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran	1.160E+05	7.480E-01	2.050E-03	2.050E-03	8.300E+05	8.300E+05	3.460E-03
69782-90-7	2,3,3',4,4',5'-Hexachlorobiphenyl	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.000E+00
70362-50-4	3,4,4',5-Tetrachlorobiphenyl	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.000E+00
73207-98-4	EA 2192	2.954E+00	4.575E-02	5.122E+00	5.122E+00	5.306E+05	5.306E+05	2.753E-04
74472-37-0	2,3,4,4'5-Pentachlorobiphenyl	7.155E+03	9.840E-02	3.577E-03	3.577E-03	1.642E+04	1.642E+04	4.868E-03

Table K-4: COPC Parameter Set 4

CAS_NUMBER	COPC_NAME	ba_beef (day/kg FW tissue)	ba_pork (day/kg FW tissue)	BCF_fish (L/kg FW)	BAF_fish (L/kg FW tissue)	BSAF_fish (unitless)
00-01-2	Aluminum compounds	1.500E-03	0.000E+00	1.000E+00	0.000E+00	0.000E+00
00-01-3	Antimony compounds	1.000E-03	0.000E+00	4.000E+01	0.000E+00	0.000E+00
00-01-4	Arsenic compounds	2.000E-03	0.000E+00	1.140E+02	0.000E+00	0.000E+00
00-01-5	Barium compounds	1.500E-04	0.000E+00	6.330E+02	0.000E+00	0.000E+00
00-01-6	Beryllium compounds	1.000E-03	0.000E+00	6.200E+01	0.000E+00	0.000E+00
00-01-7	Cadmium compounds	1.200E-04	1.910E-04	9.070E+02	0.000E+00	0.000E+00
00-01-8	Chromium compounds	5.500E-03	0.000E+00	1.900E+01	0.000E+00	0.000E+00
00-01-9	Copper compounds	1.000E-02	0.000E+00	3.162E+00	0.000E+00	0.000E+00
00-02-0	Lead compounds	3.000E-04	0.000E+00	9.000E-02	0.000E+00	0.000E+00
00-02-2	Manganese compounds	4.000E-04	0.000E+00	3.162E+00	0.000E+00	0.000E+00
00-02-3	Mercury compounds	2.500E-01	0.000E+00	3.162E+00	0.000E+00	0.000E+00
00-02-4	Nickel compounds	6.000E-03	0.000E+00	7.800E+01	0.000E+00	0.000E+00
00-02-5	Selenium compounds	2.270E-03	1.880E-01	1.290E+02	0.000E+00	0.000E+00
00-02-6	Silver compounds	3.000E-03	0.000E+00	8.770E+01	0.000E+00	0.000E+00
00-02-7	Thallium compounds	4.000E-02	0.000E+00	1.000E+04	0.000E+00	0.000E+00
00-02-8	Vanadium compounds	2.500E-03	0.000E+00	1.000E+00	0.000E+00	0.000E+00
00-02-9	Zinc compounds	9.000E-05	1.280E-04	2.060E+03	0.000E+00	0.000E+00
00-07-2	PCB Mixture (non-dioxin like, 5+ chlorines)	3.100E-02	3.700E-02	8.410E+04	2.069E+06	2.000E+00
00-15-3	Cobalt compounds	2.000E-02	0.000E+00	3.162E+00	0.000E+00	0.000E+00
00-15-5	m,p-Xylene	1.000E+00	0.000E+00	1.000E+00	1.000E+00	0.000E+00
00-16-3	Composite TOE - Volatile	3.519E-03	4.260E-03	8.657E+00	0.000E+00	0.000E+00
00-16-4	Composirte TOE - Semivolatile	1.188E-02	1.438E-02	4.690E+01	0.000E+00	0.000E+00
00-16-5	Composirte TOE - Nonvolatile	2.005E-02	2.427E-02	3.806E+04	9.257E+05	0.000E+00
00-16-6	Boron compounds	8.000E-04	0.000E+00	1.000E+00	0.000E+00	0.000E+00
00-16-9	Tin compounds	8.000E-02	0.000E+00	1.000E+00	0.000E+00	0.000E+00
56-23-5	Carbon tetrachloride	8.680E-03	1.050E-02	2.860E+01	0.000E+00	0.000E+00
65-85-0	Benzoic acid	5.650E-05	6.840E-05	3.160E+00	0.000E+00	0.000E+00
67-64-1	Acetone	2.860E-05	3.460E-05	3.160E+00	0.000E+00	0.000E+00
67-66-3	Chloroform	2.900E-03	3.510E-03	6.920E+00	0.000E+00	0.000E+00
71-43-2	Benzene	3.380E-03	4.090E-03	8.260E+00	0.000E+00	0.000E+00
74-83-9	Methyl bromide	7.110E-04	8.610E-04	1.650E+00	0.000E+00	0.000E+00
74-87-3	Methyl chloride	4.080E-04	4.940E-04	3.160E+00	0.000E+00	0.000E+00
74-88-4	Methyl iodide	1.284E-03	1.555E-03	2.902E+00	0.000E+00	0.000E+00
74-96-4	Bromoethane	1.531E-03	1.853E-03	3.465E+00	0.000E+00	0.000E+00
74-97-5	Bromochloromethane	1.073E-03	1.299E-03	2.431E+00	0.000E+00	0.000E+00

CAS_NUMBER	COPC_NAME	ba_beef (day/kg FW tissue)	ba_pork (day/kg FW tissue)	BCF_fish (L/kg FW)	BAF_fish (L/kg FW tissue)	BSAF_fish (unitless)
75-00-3	Ethyl chloride	1.050E-03	1.280E-03	2.390E+00	0.000E+00	0.000E+00
75-01-4	Vinyl chloride	1.050E-03	1.280E-03	2.390E+00	0.000E+00	0.000E+00
75-09-2	Dichloromethane	8.760E-04	1.060E-03	2.000E+00	0.000E+00	0.000E+00
75-15-0	Carbon disulfide	3.920E-03	4.750E-03	9.860E+00	0.000E+00	0.000E+00
75-25-2	Tribromomethane	5.000E-03	6.050E-03	1.330E+01	0.000E+00	0.000E+00
75-27-4	Bromodichloromethane	3.380E-03	4.090E-03	8.260E+00	0.000E+00	0.000E+00
75-35-4	1,1-Dichloroethylene	3.380E-03	4.090E-03	8.260E+00	0.000E+00	0.000E+00
75-69-4	Trichlorofluoromethane	5.960E-03	7.210E-03	1.680E+01	0.000E+00	0.000E+00
75-71-8	Dichlorodifluoromethane	3.700E-03	4.480E-03	9.190E+00	0.000E+00	0.000E+00
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1.292E-02	1.564E-02	5.410E+01	0.000E+00	0.000E+00
78-93-3	Methyl ethyl ketone	1.050E-04	1.270E-04	3.160E+00	0.000E+00	0.000E+00
79-01-6	Trichloroethylene	5.210E-03	6.300E-03	1.410E+01	0.000E+00	0.000E+00
84-66-2	Diethyl phthalate	5.960E-03	7.210E-03	1.680E+01	0.000E+00	0.000E+00
84-74-2	Dibutyl phthalate	3.640E-02	4.400E-02	8.300E+02	1.800E+03	0.000E+00
91-20-3	Naphthalene	1.480E-02	1.800E-02	6.930E+01	0.000E+00	0.000E+00
91-57-6	2-Methylnaphthalene	2.432E-02	2.944E-02	2.009E+02	0.000E+00	0.000E+00
95-47-6	2-Xylene	1.210E-02	1.470E-02	4.860E+01	0.000E+00	0.000E+00
95-48-7	o-Cresol	2.680E-03	3.240E-03	6.330E+00	0.000E+00	0.000E+00
95-50-1	1,2-Dichlorobenzene	1.600E-02	1.940E-02	7.990E+01	0.000E+00	0.000E+00
100-41-4	Ethylbenzene	1.210E-02	1.470E-02	4.860E+01	0.000E+00	0.000E+00
100-42-5	Styrene	1.090E-02	1.320E-02	4.070E+01	0.000E+00	0.000E+00
100-51-6	Benzyl alcohol	5.970E-04	7.230E-04	3.140E-01	0.000E+00	0.000E+00
100-52-7	Benzaldehyde	1.220E-03	1.470E-03	2.750E+00	0.000E+00	0.000E+00
106-46-7	1,4-Dichlorobenzene	1.780E-02	2.160E-02	9.890E+01	0.000E+00	0.000E+00
107-44-8	GB	1.071E-04	1.297E-04	3.162E+00	0.000E+00	0.000E+00
108-05-4	Vinyl acetate	2.800E-04	3.390E-04	3.160E+00	0.000E+00	0.000E+00
108-10-1	Methyl isobutyl ketone	7.250E-04	8.770E-04	1.670E+00	0.000E+00	0.000E+00
108-88-3	Toluene	7.690E-03	9.310E-03	2.390E+01	0.000E+00	0.000E+00
108-90-7	Chlorobenzene	8.680E-03	1.050E-02	2.860E+01	0.000E+00	0.000E+00
110-54-3	n-Hexane	2.432E-02	2.944E-02	2.009E+02	0.000E+00	0.000E+00
117-81-7	Bis(2-ethylhexyl)phthalate	3.990E-02	4.830E-02	5.330E+01	1.940E+02	0.000E+00
118-96-7	2,4,6-Trinitrotoluene	1.500E-03	1.820E-03	3.400E+00	0.000E+00	0.000E+00
121-14-2	2,4-Dinitrotoluene	2.810E-03	3.410E-03	6.680E+00	0.000E+00	0.000E+00
124-48-1	Chlorodibromomethane	4.100E-03	4.960E-03	1.040E+01	0.000E+00	0.000E+00
131-11-3	Dimethylphthalate	1.400E-03	1.700E-03	3.170E+00	0.000E+00	0.000E+00
505-60-2	Sulfur mustard (or H/HD)	9.973E-04	1.207E-03	2.264E+00	0.000E+00	0.000E+00

CAS_NUMBER	COPC_NAME	ba_beef (day/kg FW tissue)	ba_pork (day/kg FW tissue)	BCF_fish (L/kg FW)	BAF_fish (L/kg FW tissue)	BSAF_fish (unitless)
1330-20-7	Xylene (mixed)	1.346E-02	1.629E-02	5.808E+01	0.000E+00	0.000E+00
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin	2.610E-02	3.160E-02	3.440E+04	9.174E+05	9.000E-02
3268-87-9	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	6.850E-03	8.300E-03	1.470E+03	6.643E+03	1.000E-04
7439-97-6	Mercury	2.500E-01	0.000E+00	3.160E+00	0.000E+00	0.000E+00
7446-09-5	Sulfur dioxide	1.000E+00	0.000E+00	3.162E+00	0.000E+00	0.000E+00
7487-94-7	Mercuric chloride	5.220E-03	3.390E-05	3.162E+00	0.000E+00	0.000E+00
7647-01-0	Hydrochloric acid	5.230E-05	6.330E-05	3.160E+00	0.000E+00	0.000E+00
7664-38-2	Phosphoric acid	1.000E+00	0.000E+00	3.162E+00	0.000E+00	0.000E+00
7664-39-3	Hydrofluoric acid	1.000E+00	0.000E+00	3.162E+00	0.000E+00	0.000E+00
7782-50-5	Chlorine	3.600E-04	4.360E-04	3.160E+00	0.000E+00	0.000E+00
10061-01-5	cis-1,3-Dichloropropene	3.183E-03	3.853E-03	7.695E+00	0.000E+00	0.000E+00
10061-02-6	trans-1,3-Dichloropropene	3.040E-03	3.680E-03	7.296E+00	0.000E+00	0.000E+00
10102-44-0	Nitrogen dioxide	1.000E+00	0.000E+00	3.162E+00	0.000E+00	0.000E+00
22967-92-6	Methyl mercury	7.800E-04	5.070E-06	3.162E+00	6.800E+06	0.000E+00
31508-00-6	2,3',4,4',5-Pentachlorobiphenyl	2.082E-02	2.520E-02	4.422E+04	1.126E+06	2.000E+00
32598-13-3	3,3',4,4'-Tetrachlorobiphenyl	2.891E-02	3.500E-02	2.542E+04	6.520E+05	2.000E+00
32598-14-4	2,3,3',4,4'-Pentachlorobiphenyl	2.629E-02	3.182E-02	3.375E+04	9.001E+05	2.000E+00
38380-08-4	2,3,3',4,4',5-Hexachlorobiphenyl	1.357E-02	1.642E-02	9.727E+03	1.629E+05	2.000E+00
39001-02-0	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	8.770E-03	1.060E-02	2.750E+03	2.144E+04	1.000E-04
39635-31-9	2,3,4,5,3',4',5'-Heptachlorobiphenyl	6.855E-03	8.298E-03	1.175E+03	3.891E+03	2.000E+00
50782-69-9	VX	3.331E-03	4.033E-03	3.162E+00	0.000E+00	0.000E+00
51207-31-9	2,3,7,8-Tetrachlorodibenzofuran	3.650E-02	4.420E-02	9.930E+03	1.766E+05	9.000E-02
52663-72-6	2,3',4,4',5,5'-Hexachlorobiphenyl	1.496E-02	1.811E-02	1.334E+04	2.529E+05	2.000E+00
55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran	1.640E-02	1.990E-02	1.830E+04	3.850E+05	5.000E-03
57465-28-8	3,4,5,3',4'-Pentachlorobiphenyl	1.000E+00	0.000E+00	1.000E+00	1.000E+00	2.000E+00
67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran	1.640E-02	1.990E-02	1.830E+04	3.850E+05	5.000E-03
69782-90-7	2,3,3',4,4',5'-Hexachlorobiphenyl	1.000E+00	0.000E+00	1.000E+00	1.000E+00	2.000E+00
70362-50-4	3,4,4',5-Tetrachlorobiphenyl	1.000E+00	0.000E+00	1.000E+00	1.000E+00	2.000E+00
73207-98-4	EA 2192	1.307E-03	1.583E-03	3.162E+00	0.000E+00	0.000E+00
74472-37-0	2,3,4,4'5-Pentachlorobiphenyl	2.312E-02	2.799E-02	4.727E+04	1.241E+06	2.000E+00

Table K-5: COPC Parameter Set 5

CAS_NUMBER	COPC_NAME	RfD (mg/kg-day)	Oral_csf (per mg/kg-day)	RfC (mg/m3)	inhalation_urf (per µg/m3)	inhalation_csf (per mg/kg-day)	Chemical_type (unitless)	Chemical_subtype (unitless)
00-01-2	Aluminum compounds	1.000E+00	0.000E+00	5.000E-03	0.000E+00	0.000E+00	I	Metal
00-01-3	Antimony compounds	4.000E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	I	Metal
00-01-4	Arsenic compounds	3.000E-04	1.500E+00	3.000E-05	4.300E-03	1.500E+01	I	Metal
00-01-5	Barium compounds	2.000E-01	0.000E+00	5.000E-04	0.000E+00	0.000E+00	I	Metal
00-01-6	Beryllium compounds	2.000E-03	0.000E+00	2.000E-05	2.400E-03	8.400E+00	I	Metal
00-01-7	Cadmium compounds	5.000E-04	0.000E+00	2.000E-05	1.800E-03	6.300E+00	I	Metal
00-01-8	Chromium compounds	1.500E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	I	Metal
00-01-9	Copper compounds	3.700E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	I	Metal
00-02-0	Lead compounds	0.000E+00	8.500E-03	0.000E+00	1.200E-05	4.200E-02	I	Metal
00-02-2	Manganese compounds	1.400E-01	0.000E+00	5.000E-05	0.000E+00	0.000E+00	I	Metal
00-02-3	Mercury compounds	3.000E-04	0.000E+00	3.000E-04	0.000E+00	0.000E+00	I	Metal
00-02-4	Nickel compounds	2.000E-02	0.000E+00	9.000E-05	2.400E-04	8.400E-01	I	Metal
00-02-5	Selenium compounds	5.000E-03	0.000E+00	2.000E-02	0.000E+00	0.000E+00	I	Metal
00-02-6	Silver compounds	5.000E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	I	Metal
00-02-7	Thallium compounds	8.000E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	I	Metal
00-02-8	Vanadium compounds	9.000E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	I	Metal
00-02-9	Zinc compounds	3.000E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	I	Metal
00-07-2	PCB Mixture (non-dioxin like, 5+ chlorines)	2.000E-05	2.000E+00	0.000E+00	1.000E-04	4.000E-01	O	PCB
00-15-3	Cobalt compounds	0.000E+00	0.000E+00	1.000E-04	0.000E+00	0.000E+00	I	Metal
00-15-5	m,p-Xylene	2.000E-01	0.000E+00	1.000E-01	0.000E+00	0.000E+00	O	None
00-16-3	Composite TOE - Volatile	8.000E-01	6.700E-02	2.000E+00	1.000E-05	3.700E-02	O	None
00-16-4	Composirte TOE - Semivolatile	3.000E-02	4.000E-01	4.000E-01	1.000E-04	4.400E-01	O	None
00-16-5	Composirte TOE - Nonvolatile	9.000E-02	2.500E+01	1.000E-01	4.000E-04	5.500E+01	O	None
00-16-6	Boron compounds	2.000E-01	0.000E+00	2.000E-02	0.000E+00	0.000E+00	I	Metal
00-16-9	Tin compounds	6.000E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	I	Metal
56-23-5	Carbon tetrachloride	7.000E-04	1.300E-01	2.000E-01	1.500E-05	5.300E-02	O	None
65-85-0	Benzoic acid	4.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	O	Ionizing
67-64-1	Acetone	9.000E-01	0.000E+00	3.100E+01	0.000E+00	0.000E+00	O	None
67-66-3	Chloroform	1.000E-02	3.100E-02	1.000E-01	2.300E-05	8.100E-02	O	None
71-43-2	Benzene	4.000E-03	5.500E-02	3.000E-02	7.800E-06	2.700E-02	O	None
74-83-9	Methyl bromide	1.400E-03	0.000E+00	5.000E-03	0.000E+00	0.000E+00	O	None
74-87-3	Methyl chloride	0.000E+00	1.300E-02	9.000E-02	1.800E-06	6.300E-03	O	None

CAS_NUMBER	COPC_NAME	RfD (mg/kg-day)	Oral_csf (per mg/kg-day)	RfC (mg/m3)	inhalation_urf (per µg/m3)	inhalation_csf (per mg/kg-day)	Chemical_type (unitless)	Chemical_subtype (unitless)
74-88-4	Methyl iodide	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	O	None
74-96-4	Bromoethane	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	O	None
74-97-5	Bromochloromethane	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	O	None
75-00-3	Ethyl chloride	0.000E+00	0.000E+00	1.000E+01	0.000E+00	0.000E+00	O	None
75-01-4	Vinyl chloride	3.000E-03	1.500E+00	1.000E-01	8.800E-06	3.100E-02	O	None
75-09-2	Dichloromethane	6.000E-02	7.500E-03	1.000E+00	4.700E-07	1.600E-03	O	None
75-15-0	Carbon disulfide	1.000E-01	0.000E+00	7.000E-01	0.000E+00	0.000E+00	O	None
75-25-2	Tribromomethane	2.000E-02	7.900E-03	0.000E+00	1.100E-06	3.900E-03	O	None
75-27-4	Bromodichloromethane	2.000E-02	6.200E-02	0.000E+00	3.700E-05	1.300E-01	O	None
75-35-4	1,1-Dichloroethylene	5.000E-02	0.000E+00	2.000E-01	0.000E+00	1.200E+00	O	None
75-69-4	Trichlorofluoromethane	3.000E-01	0.000E+00	7.000E-01	0.000E+00	0.000E+00	O	None
75-71-8	Dichlorodifluoromethane	2.000E-01	0.000E+00	2.000E-01	0.000E+00	0.000E+00	O	None
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	3.000E+01	0.000E+00	3.000E+01	0.000E+00	0.000E+00	O	None
78-93-3	Methyl ethyl ketone	6.000E-01	0.000E+00	5.000E+00	0.000E+00	0.000E+00	O	None
79-01-6	Trichloroethylene	3.000E-04	4.000E-01	4.000E-02	0.000E+00	4.000E-01	O	None
84-66-2	Diethyl phthalate	8.000E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	O	None
84-74-2	Dibutyl phthalate	1.000E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	O	None
91-20-3	Naphthalene	2.000E-02	1.200E-01	3.000E-03	3.400E-05	1.200E-01	O	None
91-57-6	2-Methylnaphthalene	4.000E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	O	None
95-47-6	2-Xylene	2.000E-01	0.000E+00	1.000E-01	0.000E+00	0.000E+00	O	None
95-48-7	o-Cresol	5.000E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	O	None
95-50-1	1,2-Dichlorobenzene	9.000E-02	0.000E+00	2.000E-01	0.000E+00	0.000E+00	O	None
100-41-4	Ethylbenzene	1.000E-01	0.000E+00	1.000E+00	0.000E+00	0.000E+00	O	None
100-42-5	Styrene	2.000E-01	0.000E+00	1.000E+00	0.000E+00	0.000E+00	O	None
100-51-6	Benzyl alcohol	5.000E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	O	None
100-52-7	Benzaldehyde	1.000E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	O	None
106-46-7	1,4-Dichlorobenzene	7.000E-02	5.400E-03	8.000E-01	1.100E-05	4.000E-02	O	None
107-44-8	GB	2.000E-05	0.000E+00	1.000E-06	0.000E+00	0.000E+00	O	None
108-05-4	Vinyl acetate	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	O	None
108-10-1	Methyl isobutyl ketone	8.000E-02	0.000E+00	3.000E+00	0.000E+00	0.000E+00	O	None
108-88-3	Toluene	8.000E-02	0.000E+00	5.000E+00	0.000E+00	0.000E+00	O	None
108-90-7	Chlorobenzene	2.000E-02	0.000E+00	5.000E-02	0.000E+00	0.000E+00	O	None
110-54-3	n-Hexane	1.100E+01	0.000E+00	7.000E-01	0.000E+00	0.000E+00	O	None

CAS_NUMBER	COPC_NAME	RfD (mg/kg-day)	Oral_csf (per mg/kg-day)	RfC (mg/m3)	inhalation_urf (per µg/m3)	inhalation_csf (per mg/kg-day)	Chemical_type (unitless)	Chemical_subtype (unitless)
117-81-7	Bis(2-ethylhexyl)phthalate	2.000E-02	1.400E-02	0.000E+00	2.400E-06	8.400E-03	O	P
118-96-7	2,4,6-Trinitrotoluene	5.000E-04	3.000E-02	0.000E+00	0.000E+00	0.000E+00	O	None
121-14-2	2,4-Dinitrotoluene	2.000E-03	3.100E-01	0.000E+00	8.900E-05	3.100E-01	O	None
124-48-1	Chlorodibromomethane	2.000E-02	8.400E-02	0.000E+00	2.700E-05	9.400E-02	O	None
131-11-3	Dimethylphthalate	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	O	None
505-60-2	Sulfur mustard (or H/HD)	7.000E-06	7.700E+00	2.000E-05	0.000E+00	3.000E+02	O	None
1330-20-7	Xylene (mixed)	2.000E-01	0.000E+00	1.000E-01	0.000E+00	0.000E+00	O	None
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.000E+00	1.500E+05	0.000E+00	3.800E+01	1.300E+05	O	D
3268-87-9	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	0.000E+00	4.500E+01	0.000E+00	0.000E+00	3.900E+01	O	None
7439-97-6	Mercury	0.000E+00	0.000E+00	3.000E-04	0.000E+00	0.000E+00	I	None
7446-09-5	Sulfur dioxide	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	I	None
7487-94-7	Mercuric chloride	3.000E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	I	Divalent
7647-01-0	Hydrochloric acid	0.000E+00	0.000E+00	2.000E-02	0.000E+00	0.000E+00	I	None
7664-38-2	Phosphoric acid	0.000E+00	0.000E+00	1.000E-02	0.000E+00	0.000E+00	I	Metal
7664-39-3	Hydrofluoric acid	0.000E+00	0.000E+00	1.400E-02	0.000E+00	0.000E+00	I	None
7782-50-5	Chlorine	1.000E-01	0.000E+00	2.000E-04	0.000E+00	0.000E+00	I	None
10061-01-5	cis-1,3-Dichloropropene	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	O	None
10061-02-6	trans-1,3-Dichloropropene	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	O	None
10102-44-0	Nitrogen dioxide	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	I	None
22967-92-6	Methyl mercury	1.000E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	O	None
31508-00-6	2,3',4,4',5-Pentachlorobiphenyl	0.000E+00	4.500E+00	0.000E+00	0.000E+00	3.900E+00	O	PCB
32598-13-3	3,3',4,4'-Tetrachlorobiphenyl	0.000E+00	1.500E+01	0.000E+00	0.000E+00	1.300E+01	O	PCB
32598-14-4	2,3,3',4,4'-Pentachlorobiphenyl	0.000E+00	4.500E+00	0.000E+00	0.000E+00	3.900E+00	O	PCB
38380-08-4	2,3,3',4,4',5-Hexachlorobiphenyl	0.000E+00	4.500E+00	0.000E+00	0.000E+00	3.900E+00	O	PCB
39001-02-0	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	0.000E+00	4.500E+01	0.000E+00	0.000E+00	3.900E+01	O	F
39635-31-9	2,3,4,5,3',4',5'-Heptachlorobiphenyl	0.000E+00	4.500E+00	0.000E+00	0.000E+00	3.900E+00	O	PCB
50782-69-9	VX	6.000E-07	0.000E+00	6.000E-07	0.000E+00	0.000E+00	O	None
51207-31-9	2,3,7,8-Tetrachlorodibenzofuran	0.000E+00	1.500E+04	0.000E+00	0.000E+00	1.300E+04	O	F
52663-72-6	2,3',4,4',5,5'-Hexachlorobiphenyl	0.000E+00	4.500E+00	0.000E+00	0.000E+00	3.900E+00	O	PCB
55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.000E+00	1.500E+03	0.000E+00	0.000E+00	1.300E+03	O	F
57465-28-8	3,4,5,3',4'-Pentachlorobiphenyl	0.000E+00	1.500E+04	0.000E+00	0.000E+00	1.300E+04	O	PCB
67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.000E+00	1.500E+03	0.000E+00	0.000E+00	1.300E+03	O	F
69782-90-7	2,3,3',4,4',5'-Hexachlorobiphenyl	0.000E+00	4.500E+00	0.000E+00	0.000E+00	3.900E+00	O	PCB

CAS_NUMBER	COPC_NAME	RfD (mg/kg-day)	Oral_csf (per mg/kg-day)	RfC (mg/m3)	inhalation_urf (per µg/m3)	inhalation_csf (per mg/kg-day)	Chemical_type (unitless)	Chemical_subtype (unitless)
70362-50-4	3,4,4',5-Tetrachlorobiphenyl	0.000E+00	4.500E+01	0.000E+00	0.000E+00	3.900E+01	O	PCB
73207-98-4	EA 2192	6.000E-07	0.000E+00	7.000E-07	0.000E+00	0.000E+00	O	None
74472-37-0	2,3,4,4'5-Pentachlorobiphenyl	0.000E+00	4.500E+00	0.000E+00	0.000E+00	3.900E+00	O	PCB

Table K-6: COPC Parameter Set 6

CAS_NUMBER	COPC_NAME	br_grain ([µg/d DW plant]/[µg/g soil])	ba_egg (day/kg FW tissue)	ba_chicken (day/kg FW tissue)	inhalation_rfd (mg/kg/day)	tef (unitless)	abs (unitless)	t_b (°K)
00-01-2	Aluminum compounds	6.500E-04	0.000E+00	0.000E+00	1.000E-03	0.000E+00	1.000E+00	2.603E+03
00-01-3	Antimony compounds	3.190E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.500E-01	1.913E+03
00-01-4	Arsenic compounds	6.330E-03	0.000E+00	0.000E+00	9.000E-06	0.000E+00	1.000E+00	8.880E+02
00-01-5	Barium compounds	3.220E-02	0.000E+00	0.000E+00	1.000E-04	0.000E+00	7.000E-02	1.913E+03
00-01-6	Beryllium compounds	2.580E-03	0.000E+00	0.000E+00	6.000E-06	0.000E+00	7.000E-03	3.243E+03
00-01-7	Cadmium compounds	1.250E-01	2.500E-03	1.060E-01	6.000E-06	0.000E+00	2.500E-02	1.038E+03
00-01-8	Chromium compounds	4.880E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.300E-02	2.913E+03
00-01-9	Copper compounds	2.500E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.000E+00	2.873E+03
00-02-0	Lead compounds	1.360E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.000E+00	2.013E+03
00-02-2	Manganese compounds	5.000E-02	0.000E+00	0.000E+00	1.000E-05	0.000E+00	4.000E-02	2.373E+03
00-02-3	Mercury compounds	2.000E-01	0.000E+00	0.000E+00	9.000E-05	0.000E+00	7.000E-02	6.300E+02
00-02-4	Nickel compounds	9.310E-03	0.000E+00	0.000E+00	3.000E-05	0.000E+00	4.000E-02	3.003E+03
00-02-5	Selenium compounds	1.950E-02	1.130E+00	1.130E+00	6.000E-03	0.000E+00	1.000E+00	9.580E+02
00-02-6	Silver compounds	1.380E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.000E-02	2.483E+03
00-02-7	Thallium compounds	8.580E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.000E+00	1.743E+03
00-02-8	Vanadium compounds	3.000E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.600E-02	3.683E+03
00-02-9	Zinc compounds	9.700E-02	8.750E-03	8.750E-03	0.000E+00	0.000E+00	1.000E+00	1.181E+03
00-07-2	PCB Mixture (non-dioxin like, 5+ chlorines)	6.780E-03	1.300E-02	2.300E-02	0.000E+00	0.000E+00	1.000E+00	6.380E+02
00-15-3	Cobalt compounds	7.000E-03	0.000E+00	0.000E+00	3.000E-05	0.000E+00	1.000E+00	3.143E+03
00-15-5	m,p-Xylene	0.000E+00	1.000E+00	1.000E+00	3.000E-02	0.000E+00	1.000E+00	2.730E+02
00-16-3	Composite TOE - Volatile	2.285E+00	1.482E-03	2.593E-03	5.000E-01	0.000E+00	1.000E+00	3.108E+02
00-16-4	Composirte TOE - Semivolatile	6.428E-01	5.003E-03	8.756E-03	1.000E-01	0.000E+00	1.000E+00	4.599E+02
00-16-5	Composirte TOE - Nonvolatile	2.787E-03	8.440E-03	1.477E-02	4.000E-02	0.000E+00	1.000E+00	6.695E+02
00-16-6	Boron compounds	2.000E+00	0.000E+00	0.000E+00	6.000E-03	0.000E+00	1.000E+00	2.823E+03
00-16-9	Tin compounds	6.000E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.000E+00	2.543E+03
56-23-5	Carbon tetrachloride	9.320E-01	3.660E-03	6.400E-03	6.000E-02	0.000E+00	1.000E+00	3.497E+02
65-85-0	Benzoic acid	3.210E+00	2.380E-05	4.160E-05	0.000E+00	0.000E+00	1.000E+00	5.220E+02
67-64-1	Acetone	8.380E+00	1.200E-05	2.110E-05	8.900E+00	0.000E+00	1.000E+00	3.292E+02
67-66-3	Chloroform	2.700E+00	1.220E-03	2.140E-03	3.000E-02	0.000E+00	1.000E+00	3.347E+02
71-43-2	Benzene	2.370E+00	1.420E-03	2.490E-03	9.000E-03	0.000E+00	1.000E+00	3.531E+02
74-83-9	Methyl bromide	7.950E+00	2.990E-04	5.240E-04	1.000E-03	0.000E+00	1.000E+00	2.766E+02

CAS_NUMBER	COPC_NAME	br_grain ([µg/d DW plant]/[µg/g soil])	ba_egg (day/kg FW tissue)	ba_chicken (day/kg FW tissue)	inhalation_rfd (mg/kg/day)	tef (unitless)	abs (unitless)	t_b (°K)
74-87-3	Methyl chloride	8.380E+00	1.720E-04	3.010E-04	3.000E-02	0.000E+00	1.000E+00	2.488E+02
74-88-4	Methyl iodide	5.191E+00	5.408E-04	9.465E-04	0.000E+00	0.000E+00	1.000E+00	3.154E+02
74-96-4	Bromoethane	4.544E+00	6.444E-04	1.128E-03	0.000E+00	0.000E+00	1.000E+00	3.115E+02
74-97-5	Bromochloromethane	5.930E+00	4.518E-04	7.907E-04	0.000E+00	0.000E+00	1.000E+00	3.410E+02
75-00-3	Ethyl chloride	6.010E+00	4.440E-04	7.760E-04	2.900E+00	0.000E+00	1.000E+00	2.853E+02
75-01-4	Vinyl chloride	6.010E+00	4.440E-04	7.760E-04	3.000E-02	0.000E+00	1.000E+00	2.591E+02
75-09-2	Dichloromethane	6.860E+00	3.690E-04	6.450E-04	3.000E-01	0.000E+00	1.000E+00	3.128E+02
75-15-0	Carbon disulfide	2.070E+00	1.650E-03	2.890E-03	2.000E-01	0.000E+00	1.000E+00	3.192E+02
75-25-2	Tribromomethane	1.650E+00	2.100E-03	3.680E-03	0.000E+00	0.000E+00	1.000E+00	4.230E+02
75-27-4	Bromodichloromethane	2.370E+00	1.420E-03	2.490E-03	0.000E+00	0.000E+00	1.000E+00	3.631E+02
75-35-4	1,1-Dichloroethylene	2.370E+00	1.420E-03	2.490E-03	6.000E-02	0.000E+00	1.000E+00	3.047E+02
75-69-4	Trichlorofluoromethane	1.390E+00	2.510E-03	4.390E-03	2.000E-01	0.000E+00	1.000E+00	2.968E+02
75-71-8	Dichlorodifluoromethane	2.190E+00	1.560E-03	2.730E-03	6.000E-02	0.000E+00	1.000E+00	2.432E+02
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.775E-01	5.441E-03	9.523E-03	8.600E+00	0.000E+00	1.000E+00	3.207E+02
78-93-3	Methyl ethyl ketone	8.380E+00	4.420E-05	7.730E-05	1.000E+00	0.000E+00	1.000E+00	3.526E+02
79-01-6	Trichloroethylene	1.590E+00	2.190E-03	3.840E-03	1.000E-02	0.000E+00	1.000E+00	3.599E+02
84-66-2	Diethyl phthalate	1.390E+00	2.510E-03	4.390E-03	0.000E+00	0.000E+00	1.000E+00	5.710E+02
84-74-2	Dibutyl phthalate	7.400E-02	1.530E-02	2.680E-02	0.000E+00	0.000E+00	1.000E+00	6.130E+02
91-20-3	Naphthalene	4.790E-01	6.250E-03	1.090E-02	9.000E-04	0.000E+00	1.000E+00	4.910E+02
91-57-6	2-Methylnaphthalene	2.157E-01	1.024E-02	1.792E-02	0.000E+00	0.000E+00	1.000E+00	5.141E+02
95-47-6	2-Xylene	6.250E-01	5.110E-03	8.950E-03	3.000E-02	0.000E+00	1.000E+00	4.170E+02
95-48-7	o-Cresol	2.890E+00	1.130E-03	1.970E-03	0.000E+00	0.000E+00	1.000E+00	4.640E+02
95-50-1	1,2-Dichlorobenzene	4.310E-01	6.740E-03	1.180E-02	6.000E-02	0.000E+00	1.000E+00	4.535E+02
100-41-4	Ethylbenzene	6.250E-01	5.110E-03	8.950E-03	3.000E-01	0.000E+00	1.000E+00	4.090E+02
100-42-5	Styrene	7.140E-01	4.590E-03	8.040E-03	3.000E-01	0.000E+00	1.000E+00	4.180E+02
100-51-6	Benzyl alcohol	8.380E+00	2.510E-04	4.400E-04	0.000E+00	0.000E+00	1.000E+00	4.780E+02
100-52-7	Benzaldehyde	5.400E+00	5.130E-04	8.970E-04	0.000E+00	0.000E+00	1.000E+00	4.520E+02
106-46-7	1,4-Dichlorobenzene	3.670E-01	7.500E-03	1.310E-02	2.000E-01	0.000E+00	1.000E+00	4.460E+02
107-44-8	GB	2.601E+01	4.510E-05	7.892E-05	3.000E-07	0.000E+00	1.000E+00	4.200E+02
108-05-4	Vinyl acetate	8.380E+00	1.179E-04	2.063E-04	0.000E+00	0.000E+00	1.000E+00	3.457E+02
108-10-1	Methyl isobutyl ketone	7.840E+00	3.050E-04	5.340E-04	9.000E-01	0.000E+00	1.000E+00	3.900E+02
108-88-3	Toluene	1.070E+00	3.240E-03	5.670E-03	1.000E+00	0.000E+00	1.000E+00	3.840E+02

CAS_NUMBER	COPC_NAME	br_grain ([µg/d DW plant]/[µg/g soil])	ba_egg (day/kg FW tissue)	ba_chicken (day/kg FW tissue)	inhalation_rfd (mg/kg/day)	tef (unitless)	abs (unitless)	t_b (°K)
108-90-7	Chlorobenzene	9.320E-01	3.660E-03	6.400E-03	1.000E-02	0.000E+00	1.000E+00	4.030E+02
110-54-3	n-Hexane	2.157E-01	1.024E-02	1.792E-02	2.000E-01	0.000E+00	1.000E+00	3.420E+02
117-81-7	Bis(2-ethylhexyl)phthalate	4.370E-02	1.680E-02	2.940E-02	0.000E+00	0.000E+00	1.000E+00	6.600E+02
118-96-7	2,4,6-Trinitrotoluene	4.600E+00	6.330E-04	1.110E-03	0.000E+00	0.000E+00	1.000E+00	5.130E+02
121-14-2	2,4-Dinitrotoluene	2.780E+00	1.180E-03	2.070E-03	0.000E+00	0.000E+00	1.000E+00	5.730E+02
124-48-1	Chlorodibromomethane	1.990E+00	1.730E-03	3.020E-03	0.000E+00	0.000E+00	1.000E+00	3.930E+02
131-11-3	Dimethylphthalate	4.860E+00	5.910E-04	1.030E-03	0.000E+00	0.000E+00	1.000E+00	5.570E+02
505-60-2	Sulfur mustard (or H/HD)	6.254E+00	4.199E-04	7.349E-04	6.000E-06	0.000E+00	1.000E+00	4.880E+02
1330-20-7	Xylene (mixed)	5.475E-01	5.667E-03	9.917E-03	3.000E-02	0.000E+00	1.000E+00	4.115E+02
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin	4.550E-03	1.100E-02	1.920E-02	0.000E+00	1.000E+00	1.000E+00	7.730E+02
3268-87-9	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	7.050E-04	2.890E-03	5.050E-03	0.000E+00	3.000E-04	1.000E+00	7.830E+02
7439-97-6	Mercury	0.000E+00	1.000E+00	1.000E+00	8.571E-05	0.000E+00	1.000E+00	6.300E+02
7446-09-5	Sulfur dioxide	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.000E+00	2.630E+02
7487-94-7	Mercuric chloride	9.300E-03	2.393E-02	2.393E-02	0.000E+00	0.000E+00	7.000E-02	5.750E+02
7647-01-0	Hydrochloric acid	0.000E+00	2.200E-05	3.860E-05	6.000E-03	0.000E+00	1.000E+00	1.879E+02
7664-38-2	Phosphoric acid	0.000E+00	0.000E+00	0.000E+00	3.000E-03	0.000E+00	1.000E+00	2.730E+02
7664-39-3	Hydrofluoric acid	0.000E+00	0.000E+00	0.000E+00	4.000E-03	0.000E+00	1.000E+00	2.930E+02
7782-50-5	Chlorine	8.380E+00	1.520E-04	2.660E-04	6.000E-05	0.000E+00	1.000E+00	2.390E+02
10061-01-5	cis-1,3-Dichloropropene	2.496E+00	1.340E-03	2.345E-03	0.000E+00	0.000E+00	1.000E+00	3.770E+02
10061-02-6	trans-1,3-Dichloropropene	2.598E+00	1.280E-03	2.240E-03	0.000E+00	0.000E+00	1.000E+00	3.850E+02
10102-44-0	Nitrogen dioxide	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.000E+00	2.942E+02
22967-92-6	Methyl mercury	1.900E-02	3.575E-03	3.575E-03	0.000E+00	0.000E+00	1.000E+00	2.730E+02
31508-00-6	2,3',4,4',5-Pentachlorobiphenyl	2.969E-03	8.765E-03	1.534E-02	0.000E+00	3.000E-05	1.000E+00	2.730E+02
32598-13-3	3,3',4,4'-Tetrachlorobiphenyl	5.700E-03	1.217E-02	2.131E-02	0.000E+00	1.000E-04	1.000E+00	2.730E+02
32598-14-4	2,3,3',4,4'-Pentachlorobiphenyl	4.607E-03	1.107E-02	1.937E-02	0.000E+00	3.000E-05	1.000E+00	2.730E+02
38380-08-4	2,3,3',4,4',5-Hexachlorobiphenyl	1.567E-03	5.713E-03	9.997E-03	0.000E+00	3.000E-05	1.000E+00	2.730E+02
39001-02-0	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	9.200E-04	3.690E-03	6.460E-03	0.000E+00	3.000E-04	1.000E+00	8.100E+02
39635-31-9	2,3,4,5,3',4',5'-Heptachlorobiphenyl	6.426E-04	2.886E-03	5.051E-03	0.000E+00	3.000E-05	1.000E+00	2.730E+02
50782-69-9	VX	2.399E+00	1.403E-03	2.455E-03	2.000E-07	0.000E+00	1.000E+00	5.710E+02
51207-31-9	2,3,7,8-Tetrachlorodibenzofuran	1.150E-02	1.540E-02	2.690E-02	0.000E+00	1.000E-01	1.000E+00	7.110E+02
52663-72-6	2,3',4,4',5,5'-Hexachlorobiphenyl	1.791E-03	6.300E-03	1.102E-02	0.000E+00	3.000E-05	1.000E+00	2.730E+02
55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran	2.050E-03	6.920E-03	1.210E-02	0.000E+00	1.000E-02	1.000E+00	7.800E+02

CAS_NUMBER	COPC_NAME	br_grain ([µg/d DW plant]/[µg/g soil])	ba_egg (day/kg FW tissue)	ba_chicken (day/kg FW tissue)	inhalation_rfd (mg/kg/day)	tef (unitless)	abs (unitless)	t_b (°K)
57465-28-8	3,4,5,3',4'-Pentachlorobiphenyl	0.000E+00	1.000E+00	1.000E+00	0.000E+00	1.000E-01	1.000E+00	2.730E+02
67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran	2.050E-03	6.920E-03	1.210E-02	0.000E+00	1.000E-02	1.000E+00	7.800E+02
69782-90-7	2,3,3',4,4',5'-Hexachlorobiphenyl	0.000E+00	1.000E+00	1.000E+00	0.000E+00	3.000E-05	1.000E+00	2.730E+02
70362-50-4	3,4,4',5-Tetrachlorobiphenyl	0.000E+00	1.000E+00	1.000E+00	0.000E+00	3.000E-04	1.000E+00	2.730E+02
73207-98-4	EA 2192	5.122E+00	5.505E-04	9.634E-04	2.000E-07	0.000E+00	1.000E+00	5.710E+02
74472-37-0	2,3,4,4'5-Pentachlorobiphenyl	3.577E-03	9.736E-03	1.704E-02	0.000E+00	3.000E-05	1.000E+00	2.730E+02

Table K-7: COPC Parameter Set 7

CAS_NUMBER	COPC_NAME	fa (unitless)	p_c (cm/hr)	kpv (cm/hr)
00-01-2	Aluminum compounds	0.000E+00	1.000E-03	0.000E+00
00-01-3	Antimony compounds	0.000E+00	1.000E-03	0.000E+00
00-01-4	Arsenic compounds	0.000E+00	1.000E-03	0.000E+00
00-01-5	Barium compounds	0.000E+00	1.000E-03	0.000E+00
00-01-6	Beryllium compounds	0.000E+00	1.000E-03	0.000E+00
00-01-7	Cadmium compounds	0.000E+00	1.000E-03	0.000E+00
00-01-8	Chromium compounds	0.000E+00	1.000E-03	0.000E+00
00-01-9	Copper compounds	0.000E+00	1.000E-03	0.000E+00
00-02-0	Lead compounds	0.000E+00	1.000E-04	0.000E+00
00-02-2	Manganese compounds	0.000E+00	1.000E-03	0.000E+00
00-02-3	Mercury compounds	0.000E+00	1.000E-03	0.000E+00
00-02-4	Nickel compounds	0.000E+00	2.000E-04	0.000E+00
00-02-5	Selenium compounds	0.000E+00	1.000E-03	0.000E+00
00-02-6	Silver compounds	0.000E+00	6.000E-04	0.000E+00
00-02-7	Thallium compounds	0.000E+00	1.000E-03	0.000E+00
00-02-8	Vanadium compounds	0.000E+00	1.000E-03	0.000E+00
00-02-9	Zinc compounds	0.000E+00	6.000E-04	0.000E+00
00-07-2	PCB Mixture (non-dioxin like, 5+ chlorines)	7.000E-01	4.617E-01	0.000E+00
00-15-3	Cobalt compounds	0.000E+00	4.000E-04	0.000E+00
00-15-5	m,p-Xylene	0.000E+00	0.000E+00	8.720E-01
00-16-3	Composite TOE - Volatile	1.000E+00	1.473E-02	0.000E+00
00-16-4	Composirte TOE - Semivolatile	1.000E+00	2.564E-02	0.000E+00
00-16-5	Composirte TOE - Nonvolatile	6.000E-01	2.554E+00	0.000E+00
00-16-6	Boron compounds	0.000E+00	1.000E-03	0.000E+00
00-16-9	Tin compounds	0.000E+00	1.000E-03	0.000E+00
56-23-5	Carbon tetrachloride	1.000E+00	1.600E-02	1.370E-01
65-85-0	Benzoic acid	1.000E+00	5.700E-03	0.000E+00
67-64-1	Acetone	1.000E+00	5.203E-04	0.000E+00
67-66-3	Chloroform	1.000E+00	6.800E-03	6.100E-02
71-43-2	Benzene	1.000E+00	1.500E-02	2.060E-01
74-83-9	Methyl bromide	1.000E+00	2.800E-03	0.000E+00
74-87-3	Methyl chloride	1.000E+00	3.300E-03	1.000E-02

CAS_NUMBER	COPC_NAME	fa (unitless)	p_c (cm/hr)	kpv (cm/hr)
74-88-4	Methyl iodide	1.000E+00	2.500E-03	0.000E+00
74-96-4	Bromoethane	1.000E+00	4.491E-03	0.000E+00
74-97-5	Bromochloromethane	1.000E+00	2.547E-03	1.210E-01
75-00-3	Ethyl chloride	1.000E+00	6.100E-03	1.000E-02
75-01-4	Vinyl chloride	1.000E+00	5.600E-03	1.000E-02
75-09-2	Dichloromethane	1.000E+00	3.500E-03	2.000E-02
75-15-0	Carbon disulfide	1.000E+00	1.700E-02	0.000E+00
75-25-2	Tribromomethane	1.000E+00	2.200E-03	0.000E+00
75-27-4	Bromodichloromethane	1.000E+00	4.600E-03	1.210E-01
75-35-4	1,1-Dichloroethylene	1.000E+00	1.200E-02	1.000E-02
75-69-4	Trichlorofluoromethane	1.000E+00	1.300E-02	0.000E+00
75-71-8	Dichlorodifluoromethane	1.000E+00	9.000E-03	1.000E-02
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1.000E+00	1.723E-02	0.000E+00
78-93-3	Methyl ethyl ketone	1.000E+00	9.600E-04	0.000E+00
79-01-6	Trichloroethylene	1.000E+00	1.200E-02	2.330E-01
84-66-2	Diethyl phthalate	1.000E+00	3.900E-03	0.000E+00
84-74-2	Dibutyl phthalate	9.000E-01	2.400E-02	0.000E+00
91-20-3	Naphthalene	1.000E+00	4.700E-02	0.000E+00
91-57-6	2-Methylnaphthalene	1.000E+00	9.772E-02	0.000E+00
95-47-6	2-Xylene	1.000E+00	4.492E-02	8.810E-01
95-48-7	o-Cresol	1.000E+00	7.700E-03	0.000E+00
95-50-1	1,2-Dichlorobenzene	1.000E+00	4.100E-02	0.000E+00
100-41-4	Ethylbenzene	1.000E+00	4.900E-02	0.000E+00
100-42-5	Styrene	1.000E+00	3.700E-02	1.665E+00
100-51-6	Benzyl alcohol	1.000E+00	2.095E-03	0.000E+00
100-52-7	Benzaldehyde	1.000E+00	3.830E-03	0.000E+00
106-46-7	1,4-Dichlorobenzene	1.000E+00	4.200E-02	0.000E+00
107-44-8	GB	1.000E+00	4.105E-04	0.000E+00
108-05-4	Vinyl acetate	1.000E+00	1.584E-03	0.000E+00
108-10-1	Methyl isobutyl ketone	1.000E+00	2.700E-03	0.000E+00
108-88-3	Toluene	1.000E+00	3.100E-02	4.620E-01
108-90-7	Chlorobenzene	1.000E+00	2.800E-02	5.870E-01
110-54-3	n-Hexane	1.000E+00	1.956E-01	3.900E-02

CAS_NUMBER	COPC_NAME	fa (unitless)	p_c (cm/hr)	kpv (cm/hr)
117-81-7	Bis(2-ethylhexyl)phthalate	8.000E-01	2.500E-02	0.000E+00
118-96-7	2,4,6-Trinitrotoluene	1.000E+00	9.656E-04	0.000E+00
121-14-2	2,4-Dinitrotoluene	1.000E+00	3.100E-03	0.000E+00
124-48-1	Chlorodibromomethane	1.000E+00	3.200E-03	9.010E-01
131-11-3	Dimethylphthalate	1.000E+00	1.400E-03	0.000E+00
505-60-2	Sulfur mustard (or H/HD)	1.000E+00	4.500E-03	0.000E+00
1330-20-7	Xylene (mixed)	1.000E+00	4.966E-02	0.000E+00
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin	5.000E-01	8.100E-01	0.000E+00
3268-87-9	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	1.000E-01	1.073E+00	0.000E+00
7439-97-6	Mercury	0.000E+00	2.400E-01	0.000E+00
7446-09-5	Sulfur dioxide	0.000E+00	1.000E-03	0.000E+00
7487-94-7	Mercuric chloride	0.000E+00	1.000E-03	0.000E+00
7647-01-0	Hydrochloric acid	0.000E+00	1.000E-03	0.000E+00
7664-38-2	Phosphoric acid	0.000E+00	1.000E-03	0.000E+00
7664-39-3	Hydrofluoric acid	0.000E+00	1.000E-03	0.000E+00
7782-50-5	Chlorine	0.000E+00	1.000E-03	0.000E+00
10061-01-5	cis-1,3-Dichloropropene	1.000E+00	8.670E-03	0.000E+00
10061-02-6	trans-1,3-Dichloropropene	1.000E+00	8.283E-03	0.000E+00
10102-44-0	Nitrogen dioxide	0.000E+00	1.000E-03	0.000E+00
22967-92-6	Methyl mercury	0.000E+00	1.000E-03	0.000E+00
31508-00-6	2,3',4,4',5-Pentachlorobiphenyl	5.000E-01	1.169E+00	0.000E+00
32598-13-3	3,3',4,4'-Tetrachlorobiphenyl	6.000E-01	8.722E-01	0.000E+00
32598-14-4	2,3,3',4,4'-Pentachlorobiphenyl	7.000E-01	7.175E-01	0.000E+00
38380-08-4	2,3,3',4,4',5-Hexachlorobiphenyl	3.000E-01	1.565E+00	0.000E+00
39001-02-0	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	1.000E-01	9.727E-01	0.000E+00
39635-31-9	2,3,4,5,3',4',5'-Heptachlorobiphenyl	2.000E-01	2.794E+00	0.000E+00
50782-69-9	VX	1.000E+00	1.214E-03	0.000E+00
51207-31-9	2,3,7,8-Tetrachlorodibenzofuran	8.000E-01	3.254E-01	0.000E+00
52663-72-6	2,3',4,4',5,5'-Hexachlorobiphenyl	3.000E-01	1.344E+00	0.000E+00
55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran	4.000E-01	6.217E-01	0.000E+00
57465-28-8	3,4,5,3',4'-Pentachlorobiphenyl	0.000E+00	0.000E+00	0.000E+00
67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran	4.000E-01	6.217E-01	0.000E+00
69782-90-7	2,3,3',4,4',5'-Hexachlorobiphenyl	0.000E+00	0.000E+00	0.000E+00

CAS_NUMBER	COPC_NAME	fa (unitless)	p_c (cm/hr)	kpv (cm/hr)
70362-50-4	3,4,4',5-Tetrachlorobiphenyl	0.000E+00	0.000E+00	0.000E+00
73207-98-4	EA 2192	1.000E+00	7.295E-04	0.000E+00
74472-37-0	2,3,4,4'5-Pentachlorobiphenyl	5.000E-01	9.576E-01	0.000E+00

Table K-8: Dioxin and Furan COPC Parameter Set 1

Cas Number	COPC Name	MW (g/mol)	T_m (°K)	V_p (atm)	S (mg/L)	H (atm-m3/mol)	D_a (cm2/sec)	Dw (cm2/sec)
35822-46-9	HeptaCDD, 1,2,3,4,6,7,8-	4.25E+02	5.38E+02	7.37E-15	2.40E-06	1.20E-05	9.05E-02	8.00E-06
39227-28-6	HexaCDD, 1,2,3,4,7,8-	3.91E+02	5.47E+02	5.00E-14	4.42E-06	1.07E-05	9.44E-02	8.00E-06
57653-85-7	HexaCDD, 1,2,3,6,7,8-	3.91E+02	5.59E+02	4.73E-14	4.40E-06	1.10E-05	9.44E-02	8.00E-06
19408-74-3	HexaCDD, 1,2,3,7,8,9-	3.91E+02	5.17E+02	6.45E-14	4.40E-06	1.10E-05	9.44E-02	8.00E-06
70648-26-9	HexaCDF, 1,2,3,4,7,8-	3.75E+02	4.99E+02	3.16E-13	8.25E-06	1.43E-05	2.12E-02	8.00E-06
57117-44-9	HexaCDF, 1,2,3,6,7,8-	3.75E+02	5.06E+02	2.89E-13	1.77E-05	7.31E-06	2.12E-02	8.00E-06
72918-21-9	HexaCDF, 1,2,3,7,8,9-	3.75E+02	5.21E+02	3.68E-13	1.30E-05	1.10E-05	2.12E-02	8.00E-06
60851-34-5	HexaCDF, 2,3,4,6,7,8-	3.75E+02	5.13E+02	2.63E-13	1.30E-05	1.10E-05	2.12E-02	8.00E-06
40321-76-4	PentaCDD, 1,2,3,7,8-	3.56E+02	5.14E+02	5.79E-13	1.18E-04	2.60E-06	9.88E-02	8.00E-06
57117-41-6	PentaCDF, 1,2,3,7,8-	3.40E+02	4.99E+02	2.23E-12	2.40E-04	5.00E-06	2.23E-02	8.00E-06
57117-31-4	PentaCDF, 2,3,4,7,8-	3.40E+02	4.69E+02	3.42E-12	2.36E-04	4.98E-06	2.23E-02	8.00E-06

Table K-9: Dioxin and Furan COPC Parameter Set 2

Cas Number	COPC Name	K_ow (unitless)	K_oc (mL/g)	Kd_s (cm3/g)	Kd_sw (L/kg)	Kd_bs (cm3/g)	K_sg (per year)	f_v (unitless)
35822-46-9	HeptaCDD, 1,2,3,4,6,7,8-	1.00E+08	6.17E+07	6.17E+05	4.62E+06	2.47E+06	3.00E-02	3.00E-03
39227-28-6	HexaCDD, 1,2,3,4,7,8-	6.31E+07	3.89E+07	3.89E+05	2.92E+06	1.56E+06	3.00E-02	2.40E-02
57653-85-7	HexaCDD, 1,2,3,6,7,8-	2.00E+07	1.23E+07	1.23E+05	9.23E+05	4.92E+05	3.00E-02	2.90E-02
19408-74-3	HexaCDD, 1,2,3,7,8,9-	2.00E+07	1.23E+07	1.23E+05	9.23E+05	4.92E+05	3.00E-02	1.60E-02
70648-26-9	HexaCDF, 1,2,3,4,7,8-	1.00E+07	6.17E+06	6.17E+04	4.62E+05	2.47E+05	3.00E-02	4.90E-02
57117-44-9	HexaCDF, 1,2,3,6,7,8-	1.00E+07	6.17E+06	6.17E+04	4.62E+05	2.47E+05	3.00E-02	5.20E-02
72918-21-9	HexaCDF, 1,2,3,7,8,9-	1.00E+07	6.17E+06	6.17E+04	4.62E+05	2.47E+05	3.00E-02	9.00E-02
60851-34-5	HexaCDF, 2,3,4,6,7,8-	1.00E+07	6.17E+06	6.17E+04	4.62E+05	2.47E+05	3.00E-02	5.50E-02
40321-76-4	PentaCDD, 1,2,3,7,8-	4.37E+06	2.69E+06	2.69E+04	2.02E+05	1.08E+05	3.00E-02	1.17E-01
57117-41-6	PentaCDF, 1,2,3,7,8-	6.17E+06	3.80E+06	3.80E+04	2.85E+05	1.52E+05	3.00E-02	2.68E-01
57117-31-4	PentaCDF, 2,3,4,7,8-	3.16E+06	1.95E+06	1.95E+04	1.46E+05	7.80E+04	3.00E-02	2.21E-01

Table K-10: Dioxin and Furan COPC Parameter Set 3

Cas Number	COPC Name	RCF ([µg/g DW plant]/[µg/ml soil water])	br_root_veg ([µg/g DW plant]/[µg/g soil])	br_leafy_veg ([µg/g DW plant]/[µg/g soil])	br_forage ([µg/g DW plant]/[µg/g soil])	bv_leafy_veg ([µg/g DW plant]/[µg/g air])	bv_forage ([µg/g DW plant]/[µg/g air])	ba_milk (day/kg FW tissue)
35822-46-9	HeptaCDD, 1,2,3,4,6,7,8-	3.36E+05	5.45E-01	9.20E-04	9.20E-04	9.10E+05	9.10E+05	1.85E-03
39227-28-6	HexaCDD, 1,2,3,4,7,8-	2.36E+05	6.05E-01	1.20E-03	1.20E-03	5.20E+05	5.20E+05	2.32E-03
57653-85-7	HexaCDD, 1,2,3,6,7,8-	9.71E+04	7.89E-01	2.34E-03	2.34E-03	5.20E+05	5.20E+05	3.78E-03
19408-74-3	HexaCDD, 1,2,3,7,8,9-	9.71E+04	7.89E-01	2.34E-03	2.34E-03	5.20E+05	5.20E+05	3.78E-03
70648-26-9	HexaCDF, 1,2,3,4,7,8-	5.70E+04	9.25E-01	3.48E-03	3.48E-03	1.62E+05	1.62E+05	4.80E-03
57117-44-9	HexaCDF, 1,2,3,6,7,8-	5.70E+04	9.25E-01	3.48E-03	3.48E-03	1.62E+05	1.62E+05	4.80E-03
72918-21-9	HexaCDF, 1,2,3,7,8,9-	5.70E+04	9.25E-01	3.48E-03	3.48E-03	1.62E+05	1.62E+05	4.80E-03
60851-34-5	HexaCDF, 2,3,4,6,7,8-	5.70E+04	9.25E-01	3.48E-03	3.48E-03	1.62E+05	1.62E+05	4.80E-03
40321-76-4	PentaCDD, 1,2,3,7,8-	3.01E+04	1.12E+00	5.62E-03	5.62E-03	2.39E+05	2.39E+05	6.05E-03
57117-41-6	PentaCDF, 1,2,3,7,8-	3.93E+04	1.03E+00	4.61E-03	4.61E-03	9.75E+04	9.75E+04	5.53E-03
57117-31-4	PentaCDF, 2,3,4,7,8-	2.35E+04	1.21E+00	6.78E-03	6.78E-03	9.75E+04	9.75E+04	6.52E-03

Table K-11: Dioxin and Furan COPC Parameter Set 4

Cas Number	COPC Name	ba_beef	ba_pork	bcf_egg	bcf_chicken	BCF_fish	BAF_fish	BSAF_fish
		(day/kg FW tissue)		(L/kg-fw)	(L/kg-fw)	(L/kg FW)	(L/kg FW tissue)	(unitless)
35822-46-9	HeptaCDD, 1,2,3,4,6,7,8-	8.77E-03	1.06E-02	2.55E-02	3.90E-01	2.75E+03	2.14E+04	5.00E-03
39227-28-6	HexaCDD, 1,2,3,4,7,8-	1.10E-02	1.33E-02	4.53E-02	1.83E+00	5.18E+03	6.24E+04	4.00E-02
57653-85-7	HexaCDD, 1,2,3,6,7,8-	1.79E-02	2.17E-02	3.70E-02	1.17E+00	2.51E+04	5.74E+05	4.00E-02
19408-74-3	HexaCDD, 1,2,3,7,8,9-	1.79E-02	2.17E-02	2.33E-02	6.30E-01	2.51E+04	5.74E+05	4.00E-02
70648-26-9	HexaCDF, 1,2,3,4,7,8-	2.28E-02	2.76E-02	4.51E-02	1.58E+00	4.90E+04	1.29E+06	4.00E-02
57117-44-9	HexaCDF, 1,2,3,6,7,8-	2.28E-02	2.76E-02	4.53E-02	1.62E+00	4.90E+04	1.29E+06	4.00E-02
72918-21-9	HexaCDF, 1,2,3,7,8,9-	2.28E-02	2.76E-02	0.00E+00	0.00E+00	4.90E+04	1.29E+06	4.00E-02
60851-34-5	HexaCDF, 2,3,4,6,7,8-	2.28E-02	2.76E-02	2.71E-02	7.90E-01	4.90E+04	1.29E+06	4.00E-02
40321-76-4	PentaCDD, 1,2,3,7,8-	2.88E-02	3.48E-02	4.71E-02	2.50E+00	2.59E+04	6.64E+05	9.00E-02
57117-41-6	PentaCDF, 1,2,3,7,8-	2.63E-02	3.18E-02	0.00E+00	0.00E+00	3.38E+04	9.01E+05	9.00E-02
57117-31-4	PentaCDF, 2,3,4,7,8-	3.10E-02	3.75E-02	5.61E-02	3.28E+00	2.02E+04	4.97E+05	9.00E-02

Table K-12: Dioxin and Furan COPC Parameter Set 5

Cas Number	COPC Name	RfD	Oral_csf	RfC	inhalation_urf	inhalation csf	Chemical type	Chemical subtype
		mg/kg-day)	(per mg/kg-day)	(mg/m3)	(per µg/m3)	(per mg/kg-day)	(unitless)	(unitless)
35822-46-9	HeptaCDD, 1,2,3,4,6,7,8-	0.00E+00	1.50E+03	0.00E+00	0.00E+00	1.30E+03	O	D
39227-28-6	HexaCDD, 1,2,3,4,7,8-	0.00E+00	1.50E+04	0.00E+00	0.00E+00	1.30E+04	O	D
57653-85-7	HexaCDD, 1,2,3,6,7,8-	0.00E+00	1.50E+04	0.00E+00	0.00E+00	1.30E+04	O	D
19408-74-3	HexaCDD, 1,2,3,7,8,9-	0.00E+00	1.50E+04	0.00E+00	0.00E+00	1.30E+04	O	D
70648-26-9	HexaCDF, 1,2,3,4,7,8-	0.00E+00	1.50E+04	0.00E+00	0.00E+00	1.30E+04	O	F
57117-44-9	HexaCDF, 1,2,3,6,7,8-	0.00E+00	1.50E+04	0.00E+00	0.00E+00	1.30E+04	O	F
72918-21-9	HexaCDF, 1,2,3,7,8,9-	0.00E+00	1.50E+04	0.00E+00	0.00E+00	1.30E+04	O	F
60851-34-5	HexaCDF, 2,3,4,6,7,8-	0.00E+00	1.50E+04	0.00E+00	0.00E+00	1.30E+04	O	F
40321-76-4	PentaCDD, 1,2,3,7,8-	0.00E+00	1.50E+05	0.00E+00	0.00E+00	1.30E+05	O	D
57117-41-6	PentaCDF, 1,2,3,7,8-	0.00E+00	4.50E+03	0.00E+00	0.00E+00	3.90E+03	O	F
57117-31-4	PentaCDF, 2,3,4,7,8-	0.00E+00	4.50E+04	0.00E+00	0.00E+00	3.90E+04	O	F

Table K-13: Dioxin and Furan COPC Parameter Set 6

Cas Number	COPC Name	br_grain ([µg/d DW plant]/[µg/g soil])	ba_egg (day/kg FW tissue)	ba_chicken (day/kg FW tissue)	inhalation_rfd (mg/kg/day)	tef (unitless)	abs (unitless)	t_b (°K)
35822-46-9	HeptaCDD, 1,2,3,4,6,7,8-	9.20E-04	3.69E-03	6.46E-03	0.00E+00	1.00E-02	3.00E-02	7.80E+02
39227-28-6	HexaCDD, 1,2,3,4,7,8-	1.20E-03	4.63E-03	8.11E-03	0.00E+00	1.00E-01	3.00E-02	6.90E+02
57653-85-7	HexaCDD, 1,2,3,6,7,8-	2.34E-03	7.56E-03	1.32E-02	0.00E+00	1.00E-01	3.00E-02	7.18E+02
19408-74-3	HexaCDD, 1,2,3,7,8,9-	2.34E-03	7.56E-03	1.32E-02	0.00E+00	1.00E-01	3.00E-02	7.18E+02
70648-26-9	HexaCDF, 1,2,3,4,7,8-	3.48E-03	9.60E-03	1.68E-02	0.00E+00	1.00E-01	3.00E-02	7.61E+02
57117-44-9	HexaCDF, 1,2,3,6,7,8-	3.48E-03	9.60E-03	1.68E-02	0.00E+00	1.00E-01	3.00E-02	7.61E+02
72918-21-9	HexaCDF, 1,2,3,7,8,9-	3.48E-03	9.60E-03	1.68E-02	0.00E+00	1.00E-01	3.00E-02	6.93E+02
60851-34-5	HexaCDF, 2,3,4,6,7,8-	3.48E-03	9.60E-03	1.68E-02	0.00E+00	1.00E-01	3.00E-02	6.88E+02
40321-76-4	PentaCDD, 1,2,3,7,8-	5.62E-03	1.21E-02	2.12E-02	0.00E+00	1.00E+00	3.00E-02	6.71E+02
57117-41-6	PentaCDF, 1,2,3,7,8-	4.61E-03	1.11E-02	1.94E-02	0.00E+00	3.00E-02	3.00E-02	6.75E+02
57117-31-4	PentaCDF, 2,3,4,7,8-	6.78E-03	1.30E-02	2.28E-02	0.00E+00	3.00E-01	3.00E-02	7.38E+02

Table K-14: Dioxin and Furan COPC Parameter Set 7

Cas Number	COPC Name	fa	p_c	kpv
		(unitless)	(cm/hr)	(cm/hr)
35822-46-9	HeptaCDD, 1,2,3,4,6,7,8-	1.00E-01	1.26E+00	0.00E+00
39227-28-6	HexaCDD, 1,2,3,4,7,8-	2.00E-01	1.44E+00	0.00E+00
57653-85-7	HexaCDD, 1,2,3,6,7,8-	4.00E-01	6.74E-01	0.00E+00
19408-74-3	HexaCDD, 1,2,3,7,8,9-	4.00E-01	6.74E-01	0.00E+00
70648-26-9	HexaCDF, 1,2,3,4,7,8-	5.00E-01	5.25E-01	0.00E+00
57117-44-9	HexaCDF, 1,2,3,6,7,8-	5.00E-01	5.25E-01	0.00E+00
72918-21-9	HexaCDF, 1,2,3,7,8,9-	5.00E-01	5.25E-01	0.00E+00
60851-34-5	HexaCDF, 2,3,4,6,7,8-	5.00E-01	5.25E-01	0.00E+00
40321-76-4	PentaCDD, 1,2,3,7,8-	6.00E-01	3.88E-01	0.00E+00
57117-41-6	PentaCDF, 1,2,3,7,8-	6.00E-01	5.99E-01	0.00E+00
57117-31-4	PentaCDF, 2,3,4,7,8-	6.00E-01	3.85E-01	0.00E+00

Appendix L – Compounds Used In TOE Evaluation

Table L-1: Volatile Compounds

CAS Number	COPC Name	Melting Point (K)	Boiling Point (K)	MW (AMU)	Vapor Pressure (atm)	Aqueous Solubility (mg/L)	K_{ow}	Half-life (day)
67-63-0	Isopropanol	185	355	60.1	5.98E-02	1.00E+06	1.12E+00	1.92E-02
71-55-6	1,1,1-Trichloroethane	243	347	133.0	1.58E-01	1.30E+03	3.16E+02	7.48E-01
74-95-3	Dibromomethane	220	370	173.9	5.84E-02	1.19E+04	3.38E+01	ND
74-99-7	1-Propyne	170	250	40.1	5.67E+00	3.64E+03	8.71E+00	ND
75-07-0	Acetaldehyde	150	293	44.1	ND	1.00E+06	6.03E-01	ND
75-28-5	Isobutane	114	261	58.1	3.43E+00	4.88E+01	6.31E+02	ND
75-29-6	2-Chloropropane	156	309	78.5	6.78E-01	3.10E+03	7.94E+01	ND
75-34-3	1,1-Dichloroethane	176	330	99.0	3.03E-01	5.10E+03	6.31E+01	4.22E-01
75-37-6	1,1-Difluoroethane	156	246	66.1	5.99E+00	2.80E+03	5.62E+00	ND
75-77-4	Trimethylchlorosilane	233	331	109.0	3.08E-01	8.35E+02	3.02E+02	ND
78-78-4	Isopentane	114	303	72.2	9.07E-01	4.80E+01	5.25E+02	ND
78-87-5	1,2-Dichloropropane	203	370	113.0	6.84E-02	2.80E+03	1.00E+02	ND
96-14-0	3-Methylpentane	110	336	86.2	2.50E-01	1.79E+01	3.98E+03	ND
96-47-9	2-Methyltetrahydrofuran		352	86.1	1.28E-01	1.39E+05	2.24E+01	ND
106-97-8	Butane	135	273	58.1	2.39E+00	6.12E+01	5.75E+02	ND
106-99-0	1,3-Butadiene	164	269	54.1	2.77E+00	7.34E+02	9.77E+01	7.67E-02
107-01-7	2-Butene	134	277	56.1	1.79E+00	4.24E+02	2.14E+02	ND
107-05-1	Allyl chloride	139	318	76.5	4.84E-01	3.37E+03	2.82E+01	ND
107-06-2	1,2-Dichlorethane	237	357	99.0	1.04E-01	8.50E+03	3.16E+01	4.93E-01
107-83-5	2-Methylpentane	119	333	86.2	2.78E-01	1.40E+01	1.62E+03	ND
109-66-0	Pentane	143	309	72.2	6.76E-01	3.80E+01	2.45E+03	ND
109-67-1	Pentene-1	108	303	40.1	8.36E-01	1.48E+02	4.57E+02	ND
110-00-9	Furan	188	304	68.1	7.93E-01	1.00E+04	2.19E+01	ND
115-07-1	Propylene	88	226	42.1	1.14E+01	2.00E+02	5.89E+01	7.66E-02
115-11-7	Isobutylene	133	266	56.1	3.04E+00	2.63E+02	2.19E+02	ND

CAS Number	COPC Name	Melting Point (K)	Boiling Point (K)	MW (AMU)	Vapor Pressure (atm)	Aqueous Solubility (mg/L)	K_{ow}	Half-life (day)
142-82-5	Heptane	183	371	100.2	6.05E-02	3.40E+00	4.57E+04	4.00E-02
156-59-2	cis-1,2-Dichloroethylene	193	333	96.9	2.63E-01	3.50E+03	7.94E+01	ND
156-60-5	trans-1,2-Dichloroethylene	223	321	96.9	4.34E-01	6.30E+03	1.26E+02	ND
287-92-3	Cyclopentane	179	322	70.1	4.17E-01	1.56E+02	1.00E+03	ND
353-66-2	Difluorodimethylsilane	186	276	96.2	ND	ND	ND	ND
463-58-1	Carbonyl sulfide	134	223	60.1	1.24E+01	1.22E+03	6.31E+00	ND
504-60-9	1,3-Pentadiene	ND	315	68.1	5.33E-01	3.26E+02	2.82E+02	ND
547-63-7	Methyl isobutyrate	188	366	102.1	6.49E-02	9.27E+03	1.91E+01	ND
563-58-6	1,1-Dichloropropene	ND	350	111.0	1.19E-01	7.49E+02	3.39E+02	ND
589-34-4	3-Methylhexane	154	363	100.2	8.09E-02	4.95E+00	5.13E+03	ND
590-18-1	cis-2-Butene	134	277	56.1	2.11E+00	6.59E+02	2.14E+02	ND
590-21-6	1-Chloro-1-propene	ND	309	76.5	6.70E-01	2.42E+03	1.10E+02	ND
592-41-6	1-Hexene	133	336	84.2	2.42E-01	5.00E+01	2.45E+03	ND
592-42-7	1,5-Hexadiene	132	332	82.2	2.91E-01	1.69E+02	7.41E+02	ND
593-60-2	Vinyl bromide	134	289	107.0	1.36E+00	5.68E+03	3.72E+01	ND
594-20-7	2,2-Dichloropropane	239	342	113.0	ND	3.91E+02	8.32E+02	ND
616-38-6	Carbonic acid, dimethyl ester	276	363	90.1	7.29E-02	1.38E+05	1.70E+00	ND
624-64-6	trans-2-Butene	168	274	56.1	2.32E+00	5.11E+02	2.04E+02	ND
646-04-8	trans-2-Pentene	133	309	70.1	6.66E-01	2.03E+02	3.80E+02	ND
811-97-2	1,1,1,2-Tetrafluoroethane	172	299	102.0	6.57E+00	2.04E+03	4.79E+01	ND
994-05-8	Tert-amyl methyl ether	ND	359	102.0	9.89E-02	2.64E+03	8.32E+01	ND
1191-96-4	Ethylcyclopropane	124	309	70.1	6.78E-01	2.35E+02	4.07E+02	ND

ND implies no data was available.

Table L-2: Semi-volatile Compounds

CAS Number	COPC Name	Melting Point (K)	Boiling Point (K)	MW (AMU)	Vapor Pressure (atm)	Aqueous Solubility (mg/L)	K_{ow}	Half-life (day)
51-28-5	2,4-Dinitrophenol	386	386	184.0	6.71E-06	2.79E+03	3.47E+01	
55-18-5	N-Nitrosodiethylamine	263	450	102.0	1.13E-03	9.30E+04	3.02E+00	4.93E-01
55-63-0	Nitroglycerin	287	491	227.0	2.63E-07	1.38E+03	4.17E+01	1.92E-02
56-49-5	3-Methylcholanthrene	453	553	268.4	1.02E-11	2.90E-03	2.63E+06	3.84E+00
57-10-3	Palmitic acid	335	488	256.4	5.00E-10	8.21E-01	1.48E+07	ND
57-55-6	Propylene glycol	213	461	76.1	1.69E-04	1.00E+06	3.89E-02	ND
58-90-2	2,3,4,6-Tetrachlorophenol	343	423	232.0	1.89E-06	1.00E+02	2.82E+04	ND
59-50-7	3-Methyl-4-chlorophenol	340	508	143.0	6.58E-05	3.83E+03	1.26E+03	ND
59-89-2	N-Nitrosomorpholine	302	498	116.1	4.70E-05	8.62E+05	3.63E-01	5.00E-01
60-11-7	4-(Dimethylamino)azobenzene	389	473	225.3	9.21E-11	2.30E-01	3.80E+04	7.67E-02
62-50-0	Ethyl methanesulfonate	273	486	124.0	2.71E-04	6.30E+03	1.12E+00	ND
62-53-3	Aniline	267	457	93.6	6.45E-04	3.60E+04	7.94E+00	ND
62-75-9	N-Nitrosodimethylamine	223	425	74.0	3.55E-03	1.00E+06	2.69E-01	5.00E-01
66-27-3	Methyl methanesulfonate	293	476	110.1	4.08E-04	1.00E+06	2.19E-01	ND
67-72-1	Hexachloroethane	460	462	237.0	2.76E-04	5.00E+01	8.51E+03	ND
75-52-5	Nitromethane	245	374	61.0	4.70E-02	1.11E+05	4.47E-01	1.00E-01
76-01-7	Pentachloroethane	244	435	202.3	4.61E-03	4.80E+02	7.76E+02	ND
77-47-4	Hexachlorocyclopentadiene	284	512	273.0	7.89E-05	1.80E+00	1.10E+05	ND
78-40-0	Triethyl phosphate	217	489	182.2	5.17E-04	5.00E+05	6.31E+00	ND
78-59-1	Isophorone	265	488	138.0	5.76E-04	1.20E+04	5.01E+01	ND
79-00-5	1,1,2-Trichloroethane	236	387	133.0	3.03E-02	4.40E+03	1.00E+02	9.86E-01
79-34-5	1,1,2,2-Tetrachloroethane	229	419	168.0	6.05E-03	3.00E+03	2.51E+02	1.21E-01
83-32-9	Acenaphthene	366	552	154.0	3.29E-06	3.60E+00	7.94E+03	ND
86-30-6	N-nitrosodiphenylamine	340	541	198.0	8.82E-07	3.50E+01	1.26E+03	ND
86-73-7	Fluorene	383	568	166.0	8.29E-07	2.00E+00	1.58E+04	ND
87-65-0	2,6-Dichlorophenol	342	493	163.0	4.30E-05	1.90E+03	4.37E+02	2.00E-02
87-68-3	Hexachloro-1,3-butadiene	252	483	261.0	2.89E-04	3.20E+00	6.31E+04	ND
88-06-2	2,4,6-Trichlorophenol	342	518	198.0	3.16E-05	8.00E+02	5.01E+03	ND

CAS Number	COPC Name	Melting Point (K)	Boiling Point (K)	MW (AMU)	Vapor Pressure (atm)	Aqueous Solubility (mg/L)	K_{ow}	Half-life (day)
88-74-4	2-Nitroaniline	344	557	138.0	1.16E-06	1.47E+03	7.08E+01	ND
88-75-5	2-Nitrophenol	318	488	139.0	1.49E-04	2.19E+03	6.17E+01	ND
90-13-1	1-Chloronaphthalene	271	532	162.6	3.80E-05	1.74E+01	1.00E+04	ND
91-58-7	2-Chloronaphthalene	333	529	163.0	1.05E-05	1.17E+01	2.40E+03	ND
92-52-4	Biphenyl	344	529	154.2	7.60E-05	7.10E+00	1.23E+04	2.00E-02
94-59-7	Safrole	284	506	162.2	9.29E-05	8.11E+02	4.57E+02	ND
95-49-8	2-Chlorotoluene	ND	432	ND	ND	ND	ND	ND
95-53-4	2-Aminotoluene	257	477	107.2	4.21E-04	1.66E+04	2.09E+01	ND
95-57-8	2-Chlorophenol	283	449	129.0	3.08E-03	2.20E+04	1.45E+02	ND
95-94-3	1,2,4,5-Tetrachlorobenzene	413	519	216.0	7.11E-06	5.90E-01	6.31E+04	ND
95-95-4	2,4,5-Trichlorophenol	341	526	198.0	2.63E-05	1.20E+03	5.25E+03	ND
96-18-4	1,2,3-Trichloropropane	258	429	147.0	4.87E-03	1.80E+03	1.00E+02	ND
96-19-5	1,2,3-Trichloropropene	ND	415	145.4	5.79E-03	3.34E+02	6.03E+02	ND
96-22-0	3-Pentanone	234	374	86.1	4.96E-02	4.81E+04	9.77E+00	ND
98-29-3	4-tert-Butylpyrocatechol	327	558	166.2	4.38E-07	2.00E+03	8.71E+02	ND
98-82-8	Cumene	177	426	120.2	5.92E-03	6.10E+01	5.01E+03	ND
98-86-2	Acetophenone	293	475	120.0	5.22E-04	6.13E+03	3.80E+01	ND
98-95-3	Nitrobenzene	279	484	123.0	3.22E-04	2.09E+03	7.08E+01	ND
99-65-0	1,3-Dinitrobenzene	363	570	168.0	1.18E-06	8.60E+02	3.16E+01	ND
100-02-7	4-Nitrophenol	387	552	139.0	5.39E-08	1.16E+04	8.13E+01	ND
100-47-0	Benzonitrile	260	464	103.0	1.01E-03	2.00E+03	3.63E+01	ND
100-75-4	N-Nitrosopiperidine	ND	492	114.2	ND	ND	2.29E+00	5.00E-01
103-65-1	n-Propylbenzene	174	432	120.2	4.50E-03	5.22E+01	3.72E+03	ND
104-76-7	2-Ethyl-1-hexanol	197	458	130.2	1.79E-04	1.01E+04	6.46E+02	ND
105-67-9	2,4-Dimethylphenol	298	484	122.0	1.29E-04	7.90E+03	2.00E+02	ND
106-43-4	4-Chlorotoluene	281	435	126.6	3.89E-03	1.06E+02	2.14E+03	ND
106-44-5	p-Cresol	309	475	109.0	1.45E-04	2.20E+04	7.94E+01	1.83E-03
106-47-8	4-Chloroaniline	346	505	128.0	1.62E-05	5.30E+03	6.76E+01	ND
106-50-3	1,4-Benzenediamine	419	540	108.1	9.55E-07	3.70E+04	4.88E-01	ND

CAS Number	COPC Name	Melting Point (K)	Boiling Point (K)	MW (AMU)	Vapor Pressure (atm)	Aqueous Solubility (mg/L)	K_{ow}	Half-life (day)
106-93-4	Ethylene dibromide	283	405	188.0	1.71E-02	4.00E+03	1.00E+02	4.93E-01
107-39-1	2,4,4-Trimethyl-1-pentene	180	374	112.2	5.88E-02	4.04E+00	3.55E+04	ND
107-87-9	2-Pentanone	195	383	86.1	4.66E-02	4.30E+04	8.13E+00	ND
107-88-0	1,3-Butanediol	196	481	90.1	2.76E-05	1.00E+06	4.13E-02	ND
108-11-2	4-Methyl-2-pentanol	183	405	102.0	6.97E-03	1.64E+04	2.69E+01	ND
108-39-4	m-Cresol	285	475	109.0	1.82E-04	2.27E+04	9.12E+01	ND
108-60-1	Bis(2-chloro-1-methylethyl) ether	176	460	171.1	1.16E-03	1.70E+04	3.02E+02	ND
108-86-1	Bromobenzene	243	429	157.0	5.50E-03	4.46E+02	9.77E+02	ND
108-95-2	Phenol	314	455	94.1	3.68E-04	8.30E+04	3.16E+01	2.74E-02
109-06-8	2-Methylpyridine	203	402	93.1	1.47E-02	ND	1.29E+01	ND
110-57-6	trans-1,4-Dichlorobutene-2	275	428	125.0	4.51E-03	8.50E+02	3.98E+02	9.00E-03
110-86-1	Pyridine	232	388	79.1	2.74E-02	1.00E+06	4.47E+00	ND
111-44-4	Bis(2-chloroethyl) ether	226	452	143.0	2.04E-03	1.72E+04	1.95E+01	ND
111-65-9	N-Octane	216	399	114.2	1.86E-02	6.60E-01	1.51E+05	ND
111-84-2	Nonane	220	424	128.3	5.86E-03	2.20E-01	4.47E+05	ND
111-90-0	Diethylene glycol monoethyl ether	197	470	134.0	1.66E-04	1.00E+06	7.03E-01	7.66E-02
111-91-1	Bis(2-chloroethoxy)methane	241	488	173.0	1.84E-07	1.21E+05	5.62E+00	ND
112-31-2	Decanal	268	482	156.0	1.36E-04	6.08E+01	5.75E+03	ND
112-40-3	Dodecane	264	489	170.3	1.78E-04	3.70E-03	1.26E+06	ND
112-41-4	1-Dodecene	238	487	168.3	2.09E-04	1.13E-01	1.26E+06	ND
112-54-9	Dodecanal	318	458	184.3	2.01E-05	4.65E+00	5.62E+04	ND
112-88-9	1-Octadecene	291	452	252.5	8.88E-08	1.26E-04	1.10E+09	ND
112-92-5	1-Octadecanol	333	483	270.5	3.55E-09	1.10E-03	5.25E+07	ND
117-84-0	Di-n-octyl phthalate	298	493	391.0	3.42E-09	2.00E-02	1.26E+08	ND
119-93-7	3,3'-Dimethylbenzidine	403	573	212.3	1.12E-10	1.30E+03	2.19E+02	2.00E-02
120-58-1	Isosafrole	281	526	162.2	1.22E-04	4.45E+01	5.62E+02	8.00E-02
120-82-1	1,2,4-Trichlorobenzene	290	487	181.0	5.66E-04	3.50E+01	1.00E+04	ND
120-83-2	2,4-Dichlorophenol	318	483	163.0	8.82E-05	4.50E+03	7.94E+02	ND
121-33-5	4-Hydroxy-3-methoxybenzaldehyde	355	558	152.2	1.55E-07	1.10E+04	1.62E+01	2.00E-02

CAS Number	COPC Name	Melting Point (K)	Boiling Point (K)	MW (AMU)	Vapor Pressure (atm)	Aqueous Solubility (mg/L)	K_{ow}	Half-life (day)
122-66-7	1,2-Diphenylhydrazine	403	402	184.2	5.66E-07	6.80E+01	7.94E+02	ND
123-73-9	(E)-Crotonaldehyde	199	377	70.1	4.05E-02	1.56E+05	4.27E+00	ND
124-18-5	Decane	243	447	142.3	1.88E-03	5.20E-02	1.02E+05	ND
124-19-6	Nonanal	254	475	142.0	4.87E-04	9.60E+01	1.86E+03	ND
126-33-0	Tetrahydrothiophene-1,1-dioxide	301	558	120.2	8.16E-06	3.79E+05	1.70E-01	8.00E-03
127-18-4	Tetrachloroethylene	251	394	166.0	2.50E-02	2.00E+02	2.51E+03	9.86E-01
132-64-9	Dibenzofuran	360	560	170.0	2.37E-07	3.10E+00	1.26E+04	8.00E-02
138-86-3	Limonene	178	449	136.2	2.63E-02	1.38E+01	1.71E+04	ND
140-29-4	Benzyl cyanide	249	507	117.0	1.18E-04	1.00E+02	3.63E+01	ND
142-28-9	1,3-Dichloropropane	174	394	113.0	2.39E-02	2.75E+03	1.00E+02	ND
143-07-7	Dodecanoic Acid	316	572	200.3	2.11E-07	4.81E+00	3.98E+04	ND
208-96-8	Acenaphthylene	366	538	150.0	1.19E-06	1.60E+01	1.26E+04	1.64E-01
286-20-4	Cyclohexene oxide	263	405	98.2	1.50E-02	6.07E+03	4.57E+01	ND
293-96-9	Cyclodecane	283	475	140.3	7.37E-04	9.89E-01	1.38E+05	ND
294-62-2	Cyclododecane	334	520	168.3	3.88E-05	4.70E-03	1.32E+06	ND
295-65-8	Cyclohexadecane	ND	573	ND	ND	ND	ND	ND
375-22-4	Heptafluorobutyric acid, n-trid	256	394	214.0	8.38E-03	4.61E+03	2.69E+02	ND
464-17-5	1,7,7-trimethyl bicyclo[2.2.1] hept-2-ene	386	419	136.2	1.01E-03	1.38E+00	1.48E+04	ND
510-15-6	Chlorobenzilate	309	431	325.2	2.89E-09	1.30E+01	2.29E+04	ND
513-85-9	2,3-Butanediol	298	455	90.1	3.20E-04	1.00E+06	1.20E-01	ND
526-75-0	2,3-Dimethylphenol	346	490	122.2	1.17E-04	4.57E+03	3.02E+02	5.00E-02
536-60-7	Benzenemethanol, 4-(1-methylethyl)-	301	521	150.2	4.16E-06	2.31E+03	3.39E+02	ND
540-97-6	Dodecamethylcyclohexasiloxane	270	518	444.9	2.96E-05	5.10E-03	2.14E+06	ND
541-05-9	Hexamethylcyclotrisiloxane	338	407	222.5	4.60E-03	1.57E+00	2.95E+04	ND
541-73-1	1,3-Dichlorobenzene	248	446	147.0	2.83E-03	1.34E+02	3.98E+03	ND
544-25-2	1,3,5-Cycloheptatriene	194	390	92.1	3.09E-02	6.20E+02	4.27E+02	ND
544-76-3	Hexadecane	291	560	226.0	1.88E-06	9.00E-04	1.78E+08	ND
556-67-2	Octamethylcyclotetrasiloxane	291	449	297.0	1.27E-03	5.00E-03	2.82E+04	ND
560-21-4	2,3,3-Trimethylpentane	172	388	114.2	3.55E-02	9.91E+00	1.23E+04	ND

CAS Number	COPC Name	Melting Point (K)	Boiling Point (K)	MW (AMU)	Vapor Pressure (atm)	Aqueous Solubility (mg/L)	K_{ow}	Half-life (day)
591-78-6	2-Hexanone	218	400	100.0	1.53E-02	1.75E+04	2.40E+01	ND
606-20-2	2,6-Dinitrotoluene	344	573	182.0	7.46E-07	1.82E+02	5.25E+01	4.93E-01
608-93-5	Pentachlorobenzene	359	550	250.0	2.88E-06	1.33E+00	1.48E+05	ND
613-90-1	alpha-Oxophenylacetonitrile	404	479	131.1	2.76E-04	5.91E+04	1.58E+00	ND
621-64-7	N-Nitrosodi-N-propylamine	280	479	130.0	1.71E-04	9.89E+03	2.29E+01	ND
623-27-8	1,4-Benzenedicarboaldehyde	390	519	134.1	5.00E-06	2.00E+02	2.69E+01	ND
623-42-7	Methyl butyrate	187	375	102.1	4.25E-02	1.50E+04	1.95E+01	ND
625-38-7	3-Butenoic Acid	238	442	86.1	2.16E-03	1.30E+05	8.51E+00	ND
626-19-7	Isophthalaldehyde	363	519	134.1	1.00E-05	2.73E+03	2.69E+01	ND
626-93-7	2-Hexanol	ND	409	102.2	3.28E-03	1.37E+04	5.75E+01	ND
629-20-9	1,3,5,7-Cyclooctatetraene	269	414	104.2	1.03E-02	7.73E+01	1.20E+03	ND
629-50-5	n-Tridecane	268	508	184.4	7.30E-05	4.70E-03	5.37E+06	ND
629-59-4	n-Tetradecane	279	527	198.4	1.50E-05	2.20E-03	1.58E+07	ND
629-62-9	n-Pentadecane	283	544	212.0	4.51E-06	7.60E-05	5.13E+07	ND
630-20-6	1,1,1,2-Tetrachloroethane	204	404	168.0	1.58E-02	1.10E+03	1.07E+03	1.83E-01
871-83-0	2-Methylnonane	199	440	142.3	2.49E-03	8.99E-01	1.51E+05	ND
872-05-9	1-Decene	207	444	140.3	2.20E-03	5.70E-01	5.01E+05	ND
924-16-3	N,N-Dibutylnitrosoamine	275	507	158.0	3.95E-05	1.27E+03	8.32E+01	ND
930-55-2	N-Nitrosopyrrolidine	ND	487	100.1	3.29E-05	ND	6.46E-01	5.00E-01
930-68-7	2-Cyclohexenone	220	443	104.2	4.76E-03	3.62E+04	4.07E+00	ND
937-30-4	1-(4-Ethylphenyl) ethanone	253	387	148.2	1.20E-03	3.73E+02	5.13E+02	ND
1071-26-7	2,2-Dimethylheptane	160	406	128.3	1.42E-02	2.90E+00	4.47E+04	ND
1120-21-4	n-Undecane	248	469	156.3	5.42E-04	4.40E-03	3.16E+06	ND
1330-86-5	Diisoctyl Adipate	203	493	320.6	3.49E-08	5.40E-04	1.32E+08	ND
1476-11-5	1,4-Dichloro-cis-2-butene	225	426	125.0	5.38E-03	5.80E+02	3.98E+02	1.00E-02
1587-04-8	1-Methyl-2-(2-propenyl)benzene	ND	454	132.2	1.13E-03	3.94E+01	8.51E+03	ND
1600-37-9	1,1,2,3,3-Pentachloro-1-propene	ND	458	214.3	9.96E-04	4.13E+01	2.82E+03	ND
1745-81-9	o-Allylphenol	267	493	134.2	8.26E-05	3.72E+03	8.13E+02	ND
1888-71-7	Perchloropropene	200	483	248.8	3.21E-04	1.70E+01	2.40E+04	ND

CAS Number	COPC Name	Melting Point (K)	Boiling Point (K)	MW (AMU)	Vapor Pressure (atm)	Aqueous Solubility (mg/L)	K_{ow}	Half-life (day)
2051-30-1	2,6-Dimethyloctane	ND	433	142.3	3.88E-03	1.04E+00	1.29E+05	ND
2216-33-3	3-Methyloctane	166	417	128.3	8.23E-03	2.87E+00	4.90E+04	ND
2233-00-3	3,3,3-Trichloro 1-Propene	243	388	145.4	2.62E-02	3.07E+02	1.07E+03	ND
2303-16-4	Diallate	300	381	270.2	1.97E-07	1.40E+01	6.31E+04	2.50E-01
3454-07-7	p-Ethylstyrene	223	465	132.2	1.24E-03	2.38E+01	1.55E+04	ND
4170-30-3	Crotonaldehyde	197	377	86.0	3.94E-02	1.81E+05	3.98E+00	ND
4748-78-1	4-Ethylbenzaldehyde	ND	531	134.2	ND	ND	ND	ND
5911-04-6	3-Methylnonane	188	441	142.3	3.03E-03	9.70E-01	1.51E+05	ND
5989-27-5	(D)-Limonene	409	449	136.0	2.63E-02	1.38E+01	1.71E+04	ND
6975-98-0	2-Methyldecane	224	462	156.3	7.92E-04	2.97E-01	4.68E+05	ND
7005-72-3	p-Chlorophenyl phenyl ether	265	557	205.0	3.55E-06	3.30E+00	1.20E+04	ND
10595-95-6	N-Nitrosomethylethylamine	ND	436	88.1	1.45E-03	3.00E-05	1.10E+00	ND
13151-34-3	3-Methyl decane	180	461	156.3	1.19E-03	3.25E-01	4.68E+05	ND
13475-82-6	2,2,4,6,6-Pentamethyl heptane	206	451	170.3	1.92E-03	1.77E-01	8.71E+05	ND
14371-10-9	Cinnamaldehyde, (E)-	266	519	132.2	4.40E-05	3.76E+03	6.61E+01	ND
15869-92-8	3,4-Dimethyl octane	ND	436	142.3	3.71E-03	1.04E+00	1.29E+05	ND
17301-94-9	4-Methylnonane	174	439	142.3	3.34E-03	9.70E-01	1.51E+05	ND
39638-32-9	Bis(2-chloroisopropyl) ether	370	460	171.1	7.00E-03	1.30E+03	ND	ND
39761-61-0	(z)-5,5-Dimethyl 2-Hexene	ND	380	112.2	4.27E-02	1.33E+01	8.71E+03	ND

ND implies no data was available.

Table L-3: Non-volatile Compounds

CAS Number	COPC Name	Melting Point (K)	Boiling Point (K)	MW (AMU)	Vapor Pressure (atm)	Aqueous Solubility (mg/L)	K_{ow}	Half-life (day)
50-32-8	Benzo(a)pyrene	453	768	252.0	7.24E-12	1.60E-03	1.00E+06	ND
53-70-3	Dibenzo(a,h)anthracene	543	797	278.0	1.32E-13	2.50E-03	3.16E+06	ND
53-96-3	2-Acetylaminofluorene	467	576	223.3	7.34E-08	5.29E+00	1.74E+03	5.00E-01
56-38-2	Parathion	279	648	291.0	1.27E-08	6.54E+00	6.76E+03	ND
56-55-3	Benz(a)anthracene	357	711	228.0	1.45E-10	9.40E-03	5.01E+05	ND
57-11-4	Stearic acid	342	656	284.5	9.50E-10	3.40E+02	1.70E+08	1.67E-02
57-97-6	7,12-Dimethylbenz(a)anthracene	396	753	256.4	7.41E-12	6.10E-02	6.31E+05	8.00E-02
82-68-8	Pentachloronitrobenzene	417	601	295.0	1.49E-07	5.50E-01	4.37E+04	ND
85-01-8	Phenanthrene	372	613	178.0	1.45E-07	1.10E+00	3.16E+04	5.48E-01
85-68-7	Butyl benzyl phthalate	238	643	312.0	1.09E-08	2.70E+00	7.94E+04	1.92E-02
87-86-5	Pentachlorophenol	443	583	266.0	4.21E-08	2.00E+03	1.26E+05	ND
88-85-7	Dinoseb	313	605	240.2	9.87E-08	5.20E+01	4.90E+03	3.37E-01
91-59-8	2-Naphthylamine	385	579	143.0	1.10E-06	2.63E+02	1.91E+02	4.93E-01
91-94-1	3,3'-Dichlorobenzidine	405	641	253.0	4.88E-11	3.10E+00	3.24E+03	ND
92-67-1	4-Biphenylamine	327	575	169.2	3.88E-07	4.49E+02	6.31E+02	ND
92-87-5	Benzidine	393	673	180.0	1.05E-11	5.00E+02	5.01E+01	2.00E-02
99-09-2	3-Nitroaniline	387	579	138.0	1.26E-07	1.21E+03	2.34E+01	ND
99-35-4	1,3,5-Trinitrobenzene	393	588	213.0	8.42E-09	2.80E+02	1.58E+01	ND
100-01-6	4-Nitroaniline	422	605	138.0	1.09E-08	7.28E+02	2.45E+01	ND
101-55-3	p-Bromophenyl phenyl ether	292	583	249.0	1.97E-06	4.60E+00	1.75E+05	ND
103-23-1	Bis(2-ethylhexyl) adipate	205	690	371.0	3.09E-09	1.00E-01	1.58E+04	7.66E-02
111-02-4	Squalen	253	698	411.0	1.50E-09	1.05E-09	1.32E+14	ND
112-05-0	n-Nonanoic acid	285	783	158.0	1.54E-06	2.84E+02	2.63E+03	ND
112-39-0	Methyl hexadecanoate	303	690	270.5	6.18E-08	1.17E-02	2.40E+07	ND
112-61-8	Methyl stearate	312	716	298.5	1.79E-08	1.17E-03	2.24E+08	ND
112-95-8	n-Eicosane	310	616	282.6	6.08E-09	1.90E-03	1.58E+10	ND
118-74-1	Hexachlorobenzene	503	605	285.0	2.37E-08	6.20E-06	2.00E+05	ND

CAS Number	COPC Name	Melting Point (K)	Boiling Point (K)	MW (AMU)	Vapor Pressure (atm)	Aqueous Solubility (mg/L)	K_{ow}	Half-life (day)
120-12-7	Anthracene	493	613	178.0	3.55E-09	4.30E-02	3.16E+04	ND
122-39-4	N,N-Diphenylamine	327	575	159.0	8.79E-07	3.57E+01	3.16E+03	7.67E-02
129-00-0	Pyrene	423	677	202.0	6.05E-09	1.40E+00	7.94E+04	
134-32-7	1-Naphthylamine	323	574	143.2	3.62E-06	1.70E+03	1.78E+02	5.00E-01
191-24-2	Benzo(g,h,i)perylene	551	773	280.0	1.31E-13	2.60E-04	3.98E+06	1.78E+00
192-97-2	Benzo(e)pyrene	451	584	252.3	7.50E-12	6.30E-03	2.75E+06	ND
193-39-5	Indeno(1,2,3-cd)pyrene	433	809	276.0	1.32E-13	2.20E-05	3.98E+06	ND
205-82-3	Benzo(j)fluoranthene	439	753	252.3	3.45E-03	2.50E-03	1.29E+06	ND
205-99-2	Benz(b)fluoranthene	441	630	252.0	6.58E-10	1.50E-03	1.33E+06	ND
206-44-0	Fluoranthene	383	648	202.0	1.03E-08	2.10E-01	1.00E+05	1.21E+00
207-08-9	Benzo(k)fluoranthene	493	753	252.0	2.63E-12	8.00E-04	1.26E+06	ND
218-01-9	Chrysene	533	721	228.0	8.16E-12	6.30E-03	5.01E+05	ND
224-42-0	Dibenz(a,j)acridine	489	753	279.3	2.43E-12	1.80E-02	4.27E+05	ND
534-52-1	4,6-Dinitro-o-cresol	358	585	198.1	4.26E-07	1.98E+02	1.32E+02	6.00E-02
544-85-4	Dotriacontane	343	740	450.9	2.63E-10	8.29E-12	1.15E+16	ND
591-76-4	2-Methylhexane	155	636	100.1	ND	ND	ND	ND
593-49-7	Heptacosane	333	715	380.8	3.70E-10	2.83E-09	3.98E+13	ND
620-14-4	1-Methyl-3-ethylbenzene	176	708	120.2	ND	ND	3.17E+03	ND
629-78-7	n-Heptadecane	295	575	240.5	3.00E-07	2.94E-04	4.90E+08	ND
629-92-5	n-Nonadecane	305	603	269.0	6.45E-08	2.97E-05	4.68E+09	ND
629-94-7	n-Heneicosane	314	630	296.6	1.15E-07	2.90E-08	4.47E+10	ND
629-96-9	1-Eicosanol	339	629	298.6	5.95E-11	1.51E-03	5.01E+08	ND
629-97-0	Docosane	318	642	311.0	1.68E-09	7.90E-09	1.41E+11	ND
629-99-2	Pentacosane	327	675	352.7	1.99E-09	2.90E-08	4.17E+12	ND
630-01-3	n-Hexacosane	330	685	366.7	6.17E-10	1.70E-03	1.29E+13	ND
630-02-4	Octacosane	338	705	394.8	2.11E-12	8.84E-10	1.23E+14	ND
630-07-9	Pentatriacontane	348	763	493.0	7.09E-15	2.47E-13	3.39E+17	ND
638-53-9	Tridecanoic acid	318	585	214.4	1.65E-03	3.30E+01	3.09E+05	ND
638-67-5	Tricosane	321	653	324.6	2.29E-08	2.95E-07	4.37E+11	ND

CAS Number	COPC Name	Melting Point (K)	Boiling Point (K)	MW (AMU)	Vapor Pressure (atm)	Aqueous Solubility (mg/L)	K_{ow}	Half-life (day)
638-68-6	n-Triacontane	339	723	422.8	3.59E-14	8.58E-11	1.17E+15	ND
646-31-1	Tetracosane	327	664	338.7	5.36E-09	9.25E-08	1.35E+12	ND
791-28-6	Triphenylphosphine oxide	430	633	278.3	3.42E-12	6.28E+01	6.76E+02	ND
7098-22-8	Tetratetracontane	361	821	619.2	1.95E-12	6.28E-18	8.91E+21	ND
10544-50-0	Octasulfur	ND	718	256.5	ND	ND	ND	ND
14167-59-0	Tetratriacontane	346	756	478.9	1.02E-10	7.97E-13	1.10E+17	ND
18435-45-5	1-Nonadecene	296	602	266.5	5.01E-08	3.99E-05	3.47E+09	ND
19408-74-3	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	517	718	391.0	6.45E-14	4.40E-06	2.00E+07	2.50E+01
23950-58-5	Pronamide	428	594	256.0	5.72E-10	1.50E+01	2.69E+03	ND
32774-16-6	3,3',4,4',5,5'-Hexachlorobiphenyl	475	673	361.0	7.63E-10	5.10E-04	2.57E+07	2.50E+01
35822-46-9	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	538	780	425.0	7.37E-15	2.40E-06	1.00E+08	2.50E+01
39227-28-6	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	547	760	391.0	5.00E-14	4.42E-06	6.31E+07	2.50E+01
40321-76-4	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	514	738	356.0	5.79E-13	1.18E-04	4.37E+06	2.50E+01
57117-31-4	2,3,4,7,8-Pentachlorodibenzofuran	469	738	340.0	3.42E-12	2.36E-04	3.16E+06	2.50E+01
57117-41-6	1,2,3,7,8-Pentachlorodibenzofuran	499	738	340.0	2.23E-12	2.40E-04	6.17E+06	2.50E+01
57117-44-9	1,2,3,6,7,8-Hexachlorodibenzofuran	506	761	375.0	2.89E-13	1.77E-05	1.00E+07	2.50E+01
57653-85-7	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	559	718	391.0	4.73E-14	4.40E-06	2.00E+07	2.50E+01
60851-34-5	2,3,4,6,7,8-Hexachlorodibenzofuran	513	761	375.0	2.63E-13	1.30E-05	1.00E+07	2.50E+01
65510-44-3	2',3,4,4',5-Pentachloro-1,1'-biphenyl	398	654	326.0	ND	1.00E+04	ND	2.50E+01
70648-26-9	1,2,3,4,7,8-Hexachlorodibenzofuran	499	761	375.0	3.16E-13	8.25E-06	1.00E+07	2.50E+01
72918-21-9	1,2,3,7,8,9-Hexachlorodibenzofuran	521	761	375.0	3.68E-13	1.30E-05	1.00E+07	2.50E+01

ND implies no data was available.

Appendix M – Fate and Transport Property Equations

Equations for estimating COPC fate and transport properties are included in the PDF file on the compact disk provided with this report under the directory titled “Appendix M”.

Document	Description
STNDALG_Acute Ref Concentratinons V2.pdf	Methodology for developing acute reference concentrations
STNDALG_Chronic Toxicity Values V3.pdf	Methodology for developing chronic toxicity values
STNDALG_Ecotox Benchmarks Comb V2.0.pdf	Methodology for developing ecological toxicy reference values
STNDALG_FnT Parameters V4.pdf	Methodology for developing fate and transport parameter values
UMDCF EmisionRateFrameworkr0.pdf	Methodolgy for developing common stack emission rates
UMDCF EmisionRateFrameworkr0_Annex A_.pdf	Methodolgy for developing common stack emission rates
EmisionRateFrameworkr0_Annex B_.pdf	Methodolgy for developing common stack emission rates

Appendix N – Human Health Data for TOE Compounds

Table N-1: Human Health Data for Volatile Compounds

CAS No.	COPC Name	Oral RfD (mg/kg-day)	RfC (ug/m^3)	Inhalation RfD (mg/kg-day)	Oral CSF (mg/kg-day)	Inhalation CSF (mg/kg-day)	Inhalation UR (m^3/ug)	Acute Inhalation RfC (mg/m^3)
67-63-0	Isopropanol	ND	7.00E+00	2.00E+00	ND	ND	ND	3.00E+00
71-55-6	1,1,1-Trichloroethane (TCA or methyl chloroform)	ND	2.20E+00	6.30E-01	ND	ND	ND	7.00E+01
74-95-3	Dibromomethane (Methylene Bromide)	1.00E-02	ND	ND	ND	ND	ND	5.00E+01
74-99-7	1-Propyne (TIC)	ND	ND	ND	ND	ND	ND	6.00E+02
75-07-0	Acetaldehyde	ND	9.00E-03	2.57E-03	ND	ND	ND	8.00E+01
75-28-5	Propane, 2-methyl (TIC)	ND	ND	ND	ND	ND	ND	1.00E+03
75-29-6	2-Chloropropane (Isopropyl chloride)	ND	1.00E-01	2.86E-02	ND	ND	ND	1.00E+02
75-34-3	1,1-Dichloroethane	2.00E-01	5.00E-01	1.43E-01	5.70E-03	5.70E-03	1.60E-06	3.00E+02
75-37-6	Ethane, 1,1-difluoro-	ND	4.00E+01	1.14E+01	ND	ND	ND	3.00E+04
75-77-4	Silane, chlorotrimethyl-	ND	ND	ND	ND	ND	ND	8.00E+00
78-78-4	Butane, 2-methyl (TIC)	5.00E+00	1.84E+01	5.26E+00	ND	ND	ND	4.00E+02
78-87-5	1,2-Dichloropropane (Propylene dichloride)	9.00E-02	4.00E-03	1.14E-03	3.60E-02	3.60E-02	1.00E-05	1.00E+00
96-14-0	Pentane, 3-methyl-	5.00E+00	1.84E+01	5.26E+00	ND	ND	ND	4.00E+02
96-47-9	Furan, tetrahydro-2-methyl-	ND	ND	ND	ND	ND	ND	2.00E+01
106-97-8	Butane	ND	ND	ND	ND	ND	ND	1.00E+04
106-99-0	1,3-Butadiene	ND	2.00E-03	5.71E-04	3.40E+00	1.00E-01	3.00E-05	1.00E+03
107-01-7	2-Butene	ND	ND	ND	ND	ND	ND	3.00E+00
107-05-1	3-Chloro 1-Propene	ND	1.00E-03	2.86E-04	2.10E-02	ND	ND	9.00E+00
107-06-2	1,2-Dichloroethane (EDC)	ND	2.40E+00	6.86E-01	9.10E-02	9.10E-02	2.60E-05	2.00E+02
107-83-5	Pentane, 2-methyl-	5.00E+00	1.84E+01	5.26E+00	ND	ND	ND	4.00E+02
109-66-0	Pentane (TIC)	5.00E+00	1.84E+01	5.26E+00	ND	ND	ND	4.00E+02
109-67-1	1-Pentene	5.00E+00	1.84E+01	5.26E+00	ND	ND	ND	ND
110-00-9	Furan	1.00E-03	ND	ND	ND	ND	ND	2.00E+00

CAS No.	COPC Name	Oral RfD (mg/kg-day)	RfC (ug/m^3)	Inhalation RfD (mg/kg-day)	Oral CSF (mg/kg-day)	Inhalation CSF (mg/kg-day)	Inhalation UR (m^3/ug)	Acute Inhalation RfC (mg/m^3)
115-07-1	1-Propene (TIC)	ND	3.00E+00	8.57E-01	ND	ND	ND	6.00E+02
115-11-7	1-Propene, 2-methyl-	ND	ND	ND	ND	ND	ND	2.00E+03
142-82-5	Heptane (TIC)	5.00E+00	1.84E+01	5.26E+00	ND	ND	ND	4.00E+02
156-59-2	cis-1,2-Dichloroethene	1.00E-02	ND	ND	ND	ND	ND	6.00E+02
156-60-5	trans-1,2-Dichloroethene	2.00E-02	6.00E-02	1.71E-02	ND	ND	ND	2.00E+00
287-92-3	Cyclopentane	5.00E+00	1.84E+01	5.26E+00	ND	ND	ND	ND
463-58-1	Carbonyl Sulfide	ND	ND	ND	ND	ND	ND	3.00E+00
504-60-9	1,3-Pentadiene	5.00E+00	1.84E+01	5.26E+00	ND	ND	ND	ND
563-58-6	1,1-Dichloropropene	ND	ND	ND	ND	ND	ND	2.00E+02
589-34-4	Hexane, 3-methyl-	5.00E+00	1.84E+01	5.26E+00	ND	ND	ND	ND
590-18-1	2-Butene, (Z)-	ND	ND	ND	ND	ND	ND	4.00E+04
592-41-6	1-Hexene	5.00E+00	1.84E+01	5.26E+00	ND	ND	ND	ND
592-42-7	1,5-Hexadiene	5.00E+00	1.84E+01	5.26E+00	ND	ND	ND	ND
593-60-2	Bromoethene (Vinyl Bromide)	ND	3.00E-03	8.57E-04	ND	ND	ND	2.00E+01
594-20-7	2,2-Dichloropropane	ND	ND	ND	ND	ND	ND	1.00E+00
616-38-6	Carbonic acid, dimethyl ester	ND	ND	ND	ND	ND	ND	4.00E+01
624-64-6	2-Butene, (E)-	ND	ND	ND	ND	ND	ND	1.00E+04
646-04-8	2-Pentene, (E)-	5.00E+00	1.84E+01	5.26E+00	ND	ND	ND	ND
811-97-2	1,1,1,2-Tetrafluoroethane	ND	8.00E+01	2.29E+01	ND	ND	ND	3.00E+04
994-05-8	Butane, 2-methoxy-2-methyl-	ND	ND	ND	ND	ND	ND	2.00E+02
1191-96-4	Cyclopropane, ethyl-	5.00E+00	1.84E+01	5.26E+00	ND	ND	ND	ND

Table N-2: Human Health Data for Semi-volatile Compounds

CAS No.	COPC Name	Oral RfD (mg/kg-day)	RfC (ug/m^3)	Inhalation RfD (mg/kg-day)	Oral CSF (mg/kg-day)	Inhalation CSF (mg/kg-day)	Inhalation UR (m^3/ug)	Acute Inhalation RfC (mg/m^3)
51-28-5	2,4-Dinitrophenol	2.00E-03	ND	ND	ND	ND	ND	1.00E+00
55-18-5	N-Nitrosodiethylamine	ND	ND	ND	1.50E+02	1.50E+02	4.30E-02	ND
55-63-0	Nitroglycerine	ND	ND	ND	1.70E-02	ND	ND	3.00E-02
56-49-5	3-Methylcholanthrene	3.00E-02	ND	ND	2.20E+01	2.20E+01	6.30E-03	1.00E-01
57-10-3	Hexadecanoic acid	ND	ND	ND	ND	ND	ND	1.00E+01
58-90-2	2,3,4,6-Tetrachlorophenol	3.00E-02	ND	ND	ND	ND	ND	ND
59-50-7	4-Chloro-3-methylphenol	ND	ND	ND	ND	ND	ND	5.00E+00
59-89-2	N-Nitrosomorpholine	ND	ND	ND	6.70E+00	6.70E+00	1.90E-03	8.00E+00
60-11-7	4-(Dimethylamino)azobenzene	ND	ND	ND	4.60E+00	4.60E+00	1.30E-03	1.00E+01
62-50-0	Ethyl methanesulfonate	ND	ND	ND	ND	ND	ND	4.00E-01
62-53-3	Aniline	7.00E-03	1.00E-03	2.86E-04	5.70E-03	5.70E-03	1.60E-06	3.00E+01
62-75-9	N-Nitrosodimethylamine	8.00E-06	ND	ND	5.10E+01	4.90E+01	1.40E-02	3.00E+00
66-27-3	Methyl methanesulfonate	ND	ND	ND	9.90E-02	9.90E-02	2.80E-05	ND
67-72-1	Hexachloroethane	1.00E-03	ND	ND	1.40E-02	1.40E-02	4.00E-06	1.00E+02
75-52-5	Nitromethane	ND	2.00E-02	5.71E-03	ND	ND	ND	4.00E+01
76-01-7	Pentachloroethane	ND	ND	ND	ND	ND	ND	8.00E+00
77-47-4	Hexachlorocyclopentadiene	6.00E-03	2.00E-04	5.71E-05	ND	ND	ND	5.00E-02
78-40-0	Triethyl phosphate	ND	ND	ND	ND	ND	ND	2.00E+01
78-59-1	Isophorone	2.00E-01	2.00E+00	5.71E-01	9.50E-04	ND	ND	6.00E+00
79-00-5	1,1,2-Trichloroethane	4.00E-03	ND	ND	5.70E-02	5.60E-02	1.60E-05	1.00E+01
79-34-5	1,1,2,2-Tetrachloroethane	6.00E-02	ND	ND	2.00E-01	2.00E-01	5.80E-05	9.00E+00
83-32-9	Acenaphthene	6.00E-02	2.00E-01	5.71E-02	ND	ND	ND	3.00E-01
86-30-6	N-Nitrosodiphenylamine	2.00E-02	ND	ND	4.90E-03	9.00E-03	2.60E-06	6.00E+00
86-73-7	Fluorene	4.00E-02	2.00E-01	5.71E-02	ND	ND	ND	6.00E+00
87-65-0	2,6-Dichlorophenol	ND	ND	ND	ND	ND	ND	1.00E+00
87-68-3	Hexachlorobutadiene (Hexachloro-1,3-butadiene)	2.00E-04	ND	ND	7.80E-02	7.70E-02	2.20E-05	1.00E+01

CAS No.	COPC Name	Oral RfD (mg/kg-day)	RfC (ug/m^3)	Inhalation RfD (mg/kg-day)	Oral CSF (mg/kg-day)	Inhalation CSF (mg/kg-day)	Inhalation UR (m^3/ug)	Acute Inhalation RfC (mg/m^3)
88-06-2	2,4,6-Trichlorophenol	ND	ND	ND	1.10E-02	1.10E-02	3.10E-06	8.00E+00
88-74-4	2-Nitroaniline	3.00E-03	1.00E-04	2.86E-05	ND	ND	ND	5.00E+00
88-75-5	2-Nitrophenol	ND	ND	ND	ND	ND	ND	1.00E+00
90-13-1	1-Chloronaphthalene	ND	ND	ND	ND	ND	ND	5.00E+00
91-58-7	2-Chloronaphthalene	8.00E-02	ND	ND	ND	ND	ND	1.00E-01
92-52-4	1,1'-Biphenyl (Phenylbenzene or Diphenyl)	5.00E-02	2.00E-01	5.71E-02	ND	ND	ND	1.00E+00
94-59-7	Safrole	ND	ND	ND	2.20E-01	2.20E-01	6.30E-05	4.00E+00
95-49-8	2-Chlorotoluene	2.00E-02	ND	ND	ND	ND	ND	1.00E-01
95-53-4	2-Toluidine	ND	ND	ND	1.80E-01	1.80E-01	5.10E-05	5.00E+00
95-57-8	2-Chlorophenol	5.00E-03	ND	ND	ND	ND	ND	2.00E+00
95-94-3	1,2,4,5-Tetrachlorobenzene	3.00E-04	ND	ND	ND	ND	ND	8.00E+00
95-95-4	2,4,5-Trichlorophenol	1.00E-01	ND	ND	ND	ND	ND	8.00E+00
96-18-4	1,2,3-Trichloropropane	6.00E-03	ND	ND	7.00E+00	ND	ND	1.00E-01
96-22-0	3-Pentanone	ND	ND	ND	ND	ND	ND	3.00E+02
98-29-3	1,2-Benzenediol, 4-(1,1-dimethylethyl)-	ND	ND	ND	ND	ND	ND	7.00E-02
98-82-8	Benzene, (1-methylethyl)-	1.00E-01	4.00E-01	1.14E-01	ND	ND	ND	2.00E+02
98-86-2	Acetophenone	1.00E-01	ND	ND	ND	ND	ND	8.00E+00
98-95-3	Nitrobenzene	5.00E-04	2.00E-03	5.71E-04	ND	ND	ND	4.00E+00
99-65-0	1,3-Dinitrobenzene	1.00E-04	ND	ND	ND	ND	ND	8.00E-01
100-02-7	4-Nitrophenol	ND	ND	ND	ND	ND	ND	6.00E-01
100-47-0	Benzonitrile	ND	ND	ND	ND	ND	ND	8.00E-01
100-75-4	N-Nitrosopiperidine	ND	ND	ND	9.40E+00	9.40E+00	2.70E-03	ND
103-65-1	Benzene, propyl-	4.00E-02	2.00E-01	5.71E-02	ND	ND	ND	1.00E+02
104-76-7	1-Hexanol, 2-ethyl-	ND	ND	ND	ND	ND	ND	5.00E-01
105-67-9	2,4-Dimethylphenol	2.00E-02	ND	ND	ND	ND	ND	3.00E-01
106-43-4	4-Chlorotoluene	ND	ND	ND	ND	ND	ND	6.00E-01
106-44-5	4-Methylphenol (p-Cresol)	5.00E-03	ND	ND	ND	ND	ND	5.00E+00
106-47-8	4-Chloroaniline	4.00E-03	ND	ND	ND	ND	ND	4.00E-01

CAS No.	COPC Name	Oral RfD (mg/kg-day)	RfC (ug/m^3)	Inhalation RfD (mg/kg-day)	Oral CSF (mg/kg-day)	Inhalation CSF (mg/kg-day)	Inhalation UR (m^3/ug)	Acute Inhalation RfC (mg/m^3)
106-50-3	para-Phenylenediamine	1.90E-01	ND	ND	ND	ND	ND	1.00E-01
106-93-4	1,2-Dibromoethane (Ethylene Dibromide)	9.00E-03	9.00E-03	2.57E-03	2.00E+00	2.10E+00	6.00E-04	1.00E+02
107-39-1	2,4,4-trimethyl-1-Pentene	5.00E+00	1.84E+01	5.26E+00	ND	ND	ND	3.00E+02
107-87-9	2-Pentanone	ND	ND	ND	ND	ND	ND	2.00E+02
107-88-0	1,3-Butanediol	ND	ND	ND	ND	ND	ND	2.00E+01
108-39-4	3-Methylphenol (m-Cresol)	5.00E-02	ND	ND	ND	ND	ND	5.00E+00
108-60-1	2,2'-Oxybis[1-chloropropane] (bis-chloroisopropyl-ether)	4.00E-02	ND	ND	7.00E-02	3.50E-02	1.00E-05	2.00E+01
108-86-1	Bromobenzene	ND	ND	ND	ND	ND	ND	9.00E+01
108-95-2	Phenol	3.00E-01	2.00E-01	5.71E-02	ND	ND	ND	6.00E+00
109-06-8	2-Picoline	ND	ND	ND	ND	ND	ND	4.00E+00
110-57-6	trans-1,4-Dichloro-2-butene	ND	ND	ND	ND	ND	ND	1.00E-01
110-86-1	Pyridine	1.00E-03	ND	ND	ND	ND	ND	1.00E+01
111-44-4	bis(2-Chloroethyl)ether	ND	ND	ND	1.10E+00	1.20E+00	3.30E-04	2.00E+01
111-65-9	Octane	5.00E+00	1.84E+01	5.26E+00	ND	ND	ND	3.00E+02
111-84-2	Nonane	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	8.00E+02
111-90-0	Ethanol, 2-(2-ethoxyethoxy)-	6.00E-02	ND	ND	ND	ND	ND	4.00E+01
111-91-1	bis(2-Chloroethoxy)-methane	3.00E-03	ND	ND	ND	ND	ND	4.00E+00
112-31-2	Decanal	ND	ND	ND	ND	ND	ND	1.00E+01
112-40-3	Dodecane	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	9.00E-02
112-41-4	1-Dodecene	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	ND
112-88-9	1-Octadecene	2.00E+00	ND	ND	ND	ND	ND	ND
117-84-0	bis(n-octyl) phthalate	4.00E-02	ND	ND	ND	ND	ND	1.00E+01
119-93-7	3,3'-Dimethylbenzidine	ND	ND	ND	2.30E+00	ND	ND	7.00E-02
120-82-1	1,2,4-Trichlorobenzene	1.00E-02	4.00E-03	1.14E-03	3.60E-03	ND	ND	9.00E+00
120-83-2	2,4-Dichlorophenol	3.00E-03	ND	ND	ND	ND	ND	1.00E+00
121-33-5	Benzaldehyde, 4-hydroxy-3-methoxy-	ND	ND	ND	ND	ND	ND	4.00E+00
122-66-7	1,2-Diphenylhydrazine	ND	ND	ND	8.00E-01	7.70E-01	2.20E-04	1.00E-01
123-73-9	(E)-2-Butenal	ND	ND	ND	1.90E+00	ND	ND	5.00E-01

CAS No.	COPC Name	Oral RfD (mg/kg-day)	RfC (ug/m^3)	Inhalation RfD (mg/kg-day)	Oral CSF (mg/kg-day)	Inhalation CSF (mg/kg-day)	Inhalation UR (m^3/ug)	Acute Inhalation RfC (mg/m^3)
124-18-5	Decane, n-	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	3.00E-01
124-19-6	Nonanal	ND	ND	ND	ND	ND	ND	2.00E+00
126-33-0	Thiophene, tetrahydro-, 1,1-dioxide	ND	ND	ND	ND	ND	ND	5.00E+01
127-18-4	Tetrachloroethene (Tetrachloroethylene)	1.00E-02	3.00E-01	8.57E-02	5.40E-01	2.10E-02	5.90E-06	2.00E+01
132-64-9	Dibenzofuran	ND	ND	ND	ND	ND	ND	8.00E+00
138-86-3	Limonene	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	ND
140-29-4	Benzeneacetonitrile	ND	ND	ND	ND	ND	ND	1.00E-01
142-28-9	1,3-Dichloropropane	2.00E-02	ND	ND	ND	ND	ND	9.00E-01
143-07-7	Dodecanoic acid	ND	ND	ND	ND	ND	ND	6.00E+00
208-96-8	Acenaphthylene	4.00E-02	ND	ND	ND	ND	ND	5.00E-02
293-96-9	Cyclodecane	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	ND
294-62-2	Cyclododecane	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	ND
295-65-8	Cyclohexadecane	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	ND
510-15-6	Chlorobenzilate	2.00E-02	ND	ND	1.10E-01	1.10E-01	3.10E-05	2.00E-01
540-97-6	Dodecamethyl cyclohexasiloxane	ND	ND	ND	ND	ND	ND	6.00E+00
541-05-9	Hexamethyl-Cyclotrisiloxane	ND	ND	ND	ND	ND	ND	3.00E+00
541-73-1	1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	3.00E+00
544-76-3	Hexadecane	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	ND
556-67-2	Cyclotetrasiloxane, Octamethyl (TIC)	ND	ND	ND	ND	ND	ND	1.00E+02
560-21-4	2,3,3-Trimethylpentane	5.00E+00	1.84E+01	5.26E+00	ND	ND	ND	ND
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	ND	ND	ND	ND	ND	1.00E+01
606-20-2	2,6-Dinitrotoluene	1.00E-03	ND	ND	ND	ND	ND	1.00E-01
608-93-5	Pentachlorobenzene	8.00E-04	ND	ND	ND	ND	ND	8.00E+00
621-64-7	N-Nitroso-di-n-propylamine	ND	ND	ND	7.00E+00	7.00E+00	2.00E-03	5.00E-02
626-93-7	2-Hexanol	ND	ND	ND	ND	ND	ND	4.00E+00
629-20-9	1,3,5,7-Cyclooctatetraene	ND	ND	ND	ND	ND	ND	3.00E+01
629-50-5	Tridecane	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	9.00E-02
629-59-4	Tetradecane	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	3.00E-01

CAS No.	COPC Name	Oral RfD (mg/kg-day)	RfC (ug/m^3)	Inhalation RfD (mg/kg-day)	Oral CSF (mg/kg-day)	Inhalation CSF (mg/kg-day)	Inhalation UR (m^3/ug)	Acute Inhalation RfC (mg/m^3)
629-62-9	Pentadecane	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	2.00E+01
630-20-6	1,1,1,2-Tetrachloroethane	3.00E-02	ND	ND	2.60E-02	2.60E-02	7.40E-06	2.00E+01
871-83-0	Nonane,2-methyl-	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	ND
872-05-9	1-Decene	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	ND
924-16-3	N-Nitroso-di-n-butylamine	ND	ND	ND	5.40E+00	5.60E+00	1.60E-03	ND
930-55-2	N-Nitrosopyrrolidine	ND	ND	ND	2.10E+00	2.10E+00	6.10E-04	ND
1071-26-7	2,2-Dimethyl Heptane	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	ND
1120-21-4	Undecane	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	2.00E+00
1587-04-8	1-Methyl-2-(2-propenyl) benzene	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	ND
1888-71-7	Hexachloropropene	ND	ND	ND	ND	ND	ND	1.00E+00
2051-30-1	2,6-Dimethyloctane	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	3.00E+00
2216-33-3	Octane, 3-Methyl-	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	ND
2303-16-4	Diallate	ND	ND	ND	6.10E-02	ND	ND	ND
4170-30-3	2-Butenal	ND	ND	ND	ND	ND	ND	5.00E-01
4748-78-1	4-Ethyl Benzaldehyde	ND	ND	ND	ND	ND	ND	5.00E+00
5911-04-6	Nonane,3-methyl-	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	ND
5989-27-5	D-Limonene	ND	ND	ND	ND	ND	ND	1.00E+02
6975-98-0	Decane, 2-methyl-	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	ND
7005-72-3	4-Chlorophenyl-phenyl ether	ND	ND	ND	ND	ND	ND	2.00E-03
10595-95-6	N-Nitrosomethylethylamine (NMEA)	ND	ND	ND	2.20E+01	2.20E+01	6.30E-03	ND
13151-34-3	Decane,3-methyl	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	ND
13475-82-6	2,2,4,6,6-Pentamethyl heptane	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	ND
14371-10-9	Cinnamaldehyde, (E)-	ND	ND	ND	ND	ND	ND	4.00E-01
15869-92-8	3,4-Dimethyl octane	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	ND
17301-94-9	Nonane,4-methyl-	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	1.00E+01
39638-32-9	bis(2-Chloroisopropyl)ether	4.00E-02	ND	ND	ND	1.00E-02	2.70E-06	5.00E-03
39761-61-0	(z)-5,5-Dimethyl 2-Hexene	5.00E+00	1.84E+01	5.26E+00	ND	ND	ND	4.00E+02
999-999-999	Heptafluorobutyric acid, n-trid	ND	ND	ND	ND	ND	ND	9.00E+01

CAS No.	COPC Name	Oral RfD (mg/kg-day)	RfC (ug/m^3)	Inhalation RfD (mg/kg-day)	Oral CSF (mg/kg-day)	Inhalation CSF (mg/kg-day)	Inhalation UR (m^3/ug)	Acute Inhalation RfC (mg/m^3)
999-999-999	1,7,7-trimethyl bicyclo[2.2.1] hept-2-ene	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	ND

Table N-3: Human Health Data for Non-volatile Compounds

CAS No.	COPC Name	Oral RfD (mg/kg-day)	RfC (ug/m^3)	Inhalation RfD (mg/kg-day)	Oral CSF (mg/kg-day)	Inhalation CSF (mg/kg-day)	Inhalation UR (m^3/ug)	Acute Inhalation RfC (mg/m^3)
50-32-8	Benzo (a) pyrene	3.00E-02	ND	ND	7.30E+00	3.90E+00	1.10E-03	1.00E-01
53-70-3	Dibenz(a,h)anthracene	3.00E-02	ND	ND	7.30E+00	4.10E+00	1.20E-03	6.00E-04
53-96-3	2-Acetylaminofluorene	ND	ND	ND	3.80E+00	3.80E+00	1.30E-03	2.00E-01
56-38-2	Ethyl parathion (Parathion)	6.00E-03	ND	ND	ND	ND	ND	7.00E-02
56-55-3	Benzo (a) anthracene	3.00E-02	ND	ND	7.30E-01	3.90E-01	1.10E-04	7.00E-02
57-11-4	Octadeconoic acid	ND	ND	ND	ND	ND	ND	4.00E+01
57-97-6	7,12-Dimethylbenz[a]-anthracene (DMBA)	3.00E-02	ND	ND	2.50E+02	2.50E+02	7.10E-02	ND
82-68-8	Pentachloronitrobenzene (PCNB)	3.00E-03	ND	ND	2.60E-01	ND	ND	4.00E-01
85-01-8	Phenanthrene	4.00E-02	2.00E-01	5.71E-02	ND	ND	ND	3.00E-01
85-68-7	Butyl benzyl phthalate	2.00E-01	ND	ND	ND	ND	ND	4.00E+00
87-86-5	Pentachlorophenol	3.00E-02	ND	ND	1.20E-01	1.80E-02	4.60E-06	6.00E-01
88-85-7	2-sec-Butyl-4,6-dinitro-phenol (Dinoseb)	1.00E-03	ND	ND	ND	ND	ND	6.00E-01
91-59-8	2-Naphthylamine	ND	ND	ND	1.80E+00	1.80E+00	ND	1.00E+00
91-94-1	3,3'-Dichlorobenzidine	ND	ND	ND	4.50E-01	1.20E+00	3.40E-04	2.00E+00
92-67-1	4-Aminobiphenyl (p-Biphenylamine)	ND	ND	ND	2.10E+01	2.10E+01	6.00E-03	4.00E-01
92-87-5	Benzidine	3.00E-03	ND	ND	2.30E+02	2.40E+02	6.70E-02	1.00E-01
99-09-2	3-Nitroaniline	3.00E-04	1.00E-03	2.86E-04	2.10E-02	ND	ND	4.00E-01
99-35-4	1,3,5-Trinitrobenzene	3.00E-02	ND	ND	ND	ND	ND	8.00E+00
100-01-6	4-Nitroaniline	3.00E-03	4.00E-03	1.14E-03	2.10E-02	ND	ND	2.00E+00
101-55-3	4-Bromophenyl phenyl ether	ND	ND	ND	ND	ND	ND	2.00E+00
103-23-1	bis(2-Ethylhexl)adipate	6.00E-01	ND	ND	1.20E-03	ND	ND	4.00E+01
111-02-4	2,6,10,14,18,22-Tetracosahexaene, 2,6,10,15,19,23-hexamethyl-, (all-E)-	2.00E+00	ND	ND	ND	ND	ND	2.00E+01
112-05-0	Nonanoic acid	ND	ND	ND	ND	ND	ND	2.00E+01
112-95-8	Eicosane	2.00E+00	ND	ND	ND	ND	ND	ND
118-74-1	Hexachlorobenzene	8.00E-04	ND	ND	1.60E+00	1.60E+00	4.60E-04	2.00E-03
120-12-7	Anthracene	3.00E-01	2.00E-01	5.71E-02	ND	ND	ND	1.00E+00
122-39-4	Diphenylamine	2.50E-02	ND	ND	ND	ND	ND	8.00E+00

CAS No.	COPC Name	Oral RfD (mg/kg-day)	RfC (ug/m^3)	Inhalation RfD (mg/kg-day)	Oral CSF (mg/kg-day)	Inhalation CSF (mg/kg-day)	Inhalation UR (m^3/ug)	Acute Inhalation RfC (mg/m^3)
129-00-0	Pyrene	3.00E-02	2.00E-01	5.71E-02	ND	ND	ND	2.00E+00
134-32-7	1-Naphthylamine	ND	ND	ND	ND	ND	ND	4.00E-01
191-24-2	Benzo (g,h,i) perylene	3.00E-02	ND	ND	ND	ND	ND	8.00E+00
192-97-2	Benzo (e) pyrene	3.00E-02	ND	ND	ND	ND	ND	ND
193-39-5	Indeno(1,2,3-cd)pyrene	3.00E-02	ND	ND	7.30E-01	3.90E-01	1.10E-04	1.00E-01
205-82-3	Benzo (j) fluoranthene	3.00E-02	ND	ND	1.20E+00	3.90E-01	1.10E-04	ND
205-99-2	Benzo (b) fluoranthene	3.00E-02	ND	ND	7.30E-01	3.90E-01	1.10E-04	1.00E-01
206-44-0	Fluoranthene	4.00E-02	2.00E-01	5.71E-02	ND	ND	ND	3.00E-03
207-08-9	Benzo (k) fluoranthene	3.00E-02	ND	ND	7.30E-02	3.90E-01	1.10E-04	1.00E-01
218-01-9	Chrysene	3.00E-02	ND	ND	7.30E-03	3.90E-02	1.10E-05	1.00E-01
224-42-0	Dibenz(a,j)acridine	ND	ND	ND	1.20E+00	3.90E-01	1.10E-04	ND
534-52-1	4,6-Dinitro-2-methylphenol (Dinitro-o-cresol)	1.00E-04	ND	ND	ND	ND	ND	5.00E-02
544-85-4	Dotriacontane	2.00E+00	ND	ND	ND	ND	ND	ND
593-49-7	Heptacosane	2.00E+00	ND	ND	ND	ND	ND	ND
629-78-7	Heptadecane	2.00E+00	ND	ND	ND	ND	ND	1.00E+02
629-92-5	Nonadecane	2.00E+00	ND	ND	ND	ND	ND	ND
629-94-7	Heneicosane	2.00E+00	ND	ND	ND	ND	ND	ND
629-97-0	Docosane	2.00E+00	ND	ND	ND	ND	ND	ND
629-99-2	Pentacosane	2.00E+00	ND	ND	ND	ND	ND	ND
630-01-3	Hexacosane	2.00E+00	ND	ND	ND	ND	ND	ND
630-02-4	Octacosane	ND	ND	ND	ND	ND	ND	9.00E+01
630-07-9	Pentatriacontane	2.00E+00	ND	ND	ND	ND	ND	8.00E+00
638-67-5	Tricosane	2.00E+00	ND	ND	ND	ND	ND	ND
638-68-6	Triacontane	2.00E+00	ND	ND	ND	ND	ND	ND
646-31-1	Tetracosane	2.00E+00	ND	ND	ND	ND	ND	ND
791-28-6	Triphenyl phosphine oxide	2.00E-02	ND	ND	ND	ND	ND	ND
18435-45-5	1-Nonadecene	2.00E+00	ND	ND	ND	ND	ND	ND
19408-74-3	1,2,3,7,8,9-HxCDD	ND	ND	ND	1.50E+04	1.30E+04	ND	4.00E-03

CAS No.	COPC Name	Oral RfD (mg/kg-day)	RfC (ug/m^3)	Inhalation RfD (mg/kg-day)	Oral CSF (mg/kg-day)	Inhalation CSF (mg/kg-day)	Inhalation UR (m^3/ug)	Acute Inhalation RfC (mg/m^3)
23950-58-5	Pronamide	7.50E-02	ND	ND	ND	ND	ND	ND
32774-16-6	3,3',4,4',5,5'-Hexa CB (169)	ND	ND	ND	4.50E+03	3.90E+03	ND	1.00E-01
35822-46-9	1,2,3,4,6,7,8-HpCDD	ND	ND	ND	1.50E+03	1.30E+03	ND	1.00E-01
39227-28-6	1,2,3,4,7,8-HxCDD	ND	ND	ND	1.50E+04	1.30E+04	ND	3.00E-04
40321-76-4	1,2,3,7,8-PeCDD	ND	ND	ND	1.50E+05	1.30E+05	ND	6.00E-04
57117-31-4	2,3,4,7,8-PeCDF	ND	ND	ND	4.50E+04	3.90E+04	ND	2.00E-05
57117-41-6	1,2,3,7,8-PeCDF	ND	ND	ND	4.50E+03	3.90E+03	ND	2.00E-03
57117-44-9	1,2,3,6,7,8-HxCDF	ND	ND	ND	1.50E+04	1.30E+04	ND	6.00E-04
57653-85-7	1,2,3,6,7,8-HxCDD	ND	ND	ND	1.50E+04	1.30E+04	ND	4.00E-03
60851-34-5	2,3,4,6,7,8-HxCDF	ND	ND	ND	1.50E+04	1.30E+04	ND	4.00E-04
65510-44-3	2',3,4,4',5-Penta CB (123)	ND	ND	ND	4.50E+00	3.90E+00	ND	1.00E-01
70648-26-9	1,2,3,4,7,8-HxCDF	ND	ND	ND	1.50E+04	1.30E+04	ND	2.00E-03
72918-21-9	1,2,3,7,8,9-HxCDF	ND	ND	ND	1.50E+04	1.30E+04	ND	3.00E-02
999-999-999	2-Methyl hexane	5.00E+00	1.84E+01	5.26E+00	ND	ND	ND	ND
999-999-999	1-Ethyl-3-methyl benzene	1.00E-01	1.00E+00	2.86E-01	ND	ND	ND	ND

Appendix O – Ecological Risk Assessment Bioconcentration Factors

Table O-1: Soil to Soil Invertebrates Bioconcentration Factors

COPC Name	CAS Number	BCF_So-SI ($(mg/kg\text{-}FW_{tissue})/(mg/kg\text{-}DW_{soil})$)	Data Source
Aluminum compounds	00-01-2	0.22	EPA SLERAP, (1999)
Antimony compounds	00-01-3	2.20E-01	EPA SLERAP, (1999)
Arsenic compounds	00-01-4	7.85E-02	Sample, et al. (1998)
Barium compounds	00-01-5	2.20E-01	EPA SLERAP, (1999)
Beryllium compounds	00-01-6	2.20E-01	EPA SLERAP, (1999)
Cadmium compounds	00-01-7	6.10E+00	Sample, et al. (1998)
Chromium compounds	00-01-8	4.74E-01	Sample, et al. (1998)
Copper compounds	00-01-9	2.30E-01	Sample, et al. (1998)
Lead compounds	00-02-0	2.28E-01	Sample, et al. (1998)
Manganese compounds	00-02-2	1.86E-02	Sample, et al. (1998)
Mercury compounds	00-02-3	3.09E+00	Sample, et al. (1998)
Nickel compounds	00-02-4	7.10E-01	Sample, et al. (1998)
Selenium compounds	00-02-5	2.01E-01	Sample, et al. (1998)
Silver compounds	00-02-6	2.20E-01	EPA SLERAP, (1999)
Thallium compounds	00-02-7	2.20E-01	EPA SLERAP, (1999)
Vanadium compounds	00-02-8	N/D	
Zinc compounds	00-02-9	1.93E+00	Sample, et al. (1998)
PCB Mixture (non-dioxin like, 5+ chlorines)	00-07-2	1.13E+00	EPA SLERAP, (1999)
Cobalt compounds	00-15-3	N/D	
m,p-Xylene	00-15-5	N/D	
Composite TOE - Volatile	00-16-3	3.15E+00	Organic Kow Calc
Composite TOE - Semivolatile	00-16-4	3.21E+00	Organic Kow Calc
Composite TOE - Nonvolatile	00-16-5	N/D	

COPC Name	CAS Number	BCF_So-Sl ($mg/kg\text{-}FW_{tissue}$)/($mg/kg\text{-}DW_{soil}$)	Data Source
Boron compounds	00-16-6	N/D	
Tin compounds	00-16-9	N/D	
Carbon tetrachloride	56-23-5	1.20E+01	EPA SLERAP, (1999)
Benzoic acid	65-85-0	3.13E+00	Organic Kow Calc
Acetone	67-64-1	5.00E-02	EPA SLERAP, (1999)
Chloroform	67-66-3	2.82E+00	EPA SLERAP, (1999)
Benzene	71-43-2	3.14E+00	Organic Kow Calc
Methyl bromide	74-83-9	3.06E+00	Organic Kow Calc
Methyl chloride	74-87-3	N/D	
Methyl iodide	74-88-4	3.09E+00	Organic Kow Calc
Bromoethane	74-96-4	3.10E+00	Organic Kow Calc
Bromochloromethane	74-97-5	3.08E+00	Organic Kow Calc
Ethyl chloride	75-00-3	3.08E+00	Organic Kow Calc
Vinyl chloride	75-01-4	6.20E-01	EPA SLERAP, (1999)
Dichloromethane	75-09-2	3.07E+00	Organic Kow Calc
Carbon disulfide	75-15-0	3.15E+00	Organic Kow Calc
Tribromomethane	75-25-2	3.16E+00	Organic Kow Calc
Bromodichloromethane	75-27-4	3.14E+00	Organic Kow Calc
1,1-Dichloroethylene	75-35-4	3.14E+00	Organic Kow Calc
Trichlorofluoromethane	75-69-4	3.17E+00	Organic Kow Calc
Dichlorodifluoromethane	75-71-8	3.15E+00	Organic Kow Calc
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	3.21E+00	Organic Kow Calc
Methyl ethyl ketone	78-93-3	N/D	
Trichloroethylene	79-01-6	3.17E+00	Organic Kow Calc
Diethyl phthalate	84-66-2	3.17E+00	Organic Kow Calc
Dibutyl phthalate	84-74-2	3.27E+00	Organic Kow Calc
Naphthalene	91-20-3	3.22E+00	Organic Kow Calc
2-Methylnaphthalene	91-57-6	3.24E+00	Organic Kow Calc

COPC Name	CAS Number	BCF_So-Sl ($mg/kg\text{-}FW_{tissue}$)/($mg/kg\text{-}DW_{soil}$)	Data Source
2-Xylene	95-47-6	3.21E+00	Organic Kow Calc
o-Cresol	95-48-7	3.13E+00	Organic Kow Calc
1,2-Dichlorobenzene	95-50-1	3.22E+00	Organic Kow Calc
Ethylbenzene	100-41-4	3.21E+00	Organic Kow Calc
Styrene	100-42-5	3.20E+00	Organic Kow Calc
Benzyl alcohol	100-51-6	3.04E+00	Organic Kow Calc
Benzaldehyde	100-52-7	3.09E+00	Organic Kow Calc
1,4-Dichlorobenzene	106-46-7	3.23E+00	Organic Kow Calc
GB	107-44-8	N/D	
Vinyl acetate	108-05-4	N/D	
Methyl isobutyl ketone	108-10-1	3.06E+00	Organic Kow Calc
Toluene	108-88-3	3.18E+00	Organic Kow Calc
Chlorobenzene	108-90-7	3.19E+00	Organic Kow Calc
n-Hexane	110-54-3	3.24E+00	Organic Kow Calc
Bis(2-ethylhexyl)phthalate	117-81-7	1.31E+03	EPA SLERAP, (1999)
2,4,6-Trinitrotoluene	118-96-7	3.10E+00	Organic Kow Calc
2,4-Dinitrotoluene	121-14-2	3.08E+00	EPA SLERAP, (1999)
Chlorodibromomethane	124-48-1	3.15E+00	Organic Kow Calc
Dimethylphthalate	131-11-3	3.10E+00	Organic Kow Calc
Sulfur mustard (or H/HD)	505-60-2	3.08E+00	Organic Kow Calc
Xylene (mixed)	1330-20-7	3.21E+00	Organic Kow Calc
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1.59E+00	EPA SLERAP, (1999)
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	1.90E-02	EPA SLERAP, (1999)
Mercury	7439-97-6	N/D	
Sulfur dioxide	7446-09-5	N/D	
Mercuric chloride	7487-94-7	4.00E-02	EPA SLERAP, (1999)
Hydrochloric acid	7647-01-0	N/D	
Phosphoric acid	7664-38-2	N/D	

COPC Name	CAS Number	BCF_So-Sl ($mg/kg\text{-}FW_{tissue}$)/($mg/kg\text{-}DW_{soil}$)	Data Source
Hydrofluoric acid	7664-39-3	N/D	
Chlorine	7782-50-5	N/D	
cis-1,3-Dichloropropene	10061-01-5	3.14E+00	Organic Kow Calc
trans-1,3-Dichloropropene	10061-02-6	3.14E+00	Organic Kow Calc
Nitrogen dioxide	10102-44-0	N/D	
HexaCDD, 1,2,3,7,8,9-	19408-74-3	2.20E-01	EPA SLERAP, (1999)
Methyl mercury	22967-92-6	8.50E+00	EPA SLERAP, (1999)
2,3',4,4',5-Pentachlorobiphenyl	31508-00-6	N/D	
3,3',4,4'-Tetrachlorobiphenyl	32598-13-3	N/D	
2,3,3',4,4'-Pentachlorobiphenyl	32598-14-4	N/D	
HeptaCDD, 1,2,3,4,6,7,8-	35822-46-9	8.10E-02	EPA SLERAP, (1999)
2,3,3',4,4',5-Hexachlorobiphenyl	38380-08-4	N/D	
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	2.50E-02	EPA SLERAP, (1999)
HexaCDD, 1,2,3,4,7,8-	39227-28-6	N/D	
2,3,4,5,3',4',5'-Heptachlorobiphenyl	39635-31-9	N/D	
PentaCDD, 1,2,3,7,8-	40321-76-4	1.46E+00	EPA SLERAP, (1999)
VX	50782-69-9	3.14E+00	Organic Kow Calc
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	1.27E+00	EPA SLERAP, (1999)
2,3',4,4',5,5'-Hexachlorobiphenyl	52663-72-6	N/D	
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	6.20E-01	EPA SLERAP, (1999)
PentaCDF, 2,3,4,7,8-	57117-31-4	2.54E+00	EPA SLERAP, (1999)
PentaCDF, 1,2,3,7,8-	57117-41-6	3.20E-01	EPA SLERAP, (1999)
HexaCDF, 1,2,3,6,7,8-	57117-44-9	3.00E-01	EPA SLERAP, (1999)
3,4,5,3',4'-Pentachlorobiphenyl	57465-28-8	N/D	
HexaCDD, 1,2,3,6,7,8-	57653-85-7	1.90E-01	EPA SLERAP, (1999)
HexaCDF, 2,3,4,6,7,8-	60851-34-5	1.07E+00	EPA SLERAP, (1999)
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	N/D	
2,3,3',4,4',5'-Hexachlorobiphenyl	69782-90-7	N/D	

COPC Name	CAS Number	BCF_So-Sl ($mg/kg\text{-}FW_{tissue}$)/($mg/kg\text{-}DW_{soil}$)	Data Source
3,4,4',5-Tetrachlorobiphenyl	70362-50-4	N/D	
HexaCDF, 1,2,3,4,7,8-	70648-26-9	1.21E-01	EPA SLERAP, (1999)
HexaCDF, 1,2,3,7,8,9-	72918-21-9	1.00E+00	EPA SLERAP, (1999)
EA 2192	73207-98-4	3.14E+00	Organic Kow Calc
2,3,4,4'5-Pentachlorobiphenyl	74472-37-0	N/D	

Table O-2: Soil to Terrestrial Plants Bioconcentration Factors

COPC Name	CAS Number	BCF_So-TP (mg/kg-DW_{tissue})/ (mg/kg-DW_{soil})	Data Source
Aluminum compounds	00-01-2	4.00E-03	EPA SLERAP, (1999)
Antimony compounds	00-01-3	2.00E-01	EPA SLERAP, (1999)
Arsenic compounds	00-01-4	3.60E-02	EPA SLERAP, (1999)
Barium compounds	00-01-5	1.50E-01	EPA SLERAP, (1999)
Beryllium compounds	00-01-6	1.00E-02	EPA SLERAP, (1999)
Cadmium compounds	00-01-7	3.64E-01	EPA SLERAP, (1999)
Chromium compounds	00-01-8	7.50E-03	EPA SLERAP, (1999)
Copper compounds	00-01-9	4.00E-01	EPA SLERAP, (1999)
Lead compounds	00-02-0	4.50E-02	EPA SLERAP, (1999)
Manganese compounds	00-02-2	2.34E-01	ORNL (1998b)
Mercury compounds	00-02-3	3.75E-02	EPA SLERAP, (1999)
Nickel compounds	00-02-4	3.20E-02	EPA SLERAP, (1999)
Selenium compounds	00-02-5	1.60E-02	EPA SLERAP, (1999)
Silver compounds	00-02-6	4.00E-01	EPA SLERAP, (1999)
Thallium compounds	00-02-7	4.00E-03	EPA SLERAP, (1999)
Vanadium compounds	00-02-8	9.70E-03	ORNL (1998b)
Zinc compounds	00-02-9	1.20E-12	EPA SLERAP, (1999)
PCB Mixture (non-dioxin like, 5+ chlorines)	00-07-2	1.00E-02	EPA SLERAP, (1999)
Cobalt compounds	00-15-3	N/D	
m,p-Xylene	00-15-5	N/D	
Composite TOE - Volatile	00-16-3	2.28E+00	Organic Kow Calc
Composite TOE - Semivolatile	00-16-4	6.43E-01	Organic Kow Calc
Composite TOE - Nonvolatile	00-16-5	2.79E-03	Organic Kow Calc
Boron compounds	00-16-6	N/D	
Tin compounds	00-16-9	N/D	
Carbon tetrachloride	56-23-5	1.04E+00	EPA SLERAP, (1999)
Benzoic acid	65-85-0	3.22E+00	Organic Kow Calc

COPC Name	CAS Number	BCF_So-TP ($mg/kg\text{-}DW_{tissue}$)/ ($mg/kg\text{-}DW_{soil}$)	Data Source
Acetone	67-64-1	5.20E+01	EPA SLERAP, (1999)
Chloroform	67-66-3	2.90E+00	EPA SLERAP, (1999)
Benzene	71-43-2	2.37E+00	Organic Kow Calc
Methyl bromide	74-83-9	7.94E+00	Organic Kow Calc
Methyl chloride	74-87-3	1.15E+01	Organic Kow Calc
Methyl iodide	74-88-4	5.19E+00	Organic Kow Calc
Bromoethane	74-96-4	4.55E+00	Organic Kow Calc
Bromochloromethane	74-97-5	5.93E+00	Organic Kow Calc
Ethyl chloride	75-00-3	6.01E+00	Organic Kow Calc
Vinyl chloride	75-01-4	8.43E+00	EPA SLERAP, (1999)
Dichloromethane	75-09-2	6.85E+00	Organic Kow Calc
Carbon disulfide	75-15-0	2.08E+00	Organic Kow Calc
Tribromomethane	75-25-2	1.65E+00	Organic Kow Calc
Bromodichloromethane	75-27-4	2.37E+00	Organic Kow Calc
1,1-Dichloroethylene	75-35-4	2.37E+00	Organic Kow Calc
Trichlorofluoromethane	75-69-4	1.39E+00	Organic Kow Calc
Dichlorodifluoromethane	75-71-8	2.18E+00	Organic Kow Calc
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5.76E-01	Organic Kow Calc
Methyl ethyl ketone	78-93-3	2.63E+01	Organic Kow Calc
Trichloroethylene	79-01-6	1.59E+00	Organic Kow Calc
Diethyl phthalate	84-66-2	1.39E+00	Organic Kow Calc
Dibutyl phthalate	84-74-2	7.44E-02	Organic Kow Calc
Naphthalene	91-20-3	4.79E-01	Organic Kow Calc
2-Methylnaphthalene	91-57-6	2.16E-01	Organic Kow Calc
2-Xylene	95-47-6	6.25E-01	Organic Kow Calc
o-Cresol	95-48-7	2.89E+00	Organic Kow Calc
1,2-Dichlorobenzene	95-50-1	4.31E-01	Organic Kow Calc
Ethylbenzene	100-41-4	6.25E-01	Organic Kow Calc
Styrene	100-42-5	7.14E-01	Organic Kow Calc

COPC Name	CAS Number	BCF_So-TP ($mg/kg\text{-}DW_{tissue}$)/ ($mg/kg\text{-}DW_{soil}$)	Data Source
Benzyl alcohol	100-51-6	8.95E+00	Organic Kow Calc
Benzaldehyde	100-52-7	5.40E+00	Organic Kow Calc
1,4-Dichlorobenzene	106-46-7	3.67E-01	Organic Kow Calc
GB	107-44-8	2.60E+01	Organic Kow Calc
Vinyl acetate	108-05-4	1.47E+01	Organic Kow Calc
Methyl isobutyl ketone	108-10-1	7.86E+00	Organic Kow Calc
Toluene	108-88-3	1.07E+00	Organic Kow Calc
Chlorobenzene	108-90-7	9.32E-01	Organic Kow Calc
n-Hexane	110-54-3	2.16E-01	Organic Kow Calc
Bis(2-ethylhexyl)phthalate	117-81-7	3.80E-02	EPA SLERAP, (1999)
2,4,6-Trinitrotoluene	118-96-7	4.61E+00	Organic Kow Calc
2,4-Dinitrotoluene	121-14-2	2.72E+00	EPA SLERAP, (1999)
Chlorodibromomethane	124-48-1	1.99E+00	Organic Kow Calc
Dimethylphthalate	131-11-3	4.86E+00	Organic Kow Calc
Sulfur mustard (or H/HD)	505-60-2	6.26E+00	Organic Kow Calc
Xylene (mixed)	1330-20-7	5.48E-01	Organic Kow Calc
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	5.60E-03	EPA SLERAP, (1999)
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	6.70E-05	EPA SLERAP, (1999)
Mercury	7439-97-6	3.75E-02	EPA SLERAP, (1999)
Sulfur dioxide	7446-09-5	N/D	
Mercuric chloride	7487-94-7	3.75E-02	EPA SLERAP, (1999)
Hydrochloric acid	7647-01-0	N/D	
Phosphoric acid	7664-38-2	N/D	
Hydrofluoric acid	7664-39-3	N/D	
Chlorine	7782-50-5	N/D	
cis-1,3-Dichloropropene	10061-01-5	2.49E+00	Organic Kow Calc
trans-1,3-Dichloropropene	10061-02-6	2.60E+00	Organic Kow Calc
Nitrogen dioxide	10102-44-0	N/D	
HexaCDD, 1,2,3,7,8,9-	19408-74-3	7.80E-04	EPA SLERAP, (1999)

COPC Name	CAS Number	BCF_So-TP ($mg/kg\text{-}DW_{tissue}$)/ ($mg/kg\text{-}DW_{soil}$)	Data Source
Methyl mercury	22967-92-6	1.37E-01	EPA SLERAP, (1999)
2,3',4,4',5-Pentachlorobiphenyl	31508-00-6	2.97E-03	Organic Kow Calc
3,3',4,4'-Tetrachlorobiphenyl	32598-13-3	5.70E-03	Organic Kow Calc
2,3,3',4,4'-Pentachlorobiphenyl	32598-14-4	4.60E-03	Organic Kow Calc
HeptaCDD, 1,2,3,4,6,7,8-	35822-46-9	2.90E-04	EPA SLERAP, (1999)
2,3,3',4,4',5-Hexachlorobiphenyl	38380-08-4	1.57E-03	Organic Kow Calc
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	9.00E-05	EPA SLERAP, (1999)
HexaCDD, 1,2,3,4,7,8-	39227-28-6	1.70E-03	EPA SLERAP, (1999)
2,3,4,5,3',4',5'-Heptachlorobiphenyl	39635-31-9	6.43E-04	Organic Kow Calc
PentaCDD, 1,2,3,7,8-	40321-76-4	5.20E-03	EPA SLERAP, (1999)
VX	50782-69-9	2.40E+00	Organic Kow Calc
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	4.50E-03	EPA SLERAP, (1999)
2,3',4,4',5,5'-Hexachlorobiphenyl	52663-72-6	1.79E-03	Organic Kow Calc
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	2.20E-03	EPA SLERAP, (1999)
PentaCDF, 2,3,4,7,8-	57117-31-4	9.00E-03	EPA SLERAP, (1999)
PentaCDF, 1,2,3,7,8-	57117-41-6	1.10E-03	EPA SLERAP, (1999)
HexaCDF, 1,2,3,6,7,8-	57117-44-9	1.10E-03	EPA SLERAP, (1999)
3,4,5,3',4'-Pentachlorobiphenyl	57465-28-8	N/D	
HexaCDD, 1,2,3,6,7,8-	57653-85-7	6.70E-04	EPA SLERAP, (1999)
HexaCDF, 2,3,4,6,7,8-	60851-34-5	3.80E-03	EPA SLERAP, (1999)
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	6.20E-05	EPA SLERAP, (1999)
2,3,3',4,4',5'-Hexachlorobiphenyl	69782-90-7	N/D	
3,4,4',5-Tetrachlorobiphenyl	70362-50-4	N/D	
HexaCDF, 1,2,3,4,7,8-	70648-26-9	4.30E-04	EPA SLERAP, (1999)
HexaCDF, 1,2,3,7,8,9-	72918-21-9	3.50E-03	EPA SLERAP, (1999)
EA 2192	73207-98-4	2.40E+00	Organic Kow Calc
2,3,4,4'5-Pentachlorobiphenyl	74472-37-0	3.58E-03	Organic Kow Calc

Table O-3: Water to Aquatic Invertebrates Bioconcentration Factors

COPC Name	CAS Number	BCF_W-AI ($mg/kg\text{-}FW_{tissue}$)/(mg/L)	Data Source
Aluminum compounds	00-01-2	4.07E+03	EPA SLERAP, (1999)
Antimony compounds	00-01-3	7.00E+00	EPA SLERAP, (1999)
Arsenic compounds	00-01-4	7.30E+01	EPA SLERAP, (1999)
Barium compounds	00-01-5	2.00E+02	EPA SLERAP, (1999)
Beryllium compounds	00-01-6	4.50E+01	EPA SLERAP, (1999)
Cadmium compounds	00-01-7	3.46E+03	EPA SLERAP, (1999)
Chromium compounds	00-01-8	3.00E+03	EPA SLERAP, (1999)
Copper compounds	00-01-9	3.72E+03	EPA SLERAP, (1999)
Lead compounds	00-02-0	5.06E+03	EPA SLERAP, (1999)
Manganese compounds	00-02-2	N/D	
Mercury compounds	00-02-3	N/D	
Nickel compounds	00-02-4	2.80E+01	EPA SLERAP, (1999)
Selenium compounds	00-02-5	1.26E+03	EPA SLERAP, (1999)
Silver compounds	00-02-6	2.98E+02	EPA SLERAP, (1999)
Thallium compounds	00-02-7	1.50E+04	EPA SLERAP, (1999)
Vanadium compounds	00-02-8	N/D	
Zinc compounds	00-02-9	4.58E+03	EPA SLERAP, (1999)
PCB Mixture (non-dioxin like, 5+ chlorines)	00-07-2	4.60E+03	EPA SLERAP, (1999)
Cobalt compounds	00-15-3	N/D	
m,p-Xylene	00-15-5	N/D	
Composite TOE - Volatile	00-16-3	N/D	
Composite TOE - Semivolatile	00-16-4	N/D	
Composite TOE - Nonvolatile	00-16-5	N/D	
Boron compounds	00-16-6	N/D	
Tin compounds	00-16-9	N/D	
Carbon tetrachloride	56-23-5	1.20E+01	EPA SLERAP, (1999)
Benzoic acid	65-85-0	N/D	

COPC Name	CAS Number	BCF_W-AI (mg/kg-FW_{tissue})/(mg/L)	Data Source
Acetone	67-64-1	5.00E-02	EPA SLERAP, (1999)
Chloroform	67-66-3	2.82E+00	EPA SLERAP, (1999)
Benzene	71-43-2	N/D	
Methyl bromide	74-83-9	N/D	
Methyl chloride	74-87-3	N/D	
Methyl iodide	74-88-4	N/D	
Bromoethane	74-96-4	N/D	
Bromochloromethane	74-97-5	N/D	
Ethyl chloride	75-00-3	N/D	
Vinyl chloride	75-01-4	6.20E-01	EPA SLERAP, (1999)
Dichloromethane	75-09-2	N/D	
Carbon disulfide	75-15-0	N/D	
Tribromomethane	75-25-2	N/D	
Bromodichloromethane	75-27-4	N/D	
1,1-Dichloroethylene	75-35-4	N/D	
Trichlorofluoromethane	75-69-4	N/D	
Dichlorodifluoromethane	75-71-8	N/D	
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	N/D	
Methyl ethyl ketone	78-93-3	N/D	
Trichloroethylene	79-01-6	N/D	
Diethyl phthalate	84-66-2	N/D	
Dibutyl phthalate	84-74-2	N/D	
Naphthalene	91-20-3	N/D	
2-Methylnaphthalene	91-57-6	N/D	
2-Xylene	95-47-6	N/D	
o-Cresol	95-48-7	N/D	
1,2-Dichlorobenzene	95-50-1	N/D	
Ethylbenzene	100-41-4	N/D	
Styrene	100-42-5	N/D	

COPC Name	CAS Number	BCF_W-AI (mg/kg-FW$_{tissue}$)/(mg/L)	Data Source
Benzyl alcohol	100-51-6	N/D	
Benzaldehyde	100-52-7	N/D	
1,4-Dichlorobenzene	106-46-7	N/D	
GB	107-44-8	N/D	
Vinyl acetate	108-05-4	N/D	
Methyl isobutyl ketone	108-10-1	N/D	
Toluene	108-88-3	N/D	
Chlorobenzene	108-90-7	N/D	
n-Hexane	110-54-3	N/D	
Bis(2-ethylhexyl)phthalate	117-81-7	3.18E+02	EPA SLERAP, (1999)
2,4,6-Trinitrotoluene	118-96-7	N/D	
2,4-Dinitrotoluene	121-14-2	1.30E+01	EPA SLERAP, (1999)
Chlorodibromomethane	124-48-1	N/D	
Dimethylphthalate	131-11-3	N/D	
Sulfur mustard (or H/HD)	505-60-2	N/D	
Xylene (mixed)	1330-20-7	N/D	
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1.56E+03	EPA SLERAP, (1999)
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	1.87E+01	EPA SLERAP, (1999)
Mercury	7439-97-6	N/D	
Sulfur dioxide	7446-09-5	N/D	
Mercuric chloride	7487-94-7	2.02E+04	EPA SLERAP, (1999)
Hydrochloric acid	7647-01-0	N/D	
Phosphoric acid	7664-38-2	N/D	
Hydrofluoric acid	7664-39-3	N/D	
Chlorine	7782-50-5	N/D	
cis-1,3-Dichloropropene	10061-01-5	N/D	
trans-1,3-Dichloropropene	10061-02-6	N/D	
Nitrogen dioxide	10102-44-0	N/D	
HexaCDD, 1,2,3,7,8,9-	19408-74-3	2.18E+02	EPA SLERAP, (1999)

COPC Name	CAS Number	BCF_W-AI (mg/kg-FW$_{tissue}$)/(mg/L)	Data Source
Methyl mercury	22967-92-6	5.50E+04	EPA SLERAP, (1999)
2,3',4,4',5-Pentachlorobiphenyl	31508-00-6	N/D	
3,3',4,4'-Tetrachlorobiphenyl	32598-13-3	N/D	
2,3,3',4,4'-Pentachlorobiphenyl	32598-14-4	N/D	
HeptaCDD, 1,2,3,4,6,7,8-	35822-46-9	7.96E+01	EPA SLERAP, (1999)
2,3,3',4,4',5-Hexachlorobiphenyl	38380-08-4	N/D	
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	2.50E+01	EPA SLERAP, (1999)
HexaCDD, 1,2,3,4,7,8-	39227-28-6	4.84E+02	EPA SLERAP, (1999)
2,3,4,5,3',4',5'-Heptachlorobiphenyl	39635-31-9	N/D	
PentaCDD, 1,2,3,7,8-	40321-76-4	1.44E+03	EPA SLERAP, (1999)
VX	50782-69-9	N/D	
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	1.25E+03	EPA SLERAP, (1999)
2,3',4,4',5,5'-Hexachlorobiphenyl	52663-72-6	N/D	
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	6.08E+02	EPA SLERAP, (1999)
PentaCDF, 2,3,4,7,8-	57117-31-4	N/D	
PentaCDF, 1,2,3,7,8-	57117-41-6	3.43E+02	EPA SLERAP, (1999)
HexaCDF, 1,2,3,6,7,8-	57117-44-9	2.96E+02	EPA SLERAP, (1999)
3,4,5,3',4'-Pentachlorobiphenyl	57465-28-8	N/D	
HexaCDD, 1,2,3,6,7,8-	57653-85-7	1.87E+02	EPA SLERAP, (1999)
HexaCDF, 2,3,4,6,7,8-	60851-34-5	1.05E+03	EPA SLERAP, (1999)
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	1.72E+01	EPA SLERAP, (1999)
2,3,3',4,4',5'-Hexachlorobiphenyl	69782-90-7	N/D	
3,4,4',5-Tetrachlorobiphenyl	70362-50-4	N/D	
HexaCDF, 1,2,3,4,7,8-	70648-26-9	1.19E+02	EPA SLERAP, (1999)
HexaCDF, 1,2,3,7,8,9-	72918-21-9	9.83E+02	EPA SLERAP, (1999)
EA 2192	73207-98-4	N/D	
2,3,4,4'5-Pentachlorobiphenyl	74472-37-0	N/D	

Table O-4: Water to Algae Bioconcentration Factors

COPC Name	CAS Number	BCF_W-Algae (mg/kg-FW_{tissue})/(mg/L)	Data Source
Aluminum compounds	00-01-2	8.33E+02	EPA SLERAP, (1999)
Antimony compounds	00-01-3	1.48E+03	EPA SLERAP, (1999)
Arsenic compounds	00-01-4	2.93E+02	EPA SLERAP, (1999)
Barium compounds	00-01-5	2.60E+02	EPA SLERAP, (1999)
Beryllium compounds	00-01-6	1.41E+02	EPA SLERAP, (1999)
Cadmium compounds	00-01-7	7.82E+02	EPA SLERAP, (1999)
Chromium compounds	00-01-8	4.41E+03	EPA SLERAP, (1999)
Copper compounds	00-01-9	5.41E+02	EPA SLERAP, (1999)
Lead compounds	00-02-0	1.71E+03	EPA SLERAP, (1999)
Manganese compounds	00-02-2	N/D	
Mercury compounds	00-02-3	N/D	
Nickel compounds	00-02-4	6.10E+01	EPA SLERAP, (1999)
Selenium compounds	00-02-5	1.85E+03	EPA SLERAP, (1999)
Silver compounds	00-02-6	1.07E+04	EPA SLERAP, (1999)
Thallium compounds	00-02-7	1.50E+04	EPA SLERAP, (1999)
Vanadium compounds	00-02-8	N/D	
Zinc compounds	00-02-9	2.18E+03	EPA SLERAP, (1999)
PCB Mixture (non-dioxin like, 5+ chlorines)	00-07-2	4.77E+05	EPA SLERAP, (1999)
Cobalt compounds	00-15-3	N/D	
m,p-Xylene	00-15-5	N/D	
Composite TOE - Volatile	00-16-3	3.95E+00	Organic Kow Calc
Composite TOE - Semivolatile	00-16-4	2.38E+01	Organic Kow Calc
Composite TOE - Nonvolatile	00-16-5	5.30E+04	Organic Kow Calc
Boron compounds	00-16-6	N/D	
Tin compounds	00-16-9	N/D	
Carbon tetrachloride	56-23-5	3.00E+02	EPA SLERAP, (1999)
Benzoic acid	65-85-0	2.43E+00	Organic Kow Calc

COPC Name	CAS Number	BCF_W-Algae (mg/kg-FW_{tissue})/(mg/L)	Data Source
Acetone	67-64-1	5.00E-02	EPA SLERAP, (1999)
Chloroform	67-66-3	2.82E+00	EPA SLERAP, (1999)
Benzene	71-43-2	3.75E+00	Organic Kow Calc
Methyl bromide	74-83-9	6.74E-01	Organic Kow Calc
Methyl chloride	74-87-3	3.98E-01	Organic Kow Calc
Methyl iodide	74-88-4	1.23E+00	Organic Kow Calc
Bromoethane	74-96-4	1.49E+00	Organic Kow Calc
Bromochloromethane	74-97-5	1.02E+00	Organic Kow Calc
Ethyl chloride	75-00-3	1.00E+00	Organic Kow Calc
Vinyl chloride	75-01-4	6.20E-01	EPA SLERAP, (1999)
Dichloromethane	75-09-2	8.31E-01	Organic Kow Calc
Carbon disulfide	75-15-0	4.52E+00	Organic Kow Calc
Tribromomethane	75-25-2	6.23E+00	Organic Kow Calc
Bromodichloromethane	75-27-4	3.75E+00	Organic Kow Calc
1,1-Dichloroethylene	75-35-4	3.75E+00	Organic Kow Calc
Trichlorofluoromethane	75-69-4	7.97E+00	Organic Kow Calc
Dichlorodifluoromethane	75-71-8	4.21E+00	Organic Kow Calc
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	2.77E+01	Organic Kow Calc
Methyl ethyl ketone	78-93-3	1.23E-01	Organic Kow Calc
Trichloroethylene	79-01-6	6.60E+00	Organic Kow Calc
Diethyl phthalate	84-66-2	7.97E+00	Organic Kow Calc
Dibutyl phthalate	84-74-2	5.05E+02	Organic Kow Calc
Naphthalene	91-20-3	3.61E+01	Organic Kow Calc
2-Methylnaphthalene	91-57-6	1.12E+02	Organic Kow Calc
2-Xylene	95-47-6	2.47E+01	Organic Kow Calc
o-Cresol	95-48-7	2.82E+00	Organic Kow Calc
1,2-Dichlorobenzene	95-50-1	4.19E+01	Organic Kow Calc
Ethylbenzene	100-41-4	2.47E+01	Organic Kow Calc
Styrene	100-42-5	2.05E+01	Organic Kow Calc

COPC Name	CAS Number	BCF_W-Algae (mg/kg-FW_{tissue})/(mg/L)	Data Source
Benzyl alcohol	100-51-6	5.69E-01	Organic Kow Calc
Benzaldehyde	100-52-7	1.16E+00	Organic Kow Calc
1,4-Dichlorobenzene	106-46-7	5.25E+01	Organic Kow Calc
GB	107-44-8	1.26E-01	Organic Kow Calc
Vinyl acetate	108-05-4	2.83E-01	Organic Kow Calc
Methyl isobutyl ketone	108-10-1	6.85E-01	Organic Kow Calc
Toluene	108-88-3	1.16E+01	Organic Kow Calc
Chlorobenzene	108-90-7	1.40E+01	Organic Kow Calc
n-Hexane	110-54-3	1.12E+02	Organic Kow Calc
Bis(2-ethylhexyl)phthalate	117-81-7	9.93E+03	EPA SLERAP, (1999)
2,4,6-Trinitrotoluene	118-96-7	1.46E+00	Organic Kow Calc
2,4-Dinitrotoluene	121-14-2	2.51E+03	EPA SLERAP, (1999)
Chlorodibromomethane	124-48-1	4.79E+00	Organic Kow Calc
Dimethylphthalate	131-11-3	1.35E+00	Organic Kow Calc
Sulfur mustard (or H/HD)	505-60-2	9.45E-01	Organic Kow Calc
Xylene (mixed)	1330-20-7	2.98E+01	Organic Kow Calc
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	3.30E+03	EPA SLERAP, (1999)
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	3.96E+01	EPA SLERAP, (1999)
Mercury	7439-97-6	N/D	
Sulfur dioxide	7446-09-5	N/D	
Mercuric chloride	7487-94-7	2.48E+04	EPA SLERAP, (1999)
Hydrochloric acid	7647-01-0	N/D	
Phosphoric acid	7664-38-2	N/D	
Hydrofluoric acid	7664-39-3	N/D	
Chlorine	7782-50-5	N/D	
cis-1,3-Dichloropropene	10061-01-5	3.48E+00	Organic Kow Calc
trans-1,3-Dichloropropene	10061-02-6	3.28E+00	Organic Kow Calc
Nitrogen dioxide	10102-44-0	N/D	
HexaCDD, 1,2,3,7,8,9-	19408-74-3	4.62E+02	EPA SLERAP, (1999)

COPC Name	CAS Number	BCF_W-Algae (mg/kg-FW_{tissue})/(mg/L)	Data Source
Methyl mercury	22967-92-6	8.00E+04	EPA SLERAP, (1999)
2,3',4,4',5-Pentachlorobiphenyl	31508-00-6	4.85E+04	Organic Kow Calc
3,3',4,4'-Tetrachlorobiphenyl	32598-13-3	1.92E+04	Organic Kow Calc
2,3,3',4,4'-Pentachlorobiphenyl	32598-14-4	2.60E+04	Organic Kow Calc
HeptaCDD, 1,2,3,4,6,7,8-	35822-46-9	1.68E+02	EPA SLERAP, (1999)
2,3,3',4,4',5-Hexachlorobiphenyl	38380-08-4	1.20E+05	Organic Kow Calc
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	5.28E+01	EPA SLERAP, (1999)
HexaCDD, 1,2,3,4,7,8-	39227-28-6	1.02E+03	EPA SLERAP, (1999)
2,3,4,5,3',4',5'-Heptachlorobiphenyl	39635-31-9	4.23E+05	Organic Kow Calc
PentaCDD, 1,2,3,7,8-	40321-76-4	3.04E+03	EPA SLERAP, (1999)
VX	50782-69-9	3.68E+00	Organic Kow Calc
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	2.64E+03	EPA SLERAP, (1999)
2,3',4,4',5,5'-Hexachlorobiphenyl	52663-72-6	9.91E+04	Organic Kow Calc
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	1.29E+03	EPA SLERAP, (1999)
PentaCDF, 2,3,4,7,8-	57117-31-4	5.28E+03	EPA SLERAP, (1999)
PentaCDF, 1,2,3,7,8-	57117-41-6	7.26E+02	EPA SLERAP, (1999)
HexaCDF, 1,2,3,6,7,8-	57117-44-9	6.27E+02	EPA SLERAP, (1999)
3,4,5,3',4'-Pentachlorobiphenyl	57465-28-8	N/D	
HexaCDD, 1,2,3,6,7,8-	57653-85-7	3.96E+02	EPA SLERAP, (1999)
HexaCDF, 2,3,4,6,7,8-	60851-34-5	2.21E+03	EPA SLERAP, (1999)
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	3.63E+01	EPA SLERAP, (1999)
2,3,3',4,4',5'-Hexachlorobiphenyl	69782-90-7	N/D	
3,4,4',5-Tetrachlorobiphenyl	70362-50-4	N/D	
HexaCDF, 1,2,3,4,7,8-	70648-26-9	2.51E+02	EPA SLERAP, (1999)
HexaCDF, 1,2,3,7,8,9-	72918-21-9	2.08E+03	EPA SLERAP, (1999)
EA 2192	73207-98-4	3.68E+00	Organic Kow Calc
2,3,4,4'5-Pentachlorobiphenyl	74472-37-0	3.72E+04	Organic Kow Calc

Table O-5: Water to Fish Bioconcentration Factors

COPC Name	CAS Number	BCF_W-F (mg/kg-FW_{tissue})/(mg/L)	Data Source
Aluminum compounds	00-01-2	2.70E+00	EPA SLERAP, (1999)
Antimony compounds	00-01-3	4.00E+01	EPA SLERAP, (1999)
Arsenic compounds	00-01-4	1.14E+02	EPA SLERAP, (1999)
Barium compounds	00-01-5	6.33E+02	EPA SLERAP, (1999)
Beryllium compounds	00-01-6	6.20E+01	EPA SLERAP, (1999)
Cadmium compounds	00-01-7	9.07E+02	EPA SLERAP, (1999)
Chromium compounds	00-01-8	1.90E+01	EPA SLERAP, (1999)
Copper compounds	00-01-9	7.10E+02	EPA SLERAP, (1999)
Lead compounds	00-02-0	9.00E-02	EPA SLERAP, (1999)
Manganese compounds	00-02-2	N/D	
Mercury compounds	00-02-3	N/D	
Nickel compounds	00-02-4	7.80E+01	EPA SLERAP, (1999)
Selenium compounds	00-02-5	1.29E+02	EPA SLERAP, (1999)
Silver compounds	00-02-6	8.77E+01	EPA SLERAP, (1999)
Thallium compounds	00-02-7	1.00E+04	EPA SLERAP, (1999)
Vanadium compounds	00-02-8	N/D	
Zinc compounds	00-02-9	2.06E+03	EPA SLERAP, (1999)
PCB Mixture (non-dioxin like, 5+ chlorines)	00-07-2	1.27E+05	EPA SLERAP, (1999)
Cobalt compounds	00-15-3	N/D	
m,p-Xylene	00-15-5	N/D	
Composite TOE - Volatile	00-16-3	1.91E+01	Organic Kow Calc
Composite TOE - Semivolatile	00-16-4	1.08E+02	Organic Kow Calc
Composite TOE - Nonvolatile	00-16-5	1.83E+05	Organic Kow Calc
Boron compounds	00-16-6	N/D	
Tin compounds	00-16-9	N/D	
Carbon tetrachloride	56-23-5	3.00E+01	EPA SLERAP, (1999)
Benzoic acid	65-85-0	1.19E+01	Organic Kow Calc

COPC Name	CAS Number	BCF_W-F (mg/kg-FW_{tissue})/(mg/L)	Data Source
Acetone	67-64-1	1.00E-01	EPA SLERAP, (1999)
Chloroform	67-66-3	3.59E+00	EPA SLERAP, (1999)
Benzene	71-43-2	1.82E+01	Organic Kow Calc
Methyl bromide	74-83-9	3.47E+00	Organic Kow Calc
Methyl chloride	74-87-3	2.08E+00	Organic Kow Calc
Methyl iodide	74-88-4	6.21E+00	Organic Kow Calc
Bromoethane	74-96-4	7.44E+00	Organic Kow Calc
Bromochloromethane	74-97-5	5.17E+00	Organic Kow Calc
Ethyl chloride	75-00-3	5.08E+00	Organic Kow Calc
Vinyl chloride	75-01-4	1.87E+00	EPA SLERAP, (1999)
Dichloromethane	75-09-2	4.24E+00	Organic Kow Calc
Carbon disulfide	75-15-0	2.17E+01	Organic Kow Calc
Tribromomethane	75-25-2	2.96E+01	Organic Kow Calc
Bromodichloromethane	75-27-4	1.82E+01	Organic Kow Calc
1,1-Dichloroethylene	75-35-4	1.82E+01	Organic Kow Calc
Trichlorofluoromethane	75-69-4	3.76E+01	Organic Kow Calc
Dichlorodifluoromethane	75-71-8	2.03E+01	Organic Kow Calc
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1.25E+02	Organic Kow Calc
Methyl ethyl ketone	78-93-3	6.75E-01	Organic Kow Calc
Trichloroethylene	79-01-6	3.13E+01	Organic Kow Calc
Diethyl phthalate	84-66-2	3.76E+01	Organic Kow Calc
Dibutyl phthalate	84-74-2	2.06E+03	Organic Kow Calc
Naphthalene	91-20-3	1.61E+02	Organic Kow Calc
2-Methylnaphthalene	91-57-6	4.80E+02	Organic Kow Calc
2-Xylene	95-47-6	1.12E+02	Organic Kow Calc
o-Cresol	95-48-7	1.38E+01	Organic Kow Calc
1,2-Dichlorobenzene	95-50-1	1.86E+02	Organic Kow Calc
Ethylbenzene	100-41-4	1.12E+02	Organic Kow Calc
Styrene	100-42-5	9.33E+01	Organic Kow Calc

COPC Name	CAS Number	BCF_W-F (mg/kg-FW_{tissue})/(mg/L)	Data Source
Benzyl alcohol	100-51-6	2.95E+00	Organic Kow Calc
Benzaldehyde	100-52-7	5.88E+00	Organic Kow Calc
1,4-Dichlorobenzene	106-46-7	2.32E+02	Organic Kow Calc
GB	107-44-8	6.86E-01	Organic Kow Calc
Vinyl acetate	108-05-4	1.50E+00	Organic Kow Calc
Methyl isobutyl ketone	108-10-1	3.52E+00	Organic Kow Calc
Toluene	108-88-3	5.41E+01	Organic Kow Calc
Chlorobenzene	108-90-7	6.49E+01	Organic Kow Calc
n-Hexane	110-54-3	4.80E+02	Organic Kow Calc
Bis(2-ethylhexyl)phthalate	117-81-7	7.00E+01	EPA SLERAP, (1999)
2,4,6-Trinitrotoluene	118-96-7	7.31E+00	Organic Kow Calc
2,4-Dinitrotoluene	121-14-2	2.10E+01	EPA SLERAP, (1999)
Chlorodibromomethane	124-48-1	2.30E+01	Organic Kow Calc
Dimethylphthalate	131-11-3	6.80E+00	Organic Kow Calc
Sulfur mustard (or H/HD)	505-60-2	4.80E+00	Organic Kow Calc
Xylene (mixed)	1330-20-7	1.34E+02	Organic Kow Calc
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	4.24E+03	EPA SLERAP, (1999)
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	5.08E+01	EPA SLERAP, (1999)
Mercury	7439-97-6	N/D	
Sulfur dioxide	7446-09-5	N/D	
Mercuric chloride	7487-94-7	3.53E+03	EPA SLERAP, (1999)
Hydrochloric acid	7647-01-0	N/D	
Phosphoric acid	7664-38-2	N/D	
Hydrofluoric acid	7664-39-3	N/D	
Chlorine	7782-50-5	N/D	
cis-1,3-Dichloropropene	10061-01-5	1.69E+01	Organic Kow Calc
trans-1,3-Dichloropropene	10061-02-6	1.60E+01	Organic Kow Calc
Nitrogen dioxide	10102-44-0	N/D	
HexaCDD, 1,2,3,7,8,9-	19408-74-3	5.93E+02	EPA SLERAP, (1999)

COPC Name	CAS Number	BCF_W-F (mg/kg-FW_{tissue})/(mg/L)	Data Source
Methyl mercury	22967-92-6	1.12E+04	EPA SLERAP, (1999)
2,3',4,4',5-Pentachlorobiphenyl	31508-00-6	1.68E+05	Organic Kow Calc
3,3',4,4'-Tetrachlorobiphenyl	32598-13-3	6.89E+04	Organic Kow Calc
2,3,3',4,4'-Pentachlorobiphenyl	32598-14-4	9.21E+04	Organic Kow Calc
HeptaCDD, 1,2,3,4,6,7,8-	35822-46-9	2.16E+02	EPA SLERAP, (1999)
2,3,3',4,4',5-Hexachlorobiphenyl	38380-08-4	4.02E+05	Organic Kow Calc
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	6.78E+01	EPA SLERAP, (1999)
HexaCDD, 1,2,3,4,7,8-	39227-28-6	1.31E+03	EPA SLERAP, (1999)
2,3,4,5,3',4',5'-Heptachlorobiphenyl	39635-31-9	1.36E+06	Organic Kow Calc
PentaCDD, 1,2,3,7,8-	40321-76-4	3.90E+03	EPA SLERAP, (1999)
VX	50782-69-9	1.78E+01	Organic Kow Calc
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	3.39E+03	EPA SLERAP, (1999)
2,3',4,4',5,5'-Hexachlorobiphenyl	52663-72-6	3.35E+05	Organic Kow Calc
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	1.65E+03	EPA SLERAP, (1999)
PentaCDF, 2,3,4,7,8-	57117-31-4	6.78E+03	EPA SLERAP, (1999)
PentaCDF, 1,2,3,7,8-	57117-41-6	9.32E+02	EPA SLERAP, (1999)
HexaCDF, 1,2,3,6,7,8-	57117-44-9	8.05E+02	EPA SLERAP, (1999)
3,4,5,3',4'-Pentachlorobiphenyl	57465-28-8	N/D	
HexaCDD, 1,2,3,6,7,8-	57653-85-7	5.08E+02	EPA SLERAP, (1999)
HexaCDF, 2,3,4,6,7,8-	60851-34-5	2.84E+03	EPA SLERAP, (1999)
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	4.66E+01	EPA SLERAP, (1999)
2,3,3',4,4',5'-Hexachlorobiphenyl	69782-90-7	N/D	
3,4,4',5-Tetrachlorobiphenyl	70362-50-4	N/D	
HexaCDF, 1,2,3,4,7,8-	70648-26-9	3.22E+02	EPA SLERAP, (1999)
HexaCDF, 1,2,3,7,8,9-	72918-21-9	2.67E+03	EPA SLERAP, (1999)
EA 2192	73207-98-4	1.78E+01	Organic Kow Calc
2,3,4,4'5-Pentachlorobiphenyl	74472-37-0	1.30E+05	Organic Kow Calc

Table O-6: Sediment to Benthic Invertebrates Bioconcentration Factors

COPC Name	CAS Number	BCF_Se-BI ($mg/kg\text{-}FW_{tissue}$)/($mg/kg\text{-}DW_{sed}$)	Data Source
Aluminum compounds	00-01-2	9.00E-01	EPA SLERAP, (1999)
Antimony compounds	00-01-3	9.00E-01	EPA SLERAP, (1999)
Arsenic compounds	00-01-4	6.50E-01	ORNL (1998a)
Barium compounds	00-01-5	9.00E-01	EPA SLERAP, (1999)
Beryllium compounds	00-01-6	9.00E-01	EPA SLERAP, (1999)
Cadmium compounds	00-01-7	4.61E-01	ORNL (1998a)
Chromium compounds	00-01-8	2.79E-02	ORNL (1998a)
Copper compounds	00-01-9	1.19E+00	ORNL (1998a)
Lead compounds	00-02-0	4.89E-02	ORNL (1998a)
Manganese compounds	00-02-2	N/D	
Mercury compounds	00-02-3	5.97E-01	ORNL (1998a)
Nickel compounds	00-02-4	3.21E-02	ORNL (1998a)
Selenium compounds	00-02-5	9.00E-01	EPA SLERAP, (1999)
Silver compounds	00-02-6	9.00E-01	EPA SLERAP, (1999)
Thallium compounds	00-02-7	9.00E-01	EPA SLERAP, (1999)
Vanadium compounds	00-02-8	N/D	
Zinc compounds	00-02-9	7.14E-01	ORNL (1998a)
PCB Mixture (non-dioxin like, 5+ chlorines)	00-07-2	5.30E-01	EPA SLERAP, (1999)
Cobalt compounds	00-15-3	N/D	
m,p-Xylene	00-15-5	N/D	
Composite TOE - Volatile	00-16-3	3.95E+00	Organic Kow Calc
Composite TOE - Semivolatile	00-16-4	2.38E+01	Organic Kow Calc
Composite TOE - Nonvolatile	00-16-5	5.30E+04	Organic Kow Calc
Boron compounds	00-16-6	N/D	
Tin compounds	00-16-9	N/D	
Carbon tetrachloride	56-23-5	1.20E+01	EPA SLERAP, (1999)
Benzoic acid	65-85-0	2.43E+00	Organic Kow Calc
Acetone	67-64-1	5.00E-02	EPA SLERAP, (1999)

COPC Name	CAS Number	BCF_Se-BI ($mg/kg\text{-}FW_{tissue}$)/($mg/kg\text{-}DW_{sed}$)	Data Source
Chloroform	67-66-3	2.82E+00	EPA SLERAP, (1999)
Benzene	71-43-2	3.75E+00	Organic Kow Calc
Methyl bromide	74-83-9	6.74E-01	Organic Kow Calc
Methyl chloride	74-87-3	3.98E-01	Organic Kow Calc
Methyl iodide	74-88-4	1.23E+00	Organic Kow Calc
Bromoethane	74-96-4	1.49E+00	Organic Kow Calc
Bromochloromethane	74-97-5	1.02E+00	Organic Kow Calc
Ethyl chloride	75-00-3	1.00E+00	Organic Kow Calc
Vinyl chloride	75-01-4	6.20E-01	EPA SLERAP, (1999)
Dichloromethane	75-09-2	8.31E-01	Organic Kow Calc
Carbon disulfide	75-15-0	4.52E+00	Organic Kow Calc
Tribromomethane	75-25-2	6.23E+00	Organic Kow Calc
Bromodichloromethane	75-27-4	3.75E+00	Organic Kow Calc
1,1-Dichloroethylene	75-35-4	3.75E+00	Organic Kow Calc
Trichlorofluoromethane	75-69-4	7.97E+00	Organic Kow Calc
Dichlorodifluoromethane	75-71-8	4.21E+00	Organic Kow Calc
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	2.77E+01	Organic Kow Calc
Methyl ethyl ketone	78-93-3	1.23E-01	Organic Kow Calc
Trichloroethylene	79-01-6	6.60E+00	Organic Kow Calc
Diethyl phthalate	84-66-2	7.97E+00	Organic Kow Calc
Dibutyl phthalate	84-74-2	5.05E+02	Organic Kow Calc
Naphthalene	91-20-3	3.61E+01	Organic Kow Calc
2-Methylnaphthalene	91-57-6	1.12E+02	Organic Kow Calc
2-Xylene	95-47-6	2.47E+01	Organic Kow Calc
o-Cresol	95-48-7	2.82E+00	Organic Kow Calc
1,2-Dichlorobenzene	95-50-1	4.19E+01	Organic Kow Calc
Ethylbenzene	100-41-4	2.47E+01	Organic Kow Calc
Styrene	100-42-5	2.05E+01	Organic Kow Calc
Benzyl alcohol	100-51-6	5.69E-01	Organic Kow Calc

COPC Name	CAS Number	BCF_Se-BI ($mg/kg\text{-}FW_{tissue}$)/($mg/kg\text{-}DW_{sed}$)	Data Source
Benzaldehyde	100-52-7	1.16E+00	Organic Kow Calc
1,4-Dichlorobenzene	106-46-7	5.25E+01	Organic Kow Calc
GB	107-44-8	1.26E-01	Organic Kow Calc
Vinyl acetate	108-05-4	2.83E-01	Organic Kow Calc
Methyl isobutyl ketone	108-10-1	6.85E-01	Organic Kow Calc
Toluene	108-88-3	1.16E+01	Organic Kow Calc
Chlorobenzene	108-90-7	1.40E+01	Organic Kow Calc
n-Hexane	110-54-3	1.12E+02	Organic Kow Calc
Bis(2-ethylhexyl)phthalate	117-81-7	1.31E+03	EPA SLERAP, (1999)
2,4,6-Trinitrotoluene	118-96-7	1.46E+00	Organic Kow Calc
2,4-Dinitrotoluene	121-14-2	5.80E+01	EPA SLERAP, (1999)
Chlorodibromomethane	124-48-1	4.79E+00	Organic Kow Calc
Dimethylphthalate	131-11-3	1.35E+00	Organic Kow Calc
Sulfur mustard (or H/HD)	505-60-2	9.45E-01	Organic Kow Calc
Xylene (mixed)	1330-20-7	2.98E+01	Organic Kow Calc
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1.96E+04	EPA SLERAP, (1999)
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	2.35E+01	EPA SLERAP, (1999)
Mercury	7439-97-6	N/D	
Sulfur dioxide	7446-09-5	N/D	
Mercuric chloride	7487-94-7	6.80E-02	EPA SLERAP, (1999)
Hydrochloric acid	7647-01-0	N/D	
Phosphoric acid	7664-38-2	N/D	
Hydrofluoric acid	7664-39-3	N/D	
Chlorine	7782-50-5	N/D	
cis-1,3-Dichloropropene	10061-01-5	3.48E+00	Organic Kow Calc
trans-1,3-Dichloropropene	10061-02-6	3.28E+00	Organic Kow Calc
Nitrogen dioxide	10102-44-0	N/D	
HexaCDD, 1,2,3,7,8,9-	19408-74-3	2.74E+03	EPA SLERAP, (1999)
Methyl mercury	22967-92-6	4.80E-01	EPA SLERAP, (1999)

COPC Name	CAS Number	BCF_Se-BI ($mg/kg\text{-}FW_{tissue}$)/($mg/kg\text{-}DW_{sed}$)	Data Source
2,3',4,4',5-Pentachlorobiphenyl	31508-00-6	4.85E+04	Organic Kow Calc
3,3',4,4'-Tetrachlorobiphenyl	32598-13-3	1.92E+04	Organic Kow Calc
2,3,3',4,4'-Pentachlorobiphenyl	32598-14-4	2.60E+04	Organic Kow Calc
HeptaCDD, 1,2,3,4,6,7,8-	35822-46-9	9.94E+01	EPA SLERAP, (1999)
2,3,3',4,4',5-Hexachlorobiphenyl	38380-08-4	1.20E+05	Organic Kow Calc
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	3.14E+02	EPA SLERAP, (1999)
HexaCDD, 1,2,3,4,7,8-	39227-28-6	6.08E+03	EPA SLERAP, (1999)
2,3,4,5,3',4',5'-Heptachlorobiphenyl	39635-31-9	4.23E+05	Organic Kow Calc
PentaCDD, 1,2,3,7,8-	40321-76-4	1.80E+04	EPA SLERAP, (1999)
VX	50782-69-9	3.68E+00	Organic Kow Calc
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	2.64E+03	EPA SLERAP, (1999)
2,3',4,4',5,5'-Hexachlorobiphenyl	52663-72-6	9.91E+04	Organic Kow Calc
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	7.64E+03	EPA SLERAP, (1999)
PentaCDF, 2,3,4,7,8-	57117-31-4	3.14E+04	EPA SLERAP, (1999)
PentaCDF, 1,2,3,7,8-	57117-41-6	4.31E+03	EPA SLERAP, (1999)
HexaCDF, 1,2,3,6,7,8-	57117-44-9	3.72E+03	EPA SLERAP, (1999)
3,4,5,3',4'-Pentachlorobiphenyl	57465-28-8	N/D	
HexaCDD, 1,2,3,6,7,8-	57653-85-7	2.35E+03	EPA SLERAP, (1999)
HexaCDF, 2,3,4,6,7,8-	60851-34-5	1.31E+04	EPA SLERAP, (1999)
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	2.16E+02	EPA SLERAP, (1999)
2,3,3',4,4',5'-Hexachlorobiphenyl	69782-90-7	N/D	
3,4,4',5-Tetrachlorobiphenyl	70362-50-4	N/D	
HexaCDF, 1,2,3,4,7,8-	70648-26-9	1.49E+03	EPA SLERAP, (1999)
HexaCDF, 1,2,3,7,8,9-	72918-21-9	1.23E+04	EPA SLERAP, (1999)
EA 2192	73207-98-4	3.68E+00	Organic Kow Calc
2,3,4,4'5-Pentachlorobiphenyl	74472-37-0	3.72E+04	Organic Kow Calc

Table O-7: Chronic Water Quality Benchmark Toxicity Reference Values

COPC Name	CAS Number	Chronic water quality benchmark (mg/L)
Aluminum compounds	00-01-2	N/D
Antimony compounds	00-01-3	0.087
Arsenic compounds	00-01-4	0.16
Barium compounds	00-01-5	0.19
Beryllium compounds	00-01-6	0.0086
Cadmium compounds	00-01-7	0.11
Chromium compounds	00-01-8	5.5
Copper compounds	00-01-9	N/D
Lead compounds	00-02-0	0.0032
Manganese compounds	00-02-2	0.12
Mercury compounds	00-02-3	0.000012
Nickel compounds	00-02-4	0.16
Selenium compounds	00-02-5	0.035
Silver compounds	00-02-6	0.00012
Thallium compounds	00-02-7	0.004
Vanadium compounds	00-02-8	0.02
Zinc compounds	00-02-9	0.11
PCB Mixture (non-dioxin like, 5+ chlorines)	00-07-2	0.000014
Cobalt compounds	00-15-3	N/D
m,p-Xylene	00-15-5	N/D
Composite TOE - Volatile	00-16-3	0.512
Composite TOE - Semivolatile	00-16-4	0.03052
Composite TOE - Nonvolatile	00-16-5	0.0000209
Boron compounds	00-16-6	0.0003
Tin compounds	00-16-9	0.073
Carbon tetrachloride	56-23-5	0.00092
Benzoic acid	65-85-0	0.053
Acetone	67-64-1	N/D
Chloroform	67-66-3	0.289
Benzene	71-43-2	N/D
Methyl bromide	74-83-9	0.32
Methyl chloride	74-87-3	N/D
Methyl iodide	74-88-4	N/D
Bromoethane	74-96-4	N/D
Bromochloromethane	74-97-5	0.75
Ethyl chloride	75-00-3	0.195
Vinyl chloride	75-01-4	3.88
Dichloromethane	75-09-2	N/D

COPC Name	CAS Number	Chronic water quality benchmark (mg/L)
Carbon disulfide	75-15-0	0.0011
Tribromomethane	75-25-2	N/D
Bromodichloromethane	75-27-4	N/D
1,1-Dichloroethylene	75-35-4	N/D
Trichlorofluoromethane	75-69-4	N/D
Dichlorodifluoromethane	75-71-8	N/D
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	N/D
Methyl ethyl ketone	78-93-3	0.31
Trichloroethylene	79-01-6	0.047
Diethyl phthalate	84-66-2	0.521
Dibutyl phthalate	84-74-2	0.0094
Naphthalene	91-20-3	0.062
2-Methylnaphthalene	91-57-6	N/D
2-Xylene	95-47-6	N/D
o-Cresol	95-48-7	N/D
1,2-Dichlorobenzene	95-50-1	0.00000038
Ethylbenzene	100-41-4	0.453
Styrene	100-42-5	N/D
Benzyl alcohol	100-51-6	0.042
Benzaldehyde	100-52-7	0.004
1,4-Dichlorobenzene	106-46-7	0.0158
GB	107-44-8	N/D
Vinyl acetate	108-05-4	0.016
Methyl isobutyl ketone	108-10-1	0.0000076
Toluene	108-88-3	0.175
Chlorobenzene	108-90-7	0.011
n-Hexane	110-54-3	0.00058
Bis(2-ethylhexyl)phthalate	117-81-7	0.00053
2,4,6-Trinitrotoluene	118-96-7	0.000000076
2,4-Dinitrotoluene	121-14-2	0.09
Chlorodibromomethane	124-48-1	N/D
Dimethylphthalate	131-11-3	0.33
Sulfur mustard (or H/HD)	505-60-2	N/D
Xylene (mixed)	1330-20-7	0.013
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	0.00000076
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	0.000038
Mercury	7439-97-6	N/D
Sulfur dioxide	7446-09-5	N/D
Mercuric chloride	7487-94-7	0.0077
Hydrochloric acid	7647-01-0	1.5

COPC Name	CAS Number	Chronic water quality benchmark (mg/L)
Phosphoric acid	7664-38-2	N/D
Hydrofluoric acid	7664-39-3	N/D
Chlorine	7782-50-5	0.352
cis-1,3-Dichloropropene	10061-01-5	0.21
trans-1,3-Dichloropropene	10061-02-6	N/D
Nitrogen dioxide	10102-44-0	0.012
HexaCDD, 1,2,3,7,8,9-	19408-74-3	N/D
Methyl mercury	22967-92-6	0.0000028
2,3',4,4',5-Pentachlorobiphenyl	31508-00-6	0.00076
3,3',4,4'-Tetrachlorobiphenyl	32598-13-3	0.013
2,3,3',4,4'-Pentachlorobiphenyl	32598-14-4	0.00076
HeptaCDD, 1,2,3,4,6,7,8-	35822-46-9	N/D
2,3,3',4,4',5-Hexachlorobiphenyl	38380-08-4	0.00076
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	0.000038
HexaCDD, 1,2,3,4,7,8-	39227-28-6	N/D
2,3,4,5,3',4',5'-Heptachlorobiphenyl	39635-31-9	0.0112
PentaCDD, 1,2,3,7,8-	40321-76-4	N/D
VX	50782-69-9	N/D
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	0.0000000038
2,3',4,4',5,5'-Hexachlorobiphenyl	52663-72-6	0.00076
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	0.00000038
PentaCDF, 2,3,4,7,8-	57117-31-4	N/D
PentaCDF, 1,2,3,7,8-	57117-41-6	N/D
HexaCDF, 1,2,3,6,7,8-	57117-44-9	N/D
3,4,5,3',4'-Pentachlorobiphenyl	57465-28-8	0.000038
HexaCDD, 1,2,3,6,7,8-	57653-85-7	N/D
HexaCDF, 2,3,4,6,7,8-	60851-34-5	N/D
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	0.303
2,3,3',4,4',5'-Hexachlorobiphenyl	69782-90-7	0.00076
3,4,4',5-Tetrachlorobiphenyl	70362-50-4	0.0000076
HexaCDF, 1,2,3,4,7,8-	70648-26-9	N/D
HexaCDF, 1,2,3,7,8,9-	72918-21-9	N/D
EA 2192	73207-98-4	N/D
2,3,4,4'5-Pentachlorobiphenyl	74472-37-0	0.00076

Table O-8: Low-Effect Sediment Quality Benchmark Toxicity Reference Values

COPC Name	CAS Number	Low-effect sediment quality benchmark (mg/kg)
Aluminum compounds	00-01-2	N/D
Antimony compounds	00-01-3	58030
Arsenic compounds	00-01-4	12
Barium compounds	00-01-5	9.79
Beryllium compounds	00-01-6	0.0035088
Cadmium compounds	00-01-7	0.0396
Chromium compounds	00-01-8	1.386
Copper compounds	00-01-9	N/D
Lead compounds	00-02-0	35.8
Manganese compounds	00-02-2	1081
Mercury compounds	00-02-3	0.18
Nickel compounds	00-02-4	22.7
Selenium compounds	00-02-5	0.1
Silver compounds	00-02-6	2
Thallium compounds	00-02-7	N/D
Vanadium compounds	00-02-8	N/D
Zinc compounds	00-02-9	121
PCB Mixture (non-dioxin like, 5+ chlorines)	00-07-2	0.0598
Cobalt compounds	00-15-3	N/D
m,p-Xylene	00-15-5	N/D
Composite TOE - Volatile	00-16-3	0.52
Composite TOE - Semivolatile	00-16-4	0.68
Composite TOE - Nonvolatile	00-16-5	0.025
Boron compounds	00-16-6	0.73
Tin compounds	00-16-9	N/D
Carbon tetrachloride	56-23-5	0.00189152
Benzoic acid	65-85-0	0.130804
Acetone	67-64-1	N/D
Chloroform	67-66-3	0.0594
Benzene	71-43-2	N/D
Methyl bromide	74-83-9	2.6
Methyl chloride	74-87-3	N/D
Methyl iodide	74-88-4	N/D
Bromoethane	74-96-4	N/D
Bromochloromethane	74-97-5	N/D
Ethyl chloride	75-00-3	1.64
Vinyl chloride	75-01-4	1.7227
Dichloromethane	75-09-2	N/D

COPC Name	CAS Number	Low-effect sediment quality benchmark (mg/kg)
Carbon disulfide	75-15-0	0.99
Tribromomethane	75-25-2	N/D
Bromodichloromethane	75-27-4	N/D
1,1-Dichloroethylene	75-35-4	N/D
Trichlorofluoromethane	75-69-4	N/D
Dichlorodifluoromethane	75-71-8	N/D
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	N/D
Methyl ethyl ketone	78-93-3	0.0469
Trichloroethylene	79-01-6	0.88
Diethyl phthalate	84-66-2	1.70888
Dibutyl phthalate	84-74-2	0.59032
Naphthalene	91-20-3	0.176
2-Methylnaphthalene	91-57-6	N/D
2-Xylene	95-47-6	N/D
o-Cresol	95-48-7	N/D
1,2-Dichlorobenzene	95-50-1	0.00041
Ethylbenzene	100-41-4	0.36
Styrene	100-42-5	N/D
Benzyl alcohol	100-51-6	0.001008
Benzaldehyde	100-52-7	20
1,4-Dichlorobenzene	106-46-7	1.32
GB	107-44-8	N/D
Vinyl acetate	108-05-4	0.0031808
Methyl isobutyl ketone	108-10-1	N/D
Toluene	108-88-3	0.2
Chlorobenzene	108-90-7	N/D
n-Hexane	110-54-3	0.034104
Bis(2-ethylhexyl)phthalate	117-81-7	N/D
2,4,6-Trinitrotoluene	118-96-7	0.00041
2,4-Dinitrotoluene	121-14-2	9.2
Chlorodibromomethane	124-48-1	N/D
Dimethylphthalate	131-11-3	0.40788
Sulfur mustard (or H/HD)	505-60-2	N/D
Xylene (mixed)	1330-20-7	0.1
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	N/D
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	0.00041
Mercury	7439-97-6	N/D
Sulfur dioxide	7446-09-5	N/D
Mercuric chloride	7487-94-7	0.18

COPC Name	CAS Number	Low-effect sediment quality benchmark (mg/kg)
Hydrochloric acid	7647-01-0	0.0571
Phosphoric acid	7664-38-2	N/D
Hydrofluoric acid	7664-39-3	N/D
Chlorine	7782-50-5	2.14016
cis-1,3-Dichloropropene	10061-01-5	43.4
trans-1,3-Dichloropropene	10061-02-6	N/D
Nitrogen dioxide	10102-44-0	31.6
HexaCDD, 1,2,3,7,8,9-	19408-74-3	N/D
Methyl mercury	22967-92-6	0.2
2,3',4,4',5-Pentachlorobiphenyl	31508-00-6	N/D
3,3',4,4'-Tetrachlorobiphenyl	32598-13-3	0.027768
2,3,3',4,4'-Pentachlorobiphenyl	32598-14-4	N/D
HeptaCDD, 1,2,3,4,6,7,8-	35822-46-9	N/D
2,3,3',4,4',5-Hexachlorobiphenyl	38380-08-4	N/D
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	0.00041
HexaCDD, 1,2,3,4,7,8-	39227-28-6	N/D
2,3,4,5,3',4',5'-Heptachlorobiphenyl	39635-31-9	1.36
PentaCDD, 1,2,3,7,8-	40321-76-4	N/D
VX	50782-69-9	N/D
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	0.00041
2,3',4,4',5,5'-Hexachlorobiphenyl	52663-72-6	N/D
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	0.00041
PentaCDF, 2,3,4,7,8-	57117-31-4	N/D
PentaCDF, 1,2,3,7,8-	57117-41-6	N/D
HexaCDF, 1,2,3,6,7,8-	57117-44-9	N/D
3,4,5,3',4'-Pentachlorobiphenyl	57465-28-8	N/D
HexaCDD, 1,2,3,6,7,8-	57653-85-7	N/D
HexaCDF, 2,3,4,6,7,8-	60851-34-5	N/D
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	0.7878
2,3,3',4,4',5'-Hexachlorobiphenyl	69782-90-7	N/D
3,4,4',5-Tetrachlorobiphenyl	70362-50-4	N/D
HexaCDF, 1,2,3,4,7,8-	70648-26-9	N/D
HexaCDF, 1,2,3,7,8,9-	72918-21-9	N/D
EA 2192	73207-98-4	N/D
2,3,4,4'5-Pentachlorobiphenyl	74472-37-0	N/D

Table O-9: Low-Effect Soil Quality Benchmark for Plants Toxicity Reference Values

COPC Name	CAS Number	Low-effect soil quality benchmark - plants (mg/kg)
Aluminum compounds	00-01-2	N/D
Antimony compounds	00-01-3	N/D
Arsenic compounds	00-01-4	0.5
Barium compounds	00-01-5	18
Beryllium compounds	00-01-6	N/D
Cadmium compounds	00-01-7	N/D
Chromium compounds	00-01-8	N/D
Copper compounds	00-01-9	N/D
Lead compounds	00-02-0	120
Manganese compounds	00-02-2	220
Mercury compounds	00-02-3	0.3
Nickel compounds	00-02-4	38
Selenium compounds	00-02-5	0.05
Silver compounds	00-02-6	560
Thallium compounds	00-02-7	0.01
Vanadium compounds	00-02-8	N/D
Zinc compounds	00-02-9	50
PCB Mixture (non-dioxin like, 5+ chlorines)	00-07-2	10
Cobalt compounds	00-15-3	N/D
m,p-Xylene	00-15-5	N/D
Composite TOE - Volatile	00-16-3	600
Composite TOE - Semivolatile	00-16-4	2.497
Composite TOE - Nonvolatile	00-16-5	1.256
Boron compounds	00-16-6	N/D
Tin compounds	00-16-9	50
Carbon tetrachloride	56-23-5	N/D
Benzoic acid	65-85-0	N/D
Acetone	67-64-1	N/D
Chloroform	67-66-3	N/D
Benzene	71-43-2	100
Methyl bromide	74-83-9	N/D
Methyl chloride	74-87-3	N/D
Methyl iodide	74-88-4	N/D
Bromoethane	74-96-4	N/D
Bromochloromethane	74-97-5	0.5
Ethyl chloride	75-00-3	3.2
Vinyl chloride	75-01-4	N/D

COPC Name	CAS Number	Low-effect soil quality benchmark - plants (mg/kg)
Dichloromethane	75-09-2	N/D
Carbon disulfide	75-15-0	32
Tribromomethane	75-25-2	N/D
Bromodichloromethane	75-27-4	N/D
1,1-Dichloroethylene	75-35-4	N/D
Trichlorofluoromethane	75-69-4	N/D
Dichlorodifluoromethane	75-71-8	N/D
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	N/D
Methyl ethyl ketone	78-93-3	11
Trichloroethylene	79-01-6	N/D
Diethyl phthalate	84-66-2	100
Dibutyl phthalate	84-74-2	200
Naphthalene	91-20-3	N/D
2-Methylnaphthalene	91-57-6	N/D
2-Xylene	95-47-6	N/D
o-Cresol	95-48-7	N/D
1,2-Dichlorobenzene	95-50-1	N/D
Ethylbenzene	100-41-4	N/D
Styrene	100-42-5	300
Benzyl alcohol	100-51-6	N/D
Benzaldehyde	100-52-7	50
1,4-Dichlorobenzene	106-46-7	N/D
GB	107-44-8	N/D
Vinyl acetate	108-05-4	N/D
Methyl isobutyl ketone	108-10-1	N/D
Toluene	108-88-3	200
Chlorobenzene	108-90-7	N/D
n-Hexane	110-54-3	N/D
Bis(2-ethylhexyl)phthalate	117-81-7	N/D
2,4,6-Trinitrotoluene	118-96-7	N/D
2,4-Dinitrotoluene	121-14-2	N/D
Chlorodibromomethane	124-48-1	N/D
Dimethylphthalate	131-11-3	N/D
Sulfur mustard (or H/HD)	505-60-2	N/D
Xylene (mixed)	1330-20-7	10
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	N/D
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	N/D
Mercury	7439-97-6	N/D
Sulfur dioxide	7446-09-5	N/D

COPC Name	CAS Number	Low-effect soil quality benchmark - plants (mg/kg)
Mercuric chloride	7487-94-7	0.349
Hydrochloric acid	7647-01-0	N/D
Phosphoric acid	7664-38-2	N/D
Hydrofluoric acid	7664-39-3	N/D
Chlorine	7782-50-5	N/D
cis-1,3-Dichloropropene	10061-01-5	N/D
trans-1,3-Dichloropropene	10061-02-6	N/D
Nitrogen dioxide	10102-44-0	70
HexaCDD, 1,2,3,7,8,9-	19408-74-3	N/D
Methyl mercury	22967-92-6	N/D
2,3',4,4',5-Pentachlorobiphenyl	31508-00-6	N/D
3,3',4,4'-Tetrachlorobiphenyl	32598-13-3	N/D
2,3,3',4,4'-Pentachlorobiphenyl	32598-14-4	N/D
HeptaCDD, 1,2,3,4,6,7,8-	35822-46-9	N/D
2,3,3',4,4',5-Hexachlorobiphenyl	38380-08-4	N/D
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	N/D
HexaCDD, 1,2,3,4,7,8-	39227-28-6	N/D
2,3,4,5,3',4',5'-Heptachlorobiphenyl	39635-31-9	32
PentaCDD, 1,2,3,7,8-	40321-76-4	N/D
VX	50782-69-9	N/D
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	N/D
2,3',4,4',5,5'-Hexachlorobiphenyl	52663-72-6	N/D
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	N/D
PentaCDF, 2,3,4,7,8-	57117-31-4	N/D
PentaCDF, 1,2,3,7,8-	57117-41-6	N/D
HexaCDF, 1,2,3,6,7,8-	57117-44-9	N/D
3,4,5,3',4'-Pentachlorobiphenyl	57465-28-8	N/D
HexaCDD, 1,2,3,6,7,8-	57653-85-7	N/D
HexaCDF, 2,3,4,6,7,8-	60851-34-5	N/D
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	N/D
2,3,3',4,4',5'-Hexachlorobiphenyl	69782-90-7	N/D
3,4,4',5-Tetrachlorobiphenyl	70362-50-4	N/D
HexaCDF, 1,2,3,4,7,8-	70648-26-9	N/D
HexaCDF, 1,2,3,7,8,9-	72918-21-9	N/D
EA 2192	73207-98-4	N/D
2,3,4,4'5-Pentachlorobiphenyl	74472-37-0	N/D

Table O-10: Low-Effect Soil Quality Benchmark for Invertebrates Toxicity Reference Values

COPC Name	CAS Number	Low-effect soil quality benchmark - invertebrates (mg/kg)
Aluminum compounds	00-01-2	N/D
Antimony compounds	00-01-3	N/D
Arsenic compounds	00-01-4	78
Barium compounds	00-01-5	60
Beryllium compounds	00-01-6	N/D
Cadmium compounds	00-01-7	N/D
Chromium compounds	00-01-8	N/D
Copper compounds	00-01-9	N/D
Lead compounds	00-02-0	1700
Manganese compounds	00-02-2	450
Mercury compounds	00-02-3	0.1
Nickel compounds	00-02-4	280
Selenium compounds	00-02-5	7.7
Silver compounds	00-02-6	N/D
Thallium compounds	00-02-7	N/D
Vanadium compounds	00-02-8	N/D
Zinc compounds	00-02-9	199
PCB Mixture (non-dioxin like, 5+ chlorines)	00-07-2	2.51
Cobalt compounds	00-15-3	N/D
m,p-Xylene	00-15-5	N/D
Composite TOE - Volatile	00-16-3	700
Composite TOE - Semivolatile	00-16-4	8.1744
Composite TOE - Nonvolatile	00-16-5	1.9613
Boron compounds	00-16-6	N/D
Tin compounds	00-16-9	N/D
Carbon tetrachloride	56-23-5	N/D
Benzoic acid	65-85-0	N/D
Acetone	67-64-1	N/D
Chloroform	67-66-3	N/D
Benzene	71-43-2	N/D
Methyl bromide	74-83-9	N/D
Methyl chloride	74-87-3	N/D
Methyl iodide	74-88-4	N/D
Bromoethane	74-96-4	N/D
Bromochloromethane	74-97-5	N/D
Ethyl chloride	75-00-3	40
Vinyl chloride	75-01-4	N/D

COPC Name	CAS Number	Low-effect soil quality benchmark - invertebrates (mg/kg)
Dichloromethane	75-09-2	N/D
Carbon disulfide	75-15-0	140
Tribromomethane	75-25-2	N/D
Bromodichloromethane	75-27-4	N/D
1,1-Dichloroethylene	75-35-4	N/D
Trichlorofluoromethane	75-69-4	N/D
Dichlorodifluoromethane	75-71-8	N/D
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	N/D
Methyl ethyl ketone	78-93-3	N/D
Trichloroethylene	79-01-6	N/D
Diethyl phthalate	84-66-2	N/D
Dibutyl phthalate	84-74-2	N/D
Naphthalene	91-20-3	N/D
2-Methylnaphthalene	91-57-6	N/D
2-Xylene	95-47-6	N/D
o-Cresol	95-48-7	N/D
1,2-Dichlorobenzene	95-50-1	0.5
Ethylbenzene	100-41-4	N/D
Styrene	100-42-5	N/D
Benzyl alcohol	100-51-6	N/D
Benzaldehyde	100-52-7	330
1,4-Dichlorobenzene	106-46-7	N/D
GB	107-44-8	N/D
Vinyl acetate	108-05-4	N/D
Methyl isobutyl ketone	108-10-1	N/D
Toluene	108-88-3	N/D
Chlorobenzene	108-90-7	N/D
n-Hexane	110-54-3	N/D
Bis(2-ethylhexyl)phthalate	117-81-7	40
2,4,6-Trinitrotoluene	118-96-7	0.5
2,4-Dinitrotoluene	121-14-2	N/D
Chlorodibromomethane	124-48-1	N/D
Dimethylphthalate	131-11-3	200
Sulfur mustard (or H/HD)	505-60-2	N/D
Xylene (mixed)	1330-20-7	N/D
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	N/D
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	0.5
Mercury	7439-97-6	N/D
Sulfur dioxide	7446-09-5	N/D

COPC Name	CAS Number	Low-effect soil quality benchmark - invertebrates (mg/kg)
Mercuric chloride	7487-94-7	0.25
Hydrochloric acid	7647-01-0	N/D
Phosphoric acid	7664-38-2	N/D
Hydrofluoric acid	7664-39-3	N/D
Chlorine	7782-50-5	N/D
cis-1,3-Dichloropropene	10061-01-5	N/D
trans-1,3-Dichloropropene	10061-02-6	N/D
Nitrogen dioxide	10102-44-0	80
HexaCDD, 1,2,3,7,8,9-	19408-74-3	N/D
Methyl mercury	22967-92-6	0.25
2,3',4,4',5-Pentachlorobiphenyl	31508-00-6	N/D
3,3',4,4'-Tetrachlorobiphenyl	32598-13-3	N/D
2,3,3',4,4'-Pentachlorobiphenyl	32598-14-4	N/D
HeptaCDD, 1,2,3,4,6,7,8-	35822-46-9	N/D
2,3,3',4,4',5-Hexachlorobiphenyl	38380-08-4	N/D
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	0.5
HexaCDD, 1,2,3,4,7,8-	39227-28-6	N/D
2,3,4,5,3',4',5'-Heptachlorobiphenyl	39635-31-9	20
PentaCDD, 1,2,3,7,8-	40321-76-4	N/D
VX	50782-69-9	N/D
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	0.5
2,3',4,4',5,5'-Hexachlorobiphenyl	52663-72-6	N/D
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	0.5
PentaCDF, 2,3,4,7,8-	57117-31-4	N/D
PentaCDF, 1,2,3,7,8-	57117-41-6	N/D
HexaCDF, 1,2,3,6,7,8-	57117-44-9	N/D
3,4,5,3',4'-Pentachlorobiphenyl	57465-28-8	N/D
HexaCDD, 1,2,3,6,7,8-	57653-85-7	N/D
HexaCDF, 2,3,4,6,7,8-	60851-34-5	N/D
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	N/D
2,3,3',4,4',5'-Hexachlorobiphenyl	69782-90-7	N/D
3,4,4',5-Tetrachlorobiphenyl	70362-50-4	N/D
HexaCDF, 1,2,3,4,7,8-	70648-26-9	N/D
HexaCDF, 1,2,3,7,8,9-	72918-21-9	N/D
EA 2192	73207-98-4	N/D
2,3,4,4'5-Pentachlorobiphenyl	74472-37-0	N/D

Table O-11: Mammalian Test Species NOAEL Toxicity Reference Values

COPC Name	CAS Number	Mammalian Test Species NOAEL (mg/kg BW-d) (calculated as test species TRV X UF)
Aluminum compounds	00-01-2	1.93
Antimony compounds	00-01-3	0.059
Arsenic compounds	00-01-4	1.04
Barium compounds	00-01-5	51.8
Beryllium compounds	00-01-6	0.532
Cadmium compounds	00-01-7	0.77
Chromium compounds	00-01-8	2.40
Copper compounds	00-01-9	5.60
Lead compounds	00-02-0	4.7
Manganese compounds	00-02-2	51.5
Mercury compounds	00-02-3	1.01
Nickel compounds	00-02-4	1.7
Selenium compounds	00-02-5	0.2
Silver compounds	00-02-6	6.02
Thallium compounds	00-02-7	0.0074
Vanadium compounds	00-02-8	4.2
Zinc compounds	00-02-9	160
PCB Mixture (non-dioxin like, 5+ chlorines)	00-07-2	0.068
Cobalt compounds	00-15-3	7.33
m,p-Xylene	00-15-5	2.1
Composite TOE - Volatile	00-16-3	25.604
Composite TOE - Semivolatile	00-16-4	7.581
Composite TOE - Nonvolatile	00-16-5	0.06915
Boron compounds	00-16-6	28
Tin compounds	00-16-9	23.4
Carbon tetrachloride	56-23-5	16
Benzoic acid	65-85-0	17
Acetone	67-64-1	10
Chloroform	67-66-3	15
Benzene	71-43-2	26.36
Methyl bromide	74-83-9	1.04
Methyl chloride	74-87-3	18
Methyl iodide	74-88-4	0.76
Bromoethane	74-96-4	13.5
Bromochloromethane	74-97-5	43
Ethyl chloride	75-00-3	N/D
Vinyl chloride	75-01-4	0.17

COPC Name	CAS Number	Mammalian Test Species NOAEL (mg/kg BW-d) (calculated as test species TRV X UF)
Dichloromethane	75-09-2	16
Carbon disulfide	75-15-0	5.83
Tribromomethane	75-25-2	11.4
Bromodichloromethane	75-27-4	3.26
1,1-Dichloroethylene	75-35-4	30
Trichlorofluoromethane	75-69-4	N/D
Dichlorodifluoromethane	75-71-8	N/D
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	430
Methyl ethyl ketone	78-93-3	1771
Trichloroethylene	79-01-6	0.7
Diethyl phthalate	84-66-2	4583
Dibutyl phthalate	84-74-2	18.3
Naphthalene	91-20-3	71
2-Methylnaphthalene	91-57-6	16.3
2-Xylene	95-47-6	2.1
o-Cresol	95-48-7	219.2
1,2-Dichlorobenzene	95-50-1	250
Ethylbenzene	100-41-4	35
Styrene	100-42-5	3.16
Benzyl alcohol	100-51-6	12.3
Benzaldehyde	100-52-7	10
1,4-Dichlorobenzene	106-46-7	250
GB	107-44-8	0.0055
Vinyl acetate	108-05-4	16.13
Methyl isobutyl ketone	108-10-1	25
Toluene	108-88-3	26
Chlorobenzene	108-90-7	14.4
n-Hexane	110-54-3	0.24
Bis(2-ethylhexyl)phthalate	117-81-7	18.3
2,4,6-Trinitrotoluene	118-96-7	0.2
2,4-Dinitrotoluene	121-14-2	0.67
Chlorodibromomethane	124-48-1	1.45
Dimethylphthalate	131-11-3	4583
Sulfur mustard (or H/HD)	505-60-2	N/D
Xylene (mixed)	1330-20-7	2.1
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	0.000001
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	0.00333
Mercury	7439-97-6	N/D
Sulfur dioxide	7446-09-5	N/D

COPC Name	CAS Number	Mammalian Test Species NOAEL (mg/kg BW-d) (calculated as test species TRV X UF)
Mercuric chloride	7487-94-7	1.01
Hydrochloric acid	7647-01-0	9.0
Phosphoric acid	7664-38-2	5.5
Hydrofluoric acid	7664-39-3	N/D
Chlorine	7782-50-5	N/D
cis-1,3-Dichloropropene	10061-01-5	N/D
trans-1,3-Dichloropropene	10061-02-6	N/D
Nitrogen dioxide	10102-44-0	N/D
HexaCDD, 1,2,3,7,8,9-	19408-74-3	N/D
Methyl mercury	22967-92-6	0.032
2,3',4,4',5-Pentachlorobiphenyl	31508-00-6	0.0333
3,3',4,4'-Tetrachlorobiphenyl	32598-13-3	0.01
2,3,3',4,4'-Pentachlorobiphenyl	32598-14-4	0.0333
HeptaCDD, 1,2,3,4,6,7,8-	35822-46-9	N/D
2,3,3',4,4',5-Hexachlorobiphenyl	38380-08-4	0.0333
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	0.00333
HexaCDD, 1,2,3,4,7,8-	39227-28-6	N/D
2,3,4,5,3',4',5'-Heptachlorobiphenyl	39635-31-9	0.0333
PentaCDD, 1,2,3,7,8-	40321-76-4	N/D
VX	50782-69-9	0.000154
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	0.00001
2,3',4,4',5,5'-Hexachlorobiphenyl	52663-72-6	0.0333
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	0.0001
PentaCDF, 2,3,4,7,8-	57117-31-4	N/D
PentaCDF, 1,2,3,7,8-	57117-41-6	N/D
HexaCDF, 1,2,3,6,7,8-	57117-44-9	N/D
3,4,5,3',4'-Pentachlorobiphenyl	57465-28-8	0.00001
HexaCDD, 1,2,3,6,7,8-	57653-85-7	N/D
HexaCDF, 2,3,4,6,7,8-	60851-34-5	N/D
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	0.0001
2,3,3',4,4',5'-Hexachlorobiphenyl	69782-90-7	0.0333
3,4,4',5-Tetrachlorobiphenyl	70362-50-4	0.00333
HexaCDF, 1,2,3,4,7,8-	70648-26-9	N/D
HexaCDF, 1,2,3,7,8,9-	72918-21-9	N/D
EA 2192	73207-98-4	N/D
2,3,4,4'5-Pentachlorobiphenyl	74472-37-0	0.0333

Table O-12: Avian No-Effect Oral TRV

COPC Name	CAS Number	Avian no-effect oral TRV (mg/kg bw-d) (calculated as test species TRV X UF)
Aluminum compounds	00-01-2	109.7
Antimony compounds	00-01-3	N/D
Arsenic compounds	00-01-4	2.24
Barium compounds	00-01-5	20.8
Beryllium compounds	00-01-6	N/D
Cadmium compounds	00-01-7	1.47
Chromium compounds	00-01-8	2.66
Copper compounds	00-01-9	4.05
Lead compounds	00-02-0	1.63
Manganese compounds	00-02-2	179.0
Mercury compounds	00-02-3	0.45
Nickel compounds	00-02-4	6.71
Selenium compounds	00-02-5	0.4
Silver compounds	00-02-6	2.02
Thallium compounds	00-02-7	0.35
Vanadium compounds	00-02-8	0.344
Zinc compounds	00-02-9	14.5
PCB Mixture (non-dioxin like, 5+ chlorines)	00-07-2	0.09
Cobalt compounds	00-15-3	7.61
m,p-Xylene	00-15-5	N/D
Composite TOE - Volatile	00-16-3	17.2
Composite TOE - Semivolatile	00-16-4	0.5912
Composite TOE - Nonvolatile	00-16-5	0.001626
Boron compounds	00-16-6	28.8
Tin compounds	00-16-9	6.8
Carbon tetrachloride	56-23-5	N/D
Benzoic acid	65-85-0	N/D
Acetone	67-64-1	52.0
Chloroform	67-66-3	N/D
Benzene	71-43-2	N/D
Methyl bromide	74-83-9	N/D
Methyl chloride	74-87-3	N/D
Methyl iodide	74-88-4	N/D
Bromoethane	74-96-4	N/D
Bromochloromethane	74-97-5	N/D
Ethyl chloride	75-00-3	N/D
Vinyl chloride	75-01-4	N/D

COPC Name	CAS Number	Avian no-effect oral TRV (mg/kg bw-d) (calculated as test species TRV X UF)
Dichloromethane	75-09-2	N/D
Carbon disulfide	75-15-0	N/D
Tribromomethane	75-25-2	N/D
Bromodichloromethane	75-27-4	N/D
1,1-Dichloroethylene	75-35-4	N/D
Trichlorofluoromethane	75-69-4	N/D
Dichlorodifluoromethane	75-71-8	N/D
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	N/D
Methyl ethyl ketone	78-93-3	N/D
Trichloroethylene	79-01-6	N/D
Diethyl phthalate	84-66-2	N/D
Dibutyl phthalate	84-74-2	0.11
Naphthalene	91-20-3	N/D
2-Methylnaphthalene	91-57-6	N/D
2-Xylene	95-47-6	N/D
o-Cresol	95-48-7	N/D
1,2-Dichlorobenzene	95-50-1	N/D
Ethylbenzene	100-41-4	N/D
Styrene	100-42-5	N/D
Benzyl alcohol	100-51-6	N/D
Benzaldehyde	100-52-7	N/D
1,4-Dichlorobenzene	106-46-7	N/D
GB	107-44-8	N/D
Vinyl acetate	108-05-4	N/D
Methyl isobutyl ketone	108-10-1	1.0
Toluene	108-88-3	N/D
Chlorobenzene	108-90-7	N/D
n-Hexane	110-54-3	N/D
Bis(2-ethylhexyl)phthalate	117-81-7	1.1
2,4,6-Trinitrotoluene	118-96-7	0.7
2,4-Dinitrotoluene	121-14-2	0.1
Chlorodibromomethane	124-48-1	N/D
Dimethylphthalate	131-11-3	N/D
Sulfur mustard (or H/HD)	505-60-2	N/D
Xylene (mixed)	1330-20-7	N/D
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	0.000014
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	0.14
Mercury	7439-97-6	N/D
Sulfur dioxide	7446-09-5	N/D

COPC Name	CAS Number	Avian no-effect oral TRV (mg/kg bw-d) (calculated as test species TRV X UF)
Mercuric chloride	7487-94-7	0.45
Hydrochloric acid	7647-01-0	N/D
Phosphoric acid	7664-38-2	N/D
Hydrofluoric acid	7664-39-3	N/D
Chlorine	7782-50-5	N/D
cis-1,3-Dichloropropene	10061-01-5	N/D
trans-1,3-Dichloropropene	10061-02-6	N/D
Nitrogen dioxide	10102-44-0	N/D
HexaCDD, 1,2,3,7,8,9-	19408-74-3	N/D
Methyl mercury	22967-92-6	0.068
2,3',4,4',5-Pentachlorobiphenyl	31508-00-6	1.4
3,3',4,4'-Tetrachlorobiphenyl	32598-13-3	0.00028
2,3,3',4,4'-Pentachlorobiphenyl	32598-14-4	0.14
HeptaCDD, 1,2,3,4,6,7,8-	35822-46-9	N/D
2,3,3',4,4',5-Hexachlorobiphenyl	38380-08-4	0.14
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	0.14
HexaCDD, 1,2,3,4,7,8-	39227-28-6	N/D
2,3,4,5,3',4',5'-Heptachlorobiphenyl	39635-31-9	1.4
PentaCDD, 1,2,3,7,8-	40321-76-4	N/D
VX	50782-69-9	N/D
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	0.000001
2,3',4,4',5,5'-Hexachlorobiphenyl	52663-72-6	1.4
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	0.0014
PentaCDF, 2,3,4,7,8-	57117-31-4	N/D
PentaCDF, 1,2,3,7,8-	57117-41-6	N/D
HexaCDF, 1,2,3,6,7,8-	57117-44-9	N/D
3,4,5,3',4'-Pentachlorobiphenyl	57465-28-8	0.00014
HexaCDD, 1,2,3,6,7,8-	57653-85-7	N/D
HexaCDF, 2,3,4,6,7,8-	60851-34-5	N/D
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	0.0014
2,3,3',4,4',5'-Hexachlorobiphenyl	69782-90-7	0.14
3,4,4',5-Tetrachlorobiphenyl	70362-50-4	0.00014
HexaCDF, 1,2,3,4,7,8-	70648-26-9	N/D
HexaCDF, 1,2,3,7,8,9-	72918-21-9	N/D
EA 2192	73207-98-4	N/D
2,3,4,4'5-Pentachlorobiphenyl	74472-37-0	0.14

Appendix P – Feb 2008 HHRA Modificatons

Review of Current Risk Assessment Refinements to the Army Feb 2008 Health Risk Assessment for the UMCDF

The purpose of this handout is to update the USACHPPM February 2008 HRA report with several technical refinements and to also address the health risks associated with the unknown portion of the total organic emissions (TOE). The following sections address each of these issues.

1. Agent Emission Rate Refinements

In the Feb 2008 HRA, agent emissions were assumed to be equal to be 20 percent of the allowable stack concentration from the permit. However, site data demonstrates that actual measured emissions have been less than this assumed emission rate. Therefore, agent emissions were reduced based on actual measured data.

For this HRA refinement, the GB and VX new emission rates were set to the highest detection limit recorded at UMCDF and HD emission rates were set to the highest detection limit reported to date in the TOCDF agent trial burns. The revised agent emission rates are presented in Table 1. This refinement results in the following changes, as compared to the original assumptions in the Feb 2008 HRA.

- Common stack, BRA stack GB and VX emissions -- 300 times less than original
- Common stack, BRA stack HD emissions -- 55 times less than original
- MDB HVC and LAB HVC GB and VX emissions -- 60 times less than original
- MDB HVC and LAB HVC HD emissions -- 1.1 times less than original

2. Spent Carbon Adjustment

In the Feb HRA, the emission rates for the DFS during the Closure Campaign were adjusted using a common stack adjustment factor of 0.0733 (HRA Volume 2, Appendix J, Exhibit 2). This factor was based on the estimation that 706,035 lbs of spent carbon will process in the DFS during that campaign (HRA Volume 2, Appendix C, Tables 5 and 6). However, the actual amount of spent carbon to be processed will be lower. Based on permit actions to ship agent free carbon and limiting the HVAC carbon change out and removal of the ACS, the new spent carbon estimate is 55,320 lbs.

For this HRA refinement, the DFS Closure Secondary Waste adjustment factor for the common stack was changed from 0.0733 to 0.00574. The following equations provide the recalculation.

Equation1

$$(2\ beds \times 9\ filters \times 48\ trays \times 55\ lbs\ spent\ carbon) + 6{,}200\ lbs\ ACS\ filter\ carbon + 1600\ lbs\ mask\ carbon\ filters$$
$$= 55{,}320\ lbs\ spent\ carbon$$

Equation 2

$$\frac{55{,}320\ lbs\ spent\ carbom}{550\ lb/hr \times 17{,}520\ hrs} = 0.00574$$

3. Nonuse of the BRA during the HD and Closure Campaigns

In the Feb HRA, health risk estimates were generated in two ways, (1) assumed that the BRA would operate during all agent campaigns and the secondary waste closure campaign, and (2) assuming that the BRA was not operating during any campaign. This was done because a potential health risk concern for one of the hypothetical exposure scenarios was identified for mercury resulting from emissions from the BRA during the HD campaign. However, the removal of the BRA for all campaigns (scenario #2 above) was an efficient HRA model run for a quick "what-if" scenario, but this does not directly estimate health risks associated with removal of the BRA for only the HD and Closure Campaigns.

For this HRA refinement, the model was constructed to assume that the BRA would operate during the GB and VX campaigns but not during the HD and Closure campaigns.

4. HRA Results based on Refinements

All the refinements discussed above were incorporated into a new HRA model run. For comparison purposes, the original Feb HRA results are summarized in Tables 2 and 3. Tables 4 and 5 summarize the refined HRA results.

5. Qualitative Evaluation of the Potential Risk Associated with the Unknown Fraction of the Total Organic Emissions

In the Feb HRA, the risk assessment model was implemented for only the detected chemicals. This approach follows the EPA guidance; however, the EPA guidance recommends that the potential risk associated with the unknown fraction of the total organic emissions be evaluated qualitatively. EPA recognizes that only limited number of organics compounds can that be accurately identified and quantified during laboratory analysis. These unidentified compounds however may still contribute the overall risk and should be considered qualitatively. U.S. EPA has developed the total organic compound (TOE) test to account for the unidentified organic compounds because pre-existing methods do not fully determine the total mass of organics present in stack gas emissions. The TOE test is used in conjunction with identified organic compounds to calculate a TOE Correction Factor.

In order to do this evaluation, CHPPM ran the refined HRA model discussed above but increased the emission rates of each detected chemical using TOE factors from the

emission rate database prepared by the Enviromet. A summary of the TOE correction factors used in this evaluation is presented in Table 6. Tables 7 and 8 present the refined HRA results that include the TOE correction factors.

Table 1. Refined Agent Emission Rates

SubTblNum	Unit	Waste_Treat	COPCNum	COPCName	Max1Hr_Rev2 (g/sec)	Annual_U (g/sec)
1	LIC1	GB	231	Agent: GB	2.60E-09	2.60E-09
1	LIC1	GB	232	Agent: HD	0	0
1	LIC1	GB	233	Agent: VX	0	0
2	LIC1	VX	231	Agent: GB	0	0
2	LIC1	VX	232	Agent: HD	0	0
2	LIC1	VX	233	Agent: VX	2.60E-09	2.60E-09
3	LIC1	HD	231	Agent: GB	0	0
3	LIC1	HD	232	Agent: HD	1.43E-06	1.43E-06
3	LIC1	HD	233	Agent: VX	0	0
4	LIC2	GB	231	Agent: GB	2.60E-09	2.60E-09
4	LIC2	GB	232	Agent: HD	0	0
4	LIC2	GB	233	Agent: VX	0	0
5	LIC2	VX	231	Agent: GB	0	0
5	LIC2	VX	232	Agent: HD	0	0
5	LIC2	VX	233	Agent: VX	2.60E-09	2.60E-09
6	LIC2	HD	231	Agent: GB	0	0
6	LIC2	HD	232	Agent: HD	1.43E-06	1.43E-06
6	LIC2	HD	233	Agent: VX	0	0
7	MPF	GB	231	Agent: GB	3.90E-09	3.90E-09
7	MPF	GB	232	Agent: HD	0	0
7	MPF	GB	233	Agent: VX	0	0
8	MPF	VX	231	Agent: GB	0	0
8	MPF	VX	232	Agent: HD	0	0
8	MPF	VX	233	Agent: VX	3.90E-09	3.90E-09
9	MPF	HD	231	Agent: GB	0	0
9	MPF	HD	232	Agent: HD	2.15E-06	2.15E-06
9	MPF	HD	233	Agent: VX	0	0
10	DFS	GB	231	Agent: GB	7.75E-09	7.75E-09
10	DFS	GB	232	Agent: HD	0	0
10	DFS	GB	233	Agent: VX	0	0
11	DFS	VX	231	Agent: GB	0	0
11	DFS	VX	232	Agent: HD	0	0
11	DFS	VX	233	Agent: VX	7.75E-09	7.75E-09
12	MPF	SW_Comb	231	Agent: GB	3.90E-09	3.90E-09
12	MPF	SW_Comb	232	Agent: HD	2.15E-06	2.15E-06
12	MPF	SW_Comb	233	Agent: VX	3.90E-09	3.90E-09
13	LIC_Closr	SW_Max	231	Agent: GB	2.60E-09	2.60E-09
13	LIC_Closr	SW_Max	232	Agent: HD	1.43E-06	1.43E-06
13	LIC_Closr	SW_Max	233	Agent: VX	2.60E-09	2.60E-09
14	MPF_Closr	SW_NonC_Max	231	Agent: GB	3.90E-09	3.90E-09
14	MPF_Closr	SW_NonC_Max	232	Agent: HD	2.15E-06	2.15E-06
14	MPF_Closr	SW_NonC_Max	233	Agent: VX	3.90E-09	3.90E-09

SubTblNum	Unit	Waste_Treat	COPCNum	COPCName	Max1Hr_Rev2 (g/sec)	Annual_U (g/sec)
15	DFS_Closr	SW_Carb	231	Agent: GB	7.75E-09	7.75E-09
15	DFS_Closr	SW_Carb	232	Agent: HD	4.26E-06	4.26E-06
15	DFS_Closr	SW_Carb	233	Agent: VX	7.75E-09	7.75E-09
16	BRA	Brine	231	Agent: GB	2.17E-08	2.17E-08
16	BRA	Brine	232	Agent: HD	1.19E-05	1.19E-05
16	BRA	Brine	233	Agent: VX	2.17E-08	2.17E-08
17	MDB_HVC	ALL_Agents	231	Agent: GB	4.81E-08	4.81E-08
17	MDB_HVC	ALL_Agents	232	Agent: HD	2.65E-05	2.65E-05
17	MDB_HVC	ALL_Agents	233	Agent: VX	4.81E-08	4.81E-08
18	LAB_HVC	ALL_Agents	231	Agent: GB	6.80E-09	6.80E-09
18	LAB_HVC	ALL_Agents	232	Agent: HD	3.74E-06	3.74E-06
18	LAB_HVC	ALL_Agents	233	Agent: VX	6.80E-09	6.80E-09

Table 2. Summary of Original Feb 2008 HRA Results: Human Health Estimates

Human Health Risk Assessment Results, All campaigns, All emission sources

Highest estimated result for each result type (**green font**) or all results indicating potential for adverse human health impacts (***italicized, bolded, and red font***). The **green** risk estimates meet the traditional risk management targets and the ***red*** risk estimates do not.

Population or Community	Result Type	Result Value	Target Level	COPC(s) Contributing Most to Result	Exposure Pathway(s) Contributing Most to Result	Emission Source(s) Contributing Most to Result
Native American Adults	Excess Lifetime Cancer Risk (Human)	**5E-07**	**≤ 1E - 05**	*Mustard (or HD/HT) (76.9)	Ambient Air Inhalation (68.5%)	BRA (70.1%)
Native American Adults	Chronic Noncarcinogenic Hazard Index (Human)	***0.34 (unitless)***	**≤ 0.25**	*VX (54.8%) Methyl Mercury (24.3%)	Gamefish Meat Ingestion (44.6%) Protected Above Ground Produce Ingestion (15.0%) Drinking Water Ingestion (14.2%)	BRA (69.3%)
Native American Adults Mothers	Chronic Noncarcinogenic Hazard Index (Human)	***0.34 (unitless)***	**≤ 0.25**	*VX (54.8%) Methyl Mercury (24.3%)	Gamefish Meat Ingestion (44.6%) Protected Above Ground Produce Ingestion (15.0%) Drinking Water Ingestion (14.2%)	BRA (69.3%)
Native American Children	Chronic Noncarcinogenic Hazard Index (Human)	***0.34 (unitless)***	**≤ 0.25**	*VX (64.9%) Methyl Mercury (16.8%)	Drinking Water Ingestion (32.7%) Gamefish Meat Ingestion (30.9%)	BRA (66.9%)
UMCDF Workers	Acute Noncarcinogenic Hazard Index (Human)	**0.3 (unitless)**	**≤ 1**	Not needed	Not applicable	MPF/upset (81.8%)
All human populations	ODEQ Ambient Benchmark Concentrations (Human)	**0.04 (unitless) (Arsenic compounds)**	**≤ 1**	Not applicable	Not applicable	Not needed
Native American Children	Blood Lead Levels	**1 µg/dL**	**10 µg/dL**	Not applicable	Diet Pathways	Not needed
Native American Infants	Breastmilk Ingestion	**0.007 pg/kg**	**≤ 60 pg/kg**	Not needed	Not needed	Not needed

* COPC not detected but included in the risk assessment at the detection limit (6.50E-06 g/sec for VX and 6.50E-04 g/sec for HD/HT).

Table 3. Summary of Original Feb 2008 HRA Results: Ecological Estimates

Ecological Risk Assessment Results, All campaigns, All emission sources

The table below presents allometrically scaled Hazard Quotients (HQs) for populations/communities which had HQs higher than the target level of 0.25. All allometrically scaled HQs which were less than the target level of 0.25 are highlighted below in **green font**. Results indicating potential for adverse ecological impacts are in ***italicized, bolded, and red font*** (no results fell into this category).

Population or Community	Result Type	Result Value	COPC(s) Contributing Most to Result	Exposure Pathway(s) Contributing Most to Result	Emission Source(s) Contributing Most to Result
Umatilla River Wildlife Population	Carnivorous Birds: Peregrine Falcon (Ecological)	**$HQa^{2,3,7,8\text{-TCDF}}$ =0.085** **HQa^{Bis} =0.029**	2,3,7,8-Tetrachlorodibenzofuran (69.2%) Bis(2-ethylhexyl)phthalate (23.8%)	Omnivorous Birds Ingestion (99.1%)	DFS (96.1%)
	Carnivorous Birds: Spotted Sandpiper (Ecological)	**HQa^{Bis} =0.060** **$HQa^{2,3,7,8\text{-TCDD}}$ =0.057**	Bis(2-ethylhexyl)phthalate (49.8%) 2,3,7,8-Tetrachlorodibenzofuran (46.7%)	Benthic Invertebrates Ingestion (100.0%)	DFS (96.4%)
	Carnivorous Birds: Bald Eagle (Ecological)	**$HQa^{2,3,7,8\text{-TCDD}}$ =0.024**	2,3,7,8-Tetrachlorodibenzofuran (69.2%)	Omnivorous Birds Ingestion (99.4%)	DFS (95.5%)

$HQa^{2,3,7,8\text{-TCDD}}$= Allometrically Scaled Hazard Quotient for 2,3,7,8-Tetrachlorodibenzo-p-dioxin
HQa^{Bis}= Allometrically Scaled Hazard Quotient for Bis(2-ethylhexyl)phthalate

Table 4. Summary of Refined HRA Results: Human Health Estimates

Human Health Risk Assessment Results, All campaigns, All emission sources (No BRA emissions for the HD & Closure Campaigns), no composite Total Organic Emissions (TOE) Surrogate Chemicals, no TOE Correction Factors applied to detected COPCs)

Highest estimated result for each result type (green font) or all results indicating potential for adverse human health impacts (***italicized, bolded, and red font***)

Population or Community	Result Type	Result Value	COPC(s) Contributing Most to Result	Exposure Pathway(s) Contributing Most to Result	Emission Source(s) Contributing Most to Result
Native American Adults	Excess Lifetime Cancer Risk (Human)	*1E-07*	PCB Mixture (non-dioxin like, 5+ chlorines) (71.8%)	Gamefish Meat Ingestion (78.3%) Ambient Air Inhalation (19.1%)	MPF (65.1%) DFS (13.8%)
Native American Mother Adults	Excess Lifetime Cancer Risk (Human)	*1E-07*	PCB Mixture (non-dioxin like, 5+ chlorines) (84.7%)	Gamefish Meat Ingestion (92.6%) Ambient Air Inhalation (3.8%)	MPF (76.3%) DFS (16.2%)
Native American Children	Excess Lifetime Cancer Risk (Human)	*4E-08*	PCB Mixture (non-dioxin like, 5+ chlorines) (68.9%)	Gamefish Meat Ingestion (76.5%) Ambient Air Inhalation (10.8%)	MPF (62.4%) DFS (15.0%)
Offsite Resident Adults	Excess Lifetime Cancer Risk (Human)	*3E-09*	Mustard gas (or HD/HT) (90.1%)	Ambient Air Inhalation (72.1%) Drinking Water Ingestion (20.9%)	MDB HVC (61.7%) BRA (15.8%)
Offsite Resident Children	Excess Lifetime Cancer Risk (Human)	*6E-09*	Mustard gas (or HD/HT) (91.0%)	Ambient Air Inhalation (67.4%) Drinking Water Ingestion (25.8%)	MDB HVC (62.3%) BRA (16.3%)
Umatilla River Subsistence Fisher Adults	Excess Lifetime Cancer Risk (Human)	*2E-08*	PCB Mixture (non-dioxin like, 5+ chlorines) (70.7%)	Gamefish Meat Ingestion (77.4%)	MPF (64.1%) MDB HVC (14.4%)
Umatilla River Subsistence Fisher Children	Excess Lifetime Cancer Risk (Human)	*1E-08*	Mustard gas (or HD/HT) (54.0%)	Gamefish Meat Ingestion (41.4%)	MDB HVC (37.0%) MPF (35.0%)
Columbia River Subsistence Fisher Adults	Excess Lifetime Cancer Risk (Human)	*3E-09*	Mustard gas (or HD/HT) (73.0%)	Ambient Air Inhalation (77.4%)	MDB HVC (50.2%) MPF (19.1%)
Columbia River Subsistence Fisher Children	Excess Lifetime Cancer Risk (Human)	*5E-09*	Mustard gas (or HD/HT) (84.0%)	Ambient Air Inhalation (88.9%)	MDB HVC (57.8%) BRA (15.4%)
Subsistence Farmer Adults	Excess Lifetime Cancer Risk (Human)	*5E-09*	Mustard gas (or HD/HT) (60.9%)	Ambient Air Inhalation (48.8%)	MDB HVC (41.8%)
Subsistence Farmer Children	Excess Lifetime Cancer Risk (Human)	*8E-09*	Mustard gas (or HD/HT) (69.1%)	Ambient Air Inhalation (51.2%) Beef Milk Ingestion (20.8%)	MDB HVC (47.3%)

Population or Community	Result Type	Result Value	COPC(s) Contributing Most to Result	Exposure Pathway(s) Contributing Most to Result	Emission Source(s) Contributing Most to Result
Military Resident Adults	Excess Lifetime Cancer Risk (Human)	*3E-09*	Mustard gas (or HD/HT) (86.9%)	Ambient Air Inhalation (72.6%) Drinking Water Ingestion (21.5%)	MDB HVC (49.1%)
Worker Adults	Excess Lifetime Cancer Risk (Human)	*2E-08*	Mustard gas (or HD/HT) (82.2%)	Ambient Air Inhalation (84.2%)	LAB HVC (47.5%)
Native American Adults	Chronic Noncarcinogenic Hazard Index (Human)	*8.34E-02*	Methyl Mercury (60.9%) Thallium compounds (22.5%)	Gamefish Meat Ingestion (95.3%)	BRA (76.9%)
Native American Mother Adults	Chronic Noncarcinogenic Hazard Index (Human)	*8.34E-02*	Methyl Mercury (60.9%) Thallium compounds (22.5%)	Gamefish Meat Ingestion (95.3%)	BRA (76.9%)
Native American Children	Chronic Noncarcinogenic Hazard Index (Human)	*5.99E-02*	Methyl Mercury (59.8%) Thallium compounds (22.1%)	Gamefish Meat Ingestion (93.6%) Ambient Air Inhalation (2.3%)	BRA (74.9%)
Offsite Resident Adults	Chronic Noncarcinogenic Hazard Index (Human)	*9.98E-04*	*VX (35.1%) *Mustard (or HD/HT) (29.7%)	Ambient Air Inhalation (46.5%) Drinking Water Ingestion (25.1%)	MDB HVC (47.7%)
Offsite Resident Children	Chronic Noncarcinogenic Hazard Index (Human)	*2.54E-03*	*VX (32.6%) *Mustard (or HD/HT) (30.5%)	Ambient Air Inhalation (51.4%) Drinking Water Ingestion (22.0%)	MDB HVC (46.5%)
Umatilla River Subsistence Fisher Adults	Chronic Noncarcinogenic Hazard Index (Human)	*1.22E-02*	Methyl Mercury (58.7%) Thallium compounds (21.6%)	Gamefish Meat Ingestion (91.8%) Ambient Air Inhalation (3.8%)	BRA (73.8%)
Umatilla River Subsistence Fisher Children	Chronic Noncarcinogenic Hazard Index (Human)	*1.04E-02*	Methyl Mercury (48.4%) Thallium compounds (17.9%)	Gamefish Meat Ingestion (75.7%) Ambient Air Inhalation (12.5%)	BRA (63.8%)
Columbia River Subsistence Fisher Adults	Chronic Noncarcinogenic Hazard Index (Human)	*1.11E-03*	Methyl Mercury (24.6%) Chlorine (18.3%)	Ambient Air Inhalation (41.8%) Gamefish Meat Ingestion (34.5%)	BRA (33.0%)
Columbia River Subsistence Fisher Children	Chronic Noncarcinogenic Hazard Index (Human)	*2.20E-03*	*Mustard (or HD/HT) (25.1%) Chlorine (24.5%)	Ambient Air Inhalation (59.3%) Protected Aboveground Produce Ingestion (16.0%)	MDB HVC (35.9%)

Population or Community	Result Type	Result Value	COPC(s) Contributing Most to Result	Exposure Pathway(s) Contributing Most to Result	Emission Source(s) Contributing Most to Result
Subsistence Farmer Adults	Chronic Noncarcinogenic Hazard Index (Human)	*1.30E-03*	*VX (42.9%) *Mustard (or HD/HT) (22.8%)	Ambient Air Inhalation (35.7%) Drinking Water Ingestion (19.2%)	MDB HVC (48.5%)
Subsistence Farmer Children	Chronic Noncarcinogenic Hazard Index (Human)	*3.01E-03*	*VX (38.5%) *Mustard (or HD/HT) (25.8%)	Ambient Air Inhalation (43.4%) Drinking Water Ingestion (18.6%)	MDB HVC (47.5%)
Military Resident Adults	Chronic Noncarcinogenic Hazard Index (Human)	*4.38E-03*	Chlorine (50.9%) *Mustard (or HD/HT) (22.6%)	Ambient Air Inhalation (91.2%) Drinking Water Ingestion (5.7%)	DFS (31.5%)
Worker Adults	Chronic Noncarcinogenic Hazard Index (Human)	*7.50E-03*	Chlorine (55.3%) *Mustard (or HD/HT) (18.7%)	Ambient Air Inhalation (87.5%)	DFS (34.2%)
UMCDF Workers	Acute Noncarcinogenic Hazard Index (Human)	2.10E-01	Nitrogen dioxide (76.2%) Arsenic compounds (20.3%)	Not applicable	MPF/upset (88.1%)
All human populations	ODEQ Ambient Benchmark Concentrations (Human)	0.03 Arsenic compounds	Not applicable	Not applicable	Not needed
Native American Children	Blood Lead Levels	1 µg/dL	Not applicable	Diet Pathways	Not needed
Native American Infants	Breastmilk Ingestion	0.01 pg/kg	Not needed	Not needed	Not needed

* COPC not detected

Table 5. Summary of Refined HRA Results: Ecological Estimates

Ecological Risk Assessment Results, All campaigns, All emission sources (No BRA emissions for the HD & Closure Campaigns), no composite Total Organic Emissions (TOE) Surrogate Chemicals, no TOE Correction Factors applied to detected COPCs)

The table below presents allometrically scaled Hazard Quotients (HQs) for populations and communities which had HQs higher than the target level of 0.25. All allometrically scaled HQs which were less than the target level of 0.25 are highlighted below in **green font**.

Population or Community	Result Type	Result Value	COPC(s) Contributing Most to Result	Exposure Pathway Contributing Most to Result	Emission Source(s) Contributing Most to Result
Umatilla River Wildlife Population	Carnivorous Birds: Peregrine Falcon (Ecological)	$HQa^{2,3,7,8\text{-}TCDF}$=0.0854 HQa^{Bis} =0.0293	2,3,7,8-Tetrachlorodibenzofuran (62.9%) Bis(2-ethylhexyl)phthalate (31.3%)	Omnivorous Birds Ingestion (99.1%)	DFS (96.1%)
	Carnivorous Birds: Spotted Sandpiper (Ecological)	HQa^{Bis} =0.0603 $HQa^{2,3,7,8\text{-}TCDF}$=0.0566	Bis(2-ethylhexyl)phthalate (59.0%) 2,3,7,8-Tetrachlorodibenzofuran (38.1%)	Benthic Invertebrates Ingestion (100.0%)	DFS (96.4%)
	Carnivorous Birds: Bald Eagle (Ecological)	$HQa^{2,3,7,8\text{-}TCDF}$=0.024	2,3,7,8-Tetrachlorodibenzofuran (62.9%)	Omnivorous Birds Ingestion (99.5%)	DFS (95.6%)

$HQa^{2,3,7,8\text{-}TCDF}$= Allometrically Scaled Hazard Quotient for 2,3,7,8-Tetrachlorodibenzofuran
HQa^{Bis}= Allometrically Scaled Hazard Quotient for Bis(2-ethylhexyl)phthalate

Table 6. Summary of TOE factors for Detected Substance by Table Number / Unit / Waste Treatment

Table Number	Unit	Waste Treatment	Max TOE	Min TOE	Avg TOE	Standard Deveation	Variance
ST 1	LIC1	GB	18.19	1	13.17	7.8	61.6
ST 2	LIC1	VX	153.45	1	108.93	69.6	4,847.7
ST 3	LIC1	HD	13.35	1	9.74	5.6	31.8
ST 4	LIC2	GB	50.12	1	35.78	22.4	503.3
ST 5	LIC2	VX	153.45	1	108.93	69.6	4,847.7
ST 6	LIC2	HD	13.35	1	9.74	5.6	31.8
ST 7	MPF	GB	32.06	1	22.99	14.2	201.2
ST 8	MPF	VX	1.00	1	1.00	0	0.0
ST 9	MPF	HD	28.51	1	20.47	12.6	157.8
ST 10	DFS	GB	15.86	1	11.52	6.8	46.1
ST 11	DFS	VX	256.35	1	181.78	116.6	13,600.8
ST 12	MPF	SW_Comb	16.64	1	12.07	7.1	51.0
ST 13	LIC_Closr	SW_Max	1.00	1	1.00		
ST 14	MPF_Closr	SW_NonC_Max	1.00	1	1.00		
ST 15	DFS_Closr	SW_Carb	1.00	1	1.00	0	0
ST 16	BRA	Brine	1.00	1	1.00	0	0
ST 17	MDB_HVC	ALL_Agents	1.00	1	1.00	0	0
ST 18	LAB_HVC	ALL_Agents	1.00	1	1.00	0	0

Table 7. Summary of Refined HRA Results with the TOE Correction Factor: Human Health Estimates

Human Health Risk Assessment Results, All campaigns, All emission sources (No BRA emissions for the HD campaign & Closure), no composite Total Organic Emissions (TOE) Chemicals of Potential Concern (COPCs), TOE Factors applied to detected COPCs.

Highest estimated result for each result type (green font) or all results indicating potential for adverse human health impacts (***italicized, bolded, and red font***)

Population or Community	Result Type	Result Value	COPC(s) Contributing Most to Result	Exposure Pathway(s) Contributing Most to Result	Emission Source(s) Contributing Most to Result
Native American Adults	Excess Lifetime Cancer Risk (Human)	*7E-06*	PCB Mixture (non-dioxin like, 5+ chlorines) (62.7%)	Gamefish Meat Ingestion (94.7%) Wild Game Ingestion (2.3%)	DFS (75.1%) MPF (23.5%)
Native American Mother Adults	Excess Lifetime Cancer Risk (Human)	*6E-06*	PCB Mixture (non-dioxin like, 5+ chlorines) (62.6%)	Gamefish Meat Ingestion (94.9%) Wild Game Ingestion (2.6%)	DFS (75.5%) MPF (23.4%)
Native American Children	Excess Lifetime Cancer Risk (Human)	*2E-06*	PCB Mixture (non-dioxin like, 5+ chlorines) (56.6%)	Gamefish Meat Ingestion (86.5%) Beef Milk Ingestion (6.8%)	DFS (77.4%) MPF (21.2%)
Offsite Resident Adults	Excess Lifetime Cancer Risk (Human)	*3E-08*	2,3,7,8-Tetrachlorodibenzofuran (62.0%)	Bathing Dermal Contact (59.5%) Ambient Air Inhalation (18.8%)	DFS (85.6%) MDB HVC (7.3%)
Offsite Resident Children	Excess Lifetime Cancer Risk (Human)	*4E-08*	2,3,7,8-Tetrachlorodibenzofuran (52.1%)	Bathing Dermal Contact (52.2%) Ambient Air Inhalation (22.2%)	DFS (82.8%) MDB HVC (9.3%)
Umatilla River Subsistence Fisher Adults	Excess Lifetime Cancer Risk (Human)	*7E-07*	PCB Mixture (non-dioxin like, 5+ chlorines) (63.2%)	Gamefish Meat Ingestion (95.8%)	DFS (74.9%) MPF (23.6%)
Umatilla River Subsistence Fisher Children	Excess Lifetime Cancer Risk (Human)	*3E-07*	PCB Mixture (non-dioxin like, 5+ chlorines) (56.4%)	Gamefish Meat Ingestion (85.4%)	DFS (75.8%) MPF (21.2%)
Columbia River Subsistence Fisher Adults	Excess Lifetime Cancer Risk (Human)	*4E-08*	PCB Mixture (non-dioxin like, 5+ chlorines) (55.7%)	Gamefish Meat Ingestion (77.6%)	DFS (72.4%) MPF (21.1%)

Population or Community	Result Type	Result Value	COPC(s) Contributing Most to Result	Exposure Pathway(s) Contributing Most to Result	Emission Source(s) Contributing Most to Result
Columbia River Subsistence Fisher Children	Excess Lifetime Cancer Risk (Human)	*4E-08*	PCB Mixture (non-dioxin like, 5+ chlorines) (38.1%)	Gamefish Meat Ingestion (52.3%)	DFS (72.4%) MPF (14.8%)
Subsistence Farmer Adults	Excess Lifetime Cancer Risk (Human)	*4E-07*	2,3,7,8-Tetrachlorodibenzofuran (94.4%)	Beef Milk Ingestion (69.4%)	DFS (97.5%)
Subsistence Farmer Children	Excess Lifetime Cancer Risk (Human)	*5E-07*	2,3,7,8-Tetrachlorodibenzofuran (93.8%)	Beef Milk Ingestion (81.9%) Beef Meat Ingestion (8.5%)	DFS (97.5%)
Military Resident Adults	Excess Lifetime Cancer Risk (Human)	*2E-08*	2,3,7,8-Tetrachlorodibenzofuran (49.1%)	Ambient Air Inhalation (44.9%) Bathing Dermal Contact (37.6%)	DFS (83.5%)
Worker Adults	Excess Lifetime Cancer Risk (Human)	*2E-07*	2,3,7,8-Tetrachlorodibenzofuran (53.1%)	Ambient Air Inhalation (52.6%)	DFS (85.9%)
Native American Adults	Chronic Noncarcinogenic Hazard Index (Human)	***4.61E-01***	PCB Mixture (non-dioxin like, 5+ chlorines) (83.4%) Methyl Mercury (11.0%)	Gamefish Meat Ingestion (98.7%)	DFS (52.4%)
Native American Mother Adults	Chronic Noncarcinogenic Hazard Index (Human)	***4.61E-01***	PCB Mixture (non-dioxin like, 5+ chlorines) (83.4%) Methyl Mercury (11.0%)	Gamefish Meat Ingestion (98.7%)	DFS (52.4%)
Native American Children	Chronic Noncarcinogenic Hazard Index (Human)	***3.27E-01***	PCB Mixture (non-dioxin like, 5+ chlorines) (83.0%) Methyl Mercury (11.0%)	Gamefish Meat Ingestion (98.0%) Drinking Water Ingestion (0.5%)	DFS (52.4%)
Offsite Resident Adults	Chronic Noncarcinogenic Hazard Index (Human)	*1.62E-03*	*VX (21.6%) *Mustard (or HD/HT) (18.3%)	Ambient Air Inhalation (32.8%) Drinking Water Ingestion (19.9%)	DFS (41.4%)

Population or Community	Result Type	Result Value	COPC(s) Contributing Most to Result	Exposure Pathway(s) Contributing Most to Result	Emission Source(s) Contributing Most to Result
Offsite Resident Children	Chronic Noncarcinogenic Hazard Index (Human)	*3.98E-03*	*VX (20.7%) *Mustard (or HD/HT) (19.4%)	Ambient Air Inhalation (37.6%) Drinking Water Ingestion (18.1%)	DFS (39.9%)
Umatilla River Subsistence Fisher Adults	Chronic Noncarcinogenic Hazard Index (Human)	*6.59E-02*	PCB Mixture (non-dioxin like, 5+ chlorines) (82.6%) Methyl Mercury (10.8%)	Gamefish Meat Ingestion (97.5%) Ambient Air Inhalation (0.8%)	DFS (52.3%)
Umatilla River Subsistence Fisher Children	Chronic Noncarcinogenic Hazard Index (Human)	*4.92E-02*	PCB Mixture (non-dioxin like, 5+ chlorines) (78.5%) Methyl Mercury (10.2%)	Gamefish Meat Ingestion (91.9%) Ambient Air Inhalation (3.0%)	DFS (51.6%)
Columbia River Subsistence Fisher Adults	Chronic Noncarcinogenic Hazard Index (Human)	*5.01E-03*	PCB Mixture (non-dioxin like, 5+ chlorines) (72.9%) Methyl Mercury (5.4%)	Gamefish Meat Ingestion (78.4%) Ambient Air Inhalation (10.6%)	DFS (54.3%)
Columbia River Subsistence Fisher Children	Chronic Noncarcinogenic Hazard Index (Human)	*5.55E-03*	PCB Mixture (non-dioxin like, 5+ chlorines) (48.0%) *Mustard (or HD/HT) (10.0%)	Gamefish Meat Ingestion (49.9%) Ambient Air Inhalation (27.0%)	DFS (48.9%)
Subsistence Farmer Adults	Chronic Noncarcinogenic Hazard Index (Human)	*2.54E-03*	PCB Mixture (non-dioxin like, 5+ chlorines) (25.7%) *VX (22.0%)	Beef Milk Ingestion (22.9%) Ambient Air Inhalation (21.0%)	DFS (44.3%)
Subsistence Farmer Children	Chronic Noncarcinogenic Hazard Index (Human)	*5.34E-03*	*VX (21.7%) PCB Mixture (non-dioxin like, 5+ chlorines) (20.6%)	Ambient Air Inhalation (28.0%) Beef Milk Ingestion (18.1%)	DFS (42.3%)
Military Resident Adults	Chronic Noncarcinogenic Hazard Index (Human)	*5.89E-03*	Chlorine (37.3%) *Mustard (or HD/HT) (16.8%)	Ambient Air Inhalation (83.4%) Drinking Water Ingestion (5.5%)	DFS (46.7%)
Worker Adults	Chronic Noncarcinogenic	*1.03E-02*	Chlorine (39.7%) Methyl bromide (15.5%)	Ambient Air Inhalation (79.9%)	DFS (49.9%)

Population or Community	Result Type	Result Value	COPC(s) Contributing Most to Result	Exposure Pathway(s) Contributing Most to Result	Emission Source(s) Contributing Most to Result
	Hazard Index (Human)				
UMCDF Workers	Acute Noncarcinogenic Hazard Index (Human)	8.83E-01	Bis(2-ethylhexyl)phthalate (59.1%) Chloroform (14.5%)	Not applicable	DFS/upset (94.6%)
All human populations	ODEQ Ambient Benchmark Concentrations (Human)	0.07 Benzene	Not applicable	Not applicable	Not needed
Native American Children	Blood Lead Levels	1 µg/dL	Not applicable	Diet Pathways	Not needed
Native American Infants	Breastmilk Ingestion	1.81 pg/kg	Not needed	Not needed	Not needed

* COPC not detected

Table 8. Summary of Refined HRA Results with the TOE Correction Factor: Ecological Estimates

Ecological Risk Assessment Results, All campaigns, All emission sources (No BRA emissions for the HD campaign & Closure), no composite Total Organic Emissions (TOE) Chemicals of Potential Concern (COPCs), TOE Factors applied to detected COPCs.

The table below presents allometrically scaled HQs for populations and communities which had HQs higher than the target level of 0.25. All allometrically scaled HQs which were less than the target level of 0.25 are highlighted below in **green font**; results indicating potential for adverse ecological impacts are in ***bolded, red font***.

Population or Community	Result Type	Result Value	COPC(s) Contributing Most to Result	Exposure Pathway Contributing Most to Result	Emission Source(s) Contributing Most to Result
Columbia River Wildlife Population	Carnivorous Birds: Peregrine Falcon (Ecological)	**$HQa^{2,3,7,8\text{-TCDF}}$=1.0**	2,3,7,8-Tetrachlorodibenzofuran (71.8%)	Omnivorous Birds Ingestion (99.1%)	DFS (99.0%)
	Carnivorous Birds: Spotted Sandpiper (Ecological)	**$HQa^{2,3,7,8\text{-TCDF}}$=0.6** **$HQa^{Bis}$=0.5**	2,3,7,8-Tetrachlorodibenzofuran (52.6%) Bis(2-ethylhexyl)phthalate (41.7%)	Benthic Invertebrates Ingestion (100.0%)	DFS (99.2%)
	Carnivorous Birds: Bald Eagle (Ecological)	**$HQa^{2,3,7,8\text{-TCDF}}$=0.3**	2,3,7,8-Tetrachlorodibenzofuran (71.8%)	Omnivorous Birds Ingestion (99.8%)	DFS (99.0%)
	Omnivorous Birds: Mallard Duck (Ecological)	$HQa^{2,3,7,8\text{-TCDF}}$=0.0818 HQa^{Bis}=0.0648	2,3,7,8-Tetrachlorodibenzofuran (44.2%) Bis(2-ethylhexyl)phthalate (50.9%)	Benthic Invertebrates Ingestion (100.0%)	DFS (99.2%)
	Omnivorous Mammals: Raccoon (Ecological)	$HQa^{2,3,7,8\text{-TCDF}}$=0.056	2,3,7,8-Tetrachlorodibenzofuran (69.7%)	Benthic Invertebrates Ingestion (99.9%)	DFS (98.0%)
Umatilla River Wildlife Population	Carnivorous Birds: Peregrine Falcon (Ecological)	**$HQa^{2,3,7,8\text{-TCDF}}$=21.3** **$HQa^{Bis}$=7.1** **$HQa^{2,3,4,4',5\text{-PCB}}$=1.7**	2,3,7,8-Tetrachlorodibenzofuran (70.7%) Bis(2-ethylhexyl)phthalate (23.6%) 2,3,4,4',5-Pentachlorobiphenyl (5.6%)	Omnivorous Birds Ingestion (99.1%)	DFS (99.1%)
	Carnivorous Birds: Spotted Sandpiper (Ecological)	**HQa^{Bis}=14.8** **$HQa^{2,3,7,8\text{-TCDF}}$=14.2** **$HQa^{2,3,4,4',5\text{-PCB}}$=0.9**	Bis(2-ethylhexyl)phthalate (49.5%) 2,3,7,8-Tetrachlorodibenzofuran (47.5%) 2,3,4,4',5-Pentachlorobiphenyl	Benthic Invertebrates Ingestion (100.0%)	DFS (99.2%)

Population or Community	Result Type	Result Value	COPC(s) Contributing Most to Result	Exposure Pathway Contributing Most to Result	Emission Source(s) Contributing Most to Result
			(3.0%)		
	Carnivorous Birds: Bald Eagle (Ecological)	**$HQa^{2,3,7,8\text{-}TCDF}$=6.0** **$HQa^{Bis}$=2.0** **$HQa^{2,3,4,4',5\text{-}PCB}$=0.5**	2,3,7,8-Tetrachlorodibenzofuran (70.7%) Bis(2-ethylhexyl)phthalate (23.6%) 2,3,4,4',5-Pentachlorobiphenyl (5.6%)	Omnivorous Birds Ingestion (99.9%)	DFS (99.1%)
	Omnivorous Birds: Mallard Duck (Ecological)	**HQa^{Bis}=1.9** **$HQa^{2,3,7,8\text{-}TCDF}$=1.8**	Bis(2-ethylhexyl)phthalate (49.5%) 2,3,7,8-Tetrachlorodibenzofuran (47.5%)	Benthic Invertebrates Ingestion (100.0%)	DFS (99.2%)
	Carnivorous Birds: Great Blue Heron (Ecological)	HQa^{PCB}= 0.0294	PCB Mixture (non-dioxin like, 5+ chlorines) (79.0%)	Trophic Level 4 Fish Ingestion (84.9%)	DFS (68.9%)
	Omnivorous Mammals: Raccoon (Ecological)	**$HQa^{2,3,7,8\text{-}TCDF}$=1.2** **$HQa^{2,3,4,4',5\text{-}PCB}$=0.3**	2,3,7,8-Tetrachlorodibenzofuran (76.8%) 2,3,4,4',5-Pentachlorobiphenyl (16.0%)	Benthic Invertebrates Ingestion (99.9%)	DFS (98.3%)
	Carnivorous Mammals: Otter (Ecological)	**$HQa^{2,3,7,8\text{-}TCDF}$=0.5**	2,3,7,8-Tetrachlorodibenzofuran (76.8%)	Benthic Invertebrates Ingestion (92.8%)	DFS (97.4%)
Depot Collocation Wildlife Population	Carnivorous Birds: Western Burrowing Owl (Ecological)	**HQa^{Bis}=4.5**	Bis(2-ethylhexyl)phthalate (99.8%)	Omnivorous Mammals Ingestion (96.3%)	DFS (99.2%)
	Herbivorous Birds: Mourning Dove (Ecological)	HQa^{Bis}=0.234	Bis(2-ethylhexyl)phthalate (93.9%)	Terrestrial Plants Ingestion (97.6%)	DFS (98.6%)
	Omnivorous Birds: Western Meadowlark (Ecological)	HQa^{Bis}=0.101	Bis(2-ethylhexyl)phthalate (99.1%)	Terrestrial Invertebrates Ingestion (96.5%)	DFS (99.2%)
	Omnivorous Mammals: Deer Mouse (Ecological)	HQa^{Bis}=0.0797 $HQa^{2,3,7,8\text{-}TCDF}$=0.0216	Bis(2-ethylhexyl)phthalate (73.13%) 2,3,7,8-Tetrachlorodibenzofuran (19.85%)	Terrestrial Invertebrates Ingestion (76.0%)	DFS (96.2%)

$HQa^{2,3,7,8\text{-}TCDF}$= Allometrically Scaled Hazard Quotient for 2,3,7,8-Tetrachlorodibenzofuran
HQa^{Bis}= Allometrically Scaled Hazard Quotient for Bis(2-ethylhexyl)phthalate
$HQa^{2,3,4,4',5\text{-}PCB}$= Allometrically Scaled Hazard Quotient for 2,3,4,4',5-Pentachlorobiphenyl
HQa^{PCB}= Allometrically Scaled Hazard Quotient for PCB Mixture (non-dioxin like, 5+ chlorines)

Appendix Q - Acute Inhalation Exposure Criteria

Table Q-1: Acute Inhalation Exposure Criteria

CAS Number	Compound Name	AIEC (mg/m^3)
67-64-1	Acetone	124
71-43-2	Benzene	1.3
75-27-4	Bromodichloromethane	1
75-25-2	Tribromomethane	1.25
74-83-9	Methyl bromide	3.9
78-93-3	Methyl ethyl ketone	13
75-15-0	Carbon disulfide	6.2
56-23-5	Carbon tetrachloride	1.9
108-90-7	Chlorobenzene	46
75-00-3	Ethyl chloride	307
67-66-3	Chloroform	0.15
74-87-3	Methyl chloride	5
124-48-1	Chlorodibromomethane	1.5
75-71-8	Dichlorodifluoromethane	3750
75-35-4	1,1-Dichloroethylene	62.5
10061-01-5	cis-1,3-Dichloropropene	15
10061-02-6	trans-1,3-Dichloropropene	1.5
100-41-4	Ethylbenzene	125
110-54-3	n-Hexane	375
74-88-4	Methyl iodide	150
75-09-2	Dichloromethane	14
108-10-1	Methyl isobutyl ketone	75
108-88-3	Toluene	37
79-01-6	Trichloroethylene	64
75-69-4	Trichlorofluoromethane	625
108-05-4	Vinyl acetate	23.6
100-42-5	Styrene	21
75-01-4	Vinyl chloride	180
00-15-5	m,p-Xylene	22
95-47-6	2-Xylene	22
1330-20-7	Xylene (mixed)	22
65-85-0	Benzoic acid	3.125
100-51-6	Benzyl alcohol	62.5
100-52-7	Benzaldehyde	3.75
117-81-7	Bis(2-ethylhexyl)phthalate	2.5
84-74-2	Dibutyl phthalate	3.75
95-50-1	1,2-Dichlorobenzene	75
106-46-7	1,4-Dichlorobenzene	34
84-66-2	Diethyl phthalate	3.75
131-11-3	Dimethylphthalate	3.75
121-14-2	2,4-Dinitrotoluene	0.15

CAS Number	Compound Name	AIEC (mg/m^3)
91-57-6	2-Methylnaphthalene	5
95-48-7	o-Cresol	5
91-20-3	Naphthalene	18.75
118-96-7	2,4,6-Trinitrotoluene	1.875
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.000375
3268-87-9	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	0.0025
51207-31-9	2,3,7,8-Tetrachlorodibenzofuran	0.0005
67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.0375
55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.0625
39001-02-0	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	0.001875
00-07-2	PCB Mixture (non-dioxin like, 5+ chlorines)	0.375
32598-13-3	3,3',4,4'-Tetrachlorobiphenyl	0.15
31508-00-6	2,3',4,4',5-Pentachlorobiphenyl	0.15
32598-14-4	2,3,3',4,4'-Pentachlorobiphenyl	0.15
74472-37-0	2,3,4,4'5-Pentachlorobiphenyl	0.15
57465-28-8	3,4,5,3',4'-Pentachlorobiphenyl	0.15
38380-08-4	2,3,3',4,4',5-Hexachlorobiphenyl	0.15
52663-72-6	2,3',4,4',5,5'-Hexachlorobiphenyl	0.15
39635-31-9	2,3,4,5,3',4',5'-Heptachlorobiphenyl	0.15
69782-90-7	2,3,3',4,4',5'-Hexachlorobiphenyl	0.15
70362-50-4	3,4,4',5-Tetrachlorobiphenyl	0.15
00-01-2	Aluminum compounds	3.75
00-01-3	Antimony compounds	0.375
00-01-4	Arsenic compounds	0.00019
00-01-5	Barium compounds	0.375
00-01-6	Beryllium compounds	0.00125
00-16-6	Boron compounds	1.875
00-01-7	Cadmium compounds	0.0075
00-01-8	Chromium compounds	0.563
00-15-3	Cobalt compounds	0.025
00-01-9	Copper compounds	0.1
00-02-0	Lead compounds	0.0375
00-02-2	Manganese compounds	0.75
00-02-3	Mercury compounds	0.0018
00-02-4	Nickel compounds	0.006
7664-38-2	Phosphoric acid	0.75
00-02-5	Selenium compounds	0.15
00-02-6	Silver compounds	0.075
00-02-7	Thallium compounds	0.075
00-16-9	Tin compounds	1.5
00-02-8	Vanadium compounds	0.03
00-02-9	Zinc compounds	7.5
107-44-8	GB	0.0028
505-60-2	Sulfur mustard (or H/HD)	0.003
50782-69-9	VX	0.00017

CAS Number	Compound Name	AIEC (mg/m^3)
7647-01-0	Hydrochloric acid	2.1
7664-39-3	Hydrofluoric acid	0.24
7782-50-5	Chlorine	0.21
10102-44-0	Nitrogen dioxide	0.47
7446-09-5	Sulfur dioxide	0.66
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2500
74-96-4	Ethyl bromide	1500
74-97-5	Chlorobromomethane	750
7439-97-6	Mercury, elemental	0.0018
7487-94-7	Mercuric chloride	0.03125
22967-92-6	Mercury, Methyl	0.00805
00-16-3	Composite Nondetectable Volatile Organics	100 [a]
00-16-4	Composite Nondetectable Semivolatile Organics	3.0 [a]
00-16-5	Composite Nondetectable Nonvolatile Organics	0.2 [a]
73207-98-4	EA 2192	0.00017

a These values are 1000 times used in the January 2008 Ecology and Environment analysis (Ecology and Environment, 2008). The body of their report indicates these larger values (see their Table 3-4), but their model input files showed the smaller values. No explanation was provided in their report for the differences. Independent evaluation of the data used to generate theses estimates indicate the larger values were correct and so were applied in this effort.

Appendix R – Special Case 4 Dioxin/Furan Data

Table R-1: GB Data

CAS Number	Name	Detection Limits, (g/s)			
		UMCDF GB ATB			
		LIC 1	LIC 2	DFS	MPF
40321-76-4	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1.41E-11	8.49E-12	4.54E-11	9.89E-12
39227-28-6	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	9.32E-12	5.76E-12	3.34E-11	5.33E-12
57653-85-7	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	7.91E-12	5.28E-12	2.8E-11	4.88E-12
19408-74-3	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	8.4E-12	5.22E-12	2.97E-11	8.64E-12
35822-46-9	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	1.02E-11	1.25E-11	3.56E-11	7.88E-12
57117-41-6	1,2,3,7,8-Pentachlorodibenzofuran	9.2E-12	5.36E-12	2.26E-11	4.35E-12
57117-31-4	2,3,4,7,8-Pentachlorodibenzofuran	9.33E-12	5.22E-12	2.26E-11	4.22E-12
70648-26-9	1,2,3,4,7,8-Hexachlorodibenzofuran	6.61E-12	3.87E-12	1.95E-11	4.36E-12
57117-44-9	1,2,3,6,7,8-Hexachlorodibenzofuran	6.05E-12	3.49E-12	1.71E-11	4.02E-12
60851-34-5	2,3,4,6,7,8-Hexachlorodibenzofuran	6.59E-12	4.01E-12	1.86E-11	4.38E-12
72918-21-9	1,2,3,7,8,9-Hexachlorodibenzofuran	7.02E-12	4.44E-12	2.14E-11	4.52E-12
32774-16-6	3,3',4,4',5,5'-Hexachlorobiphenyl (169)	7.78E-11	1.17E-10	2.24E-10	1.61E-10
Used for COMSTK Data Table Number >>		*1*	*4*	*10*	*7*

Table R-2: VX Data

CAS Number	Name	Detection Limits, (g/s)			
		UMCDF VX ATB			
		LIC 1	LIC 2	DFS	MPF
40321-76-4	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	3.9E-12	3.9E-12	1.43E-11	9.88E-12
39227-28-6	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	2.36E-12	2.36E-12	1.28E-11	8.42E-12
57653-85-7	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	2.11E-12	2.11E-12	1.13E-11	7.87E-12
19408-74-3	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	1.63E-12	1.63E-12	1E-11	6.86E-12
35822-46-9	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	3.32E-12	3.32E-12	1.61E-11	1.14E-11
57117-41-6	1,2,3,7,8-Pentachlorodibenzofuran	1.87E-12	1.87E-12	1.07E-11	7.39E-12
57117-31-4	2,3,4,7,8-Pentachlorodibenzofuran	1.87E-12	1.87E-12	1.16E-11	7.68E-12
70648-26-9	1,2,3,4,7,8-Hexachlorodibenzofuran	1.97E-12	1.97E-12	1.19E-11	7.41E-12
57117-44-9	1,2,3,6,7,8-Hexachlorodibenzofuran	1.7E-12	1.7E-12	9.19E-12	6.28E-12
60851-34-5	2,3,4,6,7,8-Hexachlorodibenzofuran	2.04E-12	2.04E-12	1.02E-11	7.25E-12
72918-21-9	1,2,3,7,8,9-Hexachlorodibenzofuran	2.23E-12	2.23E-12	1.05E-11	7.31E-12
32774-16-6	3,3',4,4',5,5'-Hexachlorobiphenyl (169)	7.78E-11	1.17E-10	2.24E-10	1.61E-10
Used for COMSTK Data Table Number >>		*2*	*5*	*11*	*8*

Table R-3 HD Data

CAS Number	Name	Detection Limits, (g/s)			
		HD - Used Max of GB and VX Tests			
		LIC 1	LIC 2	DFS	MPF
40321-76-4	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1.41E-11	8.49E-12	4.54E-11	9.89E-12
39227-28-6	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	9.32E-12	5.76E-12	3.34E-11	8.42E-12
57653-85-7	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	7.91E-12	5.28E-12	2.8E-11	7.87E-12
19408-74-3	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	8.4E-12	5.22E-12	2.97E-11	8.64E-12
35822-46-9	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	1.02E-11	1.25E-11	3.56E-11	1.14E-11
57117-41-6	1,2,3,7,8-Pentachlorodibenzofuran	9.2E-12	5.36E-12	2.26E-11	7.39E-12
57117-31-4	2,3,4,7,8-Pentachlorodibenzofuran	9.33E-12	5.22E-12	2.26E-11	7.68E-12
70648-26-9	1,2,3,4,7,8-Hexachlorodibenzofuran	6.61E-12	3.87E-12	1.95E-11	7.41E-12
57117-44-9	1,2,3,6,7,8-Hexachlorodibenzofuran	6.05E-12	3.49E-12	1.71E-11	6.28E-12
60851-34-5	2,3,4,6,7,8-Hexachlorodibenzofuran	6.59E-12	4.01E-12	1.86E-11	7.25E-12
72918-21-9	1,2,3,7,8,9-Hexachlorodibenzofuran	7.02E-12	4.44E-12	2.14E-11	7.31E-12
32774-16-6	3,3',4,4',5,5'-Hexachlorobiphenyl (169)	7.78E-11	1.17E-10	2.24E-10	1.61E-10
Used for COMSTK Data Table Number >>		*3, 13*	*6*	*15*	*9, 14*

Table R-4: MPF Secondary Waste Data

CAS Number	Name	Detection Limits, (g/s)
		UMCDFSW ATB
		MPFsw
40321-76-4	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1.89E-11
39227-28-6	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	1.67E-11
57653-85-7	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	1.6E-11
19408-74-3	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	1.52E-11
35822-46-9	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	1.78E-11
57117-41-6	1,2,3,7,8-Pentachlorodibenzofuran	1.21E-11
57117-31-4	2,3,4,7,8-Pentachlorodibenzofuran	1.17E-11
70648-26-9	1,2,3,4,7,8-Hexachlorodibenzofuran	1.22E-11
57117-44-9	1,2,3,6,7,8-Hexachlorodibenzofuran	1.16E-11
60851-34-5	2,3,4,6,7,8-Hexachlorodibenzofuran	1.24E-11
72918-21-9	1,2,3,7,8,9-Hexachlorodibenzofuran	1.23E-11
32774-16-6	3,3',4,4',5,5'-Hexachlorobiphenyl (169)	2.91E-10
Used for COMSTK Data Table Number >>		*12*

Appendix S – Furnace Upset Methodology

The purpose of this is to propose a different methodology for establishing the upset factors in the Post-RA, rather than the EPA default value. The following is similar to the methodology utilized at TOCDF and ANCDF referenced in Appendix A (Evaluation of the TOCDF Upset Data) of the ANCDF Risk Assessment Report. Appendix A included a 1999 TOCDF report that identified the associated upset criteria and results for 1998. Appendix A also included Addendum 1 which was a similar evaluation conducted by ANCDF to determine the TOCDF upset data for 1999 and 2000.

METHODOLOGY FOR CHARACTERIZING AN UPSET CONDITION			
	LIC	**DFS**	**MPF**
Condition 1 (Organics)	Totalize the amount of time that the CO value (uncorrected for O_2) was greater than 100 ppm when waste (agent and/or SDS) was fed to the LIC and during the 5-minute period after the waste had been cutoff.	Totalize the amount of time that the CO value (uncorrected for O_2) was greater than 100 ppm when waste was fed to the DFS and during the 15-minute period after the waste had been discharged from the heated discharge conveyor.	Totalize the amount of time that the CO value was greater than 100 ppm when waste was treated in the primary chamber (including the discharge airlock) and during the 15-minute period after the waste was discharged from the discharge airlock.
Condition 2 (Metals/PM)	Totalize the time during which any of the three parameters listed below were outside of the permitted limits when waste (agent and/or SDS) was fed to the LIC and during the 5-minute period after the waste had been cutoff. 1) Maximum Primary and Secondary Chamber Temperature 2) Minimum Venturi scrubber brine flow rate 3) Minimum Venturi scrubber differential pressure	Totalize the time during which any of the three parameters listed below were outside of the permitted limits when waste was fed to the DFS and during the 15-minute period after the waste had been discharged from the heated discharge conveyor. 1) Maximum Post-quench exhaust temperature 2) Minimum Venturi scrubber brine flow rate 3) Minimum Venturi scrubber differential pressure	Totalize the time during which any of the three parameters listed below were outside of the permitted limits when waste was treated in the primary chamber (including the discharge airlock) and during the 15-minute period after the waste was discharged from the discharge airlock. 1) Maximum Primary chamber zone temperature 2) Minimum Venturi scrubber brine flow rate 3) Minimum Venturi scrubber differential pressure

Table S-1: UMCDF Upset Factors For 2004

	2004			
	LIC1	**LIC2**	**DFS**	**MPF**
Total Hazardous Waste Processing Time (hrs)	6.17	N/A	250.40	N/A
Organics Upset Condition Total Time (hrs)	0.05	N/A	0.0	N/A
Metals Upset Condition Total Time (hrs)	0.0	N/A	0.0	N/A
Percent Organics Upset Condition Time (%)	0.81	N/A	0.0	N/A
Percent Metals Upset Condition Time (%)	0.0	N/A	0.0	N/A
Upset Condition Emission Rate Multiplier	10.00	10.00	10.00	10.00
Organic Emissions Upset Factor	1.07	N/A	1.00	N/A
Metal Emissions Upset Factor	1.00	N/A	1.00	N/A

Table S-2: UMCDF Upset Factors For 2005

	2005			
	LIC1	**LIC2**	**DFS**	**MPF**
Total Hazardous Waste Processing Time (hrs)	1109.87	N/A	3146.00	62.30
Organics Upset Condition Total Time (hrs)	0.93	N/A	2.42	0.10
Metals Upset Condition Total Time (hrs)	0.21	N/A	0.04	0.10
Percent Organics Upset Condition Time (%)	0.08	0.0	0.08	0.16
Percent Metals Upset Condition Time (%)	0.02	0.0	0.0	0.16
Upset Condition Emission Rate Multiplier	10.00	10.00	10.00	10.00
Organic Emissions Upset Factor	1.01	1.00	1.01	1.01
Metal Emissions Upset Factor	1.00	1.00	1.00	1.01

Table S-3: UMCDF Upset Factors For 2006

	2006			
	LIC1	**LIC2**	**DFS**	**MPF**
Total Hazardous Waste Processing Time (hrs)	1970.84	818.79	6565.30	2774.10
Organics Upset Condition Total Time (hrs)	1.67	3.82	7.72	0.85
Metals Upset Condition Total Time (hrs)	0.34	0.20	0.83	0.85
Percent Organics Upset Condition Time (%)	0.08	0.47	0.12	0.20
Percent Metals Upset Condition Time (%)	0.02	0.02	0.01	0.03
Upset Condition Emission Rate Multiplier	10.00	10.00	10.00	10.00
Organic Emissions Upset Factor	1.01	1.04	1.01	1.02
Metal Emissions Upset Factor	1.00	1.00	1.00	1.00

Table S-4: UMCDF Upset Factors for Combined Years 2004, 2005 and 2006

	3 Year			
	LIC1	**LIC2**	**DFS**	**MPF**
Total Hazardous Waste Processing Time (hrs)	3086.88	818.79	9961.70	2836.40
Organic Upset Condition Total Time (hrs)	2.65	3.82	10.14	0.95
Metal Upset Condition Total Time (hrs)	0.55	0.20	0.87	0.95
Percent Organic Upset Conditions (%)	0.09	0.47	0.10	0.03
Percent Metal Upset Conditions (%)	0.02	0.02	0.01	0.03
Upset Condition Emission Rate Multiplier	10.00	10.00	10.00	10.00
Organic Emissions Upset Factor	1.01	1.04	1.01	1.00
Metal Emissions Upset Factor	1.00	1.00	1.00	1.00

Appendix T – Deposition Rates and Air Concentrations

Table T-1: HHRA Watershed Deposition Rates and Air Concentrations

Parameter	Unit	Stack	Watershed	
			Columbia River	Umatilla River
Average Air Conc'n - Vapor Phase	ug-s/g-m^3	BRASTK	3.30E-03	2.82E-03
Average Air Conc'n - Vapor Phase Hg	ug-s/g-m^3	BRASTK	3.03E-03	2.62E-03
Total Depos. - Particle Phase	s/m^2 year	BRASTK	1.73E-03	2.02E-03
Total Depos. - Particle Bound	s/m^2 year	BRASTK	1.08E-03	1.27E-03
Total Depos. - Vapor Phase	s/m^2 year	BRASTK	5.15E-04	4.81E-04
Total Depos. - Vapor Phase Hg	s/m^2 year	BRASTK	1.10E-03	1.18E-03
Average Wet Depos. - Vapor Phase	s/m^2 year	BRASTK	5.15E-05	4.33E-05
Average Wet Depos. - Vapor Phase Hg	s/m^2 year	BRASTK	2.25E-05	2.03E-05
Average Air Conc'n - Vapor Phase	ug-s/g-m^3	COMSTK	4.60E-03	3.72E-03
Average Air Conc'n - Vapor Phase Hg	ug-s/g-m^3	COMSTK	4.27E-03	3.47E-03
Total Depos. - Particle Phase	s/m^2 year	COMSTK	3.02E-04	2.86E-04
Total Depos. - Particle Bound	s/m^2 year	COMSTK	3.02E-04	2.86E-04
Total Depos. - Vapor Phase	s/m^2 year	COMSTK	6.59E-04	5.78E-04
Total Depos. - Vapor Phase Hg	s/m^2 year	COMSTK	1.40E-03	1.34E-03
Average Wet Depos. - Vapor Phase	s/m^2 year	COMSTK	4.86E-05	4.65E-05
Average Wet Depos. - Vapor Phase Hg	s/m^2 year	COMSTK	2.11E-05	2.08E-05
Average Air Conc'n - Vapor Phase	ug-s/g-m^3	LABSTK	6.84E-03	5.31E-03
Average Air Conc'n - Vapor Phase Hg	ug-s/g-m^3	LABSTK	6.84E-03	5.31E-03
Total Depos. - Particle Phase	s/m^2 year	LABSTK	3.62E-04	2.97E-04
Total Depos. - Particle Bound	s/m^2 year	LABSTK	3.62E-04	2.97E-04
Total Depos. - Vapor Phase	s/m^2 year	LABSTK	7.89E-04	6.64E-04
Total Depos. - Vapor Phase Hg	s/m^2 year	LABSTK	7.89E-04	6.64E-04
Average Wet Depos. - Vapor Phase	s/m^2 year	LABSTK	4.96E-05	4.59E-05
Average Wet Depos. - Vapor Phase Hg	s/m^2 year	LABSTK	4.96E-05	4.59E-05
Average Air Conc'n - Vapor Phase	ug-s/g-m^3	MDBSTK	3.56E-03	3.03E-03
Average Air Conc'n - Vapor Phase Hg	ug-s/g-m^3	MDBSTK	3.56E-03	3.03E-03
Total Depos. - Particle Phase	s/m^2 year	MDBSTK	2.50E-04	2.75E-04
Total Depos. - Particle Bound	s/m^2 year	MDBSTK	2.50E-04	2.75E-04
Total Depos. - Vapor Phase	s/m^2 year	MDBSTK	5.57E-04	5.19E-04
Total Depos. - Vapor Phase Hg	s/m^2 year	MDBSTK	5.57E-04	5.19E-04
Average Wet Depos. - Vapor Phase	s/m^2 year	MDBSTK	4.66E-05	4.50E-05
Average Wet Depos. - Vapor Phase Hg	s/m^2 year	MDBSTK	4.66E-05	4.50E-05

Table T-2: HHRA Water body Deposition Rates and Air Concentrations

Parameter	Unit	Source	Water Body	
			Columbia River	Umatilla River
average air conc'n - vapor phase	ug-s/g-m^3	BRASTK	4.84E-03	2.18E-03
average air conc'n - vapor phase hg	ug-s/g-m^3	BRASTK	4.34E-03	2.09E-03
total depos. - particle phase	s/m^2 year	BRASTK	2.44E-03	3.10E-04
total depos. - particle bound	s/m^2 year	BRASTK	1.52E-03	2.00E-04
total depos. - vapor phase	s/m^2 year	BRASTK	7.52E-04	2.00E-04
total depos. - vapor phase hg	s/m^2 year	BRASTK	1.59E-03	3.00E-04
average air conc'n - vapor phase	ug-s/g-m^3	COMSTK	6.22E-03	1.98E-03
average air conc'n - vapor phase hg	ug-s/g-m^3	COMSTK	5.63E-03	1.87E-03
total depos. - particle phase	s/m^2 year	COMSTK	2.83E-04	1.10E-04
total depos. - particle bound	s/m^2 year	COMSTK	2.83E-04	1.10E-04
total depos. - vapor phase	s/m^2 year	COMSTK	8.56E-04	1.90E-04
total depos. - vapor phase hg	s/m^2 year	COMSTK	1.69E-03	2.90E-04
average air conc'n - vapor phase	ug-s/g-m^3	LABSTK	1.05E-02	1.43E-03
average air conc'n - vapor phase hg	ug-s/g-m^3	LABSTK	1.05E-02	1.43E-03
total depos. - particle phase	s/m^2 year	LABSTK	3.08E-04	1.10E-04
total depos. - particle bound	s/m^2 year	LABSTK	3.08E-04	1.10E-04
total depos. - vapor phase	s/m^2 year	LABSTK	1.03E-03	1.70E-04
total depos. - vapor phase hg	s/m^2 year	LABSTK	1.03E-03	1.70E-04
average air conc'n - vapor phase	ug-s/g-m^3	MDBSTK	5.21E-03	2.32E-03
average air conc'n - vapor phase hg	ug-s/g-m^3	MDBSTK	5.21E-03	2.32E-03
total depos. - particle phase	s/m^2 year	MDBSTK	2.75E-04	1.10E-04
total depos. - particle bound	s/m^2 year	MDBSTK	2.75E-04	1.10E-04
total depos. - vapor phase	s/m^2 year	MDBSTK	8.12E-04	2.00E-04
total depos. - vapor phase hg	s/m^2 year	MDBSTK	8.12E-04	2.00E-04

Table T-3: HHRA Deposition Rates and Air Concentrations for the UMCD Administration Area Evaluation Point

Parameter	Unit	Source			
		BRASTK	**COMSTK**	**LABSTK**	**MDBSTK**
Hourly air concentration - particle phase	ug-s/g-m^3	5.14894	9.54529	24.27305	3.78835
Hourly air concentration - particle bound	ug-s/g-m^3	3.57173	9.54529	24.27305	3.78835
Hourly air concentration - vapor phase	ug-s/g-m^3	3.39438	9.32372	14.9827	3.60946
Hourly air concentration - vapor phase hg	ug-s/g-m^3	3.28591	9.34786	20.64123	3.69995
Air concentration - particle phase	ug-s/g-m^3	0.01224	0.01876	0.04487	0.01426
Air concentration - particle bound	ug-s/g-m^3	0.01231	0.01876	0.04487	0.01426
Air concentration - vapor phase	ug-s/g-m^3	0.01209	0.0185	0.042	0.01416
Air concentration - vapor phase hg	ug-s/g-m^3	0.01165	0.01773	0.04383	0.01439
Dry deposition - particle phase	s/m^2 year	0.00822	0.00175	0.00196	0.00163
Dry deposition - particle bound	s/m^2 year	0.00498	0.00175	0.00196	0.00163
Dry deposition - vapor phase	s/m^2 year	0.00214	0.00287	0.00477	0.00247
Dry deposition - vapor phase hg	s/m^2 year	0.00537	0.00641	0.00303	0.00168
Wet deposition - particle phase	s/m^2 year	0.00092	0	0	0
Wet deposition - particle bound	s/m^2 year	0.00058	0	0	0
Wet deposition - vapor phase	s/m^2 year	0.00037	0.00039	0.00044	0.00035
Wet deposition - vapor phase hg	s/m^2 year	0.00012	0.00013	0	0

Table T-4: HHRA Deposition Rates and Air Concentrations for the Off-Site Evaluation Point

Parameter	Unit	Source			
		BRASTK	**COMSTK**	**LABSTK**	**MDBSTK**
Hourly air concentration - particle phase	ug-s/g-m^3	9.76938	28.45582	106.07701	17.25841
Hourly air concentration - particle bound	ug-s/g-m^3	9.76101	28.45582	106.07701	17.25841
Hourly air concentration - vapor phase	ug-s/g-m^3	9.6899	27.87376	93.33623	16.96741
Hourly air concentration - vapor phase hg	ug-s/g-m^3	9.68811	27.97228	101.11759	17.02897
Air concentration - particle phase	ug-s/g-m^3	0.09216	0.1616	0.23908	0.13183
Air concentration - particle bound	ug-s/g-m^3	0.09844	0.1616	0.23908	0.13183
Air concentration - vapor phase	ug-s/g-m^3	0.10549	0.15776	0.22596	0.12946
Air concentration - vapor phase hg	ug-s/g-m^3	0.09776	0.14778	0.23112	0.13022
Dry deposition - particle phase	s/m^2 year	0.12702	0.00675	0.00828	0.00658
Dry deposition - particle bound	s/m^2 year	0.08228	0.00675	0.00828	0.00658
Dry deposition - vapor phase	s/m^2 year	0.0219	0.02896	0.03416	0.02697
Dry deposition - vapor phase hg	s/m^2 year	0.07485	0.08916	0.02661	0.02255
Wet deposition - particle phase	s/m^2 year	0.00328	0.00001	0.00001	0
Wet deposition - particle bound	s/m^2 year	0.00203	0.00001	0.00001	0
Wet deposition - vapor phase	s/m^2 year	0.00104	0.00126	0.00153	0.00121
Wet deposition - vapor phase hg	s/m^2 year	0.00035	0.0004	0	0

Table T-5: HHRA Deposition Rates and Air Concentrations for the On-Site Evaluation Point

Parameter	Unit	Source			
		BRASTK	**COMSTK**	**LABSTK**	**MDBSTK**
Hourly air concentration - particle phase	ug-s/g-m^3	35.381	113.90891	362.88123	49.83113
Hourly air concentration - particle bound	ug-s/g-m^3	35.74179	113.90891	362.88123	49.83113
Hourly air concentration - vapor phase	ug-s/g-m^3	36.64132	113.9952	357.54584	50.5334
Hourly air concentration - vapor phase hg	ug-s/g-m^3	36.2132	113.90667	359.48102	50.60033
Air concentration - particle phase	ug-s/g-m^3	1.79771	8.0811	10.22897	0.97594
Air concentration - particle bound	ug-s/g-m^3	1.80457	8.0811	10.22897	0.97594
Air concentration - vapor phase	ug-s/g-m^3	1.82181	8.07924	10.19302	0.97586
Air concentration - vapor phase hg	ug-s/g-m^3	1.8102	8.06871	10.19799	0.9761
Dry deposition - particle phase	s/m^2 year	8.51274	0.64678	0.8874	0.17513
Dry deposition - particle bound	s/m^2 year	5.81454	0.64678	0.8874	0.17513
Dry deposition - vapor phase	s/m^2 year	0.45588	1.80483	2.20312	0.23072
Dry deposition - vapor phase hg	s/m^2 year	2.918	8.46816	2.02415	0.21953
Wet deposition - particle phase	s/m^2 year	0.70239	0.00014	0.00014	0.00018
Wet deposition - particle bound	s/m^2 year	0.42859	0.00014	0.00014	0.00018
Wet deposition - vapor phase	s/m^2 year	0.16381	0.03485	0.03854	0.04833
Wet deposition - vapor phase hg	s/m^2 year	0.05769	0.01203	0	0

Table T-6: HHRA Deposition Rates and Air Concentrations for the UMCDF Evaluation Point

Parameter	Unit	Source			
		BRASTK	**COMSTK**	**LABSTK**	**MDBSTK**
Hourly air concentration - particle phase	ug-s/g-m^3	35.381	113.90891	362.88123	49.83113
Hourly air concentration - particle bound	ug-s/g-m^3	35.74179	113.90891	362.88123	49.83113
Hourly air concentration - vapor phase	ug-s/g-m^3	36.64132	113.9952	357.54584	50.5334
Hourly air concentration - vapor phase hg	ug-s/g-m^3	36.2132	113.90667	359.48102	50.60033
Air concentration - particle phase	ug-s/g-m^3	1.79771	8.0811	10.22897	0.97594
Air concentration - particle bound	ug-s/g-m^3	1.80457	8.0811	10.22897	0.97594
Air concentration - vapor phase	ug-s/g-m^3	1.82181	8.07924	10.19302	0.97586
Air concentration - vapor phase hg	ug-s/g-m^3	1.8102	8.06871	10.19799	0.9761
Dry deposition - particle phase	s/m^2 year	8.51274	0.64678	0.8874	0.17513
Dry deposition - particle bound	s/m^2 year	5.81454	0.64678	0.8874	0.17513
Dry deposition - vapor phase	s/m^2 year	0.45588	1.80483	2.20312	0.23072
Dry deposition - vapor phase hg	s/m^2 year	2.918	8.46816	2.02415	0.21953
Wet deposition - particle phase	s/m^2 year	0.70239	0.00014	0.00014	0.00018
Wet deposition - particle bound	s/m^2 year	0.42859	0.00014	0.00014	0.00018
Wet deposition - vapor phase	s/m^2 year	0.16381	0.03485	0.03854	0.04833
Wet deposition - vapor phase hg	s/m^2 year	0.05769	0.01203	0	0

Table T-7: ERA Watershed Deposition Rates and Air Concentrations

Source	Parameter Description	Units	Value
BRASTK	Watershed average air concentration - vapor phase	ug-s/g-m^3	2.82E-03
BRASTK	Watershed average air concentration - vapor phase hg	ug-s/g-m^3	2.62E-03
BRASTK	Watershed total (wet & dry) depos. - particle phase	s/m^2-year	2.02E-03
BRASTK	Watershed total (wet & dry) depos. - particle bound	s/m^2-year	1.27E-03
BRASTK	Watershed total (wet & dry) depos. - vapor phase	s/m^2-year	4.81E-04
BRASTK	Watershed total (wet & dry) depos. - vapor phase hg	s/m^2-year	1.18E-03
BRASTK	Watershed average wet deposition - vapor phase	s/m^2-year	4.33E-05
BRASTK	Watershed average wet deposition - vapor phase hg	s/m^2-year	2.03E-05
COMSTK	Watershed average air concentration - vapor phase	ug-s/g-m^3	3.72E-03
COMSTK	Watershed average air concentration - vapor phase hg	ug-s/g-m^3	3.47E-03
COMSTK	Watershed total (wet & dry) depos. - particle phase	s/m^2-year	2.86E-04
COMSTK	Watershed total (wet & dry) depos. - particle bound	s/m^2-year	2.86E-04
COMSTK	Watershed total (wet & dry) depos. - vapor phase	s/m^2-year	5.78E-04
COMSTK	Watershed total (wet & dry) depos. - vapor phase hg	s/m^2-year	1.34E-03
COMSTK	Watershed average wet deposition - vapor phase	s/m^2-year	4.65E-05
COMSTK	Watershed average wet deposition - vapor phase hg	s/m^2-year	2.08E-05
LABSTK	Watershed average air concentration - vapor phase	ug-s/g-m^3	5.31E-03
LABSTK	Watershed average air concentration - vapor phase hg	ug-s/g-m^3	5.31E-03
LABSTK	Watershed total (wet & dry) depos. - particle phase	s/m^2-year	2.97E-04
LABSTK	Watershed total (wet & dry) depos. - particle bound	s/m^2-year	2.97E-04
LABSTK	Watershed total (wet & dry) depos. - vapor phase	s/m^2-year	6.64E-04
LABSTK	Watershed total (wet & dry) depos. - vapor phase hg	s/m^2-year	6.64E-04
LABSTK	Watershed average wet deposition - vapor phase	s/m^2-year	4.59E-05
LABSTK	Watershed average wet deposition - vapor phase hg	s/m^2-year	4.59E-05
MDBSTK	Watershed average air concentration - vapor phase	ug-s/g-m^3	3.03E-03
MDBSTK	Watershed average air concentration - vapor phase hg	ug-s/g-m^3	3.03E-03
MDBSTK	Watershed total (wet & dry) depos. - particle phase	s/m^2-year	2.75E-04
MDBSTK	Watershed total (wet & dry) depos. - particle bound	s/m^2-year	2.75E-04
MDBSTK	Watershed total (wet & dry) depos. - vapor phase	s/m^2-year	5.19E-04
MDBSTK	Watershed total (wet & dry) depos. - vapor phase hg	s/m^2-year	5.19E-04
MDBSTK	Watershed average wet deposition - vapor phase	s/m^2-year	4.50E-05
MDBSTK	Watershed average wet deposition - vapor phase hg	s/m^2-year	4.50E-05

Table T-8: ERA Water Body Deposition Rates and Air Concentrations

Source	Parameter Description	Units	Value
BRASTK	Waterbody average air concentration - vapor phase	ug-s/g-m^3	2.18E-03
BRASTK	Waterbody average air concentration - vapor phase hg	ug-s/g-m^3	2.09E-03
BRASTK	Waterbody total (wet & dry) depos. - particle phase	s/m^2-year	3.10E-04
BRASTK	Waterbody total (wet & dry) depos. - particle bound	s/m^2-year	2.00E-04
BRASTK	Waterbody total (wet & dry) depos. - vapor phase	s/m^2-year	2.00E-04
BRASTK	Waterbody total (wet & dry) depos. - vapor phase hg	s/m^2-year	3.00E-04
BRASTK	Waterbody average wet deposition - vapor phase	s/m^2-year	1.39E-04
COMSTK	Waterbody average air concentration - vapor phase	s/m^2-year	1.98E-03
COMSTK	Waterbody average air concentration - vapor phase hg	ug-s/g-m^3	1.87E-03
COMSTK	Waterbody total (wet & dry) depos. - particle phase	ug-s/g-m^3	1.10E-04
COMSTK	Waterbody total (wet & dry) depos. - particle bound	s/m^2-year	1.10E-04
COMSTK	Waterbody total (wet & dry) depos. - vapor phase	s/m^2-year	1.90E-04
COMSTK	Waterbody total (wet & dry) depos. - vapor phase hg	s/m^2-year	2.90E-04
COMSTK	Waterbody average wet deposition - vapor phase	s/m^2-year	1.12E-04
LABSTK	Waterbody average air concentration - vapor phase	s/m^2-year	1.43E-03
LABSTK	Waterbody average air concentration - vapor phase hg	s/m^2-year	1.43E-03
LABSTK	Waterbody total (wet & dry) depos. - particle phase	ug-s/g-m^3	1.10E-04
LABSTK	Waterbody total (wet & dry) depos. - particle bound	ug-s/g-m^3	1.10E-04
LABSTK	Waterbody total (wet & dry) depos. - vapor phase	s/m^2-year	1.70E-04
LABSTK	Waterbody total (wet & dry) depos. - vapor phase hg	s/m^2-year	1.70E-04
LABSTK	Waterbody average wet deposition - vapor phase	s/m^2-year	1.18E-04
MDBSTK	Waterbody average air concentration - vapor phase	s/m^2-year	2.32E-03
MDBSTK	Waterbody average air concentration - vapor phase hg	s/m^2-year	2.32E-03
MDBSTK	Waterbody total (wet & dry) depos. - particle phase	s/m^2-year	1.10E-04
MDBSTK	Waterbody total (wet & dry) depos. - particle bound	ug-s/g-m^3	1.10E-04
MDBSTK	Waterbody total (wet & dry) depos. - vapor phase	ug-s/g-m^3	2.00E-04
MDBSTK	Waterbody total (wet & dry) depos. - vapor phase hg	s/m^2-year	2.00E-04
MDBSTK	Waterbody average wet deposition - vapor phase	s/m^2-year	1.08E-04

Table T-9: ERA Deposition Rates and Air Concentrations for the Shrub-Step and Freshwater Evaluation Points

Source	Parameter Description	Units	Shrub-Step Value	Freshwater Value
BRASTK	Air concentration - particle phase	ug-s/g-m^3	1.80E+00	2.91E-02
BRASTK	Air concentration - particle bound	ug-s/g-m^3	1.80E+00	3.00E-02
BRASTK	Air concentration - vapor phase	ug-s/g-m^3	1.82E+00	3.01E-02
BRASTK	Dry deposition - particle phase	s/m^2-year	8.51E+00	2.75E-02
BRASTK	Dry deposition - particle bound	s/m^2-year	5.81E+00	1.77E-02
BRASTK	Wet deposition - particle phase	s/m^2-year	7.02E-01	8.40E-04
BRASTK	Wet deposition - particle bound	s/m^2-year	4.29E-01	5.40E-04
BRASTK	Wet deposition - vapor phase	s/m^2-year	1.64E-01	3.70E-04
COMSTK	Air concentration - particle phase	ug-s/g-m^3	8.08E+00	3.88E-02
COMSTK	Air concentration - particle bound	ug-s/g-m^3	8.08E+00	3.88E-02
COMSTK	Air concentration - vapor phase	ug-s/g-m^3	8.08E+00	3.71E-02
COMSTK	Dry deposition - particle phase	s/m^2-year	6.47E-01	1.97E-03
COMSTK	Dry deposition - particle bound	s/m^2-year	6.47E-01	1.97E-03
COMSTK	Wet deposition - particle phase	s/m^2-year	1.40E-04	0.00E+00
COMSTK	Wet deposition - particle bound	s/m^2-year	1.40E-04	0.00E+00
COMSTK	Wet deposition - vapor phase	s/m^2-year	3.49E-02	4.10E-04
LABSTK	Air concentration - particle phase	ug-s/g-m^3	1.02E+01	5.91E-02
LABSTK	Air concentration - particle bound	ug-s/g-m^3	1.02E+01	5.91E-02
LABSTK	Air concentration - vapor phase	ug-s/g-m^3	1.02E+01	5.41E-02
LABSTK	Dry deposition - particle phase	s/m^2-year	8.87E-01	2.05E-03
LABSTK	Dry deposition - particle bound	s/m^2-year	8.87E-01	2.05E-03
LABSTK	Wet deposition - particle phase	s/m^2-year	1.40E-04	0.00E+00
LABSTK	Wet deposition - particle bound	s/m^2-year	1.40E-04	0.00E+00
LABSTK	Wet deposition - vapor phase	s/m^2-year	3.85E-02	4.30E-04
MDBSTK	Air concentration - particle phase	ug-s/g-m^3	9.76E-01	3.46E-02
MDBSTK	Air concentration - particle bound	ug-s/g-m^3	9.76E-01	3.46E-02
MDBSTK	Air concentration - vapor phase	ug-s/g-m^3	9.76E-01	3.33E-02
MDBSTK	Dry deposition - particle phase	s/m^2-year	1.75E-01	1.93E-03
MDBSTK	Dry deposition - particle bound	s/m^2-year	1.75E-01	1.93E-03
MDBSTK	Wet deposition - particle phase	s/m^2-year	1.80E-04	0.00E+00
MDBSTK	Wet deposition - particle bound	s/m^2-year	1.80E-04	0.00E+00
MDBSTK	Wet deposition - vapor phase	s/m^2-year	4.83E-02	3.90E-04

Appendix U – Ecological Risk Assessment COPC Concentration Data

Table U-1: Ecological Screening Quotient Results from EcoRisk View based on Exposure Point Concentrations for the Shrub-Step Habitat

Source	COPC	Guild	Ecological Screening Quotient
BRASTK	Antimony compounds	Soil Invertebrate	0.00E+00
BRASTK	Arsenic compounds	Soil Invertebrate	3.64E-11
BRASTK	Barium compounds	Soil Invertebrate	1.12E-04
BRASTK	Beryllium compounds	Soil Invertebrate	0.00E+00
BRASTK	Boron compounds	Soil Invertebrate	0.00E+00
BRASTK	Cadmium compounds	Soil Invertebrate	0.00E+00
BRASTK	Chromium compounds	Soil Invertebrate	0.00E+00
BRASTK	Cobalt compounds	Soil Invertebrate	0.00E+00
BRASTK	Copper compounds	Soil Invertebrate	0.00E+00
BRASTK	EA 2192	Soil Invertebrate	0.00E+00
BRASTK	GB	Soil Invertebrate	0.00E+00
BRASTK	Lead compounds	Soil Invertebrate	1.32E-10
BRASTK	Manganese compounds	Soil Invertebrate	2.29E-04
BRASTK	Mercuric chloride	Soil Invertebrate	7.91E-03
BRASTK	Methyl mercury	Soil Invertebrate	1.61E-04
BRASTK	Nickel compounds	Soil Invertebrate	5.32E-09
BRASTK	o-Cresol	Soil Invertebrate	0.00E+00
BRASTK	Phosphoric acid	Soil Invertebrate	0.00E+00
BRASTK	Selenium compounds	Soil Invertebrate	2.28E-08
BRASTK	Silver compounds	Soil Invertebrate	0.00E+00
BRASTK	Sulfur mustard (or H/HD)	Soil Invertebrate	0.00E+00
BRASTK	Thallium compounds	Soil Invertebrate	0.00E+00
BRASTK	Tin compounds	Soil Invertebrate	0.00E+00
BRASTK	Vanadium compounds	Soil Invertebrate	0.00E+00
BRASTK	VX	Soil Invertebrate	0.00E+00
BRASTK	Zinc compounds	Soil Invertebrate	1.18E-08
BRASTK	Antimony compounds	Terrestrial Plants	0.00E+00
BRASTK	Arsenic compounds	Terrestrial Plants	5.67E-09
BRASTK	Barium compounds	Terrestrial Plants	3.75E-04
BRASTK	Beryllium compounds	Terrestrial Plants	0.00E+00
BRASTK	Boron compounds	Terrestrial Plants	0.00E+00
BRASTK	Cadmium compounds	Terrestrial Plants	0.00E+00
BRASTK	Chromium compounds	Terrestrial Plants	0.00E+00
BRASTK	Cobalt compounds	Terrestrial Plants	0.00E+00
BRASTK	Copper compounds	Terrestrial Plants	0.00E+00
BRASTK	EA 2192	Terrestrial Plants	0.00E+00
BRASTK	GB	Terrestrial Plants	0.00E+00
BRASTK	Lead compounds	Terrestrial Plants	1.87E-09
BRASTK	Manganese compounds	Terrestrial Plants	4.69E-04
BRASTK	Mercuric chloride	Terrestrial Plants	5.67E-03
BRASTK	Methyl mercury	Terrestrial Plants	0.00E+00
BRASTK	Nickel compounds	Terrestrial Plants	3.92E-08

Source	COPC	Guild	Ecological Screening Quotient
BRASTK	o-Cresol	Terrestrial Plants	0.00E+00
BRASTK	Phosphoric acid	Terrestrial Plants	0.00E+00
BRASTK	Selenium compounds	Terrestrial Plants	3.51E-06
BRASTK	Silver compounds	Terrestrial Plants	6.13E-06
BRASTK	Sulfur mustard (or H/HD)	Terrestrial Plants	0.00E+00
BRASTK	Thallium compounds	Terrestrial Plants	1.04E-01
BRASTK	Tin compounds	Terrestrial Plants	5.90E-06
BRASTK	Vanadium compounds	Terrestrial Plants	0.00E+00
BRASTK	VX	Terrestrial Plants	0.00E+00
BRASTK	Zinc compounds	Terrestrial Plants	4.71E-08
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	Soil Invertebrate	0.00E+00
COMSTK	1,1-Dichloroethylene	Soil Invertebrate	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	Soil Invertebrate	3.10E-09
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	Soil Invertebrate	5.06E-09
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	Soil Invertebrate	0.00E+00
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	Soil Invertebrate	1.38E-10
COMSTK	1,2-Dichlorobenzene	Soil Invertebrate	4.12E-08
COMSTK	1,4-Dichlorobenzene	Soil Invertebrate	0.00E+00
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	Soil Invertebrate	0.00E+00
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	Soil Invertebrate	0.00E+00
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	Soil Invertebrate	0.00E+00
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	Soil Invertebrate	0.00E+00
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	Soil Invertebrate	0.00E+00
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	Soil Invertebrate	0.00E+00
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	Soil Invertebrate	4.20E-12
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	Soil Invertebrate	4.09E-08
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	Soil Invertebrate	0.00E+00
COMSTK	2,4,6-Trinitrotoluene	Soil Invertebrate	2.90E-06
COMSTK	2,4-Dinitrotoluene	Soil Invertebrate	0.00E+00
COMSTK	2-Methylnaphthalene	Soil Invertebrate	0.00E+00
COMSTK	2-Xylene	Soil Invertebrate	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	Soil Invertebrate	0.00E+00
COMSTK	3,4,4',5-Tetrachlorobiphenyl	Soil Invertebrate	0.00E+00
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	Soil Invertebrate	0.00E+00
COMSTK	Acetone	Soil Invertebrate	0.00E+00
COMSTK	Aluminum compounds	Soil Invertebrate	0.00E+00
COMSTK	Antimony compounds	Soil Invertebrate	0.00E+00
COMSTK	Arsenic compounds	Soil Invertebrate	1.85E-12
COMSTK	Barium compounds	Soil Invertebrate	6.93E-06
COMSTK	Benzaldehyde	Soil Invertebrate	6.50E-07
COMSTK	Benzene	Soil Invertebrate	0.00E+00
COMSTK	Benzoic acid	Soil Invertebrate	0.00E+00
COMSTK	Benzyl alcohol	Soil Invertebrate	0.00E+00
COMSTK	Beryllium compounds	Soil Invertebrate	0.00E+00

Source	COPC	Guild	Ecological Screening Quotient
COMSTK	Bis(2-ethylhexyl)phthalate	Soil Invertebrate	6.32E-06
COMSTK	Boron compounds	Soil Invertebrate	0.00E+00
COMSTK	Bromochloromethane	Soil Invertebrate	0.00E+00
COMSTK	Bromodichloromethane	Soil Invertebrate	0.00E+00
COMSTK	Bromoethane	Soil Invertebrate	0.00E+00
COMSTK	Cadmium compounds	Soil Invertebrate	0.00E+00
COMSTK	Carbon disulfide	Soil Invertebrate	1.15E-12
COMSTK	Carbon tetrachloride	Soil Invertebrate	0.00E+00
COMSTK	Chlorine	Soil Invertebrate	0.00E+00
COMSTK	Chlorobenzene	Soil Invertebrate	0.00E+00
COMSTK	Chlorodibromomethane	Soil Invertebrate	0.00E+00
COMSTK	Chloroform	Soil Invertebrate	0.00E+00
COMSTK	Chromium compounds	Soil Invertebrate	0.00E+00
COMSTK	cis-1,3-Dichloropropene	Soil Invertebrate	0.00E+00
COMSTK	Cobalt compounds	Soil Invertebrate	0.00E+00
COMSTK	Composirte TOE - Nonvolatile	Soil Invertebrate	4.54E-01
COMSTK	Composirte TOE - Semivolatile	Soil Invertebrate	1.31E-04
COMSTK	Composite TOE - Volatile	Soil Invertebrate	1.13E-07
COMSTK	Copper compounds	Soil Invertebrate	0.00E+00
COMSTK	Dibutyl phthalate	Soil Invertebrate	0.00E+00
COMSTK	Dichlorodifluoromethane	Soil Invertebrate	0.00E+00
COMSTK	Dichloromethane	Soil Invertebrate	0.00E+00
COMSTK	Diethyl phthalate	Soil Invertebrate	0.00E+00
COMSTK	Dimethylphthalate	Soil Invertebrate	2.56E-09
COMSTK	Ethyl chloride	Soil Invertebrate	1.91E-13
COMSTK	Ethylbenzene	Soil Invertebrate	0.00E+00
COMSTK	GB	Soil Invertebrate	0.00E+00
COMSTK	Hydrochloric acid	Soil Invertebrate	0.00E+00
COMSTK	Hydrofluoric acid	Soil Invertebrate	0.00E+00
COMSTK	Lead compounds	Soil Invertebrate	1.99E-10
COMSTK	m,p-Xylene	Soil Invertebrate	0.00E+00
COMSTK	Manganese compounds	Soil Invertebrate	2.97E-06
COMSTK	Mercuric chloride	Soil Invertebrate	4.25E-04
COMSTK	Methyl bromide	Soil Invertebrate	0.00E+00
COMSTK	Methyl chloride	Soil Invertebrate	0.00E+00
COMSTK	Methyl ethyl ketone	Soil Invertebrate	0.00E+00
COMSTK	Methyl iodide	Soil Invertebrate	0.00E+00
COMSTK	Methyl isobutyl ketone	Soil Invertebrate	0.00E+00
COMSTK	Methyl mercury	Soil Invertebrate	8.67E-06
COMSTK	Naphthalene	Soil Invertebrate	0.00E+00
COMSTK	n-Hexane	Soil Invertebrate	0.00E+00
COMSTK	Nickel compounds	Soil Invertebrate	6.97E-11
COMSTK	Nitrogen dioxide	Soil Invertebrate	1.49E-04
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	Soil Invertebrate	4.03E-05

Source	COPC	Guild	Ecological Screening Quotient
COMSTK	Phosphoric acid	Soil Invertebrate	0.00E+00
COMSTK	Selenium compounds	Soil Invertebrate	1.78E-10
COMSTK	Silver compounds	Soil Invertebrate	0.00E+00
COMSTK	Styrene	Soil Invertebrate	0.00E+00
COMSTK	Sulfur dioxide	Soil Invertebrate	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	Soil Invertebrate	0.00E+00
COMSTK	Thallium compounds	Soil Invertebrate	0.00E+00
COMSTK	Tin compounds	Soil Invertebrate	0.00E+00
COMSTK	Toluene	Soil Invertebrate	0.00E+00
COMSTK	trans-1,3-Dichloropropene	Soil Invertebrate	0.00E+00
COMSTK	Tribromomethane	Soil Invertebrate	0.00E+00
COMSTK	Trichloroethylene	Soil Invertebrate	0.00E+00
COMSTK	Trichlorofluoromethane	Soil Invertebrate	0.00E+00
COMSTK	Vanadium compounds	Soil Invertebrate	0.00E+00
COMSTK	Vinyl acetate	Soil Invertebrate	0.00E+00
COMSTK	Vinyl chloride	Soil Invertebrate	0.00E+00
COMSTK	VX	Soil Invertebrate	0.00E+00
COMSTK	Xylene (mixed)	Soil Invertebrate	0.00E+00
COMSTK	Zinc compounds	Soil Invertebrate	4.79E-09
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	Terrestrial Plants	0.00E+00
COMSTK	1,1-Dichloroethylene	Terrestrial Plants	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	Terrestrial Plants	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	Terrestrial Plants	0.00E+00
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	Terrestrial Plants	0.00E+00
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	Terrestrial Plants	0.00E+00
COMSTK	1,2-Dichlorobenzene	Terrestrial Plants	0.00E+00
COMSTK	1,4-Dichlorobenzene	Terrestrial Plants	0.00E+00
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	Terrestrial Plants	0.00E+00
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	Terrestrial Plants	0.00E+00
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	Terrestrial Plants	0.00E+00
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	Terrestrial Plants	0.00E+00
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	Terrestrial Plants	0.00E+00
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	Terrestrial Plants	0.00E+00
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	Terrestrial Plants	2.62E-12
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	Terrestrial Plants	0.00E+00
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	Terrestrial Plants	0.00E+00
COMSTK	2,4,6-Trinitrotoluene	Terrestrial Plants	0.00E+00
COMSTK	2,4-Dinitrotoluene	Terrestrial Plants	0.00E+00
COMSTK	2-Methylnaphthalene	Terrestrial Plants	0.00E+00
COMSTK	2-Xylene	Terrestrial Plants	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	Terrestrial Plants	0.00E+00
COMSTK	3,4,4',5-Tetrachlorobiphenyl	Terrestrial Plants	0.00E+00
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	Terrestrial Plants	0.00E+00
COMSTK	Acetone	Terrestrial Plants	0.00E+00

Source	COPC	Guild	Ecological Screening Quotient
COMSTK	Aluminum compounds	Terrestrial Plants	0.00E+00
COMSTK	Antimony compounds	Terrestrial Plants	0.00E+00
COMSTK	Arsenic compounds	Terrestrial Plants	2.88E-10
COMSTK	Barium compounds	Terrestrial Plants	2.31E-05
COMSTK	Benzaldehyde	Terrestrial Plants	4.29E-06
COMSTK	Benzene	Terrestrial Plants	2.00E-11
COMSTK	Benzoic acid	Terrestrial Plants	0.00E+00
COMSTK	Benzyl alcohol	Terrestrial Plants	0.00E+00
COMSTK	Beryllium compounds	Terrestrial Plants	0.00E+00
COMSTK	Bis(2-ethylhexyl)phthalate	Terrestrial Plants	0.00E+00
COMSTK	Boron compounds	Terrestrial Plants	0.00E+00
COMSTK	Bromochloromethane	Terrestrial Plants	3.59E-10
COMSTK	Bromodichloromethane	Terrestrial Plants	0.00E+00
COMSTK	Bromoethane	Terrestrial Plants	0.00E+00
COMSTK	Cadmium compounds	Terrestrial Plants	0.00E+00
COMSTK	Carbon disulfide	Terrestrial Plants	5.02E-12
COMSTK	Carbon tetrachloride	Terrestrial Plants	0.00E+00
COMSTK	Chlorine	Terrestrial Plants	0.00E+00
COMSTK	Chlorobenzene	Terrestrial Plants	0.00E+00
COMSTK	Chlorodibromomethane	Terrestrial Plants	0.00E+00
COMSTK	Chloroform	Terrestrial Plants	0.00E+00
COMSTK	Chromium compounds	Terrestrial Plants	0.00E+00
COMSTK	cis-1,3-Dichloropropene	Terrestrial Plants	0.00E+00
COMSTK	Cobalt compounds	Terrestrial Plants	0.00E+00
COMSTK	Composirte TOE - Nonvolatile	Terrestrial Plants	7.09E-01
COMSTK	Composirte TOE - Semivolatile	Terrestrial Plants	4.28E-04
COMSTK	Composite TOE - Volatile	Terrestrial Plants	1.32E-07
COMSTK	Copper compounds	Terrestrial Plants	0.00E+00
COMSTK	Dibutyl phthalate	Terrestrial Plants	6.49E-08
COMSTK	Dichlorodifluoromethane	Terrestrial Plants	0.00E+00
COMSTK	Dichloromethane	Terrestrial Plants	0.00E+00
COMSTK	Diethyl phthalate	Terrestrial Plants	5.35E-07
COMSTK	Dimethylphthalate	Terrestrial Plants	0.00E+00
COMSTK	Ethyl chloride	Terrestrial Plants	2.39E-12
COMSTK	Ethylbenzene	Terrestrial Plants	0.00E+00
COMSTK	GB	Terrestrial Plants	0.00E+00
COMSTK	Hydrochloric acid	Terrestrial Plants	0.00E+00
COMSTK	Hydrofluoric acid	Terrestrial Plants	0.00E+00
COMSTK	Lead compounds	Terrestrial Plants	2.83E-09
COMSTK	m,p-Xylene	Terrestrial Plants	0.00E+00
COMSTK	Manganese compounds	Terrestrial Plants	6.08E-06
COMSTK	Mercuric chloride	Terrestrial Plants	3.05E-04
COMSTK	Methyl bromide	Terrestrial Plants	0.00E+00
COMSTK	Methyl chloride	Terrestrial Plants	0.00E+00

Source	COPC	Guild	Ecological Screening Quotient
COMSTK	Methyl ethyl ketone	Terrestrial Plants	5.36E-08
COMSTK	Methyl iodide	Terrestrial Plants	0.00E+00
COMSTK	Methyl isobutyl ketone	Terrestrial Plants	0.00E+00
COMSTK	Methyl mercury	Terrestrial Plants	0.00E+00
COMSTK	Naphthalene	Terrestrial Plants	0.00E+00
COMSTK	n-Hexane	Terrestrial Plants	0.00E+00
COMSTK	Nickel compounds	Terrestrial Plants	5.14E-10
COMSTK	Nitrogen dioxide	Terrestrial Plants	1.70E-04
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	Terrestrial Plants	1.01E-05
COMSTK	Phosphoric acid	Terrestrial Plants	0.00E+00
COMSTK	Selenium compounds	Terrestrial Plants	2.75E-08
COMSTK	Silver compounds	Terrestrial Plants	4.85E-08
COMSTK	Styrene	Terrestrial Plants	1.51E-09
COMSTK	Sulfur dioxide	Terrestrial Plants	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	Terrestrial Plants	0.00E+00
COMSTK	Thallium compounds	Terrestrial Plants	9.32E-03
COMSTK	Tin compounds	Terrestrial Plants	8.72E-08
COMSTK	Toluene	Terrestrial Plants	6.50E-12
COMSTK	trans-1,3-Dichloropropene	Terrestrial Plants	0.00E+00
COMSTK	Tribromomethane	Terrestrial Plants	0.00E+00
COMSTK	Trichloroethylene	Terrestrial Plants	0.00E+00
COMSTK	Trichlorofluoromethane	Terrestrial Plants	0.00E+00
COMSTK	Vanadium compounds	Terrestrial Plants	0.00E+00
COMSTK	Vinyl acetate	Terrestrial Plants	0.00E+00
COMSTK	Vinyl chloride	Terrestrial Plants	0.00E+00
COMSTK	VX	Terrestrial Plants	0.00E+00
COMSTK	Xylene (mixed)	Terrestrial Plants	3.46E-08
COMSTK	Zinc compounds	Terrestrial Plants	1.91E-08
LABSTK	GB	Soil Invertebrate	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	Soil Invertebrate	0.00E+00
LABSTK	VX	Soil Invertebrate	0.00E+00
LABSTK	GB	Terrestrial Plants	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	Terrestrial Plants	0.00E+00
LABSTK	VX	Terrestrial Plants	0.00E+00
MDBSTK	GB	Soil Invertebrate	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	Soil Invertebrate	0.00E+00
MDBSTK	VX	Soil Invertebrate	0.00E+00
MDBSTK	GB	Terrestrial Plants	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	Terrestrial Plants	0.00E+00
MDBSTK	VX	Terrestrial Plants	0.00E+00

Table U-2: Ecological Screening Quotient Results from EcoRisk View based on Exposure Point Concentrations for the Fresh Water Habitat

Source	COPC	Guild	Ecological Screening Quotient
BRASTK	Antimony compounds	Benthic Invert.	8.10E-14
BRASTK	Arsenic compounds	Benthic Invert.	4.03E-10
BRASTK	Barium compounds	Benthic Invert.	9.01E-09
BRASTK	Beryllium compounds	Benthic Invert.	2.86E-06
BRASTK	Boron compounds	Benthic Invert.	0.00E+00
BRASTK	Cadmium compounds	Benthic Invert.	1.01E-06
BRASTK	Chromium compounds	Benthic Invert.	1.67E-08
BRASTK	Cobalt compounds	Benthic Invert.	0.00E+00
BRASTK	Copper compounds	Benthic Invert.	0.00E+00
BRASTK	EA 2192	Benthic Invert.	0.00E+00
BRASTK	GB	Benthic Invert.	0.00E+00
BRASTK	Lead compounds	Benthic Invert.	3.43E-10
BRASTK	Manganese compounds	Benthic Invert.	0.00E+00
BRASTK	Mercuric chloride	Benthic Invert.	2.39E-05
BRASTK	Methyl mercury	Benthic Invert.	2.74E-07
BRASTK	Nickel compounds	Benthic Invert.	3.66E-09
BRASTK	o-Cresol	Benthic Invert.	0.00E+00
BRASTK	Phosphoric acid	Benthic Invert.	0.00E+00
BRASTK	Selenium compounds	Benthic Invert.	3.84E-08
BRASTK	Silver compounds	Benthic Invert.	1.91E-08
BRASTK	Sulfur mustard (or H/HD)	Benthic Invert.	0.00E+00
BRASTK	Thallium compounds	Benthic Invert.	0.00E+00
BRASTK	Tin compounds	Benthic Invert.	0.00E+00
BRASTK	Vanadium compounds	Benthic Invert.	0.00E+00
BRASTK	VX	Benthic Invert.	0.00E+00
BRASTK	Zinc compounds	Benthic Invert.	1.08E-09
BRASTK	Antimony compounds	Water	1.20E-09
BRASTK	Arsenic compounds	Water	1.04E-09
BRASTK	Barium compounds	Water	1.13E-08
BRASTK	Beryllium compounds	Water	1.48E-09
BRASTK	Boron compounds	Water	2.34E-03
BRASTK	Cadmium compounds	Water	4.86E-09
BRASTK	Chromium compounds	Water	2.22E-10
BRASTK	Cobalt compounds	Water	0.00E+00
BRASTK	Copper compounds	Water	0.00E+00
BRASTK	EA 2192	Water	0.00E+00
BRASTK	GB	Water	0.00E+00
BRASTK	Lead compounds	Water	4.26E-09
BRASTK	Manganese compounds	Water	6.70E-07
BRASTK	Mercuric chloride	Water	1.12E-08
BRASTK	Methyl mercury	Water	6.52E-06
BRASTK	Nickel compounds	Water	7.98E-09

Source	COPC	Guild	Ecological Screening Quotient
BRASTK	o-Cresol	Water	0.00E+00
BRASTK	Phosphoric acid	Water	0.00E+00
BRASTK	Selenium compounds	Water	2.20E-08
BRASTK	Silver compounds	Water	3.83E-05
BRASTK	Sulfur mustard (or H/HD)	Water	0.00E+00
BRASTK	Thallium compounds	Water	5.41E-08
BRASTK	Tin compounds	Water	1.17E-06
BRASTK	Vanadium compounds	Water	3.11E-08
BRASTK	VX	Water	0.00E+00
BRASTK	Zinc compounds	Water	1.92E-08
BRASTK	Antimony compounds	Water Invertebrates	1.20E-09
BRASTK	Arsenic compounds	Water Invertebrates	1.04E-09
BRASTK	Barium compounds	Water Invertebrates	1.13E-08
BRASTK	Beryllium compounds	Water Invertebrates	1.48E-09
BRASTK	Boron compounds	Water Invertebrates	2.34E-03
BRASTK	Cadmium compounds	Water Invertebrates	4.86E-09
BRASTK	Chromium compounds	Water Invertebrates	2.22E-10
BRASTK	Cobalt compounds	Water Invertebrates	0.00E+00
BRASTK	Copper compounds	Water Invertebrates	0.00E+00
BRASTK	EA 2192	Water Invertebrates	0.00E+00
BRASTK	GB	Water Invertebrates	0.00E+00
BRASTK	Lead compounds	Water Invertebrates	4.26E-09
BRASTK	Manganese compounds	Water Invertebrates	6.70E-07
BRASTK	Mercuric chloride	Water Invertebrates	1.12E-08
BRASTK	Methyl mercury	Water Invertebrates	6.52E-06
BRASTK	Nickel compounds	Water Invertebrates	7.98E-09
BRASTK	o-Cresol	Water Invertebrates	0.00E+00
BRASTK	Phosphoric acid	Water Invertebrates	0.00E+00
BRASTK	Selenium compounds	Water Invertebrates	2.20E-08
BRASTK	Silver compounds	Water Invertebrates	3.83E-05
BRASTK	Sulfur mustard (or H/HD)	Water Invertebrates	0.00E+00
BRASTK	Thallium compounds	Water Invertebrates	5.41E-08
BRASTK	Tin compounds	Water Invertebrates	1.17E-06
BRASTK	Vanadium compounds	Water Invertebrates	3.11E-08
BRASTK	VX	Water Invertebrates	0.00E+00
BRASTK	Zinc compounds	Water Invertebrates	1.92E-08
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	Benthic Invert.	0.00E+00
COMSTK	1,1-Dichloroethylene	Benthic Invert.	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	Benthic Invert.	2.42E-08
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	Benthic Invert.	3.95E-08
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	Benthic Invert.	2.14E-12
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	Benthic Invert.	9.81E-10
COMSTK	1,2-Dichlorobenzene	Benthic Invert.	1.57E-07
COMSTK	1,4-Dichlorobenzene	Benthic Invert.	2.01E-10

Source	COPC	Guild	Ecological Screening Quotient
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	Benthic Invert.	0.00E+00
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	Benthic Invert.	0.00E+00
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	Benthic Invert.	0.00E+00
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	Benthic Invert.	0.00E+00
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	Benthic Invert.	0.00E+00
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	Benthic Invert.	0.00E+00
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	Benthic Invert.	3.94E-13
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	Benthic Invert.	8.46E-08
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	Benthic Invert.	0.00E+00
COMSTK	2,4,6-Trinitrotoluene	Benthic Invert.	8.70E-07
COMSTK	2,4-Dinitrotoluene	Benthic Invert.	2.37E-11
COMSTK	2-Methylnaphthalene	Benthic Invert.	0.00E+00
COMSTK	2-Xylene	Benthic Invert.	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	Benthic Invert.	1.07E-08
COMSTK	3,4,4',5-Tetrachlorobiphenyl	Benthic Invert.	0.00E+00
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	Benthic Invert.	0.00E+00
COMSTK	Acetone	Benthic Invert.	0.00E+00
COMSTK	Aluminum compounds	Benthic Invert.	0.00E+00
COMSTK	Antimony compounds	Benthic Invert.	2.94E-14
COMSTK	Arsenic compounds	Benthic Invert.	4.15E-11
COMSTK	Barium compounds	Benthic Invert.	1.12E-09
COMSTK	Benzaldehyde	Benthic Invert.	1.94E-09
COMSTK	Benzene	Benthic Invert.	0.00E+00
COMSTK	Benzoic acid	Benthic Invert.	3.74E-09
COMSTK	Benzyl alcohol	Benthic Invert.	4.01E-06
COMSTK	Beryllium compounds	Benthic Invert.	5.95E-08
COMSTK	Bis(2-ethylhexyl)phthalate	Benthic Invert.	0.00E+00
COMSTK	Boron compounds	Benthic Invert.	0.00E+00
COMSTK	Bromochloromethane	Benthic Invert.	0.00E+00
COMSTK	Bromodichloromethane	Benthic Invert.	0.00E+00
COMSTK	Bromoethane	Benthic Invert.	0.00E+00
COMSTK	Cadmium compounds	Benthic Invert.	1.51E-08
COMSTK	Carbon disulfide	Benthic Invert.	7.22E-11
COMSTK	Carbon tetrachloride	Benthic Invert.	2.31E-08
COMSTK	Chlorine	Benthic Invert.	0.00E+00
COMSTK	Chlorobenzene	Benthic Invert.	0.00E+00
COMSTK	Chlorodibromomethane	Benthic Invert.	0.00E+00
COMSTK	Chloroform	Benthic Invert.	5.09E-10
COMSTK	Chromium compounds	Benthic Invert.	1.05E-09
COMSTK	cis-1,3-Dichloropropene	Benthic Invert.	4.26E-13
COMSTK	Cobalt compounds	Benthic Invert.	0.00E+00
COMSTK	Composirte TOE - Nonvolatile	Benthic Invert.	5.66E-02
COMSTK	Composirte TOE - Semivolatile	Benthic Invert.	9.44E-07
COMSTK	Composite TOE - Volatile	Benthic Invert.	1.28E-05

Source	COPC	Guild	Ecological Screening Quotient
COMSTK	Copper compounds	Benthic Invert.	0.00E+00
COMSTK	Dibutyl phthalate	Benthic Invert.	5.15E-09
COMSTK	Dichlorodifluoromethane	Benthic Invert.	0.00E+00
COMSTK	Dichloromethane	Benthic Invert.	0.00E+00
COMSTK	Diethyl phthalate	Benthic Invert.	3.53E-10
COMSTK	Dimethylphthalate	Benthic Invert.	3.19E-10
COMSTK	Ethyl chloride	Benthic Invert.	1.02E-12
COMSTK	Ethylbenzene	Benthic Invert.	2.14E-10
COMSTK	GB	Benthic Invert.	0.00E+00
COMSTK	Hydrochloric acid	Benthic Invert.	0.00E+00
COMSTK	Hydrofluoric acid	Benthic Invert.	0.00E+00
COMSTK	Lead compounds	Benthic Invert.	1.05E-09
COMSTK	m,p-Xylene	Benthic Invert.	0.00E+00
COMSTK	Manganese compounds	Benthic Invert.	0.00E+00
COMSTK	Mercuric chloride	Benthic Invert.	8.31E-07
COMSTK	Methyl bromide	Benthic Invert.	6.24E-12
COMSTK	Methyl chloride	Benthic Invert.	0.00E+00
COMSTK	Methyl ethyl ketone	Benthic Invert.	3.37E-10
COMSTK	Methyl iodide	Benthic Invert.	0.00E+00
COMSTK	Methyl isobutyl ketone	Benthic Invert.	0.00E+00
COMSTK	Methyl mercury	Benthic Invert.	9.81E-09
COMSTK	Naphthalene	Benthic Invert.	3.48E-09
COMSTK	n-Hexane	Benthic Invert.	7.01E-09
COMSTK	Nickel compounds	Benthic Invert.	9.73E-11
COMSTK	Nitrogen dioxide	Benthic Invert.	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	Benthic Invert.	2.31E-06
COMSTK	Phosphoric acid	Benthic Invert.	0.00E+00
COMSTK	Selenium compounds	Benthic Invert.	6.11E-10
COMSTK	Silver compounds	Benthic Invert.	3.05E-10
COMSTK	Styrene	Benthic Invert.	0.00E+00
COMSTK	Sulfur dioxide	Benthic Invert.	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	Benthic Invert.	0.00E+00
COMSTK	Thallium compounds	Benthic Invert.	0.00E+00
COMSTK	Tin compounds	Benthic Invert.	0.00E+00
COMSTK	Toluene	Benthic Invert.	3.08E-10
COMSTK	trans-1,3-Dichloropropene	Benthic Invert.	0.00E+00
COMSTK	Tribromomethane	Benthic Invert.	0.00E+00
COMSTK	Trichloroethylene	Benthic Invert.	8.11E-13
COMSTK	Trichlorofluoromethane	Benthic Invert.	0.00E+00
COMSTK	Vanadium compounds	Benthic Invert.	0.00E+00
COMSTK	Vinyl acetate	Benthic Invert.	1.33E-10
COMSTK	Vinyl chloride	Benthic Invert.	8.82E-13
COMSTK	VX	Benthic Invert.	0.00E+00
COMSTK	Xylene (mixed)	Benthic Invert.	7.00E-09

Source	COPC	Guild	Ecological Screening Quotient
COMSTK	Zinc compounds	Benthic Invert.	8.92E-10
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	Water	0.00E+00
COMSTK	1,1-Dichloroethylene	Water	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	Water	1.06E-13
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	Water	1.09E-13
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	Water	8.97E-18
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	Water	1.71E-12
COMSTK	1,2-Dichlorobenzene	Water	1.12E-05
COMSTK	1,4-Dichlorobenzene	Water	6.82E-10
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	Water	1.01E-10
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	Water	1.67E-13
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	Water	2.91E-12
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	Water	1.33E-13
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	Water	1.17E-12
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	Water	5.08E-12
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	Water	8.87E-18
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	Water	2.95E-07
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	Water	5.30E-13
COMSTK	2,4,6-Trinitrotoluene	Water	3.13E-03
COMSTK	2,4-Dinitrotoluene	Water	6.83E-10
COMSTK	2-Methylnaphthalene	Water	0.00E+00
COMSTK	2-Xylene	Water	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	Water	1.73E-13
COMSTK	3,4,4',5-Tetrachlorobiphenyl	Water	6.93E-09
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	Water	1.95E-09
COMSTK	Acetone	Water	0.00E+00
COMSTK	Aluminum compounds	Water	0.00E+00
COMSTK	Antimony compounds	Water	4.36E-10
COMSTK	Arsenic compounds	Water	1.07E-10
COMSTK	Barium compounds	Water	1.41E-09
COMSTK	Benzaldehyde	Water	8.52E-06
COMSTK	Benzene	Water	0.00E+00
COMSTK	Benzoic acid	Water	3.85E-07
COMSTK	Benzyl alcohol	Water	2.00E-07
COMSTK	Beryllium compounds	Water	3.07E-11
COMSTK	Bis(2-ethylhexyl)phthalate	Water	1.13E-05
COMSTK	Boron compounds	Water	1.43E-04
COMSTK	Bromochloromethane	Water	9.73E-13
COMSTK	Bromodichloromethane	Water	0.00E+00
COMSTK	Bromoethane	Water	0.00E+00
COMSTK	Cadmium compounds	Water	7.23E-11
COMSTK	Carbon disulfide	Water	2.45E-08
COMSTK	Carbon tetrachloride	Water	7.82E-09
COMSTK	Chlorine	Water	1.02E-06

Source	COPC	Guild	Ecological Screening Quotient
COMSTK	Chlorobenzene	Water	1.00E-10
COMSTK	Chlorodibromomethane	Water	0.00E+00
COMSTK	Chloroform	Water	4.98E-11
COMSTK	Chromium compounds	Water	1.39E-11
COMSTK	cis-1,3-Dichloropropene	Water	2.08E-11
COMSTK	Cobalt compounds	Water	0.00E+00
COMSTK	Composirte TOE - Nonvolatile	Water	1.52E-04
COMSTK	Composirte TOE - Semivolatile	Water	4.94E-07
COMSTK	Composite TOE - Volatile	Water	3.28E-07
COMSTK	Copper compounds	Water	0.00E+00
COMSTK	Dibutyl phthalate	Water	5.15E-09
COMSTK	Dichlorodifluoromethane	Water	0.00E+00
COMSTK	Dichloromethane	Water	0.00E+00
COMSTK	Diethyl phthalate	Water	3.52E-10
COMSTK	Dimethylphthalate	Water	2.88E-10
COMSTK	Ethyl chloride	Water	1.39E-11
COMSTK	Ethylbenzene	Water	2.09E-11
COMSTK	GB	Water	0.00E+00
COMSTK	Hydrochloric acid	Water	2.29E-07
COMSTK	Hydrofluoric acid	Water	0.00E+00
COMSTK	Lead compounds	Water	1.31E-08
COMSTK	m,p-Xylene	Water	0.00E+00
COMSTK	Manganese compounds	Water	1.76E-08
COMSTK	Mercuric chloride	Water	3.89E-10
COMSTK	Methyl bromide	Water	1.41E-10
COMSTK	Methyl chloride	Water	0.00E+00
COMSTK	Methyl ethyl ketone	Water	6.37E-10
COMSTK	Methyl iodide	Water	0.00E+00
COMSTK	Methyl isobutyl ketone	Water	1.09E-05
COMSTK	Methyl mercury	Water	2.33E-07
COMSTK	Naphthalene	Water	2.07E-10
COMSTK	n-Hexane	Water	7.02E-09
COMSTK	Nickel compounds	Water	2.12E-10
COMSTK	Nitrogen dioxide	Water	1.42E-04
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	Water	1.01E-07
COMSTK	Phosphoric acid	Water	0.00E+00
COMSTK	Selenium compounds	Water	3.49E-10
COMSTK	Silver compounds	Water	6.13E-07
COMSTK	Styrene	Water	0.00E+00
COMSTK	Sulfur dioxide	Water	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	Water	0.00E+00
COMSTK	Thallium compounds	Water	9.80E-09
COMSTK	Tin compounds	Water	3.49E-08
COMSTK	Toluene	Water	6.28E-11

Source	COPC	Guild	Ecological Screening Quotient
COMSTK	trans-1,3-Dichloropropene	Water	0.00E+00
COMSTK	Tribromomethane	Water	0.00E+00
COMSTK	Trichloroethylene	Water	4.03E-12
COMSTK	Trichlorofluoromethane	Water	0.00E+00
COMSTK	Vanadium compounds	Water	2.22E-10
COMSTK	Vinyl acetate	Water	1.26E-10
COMSTK	Vinyl chloride	Water	6.31E-13
COMSTK	VX	Water	0.00E+00
COMSTK	Xylene (mixed)	Water	3.28E-09
COMSTK	Zinc compounds	Water	1.58E-08
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	Water Invertebrates	0.00E+00
COMSTK	1,1-Dichloroethylene	Water Invertebrates	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	Water Invertebrates	1.06E-13
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	Water Invertebrates	1.09E-13
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	Water Invertebrates	8.97E-18
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	Water Invertebrates	1.71E-12
COMSTK	1,2-Dichlorobenzene	Water Invertebrates	1.12E-05
COMSTK	1,4-Dichlorobenzene	Water Invertebrates	6.82E-10
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	Water Invertebrates	1.01E-10
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	Water Invertebrates	1.67E-13
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	Water Invertebrates	2.91E-12
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	Water Invertebrates	1.33E-13
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	Water Invertebrates	1.17E-12
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	Water Invertebrates	5.08E-12
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	Water Invertebrates	8.87E-18
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	Water Invertebrates	2.95E-07
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	Water Invertebrates	5.30E-13
COMSTK	2,4,6-Trinitrotoluene	Water Invertebrates	3.13E-03
COMSTK	2,4-Dinitrotoluene	Water Invertebrates	6.83E-10
COMSTK	2-Methylnaphthalene	Water Invertebrates	0.00E+00
COMSTK	2-Xylene	Water Invertebrates	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	Water Invertebrates	1.73E-13
COMSTK	3,4,4',5-Tetrachlorobiphenyl	Water Invertebrates	6.93E-09
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	Water Invertebrates	1.95E-09
COMSTK	Acetone	Water Invertebrates	0.00E+00
COMSTK	Aluminum compounds	Water Invertebrates	0.00E+00
COMSTK	Antimony compounds	Water Invertebrates	4.36E-10
COMSTK	Arsenic compounds	Water Invertebrates	1.07E-10
COMSTK	Barium compounds	Water Invertebrates	1.41E-09
COMSTK	Benzaldehyde	Water Invertebrates	8.52E-06
COMSTK	Benzene	Water Invertebrates	0.00E+00
COMSTK	Benzoic acid	Water Invertebrates	3.85E-07
COMSTK	Benzyl alcohol	Water Invertebrates	2.00E-07
COMSTK	Beryllium compounds	Water Invertebrates	3.07E-11

Source	COPC	Guild	Ecological Screening Quotient
COMSTK	Bis(2-ethylhexyl)phthalate	Water Invertebrates	1.13E-05
COMSTK	Boron compounds	Water Invertebrates	1.43E-04
COMSTK	Bromochloromethane	Water Invertebrates	9.73E-13
COMSTK	Bromodichloromethane	Water Invertebrates	0.00E+00
COMSTK	Bromoethane	Water Invertebrates	0.00E+00
COMSTK	Cadmium compounds	Water Invertebrates	7.23E-11
COMSTK	Carbon disulfide	Water Invertebrates	2.45E-08
COMSTK	Carbon tetrachloride	Water Invertebrates	7.82E-09
COMSTK	Chlorine	Water Invertebrates	1.02E-06
COMSTK	Chlorobenzene	Water Invertebrates	1.00E-10
COMSTK	Chlorodibromomethane	Water Invertebrates	0.00E+00
COMSTK	Chloroform	Water Invertebrates	4.98E-11
COMSTK	Chromium compounds	Water Invertebrates	1.39E-11
COMSTK	cis-1,3-Dichloropropene	Water Invertebrates	2.08E-11
COMSTK	Cobalt compounds	Water Invertebrates	0.00E+00
COMSTK	Composirte TOE - Nonvolatile	Water Invertebrates	1.52E-04
COMSTK	Composirte TOE - Semivolatile	Water Invertebrates	4.94E-07
COMSTK	Composite TOE - Volatile	Water Invertebrates	3.28E-07
COMSTK	Copper compounds	Water Invertebrates	0.00E+00
COMSTK	Dibutyl phthalate	Water Invertebrates	5.15E-09
COMSTK	Dichlorodifluoromethane	Water Invertebrates	0.00E+00
COMSTK	Dichloromethane	Water Invertebrates	0.00E+00
COMSTK	Diethyl phthalate	Water Invertebrates	3.52E-10
COMSTK	Dimethylphthalate	Water Invertebrates	2.88E-10
COMSTK	Ethyl chloride	Water Invertebrates	1.39E-11
COMSTK	Ethylbenzene	Water Invertebrates	2.09E-11
COMSTK	GB	Water Invertebrates	0.00E+00
COMSTK	Hydrochloric acid	Water Invertebrates	2.29E-07
COMSTK	Hydrofluoric acid	Water Invertebrates	0.00E+00
COMSTK	Lead compounds	Water Invertebrates	1.31E-08
COMSTK	m,p-Xylene	Water Invertebrates	0.00E+00
COMSTK	Manganese compounds	Water Invertebrates	1.76E-08
COMSTK	Mercuric chloride	Water Invertebrates	3.89E-10
COMSTK	Methyl bromide	Water Invertebrates	1.41E-10
COMSTK	Methyl chloride	Water Invertebrates	0.00E+00
COMSTK	Methyl ethyl ketone	Water Invertebrates	6.37E-10
COMSTK	Methyl iodide	Water Invertebrates	0.00E+00
COMSTK	Methyl isobutyl ketone	Water Invertebrates	1.09E-05
COMSTK	Methyl mercury	Water Invertebrates	2.33E-07
COMSTK	Naphthalene	Water Invertebrates	2.07E-10
COMSTK	n-Hexane	Water Invertebrates	7.02E-09
COMSTK	Nickel compounds	Water Invertebrates	2.12E-10
COMSTK	Nitrogen dioxide	Water Invertebrates	1.42E-04
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	Water Invertebrates	1.01E-07

Source	COPC	Guild	Ecological Screening Quotient
COMSTK	Phosphoric acid	Water Invertebrates	0.00E+00
COMSTK	Selenium compounds	Water Invertebrates	3.49E-10
COMSTK	Silver compounds	Water Invertebrates	6.13E-07
COMSTK	Styrene	Water Invertebrates	0.00E+00
COMSTK	Sulfur dioxide	Water Invertebrates	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	Water Invertebrates	0.00E+00
COMSTK	Thallium compounds	Water Invertebrates	9.80E-09
COMSTK	Tin compounds	Water Invertebrates	3.49E-08
COMSTK	Toluene	Water Invertebrates	6.28E-11
COMSTK	trans-1,3-Dichloropropene	Water Invertebrates	0.00E+00
COMSTK	Tribromomethane	Water Invertebrates	0.00E+00
COMSTK	Trichloroethylene	Water Invertebrates	4.03E-12
COMSTK	Trichlorofluoromethane	Water Invertebrates	0.00E+00
COMSTK	Vanadium compounds	Water Invertebrates	2.22E-10
COMSTK	Vinyl acetate	Water Invertebrates	1.26E-10
COMSTK	Vinyl chloride	Water Invertebrates	6.31E-13
COMSTK	VX	Water Invertebrates	0.00E+00
COMSTK	Xylene (mixed)	Water Invertebrates	3.28E-09
COMSTK	Zinc compounds	Water Invertebrates	1.58E-08
LABSTK	GB	Benthic Invert.	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	Benthic Invert.	0.00E+00
LABSTK	VX	Benthic Invert.	0.00E+00
LABSTK	GB	Water	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	Water	0.00E+00
LABSTK	VX	Water	0.00E+00
LABSTK	GB	Water Invertebrates	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	Water Invertebrates	0.00E+00
LABSTK	VX	Water Invertebrates	0.00E+00
MDBSTK	GB	Benthic Invert.	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	Benthic Invert.	0.00E+00
MDBSTK	VX	Benthic Invert.	0.00E+00
MDBSTK	GB	Water	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	Water	0.00E+00
MDBSTK	VX	Water	0.00E+00
MDBSTK	GB	Water Invertebrates	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	Water Invertebrates	0.00E+00
MDBSTK	VX	Water Invertebrates	0.00E+00

Table U-3: COPC Concentrations in Sediments Calculated by EcoRisk View

Habitat	Source	COPC	Concentration (mg/kg)
Fresh Water	COMSTK	Composirte TOE - Nonvolatile	1.42E-03
Fresh Water	COMSTK	Bis(2-ethylhexyl)phthalate	2.67E-05
Fresh Water	COMSTK	Composite TOE - Volatile	6.67E-06
Fresh Water	COMSTK	Mercuric chloride	1.50E-07
Fresh Water	COMSTK	Composirte TOE - Semivolatile	6.42E-07
Fresh Water	COMSTK	VX	6.71E-09
Fresh Water	COMSTK	Zinc compounds	1.08E-07
Fresh Water	BRASTK	o-Cresol	1.65E-07
Fresh Water	COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	1.38E-07
Fresh Water	COMSTK	Barium compounds	1.10E-08
Fresh Water	COMSTK	Nickel compounds	2.21E-09
Fresh Water	COMSTK	Methyl mercury	1.96E-09
Fresh Water	BRASTK	Lead compounds	1.23E-08
Fresh Water	LABSTK	Sulfur mustard (or H/HD)	2.56E-10
Fresh Water	COMSTK	Cadmium compounds	5.97E-10
Fresh Water	COMSTK	Benzaldehyde	3.89E-08
Fresh Water	COMSTK	Silver compounds	6.10E-10
Fresh Water	COMSTK	Chromium compounds	1.45E-09
Fresh Water	COMSTK	GB	5.64E-10
Fresh Water	COMSTK	Thallium compounds	2.78E-09
Fresh Water	COMSTK	Beryllium compounds	2.09E-10
Fresh Water	COMSTK	Antimony compounds	1.71E-09
Fresh Water	COMSTK	Arsenic compounds	4.98E-10
Fresh Water	COMSTK	Benzyl alcohol	4.04E-09
Fresh Water	COMSTK	Selenium compounds	6.11E-11
Fresh Water	COMSTK	2-Methylnaphthalene	3.07E-09
Fresh Water	COMSTK	Dibutyl phthalate	3.04E-09
Fresh Water	COMSTK	2,3,4,4'5-Pentachlorobiphenyl	1.12E-09
Fresh Water	COMSTK	Xylene (mixed)	7.00E-10
Fresh Water	COMSTK	Naphthalene	6.12E-10
Fresh Water	COMSTK	Diethyl phthalate	6.03E-10
Fresh Water	COMSTK	Benzoic acid	4.90E-10
Fresh Water	COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	4.18E-10
Fresh Water	COMSTK	2,4,6-Trinitrotoluene	3.57E-10
Fresh Water	COMSTK	2,3',4,4',5-Pentachlorobiphenyl	3.55E-10
Fresh Water	COMSTK	3,3',4,4'-Tetrachlorobiphenyl	2.96E-10
Fresh Water	COMSTK	1,4-Dichlorobenzene	2.65E-10
Fresh Water	COMSTK	n-Hexane	2.39E-10
Fresh Water	COMSTK	2,4-Dinitrotoluene	2.18E-10
Fresh Water	COMSTK	Styrene	1.67E-10
Fresh Water	COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	1.50E-10
Fresh Water	COMSTK	2-Xylene	1.45E-10
Fresh Water	COMSTK	Dimethylphthalate	1.30E-10
Fresh Water	COMSTK	Benzene	1.02E-10

Habitat	Source	COPC	Concentration (mg/kg)
Fresh Water	COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	9.55E-11
Fresh Water	COMSTK	Chlorodibromomethane	9.05E-11
Fresh Water	COMSTK	Acetone	8.20E-11
Fresh Water	COMSTK	Ethylbenzene	7.72E-11
Fresh Water	COMSTK	Carbon disulfide	7.15E-11
Fresh Water	COMSTK	1,2-Dichlorobenzene	6.45E-11
Fresh Water	COMSTK	Toluene	6.16E-11
Fresh Water	COMSTK	trans-1,3-Dichloropropene	5.85E-11
Fresh Water	COMSTK	Methyl isobutyl ketone	5.06E-11
Fresh Water	COMSTK	Tribromomethane	4.99E-11
Fresh Water	COMSTK	Bromodichloromethane	4.83E-11
Fresh Water	COMSTK	Carbon tetrachloride	4.37E-11
Fresh Water	COMSTK	Trichlorofluoromethane	4.10E-11
Fresh Water	COMSTK	2,3,7,8-Tetrachlorodibenzofuran	3.47E-11
Fresh Water	COMSTK	Dichloromethane	3.04E-11
Fresh Water	COMSTK	Chloroform	3.02E-11
Fresh Water	COMSTK	cis-1,3-Dichloropropene	1.85E-11
Fresh Water	COMSTK	Methyl bromide	1.62E-11
Fresh Water	COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	1.62E-11
Fresh Water	COMSTK	Methyl ethyl ketone	1.58E-11
Fresh Water	COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	9.91E-12
Fresh Water	COMSTK	Chlorobenzene	9.87E-12
Fresh Water	COMSTK	Dichlorodifluoromethane	9.00E-12
Fresh Water	COMSTK	Methyl chloride	7.15E-12
Fresh Water	COMSTK	Bromoethane	3.37E-12
Fresh Water	COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	2.89E-12
Fresh Water	COMSTK	Methyl iodide	2.87E-12
Fresh Water	COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	1.69E-12
Fresh Water	COMSTK	Ethyl chloride	1.68E-12
Fresh Water	COMSTK	1,1-Dichloroethylene	1.55E-12
Fresh Water	COMSTK	Vinyl chloride	1.52E-12
Fresh Water	COMSTK	Trichloroethylene	7.14E-13
Fresh Water	COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	5.35E-13
Fresh Water	COMSTK	Bromochloromethane	4.58E-13
Fresh Water	COMSTK	Vinyl acetate	4.23E-13
Fresh Water	COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	4.02E-13
Fresh Water	COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	6.28E-14
Fresh Water	BRASTK	EA 2192	1.36E-14
Fresh Water	COMSTK	Vanadium compounds	0.00E+00
Fresh Water	COMSTK	Tin compounds	0.00E+00
Fresh Water	COMSTK	Sulfur dioxide	0.00E+00
Fresh Water	COMSTK	Phosphoric acid	0.00E+00
Fresh Water	COMSTK	Nitrogen dioxide	0.00E+00
Fresh Water	COMSTK	Manganese compounds	0.00E+00
Fresh Water	COMSTK	m,p-Xylene	0.00E+00

Habitat	Source	COPC	Concentration (mg/kg)
Fresh Water	COMSTK	Hydrofluoric acid	0.00E+00
Fresh Water	COMSTK	Hydrochloric acid	0.00E+00
Fresh Water	COMSTK	Copper compounds	0.00E+00
Fresh Water	COMSTK	Cobalt compounds	0.00E+00
Fresh Water	COMSTK	Chlorine	0.00E+00
Fresh Water	COMSTK	Boron compounds	0.00E+00
Fresh Water	COMSTK	Aluminum compounds	0.00E+00
Fresh Water	COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	0.00E+00
Fresh Water	COMSTK	3,4,4',5-Tetrachlorobiphenyl	0.00E+00
Fresh Water	COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	0.00E+00
Fresh Water	BRASTK	Zinc compounds	1.31E-07
Fresh Water	BRASTK	VX	2.47E-07
Fresh Water	MDBSTK	VX	1.17E-07
Fresh Water	LABSTK	VX	2.79E-08
Fresh Water	BRASTK	Vanadium compounds	0.00E+00
Fresh Water	BRASTK	Tin compounds	0.00E+00
Fresh Water	BRASTK	Thallium compounds	1.54E-08
Fresh Water	BRASTK	Sulfur mustard (or H/HD)	3.94E-08
Fresh Water	MDBSTK	Sulfur mustard (or H/HD)	1.78E-09
Fresh Water	COMSTK	Sulfur mustard (or H/HD)	6.67E-10
Fresh Water	BRASTK	Silver compounds	3.82E-08
Fresh Water	BRASTK	Selenium compounds	3.84E-09
Fresh Water	BRASTK	Phosphoric acid	0.00E+00
Fresh Water	BRASTK	Nickel compounds	8.30E-08
Fresh Water	BRASTK	Methyl mercury	5.48E-08
Fresh Water	BRASTK	Mercuric chloride	4.30E-06
Fresh Water	BRASTK	Manganese compounds	0.00E+00
Fresh Water	COMSTK	Lead compounds	3.77E-08
Fresh Water	BRASTK	GB	1.26E-08
Fresh Water	MDBSTK	GB	5.99E-09
Fresh Water	LABSTK	GB	1.42E-09
Fresh Water	BRASTK	Copper compounds	0.00E+00
Fresh Water	BRASTK	Cobalt compounds	0.00E+00
Fresh Water	BRASTK	Chromium compounds	2.32E-08
Fresh Water	BRASTK	Cadmium compounds	4.01E-08
Fresh Water	BRASTK	Boron compounds	0.00E+00
Fresh Water	BRASTK	Beryllium compounds	1.00E-08
Fresh Water	BRASTK	Barium compounds	8.82E-08
Fresh Water	BRASTK	Arsenic compounds	4.84E-09
Fresh Water	BRASTK	Antimony compounds	4.70E-09

Table U-4: COPC Concentrations in Soils Calculated by EcoRisk View

Habitat	Source	COPC	Concentration (mg/kg)
Shrub-Step	COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	3.70E-12
Shrub-Step	COMSTK	1,1-Dichloroethylene	6.31E-12
Shrub-Step	COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	1.55E-09
Shrub-Step	COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	2.53E-09
Shrub-Step	COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	2.71E-10
Shrub-Step	COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	6.92E-11
Shrub-Step	COMSTK	1,2-Dichlorobenzene	2.06E-08
Shrub-Step	COMSTK	1,4-Dichlorobenzene	1.35E-08
Shrub-Step	COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	1.32E-10
Shrub-Step	COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	2.38E-08
Shrub-Step	COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	6.52E-08
Shrub-Step	COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	1.52E-08
Shrub-Step	COMSTK	2,3',4,4',5-Pentachlorobiphenyl	5.75E-08
Shrub-Step	COMSTK	2,3,4,4'5-Pentachlorobiphenyl	6.82E-07
Shrub-Step	COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	8.40E-11
Shrub-Step	COMSTK	2,3,7,8-Tetrachlorodibenzofuran	2.04E-08
Shrub-Step	COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	2.54E-11
Shrub-Step	COMSTK	2,4,6-Trinitrotoluene	1.45E-06
Shrub-Step	COMSTK	2,4-Dinitrotoluene	7.50E-07
Shrub-Step	COMSTK	2-Methylnaphthalene	3.40E-05
Shrub-Step	COMSTK	2-Xylene	4.75E-09
Shrub-Step	COMSTK	3,3',4,4'-Tetrachlorobiphenyl	9.60E-09
Shrub-Step	COMSTK	3,4,4',5-Tetrachlorobiphenyl	9.00E-11
Shrub-Step	COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	1.27E-10
Shrub-Step	COMSTK	Acetone	3.96E-06
Shrub-Step	COMSTK	Aluminum compounds	3.96E-03
Shrub-Step	BRASTK	Antimony compounds	8.43E-08
Shrub-Step	COMSTK	Antimony compounds	1.51E-08
Shrub-Step	BRASTK	Arsenic compounds	2.84E-09
Shrub-Step	COMSTK	Arsenic compounds	1.44E-10
Shrub-Step	BRASTK	Barium compounds	6.75E-03
Shrub-Step	COMSTK	Barium compounds	4.16E-04
Shrub-Step	COMSTK	Benzaldehyde	2.14E-04
Shrub-Step	COMSTK	Benzene	2.00E-09
Shrub-Step	COMSTK	Benzoic acid	3.50E-05
Shrub-Step	COMSTK	Benzyl alcohol	2.60E-05
Shrub-Step	BRASTK	Beryllium compounds	3.03E-07
Shrub-Step	COMSTK	Beryllium compounds	3.10E-09
Shrub-Step	COMSTK	Bis(2-ethylhexyl)phthalate	2.53E-04
Shrub-Step	BRASTK	Boron compounds	1.19E-02
Shrub-Step	COMSTK	Boron compounds	1.64E-03
Shrub-Step	COMSTK	Bromochloromethane	1.80E-10
Shrub-Step	COMSTK	Bromodichloromethane	1.18E-07
Shrub-Step	COMSTK	Bromoethane	2.65E-10

Habitat	Source	COPC	Concentration (mg/kg)
Shrub-Step	BRASTK	Cadmium compounds	5.82E-07
Shrub-Step	COMSTK	Cadmium compounds	4.26E-09
Shrub-Step	COMSTK	Carbon disulfide	1.61E-10
Shrub-Step	COMSTK	Carbon tetrachloride	2.10E-10
Shrub-Step	COMSTK	Chlorine	2.03E-03
Shrub-Step	COMSTK	Chlorobenzene	3.30E-10
Shrub-Step	COMSTK	Chlorodibromomethane	7.92E-07
Shrub-Step	COMSTK	Chloroform	5.82E-10
Shrub-Step	BRASTK	Chromium compounds	2.26E-03
Shrub-Step	COMSTK	Chromium compounds	7.03E-05
Shrub-Step	COMSTK	cis-1,3-Dichloropropene	5.09E-09
Shrub-Step	BRASTK	Cobalt compounds	3.02E-03
Shrub-Step	COMSTK	Cobalt compounds	1.26E-05
Shrub-Step	COMSTK	Composirte TOE - Nonvolatile	8.91E-01
Shrub-Step	COMSTK	Composirte TOE - Semivolatile	1.07E-03
Shrub-Step	COMSTK	Composite TOE - Volatile	7.90E-05
Shrub-Step	BRASTK	Copper compounds	9.92E-02
Shrub-Step	COMSTK	Copper compounds	1.30E-04
Shrub-Step	COMSTK	Dibutyl phthalate	1.30E-05
Shrub-Step	COMSTK	Dichlorodifluoromethane	1.34E-09
Shrub-Step	COMSTK	Dichloromethane	1.62E-09
Shrub-Step	COMSTK	Diethyl phthalate	5.35E-05
Shrub-Step	COMSTK	Dimethylphthalate	5.11E-07
Shrub-Step	BRASTK	EA 2192	1.94E-11
Shrub-Step	COMSTK	Ethyl chloride	7.65E-12
Shrub-Step	COMSTK	Ethylbenzene	2.13E-09
Shrub-Step	BRASTK	GB	2.07E-05
Shrub-Step	COMSTK	GB	2.09E-06
Shrub-Step	LABSTK	GB	4.74E-06
Shrub-Step	MDBSTK	GB	4.13E-06
Shrub-Step	COMSTK	Hydrochloric acid	1.84E-03
Shrub-Step	COMSTK	Hydrofluoric acid	7.43E-05
Shrub-Step	BRASTK	Lead compounds	2.24E-07
Shrub-Step	COMSTK	Lead compounds	3.39E-07
Shrub-Step	COMSTK	m,p-Xylene	4.29E-05
Shrub-Step	BRASTK	Manganese compounds	1.03E-01
Shrub-Step	COMSTK	Manganese compounds	1.34E-03
Shrub-Step	BRASTK	Mercuric chloride	1.98E-03
Shrub-Step	COMSTK	Mercuric chloride	1.06E-04
Shrub-Step	COMSTK	Methyl bromide	1.89E-09
ShrubScrub	COMSTK	Methyl chloride	2.68E-10
ShrubScrub	COMSTK	Methyl ethyl ketone	5.89E-07
ShrubScrub	COMSTK	Methyl iodide	3.58E-10
ShrubScrub	COMSTK	Methyl isobutyl ketone	1.16E-06
ShrubScrub	BRASTK	Methyl mercury	4.03E-05

Habitat	Source	COPC	Concentration (mg/kg)
ShrubScrub	COMSTK	Methyl mercury	2.17E-06
ShrubScrub	COMSTK	Naphthalene	8.68E-06
ShrubScrub	COMSTK	n-Hexane	7.34E-11
ShrubScrub	BRASTK	Nickel compounds	1.49E-06
ShrubScrub	COMSTK	Nickel compounds	1.95E-08
ShrubScrub	COMSTK	Nitrogen dioxide	1.19E-02
ShrubScrub	BRASTK	o-Cresol	2.20E-04
ShrubScrub	COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	1.01E-04
ShrubScrub	BRASTK	Phosphoric acid	3.91E-03
ShrubScrub	COMSTK	Phosphoric acid	2.61E-05
ShrubScrub	BRASTK	Selenium compounds	1.75E-07
ShrubScrub	COMSTK	Selenium compounds	1.37E-09
ShrubScrub	BRASTK	Silver compounds	3.43E-03
ShrubScrub	COMSTK	Silver compounds	2.72E-05
ShrubScrub	COMSTK	Styrene	4.54E-07
ShrubScrub	COMSTK	Sulfur dioxide	3.42E-04
ShrubScrub	BRASTK	Sulfur mustard (or H/HD)	4.18E-07
ShrubScrub	COMSTK	Sulfur mustard (or H/HD)	1.96E-08
ShrubScrub	LABSTK	Sulfur mustard (or H/HD)	9.58E-09
ShrubScrub	MDBSTK	Sulfur mustard (or H/HD)	8.34E-09
ShrubScrub	BRASTK	Thallium compounds	1.04E-03
ShrubScrub	COMSTK	Thallium compounds	9.32E-05
ShrubScrub	BRASTK	Tin compounds	2.95E-04
ShrubScrub	COMSTK	Tin compounds	4.36E-06
ShrubScrub	COMSTK	Toluene	1.30E-09
ShrubScrub	COMSTK	trans-1,3-Dichloropropene	2.90E-09
ShrubScrub	COMSTK	Tribromomethane	2.68E-11
ShrubScrub	COMSTK	Trichloroethylene	1.54E-11
ShrubScrub	COMSTK	Trichlorofluoromethane	5.17E-11
ShrubScrub	BRASTK	Vanadium compounds	2.63E-03
ShrubScrub	COMSTK	Vanadium compounds	9.26E-06
ShrubScrub	COMSTK	Vinyl acetate	5.06E-09
ShrubScrub	COMSTK	Vinyl chloride	6.96E-12
ShrubScrub	BRASTK	VX	3.53E-04
ShrubScrub	COMSTK	VX	2.13E-05
ShrubScrub	LABSTK	VX	7.97E-05
ShrubScrub	MDBSTK	VX	6.94E-05
ShrubScrub	COMSTK	Xylene (mixed)	3.46E-07
ShrubScrub	BRASTK	Zinc compounds	2.35E-06
ShrubScrub	COMSTK	Zinc compounds	9.54E-07

Table U-5: COPC Concentrations in Water Calculated by EcoRisk View (Shrub-Step Habitat)

Habitat	Source	COPC Name	Concentration (mg/L)
Shrub-Step	BRASTK	Antimony compounds	1.05E-10
Shrub-Step	BRASTK	Arsenic compounds	1.67E-10
Shrub-Step	BRASTK	Barium compounds	2.15E-09
Shrub-Step	BRASTK	Beryllium compounds	1.28E-11
Shrub-Step	BRASTK	Boron compounds	7.03E-07
Shrub-Step	BRASTK	Cadmium compounds	5.35E-10
Shrub-Step	BRASTK	Chromium compounds	1.22E-09
Shrub-Step	BRASTK	Cobalt compounds	3.14E-09
Shrub-Step	BRASTK	Copper compounds	1.17E-10
Shrub-Step	BRASTK	EA 2192	1.08E-15
Shrub-Step	BRASTK	GB	5.33E-09
Shrub-Step	BRASTK	Lead compounds	1.38E-11
Shrub-Step	BRASTK	Manganese compounds	8.04E-08
Shrub-Step	BRASTK	Mercuric chloride	1.76E-10
Shrub-Step	BRASTK	Methyl mercury	3.62E-11
Shrub-Step	BRASTK	Nickel compounds	1.28E-09
Shrub-Step	BRASTK	Phosphoric acid	2.77E-05
Shrub-Step	BRASTK	Selenium compounds	7.69E-10
Shrub-Step	BRASTK	Silver compounds	4.60E-09
Shrub-Step	BRASTK	Sulfur mustard (or H/HD)	7.47E-09
Shrub-Step	BRASTK	Thallium compounds	2.16E-10
Shrub-Step	BRASTK	Tin compounds	8.55E-08
Shrub-Step	BRASTK	VX	1.96E-08
Shrub-Step	BRASTK	Vanadium compounds	6.22E-10
Shrub-Step	BRASTK	Zinc compounds	2.12E-09
Shrub-Step	BRASTK	o-Cresol	5.00E-08
Shrub-Step	COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	1.90E-13
Shrub-Step	COMSTK	1,1-Dichloroethylene	5.96E-13
Shrub-Step	COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3.08E-16
Shrub-Step	COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	1.89E-16
Shrub-Step	COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	3.43E-17
Shrub-Step	COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	8.17E-18
Shrub-Step	COMSTK	1,2-Dichlorobenzene	4.24E-12
Shrub-Step	COMSTK	1,4-Dichlorobenzene	1.08E-11
Shrub-Step	COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	1.89E-15
Shrub-Step	COMSTK	2,3',4,4',5-Pentachlorobiphenyl	7.54E-15
Shrub-Step	COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	7.70E-14
Shrub-Step	COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	2.94E-15
Shrub-Step	COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	1.01E-14
Shrub-Step	COMSTK	2,3,4,4'5-Pentachlorobiphenyl	2.49E-14
Shrub-Step	COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	1.01E-17
Shrub-Step	COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1.58E-18
Shrub-Step	COMSTK	2,3,7,8-Tetrachlorodibenzofuran	1.77E-15

Habitat	Source	COPC Name	Concentration (mg/L)
Shrub-Step	COMSTK	2,4,6-Trinitrotoluene	2.38E-10
Shrub-Step	COMSTK	2,4-Dinitrotoluene	6.15E-11
Shrub-Step	COMSTK	2-Methylnaphthalene	1.13E-11
Shrub-Step	COMSTK	2-Xylene	1.50E-11
Shrub-Step	COMSTK	3,3',4,4'-Tetrachlorobiphenyl	7.78E-15
Shrub-Step	COMSTK	3,4,4',5-Tetrachlorobiphenyl	5.27E-14
Shrub-Step	COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	7.42E-14
Shrub-Step	COMSTK	Acetone	4.10E-09
Shrub-Step	COMSTK	Aluminum compounds	3.19E-08
Shrub-Step	COMSTK	Antimony compounds	3.80E-11
Shrub-Step	COMSTK	Arsenic compounds	1.72E-11
Shrub-Step	COMSTK	Barium compounds	2.68E-10
Shrub-Step	COMSTK	Benzaldehyde	3.41E-08
Shrub-Step	COMSTK	Benzene	4.12E-11
Shrub-Step	COMSTK	Benzoic acid	2.04E-08
Shrub-Step	COMSTK	Benzyl alcohol	8.41E-09
Shrub-Step	COMSTK	Beryllium compounds	2.66E-13
Shrub-Step	COMSTK	Bis(2-ethylhexyl)phthalate	6.50E-09
Shrub-Step	COMSTK	Boron compounds	4.30E-08
Shrub-Step	COMSTK	Bromochloromethane	7.30E-13
Shrub-Step	COMSTK	Bromodichloromethane	2.19E-11
Shrub-Step	COMSTK	Bromoethane	4.71E-13
Shrub-Step	COMSTK	Cadmium compounds	7.96E-12
Shrub-Step	COMSTK	Carbon disulfide	2.70E-11
Shrub-Step	COMSTK	Carbon tetrachloride	7.19E-12
Shrub-Step	COMSTK	Chlorine	3.58E-07
Shrub-Step	COMSTK	Chlorobenzene	1.10E-12
Shrub-Step	COMSTK	Chlorodibromomethane	3.23E-11
Shrub-Step	COMSTK	Chloroform	1.44E-11
Shrub-Step	COMSTK	Chromium compounds	7.65E-11
Shrub-Step	COMSTK	Cobalt compounds	2.65E-11
Shrub-Step	COMSTK	Composirte TOE - Nonvolatile	2.97E-08
Shrub-Step	COMSTK	Composirte TOE - Semivolatile	1.51E-08
Shrub-Step	COMSTK	Composite TOE - Volatile	1.68E-07
Shrub-Step	COMSTK	Copper compounds	3.12E-13
Shrub-Step	COMSTK	Dibutyl phthalate	4.85E-11
Shrub-Step	COMSTK	Dichlorodifluoromethane	3.66E-12
Shrub-Step	COMSTK	Dichloromethane	7.60E-11
Shrub-Step	COMSTK	Diethyl phthalate	1.83E-10
Shrub-Step	COMSTK	Dimethylphthalate	9.50E-11
Shrub-Step	COMSTK	Ethyl chloride	2.70E-12
Shrub-Step	COMSTK	Ethylbenzene	9.46E-12
Shrub-Step	COMSTK	GB	2.39E-10
Shrub-Step	COMSTK	Hydrochloric acid	3.43E-07
Shrub-Step	COMSTK	Hydrofluoric acid	1.23E-08

Habitat	Source	COPC Name	Concentration (mg/L)
Shrub-Step	COMSTK	Lead compounds	4.23E-11
Shrub-Step	COMSTK	Manganese compounds	2.11E-09
Shrub-Step	COMSTK	Mercuric chloride	6.22E-12
Shrub-Step	COMSTK	Methyl bromide	4.51E-11
Shrub-Step	COMSTK	Methyl chloride	2.86E-11
Shrub-Step	COMSTK	Methyl ethyl ketone	1.97E-10
Shrub-Step	COMSTK	Methyl iodide	3.82E-12
Shrub-Step	COMSTK	Methyl isobutyl ketone	8.30E-11
Shrub-Step	COMSTK	Methyl mercury	1.29E-12
Shrub-Step	COMSTK	Naphthalene	1.29E-11
Shrub-Step	COMSTK	Nickel compounds	3.40E-11
Shrub-Step	COMSTK	Nitrogen dioxide	1.71E-06
Shrub-Step	COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	4.00E-12
Shrub-Step	COMSTK	Phosphoric acid	2.37E-06
Shrub-Step	COMSTK	Selenium compounds	1.22E-11
Shrub-Step	COMSTK	Silver compounds	7.35E-11
Shrub-Step	COMSTK	Styrene	4.59E-12
Shrub-Step	COMSTK	Sulfur dioxide	6.67E-08
Shrub-Step	COMSTK	Sulfur mustard (or H/HD)	1.27E-10
Shrub-Step	COMSTK	Thallium compounds	3.92E-11
Shrub-Step	COMSTK	Tin compounds	2.55E-09
Shrub-Step	COMSTK	Toluene	1.10E-11
Shrub-Step	COMSTK	Tribromomethane	9.91E-12
Shrub-Step	COMSTK	Trichloroethylene	1.89E-13
Shrub-Step	COMSTK	Trichlorofluoromethane	8.97E-12
Shrub-Step	COMSTK	VX	5.33E-10
Shrub-Step	COMSTK	Vanadium compounds	4.44E-12
Shrub-Step	COMSTK	Vinyl acetate	2.02E-12
Shrub-Step	COMSTK	Vinyl chloride	2.45E-12
Shrub-Step	COMSTK	Xylene (mixed)	4.27E-11
Shrub-Step	COMSTK	Zinc compounds	1.74E-09
Shrub-Step	COMSTK	cis-1,3-Dichloropropene	4.36E-12
Shrub-Step	COMSTK	m,p-Xylene	2.51E-08
Shrub-Step	COMSTK	n-Hexane	4.08E-12
Shrub-Step	COMSTK	trans-1,3-Dichloropropene	1.48E-11
Shrub-Step	LABSTK	GB	6.00E-10
Shrub-Step	LABSTK	Sulfur mustard (or H/HD)	4.85E-11
Shrub-Step	LABSTK	VX	2.21E-09
Shrub-Step	MDBSTK	GB	2.54E-09
Shrub-Step	MDBSTK	Sulfur mustard (or H/HD)	3.39E-10
Shrub-Step	MDBSTK	VX	9.31E-09

Table U-6: COPC Concentrations in Water Calculated by EcoRisk View
(Fresh Water Habitat)

Habitat	Source	COPC Name	Concentration (mg/L)
Fresh Water	BRASTK	Antimony compounds	1.05E-10
Fresh Water	BRASTK	Arsenic compounds	1.67E-10
Fresh Water	BRASTK	Barium compounds	2.15E-09
Fresh Water	BRASTK	Beryllium compounds	1.28E-11
Fresh Water	BRASTK	Boron compounds	7.03E-07
Fresh Water	BRASTK	Cadmium compounds	5.35E-10
Fresh Water	BRASTK	Chromium compounds	1.22E-09
Fresh Water	BRASTK	Cobalt compounds	3.14E-09
Fresh Water	BRASTK	Copper compounds	1.17E-10
Fresh Water	BRASTK	EA 2192	1.08E-15
Fresh Water	BRASTK	GB	5.33E-09
Fresh Water	BRASTK	Lead compounds	1.38E-11
Fresh Water	BRASTK	Manganese compounds	8.04E-08
Fresh Water	BRASTK	Mercuric chloride	1.72E-10
Fresh Water	BRASTK	Methyl mercury	3.65E-11
Fresh Water	BRASTK	Nickel compounds	1.28E-09
Fresh Water	BRASTK	Phosphoric acid	2.77E-05
Fresh Water	BRASTK	Selenium compounds	7.69E-10
Fresh Water	BRASTK	Silver compounds	4.60E-09
Fresh Water	BRASTK	Sulfur mustard (or H/HD)	7.47E-09
Fresh Water	BRASTK	Thallium compounds	2.16E-10
Fresh Water	BRASTK	Tin compounds	8.55E-08
Fresh Water	BRASTK	VX	1.96E-08
Fresh Water	BRASTK	Vanadium compounds	6.22E-10
Fresh Water	BRASTK	Zinc compounds	2.12E-09
Fresh Water	BRASTK	o-Cresol	5.00E-08
Fresh Water	COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	1.90E-13
Fresh Water	COMSTK	1,1-Dichloroethylene	5.96E-13
Fresh Water	COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3.08E-16
Fresh Water	COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	1.89E-16
Fresh Water	COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	3.43E-17
Fresh Water	COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	8.17E-18
Fresh Water	COMSTK	1,2-Dichlorobenzene	4.24E-12
Fresh Water	COMSTK	1,4-Dichlorobenzene	1.08E-11
Fresh Water	COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	1.89E-15
Fresh Water	COMSTK	2,3',4,4',5-Pentachlorobiphenyl	7.54E-15
Fresh Water	COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	7.70E-14
Fresh Water	COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	2.94E-15
Fresh Water	COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	1.01E-14
Fresh Water	COMSTK	2,3,4,4'5-Pentachlorobiphenyl	2.49E-14
Fresh Water	COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	1.01E-17
Fresh Water	COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1.58E-18
Fresh Water	COMSTK	2,3,7,8-Tetrachlorodibenzofuran	1.77E-15

Habitat	Source	COPC Name	Concentration (mg/L)
Fresh Water	COMSTK	2,4,6-Trinitrotoluene	2.38E-10
Fresh Water	COMSTK	2,4-Dinitrotoluene	6.15E-11
Fresh Water	COMSTK	2-Methylnaphthalene	1.13E-11
Fresh Water	COMSTK	2-Xylene	1.50E-11
Fresh Water	COMSTK	3,3',4,4'-Tetrachlorobiphenyl	7.78E-15
Fresh Water	COMSTK	3,4,4',5-Tetrachlorobiphenyl	5.27E-14
Fresh Water	COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	7.42E-14
Fresh Water	COMSTK	Acetone	4.10E-09
Fresh Water	COMSTK	Aluminum compounds	3.19E-08
Fresh Water	COMSTK	Antimony compounds	3.80E-11
Fresh Water	COMSTK	Arsenic compounds	1.72E-11
Fresh Water	COMSTK	Barium compounds	2.68E-10
Fresh Water	COMSTK	Benzaldehyde	3.41E-08
Fresh Water	COMSTK	Benzene	4.12E-11
Fresh Water	COMSTK	Benzoic acid	2.04E-08
Fresh Water	COMSTK	Benzyl alcohol	8.41E-09
Fresh Water	COMSTK	Beryllium compounds	2.66E-13
Fresh Water	COMSTK	Bis(2-ethylhexyl)phthalate	6.50E-09
Fresh Water	COMSTK	Boron compounds	4.30E-08
Fresh Water	COMSTK	Bromochloromethane	7.30E-13
Fresh Water	COMSTK	Bromodichloromethane	2.19E-11
Fresh Water	COMSTK	Bromoethane	4.71E-13
Fresh Water	COMSTK	Cadmium compounds	7.96E-12
Fresh Water	COMSTK	Carbon disulfide	2.70E-11
Fresh Water	COMSTK	Carbon tetrachloride	7.19E-12
Fresh Water	COMSTK	Chlorine	3.58E-07
Fresh Water	COMSTK	Chlorobenzene	1.10E-12
Fresh Water	COMSTK	Chlorodibromomethane	3.23E-11
Fresh Water	COMSTK	Chloroform	1.44E-11
Fresh Water	COMSTK	Chromium compounds	7.65E-11
Fresh Water	COMSTK	Cobalt compounds	2.65E-11
Fresh Water	COMSTK	Composirte TOE - Nonvolatile	2.97E-08
Fresh Water	COMSTK	Composirte TOE - Semivolatile	1.51E-08
Fresh Water	COMSTK	Composite TOE - Volatile	1.68E-07
Fresh Water	COMSTK	Copper compounds	3.12E-13
Fresh Water	COMSTK	Dibutyl phthalate	4.85E-11
Fresh Water	COMSTK	Dichlorodifluoromethane	3.66E-12
Fresh Water	COMSTK	Dichloromethane	7.60E-11
Fresh Water	COMSTK	Diethyl phthalate	1.83E-10
Fresh Water	COMSTK	Dimethylphthalate	9.50E-11
Fresh Water	COMSTK	Ethyl chloride	2.70E-12
Fresh Water	COMSTK	Ethylbenzene	9.46E-12
Fresh Water	COMSTK	GB	2.39E-10
Fresh Water	COMSTK	Hydrochloric acid	3.43E-07
Fresh Water	COMSTK	Hydrofluoric acid	1.23E-08

Habitat	Source	COPC Name	Concentration (mg/L)
Fresh Water	COMSTK	Lead compounds	4.23E-11
Fresh Water	COMSTK	Manganese compounds	2.11E-09
Fresh Water	COMSTK	Mercuric chloride	5.99E-12
Fresh Water	COMSTK	Methyl bromide	4.51E-11
Fresh Water	COMSTK	Methyl chloride	2.86E-11
Fresh Water	COMSTK	Methyl ethyl ketone	1.97E-10
Fresh Water	COMSTK	Methyl iodide	3.82E-12
Fresh Water	COMSTK	Methyl isobutyl ketone	8.30E-11
Fresh Water	COMSTK	Methyl mercury	1.31E-12
Fresh Water	COMSTK	Naphthalene	1.29E-11
Fresh Water	COMSTK	Nickel compounds	3.40E-11
Fresh Water	COMSTK	Nitrogen dioxide	1.71E-06
Fresh Water	COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	4.00E-12
Fresh Water	COMSTK	Phosphoric acid	2.37E-06
Fresh Water	COMSTK	Selenium compounds	1.22E-11
Fresh Water	COMSTK	Silver compounds	7.35E-11
Fresh Water	COMSTK	Styrene	4.59E-12
Fresh Water	COMSTK	Sulfur dioxide	6.67E-08
Fresh Water	COMSTK	Sulfur mustard (or H/HD)	1.27E-10
Fresh Water	COMSTK	Thallium compounds	3.92E-11
Fresh Water	COMSTK	Tin compounds	2.55E-09
Fresh Water	COMSTK	Toluene	1.10E-11
Fresh Water	COMSTK	Tribromomethane	9.91E-12
Fresh Water	COMSTK	Trichloroethylene	1.89E-13
Fresh Water	COMSTK	Trichlorofluoromethane	8.97E-12
Fresh Water	COMSTK	VX	5.33E-10
Fresh Water	COMSTK	Vanadium compounds	4.44E-12
Fresh Water	COMSTK	Vinyl acetate	2.02E-12
Fresh Water	COMSTK	Vinyl chloride	2.45E-12
Fresh Water	COMSTK	Xylene (mixed)	4.27E-11
Fresh Water	COMSTK	Zinc compounds	1.74E-09
Fresh Water	COMSTK	cis-1,3-Dichloropropene	4.36E-12
Fresh Water	COMSTK	m,p-Xylene	2.51E-08
Fresh Water	COMSTK	n-Hexane	4.08E-12
Fresh Water	COMSTK	trans-1,3-Dichloropropene	1.48E-11
Fresh Water	LABSTK	GB	6.00E-10
Fresh Water	LABSTK	Sulfur mustard (or H/HD)	4.85E-11
Fresh Water	LABSTK	VX	2.21E-09
Fresh Water	MDBSTK	GB	2.54E-09
Fresh Water	MDBSTK	Sulfur mustard (or H/HD)	3.39E-10
Fresh Water	MDBSTK	VX	9.31E-09

Table U-7: Complete EcoRisk View Diet Results
(Shrub-Step Habitat)

Source	COPC	Guild	Diet Type	ESQ
BRASTK	Antimony compounds	ESQ_CB	EQDIET	0.00E+00
BRASTK	Arsenic compounds	ESQ_CB	EQDIET	1.82E-09
BRASTK	Barium compounds	ESQ_CB	EQDIET	3.62E-06
BRASTK	Beryllium compounds	ESQ_CB	EQDIET	0.00E+00
BRASTK	Boron compounds	ESQ_CB	EQDIET	8.77E-07
BRASTK	Cadmium compounds	ESQ_CB	EQDIET	7.59E-07
BRASTK	Chromium compounds	ESQ_CB	EQDIET	1.93E-05
BRASTK	Cobalt compounds	ESQ_CB	EQDIET	1.23E-06
BRASTK	Copper compounds	ESQ_CB	EQDIET	2.85E-04
BRASTK	EA 2192	ESQ_CB	EQDIET	0.00E+00
BRASTK	GB	ESQ_CB	EQDIET	0.00E+00
BRASTK	Lead compounds	ESQ_CB	EQDIET	1.62E-09
BRASTK	Manganese compounds	ESQ_CB	EQDIET	1.16E-06
BRASTK	Mercuric chloride	ESQ_CB	EQDIET	1.33E-05
BRASTK	Methyl mercury	ESQ_CB	EQDIET	2.30E-04
BRASTK	Nickel compounds	ESQ_CB	EQDIET	2.12E-08
BRASTK	o-Cresol	ESQ_CB	EQDIET	0.00E+00
BRASTK	Phosphoric acid	ESQ_CB	EQDIET	0.00E+00
BRASTK	Selenium compounds	ESQ_CB	EQDIET	3.60E-05
BRASTK	Silver compounds	ESQ_CB	EQDIET	1.90E-05
BRASTK	Sulfur mustard (or H/HD)	ESQ_CB	EQDIET	0.00E+00
BRASTK	Thallium compounds	ESQ_CB	EQDIET	3.33E-05
BRASTK	Tin compounds	ESQ_CB	EQDIET	2.66E-06
BRASTK	Vanadium compounds	ESQ_CB	EQDIET	8.90E-06
BRASTK	VX	ESQ_CB	EQDIET	0.00E+00
BRASTK	Zinc compounds	ESQ_CB	EQDIET	3.60E-08
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_CB	EQDIET	0.00E+00
COMSTK	1,1-Dichloroethylene	ESQ_CB	EQDIET	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_CB	EQDIET	1.16E-10
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_CB	EQDIET	1.21E-10
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_CB	EQDIET	2.36E-10
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_CB	EQDIET	1.82E-08
COMSTK	1,2-Dichlorobenzene	ESQ_CB	EQDIET	0.00E+00
COMSTK	1,4-Dichlorobenzene	ESQ_CB	EQDIET	0.00E+00
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_CB	EQDIET	9.88E-11
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_CB	EQDIET	2.03E-10
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_CB	EQDIET	5.73E-10
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_CB	EQDIET	1.30E-11
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_CB	EQDIET	4.97E-11
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_CB	EQDIET	5.89E-09
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_CB	EQDIET	7.05E-14
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_CB	EQDIET	1.30E-02
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_CB	EQDIET	1.84E-06

Source	COPC	Guild	Diet Type	ESQ
COMSTK	2,4,6-Trinitrotoluene	ESQ_CB	EQDIET	2.95E-07
COMSTK	2,4-Dinitrotoluene	ESQ_CB	EQDIET	1.06E-06
COMSTK	2-Methylnaphthalene	ESQ_CB	EQDIET	0.00E+00
COMSTK	2-Xylene	ESQ_CB	EQDIET	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_CB	EQDIET	5.17E-08
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_CB	EQDIET	6.76E-08
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_CB	EQDIET	9.52E-08
COMSTK	Acetone	ESQ_CB	EQDIET	2.67E-10
COMSTK	Aluminum compounds	ESQ_CB	EQDIET	4.04E-07
COMSTK	Antimony compounds	ESQ_CB	EQDIET	0.00E+00
COMSTK	Arsenic compounds	ESQ_CB	EQDIET	9.84E-11
COMSTK	Barium compounds	ESQ_CB	EQDIET	2.23E-07
COMSTK	Benzaldehyde	ESQ_CB	EQDIET	0.00E+00
COMSTK	Benzene	ESQ_CB	EQDIET	0.00E+00
COMSTK	Benzoic acid	ESQ_CB	EQDIET	0.00E+00
COMSTK	Benzyl alcohol	ESQ_CB	EQDIET	0.00E+00
COMSTK	Beryllium compounds	ESQ_CB	EQDIET	0.00E+00
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_CB	EQDIET	4.94E-02
COMSTK	Boron compounds	ESQ_CB	EQDIET	1.20E-07
COMSTK	Bromochloromethane	ESQ_CB	EQDIET	0.00E+00
COMSTK	Bromodichloromethane	ESQ_CB	EQDIET	0.00E+00
COMSTK	Bromoethane	ESQ_CB	EQDIET	0.00E+00
COMSTK	Cadmium compounds	ESQ_CB	EQDIET	5.86E-09
COMSTK	Carbon disulfide	ESQ_CB	EQDIET	0.00E+00
COMSTK	Carbon tetrachloride	ESQ_CB	EQDIET	0.00E+00
COMSTK	Chlorine	ESQ_CB	EQDIET	0.00E+00
COMSTK	Chlorobenzene	ESQ_CB	EQDIET	0.00E+00
COMSTK	Chlorodibromomethane	ESQ_CB	EQDIET	0.00E+00
COMSTK	Chloroform	ESQ_CB	EQDIET	0.00E+00
COMSTK	Chromium compounds	ESQ_CB	EQDIET	6.01E-07
COMSTK	cis-1,3-Dichloropropene	ESQ_CB	EQDIET	0.00E+00
COMSTK	Cobalt compounds	ESQ_CB	EQDIET	5.25E-09
COMSTK	Composirte TOE - Nonvolatile	ESQ_CB	EQDIET	6.69E-01
COMSTK	Composirte TOE - Semivolatile	ESQ_CB	EQDIET	2.66E-04
COMSTK	Composite TOE - Volatile	ESQ_CB	EQDIET	6.08E-09
COMSTK	Copper compounds	ESQ_CB	EQDIET	3.73E-07
COMSTK	Dibutyl phthalate	ESQ_CB	EQDIET	3.89E-05
COMSTK	Dichlorodifluoromethane	ESQ_CB	EQDIET	0.00E+00
COMSTK	Dichloromethane	ESQ_CB	EQDIET	0.00E+00
COMSTK	Diethyl phthalate	ESQ_CB	EQDIET	0.00E+00
COMSTK	Dimethylphthalate	ESQ_CB	EQDIET	0.00E+00
COMSTK	Ethyl chloride	ESQ_CB	EQDIET	0.00E+00
COMSTK	Ethylbenzene	ESQ_CB	EQDIET	0.00E+00
COMSTK	GB	ESQ_CB	EQDIET	0.00E+00
COMSTK	Hydrochloric acid	ESQ_CB	EQDIET	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Hydrofluoric acid	ESQ_CB	EQDIET	0.00E+00
COMSTK	Lead compounds	ESQ_CB	EQDIET	2.45E-09
COMSTK	m,p-Xylene	ESQ_CB	EQDIET	0.00E+00
COMSTK	Manganese compounds	ESQ_CB	EQDIET	1.50E-08
COMSTK	Mercuric chloride	ESQ_CB	EQDIET	7.11E-07
COMSTK	Methyl bromide	ESQ_CB	EQDIET	0.00E+00
COMSTK	Methyl chloride	ESQ_CB	EQDIET	0.00E+00
COMSTK	Methyl ethyl ketone	ESQ_CB	EQDIET	0.00E+00
COMSTK	Methyl iodide	ESQ_CB	EQDIET	0.00E+00
COMSTK	Methyl isobutyl ketone	ESQ_CB	EQDIET	1.64E-07
COMSTK	Methyl mercury	ESQ_CB	EQDIET	1.24E-05
COMSTK	Naphthalene	ESQ_CB	EQDIET	0.00E+00
COMSTK	n-Hexane	ESQ_CB	EQDIET	0.00E+00
COMSTK	Nickel compounds	ESQ_CB	EQDIET	2.90E-10
COMSTK	Nitrogen dioxide	ESQ_CB	EQDIET	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_CB	EQDIET	8.10E-04
COMSTK	Phosphoric acid	ESQ_CB	EQDIET	0.00E+00
COMSTK	Selenium compounds	ESQ_CB	EQDIET	3.00E-07
COMSTK	Silver compounds	ESQ_CB	EQDIET	1.50E-07
COMSTK	Styrene	ESQ_CB	EQDIET	0.00E+00
COMSTK	Sulfur dioxide	ESQ_CB	EQDIET	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_CB	EQDIET	0.00E+00
COMSTK	Thallium compounds	ESQ_CB	EQDIET	2.98E-06
COMSTK	Tin compounds	ESQ_CB	EQDIET	4.18E-08
COMSTK	Toluene	ESQ_CB	EQDIET	0.00E+00
COMSTK	trans-1,3-Dichloropropene	ESQ_CB	EQDIET	0.00E+00
COMSTK	Tribromomethane	ESQ_CB	EQDIET	0.00E+00
COMSTK	Trichloroethylene	ESQ_CB	EQDIET	0.00E+00
COMSTK	Trichlorofluoromethane	ESQ_CB	EQDIET	0.00E+00
COMSTK	Vanadium compounds	ESQ_CB	EQDIET	3.13E-08
COMSTK	Vinyl acetate	ESQ_CB	EQDIET	0.00E+00
COMSTK	Vinyl chloride	ESQ_CB	EQDIET	0.00E+00
COMSTK	VX	ESQ_CB	EQDIET	0.00E+00
COMSTK	Xylene (mixed)	ESQ_CB	EQDIET	0.00E+00
COMSTK	Zinc compounds	ESQ_CB	EQDIET	1.52E-08
LABSTK	GB	ESQ_CB	EQDIET	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	ESQ_CB	EQDIET	0.00E+00
LABSTK	VX	ESQ_CB	EQDIET	0.00E+00
MDBSTK	GB	ESQ_CB	EQDIET	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	ESQ_CB	EQDIET	0.00E+00
MDBSTK	VX	ESQ_CB	EQDIET	0.00E+00
BRASTK	Antimony compounds	ESQ_CM	EQDIET	7.44E-09
BRASTK	Arsenic compounds	ESQ_CM	EQDIET	7.64E-10
BRASTK	Barium compounds	ESQ_CM	EQDIET	2.91E-07
BRASTK	Beryllium compounds	ESQ_CM	EQDIET	1.33E-09

Source	COPC	Guild	Diet Type	ESQ
BRASTK	Boron compounds	ESQ_CM	EQDIET	2.12E-07
BRASTK	Cadmium compounds	ESQ_CM	EQDIET	2.79E-07
BRASTK	Chromium compounds	ESQ_CM	EQDIET	4.20E-06
BRASTK	Cobalt compounds	ESQ_CM	EQDIET	2.81E-07
BRASTK	Copper compounds	ESQ_CM	EQDIET	4.12E-05
BRASTK	EA 2192	ESQ_CM	EQDIET	0.00E+00
BRASTK	GB	ESQ_CM	EQDIET	1.25E-06
BRASTK	Lead compounds	ESQ_CM	EQDIET	1.12E-10
BRASTK	Manganese compounds	ESQ_CM	EQDIET	9.47E-07
BRASTK	Mercuric chloride	ESQ_CM	EQDIET	1.31E-06
BRASTK	Methyl mercury	ESQ_CM	EQDIET	9.41E-05
BRASTK	Nickel compounds	ESQ_CM	EQDIET	1.62E-08
BRASTK	o-Cresol	ESQ_CM	EQDIET	2.79E-08
BRASTK	Phosphoric acid	ESQ_CM	EQDIET	6.14E-06
BRASTK	Selenium compounds	ESQ_CM	EQDIET	1.38E-05
BRASTK	Silver compounds	ESQ_CM	EQDIET	1.27E-06
BRASTK	Sulfur mustard (or H/HD)	ESQ_CM	EQDIET	0.00E+00
BRASTK	Thallium compounds	ESQ_CM	EQDIET	3.15E-04
BRASTK	Tin compounds	ESQ_CM	EQDIET	1.50E-07
BRASTK	Vanadium compounds	ESQ_CM	EQDIET	1.95E-07
BRASTK	VX	ESQ_CM	EQDIET	7.37E-04
BRASTK	Zinc compounds	ESQ_CM	EQDIET	6.30E-10
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_CM	EQDIET	2.78E-16
COMSTK	1,1-Dichloroethylene	ESQ_CM	EQDIET	1.60E-15
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_CM	EQDIET	9.81E-10
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_CM	EQDIET	1.05E-09
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_CM	EQDIET	8.71E-10
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_CM	EQDIET	4.90E-08
COMSTK	1,2-Dichlorobenzene	ESQ_CM	EQDIET	2.58E-12
COMSTK	1,4-Dichlorobenzene	ESQ_CM	EQDIET	1.70E-12
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_CM	EQDIET	8.04E-11
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_CM	EQDIET	2.26E-10
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_CM	EQDIET	6.34E-10
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_CM	EQDIET	1.45E-10
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_CM	EQDIET	5.52E-10
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_CM	EQDIET	6.54E-09
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_CM	EQDIET	7.89E-13
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_CM	EQDIET	2.51E-04
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_CM	EQDIET	4.96E-06
COMSTK	2,4,6-Trinitrotoluene	ESQ_CM	EQDIET	1.99E-07
COMSTK	2,4-Dinitrotoluene	ESQ_CM	EQDIET	3.05E-08
COMSTK	2-Methylnaphthalene	ESQ_CM	EQDIET	7.16E-08
COMSTK	2-Xylene	ESQ_CM	EQDIET	6.48E-11
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_CM	EQDIET	3.62E-10
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_CM	EQDIET	5.50E-10

Source	COPC	Guild	Diet Type	ESQ
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_CM	EQDIET	2.58E-07
COMSTK	Acetone	ESQ_CM	EQDIET	3.28E-10
COMSTK	Aluminum compounds	ESQ_CM	EQDIET	4.59E-06
COMSTK	Antimony compounds	ESQ_CM	EQDIET	1.40E-09
COMSTK	Arsenic compounds	ESQ_CM	EQDIET	4.19E-11
COMSTK	Barium compounds	ESQ_CM	EQDIET	1.79E-08
COMSTK	Benzaldehyde	ESQ_CM	EQDIET	5.87E-07
COMSTK	Benzene	ESQ_CM	EQDIET	1.44E-13
COMSTK	Benzoic acid	ESQ_CM	EQDIET	5.71E-08
COMSTK	Benzyl alcohol	ESQ_CM	EQDIET	5.69E-08
COMSTK	Beryllium compounds	ESQ_CM	EQDIET	1.37E-11
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_CM	EQDIET	5.71E-04
COMSTK	Boron compounds	ESQ_CM	EQDIET	2.89E-08
COMSTK	Bromochloromethane	ESQ_CM	EQDIET	1.15E-13
COMSTK	Bromodichloromethane	ESQ_CM	EQDIET	1.20E-11
COMSTK	Bromoethane	ESQ_CM	EQDIET	5.42E-13
COMSTK	Cadmium compounds	ESQ_CM	EQDIET	2.15E-09
COMSTK	Carbon disulfide	ESQ_CM	EQDIET	3.65E-13
COMSTK	Carbon tetrachloride	ESQ_CM	EQDIET	3.88E-14
COMSTK	Chlorine	ESQ_CM	EQDIET	0.00E+00
COMSTK	Chlorobenzene	ESQ_CM	EQDIET	1.32E-14
COMSTK	Chlorodibromomethane	ESQ_CM	EQDIET	1.75E-10
COMSTK	Chloroform	ESQ_CM	EQDIET	1.04E-12
COMSTK	Chromium compounds	ESQ_CM	EQDIET	1.31E-07
COMSTK	cis-1,3-Dichloropropene	ESQ_CM	EQDIET	0.00E+00
COMSTK	Cobalt compounds	ESQ_CM	EQDIET	1.20E-09
COMSTK	Composirte TOE - Nonvolatile	ESQ_CM	EQDIET	4.15E-03
COMSTK	Composirte TOE - Semivolatile	ESQ_CM	EQDIET	4.01E-06
COMSTK	Composite TOE - Volatile	ESQ_CM	EQDIET	1.48E-09
COMSTK	Copper compounds	ESQ_CM	EQDIET	5.39E-08
COMSTK	Dibutyl phthalate	ESQ_CM	EQDIET	4.50E-08
COMSTK	Dichlorodifluoromethane	ESQ_CM	EQDIET	0.00E+00
COMSTK	Dichloromethane	ESQ_CM	EQDIET	3.12E-12
COMSTK	Diethyl phthalate	ESQ_CM	EQDIET	3.28E-10
COMSTK	Dimethylphthalate	ESQ_CM	EQDIET	3.06E-12
COMSTK	Ethyl chloride	ESQ_CM	EQDIET	0.00E+00
COMSTK	Ethylbenzene	ESQ_CM	EQDIET	1.75E-12
COMSTK	GB	ESQ_CM	EQDIET	1.22E-07
COMSTK	Hydrochloric acid	ESQ_CM	EQDIET	6.62E-08
COMSTK	Hydrofluoric acid	ESQ_CM	EQDIET	0.00E+00
COMSTK	Lead compounds	ESQ_CM	EQDIET	1.70E-10
COMSTK	m,p-Xylene	ESQ_CM	EQDIET	4.14E-07
COMSTK	Manganese compounds	ESQ_CM	EQDIET	1.23E-08
COMSTK	Mercuric chloride	ESQ_CM	EQDIET	7.01E-08
COMSTK	Methyl bromide	ESQ_CM	EQDIET	5.26E-11

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Methyl chloride	ESQ_CM	EQDIET	1.27E-13
COMSTK	Methyl ethyl ketone	ESQ_CM	EQDIET	1.12E-13
COMSTK	Methyl iodide	ESQ_CM	EQDIET	1.33E-11
COMSTK	Methyl isobutyl ketone	ESQ_CM	EQDIET	1.26E-09
COMSTK	Methyl mercury	ESQ_CM	EQDIET	5.06E-06
COMSTK	Naphthalene	ESQ_CM	EQDIET	3.83E-09
COMSTK	n-Hexane	ESQ_CM	EQDIET	1.18E-11
COMSTK	Nickel compounds	ESQ_CM	EQDIET	2.22E-10
COMSTK	Nitrogen dioxide	ESQ_CM	EQDIET	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_CM	EQDIET	2.06E-04
COMSTK	Phosphoric acid	ESQ_CM	EQDIET	7.46E-08
COMSTK	Selenium compounds	ESQ_CM	EQDIET	1.15E-07
COMSTK	Silver compounds	ESQ_CM	EQDIET	1.01E-08
COMSTK	Styrene	ESQ_CM	EQDIET	4.07E-09
COMSTK	Sulfur dioxide	ESQ_CM	EQDIET	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_CM	EQDIET	0.00E+00
COMSTK	Thallium compounds	ESQ_CM	EQDIET	2.82E-05
COMSTK	Tin compounds	ESQ_CM	EQDIET	2.36E-09
COMSTK	Toluene	ESQ_CM	EQDIET	4.85E-14
COMSTK	trans-1,3-Dichloropropene	ESQ_CM	EQDIET	0.00E+00
COMSTK	Tribromomethane	ESQ_CM	EQDIET	6.77E-14
COMSTK	Trichloroethylene	ESQ_CM	EQDIET	2.78E-14
COMSTK	Trichlorofluoromethane	ESQ_CM	EQDIET	0.00E+00
COMSTK	Vanadium compounds	ESQ_CM	EQDIET	6.84E-10
COMSTK	Vinyl acetate	ESQ_CM	EQDIET	1.08E-13
COMSTK	Vinyl chloride	ESQ_CM	EQDIET	1.34E-12
COMSTK	VX	ESQ_CM	EQDIET	4.41E-05
COMSTK	Xylene (mixed)	ESQ_CM	EQDIET	5.35E-09
COMSTK	Zinc compounds	ESQ_CM	EQDIET	2.66E-10
LABSTK	GB	ESQ_CM	EQDIET	2.78E-07
LABSTK	Sulfur mustard (or H/HD)	ESQ_CM	EQDIET	0.00E+00
LABSTK	VX	ESQ_CM	EQDIET	1.65E-04
MDBSTK	GB	ESQ_CM	EQDIET	2.70E-07
MDBSTK	Sulfur mustard (or H/HD)	ESQ_CM	EQDIET	0.00E+00
MDBSTK	VX	ESQ_CM	EQDIET	1.48E-04
BRASTK	Antimony compounds	ESQ_HB	EQDIET	0.00E+00
BRASTK	Arsenic compounds	ESQ_HB	EQDIET	1.72E-05
BRASTK	Barium compounds	ESQ_HB	EQDIET	8.65E-06
BRASTK	Beryllium compounds	ESQ_HB	EQDIET	0.00E+00
BRASTK	Boron compounds	ESQ_HB	EQDIET	2.91E-06
BRASTK	Cadmium compounds	ESQ_HB	EQDIET	8.38E-05
BRASTK	Chromium compounds	ESQ_HB	EQDIET	1.89E-05
BRASTK	Cobalt compounds	ESQ_HB	EQDIET	8.05E-06
BRASTK	Copper compounds	ESQ_HB	EQDIET	8.80E-04
BRASTK	EA 2192	ESQ_HB	EQDIET	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
BRASTK	GB	ESQ_HB	EQDIET	0.00E+00
BRASTK	Lead compounds	ESQ_HB	EQDIET	1.96E-06
BRASTK	Manganese compounds	ESQ_HB	EQDIET	1.71E-05
BRASTK	Mercuric chloride	ESQ_HB	EQDIET	6.96E-05
BRASTK	Methyl mercury	ESQ_HB	EQDIET	6.70E-05
BRASTK	Nickel compounds	ESQ_HB	EQDIET	4.37E-05
BRASTK	o-Cresol	ESQ_HB	EQDIET	0.00E+00
BRASTK	Phosphoric acid	ESQ_HB	EQDIET	0.00E+00
BRASTK	Selenium compounds	ESQ_HB	EQDIET	4.36E-04
BRASTK	Silver compounds	ESQ_HB	EQDIET	7.29E-05
BRASTK	Sulfur mustard (or H/HD)	ESQ_HB	EQDIET	0.00E+00
BRASTK	Thallium compounds	ESQ_HB	EQDIET	5.94E-05
BRASTK	Tin compounds	ESQ_HB	EQDIET	3.36E-05
BRASTK	Vanadium compounds	ESQ_HB	EQDIET	1.50E-04
BRASTK	VX	ESQ_HB	EQDIET	0.00E+00
BRASTK	Zinc compounds	ESQ_HB	EQDIET	3.35E-05
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_HB	EQDIET	0.00E+00
COMSTK	1,1-Dichloroethylene	ESQ_HB	EQDIET	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_HB	EQDIET	3.18E-10
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_HB	EQDIET	5.23E-10
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_HB	EQDIET	6.59E-09
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_HB	EQDIET	4.35E-09
COMSTK	1,2-Dichlorobenzene	ESQ_HB	EQDIET	0.00E+00
COMSTK	1,4-Dichlorobenzene	ESQ_HB	EQDIET	0.00E+00
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_HB	EQDIET	7.78E-10
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_HB	EQDIET	3.72E-09
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_HB	EQDIET	1.15E-08
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_HB	EQDIET	2.37E-10
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_HB	EQDIET	9.17E-10
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_HB	EQDIET	9.49E-08
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_HB	EQDIET	1.31E-12
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_HB	EQDIET	8.03E-04
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_HB	EQDIET	9.16E-08
COMSTK	2,4,6-Trinitrotoluene	ESQ_HB	EQDIET	4.63E-07
COMSTK	2,4-Dinitrotoluene	ESQ_HB	EQDIET	9.21E-07
COMSTK	2-Methylnaphthalene	ESQ_HB	EQDIET	0.00E+00
COMSTK	2-Xylene	ESQ_HB	EQDIET	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_HB	EQDIET	3.87E-06
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_HB	EQDIET	5.32E-07
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_HB	EQDIET	7.49E-07
COMSTK	Acetone	ESQ_HB	EQDIET	1.66E-07
COMSTK	Aluminum compounds	ESQ_HB	EQDIET	9.48E-07
COMSTK	Antimony compounds	ESQ_HB	EQDIET	0.00E+00
COMSTK	Arsenic compounds	ESQ_HB	EQDIET	9.31E-07
COMSTK	Barium compounds	ESQ_HB	EQDIET	5.50E-07

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Benzaldehyde	ESQ_HB	EQDIET	0.00E+00
COMSTK	Benzene	ESQ_HB	EQDIET	0.00E+00
COMSTK	Benzoic acid	ESQ_HB	EQDIET	0.00E+00
COMSTK	Benzyl alcohol	ESQ_HB	EQDIET	0.00E+00
COMSTK	Beryllium compounds	ESQ_HB	EQDIET	0.00E+00
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_HB	EQDIET	8.28E-04
COMSTK	Boron compounds	ESQ_HB	EQDIET	3.98E-07
COMSTK	Bromochloromethane	ESQ_HB	EQDIET	0.00E+00
COMSTK	Bromodichloromethane	ESQ_HB	EQDIET	0.00E+00
COMSTK	Bromoethane	ESQ_HB	EQDIET	0.00E+00
COMSTK	Cadmium compounds	ESQ_HB	EQDIET	6.53E-07
COMSTK	Carbon disulfide	ESQ_HB	EQDIET	0.00E+00
COMSTK	Carbon tetrachloride	ESQ_HB	EQDIET	0.00E+00
COMSTK	Chlorine	ESQ_HB	EQDIET	0.00E+00
COMSTK	Chlorobenzene	ESQ_HB	EQDIET	0.00E+00
COMSTK	Chlorodibromomethane	ESQ_HB	EQDIET	0.00E+00
COMSTK	Chloroform	ESQ_HB	EQDIET	0.00E+00
COMSTK	Chromium compounds	ESQ_HB	EQDIET	6.07E-07
COMSTK	cis-1,3-Dichloropropene	ESQ_HB	EQDIET	0.00E+00
COMSTK	Cobalt compounds	ESQ_HB	EQDIET	3.51E-08
COMSTK	Composirte TOE - Nonvolatile	ESQ_HB	EQDIET	1.55E+01
COMSTK	Composirte TOE - Semivolatile	ESQ_HB	EQDIET	6.18E-05
COMSTK	Composite TOE - Volatile	ESQ_HB	EQDIET	4.72E-07
COMSTK	Copper compounds	ESQ_HB	EQDIET	1.18E-06
COMSTK	Dibutyl phthalate	ESQ_HB	EQDIET	2.80E-05
COMSTK	Dichlorodifluoromethane	ESQ_HB	EQDIET	0.00E+00
COMSTK	Dichloromethane	ESQ_HB	EQDIET	0.00E+00
COMSTK	Diethyl phthalate	ESQ_HB	EQDIET	0.00E+00
COMSTK	Dimethylphthalate	ESQ_HB	EQDIET	0.00E+00
COMSTK	Ethyl chloride	ESQ_HB	EQDIET	0.00E+00
COMSTK	Ethylbenzene	ESQ_HB	EQDIET	0.00E+00
COMSTK	GB	ESQ_HB	EQDIET	0.00E+00
COMSTK	Hydrochloric acid	ESQ_HB	EQDIET	0.00E+00
COMSTK	Hydrofluoric acid	ESQ_HB	EQDIET	0.00E+00
COMSTK	Lead compounds	ESQ_HB	EQDIET	3.15E-06
COMSTK	m,p-Xylene	ESQ_HB	EQDIET	0.00E+00
COMSTK	Manganese compounds	ESQ_HB	EQDIET	2.28E-07
COMSTK	Mercuric chloride	ESQ_HB	EQDIET	2.42E-06
COMSTK	Methyl bromide	ESQ_HB	EQDIET	0.00E+00
COMSTK	Methyl chloride	ESQ_HB	EQDIET	0.00E+00
COMSTK	Methyl ethyl ketone	ESQ_HB	EQDIET	0.00E+00
COMSTK	Methyl iodide	ESQ_HB	EQDIET	0.00E+00
COMSTK	Methyl isobutyl ketone	ESQ_HB	EQDIET	3.92E-07
COMSTK	Methyl mercury	ESQ_HB	EQDIET	1.14E-06
COMSTK	Naphthalene	ESQ_HB	EQDIET	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	n-Hexane	ESQ_HB	EQDIET	0.00E+00
COMSTK	Nickel compounds	ESQ_HB	EQDIET	6.11E-07
COMSTK	Nitrogen dioxide	ESQ_HB	EQDIET	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_HB	EQDIET	9.79E-06
COMSTK	Phosphoric acid	ESQ_HB	EQDIET	0.00E+00
COMSTK	Selenium compounds	ESQ_HB	EQDIET	3.64E-06
COMSTK	Silver compounds	ESQ_HB	EQDIET	5.94E-07
COMSTK	Styrene	ESQ_HB	EQDIET	0.00E+00
COMSTK	Sulfur dioxide	ESQ_HB	EQDIET	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_HB	EQDIET	0.00E+00
COMSTK	Thallium compounds	ESQ_HB	EQDIET	5.55E-06
COMSTK	Tin compounds	ESQ_HB	EQDIET	5.28E-07
COMSTK	Toluene	ESQ_HB	EQDIET	0.00E+00
COMSTK	trans-1,3-Dichloropropene	ESQ_HB	EQDIET	0.00E+00
COMSTK	Tribromomethane	ESQ_HB	EQDIET	0.00E+00
COMSTK	Trichloroethylene	ESQ_HB	EQDIET	0.00E+00
COMSTK	Trichlorofluoromethane	ESQ_HB	EQDIET	0.00E+00
COMSTK	Vanadium compounds	ESQ_HB	EQDIET	5.47E-07
COMSTK	Vinyl acetate	ESQ_HB	EQDIET	0.00E+00
COMSTK	Vinyl chloride	ESQ_HB	EQDIET	0.00E+00
COMSTK	VX	ESQ_HB	EQDIET	0.00E+00
COMSTK	Xylene (mixed)	ESQ_HB	EQDIET	0.00E+00
COMSTK	Zinc compounds	ESQ_HB	EQDIET	1.45E-05
LABSTK	GB	ESQ_HB	EQDIET	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	ESQ_HB	EQDIET	0.00E+00
LABSTK	VX	ESQ_HB	EQDIET	0.00E+00
MDBSTK	GB	ESQ_HB	EQDIET	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	ESQ_HB	EQDIET	0.00E+00
MDBSTK	VX	ESQ_HB	EQDIET	0.00E+00
BRASTK	Antimony compounds	ESQ_HM	EQDIET	1.20E-04
BRASTK	Arsenic compounds	ESQ_HM	EQDIET	1.10E-05
BRASTK	Barium compounds	ESQ_HM	EQDIET	8.36E-07
BRASTK	Beryllium compounds	ESQ_HM	EQDIET	1.63E-06
BRASTK	Boron compounds	ESQ_HM	EQDIET	2.66E-07
BRASTK	Cadmium compounds	ESQ_HM	EQDIET	4.72E-05
BRASTK	Chromium compounds	ESQ_HM	EQDIET	4.83E-06
BRASTK	Cobalt compounds	ESQ_HM	EQDIET	1.87E-06
BRASTK	Copper compounds	ESQ_HM	EQDIET	1.62E-04
BRASTK	EA 2192	ESQ_HM	EQDIET	0.00E+00
BRASTK	GB	ESQ_HM	EQDIET	1.21E-03
BRASTK	Lead compounds	ESQ_HM	EQDIET	2.00E-07
BRASTK	Manganese compounds	ESQ_HM	EQDIET	1.46E-05
BRASTK	Mercuric chloride	ESQ_HM	EQDIET	6.31E-06
BRASTK	Methyl mercury	ESQ_HM	EQDIET	4.02E-05
BRASTK	Nickel compounds	ESQ_HM	EQDIET	5.10E-05

Source	COPC	Guild	Diet Type	ESQ
BRASTK	o-Cresol	ESQ_HM	EQDIET	3.68E-08
BRASTK	Phosphoric acid	ESQ_HM	EQDIET	1.62E-04
BRASTK	Selenium compounds	ESQ_HM	EQDIET	2.57E-04
BRASTK	Silver compounds	ESQ_HM	EQDIET	6.39E-06
BRASTK	Sulfur mustard (or H/HD)	ESQ_HM	EQDIET	0.00E+00
BRASTK	Thallium compounds	ESQ_HM	EQDIET	6.25E-04
BRASTK	Tin compounds	ESQ_HM	EQDIET	2.86E-06
BRASTK	Vanadium compounds	ESQ_HM	EQDIET	2.71E-06
BRASTK	VX	ESQ_HM	EQDIET	7.18E-02
BRASTK	Zinc compounds	ESQ_HM	EQDIET	8.97E-07
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_HM	EQDIET	9.88E-17
COMSTK	1,1-Dichloroethylene	ESQ_HM	EQDIET	7.79E-15
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_HM	EQDIET	3.27E-09
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_HM	EQDIET	5.39E-09
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_HM	EQDIET	2.33E-08
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_HM	EQDIET	1.70E-08
COMSTK	1,2-Dichlorobenzene	ESQ_HM	EQDIET	5.26E-13
COMSTK	1,4-Dichlorobenzene	ESQ_HM	EQDIET	3.77E-13
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_HM	EQDIET	9.59E-10
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_HM	EQDIET	3.58E-09
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_HM	EQDIET	1.15E-08
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_HM	EQDIET	2.28E-09
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_HM	EQDIET	8.87E-09
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_HM	EQDIET	8.81E-08
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_HM	EQDIET	1.26E-11
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_HM	EQDIET	2.07E-05
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_HM	EQDIET	3.42E-07
COMSTK	2,4,6-Trinitrotoluene	ESQ_HM	EQDIET	4.68E-07
COMSTK	2,4-Dinitrotoluene	ESQ_HM	EQDIET	3.90E-08
COMSTK	2-Methylnaphthalene	ESQ_HM	EQDIET	6.87E-09
COMSTK	2-Xylene	ESQ_HM	EQDIET	2.25E-11
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_HM	EQDIET	3.06E-08
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_HM	EQDIET	6.56E-09
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_HM	EQDIET	3.08E-06
COMSTK	Acetone	ESQ_HM	EQDIET	2.55E-07
COMSTK	Aluminum compounds	ESQ_HM	EQDIET	1.29E-05
COMSTK	Antimony compounds	ESQ_HM	EQDIET	2.29E-05
COMSTK	Arsenic compounds	ESQ_HM	EQDIET	5.92E-07
COMSTK	Barium compounds	ESQ_HM	EQDIET	5.36E-08
COMSTK	Benzaldehyde	ESQ_HM	EQDIET	1.44E-06
COMSTK	Benzene	ESQ_HM	EQDIET	2.43E-12
COMSTK	Benzoic acid	ESQ_HM	EQDIET	8.35E-08
COMSTK	Benzyl alcohol	ESQ_HM	EQDIET	2.35E-07
COMSTK	Beryllium compounds	ESQ_HM	EQDIET	1.78E-08
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_HM	EQDIET	1.47E-05

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Boron compounds	ESQ_HM	EQDIET	3.63E-08
COMSTK	Bromochloromethane	ESQ_HM	EQDIET	5.56E-13
COMSTK	Bromodichloromethane	ESQ_HM	EQDIET	1.09E-09
COMSTK	Bromoethane	ESQ_HM	EQDIET	1.31E-12
COMSTK	Cadmium compounds	ESQ_HM	EQDIET	3.68E-07
COMSTK	Carbon disulfide	ESQ_HM	EQDIET	1.08E-12
COMSTK	Carbon tetrachloride	ESQ_HM	EQDIET	2.23E-13
COMSTK	Chlorine	ESQ_HM	EQDIET	0.00E+00
COMSTK	Chlorobenzene	ESQ_HM	EQDIET	3.05E-13
COMSTK	Chlorodibromomethane	ESQ_HM	EQDIET	1.38E-08
COMSTK	Chloroform	ESQ_HM	EQDIET	1.52E-12
COMSTK	Chromium compounds	ESQ_HM	EQDIET	1.56E-07
COMSTK	cis-1,3-Dichloropropene	ESQ_HM	EQDIET	0.00E+00
COMSTK	Cobalt compounds	ESQ_HM	EQDIET	8.25E-09
COMSTK	Composirte TOE - Nonvolatile	ESQ_HM	EQDIET	8.90E-02
COMSTK	Composirte TOE - Semivolatile	ESQ_HM	EQDIET	1.22E-06
COMSTK	Composite TOE - Volatile	ESQ_HM	EQDIET	8.93E-08
COMSTK	Copper compounds	ESQ_HM	EQDIET	2.18E-07
COMSTK	Dibutyl phthalate	ESQ_HM	EQDIET	4.87E-08
COMSTK	Dichlorodifluoromethane	ESQ_HM	EQDIET	0.00E+00
COMSTK	Dichloromethane	ESQ_HM	EQDIET	9.03E-12
COMSTK	Diethyl phthalate	ESQ_HM	EQDIET	2.14E-10
COMSTK	Dimethylphthalate	ESQ_HM	EQDIET	6.98E-12
COMSTK	Ethyl chloride	ESQ_HM	EQDIET	0.00E+00
COMSTK	Ethylbenzene	ESQ_HM	EQDIET	6.00E-13
COMSTK	GB	ESQ_HM	EQDIET	1.22E-04
COMSTK	Hydrochloric acid	ESQ_HM	EQDIET	1.29E-07
COMSTK	Hydrofluoric acid	ESQ_HM	EQDIET	0.00E+00
COMSTK	Lead compounds	ESQ_HM	EQDIET	3.23E-07
COMSTK	m,p-Xylene	ESQ_HM	EQDIET	4.94E-06
COMSTK	Manganese compounds	ESQ_HM	EQDIET	1.96E-07
COMSTK	Mercuric chloride	ESQ_HM	EQDIET	1.66E-07
COMSTK	Methyl bromide	ESQ_HM	EQDIET	1.83E-10
COMSTK	Methyl chloride	ESQ_HM	EQDIET	2.24E-12
COMSTK	Methyl ethyl ketone	ESQ_HM	EQDIET	1.08E-10
COMSTK	Methyl iodide	ESQ_HM	EQDIET	3.09E-11
COMSTK	Methyl isobutyl ketone	ESQ_HM	EQDIET	4.56E-09
COMSTK	Methyl mercury	ESQ_HM	EQDIET	6.20E-07
COMSTK	Naphthalene	ESQ_HM	EQDIET	8.00E-10
COMSTK	n-Hexane	ESQ_HM	EQDIET	2.32E-12
COMSTK	Nickel compounds	ESQ_HM	EQDIET	7.11E-07
COMSTK	Nitrogen dioxide	ESQ_HM	EQDIET	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_HM	EQDIET	1.67E-06
COMSTK	Phosphoric acid	ESQ_HM	EQDIET	1.18E-06
COMSTK	Selenium compounds	ESQ_HM	EQDIET	2.15E-06

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Silver compounds	ESQ_HM	EQDIET	5.23E-08
COMSTK	Styrene	ESQ_HM	EQDIET	1.36E-09
COMSTK	Sulfur dioxide	ESQ_HM	EQDIET	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_HM	EQDIET	0.00E+00
COMSTK	Thallium compounds	ESQ_HM	EQDIET	5.92E-05
COMSTK	Tin compounds	ESQ_HM	EQDIET	4.50E-08
COMSTK	Toluene	ESQ_HM	EQDIET	7.74E-13
COMSTK	trans-1,3-Dichloropropene	ESQ_HM	EQDIET	0.00E+00
COMSTK	Tribromomethane	ESQ_HM	EQDIET	1.08E-13
COMSTK	Trichloroethylene	ESQ_HM	EQDIET	4.74E-13
COMSTK	Trichlorofluoromethane	ESQ_HM	EQDIET	0.00E+00
COMSTK	Vanadium compounds	ESQ_HM	EQDIET	1.00E-08
COMSTK	Vinyl acetate	ESQ_HM	EQDIET	5.72E-11
COMSTK	Vinyl chloride	ESQ_HM	EQDIET	5.28E-12
COMSTK	VX	ESQ_HM	EQDIET	4.38E-03
COMSTK	Xylene (mixed)	ESQ_HM	EQDIET	7.09E-07
COMSTK	Zinc compounds	ESQ_HM	EQDIET	3.87E-07
LABSTK	GB	ESQ_HM	EQDIET	2.78E-04
LABSTK	Sulfur mustard (or H/HD)	ESQ_HM	EQDIET	0.00E+00
LABSTK	VX	ESQ_HM	EQDIET	1.64E-02
MDBSTK	GB	ESQ_HM	EQDIET	2.42E-04
MDBSTK	Sulfur mustard (or H/HD)	ESQ_HM	EQDIET	0.00E+00
MDBSTK	VX	ESQ_HM	EQDIET	1.42E-02
BRASTK	Antimony compounds	ESQ_OB	EQDIET	0.00E+00
BRASTK	Arsenic compounds	ESQ_OB	EQDIET	1.04E-05
BRASTK	Barium compounds	ESQ_OB	EQDIET	2.34E-05
BRASTK	Beryllium compounds	ESQ_OB	EQDIET	0.00E+00
BRASTK	Boron compounds	ESQ_OB	EQDIET	5.77E-06
BRASTK	Cadmium compounds	ESQ_OB	EQDIET	5.11E-05
BRASTK	Chromium compounds	ESQ_OB	EQDIET	1.04E-04
BRASTK	Cobalt compounds	ESQ_OB	EQDIET	8.70E-06
BRASTK	Copper compounds	ESQ_OB	EQDIET	1.95E-03
BRASTK	EA 2192	ESQ_OB	EQDIET	0.00E+00
BRASTK	GB	ESQ_OB	EQDIET	0.00E+00
BRASTK	Lead compounds	ESQ_OB	EQDIET	1.19E-06
BRASTK	Manganese compounds	ESQ_OB	EQDIET	1.81E-05
BRASTK	Mercuric chloride	ESQ_OB	EQDIET	1.22E-04
BRASTK	Methyl mercury	ESQ_OB	EQDIET	1.11E-03
BRASTK	Nickel compounds	ESQ_OB	EQDIET	2.64E-05
BRASTK	o-Cresol	ESQ_OB	EQDIET	0.00E+00
BRASTK	Phosphoric acid	ESQ_OB	EQDIET	0.00E+00
BRASTK	Selenium compounds	ESQ_OB	EQDIET	2.63E-04
BRASTK	Silver compounds	ESQ_OB	EQDIET	1.39E-04
BRASTK	Sulfur mustard (or H/HD)	ESQ_OB	EQDIET	0.00E+00
BRASTK	Thallium compounds	ESQ_OB	EQDIET	2.02E-04

Source	COPC	Guild	Diet Type	ESQ
BRASTK	Tin compounds	ESQ_OB	EQDIET	2.07E-05
BRASTK	Vanadium compounds	ESQ_OB	EQDIET	1.64E-04
BRASTK	VX	ESQ_OB	EQDIET	0.00E+00
BRASTK	Zinc compounds	ESQ_OB	EQDIET	2.03E-05
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_OB	EQDIET	0.00E+00
COMSTK	1,1-Dichloroethylene	ESQ_OB	EQDIET	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_OB	EQDIET	3.57E-10
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_OB	EQDIET	5.63E-10
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_OB	EQDIET	5.85E-09
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_OB	EQDIET	9.56E-09
COMSTK	1,2-Dichlorobenzene	ESQ_OB	EQDIET	0.00E+00
COMSTK	1,4-Dichlorobenzene	ESQ_OB	EQDIET	0.00E+00
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_OB	EQDIET	4.78E-10
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_OB	EQDIET	3.89E-09
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_OB	EQDIET	1.15E-08
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_OB	EQDIET	2.48E-10
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_OB	EQDIET	9.51E-10
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_OB	EQDIET	1.04E-07
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_OB	EQDIET	1.37E-12
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_OB	EQDIET	6.15E-03
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_OB	EQDIET	6.81E-07
COMSTK	2,4,6-Trinitrotoluene	ESQ_OB	EQDIET	1.65E-06
COMSTK	2,4-Dinitrotoluene	ESQ_OB	EQDIET	5.49E-06
COMSTK	2-Methylnaphthalene	ESQ_OB	EQDIET	0.00E+00
COMSTK	2-Xylene	ESQ_OB	EQDIET	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_OB	EQDIET	2.67E-06
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_OB	EQDIET	3.27E-07
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_OB	EQDIET	4.61E-07
COMSTK	Acetone	ESQ_OB	EQDIET	1.02E-07
COMSTK	Aluminum compounds	ESQ_OB	EQDIET	2.59E-06
COMSTK	Antimony compounds	ESQ_OB	EQDIET	0.00E+00
COMSTK	Arsenic compounds	ESQ_OB	EQDIET	5.61E-07
COMSTK	Barium compounds	ESQ_OB	EQDIET	1.45E-06
COMSTK	Benzaldehyde	ESQ_OB	EQDIET	0.00E+00
COMSTK	Benzene	ESQ_OB	EQDIET	0.00E+00
COMSTK	Benzoic acid	ESQ_OB	EQDIET	0.00E+00
COMSTK	Benzyl alcohol	ESQ_OB	EQDIET	0.00E+00
COMSTK	Beryllium compounds	ESQ_OB	EQDIET	0.00E+00
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_OB	EQDIET	6.39E-02
COMSTK	Boron compounds	ESQ_OB	EQDIET	7.90E-07
COMSTK	Bromochloromethane	ESQ_OB	EQDIET	0.00E+00
COMSTK	Bromodichloromethane	ESQ_OB	EQDIET	0.00E+00
COMSTK	Bromoethane	ESQ_OB	EQDIET	0.00E+00
COMSTK	Cadmium compounds	ESQ_OB	EQDIET	3.98E-07
COMSTK	Carbon disulfide	ESQ_OB	EQDIET	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Carbon tetrachloride	ESQ_OB	EQDIET	0.00E+00
COMSTK	Chlorine	ESQ_OB	EQDIET	0.00E+00
COMSTK	Chlorobenzene	ESQ_OB	EQDIET	0.00E+00
COMSTK	Chlorodibromomethane	ESQ_OB	EQDIET	0.00E+00
COMSTK	Chloroform	ESQ_OB	EQDIET	0.00E+00
COMSTK	Chromium compounds	ESQ_OB	EQDIET	3.26E-06
COMSTK	cis-1,3-Dichloropropene	ESQ_OB	EQDIET	0.00E+00
COMSTK	Cobalt compounds	ESQ_OB	EQDIET	3.72E-08
COMSTK	Composirte TOE - Nonvolatile	ESQ_OB	EQDIET	1.47E+01
COMSTK	Composirte TOE - Semivolatile	ESQ_OB	EQDIET	1.28E-03
COMSTK	Composite TOE - Volatile	ESQ_OB	EQDIET	3.37E-06
COMSTK	Copper compounds	ESQ_OB	EQDIET	2.57E-06
COMSTK	Dibutyl phthalate	ESQ_OB	EQDIET	9.93E-05
COMSTK	Dichlorodifluoromethane	ESQ_OB	EQDIET	0.00E+00
COMSTK	Dichloromethane	ESQ_OB	EQDIET	0.00E+00
COMSTK	Diethyl phthalate	ESQ_OB	EQDIET	0.00E+00
COMSTK	Dimethylphthalate	ESQ_OB	EQDIET	0.00E+00
COMSTK	Ethyl chloride	ESQ_OB	EQDIET	0.00E+00
COMSTK	Ethylbenzene	ESQ_OB	EQDIET	0.00E+00
COMSTK	GB	ESQ_OB	EQDIET	0.00E+00
COMSTK	Hydrochloric acid	ESQ_OB	EQDIET	0.00E+00
COMSTK	Hydrofluoric acid	ESQ_OB	EQDIET	0.00E+00
COMSTK	Lead compounds	ESQ_OB	EQDIET	1.91E-06
COMSTK	m,p-Xylene	ESQ_OB	EQDIET	0.00E+00
COMSTK	Manganese compounds	ESQ_OB	EQDIET	2.39E-07
COMSTK	Mercuric chloride	ESQ_OB	EQDIET	5.74E-06
COMSTK	Methyl bromide	ESQ_OB	EQDIET	0.00E+00
COMSTK	Methyl chloride	ESQ_OB	EQDIET	0.00E+00
COMSTK	Methyl ethyl ketone	ESQ_OB	EQDIET	0.00E+00
COMSTK	Methyl iodide	ESQ_OB	EQDIET	0.00E+00
COMSTK	Methyl isobutyl ketone	ESQ_OB	EQDIET	9.98E-07
COMSTK	Methyl mercury	ESQ_OB	EQDIET	5.80E-05
COMSTK	Naphthalene	ESQ_OB	EQDIET	0.00E+00
COMSTK	n-Hexane	ESQ_OB	EQDIET	0.00E+00
COMSTK	Nickel compounds	ESQ_OB	EQDIET	3.69E-07
COMSTK	Nitrogen dioxide	ESQ_OB	EQDIET	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_OB	EQDIET	2.84E-04
COMSTK	Phosphoric acid	ESQ_OB	EQDIET	0.00E+00
COMSTK	Selenium compounds	ESQ_OB	EQDIET	2.19E-06
COMSTK	Silver compounds	ESQ_OB	EQDIET	1.11E-06
COMSTK	Styrene	ESQ_OB	EQDIET	0.00E+00
COMSTK	Sulfur dioxide	ESQ_OB	EQDIET	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_OB	EQDIET	0.00E+00
COMSTK	Thallium compounds	ESQ_OB	EQDIET	1.83E-05
COMSTK	Tin compounds	ESQ_OB	EQDIET	3.25E-07

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Toluene	ESQ_OB	EQDIET	0.00E+00
COMSTK	trans-1,3-Dichloropropene	ESQ_OB	EQDIET	0.00E+00
COMSTK	Tribromomethane	ESQ_OB	EQDIET	0.00E+00
COMSTK	Trichloroethylene	ESQ_OB	EQDIET	0.00E+00
COMSTK	Trichlorofluoromethane	ESQ_OB	EQDIET	0.00E+00
COMSTK	Vanadium compounds	ESQ_OB	EQDIET	5.91E-07
COMSTK	Vinyl acetate	ESQ_OB	EQDIET	0.00E+00
COMSTK	Vinyl chloride	ESQ_OB	EQDIET	0.00E+00
COMSTK	VX	ESQ_OB	EQDIET	0.00E+00
COMSTK	Xylene (mixed)	ESQ_OB	EQDIET	0.00E+00
COMSTK	Zinc compounds	ESQ_OB	EQDIET	8.76E-06
LABSTK	GB	ESQ_OB	EQDIET	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	ESQ_OB	EQDIET	0.00E+00
LABSTK	VX	ESQ_OB	EQDIET	0.00E+00
MDBSTK	GB	ESQ_OB	EQDIET	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	ESQ_OB	EQDIET	0.00E+00
MDBSTK	VX	ESQ_OB	EQDIET	0.00E+00
BRASTK	Antimony compounds	ESQ_OM	EQDIET	3.49E-04
BRASTK	Arsenic compounds	ESQ_OM	EQDIET	3.18E-05
BRASTK	Barium compounds	ESQ_OM	EQDIET	1.10E-05
BRASTK	Beryllium compounds	ESQ_OM	EQDIET	4.79E-06
BRASTK	Boron compounds	ESQ_OM	EQDIET	6.18E-07
BRASTK	Cadmium compounds	ESQ_OM	EQDIET	1.39E-04
BRASTK	Chromium compounds	ESQ_OM	EQDIET	1.47E-04
BRASTK	Cobalt compounds	ESQ_OM	EQDIET	5.29E-06
BRASTK	Copper compounds	ESQ_OM	EQDIET	1.69E-03
BRASTK	EA 2192	ESQ_OM	EQDIET	0.00E+00
BRASTK	GB	ESQ_OM	EQDIET	3.52E-03
BRASTK	Lead compounds	ESQ_OM	EQDIET	5.85E-07
BRASTK	Manganese compounds	ESQ_OM	EQDIET	5.30E-05
BRASTK	Mercuric chloride	ESQ_OM	EQDIET	4.11E-05
BRASTK	Methyl mercury	ESQ_OM	EQDIET	3.32E-03
BRASTK	Nickel compounds	ESQ_OM	EQDIET	1.48E-04
BRASTK	o-Cresol	ESQ_OM	EQDIET	1.05E-06
BRASTK	Phosphoric acid	ESQ_OM	EQDIET	4.70E-04
BRASTK	Selenium compounds	ESQ_OM	EQDIET	7.48E-04
BRASTK	Silver compounds	ESQ_OM	EQDIET	5.59E-05
BRASTK	Sulfur mustard (or H/HD)	ESQ_OM	EQDIET	0.00E+00
BRASTK	Thallium compounds	ESQ_OM	EQDIET	1.10E-02
BRASTK	Tin compounds	ESQ_OM	EQDIET	8.32E-06
BRASTK	Vanadium compounds	ESQ_OM	EQDIET	7.65E-06
BRASTK	VX	ESQ_OM	EQDIET	2.36E+00
BRASTK	Zinc compounds	ESQ_OM	EQDIET	2.62E-06
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_OM	EQDIET	8.54E-15
COMSTK	1,1-Dichloroethylene	ESQ_OM	EQDIET	2.20E-13

Source	COPC	Guild	Diet Type	ESQ
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_OM	EQDIET	1.28E-08
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_OM	EQDIET	1.97E-08
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_OM	EQDIET	6.68E-08
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_OM	EQDIET	1.78E-07
COMSTK	1,2-Dichlorobenzene	ESQ_OM	EQDIET	8.10E-11
COMSTK	1,4-Dichlorobenzene	ESQ_OM	EQDIET	5.32E-11
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_OM	EQDIET	2.79E-09
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_OM	EQDIET	1.01E-08
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_OM	EQDIET	3.27E-08
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_OM	EQDIET	6.47E-09
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_OM	EQDIET	2.52E-08
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_OM	EQDIET	2.49E-07
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_OM	EQDIET	3.56E-11
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_OM	EQDIET	8.37E-04
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_OM	EQDIET	1.31E-05
COMSTK	2,4,6-Trinitrotoluene	ESQ_OM	EQDIET	8.10E-06
COMSTK	2,4-Dinitrotoluene	ESQ_OM	EQDIET	1.14E-06
COMSTK	2-Methylnaphthalene	ESQ_OM	EQDIET	2.04E-06
COMSTK	2-Xylene	ESQ_OM	EQDIET	2.24E-09
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_OM	EQDIET	8.86E-08
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_OM	EQDIET	1.91E-08
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_OM	EQDIET	8.95E-06
COMSTK	Acetone	ESQ_OM	EQDIET	7.46E-07
COMSTK	Aluminum compounds	ESQ_OM	EQDIET	1.72E-04
COMSTK	Antimony compounds	ESQ_OM	EQDIET	6.65E-05
COMSTK	Arsenic compounds	ESQ_OM	EQDIET	1.72E-06
COMSTK	Barium compounds	ESQ_OM	EQDIET	6.82E-07
COMSTK	Benzaldehyde	ESQ_OM	EQDIET	2.40E-05
COMSTK	Benzene	ESQ_OM	EQDIET	7.81E-11
COMSTK	Benzoic acid	ESQ_OM	EQDIET	2.17E-06
COMSTK	Benzyl alcohol	ESQ_OM	EQDIET	2.61E-06
COMSTK	Beryllium compounds	ESQ_OM	EQDIET	5.23E-08
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_OM	EQDIET	5.47E-03
COMSTK	Boron compounds	ESQ_OM	EQDIET	8.44E-08
COMSTK	Bromochloromethane	ESQ_OM	EQDIET	5.47E-12
COMSTK	Bromodichloromethane	ESQ_OM	EQDIET	3.73E-08
COMSTK	Bromoethane	ESQ_OM	EQDIET	2.20E-11
COMSTK	Cadmium compounds	ESQ_OM	EQDIET	1.08E-06
COMSTK	Carbon disulfide	ESQ_OM	EQDIET	2.89E-11
COMSTK	Carbon tetrachloride	ESQ_OM	EQDIET	4.77E-11
COMSTK	Chlorine	ESQ_OM	EQDIET	0.00E+00
COMSTK	Chlorobenzene	ESQ_OM	EQDIET	2.28E-11
COMSTK	Chlorodibromomethane	ESQ_OM	EQDIET	5.55E-07
COMSTK	Chloroform	ESQ_OM	EQDIET	3.71E-11
COMSTK	Chromium compounds	ESQ_OM	EQDIET	4.60E-06

Source	COPC	Guild	Diet Type	ESQ
COMSTK	cis-1,3-Dichloropropene	ESQ_OM	EQDIET	0.00E+00
COMSTK	Cobalt compounds	ESQ_OM	EQDIET	2.34E-08
COMSTK	Composirte TOE - Nonvolatile	ESQ_OM	EQDIET	2.54E-01
COMSTK	Composirte TOE - Semivolatile	ESQ_OM	EQDIET	1.39E-04
COMSTK	Composite TOE - Volatile	ESQ_OM	EQDIET	3.17E-06
COMSTK	Copper compounds	ESQ_OM	EQDIET	2.22E-06
COMSTK	Dibutyl phthalate	ESQ_OM	EQDIET	8.36E-07
COMSTK	Dichlorodifluoromethane	ESQ_OM	EQDIET	0.00E+00
COMSTK	Dichloromethane	ESQ_OM	EQDIET	1.19E-10
COMSTK	Diethyl phthalate	ESQ_OM	EQDIET	1.17E-08
COMSTK	Dimethylphthalate	ESQ_OM	EQDIET	1.24E-10
COMSTK	Ethyl chloride	ESQ_OM	EQDIET	0.00E+00
COMSTK	Ethylbenzene	ESQ_OM	EQDIET	6.03E-11
COMSTK	GB	ESQ_OM	EQDIET	3.55E-04
COMSTK	Hydrochloric acid	ESQ_OM	EQDIET	2.99E-07
COMSTK	Hydrofluoric acid	ESQ_OM	EQDIET	0.00E+00
COMSTK	Lead compounds	ESQ_OM	EQDIET	9.44E-07
COMSTK	m,p-Xylene	ESQ_OM	EQDIET	1.43E-05
COMSTK	Manganese compounds	ESQ_OM	EQDIET	7.06E-07
COMSTK	Mercuric chloride	ESQ_OM	EQDIET	1.71E-06
COMSTK	Methyl bromide	ESQ_OM	EQDIET	2.19E-09
COMSTK	Methyl chloride	ESQ_OM	EQDIET	6.42E-12
COMSTK	Methyl ethyl ketone	ESQ_OM	EQDIET	3.15E-10
COMSTK	Methyl iodide	ESQ_OM	EQDIET	5.25E-10
COMSTK	Methyl isobutyl ketone	ESQ_OM	EQDIET	5.59E-08
COMSTK	Methyl mercury	ESQ_OM	EQDIET	1.74E-04
COMSTK	Naphthalene	ESQ_OM	EQDIET	1.20E-07
COMSTK	n-Hexane	ESQ_OM	EQDIET	3.03E-10
COMSTK	Nickel compounds	ESQ_OM	EQDIET	2.07E-06
COMSTK	Nitrogen dioxide	ESQ_OM	EQDIET	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_OM	EQDIET	5.07E-04
COMSTK	Phosphoric acid	ESQ_OM	EQDIET	3.40E-06
COMSTK	Selenium compounds	ESQ_OM	EQDIET	6.24E-06
COMSTK	Silver compounds	ESQ_OM	EQDIET	4.48E-07
COMSTK	Styrene	ESQ_OM	EQDIET	1.42E-07
COMSTK	Sulfur dioxide	ESQ_OM	EQDIET	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_OM	EQDIET	0.00E+00
COMSTK	Thallium compounds	ESQ_OM	EQDIET	9.98E-04
COMSTK	Tin compounds	ESQ_OM	EQDIET	1.31E-07
COMSTK	Toluene	ESQ_OM	EQDIET	4.98E-11
COMSTK	trans-1,3-Dichloropropene	ESQ_OM	EQDIET	0.00E+00
COMSTK	Tribromomethane	ESQ_OM	EQDIET	2.50E-12
COMSTK	Trichloroethylene	ESQ_OM	EQDIET	2.22E-11
COMSTK	Trichlorofluoromethane	ESQ_OM	EQDIET	0.00E+00
COMSTK	Vanadium compounds	ESQ_OM	EQDIET	2.84E-08

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Vinyl acetate	ESQ_OM	EQDIET	1.66E-10
COMSTK	Vinyl chloride	ESQ_OM	EQDIET	2.23E-11
COMSTK	VX	ESQ_OM	EQDIET	1.43E-01
COMSTK	Xylene (mixed)	ESQ_OM	EQDIET	2.22E-06
COMSTK	Zinc compounds	ESQ_OM	EQDIET	1.13E-06
LABSTK	GB	ESQ_OM	EQDIET	8.07E-04
LABSTK	Sulfur mustard (or H/HD)	ESQ_OM	EQDIET	0.00E+00
LABSTK	VX	ESQ_OM	EQDIET	5.34E-01
MDBSTK	GB	ESQ_OM	EQDIET	7.03E-04
MDBSTK	Sulfur mustard (or H/HD)	ESQ_OM	EQDIET	0.00E+00
MDBSTK	VX	ESQ_OM	EQDIET	4.65E-01
BRASTK	Antimony compounds	ESQ_CB	FD_HB	0.00E+00
BRASTK	Arsenic compounds	ESQ_CB	FD_HB	5.86E-12
BRASTK	Barium compounds	ESQ_CB	FD_HB	3.76E-07
BRASTK	Beryllium compounds	ESQ_CB	FD_HB	0.00E+00
BRASTK	Boron compounds	ESQ_CB	FD_HB	1.01E-06
BRASTK	Cadmium compounds	ESQ_CB	FD_HB	1.62E-06
BRASTK	Chromium compounds	ESQ_CB	FD_HB	9.86E-07
BRASTK	Cobalt compounds	ESQ_CB	FD_HB	1.93E-06
BRASTK	Copper compounds	ESQ_CB	FD_HB	2.84E-05
BRASTK	EA 2192	ESQ_CB	FD_HB	0.00E+00
BRASTK	GB	ESQ_CB	FD_HB	0.00E+00
BRASTK	Lead compounds	ESQ_CB	FD_HB	1.60E-10
BRASTK	Manganese compounds	ESQ_CB	FD_HB	6.68E-07
BRASTK	Mercuric chloride	ESQ_CB	FD_HB	5.40E-06
BRASTK	Methyl mercury	ESQ_CB	FD_HB	7.31E-07
BRASTK	Nickel compounds	ESQ_CB	FD_HB	2.69E-10
BRASTK	o-Cresol	ESQ_CB	FD_HB	0.00E+00
BRASTK	Phosphoric acid	ESQ_CB	FD_HB	0.00E+00
BRASTK	Selenium compounds	ESQ_CB	FD_HB	8.97E-05
BRASTK	Silver compounds	ESQ_CB	FD_HB	1.97E-06
BRASTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_HB	0.00E+00
BRASTK	Thallium compounds	ESQ_CB	FD_HB	3.45E-06
BRASTK	Tin compounds	ESQ_CB	FD_HB	6.16E-06
BRASTK	Vanadium compounds	ESQ_CB	FD_HB	8.88E-06
BRASTK	VX	ESQ_CB	FD_HB	0.00E+00
BRASTK	Zinc compounds	ESQ_CB	FD_HB	5.36E-08
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_CB	FD_HB	0.00E+00
COMSTK	1,1-Dichloroethylene	ESQ_CB	FD_HB	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_CB	FD_HB	1.32E-11
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_CB	FD_HB	2.14E-11
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_CB	FD_HB	2.39E-10
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_CB	FD_HB	6.69E-11
COMSTK	1,2-Dichlorobenzene	ESQ_CB	FD_HB	0.00E+00
COMSTK	1,4-Dichlorobenzene	ESQ_CB	FD_HB	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_CB	FD_HB	1.43E-10
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_CB	FD_HB	2.04E-10
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_CB	FD_HB	5.81E-10
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_CB	FD_HB	1.31E-11
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_CB	FD_HB	5.02E-11
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_CB	FD_HB	5.95E-09
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_CB	FD_HB	7.07E-14
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_CB	FD_HB	2.76E-05
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_CB	FD_HB	2.43E-09
COMSTK	2,4,6-Trinitrotoluene	ESQ_CB	FD_HB	2.52E-09
COMSTK	2,4-Dinitrotoluene	ESQ_CB	FD_HB	9.08E-09
COMSTK	2-Methylnaphthalene	ESQ_CB	FD_HB	0.00E+00
COMSTK	2-Xylene	ESQ_CB	FD_HB	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_CB	FD_HB	5.48E-08
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_CB	FD_HB	9.76E-08
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_CB	FD_HB	1.37E-07
COMSTK	Acetone	ESQ_CB	FD_HB	9.36E-11
COMSTK	Aluminum compounds	ESQ_CB	FD_HB	4.19E-08
COMSTK	Antimony compounds	ESQ_CB	FD_HB	0.00E+00
COMSTK	Arsenic compounds	ESQ_CB	FD_HB	5.27E-13
COMSTK	Barium compounds	ESQ_CB	FD_HB	2.32E-08
COMSTK	Benzaldehyde	ESQ_CB	FD_HB	0.00E+00
COMSTK	Benzene	ESQ_CB	FD_HB	0.00E+00
COMSTK	Benzoic acid	ESQ_CB	FD_HB	0.00E+00
COMSTK	Benzyl alcohol	ESQ_CB	FD_HB	0.00E+00
COMSTK	Beryllium compounds	ESQ_CB	FD_HB	0.00E+00
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_CB	FD_HB	4.70E-06
COMSTK	Boron compounds	ESQ_CB	FD_HB	1.38E-07
COMSTK	Bromochloromethane	ESQ_CB	FD_HB	0.00E+00
COMSTK	Bromodichloromethane	ESQ_CB	FD_HB	0.00E+00
COMSTK	Bromoethane	ESQ_CB	FD_HB	0.00E+00
COMSTK	Cadmium compounds	ESQ_CB	FD_HB	1.26E-08
COMSTK	Carbon disulfide	ESQ_CB	FD_HB	0.00E+00
COMSTK	Carbon tetrachloride	ESQ_CB	FD_HB	0.00E+00
COMSTK	Chlorine	ESQ_CB	FD_HB	0.00E+00
COMSTK	Chlorobenzene	ESQ_CB	FD_HB	0.00E+00
COMSTK	Chlorodibromomethane	ESQ_CB	FD_HB	0.00E+00
COMSTK	Chloroform	ESQ_CB	FD_HB	0.00E+00
COMSTK	Chromium compounds	ESQ_CB	FD_HB	3.07E-08
COMSTK	cis-1,3-Dichloropropene	ESQ_CB	FD_HB	0.00E+00
COMSTK	Cobalt compounds	ESQ_CB	FD_HB	8.31E-09
COMSTK	Composirte TOE - Nonvolatile	ESQ_CB	FD_HB	6.77E-01
COMSTK	Composirte TOE - Semivolatile	ESQ_CB	FD_HB	2.20E-06
COMSTK	Composite TOE - Volatile	ESQ_CB	FD_HB	6.13E-09
COMSTK	Copper compounds	ESQ_CB	FD_HB	3.72E-08

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Dibutyl phthalate	ESQ_CB	FD_HB	2.74E-07
COMSTK	Dichlorodifluoromethane	ESQ_CB	FD_HB	0.00E+00
COMSTK	Dichloromethane	ESQ_CB	FD_HB	0.00E+00
COMSTK	Diethyl phthalate	ESQ_CB	FD_HB	0.00E+00
COMSTK	Dimethylphthalate	ESQ_CB	FD_HB	0.00E+00
COMSTK	Ethyl chloride	ESQ_CB	FD_HB	0.00E+00
COMSTK	Ethylbenzene	ESQ_CB	FD_HB	0.00E+00
COMSTK	GB	ESQ_CB	FD_HB	0.00E+00
COMSTK	Hydrochloric acid	ESQ_CB	FD_HB	0.00E+00
COMSTK	Hydrofluoric acid	ESQ_CB	FD_HB	0.00E+00
COMSTK	Lead compounds	ESQ_CB	FD_HB	2.43E-10
COMSTK	m,p-Xylene	ESQ_CB	FD_HB	0.00E+00
COMSTK	Manganese compounds	ESQ_CB	FD_HB	8.67E-09
COMSTK	Mercuric chloride	ESQ_CB	FD_HB	2.85E-07
COMSTK	Methyl bromide	ESQ_CB	FD_HB	0.00E+00
COMSTK	Methyl chloride	ESQ_CB	FD_HB	0.00E+00
COMSTK	Methyl ethyl ketone	ESQ_CB	FD_HB	0.00E+00
COMSTK	Methyl iodide	ESQ_CB	FD_HB	0.00E+00
COMSTK	Methyl isobutyl ketone	ESQ_CB	FD_HB	1.39E-09
COMSTK	Methyl mercury	ESQ_CB	FD_HB	3.77E-08
COMSTK	Naphthalene	ESQ_CB	FD_HB	0.00E+00
COMSTK	n-Hexane	ESQ_CB	FD_HB	0.00E+00
COMSTK	Nickel compounds	ESQ_CB	FD_HB	3.67E-12
COMSTK	Nitrogen dioxide	ESQ_CB	FD_HB	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_CB	FD_HB	1.34E-06
COMSTK	Phosphoric acid	ESQ_CB	FD_HB	0.00E+00
COMSTK	Selenium compounds	ESQ_CB	FD_HB	7.48E-07
COMSTK	Silver compounds	ESQ_CB	FD_HB	1.56E-08
COMSTK	Styrene	ESQ_CB	FD_HB	0.00E+00
COMSTK	Sulfur dioxide	ESQ_CB	FD_HB	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_HB	0.00E+00
COMSTK	Thallium compounds	ESQ_CB	FD_HB	3.09E-07
COMSTK	Tin compounds	ESQ_CB	FD_HB	9.69E-08
COMSTK	Toluene	ESQ_CB	FD_HB	0.00E+00
COMSTK	trans-1,3-Dichloropropene	ESQ_CB	FD_HB	0.00E+00
COMSTK	Tribromomethane	ESQ_CB	FD_HB	0.00E+00
COMSTK	Trichloroethylene	ESQ_CB	FD_HB	0.00E+00
COMSTK	Trichlorofluoromethane	ESQ_CB	FD_HB	0.00E+00
COMSTK	Vanadium compounds	ESQ_CB	FD_HB	3.12E-08
COMSTK	Vinyl acetate	ESQ_CB	FD_HB	0.00E+00
COMSTK	Vinyl chloride	ESQ_CB	FD_HB	0.00E+00
COMSTK	VX	ESQ_CB	FD_HB	0.00E+00
COMSTK	Xylene (mixed)	ESQ_CB	FD_HB	0.00E+00
COMSTK	Zinc compounds	ESQ_CB	FD_HB	2.31E-08
LABSTK	GB	ESQ_CB	FD_HB	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
LABSTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_HB	0.00E+00
LABSTK	VX	ESQ_CB	FD_HB	0.00E+00
MDBSTK	GB	ESQ_CB	FD_HB	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_HB	0.00E+00
MDBSTK	VX	ESQ_CB	FD_HB	0.00E+00
BRASTK	Antimony compounds	ESQ_CM	FD_HB	5.80E-10
BRASTK	Arsenic compounds	ESQ_CM	FD_HB	1.32E-11
BRASTK	Barium compounds	ESQ_CM	FD_HB	4.04E-08
BRASTK	Beryllium compounds	ESQ_CM	FD_HB	1.78E-10
BRASTK	Boron compounds	ESQ_CM	FD_HB	2.39E-07
BRASTK	Cadmium compounds	ESQ_CM	FD_HB	5.94E-07
BRASTK	Chromium compounds	ESQ_CM	FD_HB	2.92E-07
BRASTK	Cobalt compounds	ESQ_CM	FD_HB	4.21E-07
BRASTK	Copper compounds	ESQ_CM	FD_HB	5.49E-06
BRASTK	EA 2192	ESQ_CM	FD_HB	0.00E+00
BRASTK	GB	ESQ_CM	FD_HB	1.25E-06
BRASTK	Lead compounds	ESQ_CM	FD_HB	1.50E-11
BRASTK	Manganese compounds	ESQ_CM	FD_HB	6.21E-07
BRASTK	Mercuric chloride	ESQ_CM	FD_HB	6.33E-07
BRASTK	Methyl mercury	ESQ_CM	FD_HB	4.08E-07
BRASTK	Nickel compounds	ESQ_CM	FD_HB	3.29E-10
BRASTK	o-Cresol	ESQ_CM	FD_HB	3.38E-10
BRASTK	Phosphoric acid	ESQ_CM	FD_HB	6.09E-07
BRASTK	Selenium compounds	ESQ_CM	FD_HB	3.45E-05
BRASTK	Silver compounds	ESQ_CM	FD_HB	1.77E-07
BRASTK	Sulfur mustard (or H/HD)	ESQ_CM	FD_HB	0.00E+00
BRASTK	Thallium compounds	ESQ_CM	FD_HB	4.36E-05
BRASTK	Tin compounds	ESQ_CM	FD_HB	3.46E-07
BRASTK	Vanadium compounds	ESQ_CM	FD_HB	1.94E-07
BRASTK	VX	ESQ_CM	FD_HB	7.41E-04
BRASTK	Zinc compounds	ESQ_CM	FD_HB	9.36E-10
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_CM	FD_HB	3.68E-17
COMSTK	1,1-Dichloroethylene	ESQ_CM	FD_HB	1.60E-15
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_CM	FD_HB	1.47E-10
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_CM	FD_HB	2.39E-10
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_CM	FD_HB	8.79E-10
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_CM	FD_HB	2.40E-10
COMSTK	1,2-Dichlorobenzene	ESQ_CM	FD_HB	2.78E-14
COMSTK	1,4-Dichlorobenzene	ESQ_CM	FD_HB	2.07E-14
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_CM	FD_HB	1.16E-10
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_CM	FD_HB	2.27E-10
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_CM	FD_HB	6.40E-10
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_CM	FD_HB	1.45E-10
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_CM	FD_HB	5.56E-10
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_CM	FD_HB	6.59E-09

Source	COPC	Guild	Diet Type	ESQ
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_CM	FD_HB	7.91E-13
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_CM	FD_HB	7.09E-07
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_CM	FD_HB	8.75E-09
COMSTK	2,4,6-Trinitrotoluene	ESQ_CM	FD_HB	2.40E-09
COMSTK	2,4-Dinitrotoluene	ESQ_CM	FD_HB	3.64E-10
COMSTK	2-Methylnaphthalene	ESQ_CM	FD_HB	6.67E-10
COMSTK	2-Xylene	ESQ_CM	FD_HB	1.28E-12
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_CM	FD_HB	3.78E-10
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_CM	FD_HB	7.92E-10
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_CM	FD_HB	3.72E-07
COMSTK	Acetone	ESQ_CM	FD_HB	1.55E-10
COMSTK	Aluminum compounds	ESQ_CM	FD_HB	6.38E-07
COMSTK	Antimony compounds	ESQ_CM	FD_HB	1.29E-10
COMSTK	Arsenic compounds	ESQ_CM	FD_HB	1.32E-12
COMSTK	Barium compounds	ESQ_CM	FD_HB	2.49E-09
COMSTK	Benzaldehyde	ESQ_CM	FD_HB	7.07E-09
COMSTK	Benzene	ESQ_CM	FD_HB	1.45E-13
COMSTK	Benzoic acid	ESQ_CM	FD_HB	7.31E-10
COMSTK	Benzyl alcohol	ESQ_CM	FD_HB	7.20E-10
COMSTK	Beryllium compounds	ESQ_CM	FD_HB	1.85E-12
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_CM	FD_HB	5.56E-08
COMSTK	Boron compounds	ESQ_CM	FD_HB	3.26E-08
COMSTK	Bromochloromethane	ESQ_CM	FD_HB	2.66E-15
COMSTK	Bromodichloromethane	ESQ_CM	FD_HB	1.21E-11
COMSTK	Bromoethane	ESQ_CM	FD_HB	8.96E-15
COMSTK	Cadmium compounds	ESQ_CM	FD_HB	4.63E-09
COMSTK	Carbon disulfide	ESQ_CM	FD_HB	3.65E-13
COMSTK	Carbon tetrachloride	ESQ_CM	FD_HB	3.88E-14
COMSTK	Chlorine	ESQ_CM	FD_HB	0.00E+00
COMSTK	Chlorobenzene	ESQ_CM	FD_HB	1.33E-14
COMSTK	Chlorodibromomethane	ESQ_CM	FD_HB	1.76E-10
COMSTK	Chloroform	ESQ_CM	FD_HB	8.64E-14
COMSTK	Chromium compounds	ESQ_CM	FD_HB	9.09E-09
COMSTK	cis-1,3-Dichloropropene	ESQ_CM	FD_HB	0.00E+00
COMSTK	Cobalt compounds	ESQ_CM	FD_HB	1.81E-09
COMSTK	Composirte TOE - Nonvolatile	ESQ_CM	FD_HB	4.18E-03
COMSTK	Composirte TOE - Semivolatile	ESQ_CM	FD_HB	4.53E-08
COMSTK	Composite TOE - Volatile	ESQ_CM	FD_HB	1.49E-09
COMSTK	Copper compounds	ESQ_CM	FD_HB	7.19E-09
COMSTK	Dibutyl phthalate	ESQ_CM	FD_HB	3.78E-10
COMSTK	Dichlorodifluoromethane	ESQ_CM	FD_HB	0.00E+00
COMSTK	Dichloromethane	ESQ_CM	FD_HB	3.98E-13
COMSTK	Diethyl phthalate	ESQ_CM	FD_HB	3.74E-12
COMSTK	Dimethylphthalate	ESQ_CM	FD_HB	3.71E-14
COMSTK	Ethyl chloride	ESQ_CM	FD_HB	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Ethylbenzene	ESQ_CM	FD_HB	4.04E-14
COMSTK	GB	ESQ_CM	FD_HB	1.22E-07
COMSTK	Hydrochloric acid	ESQ_CM	FD_HB	6.62E-08
COMSTK	Hydrofluoric acid	ESQ_CM	FD_HB	0.00E+00
COMSTK	Lead compounds	ESQ_CM	FD_HB	2.31E-11
COMSTK	m,p-Xylene	ESQ_CM	FD_HB	5.96E-07
COMSTK	Manganese compounds	ESQ_CM	FD_HB	8.05E-09
COMSTK	Mercuric chloride	ESQ_CM	FD_HB	3.35E-08
COMSTK	Methyl bromide	ESQ_CM	FD_HB	3.91E-12
COMSTK	Methyl chloride	ESQ_CM	FD_HB	1.27E-13
COMSTK	Methyl ethyl ketone	ESQ_CM	FD_HB	1.13E-13
COMSTK	Methyl iodide	ESQ_CM	FD_HB	5.36E-13
COMSTK	Methyl isobutyl ketone	ESQ_CM	FD_HB	1.50E-11
COMSTK	Methyl mercury	ESQ_CM	FD_HB	2.13E-08
COMSTK	Naphthalene	ESQ_CM	FD_HB	3.92E-11
COMSTK	n-Hexane	ESQ_CM	FD_HB	1.41E-12
COMSTK	Nickel compounds	ESQ_CM	FD_HB	5.10E-12
COMSTK	Nitrogen dioxide	ESQ_CM	FD_HB	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_CM	FD_HB	4.71E-07
COMSTK	Phosphoric acid	ESQ_CM	FD_HB	3.46E-08
COMSTK	Selenium compounds	ESQ_CM	FD_HB	2.88E-07
COMSTK	Silver compounds	ESQ_CM	FD_HB	1.40E-09
COMSTK	Styrene	ESQ_CM	FD_HB	4.62E-11
COMSTK	Sulfur dioxide	ESQ_CM	FD_HB	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_CM	FD_HB	0.00E+00
COMSTK	Thallium compounds	ESQ_CM	FD_HB	3.91E-06
COMSTK	Tin compounds	ESQ_CM	FD_HB	5.44E-09
COMSTK	Toluene	ESQ_CM	FD_HB	4.86E-14
COMSTK	trans-1,3-Dichloropropene	ESQ_CM	FD_HB	0.00E+00
COMSTK	Tribromomethane	ESQ_CM	FD_HB	6.77E-14
COMSTK	Trichloroethylene	ESQ_CM	FD_HB	2.78E-14
COMSTK	Trichlorofluoromethane	ESQ_CM	FD_HB	0.00E+00
COMSTK	Vanadium compounds	ESQ_CM	FD_HB	6.84E-10
COMSTK	Vinyl acetate	ESQ_CM	FD_HB	1.08E-13
COMSTK	Vinyl chloride	ESQ_CM	FD_HB	1.12E-12
COMSTK	VX	ESQ_CM	FD_HB	4.44E-05
COMSTK	Xylene (mixed)	ESQ_CM	FD_HB	8.87E-10
COMSTK	Zinc compounds	ESQ_CM	FD_HB	4.04E-10
LABSTK	GB	ESQ_CM	FD_HB	2.78E-07
LABSTK	Sulfur mustard (or H/HD)	ESQ_CM	FD_HB	0.00E+00
LABSTK	VX	ESQ_CM	FD_HB	1.67E-04
MDBSTK	GB	ESQ_CM	FD_HB	2.70E-07
MDBSTK	Sulfur mustard (or H/HD)	ESQ_CM	FD_HB	0.00E+00
MDBSTK	VX	ESQ_CM	FD_HB	1.49E-04
BRASTK	Antimony compounds	ESQ_CB	FD_HM	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
BRASTK	Arsenic compounds	ESQ_CB	FD_HM	1.86E-09
BRASTK	Barium compounds	ESQ_CB	FD_HM	3.76E-07
BRASTK	Beryllium compounds	ESQ_CB	FD_HM	0.00E+00
BRASTK	Boron compounds	ESQ_CB	FD_HM	4.82E-07
BRASTK	Cadmium compounds	ESQ_CB	FD_HM	1.02E-09
BRASTK	Chromium compounds	ESQ_CB	FD_HM	9.91E-07
BRASTK	Cobalt compounds	ESQ_CB	FD_HM	4.68E-07
BRASTK	Copper compounds	ESQ_CB	FD_HM	2.88E-05
BRASTK	EA 2192	ESQ_CB	FD_HM	0.00E+00
BRASTK	GB	ESQ_CB	FD_HM	0.00E+00
BRASTK	Lead compounds	ESQ_CB	FD_HM	1.91E-10
BRASTK	Manganese compounds	ESQ_CB	FD_HM	6.69E-07
BRASTK	Mercuric chloride	ESQ_CB	FD_HM	5.11E-06
BRASTK	Methyl mercury	ESQ_CB	FD_HM	6.90E-07
BRASTK	Nickel compounds	ESQ_CB	FD_HM	1.44E-08
BRASTK	o-Cresol	ESQ_CB	FD_HM	0.00E+00
BRASTK	Phosphoric acid	ESQ_CB	FD_HM	0.00E+00
BRASTK	Selenium compounds	ESQ_CB	FD_HM	5.38E-08
BRASTK	Silver compounds	ESQ_CB	FD_HM	1.98E-06
BRASTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_HM	0.00E+00
BRASTK	Thallium compounds	ESQ_CB	FD_HM	3.54E-06
BRASTK	Tin compounds	ESQ_CB	FD_HM	1.95E-07
BRASTK	Vanadium compounds	ESQ_CB	FD_HM	8.90E-06
BRASTK	VX	ESQ_CB	FD_HM	0.00E+00
BRASTK	Zinc compounds	ESQ_CB	FD_HM	3.59E-10
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_CB	FD_HM	0.00E+00
COMSTK	1,1-Dichloroethylene	ESQ_CB	FD_HM	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_CB	FD_HM	1.30E-11
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_CB	FD_HM	2.11E-11
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_CB	FD_HM	2.29E-10
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_CB	FD_HM	6.10E-11
COMSTK	1,2-Dichlorobenzene	ESQ_CB	FD_HM	0.00E+00
COMSTK	1,4-Dichlorobenzene	ESQ_CB	FD_HM	0.00E+00
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_CB	FD_HM	4.27E-11
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_CB	FD_HM	1.99E-10
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_CB	FD_HM	5.53E-10
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_CB	FD_HM	1.27E-11
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_CB	FD_HM	4.85E-11
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_CB	FD_HM	5.74E-09
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_CB	FD_HM	6.99E-14
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_CB	FD_HM	2.51E-05
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_CB	FD_HM	2.22E-09
COMSTK	2,4,6-Trinitrotoluene	ESQ_CB	FD_HM	2.46E-09
COMSTK	2,4-Dinitrotoluene	ESQ_CB	FD_HM	8.87E-09
COMSTK	2-Methylnaphthalene	ESQ_CB	FD_HM	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	2-Xylene	ESQ_CB	FD_HM	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_CB	FD_HM	4.55E-08
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_CB	FD_HM	2.92E-08
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_CB	FD_HM	4.11E-08
COMSTK	Acetone	ESQ_CB	FD_HM	9.32E-11
COMSTK	Aluminum compounds	ESQ_CB	FD_HM	4.20E-08
COMSTK	Antimony compounds	ESQ_CB	FD_HM	0.00E+00
COMSTK	Arsenic compounds	ESQ_CB	FD_HM	1.01E-10
COMSTK	Barium compounds	ESQ_CB	FD_HM	2.32E-08
COMSTK	Benzaldehyde	ESQ_CB	FD_HM	0.00E+00
COMSTK	Benzene	ESQ_CB	FD_HM	0.00E+00
COMSTK	Benzoic acid	ESQ_CB	FD_HM	0.00E+00
COMSTK	Benzyl alcohol	ESQ_CB	FD_HM	0.00E+00
COMSTK	Beryllium compounds	ESQ_CB	FD_HM	0.00E+00
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_CB	FD_HM	2.04E-06
COMSTK	Boron compounds	ESQ_CB	FD_HM	6.60E-08
COMSTK	Bromochloromethane	ESQ_CB	FD_HM	0.00E+00
COMSTK	Bromodichloromethane	ESQ_CB	FD_HM	0.00E+00
COMSTK	Bromoethane	ESQ_CB	FD_HM	0.00E+00
COMSTK	Cadmium compounds	ESQ_CB	FD_HM	7.89E-12
COMSTK	Carbon disulfide	ESQ_CB	FD_HM	0.00E+00
COMSTK	Carbon tetrachloride	ESQ_CB	FD_HM	0.00E+00
COMSTK	Chlorine	ESQ_CB	FD_HM	0.00E+00
COMSTK	Chlorobenzene	ESQ_CB	FD_HM	0.00E+00
COMSTK	Chlorodibromomethane	ESQ_CB	FD_HM	0.00E+00
COMSTK	Chloroform	ESQ_CB	FD_HM	0.00E+00
COMSTK	Chromium compounds	ESQ_CB	FD_HM	3.08E-08
COMSTK	cis-1,3-Dichloropropene	ESQ_CB	FD_HM	0.00E+00
COMSTK	Cobalt compounds	ESQ_CB	FD_HM	1.96E-09
COMSTK	Composirte TOE - Nonvolatile	ESQ_CB	FD_HM	6.50E-01
COMSTK	Composirte TOE - Semivolatile	ESQ_CB	FD_HM	2.13E-06
COMSTK	Composite TOE - Volatile	ESQ_CB	FD_HM	5.99E-09
COMSTK	Copper compounds	ESQ_CB	FD_HM	3.77E-08
COMSTK	Dibutyl phthalate	ESQ_CB	FD_HM	1.91E-07
COMSTK	Dichlorodifluoromethane	ESQ_CB	FD_HM	0.00E+00
COMSTK	Dichloromethane	ESQ_CB	FD_HM	0.00E+00
COMSTK	Diethyl phthalate	ESQ_CB	FD_HM	0.00E+00
COMSTK	Dimethylphthalate	ESQ_CB	FD_HM	0.00E+00
COMSTK	Ethyl chloride	ESQ_CB	FD_HM	0.00E+00
COMSTK	Ethylbenzene	ESQ_CB	FD_HM	0.00E+00
COMSTK	GB	ESQ_CB	FD_HM	0.00E+00
COMSTK	Hydrochloric acid	ESQ_CB	FD_HM	0.00E+00
COMSTK	Hydrofluoric acid	ESQ_CB	FD_HM	0.00E+00
COMSTK	Lead compounds	ESQ_CB	FD_HM	2.94E-10
COMSTK	m,p-Xylene	ESQ_CB	FD_HM	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Manganese compounds	ESQ_CB	FD_HM	8.67E-09
COMSTK	Mercuric chloride	ESQ_CB	FD_HM	2.75E-07
COMSTK	Methyl bromide	ESQ_CB	FD_HM	0.00E+00
COMSTK	Methyl chloride	ESQ_CB	FD_HM	0.00E+00
COMSTK	Methyl ethyl ketone	ESQ_CB	FD_HM	0.00E+00
COMSTK	Methyl iodide	ESQ_CB	FD_HM	0.00E+00
COMSTK	Methyl isobutyl ketone	ESQ_CB	FD_HM	1.37E-09
COMSTK	Methyl mercury	ESQ_CB	FD_HM	3.70E-08
COMSTK	Naphthalene	ESQ_CB	FD_HM	0.00E+00
COMSTK	n-Hexane	ESQ_CB	FD_HM	0.00E+00
COMSTK	Nickel compounds	ESQ_CB	FD_HM	2.00E-10
COMSTK	Nitrogen dioxide	ESQ_CB	FD_HM	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_CB	FD_HM	1.31E-06
COMSTK	Phosphoric acid	ESQ_CB	FD_HM	0.00E+00
COMSTK	Selenium compounds	ESQ_CB	FD_HM	4.49E-10
COMSTK	Silver compounds	ESQ_CB	FD_HM	1.57E-08
COMSTK	Styrene	ESQ_CB	FD_HM	0.00E+00
COMSTK	Sulfur dioxide	ESQ_CB	FD_HM	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_HM	0.00E+00
COMSTK	Thallium compounds	ESQ_CB	FD_HM	3.18E-07
COMSTK	Tin compounds	ESQ_CB	FD_HM	3.02E-09
COMSTK	Toluene	ESQ_CB	FD_HM	0.00E+00
COMSTK	trans-1,3-Dichloropropene	ESQ_CB	FD_HM	0.00E+00
COMSTK	Tribromomethane	ESQ_CB	FD_HM	0.00E+00
COMSTK	Trichloroethylene	ESQ_CB	FD_HM	0.00E+00
COMSTK	Trichlorofluoromethane	ESQ_CB	FD_HM	0.00E+00
COMSTK	Vanadium compounds	ESQ_CB	FD_HM	3.13E-08
COMSTK	Vinyl acetate	ESQ_CB	FD_HM	0.00E+00
COMSTK	Vinyl chloride	ESQ_CB	FD_HM	0.00E+00
COMSTK	VX	ESQ_CB	FD_HM	0.00E+00
COMSTK	Xylene (mixed)	ESQ_CB	FD_HM	0.00E+00
COMSTK	Zinc compounds	ESQ_CB	FD_HM	1.53E-10
LABSTK	GB	ESQ_CB	FD_HM	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_HM	0.00E+00
LABSTK	VX	ESQ_CB	FD_HM	0.00E+00
MDBSTK	GB	ESQ_CB	FD_HM	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_HM	0.00E+00
MDBSTK	VX	ESQ_CB	FD_HM	0.00E+00
BRASTK	Antimony compounds	ESQ_CM	FD_HM	4.78E-09
BRASTK	Arsenic compounds	ESQ_CM	FD_HM	7.80E-10
BRASTK	Barium compounds	ESQ_CM	FD_HM	4.04E-08
BRASTK	Beryllium compounds	ESQ_CM	FD_HM	2.36E-10
BRASTK	Boron compounds	ESQ_CM	FD_HM	1.34E-07
BRASTK	Cadmium compounds	ESQ_CM	FD_HM	4.86E-10
BRASTK	Chromium compounds	ESQ_CM	FD_HM	2.93E-07

Source	COPC	Guild	Diet Type	ESQ
BRASTK	Cobalt compounds	ESQ_CM	FD_HM	1.29E-07
BRASTK	Copper compounds	ESQ_CM	FD_HM	5.55E-06
BRASTK	EA 2192	ESQ_CM	FD_HM	0.00E+00
BRASTK	GB	ESQ_CM	FD_HM	1.25E-06
BRASTK	Lead compounds	ESQ_CM	FD_HM	1.71E-11
BRASTK	Manganese compounds	ESQ_CM	FD_HM	6.21E-07
BRASTK	Mercuric chloride	ESQ_CM	FD_HM	6.08E-07
BRASTK	Methyl mercury	ESQ_CM	FD_HM	3.92E-07
BRASTK	Nickel compounds	ESQ_CM	FD_HM	1.10E-08
BRASTK	o-Cresol	ESQ_CM	FD_HM	3.33E-10
BRASTK	Phosphoric acid	ESQ_CM	FD_HM	6.27E-06
BRASTK	Selenium compounds	ESQ_CM	FD_HM	2.10E-08
BRASTK	Silver compounds	ESQ_CM	FD_HM	1.77E-07
BRASTK	Sulfur mustard (or H/HD)	ESQ_CM	FD_HM	0.00E+00
BRASTK	Thallium compounds	ESQ_CM	FD_HM	4.44E-05
BRASTK	Tin compounds	ESQ_CM	FD_HM	1.22E-08
BRASTK	Vanadium compounds	ESQ_CM	FD_HM	1.95E-07
BRASTK	VX	ESQ_CM	FD_HM	7.28E-04
BRASTK	Zinc compounds	ESQ_CM	FD_HM	8.40E-12
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_CM	FD_HM	3.68E-17
COMSTK	1,1-Dichloroethylene	ESQ_CM	FD_HM	1.59E-15
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_CM	FD_HM	1.45E-10
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_CM	FD_HM	2.37E-10
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_CM	FD_HM	8.53E-10
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_CM	FD_HM	2.24E-10
COMSTK	1,2-Dichlorobenzene	ESQ_CM	FD_HM	2.71E-14
COMSTK	1,4-Dichlorobenzene	ESQ_CM	FD_HM	2.03E-14
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_CM	FD_HM	3.50E-11
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_CM	FD_HM	2.23E-10
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_CM	FD_HM	6.18E-10
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_CM	FD_HM	1.43E-10
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_CM	FD_HM	5.42E-10
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_CM	FD_HM	6.42E-09
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_CM	FD_HM	7.85E-13
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_CM	FD_HM	6.60E-07
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_CM	FD_HM	8.20E-09
COMSTK	2,4,6-Trinitrotoluene	ESQ_CM	FD_HM	2.37E-09
COMSTK	2,4-Dinitrotoluene	ESQ_CM	FD_HM	3.58E-10
COMSTK	2-Methylnaphthalene	ESQ_CM	FD_HM	6.52E-10
COMSTK	2-Xylene	ESQ_CM	FD_HM	1.26E-12
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_CM	FD_HM	3.28E-10
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_CM	FD_HM	2.39E-10
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_CM	FD_HM	1.12E-07
COMSTK	Acetone	ESQ_CM	FD_HM	1.55E-10
COMSTK	Aluminum compounds	ESQ_CM	FD_HM	6.39E-07

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Antimony compounds	ESQ_CM	FD_HM	9.29E-10
COMSTK	Arsenic compounds	ESQ_CM	FD_HM	4.27E-11
COMSTK	Barium compounds	ESQ_CM	FD_HM	2.49E-09
COMSTK	Benzaldehyde	ESQ_CM	FD_HM	6.97E-09
COMSTK	Benzene	ESQ_CM	FD_HM	1.44E-13
COMSTK	Benzoic acid	ESQ_CM	FD_HM	7.31E-10
COMSTK	Benzyl alcohol	ESQ_CM	FD_HM	7.12E-10
COMSTK	Beryllium compounds	ESQ_CM	FD_HM	2.47E-12
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_CM	FD_HM	2.48E-08
COMSTK	Boron compounds	ESQ_CM	FD_HM	1.82E-08
COMSTK	Bromochloromethane	ESQ_CM	FD_HM	2.62E-15
COMSTK	Bromodichloromethane	ESQ_CM	FD_HM	1.19E-11
COMSTK	Bromoethane	ESQ_CM	FD_HM	8.85E-15
COMSTK	Cadmium compounds	ESQ_CM	FD_HM	4.06E-12
COMSTK	Carbon disulfide	ESQ_CM	FD_HM	3.65E-13
COMSTK	Carbon tetrachloride	ESQ_CM	FD_HM	3.87E-14
COMSTK	Chlorine	ESQ_CM	FD_HM	0.00E+00
COMSTK	Chlorobenzene	ESQ_CM	FD_HM	1.31E-14
COMSTK	Chlorodibromomethane	ESQ_CM	FD_HM	1.73E-10
COMSTK	Chloroform	ESQ_CM	FD_HM	8.61E-14
COMSTK	Chromium compounds	ESQ_CM	FD_HM	9.12E-09
COMSTK	cis-1,3-Dichloropropene	ESQ_CM	FD_HM	0.00E+00
COMSTK	Cobalt compounds	ESQ_CM	FD_HM	5.41E-10
COMSTK	Composirte TOE - Nonvolatile	ESQ_CM	FD_HM	4.06E-03
COMSTK	Composirte TOE - Semivolatile	ESQ_CM	FD_HM	4.44E-08
COMSTK	Composite TOE - Volatile	ESQ_CM	FD_HM	1.47E-09
COMSTK	Copper compounds	ESQ_CM	FD_HM	7.26E-09
COMSTK	Dibutyl phthalate	ESQ_CM	FD_HM	2.82E-10
COMSTK	Dichlorodifluoromethane	ESQ_CM	FD_HM	0.00E+00
COMSTK	Dichloromethane	ESQ_CM	FD_HM	3.97E-13
COMSTK	Diethyl phthalate	ESQ_CM	FD_HM	3.67E-12
COMSTK	Dimethylphthalate	ESQ_CM	FD_HM	3.65E-14
COMSTK	Ethyl chloride	ESQ_CM	FD_HM	0.00E+00
COMSTK	Ethylbenzene	ESQ_CM	FD_HM	4.00E-14
COMSTK	GB	ESQ_CM	FD_HM	1.21E-07
COMSTK	Hydrochloric acid	ESQ_CM	FD_HM	6.62E-08
COMSTK	Hydrofluoric acid	ESQ_CM	FD_HM	0.00E+00
COMSTK	Lead compounds	ESQ_CM	FD_HM	2.65E-11
COMSTK	m,p-Xylene	ESQ_CM	FD_HM	1.80E-07
COMSTK	Manganese compounds	ESQ_CM	FD_HM	8.06E-09
COMSTK	Mercuric chloride	ESQ_CM	FD_HM	3.27E-08
COMSTK	Methyl bromide	ESQ_CM	FD_HM	3.90E-12
COMSTK	Methyl chloride	ESQ_CM	FD_HM	1.27E-13
COMSTK	Methyl ethyl ketone	ESQ_CM	FD_HM	1.12E-13
COMSTK	Methyl iodide	ESQ_CM	FD_HM	5.34E-13

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Methyl isobutyl ketone	ESQ_CM	FD_HM	1.48E-11
COMSTK	Methyl mercury	ESQ_CM	FD_HM	2.10E-08
COMSTK	Naphthalene	ESQ_CM	FD_HM	3.83E-11
COMSTK	n-Hexane	ESQ_CM	FD_HM	1.40E-12
COMSTK	Nickel compounds	ESQ_CM	FD_HM	1.54E-10
COMSTK	Nitrogen dioxide	ESQ_CM	FD_HM	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_CM	FD_HM	4.63E-07
COMSTK	Phosphoric acid	ESQ_CM	FD_HM	7.58E-08
COMSTK	Selenium compounds	ESQ_CM	FD_HM	1.77E-10
COMSTK	Silver compounds	ESQ_CM	FD_HM	1.41E-09
COMSTK	Styrene	ESQ_CM	FD_HM	4.52E-11
COMSTK	Sulfur dioxide	ESQ_CM	FD_HM	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_CM	FD_HM	0.00E+00
COMSTK	Thallium compounds	ESQ_CM	FD_HM	3.99E-06
COMSTK	Tin compounds	ESQ_CM	FD_HM	1.92E-10
COMSTK	Toluene	ESQ_CM	FD_HM	4.83E-14
COMSTK	trans-1,3-Dichloropropene	ESQ_CM	FD_HM	0.00E+00
COMSTK	Tribromomethane	ESQ_CM	FD_HM	6.77E-14
COMSTK	Trichloroethylene	ESQ_CM	FD_HM	2.77E-14
COMSTK	Trichlorofluoromethane	ESQ_CM	FD_HM	0.00E+00
COMSTK	Vanadium compounds	ESQ_CM	FD_HM	6.85E-10
COMSTK	Vinyl acetate	ESQ_CM	FD_HM	1.07E-13
COMSTK	Vinyl chloride	ESQ_CM	FD_HM	1.12E-12
COMSTK	VX	ESQ_CM	FD_HM	4.36E-05
COMSTK	Xylene (mixed)	ESQ_CM	FD_HM	3.88E-10
COMSTK	Zinc compounds	ESQ_CM	FD_HM	3.91E-12
LABSTK	GB	ESQ_CM	FD_HM	2.77E-07
LABSTK	Sulfur mustard (or H/HD)	ESQ_CM	FD_HM	0.00E+00
LABSTK	VX	ESQ_CM	FD_HM	1.63E-04
MDBSTK	GB	ESQ_CM	FD_HM	2.69E-07
MDBSTK	Sulfur mustard (or H/HD)	ESQ_CM	FD_HM	0.00E+00
MDBSTK	VX	ESQ_CM	FD_HM	1.46E-04
BRASTK	Antimony compounds	ESQ_OB	FD_INV	0.00E+00
BRASTK	Arsenic compounds	ESQ_OB	FD_INV	6.92E-11
BRASTK	Barium compounds	ESQ_OB	FD_INV	3.45E-05
BRASTK	Beryllium compounds	ESQ_OB	FD_INV	0.00E+00
BRASTK	Boron compounds	ESQ_OB	FD_INV	5.77E-06
BRASTK	Cadmium compounds	ESQ_OB	FD_INV	1.02E-06
BRASTK	Chromium compounds	ESQ_OB	FD_INV	1.81E-04
BRASTK	Cobalt compounds	ESQ_OB	FD_INV	5.53E-06
BRASTK	Copper compounds	ESQ_OB	FD_INV	2.71E-03
BRASTK	EA 2192	ESQ_OB	FD_INV	0.00E+00
BRASTK	GB	ESQ_OB	FD_INV	0.00E+00
BRASTK	Lead compounds	ESQ_OB	FD_INV	1.51E-08
BRASTK	Manganese compounds	ESQ_OB	FD_INV	1.25E-05

Source	COPC	Guild	Diet Type	ESQ
BRASTK	Mercuric chloride	ESQ_OB	FD_INV	1.35E-04
BRASTK	Methyl mercury	ESQ_OB	FD_INV	2.13E-03
BRASTK	Nickel compounds	ESQ_OB	FD_INV	6.95E-08
BRASTK	o-Cresol	ESQ_OB	FD_INV	0.00E+00
BRASTK	Phosphoric acid	ESQ_OB	FD_INV	0.00E+00
BRASTK	Selenium compounds	ESQ_OB	FD_INV	4.35E-08
BRASTK	Silver compounds	ESQ_OB	FD_INV	1.81E-04
BRASTK	Sulfur mustard (or H/HD)	ESQ_OB	FD_INV	0.00E+00
BRASTK	Thallium compounds	ESQ_OB	FD_INV	3.16E-04
BRASTK	Tin compounds	ESQ_OB	FD_INV	6.05E-07
BRASTK	Vanadium compounds	ESQ_OB	FD_INV	1.06E-04
BRASTK	VX	ESQ_OB	FD_INV	0.00E+00
BRASTK	Zinc compounds	ESQ_OB	FD_INV	1.34E-07
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_OB	FD_INV	0.00E+00
COMSTK	1,1-Dichloroethylene	ESQ_OB	FD_INV	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_OB	FD_INV	2.70E-10
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_OB	FD_INV	3.96E-10
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_OB	FD_INV	2.69E-09
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_OB	FD_INV	1.36E-08
COMSTK	1,2-Dichlorobenzene	ESQ_OB	FD_INV	0.00E+00
COMSTK	1,4-Dichlorobenzene	ESQ_OB	FD_INV	0.00E+00
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_OB	FD_INV	1.31E-11
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_OB	FD_INV	2.36E-09
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_OB	FD_INV	6.48E-09
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_OB	FD_INV	1.51E-10
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_OB	FD_INV	5.71E-10
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_OB	FD_INV	6.77E-08
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_OB	FD_INV	8.34E-13
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_OB	FD_INV	1.12E-02
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_OB	FD_INV	1.24E-06
COMSTK	2,4,6-Trinitrotoluene	ESQ_OB	FD_INV	2.73E-06
COMSTK	2,4-Dinitrotoluene	ESQ_OB	FD_INV	9.82E-06
COMSTK	2-Methylnaphthalene	ESQ_OB	FD_INV	0.00E+00
COMSTK	2-Xylene	ESQ_OB	FD_INV	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_OB	FD_INV	4.76E-07
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_OB	FD_INV	8.99E-09
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_OB	FD_INV	1.27E-08
COMSTK	Acetone	ESQ_OB	FD_INV	2.67E-09
COMSTK	Aluminum compounds	ESQ_OB	FD_INV	3.85E-06
COMSTK	Antimony compounds	ESQ_OB	FD_INV	0.00E+00
COMSTK	Arsenic compounds	ESQ_OB	FD_INV	4.02E-12
COMSTK	Barium compounds	ESQ_OB	FD_INV	2.13E-06
COMSTK	Benzaldehyde	ESQ_OB	FD_INV	0.00E+00
COMSTK	Benzene	ESQ_OB	FD_INV	0.00E+00
COMSTK	Benzoic acid	ESQ_OB	FD_INV	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Benzyl alcohol	ESQ_OB	FD_INV	0.00E+00
COMSTK	Beryllium compounds	ESQ_OB	FD_INV	0.00E+00
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_OB	FD_INV	1.27E-01
COMSTK	Boron compounds	ESQ_OB	FD_INV	7.90E-07
COMSTK	Bromochloromethane	ESQ_OB	FD_INV	0.00E+00
COMSTK	Bromodichloromethane	ESQ_OB	FD_INV	0.00E+00
COMSTK	Bromoethane	ESQ_OB	FD_INV	0.00E+00
COMSTK	Cadmium compounds	ESQ_OB	FD_INV	7.48E-09
COMSTK	Carbon disulfide	ESQ_OB	FD_INV	0.00E+00
COMSTK	Carbon tetrachloride	ESQ_OB	FD_INV	0.00E+00
COMSTK	Chlorine	ESQ_OB	FD_INV	0.00E+00
COMSTK	Chlorobenzene	ESQ_OB	FD_INV	0.00E+00
COMSTK	Chlorodibromomethane	ESQ_OB	FD_INV	0.00E+00
COMSTK	Chloroform	ESQ_OB	FD_INV	0.00E+00
COMSTK	Chromium compounds	ESQ_OB	FD_INV	5.64E-06
COMSTK	cis-1,3-Dichloropropene	ESQ_OB	FD_INV	0.00E+00
COMSTK	Cobalt compounds	ESQ_OB	FD_INV	2.31E-08
COMSTK	Composirte TOE - Nonvolatile	ESQ_OB	FD_INV	7.62E+00
COMSTK	Composirte TOE - Semivolatile	ESQ_OB	FD_INV	2.47E-03
COMSTK	Composite TOE - Volatile	ESQ_OB	FD_INV	6.15E-06
COMSTK	Copper compounds	ESQ_OB	FD_INV	3.55E-06
COMSTK	Dibutyl phthalate	ESQ_OB	FD_INV	1.64E-04
COMSTK	Dichlorodifluoromethane	ESQ_OB	FD_INV	0.00E+00
COMSTK	Dichloromethane	ESQ_OB	FD_INV	0.00E+00
COMSTK	Diethyl phthalate	ESQ_OB	FD_INV	0.00E+00
COMSTK	Dimethylphthalate	ESQ_OB	FD_INV	0.00E+00
COMSTK	Ethyl chloride	ESQ_OB	FD_INV	0.00E+00
COMSTK	Ethylbenzene	ESQ_OB	FD_INV	0.00E+00
COMSTK	GB	ESQ_OB	FD_INV	0.00E+00
COMSTK	Hydrochloric acid	ESQ_OB	FD_INV	0.00E+00
COMSTK	Hydrofluoric acid	ESQ_OB	FD_INV	0.00E+00
COMSTK	Lead compounds	ESQ_OB	FD_INV	2.29E-08
COMSTK	m,p-Xylene	ESQ_OB	FD_INV	0.00E+00
COMSTK	Manganese compounds	ESQ_OB	FD_INV	1.62E-07
COMSTK	Mercuric chloride	ESQ_OB	FD_INV	7.27E-06
COMSTK	Methyl bromide	ESQ_OB	FD_INV	0.00E+00
COMSTK	Methyl chloride	ESQ_OB	FD_INV	0.00E+00
COMSTK	Methyl ethyl ketone	ESQ_OB	FD_INV	0.00E+00
COMSTK	Methyl iodide	ESQ_OB	FD_INV	0.00E+00
COMSTK	Methyl isobutyl ketone	ESQ_OB	FD_INV	1.52E-06
COMSTK	Methyl mercury	ESQ_OB	FD_INV	1.14E-04
COMSTK	Naphthalene	ESQ_OB	FD_INV	0.00E+00
COMSTK	n-Hexane	ESQ_OB	FD_INV	0.00E+00
COMSTK	Nickel compounds	ESQ_OB	FD_INV	9.11E-10
COMSTK	Nitrogen dioxide	ESQ_OB	FD_INV	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_OB	FD_INV	5.50E-04
COMSTK	Phosphoric acid	ESQ_OB	FD_INV	0.00E+00
COMSTK	Selenium compounds	ESQ_OB	FD_INV	3.42E-10
COMSTK	Silver compounds	ESQ_OB	FD_INV	1.43E-06
COMSTK	Styrene	ESQ_OB	FD_INV	0.00E+00
COMSTK	Sulfur dioxide	ESQ_OB	FD_INV	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_OB	FD_INV	0.00E+00
COMSTK	Thallium compounds	ESQ_OB	FD_INV	2.84E-05
COMSTK	Tin compounds	ESQ_OB	FD_INV	8.96E-09
COMSTK	Toluene	ESQ_OB	FD_INV	0.00E+00
COMSTK	trans-1,3-Dichloropropene	ESQ_OB	FD_INV	0.00E+00
COMSTK	Tribromomethane	ESQ_OB	FD_INV	0.00E+00
COMSTK	Trichloroethylene	ESQ_OB	FD_INV	0.00E+00
COMSTK	Trichlorofluoromethane	ESQ_OB	FD_INV	0.00E+00
COMSTK	Vanadium compounds	ESQ_OB	FD_INV	3.74E-07
COMSTK	Vinyl acetate	ESQ_OB	FD_INV	0.00E+00
COMSTK	Vinyl chloride	ESQ_OB	FD_INV	0.00E+00
COMSTK	VX	ESQ_OB	FD_INV	0.00E+00
COMSTK	Xylene (mixed)	ESQ_OB	FD_INV	0.00E+00
COMSTK	Zinc compounds	ESQ_OB	FD_INV	5.44E-08
LABSTK	GB	ESQ_OB	FD_INV	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	ESQ_OB	FD_INV	0.00E+00
LABSTK	VX	ESQ_OB	FD_INV	0.00E+00
MDBSTK	GB	ESQ_OB	FD_INV	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	ESQ_OB	FD_INV	0.00E+00
MDBSTK	VX	ESQ_OB	FD_INV	0.00E+00
BRASTK	Antimony compounds	ESQ_OM	FD_INV	1.91E-07
BRASTK	Arsenic compounds	ESQ_OM	FD_INV	1.56E-10
BRASTK	Barium compounds	ESQ_OM	FD_INV	1.73E-05
BRASTK	Beryllium compounds	ESQ_OM	FD_INV	7.58E-08
BRASTK	Boron compounds	ESQ_OM	FD_INV	6.18E-07
BRASTK	Cadmium compounds	ESQ_OM	FD_INV	2.76E-06
BRASTK	Chromium compounds	ESQ_OM	FD_INV	2.69E-04
BRASTK	Cobalt compounds	ESQ_OM	FD_INV	5.94E-07
BRASTK	Copper compounds	ESQ_OM	FD_INV	2.46E-03
BRASTK	EA 2192	ESQ_OM	FD_INV	0.00E+00
BRASTK	GB	ESQ_OM	FD_INV	5.57E-06
BRASTK	Lead compounds	ESQ_OM	FD_INV	6.58E-09
BRASTK	Manganese compounds	ESQ_OM	FD_INV	2.52E-05
BRASTK	Mercuric chloride	ESQ_OM	FD_INV	4.98E-05
BRASTK	Methyl mercury	ESQ_OM	FD_INV	6.42E-03
BRASTK	Nickel compounds	ESQ_OM	FD_INV	3.74E-07
BRASTK	o-Cresol	ESQ_OM	FD_INV	1.89E-06
BRASTK	Phosphoric acid	ESQ_OM	FD_INV	1.79E-06
BRASTK	Selenium compounds	ESQ_OM	FD_INV	1.07E-07

Source	COPC	Guild	Diet Type	ESQ
BRASTK	Silver compounds	ESQ_OM	FD_INV	7.59E-05
BRASTK	Sulfur mustard (or H/HD)	ESQ_OM	FD_INV	0.00E+00
BRASTK	Thallium compounds	ESQ_OM	FD_INV	1.87E-02
BRASTK	Tin compounds	ESQ_OM	FD_INV	1.87E-08
BRASTK	Vanadium compounds	ESQ_OM	FD_INV	9.03E-07
BRASTK	VX	ESQ_OM	FD_INV	4.31E+00
BRASTK	Zinc compounds	ESQ_OM	FD_INV	1.70E-08
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_OM	FD_INV	1.66E-14
COMSTK	1,1-Dichloroethylene	ESQ_OM	FD_INV	3.99E-13
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_OM	FD_INV	7.64E-09
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_OM	FD_INV	9.74E-09
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_OM	FD_INV	3.90E-09
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_OM	FD_INV	2.58E-07
COMSTK	1,2-Dichlorobenzene	ESQ_OM	FD_INV	1.59E-10
COMSTK	1,4-Dichlorobenzene	ESQ_OM	FD_INV	1.04E-10
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_OM	FD_INV	6.04E-12
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_OM	FD_INV	1.03E-09
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_OM	FD_INV	2.82E-09
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_OM	FD_INV	6.57E-10
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_OM	FD_INV	2.49E-09
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_OM	FD_INV	2.95E-08
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_OM	FD_INV	3.63E-12
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_OM	FD_INV	1.56E-03
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_OM	FD_INV	2.43E-05
COMSTK	2,4,6-Trinitrotoluene	ESQ_OM	FD_INV	1.35E-05
COMSTK	2,4-Dinitrotoluene	ESQ_OM	FD_INV	2.07E-06
COMSTK	2-Methylnaphthalene	ESQ_OM	FD_INV	4.05E-06
COMSTK	2-Xylene	ESQ_OM	FD_INV	4.35E-09
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_OM	FD_INV	1.38E-09
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_OM	FD_INV	4.13E-11
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_OM	FD_INV	1.94E-08
COMSTK	Acetone	ESQ_OM	FD_INV	1.25E-08
COMSTK	Aluminum compounds	ESQ_OM	FD_INV	2.74E-04
COMSTK	Antimony compounds	ESQ_OM	FD_INV	3.41E-08
COMSTK	Arsenic compounds	ESQ_OM	FD_INV	9.20E-12
COMSTK	Barium compounds	ESQ_OM	FD_INV	1.07E-06
COMSTK	Benzaldehyde	ESQ_OM	FD_INV	3.97E-05
COMSTK	Benzene	ESQ_OM	FD_INV	1.43E-10
COMSTK	Benzoic acid	ESQ_OM	FD_INV	3.86E-06
COMSTK	Benzyl alcohol	ESQ_OM	FD_INV	3.85E-06
COMSTK	Beryllium compounds	ESQ_OM	FD_INV	7.77E-10
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_OM	FD_INV	1.08E-02
COMSTK	Boron compounds	ESQ_OM	FD_INV	8.44E-08
COMSTK	Bromochloromethane	ESQ_OM	FD_INV	7.72E-12
COMSTK	Bromodichloromethane	ESQ_OM	FD_INV	6.83E-08

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Bromoethane	ESQ_OM	FD_INV	3.65E-11
COMSTK	Cadmium compounds	ESQ_OM	FD_INV	2.02E-08
COMSTK	Carbon disulfide	ESQ_OM	FD_INV	5.27E-11
COMSTK	Carbon tetrachloride	ESQ_OM	FD_INV	9.43E-11
COMSTK	Chlorine	ESQ_OM	FD_INV	0.00E+00
COMSTK	Chlorobenzene	ESQ_OM	FD_INV	4.39E-11
COMSTK	Chlorodibromomethane	ESQ_OM	FD_INV	1.03E-06
COMSTK	Chloroform	ESQ_OM	FD_INV	6.57E-11
COMSTK	Chromium compounds	ESQ_OM	FD_INV	8.36E-06
COMSTK	cis-1,3-Dichloropropene	ESQ_OM	FD_INV	0.00E+00
COMSTK	Cobalt compounds	ESQ_OM	FD_INV	2.49E-09
COMSTK	Composirte TOE - Nonvolatile	ESQ_OM	FD_INV	1.86E-02
COMSTK	Composirte TOE - Semivolatile	ESQ_OM	FD_INV	2.71E-04
COMSTK	Composite TOE - Volatile	ESQ_OM	FD_INV	5.83E-06
COMSTK	Copper compounds	ESQ_OM	FD_INV	3.23E-06
COMSTK	Dibutyl phthalate	ESQ_OM	FD_INV	1.39E-06
COMSTK	Dichlorodifluoromethane	ESQ_OM	FD_INV	0.00E+00
COMSTK	Dichloromethane	ESQ_OM	FD_INV	1.87E-10
COMSTK	Diethyl phthalate	ESQ_OM	FD_INV	2.22E-08
COMSTK	Dimethylphthalate	ESQ_OM	FD_INV	2.07E-10
COMSTK	Ethyl chloride	ESQ_OM	FD_INV	0.00E+00
COMSTK	Ethylbenzene	ESQ_OM	FD_INV	1.17E-10
COMSTK	GB	ESQ_OM	FD_INV	5.53E-07
COMSTK	Hydrochloric acid	ESQ_OM	FD_INV	2.99E-07
COMSTK	Hydrofluoric acid	ESQ_OM	FD_INV	0.00E+00
COMSTK	Lead compounds	ESQ_OM	FD_INV	9.96E-09
COMSTK	m,p-Xylene	ESQ_OM	FD_INV	3.12E-08
COMSTK	Manganese compounds	ESQ_OM	FD_INV	3.27E-07
COMSTK	Mercuric chloride	ESQ_OM	FD_INV	2.67E-06
COMSTK	Methyl bromide	ESQ_OM	FD_INV	3.34E-09
COMSTK	Methyl chloride	ESQ_OM	FD_INV	2.61E-13
COMSTK	Methyl ethyl ketone	ESQ_OM	FD_INV	4.96E-13
COMSTK	Methyl iodide	ESQ_OM	FD_INV	8.73E-10
COMSTK	Methyl isobutyl ketone	ESQ_OM	FD_INV	8.55E-08
COMSTK	Methyl mercury	ESQ_OM	FD_INV	3.45E-04
COMSTK	Naphthalene	ESQ_OM	FD_INV	2.36E-07
COMSTK	n-Hexane	ESQ_OM	FD_INV	5.97E-10
COMSTK	Nickel compounds	ESQ_OM	FD_INV	4.90E-09
COMSTK	Nitrogen dioxide	ESQ_OM	FD_INV	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_OM	FD_INV	1.01E-03
COMSTK	Phosphoric acid	ESQ_OM	FD_INV	7.19E-08
COMSTK	Selenium compounds	ESQ_OM	FD_INV	8.46E-10
COMSTK	Silver compounds	ESQ_OM	FD_INV	6.01E-07
COMSTK	Styrene	ESQ_OM	FD_INV	2.76E-07
COMSTK	Sulfur dioxide	ESQ_OM	FD_INV	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Sulfur mustard (or H/HD)	ESQ_OM	FD_INV	0.00E+00
COMSTK	Thallium compounds	ESQ_OM	FD_INV	1.68E-03
COMSTK	Tin compounds	ESQ_OM	FD_INV	2.85E-10
COMSTK	Toluene	ESQ_OM	FD_INV	9.53E-11
COMSTK	trans-1,3-Dichloropropene	ESQ_OM	FD_INV	0.00E+00
COMSTK	Tribromomethane	ESQ_OM	FD_INV	4.58E-12
COMSTK	Trichloroethylene	ESQ_OM	FD_INV	4.17E-11
COMSTK	Trichlorofluoromethane	ESQ_OM	FD_INV	0.00E+00
COMSTK	Vanadium compounds	ESQ_OM	FD_INV	3.18E-09
COMSTK	Vinyl acetate	ESQ_OM	FD_INV	4.71E-13
COMSTK	Vinyl chloride	ESQ_OM	FD_INV	1.74E-11
COMSTK	VX	ESQ_OM	FD_INV	2.60E-01
COMSTK	Xylene (mixed)	ESQ_OM	FD_INV	3.17E-07
COMSTK	Zinc compounds	ESQ_OM	FD_INV	6.90E-09
LABSTK	GB	ESQ_OM	FD_INV	1.26E-06
LABSTK	Sulfur mustard (or H/HD)	ESQ_OM	FD_INV	0.00E+00
LABSTK	VX	ESQ_OM	FD_INV	9.74E-01
MDBSTK	GB	ESQ_OM	FD_INV	1.15E-06
MDBSTK	Sulfur mustard (or H/HD)	ESQ_OM	FD_INV	0.00E+00
MDBSTK	VX	ESQ_OM	FD_INV	8.48E-01
BRASTK	Antimony compounds	ESQ_CB	FD_OB	0.00E+00
BRASTK	Arsenic compounds	ESQ_CB	FD_OB	1.49E-11
BRASTK	Barium compounds	ESQ_CB	FD_OB	6.87E-06
BRASTK	Beryllium compounds	ESQ_CB	FD_OB	0.00E+00
BRASTK	Boron compounds	ESQ_CB	FD_OB	1.53E-06
BRASTK	Cadmium compounds	ESQ_CB	FD_OB	1.20E-06
BRASTK	Chromium compounds	ESQ_CB	FD_OB	3.77E-05
BRASTK	Cobalt compounds	ESQ_CB	FD_OB	2.04E-06
BRASTK	Copper compounds	ESQ_CB	FD_OB	5.41E-04
BRASTK	EA 2192	ESQ_CB	FD_OB	0.00E+00
BRASTK	GB	ESQ_CB	FD_OB	0.00E+00
BRASTK	Lead compounds	ESQ_CB	FD_OB	3.01E-09
BRASTK	Manganese compounds	ESQ_CB	FD_OB	1.64E-06
BRASTK	Mercuric chloride	ESQ_CB	FD_OB	2.15E-05
BRASTK	Methyl mercury	ESQ_CB	FD_OB	4.59E-04
BRASTK	Nickel compounds	ESQ_CB	FD_OB	1.46E-08
BRASTK	o-Cresol	ESQ_CB	FD_OB	0.00E+00
BRASTK	Phosphoric acid	ESQ_CB	FD_OB	0.00E+00
BRASTK	Selenium compounds	ESQ_CB	FD_OB	5.41E-05
BRASTK	Silver compounds	ESQ_CB	FD_OB	3.60E-05
BRASTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_OB	0.00E+00
BRASTK	Thallium compounds	ESQ_CB	FD_OB	6.29E-05
BRASTK	Tin compounds	ESQ_CB	FD_OB	3.82E-06
BRASTK	Vanadium compounds	ESQ_CB	FD_OB	8.88E-06
BRASTK	VX	ESQ_CB	FD_OB	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
BRASTK	Zinc compounds	ESQ_CB	FD_OB	6.09E-08
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_CB	FD_OB	0.00E+00
COMSTK	1,1-Dichloroethylene	ESQ_CB	FD_OB	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_CB	FD_OB	2.20E-10
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_CB	FD_OB	2.21E-10
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_CB	FD_OB	2.37E-10
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_CB	FD_OB	3.63E-08
COMSTK	1,2-Dichlorobenzene	ESQ_CB	FD_OB	0.00E+00
COMSTK	1,4-Dichlorobenzene	ESQ_CB	FD_OB	0.00E+00
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_CB	FD_OB	8.82E-11
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_CB	FD_OB	2.04E-10
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_CB	FD_OB	5.81E-10
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_CB	FD_OB	1.31E-11
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_CB	FD_OB	5.03E-11
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_CB	FD_OB	5.97E-09
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_CB	FD_OB	7.07E-14
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_CB	FD_OB	2.60E-02
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_CB	FD_OB	3.68E-06
COMSTK	2,4,6-Trinitrotoluene	ESQ_CB	FD_OB	5.87E-07
COMSTK	2,4-Dinitrotoluene	ESQ_CB	FD_OB	2.11E-06
COMSTK	2-Methylnaphthalene	ESQ_CB	FD_OB	0.00E+00
COMSTK	2-Xylene	ESQ_CB	FD_OB	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_CB	FD_OB	5.01E-08
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_CB	FD_OB	6.03E-08
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_CB	FD_OB	8.49E-08
COMSTK	Acetone	ESQ_CB	FD_OB	4.40E-10
COMSTK	Aluminum compounds	ESQ_CB	FD_OB	7.65E-07
COMSTK	Antimony compounds	ESQ_CB	FD_OB	0.00E+00
COMSTK	Arsenic compounds	ESQ_CB	FD_OB	9.86E-13
COMSTK	Barium compounds	ESQ_CB	FD_OB	4.24E-07
COMSTK	Benzaldehyde	ESQ_CB	FD_OB	0.00E+00
COMSTK	Benzene	ESQ_CB	FD_OB	0.00E+00
COMSTK	Benzoic acid	ESQ_CB	FD_OB	0.00E+00
COMSTK	Benzyl alcohol	ESQ_CB	FD_OB	0.00E+00
COMSTK	Beryllium compounds	ESQ_CB	FD_OB	0.00E+00
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_CB	FD_OB	9.87E-02
COMSTK	Boron compounds	ESQ_CB	FD_OB	2.10E-07
COMSTK	Bromochloromethane	ESQ_CB	FD_OB	0.00E+00
COMSTK	Bromodichloromethane	ESQ_CB	FD_OB	0.00E+00
COMSTK	Bromoethane	ESQ_CB	FD_OB	0.00E+00
COMSTK	Cadmium compounds	ESQ_CB	FD_OB	9.22E-09
COMSTK	Carbon disulfide	ESQ_CB	FD_OB	0.00E+00
COMSTK	Carbon tetrachloride	ESQ_CB	FD_OB	0.00E+00
COMSTK	Chlorine	ESQ_CB	FD_OB	0.00E+00
COMSTK	Chlorobenzene	ESQ_CB	FD_OB	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Chlorodibromomethane	ESQ_CB	FD_OB	0.00E+00
COMSTK	Chloroform	ESQ_CB	FD_OB	0.00E+00
COMSTK	Chromium compounds	ESQ_CB	FD_OB	1.17E-06
COMSTK	cis-1,3-Dichloropropene	ESQ_CB	FD_OB	0.00E+00
COMSTK	Cobalt compounds	ESQ_CB	FD_OB	8.71E-09
COMSTK	Composirte TOE - Nonvolatile	ESQ_CB	FD_OB	6.75E-01
COMSTK	Composirte TOE - Semivolatile	ESQ_CB	FD_OB	5.30E-04
COMSTK	Composite TOE - Volatile	ESQ_CB	FD_OB	6.06E-09
COMSTK	Copper compounds	ESQ_CB	FD_OB	7.08E-07
COMSTK	Dibutyl phthalate	ESQ_CB	FD_OB	7.75E-05
COMSTK	Dichlorodifluoromethane	ESQ_CB	FD_OB	0.00E+00
COMSTK	Dichloromethane	ESQ_CB	FD_OB	0.00E+00
COMSTK	Diethyl phthalate	ESQ_CB	FD_OB	0.00E+00
COMSTK	Dimethylphthalate	ESQ_CB	FD_OB	0.00E+00
COMSTK	Ethyl chloride	ESQ_CB	FD_OB	0.00E+00
COMSTK	Ethylbenzene	ESQ_CB	FD_OB	0.00E+00
COMSTK	GB	ESQ_CB	FD_OB	0.00E+00
COMSTK	Hydrochloric acid	ESQ_CB	FD_OB	0.00E+00
COMSTK	Hydrofluoric acid	ESQ_CB	FD_OB	0.00E+00
COMSTK	Lead compounds	ESQ_CB	FD_OB	4.56E-09
COMSTK	m,p-Xylene	ESQ_CB	FD_OB	0.00E+00
COMSTK	Manganese compounds	ESQ_CB	FD_OB	2.13E-08
COMSTK	Mercuric chloride	ESQ_CB	FD_OB	1.15E-06
COMSTK	Methyl bromide	ESQ_CB	FD_OB	0.00E+00
COMSTK	Methyl chloride	ESQ_CB	FD_OB	0.00E+00
COMSTK	Methyl ethyl ketone	ESQ_CB	FD_OB	0.00E+00
COMSTK	Methyl iodide	ESQ_CB	FD_OB	0.00E+00
COMSTK	Methyl isobutyl ketone	ESQ_CB	FD_OB	3.26E-07
COMSTK	Methyl mercury	ESQ_CB	FD_OB	2.47E-05
COMSTK	Naphthalene	ESQ_CB	FD_OB	0.00E+00
COMSTK	n-Hexane	ESQ_CB	FD_OB	0.00E+00
COMSTK	Nickel compounds	ESQ_CB	FD_OB	1.92E-10
COMSTK	Nitrogen dioxide	ESQ_CB	FD_OB	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_CB	FD_OB	1.62E-03
COMSTK	Phosphoric acid	ESQ_CB	FD_OB	0.00E+00
COMSTK	Selenium compounds	ESQ_CB	FD_OB	4.51E-07
COMSTK	Silver compounds	ESQ_CB	FD_OB	2.85E-07
COMSTK	Styrene	ESQ_CB	FD_OB	0.00E+00
COMSTK	Sulfur dioxide	ESQ_CB	FD_OB	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_OB	0.00E+00
COMSTK	Thallium compounds	ESQ_CB	FD_OB	5.64E-06
COMSTK	Tin compounds	ESQ_CB	FD_OB	5.99E-08
COMSTK	Toluene	ESQ_CB	FD_OB	0.00E+00
COMSTK	trans-1,3-Dichloropropene	ESQ_CB	FD_OB	0.00E+00
COMSTK	Tribromomethane	ESQ_CB	FD_OB	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Trichloroethylene	ESQ_CB	FD_OB	0.00E+00
COMSTK	Trichlorofluoromethane	ESQ_CB	FD_OB	0.00E+00
COMSTK	Vanadium compounds	ESQ_CB	FD_OB	3.12E-08
COMSTK	Vinyl acetate	ESQ_CB	FD_OB	0.00E+00
COMSTK	Vinyl chloride	ESQ_CB	FD_OB	0.00E+00
COMSTK	VX	ESQ_CB	FD_OB	0.00E+00
COMSTK	Xylene (mixed)	ESQ_CB	FD_OB	0.00E+00
COMSTK	Zinc compounds	ESQ_CB	FD_OB	2.55E-08
LABSTK	GB	ESQ_CB	FD_OB	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_OB	0.00E+00
LABSTK	VX	ESQ_CB	FD_OB	0.00E+00
MDBSTK	GB	ESQ_CB	FD_OB	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_OB	0.00E+00
MDBSTK	VX	ESQ_CB	FD_OB	0.00E+00
BRASTK	Antimony compounds	ESQ_CM	FD_OB	6.08E-09
BRASTK	Arsenic compounds	ESQ_CM	FD_OB	1.69E-11
BRASTK	Barium compounds	ESQ_CM	FD_OB	5.42E-07
BRASTK	Beryllium compounds	ESQ_CM	FD_OB	2.37E-09
BRASTK	Boron compounds	ESQ_CM	FD_OB	3.42E-07
BRASTK	Cadmium compounds	ESQ_CM	FD_OB	4.39E-07
BRASTK	Chromium compounds	ESQ_CM	FD_OB	8.11E-06
BRASTK	Cobalt compounds	ESQ_CM	FD_OB	4.44E-07
BRASTK	Copper compounds	ESQ_CM	FD_OB	7.68E-05
BRASTK	EA 2192	ESQ_CM	FD_OB	0.00E+00
BRASTK	GB	ESQ_CM	FD_OB	1.25E-06
BRASTK	Lead compounds	ESQ_CM	FD_OB	2.05E-10
BRASTK	Manganese compounds	ESQ_CM	FD_OB	1.27E-06
BRASTK	Mercuric chloride	ESQ_CM	FD_OB	2.01E-06
BRASTK	Methyl mercury	ESQ_CM	FD_OB	1.88E-04
BRASTK	Nickel compounds	ESQ_CM	FD_OB	1.12E-08
BRASTK	o-Cresol	ESQ_CM	FD_OB	5.54E-08
BRASTK	Phosphoric acid	ESQ_CM	FD_OB	6.09E-07
BRASTK	Selenium compounds	ESQ_CM	FD_OB	2.08E-05
BRASTK	Silver compounds	ESQ_CM	FD_OB	2.37E-06
BRASTK	Sulfur mustard (or H/HD)	ESQ_CM	FD_OB	0.00E+00
BRASTK	Thallium compounds	ESQ_CM	FD_OB	5.84E-04
BRASTK	Tin compounds	ESQ_CM	FD_OB	2.15E-07
BRASTK	Vanadium compounds	ESQ_CM	FD_OB	1.94E-07
BRASTK	VX	ESQ_CM	FD_OB	7.35E-04
BRASTK	Zinc compounds	ESQ_CM	FD_OB	1.06E-09
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_CM	FD_OB	5.20E-16
COMSTK	1,1-Dichloroethylene	ESQ_CM	FD_OB	1.60E-15
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_CM	FD_OB	1.82E-09
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_CM	FD_OB	1.86E-09
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_CM	FD_OB	8.74E-10

Source	COPC	Guild	Diet Type	ESQ
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_CM	FD_OB	9.79E-08
COMSTK	1,2-Dichlorobenzene	ESQ_CM	FD_OB	5.13E-12
COMSTK	1,4-Dichlorobenzene	ESQ_CM	FD_OB	3.37E-12
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_CM	FD_OB	7.18E-11
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_CM	FD_OB	2.27E-10
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_CM	FD_OB	6.40E-10
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_CM	FD_OB	1.45E-10
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_CM	FD_OB	5.57E-10
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_CM	FD_OB	6.61E-09
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_CM	FD_OB	7.91E-13
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_CM	FD_OB	5.00E-04
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_CM	FD_OB	9.92E-06
COMSTK	2,4,6-Trinitrotoluene	ESQ_CM	FD_OB	3.96E-07
COMSTK	2,4-Dinitrotoluene	ESQ_CM	FD_OB	6.07E-08
COMSTK	2-Methylnaphthalene	ESQ_CM	FD_OB	1.43E-07
COMSTK	2-Xylene	ESQ_CM	FD_OB	1.28E-10
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_CM	FD_OB	3.53E-10
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_CM	FD_OB	4.91E-10
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_CM	FD_OB	2.30E-07
COMSTK	Acetone	ESQ_CM	FD_OB	5.01E-10
COMSTK	Aluminum compounds	ESQ_CM	FD_OB	8.55E-06
COMSTK	Antimony compounds	ESQ_CM	FD_OB	1.11E-09
COMSTK	Arsenic compounds	ESQ_CM	FD_OB	1.51E-12
COMSTK	Barium compounds	ESQ_CM	FD_OB	3.34E-08
COMSTK	Benzaldehyde	ESQ_CM	FD_OB	1.17E-06
COMSTK	Benzene	ESQ_CM	FD_OB	1.44E-13
COMSTK	Benzoic acid	ESQ_CM	FD_OB	1.13E-07
COMSTK	Benzyl alcohol	ESQ_CM	FD_OB	1.13E-07
COMSTK	Beryllium compounds	ESQ_CM	FD_OB	2.43E-11
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_CM	FD_OB	1.14E-03
COMSTK	Boron compounds	ESQ_CM	FD_OB	4.67E-08
COMSTK	Bromochloromethane	ESQ_CM	FD_OB	2.28E-13
COMSTK	Bromodichloromethane	ESQ_CM	FD_OB	1.20E-11
COMSTK	Bromoethane	ESQ_CM	FD_OB	1.08E-12
COMSTK	Cadmium compounds	ESQ_CM	FD_OB	3.38E-09
COMSTK	Carbon disulfide	ESQ_CM	FD_OB	3.65E-13
COMSTK	Carbon tetrachloride	ESQ_CM	FD_OB	3.88E-14
COMSTK	Chlorine	ESQ_CM	FD_OB	0.00E+00
COMSTK	Chlorobenzene	ESQ_CM	FD_OB	1.32E-14
COMSTK	Chlorodibromomethane	ESQ_CM	FD_OB	1.75E-10
COMSTK	Chloroform	ESQ_CM	FD_OB	2.00E-12
COMSTK	Chromium compounds	ESQ_CM	FD_OB	2.52E-07
COMSTK	cis-1,3-Dichloropropene	ESQ_CM	FD_OB	0.00E+00
COMSTK	Cobalt compounds	ESQ_CM	FD_OB	1.89E-09
COMSTK	Composirte TOE - Nonvolatile	ESQ_CM	FD_OB	4.17E-03

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Composirte TOE - Semivolatile	ESQ_CM	FD_OB	7.97E-06
COMSTK	Composite TOE - Volatile	ESQ_CM	FD_OB	1.48E-09
COMSTK	Copper compounds	ESQ_CM	FD_OB	1.01E-07
COMSTK	Dibutyl phthalate	ESQ_CM	FD_OB	8.96E-08
COMSTK	Dichlorodifluoromethane	ESQ_CM	FD_OB	0.00E+00
COMSTK	Dichloromethane	ESQ_CM	FD_OB	5.84E-12
COMSTK	Diethyl phthalate	ESQ_CM	FD_OB	6.52E-10
COMSTK	Dimethylphthalate	ESQ_CM	FD_OB	6.09E-12
COMSTK	Ethyl chloride	ESQ_CM	FD_OB	0.00E+00
COMSTK	Ethylbenzene	ESQ_CM	FD_OB	3.46E-12
COMSTK	GB	ESQ_CM	FD_OB	1.22E-07
COMSTK	Hydrochloric acid	ESQ_CM	FD_OB	6.62E-08
COMSTK	Hydrofluoric acid	ESQ_CM	FD_OB	0.00E+00
COMSTK	Lead compounds	ESQ_CM	FD_OB	3.11E-10
COMSTK	m,p-Xylene	ESQ_CM	FD_OB	3.69E-07
COMSTK	Manganese compounds	ESQ_CM	FD_OB	1.65E-08
COMSTK	Mercuric chloride	ESQ_CM	FD_OB	1.08E-07
COMSTK	Methyl bromide	ESQ_CM	FD_OB	1.01E-10
COMSTK	Methyl chloride	ESQ_CM	FD_OB	1.27E-13
COMSTK	Methyl ethyl ketone	ESQ_CM	FD_OB	1.12E-13
COMSTK	Methyl iodide	ESQ_CM	FD_OB	2.60E-11
COMSTK	Methyl isobutyl ketone	ESQ_CM	FD_OB	2.51E-09
COMSTK	Methyl mercury	ESQ_CM	FD_OB	1.01E-05
COMSTK	Naphthalene	ESQ_CM	FD_OB	7.61E-09
COMSTK	n-Hexane	ESQ_CM	FD_OB	2.22E-11
COMSTK	Nickel compounds	ESQ_CM	FD_OB	1.48E-10
COMSTK	Nitrogen dioxide	ESQ_CM	FD_OB	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_CM	FD_OB	4.12E-04
COMSTK	Phosphoric acid	ESQ_CM	FD_OB	3.46E-08
COMSTK	Selenium compounds	ESQ_CM	FD_OB	1.74E-07
COMSTK	Silver compounds	ESQ_CM	FD_OB	1.88E-08
COMSTK	Styrene	ESQ_CM	FD_OB	8.10E-09
COMSTK	Sulfur dioxide	ESQ_CM	FD_OB	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_CM	FD_OB	0.00E+00
COMSTK	Thallium compounds	ESQ_CM	FD_OB	5.24E-05
COMSTK	Tin compounds	ESQ_CM	FD_OB	3.37E-09
COMSTK	Toluene	ESQ_CM	FD_OB	4.85E-14
COMSTK	trans-1,3-Dichloropropene	ESQ_CM	FD_OB	0.00E+00
COMSTK	Tribromomethane	ESQ_CM	FD_OB	6.77E-14
COMSTK	Trichloroethylene	ESQ_CM	FD_OB	2.78E-14
COMSTK	Trichlorofluoromethane	ESQ_CM	FD_OB	0.00E+00
COMSTK	Vanadium compounds	ESQ_CM	FD_OB	6.84E-10
COMSTK	Vinyl acetate	ESQ_CM	FD_OB	1.08E-13
COMSTK	Vinyl chloride	ESQ_CM	FD_OB	1.57E-12
COMSTK	VX	ESQ_CM	FD_OB	4.40E-05

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Xylene (mixed)	ESQ_CM	FD_OB	9.82E-09
COMSTK	Zinc compounds	ESQ_CM	FD_OB	4.46E-10
LABSTK	GB	ESQ_CM	FD_OB	2.77E-07
LABSTK	Sulfur mustard (or H/HD)	ESQ_CM	FD_OB	0.00E+00
LABSTK	VX	ESQ_CM	FD_OB	1.65E-04
MDBSTK	GB	ESQ_CM	FD_OB	2.70E-07
MDBSTK	Sulfur mustard (or H/HD)	ESQ_CM	FD_OB	0.00E+00
MDBSTK	VX	ESQ_CM	FD_OB	1.47E-04
BRASTK	Antimony compounds	ESQ_CB	FD_OM	0.00E+00
BRASTK	Arsenic compounds	ESQ_CB	FD_OM	5.40E-09
BRASTK	Barium compounds	ESQ_CB	FD_OM	6.87E-06
BRASTK	Beryllium compounds	ESQ_CB	FD_OM	0.00E+00
BRASTK	Boron compounds	ESQ_CB	FD_OM	4.82E-07
BRASTK	Cadmium compounds	ESQ_CB	FD_OM	2.22E-07
BRASTK	Chromium compounds	ESQ_CB	FD_OM	3.77E-05
BRASTK	Cobalt compounds	ESQ_CB	FD_OM	4.80E-07
BRASTK	Copper compounds	ESQ_CB	FD_OM	5.42E-04
BRASTK	EA 2192	ESQ_CB	FD_OM	0.00E+00
BRASTK	GB	ESQ_CB	FD_OM	0.00E+00
BRASTK	Lead compounds	ESQ_CB	FD_OM	3.10E-09
BRASTK	Manganese compounds	ESQ_CB	FD_OM	1.64E-06
BRASTK	Mercuric chloride	ESQ_CB	FD_OM	2.11E-05
BRASTK	Methyl mercury	ESQ_CB	FD_OM	4.59E-04
BRASTK	Nickel compounds	ESQ_CB	FD_OM	5.56E-08
BRASTK	o-Cresol	ESQ_CB	FD_OM	0.00E+00
BRASTK	Phosphoric acid	ESQ_CB	FD_OM	0.00E+00
BRASTK	Selenium compounds	ESQ_CB	FD_OM	1.63E-07
BRASTK	Silver compounds	ESQ_CB	FD_OM	3.60E-05
BRASTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_OM	0.00E+00
BRASTK	Thallium compounds	ESQ_CB	FD_OM	6.32E-05
BRASTK	Tin compounds	ESQ_CB	FD_OM	4.68E-07
BRASTK	Vanadium compounds	ESQ_CB	FD_OM	8.92E-06
BRASTK	VX	ESQ_CB	FD_OM	0.00E+00
BRASTK	Zinc compounds	ESQ_CB	FD_OM	2.92E-08
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_CB	FD_OM	0.00E+00
COMSTK	1,1-Dichloroethylene	ESQ_CB	FD_OM	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_CB	FD_OM	2.20E-10
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_CB	FD_OM	2.21E-10
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_CB	FD_OM	2.39E-10
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_CB	FD_OM	3.63E-08
COMSTK	1,2-Dichlorobenzene	ESQ_CB	FD_OM	0.00E+00
COMSTK	1,4-Dichlorobenzene	ESQ_CB	FD_OM	0.00E+00
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_CB	FD_OM	1.22E-10
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_CB	FD_OM	2.03E-10
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_CB	FD_OM	5.78E-10

Source	COPC	Guild	Diet Type	ESQ
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_CB	FD_OM	1.30E-11
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_CB	FD_OM	4.99E-11
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_CB	FD_OM	5.90E-09
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_CB	FD_OM	7.06E-14
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_CB	FD_OM	2.60E-02
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_CB	FD_OM	3.68E-06
COMSTK	2,4,6-Trinitrotoluene	ESQ_CB	FD_OM	5.87E-07
COMSTK	2,4-Dinitrotoluene	ESQ_CB	FD_OM	2.11E-06
COMSTK	2-Methylnaphthalene	ESQ_CB	FD_OM	0.00E+00
COMSTK	2-Xylene	ESQ_CB	FD_OM	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_CB	FD_OM	5.64E-08
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_CB	FD_OM	8.33E-08
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_CB	FD_OM	1.17E-07
COMSTK	Acetone	ESQ_CB	FD_OM	4.40E-10
COMSTK	Aluminum compounds	ESQ_CB	FD_OM	7.66E-07
COMSTK	Antimony compounds	ESQ_CB	FD_OM	0.00E+00
COMSTK	Arsenic compounds	ESQ_CB	FD_OM	2.92E-10
COMSTK	Barium compounds	ESQ_CB	FD_OM	4.24E-07
COMSTK	Benzaldehyde	ESQ_CB	FD_OM	0.00E+00
COMSTK	Benzene	ESQ_CB	FD_OM	0.00E+00
COMSTK	Benzoic acid	ESQ_CB	FD_OM	0.00E+00
COMSTK	Benzyl alcohol	ESQ_CB	FD_OM	0.00E+00
COMSTK	Beryllium compounds	ESQ_CB	FD_OM	0.00E+00
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_CB	FD_OM	9.87E-02
COMSTK	Boron compounds	ESQ_CB	FD_OM	6.60E-08
COMSTK	Bromochloromethane	ESQ_CB	FD_OM	0.00E+00
COMSTK	Bromodichloromethane	ESQ_CB	FD_OM	0.00E+00
COMSTK	Bromoethane	ESQ_CB	FD_OM	0.00E+00
COMSTK	Cadmium compounds	ESQ_CB	FD_OM	1.62E-09
COMSTK	Carbon disulfide	ESQ_CB	FD_OM	0.00E+00
COMSTK	Carbon tetrachloride	ESQ_CB	FD_OM	0.00E+00
COMSTK	Chlorine	ESQ_CB	FD_OM	0.00E+00
COMSTK	Chlorobenzene	ESQ_CB	FD_OM	0.00E+00
COMSTK	Chlorodibromomethane	ESQ_CB	FD_OM	0.00E+00
COMSTK	Chloroform	ESQ_CB	FD_OM	0.00E+00
COMSTK	Chromium compounds	ESQ_CB	FD_OM	1.17E-06
COMSTK	cis-1,3-Dichloropropene	ESQ_CB	FD_OM	0.00E+00
COMSTK	Cobalt compounds	ESQ_CB	FD_OM	2.01E-09
COMSTK	Composirte TOE - Nonvolatile	ESQ_CB	FD_OM	6.76E-01
COMSTK	Composirte TOE - Semivolatile	ESQ_CB	FD_OM	5.30E-04
COMSTK	Composite TOE - Volatile	ESQ_CB	FD_OM	6.15E-09
COMSTK	Copper compounds	ESQ_CB	FD_OM	7.10E-07
COMSTK	Dibutyl phthalate	ESQ_CB	FD_OM	7.75E-05
COMSTK	Dichlorodifluoromethane	ESQ_CB	FD_OM	0.00E+00
COMSTK	Dichloromethane	ESQ_CB	FD_OM	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Diethyl phthalate	ESQ_CB	FD_OM	0.00E+00
COMSTK	Dimethylphthalate	ESQ_CB	FD_OM	0.00E+00
COMSTK	Ethyl chloride	ESQ_CB	FD_OM	0.00E+00
COMSTK	Ethylbenzene	ESQ_CB	FD_OM	0.00E+00
COMSTK	GB	ESQ_CB	FD_OM	0.00E+00
COMSTK	Hydrochloric acid	ESQ_CB	FD_OM	0.00E+00
COMSTK	Hydrofluoric acid	ESQ_CB	FD_OM	0.00E+00
COMSTK	Lead compounds	ESQ_CB	FD_OM	4.71E-09
COMSTK	m,p-Xylene	ESQ_CB	FD_OM	0.00E+00
COMSTK	Manganese compounds	ESQ_CB	FD_OM	2.13E-08
COMSTK	Mercuric chloride	ESQ_CB	FD_OM	1.14E-06
COMSTK	Methyl bromide	ESQ_CB	FD_OM	0.00E+00
COMSTK	Methyl chloride	ESQ_CB	FD_OM	0.00E+00
COMSTK	Methyl ethyl ketone	ESQ_CB	FD_OM	0.00E+00
COMSTK	Methyl iodide	ESQ_CB	FD_OM	0.00E+00
COMSTK	Methyl isobutyl ketone	ESQ_CB	FD_OM	3.26E-07
COMSTK	Methyl mercury	ESQ_CB	FD_OM	2.47E-05
COMSTK	Naphthalene	ESQ_CB	FD_OM	0.00E+00
COMSTK	n-Hexane	ESQ_CB	FD_OM	0.00E+00
COMSTK	Nickel compounds	ESQ_CB	FD_OM	7.64E-10
COMSTK	Nitrogen dioxide	ESQ_CB	FD_OM	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_CB	FD_OM	1.62E-03
COMSTK	Phosphoric acid	ESQ_CB	FD_OM	0.00E+00
COMSTK	Selenium compounds	ESQ_CB	FD_OM	1.36E-09
COMSTK	Silver compounds	ESQ_CB	FD_OM	2.85E-07
COMSTK	Styrene	ESQ_CB	FD_OM	0.00E+00
COMSTK	Sulfur dioxide	ESQ_CB	FD_OM	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_OM	0.00E+00
COMSTK	Thallium compounds	ESQ_CB	FD_OM	5.67E-06
COMSTK	Tin compounds	ESQ_CB	FD_OM	7.32E-09
COMSTK	Toluene	ESQ_CB	FD_OM	0.00E+00
COMSTK	trans-1,3-Dichloropropene	ESQ_CB	FD_OM	0.00E+00
COMSTK	Tribromomethane	ESQ_CB	FD_OM	0.00E+00
COMSTK	Trichloroethylene	ESQ_CB	FD_OM	0.00E+00
COMSTK	Trichlorofluoromethane	ESQ_CB	FD_OM	0.00E+00
COMSTK	Vanadium compounds	ESQ_CB	FD_OM	3.14E-08
COMSTK	Vinyl acetate	ESQ_CB	FD_OM	0.00E+00
COMSTK	Vinyl chloride	ESQ_CB	FD_OM	0.00E+00
COMSTK	VX	ESQ_CB	FD_OM	0.00E+00
COMSTK	Xylene (mixed)	ESQ_CB	FD_OM	0.00E+00
COMSTK	Zinc compounds	ESQ_CB	FD_OM	1.18E-08
LABSTK	GB	ESQ_CB	FD_OM	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_OM	0.00E+00
LABSTK	VX	ESQ_CB	FD_OM	0.00E+00
MDBSTK	GB	ESQ_CB	FD_OM	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
MDBSTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_OM	0.00E+00
MDBSTK	VX	ESQ_CB	FD_OM	0.00E+00
BRASTK	Antimony compounds	ESQ_CM	FD_OM	1.83E-08
BRASTK	Arsenic compounds	ESQ_CM	FD_OM	2.25E-09
BRASTK	Barium compounds	ESQ_CM	FD_OM	5.42E-07
BRASTK	Beryllium compounds	ESQ_CM	FD_OM	2.54E-09
BRASTK	Boron compounds	ESQ_CM	FD_OM	1.34E-07
BRASTK	Cadmium compounds	ESQ_CM	FD_OM	8.15E-08
BRASTK	Chromium compounds	ESQ_CM	FD_OM	8.11E-06
BRASTK	Cobalt compounds	ESQ_CM	FD_OM	1.32E-07
BRASTK	Copper compounds	ESQ_CM	FD_OM	7.69E-05
BRASTK	EA 2192	ESQ_CM	FD_OM	0.00E+00
BRASTK	GB	ESQ_CM	FD_OM	1.26E-06
BRASTK	Lead compounds	ESQ_CM	FD_OM	2.11E-10
BRASTK	Manganese compounds	ESQ_CM	FD_OM	1.27E-06
BRASTK	Mercuric chloride	ESQ_CM	FD_OM	1.98E-06
BRASTK	Methyl mercury	ESQ_CM	FD_OM	1.88E-04
BRASTK	Nickel compounds	ESQ_CM	FD_OM	4.23E-08
BRASTK	o-Cresol	ESQ_CM	FD_OM	5.54E-08
BRASTK	Phosphoric acid	ESQ_CM	FD_OM	1.71E-05
BRASTK	Selenium compounds	ESQ_CM	FD_OM	6.31E-08
BRASTK	Silver compounds	ESQ_CM	FD_OM	2.37E-06
BRASTK	Sulfur mustard (or H/HD)	ESQ_CM	FD_OM	0.00E+00
BRASTK	Thallium compounds	ESQ_CM	FD_OM	5.87E-04
BRASTK	Tin compounds	ESQ_CM	FD_OM	2.75E-08
BRASTK	Vanadium compounds	ESQ_CM	FD_OM	1.95E-07
BRASTK	VX	ESQ_CM	FD_OM	7.44E-04
BRASTK	Zinc compounds	ESQ_CM	FD_OM	5.10E-10
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_CM	FD_OM	5.20E-16
COMSTK	1,1-Dichloroethylene	ESQ_CM	FD_OM	1.60E-15
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_CM	FD_OM	1.82E-09
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_CM	FD_OM	1.86E-09
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_CM	FD_OM	8.78E-10
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_CM	FD_OM	9.79E-08
COMSTK	1,2-Dichlorobenzene	ESQ_CM	FD_OM	5.13E-12
COMSTK	1,4-Dichlorobenzene	ESQ_CM	FD_OM	3.37E-12
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_CM	FD_OM	9.90E-11
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_CM	FD_OM	2.26E-10
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_CM	FD_OM	6.37E-10
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_CM	FD_OM	1.45E-10
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_CM	FD_OM	5.54E-10
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_CM	FD_OM	6.55E-09
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_CM	FD_OM	7.90E-13
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_CM	FD_OM	5.00E-04
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_CM	FD_OM	9.92E-06

Source	COPC	Guild	Diet Type	ESQ
COMSTK	2,4,6-Trinitrotoluene	ESQ_CM	FD_OM	3.96E-07
COMSTK	2,4-Dinitrotoluene	ESQ_CM	FD_OM	6.07E-08
COMSTK	2-Methylnaphthalene	ESQ_CM	FD_OM	1.43E-07
COMSTK	2-Xylene	ESQ_CM	FD_OM	1.28E-10
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_CM	FD_OM	3.87E-10
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_CM	FD_OM	6.77E-10
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_CM	FD_OM	3.18E-07
COMSTK	Acetone	ESQ_CM	FD_OM	5.01E-10
COMSTK	Aluminum compounds	ESQ_CM	FD_OM	8.55E-06
COMSTK	Antimony compounds	ESQ_CM	FD_OM	3.44E-09
COMSTK	Arsenic compounds	ESQ_CM	FD_OM	1.22E-10
COMSTK	Barium compounds	ESQ_CM	FD_OM	3.34E-08
COMSTK	Benzaldehyde	ESQ_CM	FD_OM	1.17E-06
COMSTK	Benzene	ESQ_CM	FD_OM	1.45E-13
COMSTK	Benzoic acid	ESQ_CM	FD_OM	1.13E-07
COMSTK	Benzyl alcohol	ESQ_CM	FD_OM	1.13E-07
COMSTK	Beryllium compounds	ESQ_CM	FD_OM	2.61E-11
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_CM	FD_OM	1.14E-03
COMSTK	Boron compounds	ESQ_CM	FD_OM	1.82E-08
COMSTK	Bromochloromethane	ESQ_CM	FD_OM	2.28E-13
COMSTK	Bromodichloromethane	ESQ_CM	FD_OM	1.21E-11
COMSTK	Bromoethane	ESQ_CM	FD_OM	1.08E-12
COMSTK	Cadmium compounds	ESQ_CM	FD_OM	5.98E-10
COMSTK	Carbon disulfide	ESQ_CM	FD_OM	3.65E-13
COMSTK	Carbon tetrachloride	ESQ_CM	FD_OM	3.89E-14
COMSTK	Chlorine	ESQ_CM	FD_OM	0.00E+00
COMSTK	Chlorobenzene	ESQ_CM	FD_OM	1.33E-14
COMSTK	Chlorodibromomethane	ESQ_CM	FD_OM	1.77E-10
COMSTK	Chloroform	ESQ_CM	FD_OM	2.00E-12
COMSTK	Chromium compounds	ESQ_CM	FD_OM	2.52E-07
COMSTK	cis-1,3-Dichloropropene	ESQ_CM	FD_OM	0.00E+00
COMSTK	Cobalt compounds	ESQ_CM	FD_OM	5.51E-10
COMSTK	Composirte TOE - Nonvolatile	ESQ_CM	FD_OM	4.17E-03
COMSTK	Composirte TOE - Semivolatile	ESQ_CM	FD_OM	7.97E-06
COMSTK	Composite TOE - Volatile	ESQ_CM	FD_OM	1.49E-09
COMSTK	Copper compounds	ESQ_CM	FD_OM	1.01E-07
COMSTK	Dibutyl phthalate	ESQ_CM	FD_OM	8.97E-08
COMSTK	Dichlorodifluoromethane	ESQ_CM	FD_OM	0.00E+00
COMSTK	Dichloromethane	ESQ_CM	FD_OM	5.84E-12
COMSTK	Diethyl phthalate	ESQ_CM	FD_OM	6.52E-10
COMSTK	Dimethylphthalate	ESQ_CM	FD_OM	6.09E-12
COMSTK	Ethyl chloride	ESQ_CM	FD_OM	0.00E+00
COMSTK	Ethylbenzene	ESQ_CM	FD_OM	3.46E-12
COMSTK	GB	ESQ_CM	FD_OM	1.22E-07
COMSTK	Hydrochloric acid	ESQ_CM	FD_OM	6.62E-08

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Hydrofluoric acid	ESQ_CM	FD_OM	0.00E+00
COMSTK	Lead compounds	ESQ_CM	FD_OM	3.21E-10
COMSTK	m,p-Xylene	ESQ_CM	FD_OM	5.09E-07
COMSTK	Manganese compounds	ESQ_CM	FD_OM	1.65E-08
COMSTK	Mercuric chloride	ESQ_CM	FD_OM	1.06E-07
COMSTK	Methyl bromide	ESQ_CM	FD_OM	1.01E-10
COMSTK	Methyl chloride	ESQ_CM	FD_OM	1.27E-13
COMSTK	Methyl ethyl ketone	ESQ_CM	FD_OM	1.13E-13
COMSTK	Methyl iodide	ESQ_CM	FD_OM	2.60E-11
COMSTK	Methyl isobutyl ketone	ESQ_CM	FD_OM	2.51E-09
COMSTK	Methyl mercury	ESQ_CM	FD_OM	1.01E-05
COMSTK	Naphthalene	ESQ_CM	FD_OM	7.61E-09
COMSTK	n-Hexane	ESQ_CM	FD_OM	2.22E-11
COMSTK	Nickel compounds	ESQ_CM	FD_OM	5.82E-10
COMSTK	Nitrogen dioxide	ESQ_CM	FD_OM	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_CM	FD_OM	4.12E-04
COMSTK	Phosphoric acid	ESQ_CM	FD_OM	1.54E-07
COMSTK	Selenium compounds	ESQ_CM	FD_OM	5.27E-10
COMSTK	Silver compounds	ESQ_CM	FD_OM	1.88E-08
COMSTK	Styrene	ESQ_CM	FD_OM	8.10E-09
COMSTK	Sulfur dioxide	ESQ_CM	FD_OM	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_CM	FD_OM	0.00E+00
COMSTK	Thallium compounds	ESQ_CM	FD_OM	5.26E-05
COMSTK	Tin compounds	ESQ_CM	FD_OM	4.33E-10
COMSTK	Toluene	ESQ_CM	FD_OM	4.87E-14
COMSTK	trans-1,3-Dichloropropene	ESQ_CM	FD_OM	0.00E+00
COMSTK	Tribromomethane	ESQ_CM	FD_OM	6.77E-14
COMSTK	Trichloroethylene	ESQ_CM	FD_OM	2.79E-14
COMSTK	Trichlorofluoromethane	ESQ_CM	FD_OM	0.00E+00
COMSTK	Vanadium compounds	ESQ_CM	FD_OM	6.86E-10
COMSTK	Vinyl acetate	ESQ_CM	FD_OM	1.09E-13
COMSTK	Vinyl chloride	ESQ_CM	FD_OM	1.57E-12
COMSTK	VX	ESQ_CM	FD_OM	4.45E-05
COMSTK	Xylene (mixed)	ESQ_CM	FD_OM	1.03E-08
COMSTK	Zinc compounds	ESQ_CM	FD_OM	2.08E-10
LABSTK	GB	ESQ_CM	FD_OM	2.79E-07
LABSTK	Sulfur mustard (or H/HD)	ESQ_CM	FD_OM	0.00E+00
LABSTK	VX	ESQ_CM	FD_OM	1.67E-04
MDBSTK	GB	ESQ_CM	FD_OM	2.71E-07
MDBSTK	Sulfur mustard (or H/HD)	ESQ_CM	FD_OM	0.00E+00
MDBSTK	VX	ESQ_CM	FD_OM	1.49E-04
BRASTK	Antimony compounds	ESQ_HB	FD_TP	0.00E+00
BRASTK	Arsenic compounds	ESQ_HB	FD_TP	1.72E-05
BRASTK	Barium compounds	ESQ_HB	FD_TP	8.65E-06
BRASTK	Beryllium compounds	ESQ_HB	FD_TP	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
BRASTK	Boron compounds	ESQ_HB	FD_TP	2.91E-06
BRASTK	Cadmium compounds	ESQ_HB	FD_TP	8.38E-05
BRASTK	Chromium compounds	ESQ_HB	FD_TP	1.89E-05
BRASTK	Cobalt compounds	ESQ_HB	FD_TP	8.05E-06
BRASTK	Copper compounds	ESQ_HB	FD_TP	8.80E-04
BRASTK	EA 2192	ESQ_HB	FD_TP	0.00E+00
BRASTK	GB	ESQ_HB	FD_TP	0.00E+00
BRASTK	Lead compounds	ESQ_HB	FD_TP	1.96E-06
BRASTK	Manganese compounds	ESQ_HB	FD_TP	1.71E-05
BRASTK	Mercuric chloride	ESQ_HB	FD_TP	6.96E-05
BRASTK	Methyl mercury	ESQ_HB	FD_TP	6.70E-05
BRASTK	Nickel compounds	ESQ_HB	FD_TP	4.37E-05
BRASTK	o-Cresol	ESQ_HB	FD_TP	0.00E+00
BRASTK	Phosphoric acid	ESQ_HB	FD_TP	0.00E+00
BRASTK	Selenium compounds	ESQ_HB	FD_TP	4.36E-04
BRASTK	Silver compounds	ESQ_HB	FD_TP	7.29E-05
BRASTK	Sulfur mustard (or H/HD)	ESQ_HB	FD_TP	0.00E+00
BRASTK	Thallium compounds	ESQ_HB	FD_TP	5.94E-05
BRASTK	Tin compounds	ESQ_HB	FD_TP	3.36E-05
BRASTK	Vanadium compounds	ESQ_HB	FD_TP	1.50E-04
BRASTK	VX	ESQ_HB	FD_TP	0.00E+00
BRASTK	Zinc compounds	ESQ_HB	FD_TP	3.35E-05
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_HB	FD_TP	0.00E+00
COMSTK	1,1-Dichloroethylene	ESQ_HB	FD_TP	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_HB	FD_TP	3.18E-10
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_HB	FD_TP	5.23E-10
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_HB	FD_TP	6.59E-09
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_HB	FD_TP	4.35E-09
COMSTK	1,2-Dichlorobenzene	ESQ_HB	FD_TP	0.00E+00
COMSTK	1,4-Dichlorobenzene	ESQ_HB	FD_TP	0.00E+00
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_HB	FD_TP	7.78E-10
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_HB	FD_TP	3.72E-09
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_HB	FD_TP	1.15E-08
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_HB	FD_TP	2.37E-10
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_HB	FD_TP	9.17E-10
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_HB	FD_TP	9.49E-08
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_HB	FD_TP	1.31E-12
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_HB	FD_TP	8.03E-04
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_HB	FD_TP	9.16E-08
COMSTK	2,4,6-Trinitrotoluene	ESQ_HB	FD_TP	4.63E-07
COMSTK	2,4-Dinitrotoluene	ESQ_HB	FD_TP	9.21E-07
COMSTK	2-Methylnaphthalene	ESQ_HB	FD_TP	0.00E+00
COMSTK	2-Xylene	ESQ_HB	FD_TP	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_HB	FD_TP	3.87E-06
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_HB	FD_TP	5.32E-07

Source	COPC	Guild	Diet Type	ESQ
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_HB	FD_TP	7.49E-07
COMSTK	Acetone	ESQ_HB	FD_TP	1.66E-07
COMSTK	Aluminum compounds	ESQ_HB	FD_TP	9.48E-07
COMSTK	Antimony compounds	ESQ_HB	FD_TP	0.00E+00
COMSTK	Arsenic compounds	ESQ_HB	FD_TP	9.31E-07
COMSTK	Barium compounds	ESQ_HB	FD_TP	5.50E-07
COMSTK	Benzaldehyde	ESQ_HB	FD_TP	0.00E+00
COMSTK	Benzene	ESQ_HB	FD_TP	0.00E+00
COMSTK	Benzoic acid	ESQ_HB	FD_TP	0.00E+00
COMSTK	Benzyl alcohol	ESQ_HB	FD_TP	0.00E+00
COMSTK	Beryllium compounds	ESQ_HB	FD_TP	0.00E+00
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_HB	FD_TP	8.28E-04
COMSTK	Boron compounds	ESQ_HB	FD_TP	3.98E-07
COMSTK	Bromochloromethane	ESQ_HB	FD_TP	0.00E+00
COMSTK	Bromodichloromethane	ESQ_HB	FD_TP	0.00E+00
COMSTK	Bromoethane	ESQ_HB	FD_TP	0.00E+00
COMSTK	Cadmium compounds	ESQ_HB	FD_TP	6.53E-07
COMSTK	Carbon disulfide	ESQ_HB	FD_TP	0.00E+00
COMSTK	Carbon tetrachloride	ESQ_HB	FD_TP	0.00E+00
COMSTK	Chlorine	ESQ_HB	FD_TP	0.00E+00
COMSTK	Chlorobenzene	ESQ_HB	FD_TP	0.00E+00
COMSTK	Chlorodibromomethane	ESQ_HB	FD_TP	0.00E+00
COMSTK	Chloroform	ESQ_HB	FD_TP	0.00E+00
COMSTK	Chromium compounds	ESQ_HB	FD_TP	6.07E-07
COMSTK	cis-1,3-Dichloropropene	ESQ_HB	FD_TP	0.00E+00
COMSTK	Cobalt compounds	ESQ_HB	FD_TP	3.51E-08
COMSTK	Composirte TOE - Nonvolatile	ESQ_HB	FD_TP	1.55E+01
COMSTK	Composirte TOE - Semivolatile	ESQ_HB	FD_TP	6.18E-05
COMSTK	Composite TOE - Volatile	ESQ_HB	FD_TP	4.72E-07
COMSTK	Copper compounds	ESQ_HB	FD_TP	1.18E-06
COMSTK	Dibutyl phthalate	ESQ_HB	FD_TP	2.80E-05
COMSTK	Dichlorodifluoromethane	ESQ_HB	FD_TP	0.00E+00
COMSTK	Dichloromethane	ESQ_HB	FD_TP	0.00E+00
COMSTK	Diethyl phthalate	ESQ_HB	FD_TP	0.00E+00
COMSTK	Dimethylphthalate	ESQ_HB	FD_TP	0.00E+00
COMSTK	Ethyl chloride	ESQ_HB	FD_TP	0.00E+00
COMSTK	Ethylbenzene	ESQ_HB	FD_TP	0.00E+00
COMSTK	GB	ESQ_HB	FD_TP	0.00E+00
COMSTK	Hydrochloric acid	ESQ_HB	FD_TP	0.00E+00
COMSTK	Hydrofluoric acid	ESQ_HB	FD_TP	0.00E+00
COMSTK	Lead compounds	ESQ_HB	FD_TP	3.15E-06
COMSTK	m,p-Xylene	ESQ_HB	FD_TP	0.00E+00
COMSTK	Manganese compounds	ESQ_HB	FD_TP	2.28E-07
COMSTK	Mercuric chloride	ESQ_HB	FD_TP	2.42E-06
COMSTK	Methyl bromide	ESQ_HB	FD_TP	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Methyl chloride	ESQ_HB	FD_TP	0.00E+00
COMSTK	Methyl ethyl ketone	ESQ_HB	FD_TP	0.00E+00
COMSTK	Methyl iodide	ESQ_HB	FD_TP	0.00E+00
COMSTK	Methyl isobutyl ketone	ESQ_HB	FD_TP	3.92E-07
COMSTK	Methyl mercury	ESQ_HB	FD_TP	1.14E-06
COMSTK	Naphthalene	ESQ_HB	FD_TP	0.00E+00
COMSTK	n-Hexane	ESQ_HB	FD_TP	0.00E+00
COMSTK	Nickel compounds	ESQ_HB	FD_TP	6.11E-07
COMSTK	Nitrogen dioxide	ESQ_HB	FD_TP	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_HB	FD_TP	9.79E-06
COMSTK	Phosphoric acid	ESQ_HB	FD_TP	0.00E+00
COMSTK	Selenium compounds	ESQ_HB	FD_TP	3.64E-06
COMSTK	Silver compounds	ESQ_HB	FD_TP	5.94E-07
COMSTK	Styrene	ESQ_HB	FD_TP	0.00E+00
COMSTK	Sulfur dioxide	ESQ_HB	FD_TP	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_HB	FD_TP	0.00E+00
COMSTK	Thallium compounds	ESQ_HB	FD_TP	5.55E-06
COMSTK	Tin compounds	ESQ_HB	FD_TP	5.28E-07
COMSTK	Toluene	ESQ_HB	FD_TP	0.00E+00
COMSTK	trans-1,3-Dichloropropene	ESQ_HB	FD_TP	0.00E+00
COMSTK	Tribromomethane	ESQ_HB	FD_TP	0.00E+00
COMSTK	Trichloroethylene	ESQ_HB	FD_TP	0.00E+00
COMSTK	Trichlorofluoromethane	ESQ_HB	FD_TP	0.00E+00
COMSTK	Vanadium compounds	ESQ_HB	FD_TP	5.47E-07
COMSTK	Vinyl acetate	ESQ_HB	FD_TP	0.00E+00
COMSTK	Vinyl chloride	ESQ_HB	FD_TP	0.00E+00
COMSTK	VX	ESQ_HB	FD_TP	0.00E+00
COMSTK	Xylene (mixed)	ESQ_HB	FD_TP	0.00E+00
COMSTK	Zinc compounds	ESQ_HB	FD_TP	1.45E-05
LABSTK	GB	ESQ_HB	FD_TP	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	ESQ_HB	FD_TP	0.00E+00
LABSTK	VX	ESQ_HB	FD_TP	0.00E+00
MDBSTK	GB	ESQ_HB	FD_TP	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	ESQ_HB	FD_TP	0.00E+00
MDBSTK	VX	ESQ_HB	FD_TP	0.00E+00
BRASTK	Antimony compounds	ESQ_HM	FD_TP	1.20E-04
BRASTK	Arsenic compounds	ESQ_HM	FD_TP	1.10E-05
BRASTK	Barium compounds	ESQ_HM	FD_TP	8.36E-07
BRASTK	Beryllium compounds	ESQ_HM	FD_TP	1.63E-06
BRASTK	Boron compounds	ESQ_HM	FD_TP	2.66E-07
BRASTK	Cadmium compounds	ESQ_HM	FD_TP	4.72E-05
BRASTK	Chromium compounds	ESQ_HM	FD_TP	4.83E-06
BRASTK	Cobalt compounds	ESQ_HM	FD_TP	1.87E-06
BRASTK	Copper compounds	ESQ_HM	FD_TP	1.62E-04
BRASTK	EA 2192	ESQ_HM	FD_TP	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
BRASTK	GB	ESQ_HM	FD_TP	1.21E-03
BRASTK	Lead compounds	ESQ_HM	FD_TP	2.00E-07
BRASTK	Manganese compounds	ESQ_HM	FD_TP	1.46E-05
BRASTK	Mercuric chloride	ESQ_HM	FD_TP	6.31E-06
BRASTK	Methyl mercury	ESQ_HM	FD_TP	4.02E-05
BRASTK	Nickel compounds	ESQ_HM	FD_TP	5.10E-05
BRASTK	o-Cresol	ESQ_HM	FD_TP	3.68E-08
BRASTK	Phosphoric acid	ESQ_HM	FD_TP	1.62E-04
BRASTK	Selenium compounds	ESQ_HM	FD_TP	2.57E-04
BRASTK	Silver compounds	ESQ_HM	FD_TP	6.39E-06
BRASTK	Sulfur mustard (or H/HD)	ESQ_HM	FD_TP	0.00E+00
BRASTK	Thallium compounds	ESQ_HM	FD_TP	6.25E-04
BRASTK	Tin compounds	ESQ_HM	FD_TP	2.86E-06
BRASTK	Vanadium compounds	ESQ_HM	FD_TP	2.71E-06
BRASTK	VX	ESQ_HM	FD_TP	7.18E-02
BRASTK	Zinc compounds	ESQ_HM	FD_TP	8.97E-07
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_HM	FD_TP	9.88E-17
COMSTK	1,1-Dichloroethylene	ESQ_HM	FD_TP	7.79E-15
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_HM	FD_TP	3.27E-09
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_HM	FD_TP	5.39E-09
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_HM	FD_TP	2.33E-08
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_HM	FD_TP	1.70E-08
COMSTK	1,2-Dichlorobenzene	ESQ_HM	FD_TP	5.26E-13
COMSTK	1,4-Dichlorobenzene	ESQ_HM	FD_TP	3.77E-13
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_HM	FD_TP	9.59E-10
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_HM	FD_TP	3.58E-09
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_HM	FD_TP	1.15E-08
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_HM	FD_TP	2.28E-09
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_HM	FD_TP	8.87E-09
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_HM	FD_TP	8.81E-08
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_HM	FD_TP	1.26E-11
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_HM	FD_TP	2.07E-05
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_HM	FD_TP	3.42E-07
COMSTK	2,4,6-Trinitrotoluene	ESQ_HM	FD_TP	4.68E-07
COMSTK	2,4-Dinitrotoluene	ESQ_HM	FD_TP	3.90E-08
COMSTK	2-Methylnaphthalene	ESQ_HM	FD_TP	6.87E-09
COMSTK	2-Xylene	ESQ_HM	FD_TP	2.25E-11
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_HM	FD_TP	3.06E-08
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_HM	FD_TP	6.56E-09
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_HM	FD_TP	3.08E-06
COMSTK	Acetone	ESQ_HM	FD_TP	2.55E-07
COMSTK	Aluminum compounds	ESQ_HM	FD_TP	1.29E-05
COMSTK	Antimony compounds	ESQ_HM	FD_TP	2.29E-05
COMSTK	Arsenic compounds	ESQ_HM	FD_TP	5.92E-07
COMSTK	Barium compounds	ESQ_HM	FD_TP	5.36E-08

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Benzaldehyde	ESQ_HM	FD_TP	1.44E-06
COMSTK	Benzene	ESQ_HM	FD_TP	2.43E-12
COMSTK	Benzoic acid	ESQ_HM	FD_TP	8.35E-08
COMSTK	Benzyl alcohol	ESQ_HM	FD_TP	2.35E-07
COMSTK	Beryllium compounds	ESQ_HM	FD_TP	1.78E-08
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_HM	FD_TP	1.47E-05
COMSTK	Boron compounds	ESQ_HM	FD_TP	3.63E-08
COMSTK	Bromochloromethane	ESQ_HM	FD_TP	5.56E-13
COMSTK	Bromodichloromethane	ESQ_HM	FD_TP	1.09E-09
COMSTK	Bromoethane	ESQ_HM	FD_TP	1.31E-12
COMSTK	Cadmium compounds	ESQ_HM	FD_TP	3.68E-07
COMSTK	Carbon disulfide	ESQ_HM	FD_TP	1.08E-12
COMSTK	Carbon tetrachloride	ESQ_HM	FD_TP	2.23E-13
COMSTK	Chlorine	ESQ_HM	FD_TP	0.00E+00
COMSTK	Chlorobenzene	ESQ_HM	FD_TP	3.05E-13
COMSTK	Chlorodibromomethane	ESQ_HM	FD_TP	1.38E-08
COMSTK	Chloroform	ESQ_HM	FD_TP	1.52E-12
COMSTK	Chromium compounds	ESQ_HM	FD_TP	1.56E-07
COMSTK	cis-1,3-Dichloropropene	ESQ_HM	FD_TP	0.00E+00
COMSTK	Cobalt compounds	ESQ_HM	FD_TP	8.25E-09
COMSTK	Composirte TOE - Nonvolatile	ESQ_HM	FD_TP	8.90E-02
COMSTK	Composirte TOE - Semivolatile	ESQ_HM	FD_TP	1.22E-06
COMSTK	Composite TOE - Volatile	ESQ_HM	FD_TP	8.93E-08
COMSTK	Copper compounds	ESQ_HM	FD_TP	2.18E-07
COMSTK	Dibutyl phthalate	ESQ_HM	FD_TP	4.87E-08
COMSTK	Dichlorodifluoromethane	ESQ_HM	FD_TP	0.00E+00
COMSTK	Dichloromethane	ESQ_HM	FD_TP	9.03E-12
COMSTK	Diethyl phthalate	ESQ_HM	FD_TP	2.14E-10
COMSTK	Dimethylphthalate	ESQ_HM	FD_TP	6.98E-12
COMSTK	Ethyl chloride	ESQ_HM	FD_TP	0.00E+00
COMSTK	Ethylbenzene	ESQ_HM	FD_TP	6.00E-13
COMSTK	GB	ESQ_HM	FD_TP	1.22E-04
COMSTK	Hydrochloric acid	ESQ_HM	FD_TP	1.29E-07
COMSTK	Hydrofluoric acid	ESQ_HM	FD_TP	0.00E+00
COMSTK	Lead compounds	ESQ_HM	FD_TP	3.23E-07
COMSTK	m,p-Xylene	ESQ_HM	FD_TP	4.94E-06
COMSTK	Manganese compounds	ESQ_HM	FD_TP	1.96E-07
COMSTK	Mercuric chloride	ESQ_HM	FD_TP	1.66E-07
COMSTK	Methyl bromide	ESQ_HM	FD_TP	1.83E-10
COMSTK	Methyl chloride	ESQ_HM	FD_TP	2.24E-12
COMSTK	Methyl ethyl ketone	ESQ_HM	FD_TP	1.08E-10
COMSTK	Methyl iodide	ESQ_HM	FD_TP	3.09E-11
COMSTK	Methyl isobutyl ketone	ESQ_HM	FD_TP	4.56E-09
COMSTK	Methyl mercury	ESQ_HM	FD_TP	6.20E-07
COMSTK	Naphthalene	ESQ_HM	FD_TP	8.00E-10

Source	COPC	Guild	Diet Type	ESQ
COMSTK	n-Hexane	ESQ_HM	FD_TP	2.32E-12
COMSTK	Nickel compounds	ESQ_HM	FD_TP	7.11E-07
COMSTK	Nitrogen dioxide	ESQ_HM	FD_TP	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_HM	FD_TP	1.67E-06
COMSTK	Phosphoric acid	ESQ_HM	FD_TP	1.18E-06
COMSTK	Selenium compounds	ESQ_HM	FD_TP	2.15E-06
COMSTK	Silver compounds	ESQ_HM	FD_TP	5.23E-08
COMSTK	Styrene	ESQ_HM	FD_TP	1.36E-09
COMSTK	Sulfur dioxide	ESQ_HM	FD_TP	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_HM	FD_TP	0.00E+00
COMSTK	Thallium compounds	ESQ_HM	FD_TP	5.92E-05
COMSTK	Tin compounds	ESQ_HM	FD_TP	4.50E-08
COMSTK	Toluene	ESQ_HM	FD_TP	7.74E-13
COMSTK	trans-1,3-Dichloropropene	ESQ_HM	FD_TP	0.00E+00
COMSTK	Tribromomethane	ESQ_HM	FD_TP	1.08E-13
COMSTK	Trichloroethylene	ESQ_HM	FD_TP	4.74E-13
COMSTK	Trichlorofluoromethane	ESQ_HM	FD_TP	0.00E+00
COMSTK	Vanadium compounds	ESQ_HM	FD_TP	1.00E-08
COMSTK	Vinyl acetate	ESQ_HM	FD_TP	5.72E-11
COMSTK	Vinyl chloride	ESQ_HM	FD_TP	5.28E-12
COMSTK	VX	ESQ_HM	FD_TP	4.38E-03
COMSTK	Xylene (mixed)	ESQ_HM	FD_TP	7.09E-07
COMSTK	Zinc compounds	ESQ_HM	FD_TP	3.87E-07
LABSTK	GB	ESQ_HM	FD_TP	2.78E-04
LABSTK	Sulfur mustard (or H/HD)	ESQ_HM	FD_TP	0.00E+00
LABSTK	VX	ESQ_HM	FD_TP	1.64E-02
MDBSTK	GB	ESQ_HM	FD_TP	2.42E-04
MDBSTK	Sulfur mustard (or H/HD)	ESQ_HM	FD_TP	0.00E+00
MDBSTK	VX	ESQ_HM	FD_TP	1.42E-02
BRASTK	Antimony compounds	ESQ_OB	FD_TP	0.00E+00
BRASTK	Arsenic compounds	ESQ_OB	FD_TP	2.08E-05
BRASTK	Barium compounds	ESQ_OB	FD_TP	1.22E-05
BRASTK	Beryllium compounds	ESQ_OB	FD_TP	0.00E+00
BRASTK	Boron compounds	ESQ_OB	FD_TP	5.77E-06
BRASTK	Cadmium compounds	ESQ_OB	FD_TP	1.01E-04
BRASTK	Chromium compounds	ESQ_OB	FD_TP	2.75E-05
BRASTK	Cobalt compounds	ESQ_OB	FD_TP	1.19E-05
BRASTK	Copper compounds	ESQ_OB	FD_TP	1.20E-03
BRASTK	EA 2192	ESQ_OB	FD_TP	0.00E+00
BRASTK	GB	ESQ_OB	FD_TP	0.00E+00
BRASTK	Lead compounds	ESQ_OB	FD_TP	2.36E-06
BRASTK	Manganese compounds	ESQ_OB	FD_TP	2.38E-05
BRASTK	Mercuric chloride	ESQ_OB	FD_TP	1.08E-04
BRASTK	Methyl mercury	ESQ_OB	FD_TP	8.40E-05
BRASTK	Nickel compounds	ESQ_OB	FD_TP	5.28E-05

Source	COPC	Guild	Diet Type	ESQ
BRASTK	o-Cresol	ESQ_OB	FD_TP	0.00E+00
BRASTK	Phosphoric acid	ESQ_OB	FD_TP	0.00E+00
BRASTK	Selenium compounds	ESQ_OB	FD_TP	5.26E-04
BRASTK	Silver compounds	ESQ_OB	FD_TP	9.72E-05
BRASTK	Sulfur mustard (or H/HD)	ESQ_OB	FD_TP	0.00E+00
BRASTK	Thallium compounds	ESQ_OB	FD_TP	8.78E-05
BRASTK	Tin compounds	ESQ_OB	FD_TP	4.08E-05
BRASTK	Vanadium compounds	ESQ_OB	FD_TP	2.22E-04
BRASTK	VX	ESQ_OB	FD_TP	0.00E+00
BRASTK	Zinc compounds	ESQ_OB	FD_TP	4.04E-05
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_OB	FD_TP	0.00E+00
COMSTK	1,1-Dichloroethylene	ESQ_OB	FD_TP	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_OB	FD_TP	4.44E-10
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_OB	FD_TP	7.30E-10
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_OB	FD_TP	9.00E-09
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_OB	FD_TP	5.52E-09
COMSTK	1,2-Dichlorobenzene	ESQ_OB	FD_TP	0.00E+00
COMSTK	1,4-Dichlorobenzene	ESQ_OB	FD_TP	0.00E+00
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_OB	FD_TP	9.43E-10
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_OB	FD_TP	5.41E-09
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_OB	FD_TP	1.65E-08
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_OB	FD_TP	3.45E-10
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_OB	FD_TP	1.33E-09
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_OB	FD_TP	1.41E-07
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_OB	FD_TP	1.90E-12
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_OB	FD_TP	1.08E-03
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_OB	FD_TP	1.20E-07
COMSTK	2,4,6-Trinitrotoluene	ESQ_OB	FD_TP	5.70E-07
COMSTK	2,4-Dinitrotoluene	ESQ_OB	FD_TP	1.15E-06
COMSTK	2-Methylnaphthalene	ESQ_OB	FD_TP	0.00E+00
COMSTK	2-Xylene	ESQ_OB	FD_TP	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_OB	FD_TP	4.86E-06
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_OB	FD_TP	6.45E-07
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_OB	FD_TP	9.09E-07
COMSTK	Acetone	ESQ_OB	FD_TP	2.01E-07
COMSTK	Aluminum compounds	ESQ_OB	FD_TP	1.34E-06
COMSTK	Antimony compounds	ESQ_OB	FD_TP	0.00E+00
COMSTK	Arsenic compounds	ESQ_OB	FD_TP	1.12E-06
COMSTK	Barium compounds	ESQ_OB	FD_TP	7.73E-07
COMSTK	Benzaldehyde	ESQ_OB	FD_TP	0.00E+00
COMSTK	Benzene	ESQ_OB	FD_TP	0.00E+00
COMSTK	Benzoic acid	ESQ_OB	FD_TP	0.00E+00
COMSTK	Benzyl alcohol	ESQ_OB	FD_TP	0.00E+00
COMSTK	Beryllium compounds	ESQ_OB	FD_TP	0.00E+00
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_OB	FD_TP	1.00E-03

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Boron compounds	ESQ_OB	FD_TP	7.90E-07
COMSTK	Bromochloromethane	ESQ_OB	FD_TP	0.00E+00
COMSTK	Bromodichloromethane	ESQ_OB	FD_TP	0.00E+00
COMSTK	Bromoethane	ESQ_OB	FD_TP	0.00E+00
COMSTK	Cadmium compounds	ESQ_OB	FD_TP	7.88E-07
COMSTK	Carbon disulfide	ESQ_OB	FD_TP	0.00E+00
COMSTK	Carbon tetrachloride	ESQ_OB	FD_TP	0.00E+00
COMSTK	Chlorine	ESQ_OB	FD_TP	0.00E+00
COMSTK	Chlorobenzene	ESQ_OB	FD_TP	0.00E+00
COMSTK	Chlorodibromomethane	ESQ_OB	FD_TP	0.00E+00
COMSTK	Chloroform	ESQ_OB	FD_TP	0.00E+00
COMSTK	Chromium compounds	ESQ_OB	FD_TP	8.76E-07
COMSTK	cis-1,3-Dichloropropene	ESQ_OB	FD_TP	0.00E+00
COMSTK	Cobalt compounds	ESQ_OB	FD_TP	5.14E-08
COMSTK	Composirte TOE - Nonvolatile	ESQ_OB	FD_TP	2.17E+01
COMSTK	Composirte TOE - Semivolatile	ESQ_OB	FD_TP	8.44E-05
COMSTK	Composite TOE - Volatile	ESQ_OB	FD_TP	5.94E-07
COMSTK	Copper compounds	ESQ_OB	FD_TP	1.60E-06
COMSTK	Dibutyl phthalate	ESQ_OB	FD_TP	3.45E-05
COMSTK	Dichlorodifluoromethane	ESQ_OB	FD_TP	0.00E+00
COMSTK	Dichloromethane	ESQ_OB	FD_TP	0.00E+00
COMSTK	Diethyl phthalate	ESQ_OB	FD_TP	0.00E+00
COMSTK	Dimethylphthalate	ESQ_OB	FD_TP	0.00E+00
COMSTK	Ethyl chloride	ESQ_OB	FD_TP	0.00E+00
COMSTK	Ethylbenzene	ESQ_OB	FD_TP	0.00E+00
COMSTK	GB	ESQ_OB	FD_TP	0.00E+00
COMSTK	Hydrochloric acid	ESQ_OB	FD_TP	0.00E+00
COMSTK	Hydrofluoric acid	ESQ_OB	FD_TP	0.00E+00
COMSTK	Lead compounds	ESQ_OB	FD_TP	3.81E-06
COMSTK	m,p-Xylene	ESQ_OB	FD_TP	0.00E+00
COMSTK	Manganese compounds	ESQ_OB	FD_TP	3.16E-07
COMSTK	Mercuric chloride	ESQ_OB	FD_TP	4.21E-06
COMSTK	Methyl bromide	ESQ_OB	FD_TP	0.00E+00
COMSTK	Methyl chloride	ESQ_OB	FD_TP	0.00E+00
COMSTK	Methyl ethyl ketone	ESQ_OB	FD_TP	0.00E+00
COMSTK	Methyl iodide	ESQ_OB	FD_TP	0.00E+00
COMSTK	Methyl isobutyl ketone	ESQ_OB	FD_TP	4.79E-07
COMSTK	Methyl mercury	ESQ_OB	FD_TP	1.55E-06
COMSTK	Naphthalene	ESQ_OB	FD_TP	0.00E+00
COMSTK	n-Hexane	ESQ_OB	FD_TP	0.00E+00
COMSTK	Nickel compounds	ESQ_OB	FD_TP	7.37E-07
COMSTK	Nitrogen dioxide	ESQ_OB	FD_TP	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_OB	FD_TP	1.79E-05
COMSTK	Phosphoric acid	ESQ_OB	FD_TP	0.00E+00
COMSTK	Selenium compounds	ESQ_OB	FD_TP	4.39E-06

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Silver compounds	ESQ_OB	FD_TP	7.90E-07
COMSTK	Styrene	ESQ_OB	FD_TP	0.00E+00
COMSTK	Sulfur dioxide	ESQ_OB	FD_TP	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_OB	FD_TP	0.00E+00
COMSTK	Thallium compounds	ESQ_OB	FD_TP	8.14E-06
COMSTK	Tin compounds	ESQ_OB	FD_TP	6.41E-07
COMSTK	Toluene	ESQ_OB	FD_TP	0.00E+00
COMSTK	trans-1,3-Dichloropropene	ESQ_OB	FD_TP	0.00E+00
COMSTK	Tribromomethane	ESQ_OB	FD_TP	0.00E+00
COMSTK	Trichloroethylene	ESQ_OB	FD_TP	0.00E+00
COMSTK	Trichlorofluoromethane	ESQ_OB	FD_TP	0.00E+00
COMSTK	Vanadium compounds	ESQ_OB	FD_TP	8.07E-07
COMSTK	Vinyl acetate	ESQ_OB	FD_TP	0.00E+00
COMSTK	Vinyl chloride	ESQ_OB	FD_TP	0.00E+00
COMSTK	VX	ESQ_OB	FD_TP	0.00E+00
COMSTK	Xylene (mixed)	ESQ_OB	FD_TP	0.00E+00
COMSTK	Zinc compounds	ESQ_OB	FD_TP	1.75E-05
LABSTK	GB	ESQ_OB	FD_TP	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	ESQ_OB	FD_TP	0.00E+00
LABSTK	VX	ESQ_OB	FD_TP	0.00E+00
MDBSTK	GB	ESQ_OB	FD_TP	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	ESQ_OB	FD_TP	0.00E+00
MDBSTK	VX	ESQ_OB	FD_TP	0.00E+00
BRASTK	Antimony compounds	ESQ_OM	FD_TP	6.98E-04
BRASTK	Arsenic compounds	ESQ_OM	FD_TP	6.37E-05
BRASTK	Barium compounds	ESQ_OM	FD_TP	4.58E-06
BRASTK	Beryllium compounds	ESQ_OM	FD_TP	9.51E-06
BRASTK	Boron compounds	ESQ_OM	FD_TP	6.18E-07
BRASTK	Cadmium compounds	ESQ_OM	FD_TP	2.75E-04
BRASTK	Chromium compounds	ESQ_OM	FD_TP	2.60E-05
BRASTK	Cobalt compounds	ESQ_OM	FD_TP	9.98E-06
BRASTK	Copper compounds	ESQ_OM	FD_TP	9.05E-04
BRASTK	EA 2192	ESQ_OM	FD_TP	0.00E+00
BRASTK	GB	ESQ_OM	FD_TP	7.04E-03
BRASTK	Lead compounds	ESQ_OM	FD_TP	1.16E-06
BRASTK	Manganese compounds	ESQ_OM	FD_TP	8.08E-05
BRASTK	Mercuric chloride	ESQ_OM	FD_TP	3.24E-05
BRASTK	Methyl mercury	ESQ_OM	FD_TP	2.31E-04
BRASTK	Nickel compounds	ESQ_OM	FD_TP	2.96E-04
BRASTK	o-Cresol	ESQ_OM	FD_TP	2.12E-07
BRASTK	Phosphoric acid	ESQ_OM	FD_TP	9.39E-04
BRASTK	Selenium compounds	ESQ_OM	FD_TP	1.50E-03
BRASTK	Silver compounds	ESQ_OM	FD_TP	3.59E-05
BRASTK	Sulfur mustard (or H/HD)	ESQ_OM	FD_TP	0.00E+00
BRASTK	Thallium compounds	ESQ_OM	FD_TP	3.33E-03

Source	COPC	Guild	Diet Type	ESQ
BRASTK	Tin compounds	ESQ_OM	FD_TP	1.66E-05
BRASTK	Vanadium compounds	ESQ_OM	FD_TP	1.44E-05
BRASTK	VX	ESQ_OM	FD_TP	4.13E-01
BRASTK	Zinc compounds	ESQ_OM	FD_TP	5.21E-06
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_OM	FD_TP	4.49E-16
COMSTK	1,1-Dichloroethylene	ESQ_OM	FD_TP	4.01E-14
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_OM	FD_TP	1.80E-08
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_OM	FD_TP	2.97E-08
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_OM	FD_TP	1.30E-07
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_OM	FD_TP	9.73E-08
COMSTK	1,2-Dichlorobenzene	ESQ_OM	FD_TP	2.88E-12
COMSTK	1,4-Dichlorobenzene	ESQ_OM	FD_TP	2.07E-12
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_OM	FD_TP	5.57E-09
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_OM	FD_TP	1.93E-08
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_OM	FD_TP	6.26E-08
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_OM	FD_TP	1.23E-08
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_OM	FD_TP	4.79E-08
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_OM	FD_TP	4.68E-07
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_OM	FD_TP	6.75E-11
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_OM	FD_TP	1.16E-04
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_OM	FD_TP	1.93E-06
COMSTK	2,4,6-Trinitrotoluene	ESQ_OM	FD_TP	2.71E-06
COMSTK	2,4-Dinitrotoluene	ESQ_OM	FD_TP	2.24E-07
COMSTK	2-Methylnaphthalene	ESQ_OM	FD_TP	3.54E-08
COMSTK	2-Xylene	ESQ_OM	FD_TP	1.24E-10
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_OM	FD_TP	1.76E-07
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_OM	FD_TP	3.81E-08
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_OM	FD_TP	1.79E-05
COMSTK	Acetone	ESQ_OM	FD_TP	1.48E-06
COMSTK	Aluminum compounds	ESQ_OM	FD_TP	7.07E-05
COMSTK	Antimony compounds	ESQ_OM	FD_TP	1.33E-04
COMSTK	Arsenic compounds	ESQ_OM	FD_TP	3.44E-06
COMSTK	Barium compounds	ESQ_OM	FD_TP	2.94E-07
COMSTK	Benzaldehyde	ESQ_OM	FD_TP	8.36E-06
COMSTK	Benzene	ESQ_OM	FD_TP	1.36E-11
COMSTK	Benzoic acid	ESQ_OM	FD_TP	4.81E-07
COMSTK	Benzyl alcohol	ESQ_OM	FD_TP	1.36E-06
COMSTK	Beryllium compounds	ESQ_OM	FD_TP	1.04E-07
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_OM	FD_TP	8.53E-05
COMSTK	Boron compounds	ESQ_OM	FD_TP	8.44E-08
COMSTK	Bromochloromethane	ESQ_OM	FD_TP	3.22E-12
COMSTK	Bromodichloromethane	ESQ_OM	FD_TP	6.24E-09
COMSTK	Bromoethane	ESQ_OM	FD_TP	7.54E-12
COMSTK	Cadmium compounds	ESQ_OM	FD_TP	2.14E-06
COMSTK	Carbon disulfide	ESQ_OM	FD_TP	5.09E-12

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Carbon tetrachloride	ESQ_OM	FD_TP	1.16E-12
COMSTK	Chlorine	ESQ_OM	FD_TP	0.00E+00
COMSTK	Chlorobenzene	ESQ_OM	FD_TP	1.71E-12
COMSTK	Chlorodibromomethane	ESQ_OM	FD_TP	7.89E-08
COMSTK	Chloroform	ESQ_OM	FD_TP	8.52E-12
COMSTK	Chromium compounds	ESQ_OM	FD_TP	8.44E-07
COMSTK	cis-1,3-Dichloropropene	ESQ_OM	FD_TP	0.00E+00
COMSTK	Cobalt compounds	ESQ_OM	FD_TP	4.43E-08
COMSTK	Composirte TOE - Nonvolatile	ESQ_OM	FD_TP	4.89E-01
COMSTK	Composirte TOE - Semivolatile	ESQ_OM	FD_TP	6.78E-06
COMSTK	Composite TOE - Volatile	ESQ_OM	FD_TP	5.11E-07
COMSTK	Copper compounds	ESQ_OM	FD_TP	1.22E-06
COMSTK	Dibutyl phthalate	ESQ_OM	FD_TP	2.82E-07
COMSTK	Dichlorodifluoromethane	ESQ_OM	FD_TP	0.00E+00
COMSTK	Dichloromethane	ESQ_OM	FD_TP	5.11E-11
COMSTK	Diethyl phthalate	ESQ_OM	FD_TP	1.22E-09
COMSTK	Dimethylphthalate	ESQ_OM	FD_TP	4.03E-11
COMSTK	Ethyl chloride	ESQ_OM	FD_TP	0.00E+00
COMSTK	Ethylbenzene	ESQ_OM	FD_TP	3.29E-12
COMSTK	GB	ESQ_OM	FD_TP	7.10E-04
COMSTK	Hydrochloric acid	ESQ_OM	FD_TP	2.99E-07
COMSTK	Hydrofluoric acid	ESQ_OM	FD_TP	0.00E+00
COMSTK	Lead compounds	ESQ_OM	FD_TP	1.88E-06
COMSTK	m,p-Xylene	ESQ_OM	FD_TP	2.87E-05
COMSTK	Manganese compounds	ESQ_OM	FD_TP	1.09E-06
COMSTK	Mercuric chloride	ESQ_OM	FD_TP	7.38E-07
COMSTK	Methyl bromide	ESQ_OM	FD_TP	1.05E-09
COMSTK	Methyl chloride	ESQ_OM	FD_TP	1.26E-11
COMSTK	Methyl ethyl ketone	ESQ_OM	FD_TP	6.29E-10
COMSTK	Methyl iodide	ESQ_OM	FD_TP	1.77E-10
COMSTK	Methyl isobutyl ketone	ESQ_OM	FD_TP	2.64E-08
COMSTK	Methyl mercury	ESQ_OM	FD_TP	3.46E-06
COMSTK	Naphthalene	ESQ_OM	FD_TP	4.39E-09
COMSTK	n-Hexane	ESQ_OM	FD_TP	8.74E-12
COMSTK	Nickel compounds	ESQ_OM	FD_TP	4.14E-06
COMSTK	Nitrogen dioxide	ESQ_OM	FD_TP	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_OM	FD_TP	6.51E-06
COMSTK	Phosphoric acid	ESQ_OM	FD_TP	6.72E-06
COMSTK	Selenium compounds	ESQ_OM	FD_TP	1.25E-05
COMSTK	Silver compounds	ESQ_OM	FD_TP	2.94E-07
COMSTK	Styrene	ESQ_OM	FD_TP	7.59E-09
COMSTK	Sulfur dioxide	ESQ_OM	FD_TP	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_OM	FD_TP	0.00E+00
COMSTK	Thallium compounds	ESQ_OM	FD_TP	3.17E-04
COMSTK	Tin compounds	ESQ_OM	FD_TP	2.62E-07

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Toluene	ESQ_OM	FD_TP	4.29E-12
COMSTK	trans-1,3-Dichloropropene	ESQ_OM	FD_TP	0.00E+00
COMSTK	Tribromomethane	ESQ_OM	FD_TP	4.14E-13
COMSTK	Trichloroethylene	ESQ_OM	FD_TP	2.64E-12
COMSTK	Trichlorofluoromethane	ESQ_OM	FD_TP	0.00E+00
COMSTK	Vanadium compounds	ESQ_OM	FD_TP	5.36E-08
COMSTK	Vinyl acetate	ESQ_OM	FD_TP	3.32E-10
COMSTK	Vinyl chloride	ESQ_OM	FD_TP	2.72E-11
COMSTK	VX	ESQ_OM	FD_TP	2.52E-02
COMSTK	Xylene (mixed)	ESQ_OM	FD_TP	4.12E-06
COMSTK	Zinc compounds	ESQ_OM	FD_TP	2.25E-06
LABSTK	GB	ESQ_OM	FD_TP	1.61E-03
LABSTK	Sulfur mustard (or H/HD)	ESQ_OM	FD_TP	0.00E+00
LABSTK	VX	ESQ_OM	FD_TP	9.44E-02
MDBSTK	GB	ESQ_OM	FD_TP	1.40E-03
MDBSTK	Sulfur mustard (or H/HD)	ESQ_OM	FD_TP	0.00E+00
MDBSTK	VX	ESQ_OM	FD_TP	8.13E-02

Table U-8: Complete EcoRisk View Diet Results
(Fresh Water Habitat)

Source	COPC	Guild	Diet Type	ESQ
BRASTK	Antimony compounds	ESQ_CB	EQDIET	0.00E+00
BRASTK	Arsenic compounds	ESQ_CB	EQDIET	5.14E-10
BRASTK	Barium compounds	ESQ_CB	EQDIET	3.93E-09
BRASTK	Beryllium compounds	ESQ_CB	EQDIET	0.00E+00
BRASTK	Boron compounds	ESQ_CB	EQDIET	9.42E-10
BRASTK	Cadmium compounds	ESQ_CB	EQDIET	1.98E-08
BRASTK	Chromium compounds	ESQ_CB	EQDIET	5.46E-10
BRASTK	Cobalt compounds	ESQ_CB	EQDIET	1.60E-11
BRASTK	Copper compounds	ESQ_CB	EQDIET	1.24E-09
BRASTK	EA 2192	ESQ_CB	EQDIET	0.00E+00
BRASTK	GB	ESQ_CB	EQDIET	0.00E+00
BRASTK	Lead compounds	ESQ_CB	EQDIET	5.78E-12
BRASTK	Manganese compounds	ESQ_CB	EQDIET	1.66E-11
BRASTK	Mercuric chloride	ESQ_CB	EQDIET	4.74E-08
BRASTK	Methyl mercury	ESQ_CB	EQDIET	1.81E-07
BRASTK	Nickel compounds	ESQ_CB	EQDIET	9.07E-10
BRASTK	o-Cresol	ESQ_CB	EQDIET	0.00E+00
BRASTK	Phosphoric acid	ESQ_CB	EQDIET	0.00E+00
BRASTK	Selenium compounds	ESQ_CB	EQDIET	1.50E-08
BRASTK	Silver compounds	ESQ_CB	EQDIET	1.21E-08
BRASTK	Sulfur mustard (or H/HD)	ESQ_CB	EQDIET	0.00E+00
BRASTK	Thallium compounds	ESQ_CB	EQDIET	3.71E-07
BRASTK	Tin compounds	ESQ_CB	EQDIET	4.89E-10
BRASTK	Vanadium compounds	ESQ_CB	EQDIET	6.70E-11
BRASTK	VX	ESQ_CB	EQDIET	0.00E+00
BRASTK	Zinc compounds	ESQ_CB	EQDIET	1.80E-08
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_CB	EQDIET	0.00E+00
COMSTK	1,1-Dichloroethylene	ESQ_CB	EQDIET	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_CB	EQDIET	5.20E-14
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_CB	EQDIET	8.40E-14
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_CB	EQDIET	9.62E-13
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_CB	EQDIET	9.88E-13
COMSTK	1,2-Dichlorobenzene	ESQ_CB	EQDIET	0.00E+00
COMSTK	1,4-Dichlorobenzene	ESQ_CB	EQDIET	0.00E+00
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_CB	EQDIET	2.34E-14
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_CB	EQDIET	3.18E-10
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_CB	EQDIET	1.79E-09
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_CB	EQDIET	2.33E-11
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_CB	EQDIET	1.25E-10
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_CB	EQDIET	4.30E-09
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_CB	EQDIET	2.57E-14
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_CB	EQDIET	3.33E-06
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_CB	EQDIET	1.53E-10

Source	COPC	Guild	Diet Type	ESQ
COMSTK	2,4,6-Trinitrotoluene	ESQ_CB	EQDIET	1.62E-10
COMSTK	2,4-Dinitrotoluene	ESQ_CB	EQDIET	7.99E-10
COMSTK	2-Methylnaphthalene	ESQ_CB	EQDIET	0.00E+00
COMSTK	2-Xylene	ESQ_CB	EQDIET	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_CB	EQDIET	6.63E-07
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_CB	EQDIET	1.60E-11
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_CB	EQDIET	2.26E-11
COMSTK	Acetone	ESQ_CB	EQDIET	3.39E-12
COMSTK	Aluminum compounds	ESQ_CB	EQDIET	5.78E-11
COMSTK	Antimony compounds	ESQ_CB	EQDIET	0.00E+00
COMSTK	Arsenic compounds	ESQ_CB	EQDIET	5.29E-11
COMSTK	Barium compounds	ESQ_CB	EQDIET	4.90E-10
COMSTK	Benzaldehyde	ESQ_CB	EQDIET	0.00E+00
COMSTK	Benzene	ESQ_CB	EQDIET	0.00E+00
COMSTK	Benzoic acid	ESQ_CB	EQDIET	0.00E+00
COMSTK	Benzyl alcohol	ESQ_CB	EQDIET	0.00E+00
COMSTK	Beryllium compounds	ESQ_CB	EQDIET	0.00E+00
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_CB	EQDIET	9.60E-08
COMSTK	Boron compounds	ESQ_CB	EQDIET	5.76E-11
COMSTK	Bromochloromethane	ESQ_CB	EQDIET	0.00E+00
COMSTK	Bromodichloromethane	ESQ_CB	EQDIET	0.00E+00
COMSTK	Bromoethane	ESQ_CB	EQDIET	0.00E+00
COMSTK	Cadmium compounds	ESQ_CB	EQDIET	2.95E-10
COMSTK	Carbon disulfide	ESQ_CB	EQDIET	0.00E+00
COMSTK	Carbon tetrachloride	ESQ_CB	EQDIET	0.00E+00
COMSTK	Chlorine	ESQ_CB	EQDIET	0.00E+00
COMSTK	Chlorobenzene	ESQ_CB	EQDIET	0.00E+00
COMSTK	Chlorodibromomethane	ESQ_CB	EQDIET	0.00E+00
COMSTK	Chloroform	ESQ_CB	EQDIET	0.00E+00
COMSTK	Chromium compounds	ESQ_CB	EQDIET	3.43E-11
COMSTK	cis-1,3-Dichloropropene	ESQ_CB	EQDIET	0.00E+00
COMSTK	Cobalt compounds	ESQ_CB	EQDIET	1.35E-13
COMSTK	Composirte TOE - Nonvolatile	ESQ_CB	EQDIET	4.09E-01
COMSTK	Composirte TOE - Semivolatile	ESQ_CB	EQDIET	1.67E-07
COMSTK	Composite TOE - Volatile	ESQ_CB	EQDIET	6.66E-10
COMSTK	Copper compounds	ESQ_CB	EQDIET	3.28E-12
COMSTK	Dibutyl phthalate	ESQ_CB	EQDIET	1.03E-07
COMSTK	Dichlorodifluoromethane	ESQ_CB	EQDIET	0.00E+00
COMSTK	Dichloromethane	ESQ_CB	EQDIET	0.00E+00
COMSTK	Diethyl phthalate	ESQ_CB	EQDIET	0.00E+00
COMSTK	Dimethylphthalate	ESQ_CB	EQDIET	0.00E+00
COMSTK	Ethyl chloride	ESQ_CB	EQDIET	0.00E+00
COMSTK	Ethylbenzene	ESQ_CB	EQDIET	0.00E+00
COMSTK	GB	ESQ_CB	EQDIET	0.00E+00
COMSTK	Hydrochloric acid	ESQ_CB	EQDIET	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Hydrofluoric acid	ESQ_CB	EQDIET	0.00E+00
COMSTK	Lead compounds	ESQ_CB	EQDIET	1.78E-11
COMSTK	m,p-Xylene	ESQ_CB	EQDIET	0.00E+00
COMSTK	Manganese compounds	ESQ_CB	EQDIET	4.36E-13
COMSTK	Mercuric chloride	ESQ_CB	EQDIET	1.65E-09
COMSTK	Methyl bromide	ESQ_CB	EQDIET	0.00E+00
COMSTK	Methyl chloride	ESQ_CB	EQDIET	0.00E+00
COMSTK	Methyl ethyl ketone	ESQ_CB	EQDIET	0.00E+00
COMSTK	Methyl iodide	ESQ_CB	EQDIET	0.00E+00
COMSTK	Methyl isobutyl ketone	ESQ_CB	EQDIET	2.06E-11
COMSTK	Methyl mercury	ESQ_CB	EQDIET	6.48E-09
COMSTK	Naphthalene	ESQ_CB	EQDIET	0.00E+00
COMSTK	n-Hexane	ESQ_CB	EQDIET	0.00E+00
COMSTK	Nickel compounds	ESQ_CB	EQDIET	2.41E-11
COMSTK	Nitrogen dioxide	ESQ_CB	EQDIET	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_CB	EQDIET	2.32E-06
COMSTK	Phosphoric acid	ESQ_CB	EQDIET	0.00E+00
COMSTK	Selenium compounds	ESQ_CB	EQDIET	2.38E-10
COMSTK	Silver compounds	ESQ_CB	EQDIET	1.93E-10
COMSTK	Styrene	ESQ_CB	EQDIET	0.00E+00
COMSTK	Sulfur dioxide	ESQ_CB	EQDIET	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_CB	EQDIET	0.00E+00
COMSTK	Thallium compounds	ESQ_CB	EQDIET	6.72E-08
COMSTK	Tin compounds	ESQ_CB	EQDIET	1.46E-11
COMSTK	Toluene	ESQ_CB	EQDIET	0.00E+00
COMSTK	trans-1,3-Dichloropropene	ESQ_CB	EQDIET	0.00E+00
COMSTK	Tribromomethane	ESQ_CB	EQDIET	0.00E+00
COMSTK	Trichloroethylene	ESQ_CB	EQDIET	0.00E+00
COMSTK	Trichlorofluoromethane	ESQ_CB	EQDIET	0.00E+00
COMSTK	Vanadium compounds	ESQ_CB	EQDIET	4.78E-13
COMSTK	Vinyl acetate	ESQ_CB	EQDIET	0.00E+00
COMSTK	Vinyl chloride	ESQ_CB	EQDIET	0.00E+00
COMSTK	VX	ESQ_CB	EQDIET	0.00E+00
COMSTK	Xylene (mixed)	ESQ_CB	EQDIET	0.00E+00
COMSTK	Zinc compounds	ESQ_CB	EQDIET	1.49E-08
LABSTK	GB	ESQ_CB	EQDIET	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	ESQ_CB	EQDIET	0.00E+00
LABSTK	VX	ESQ_CB	EQDIET	0.00E+00
MDBSTK	GB	ESQ_CB	EQDIET	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	ESQ_CB	EQDIET	0.00E+00
MDBSTK	VX	ESQ_CB	EQDIET	0.00E+00
BRASTK	Antimony compounds	ESQ_CM	EQDIET	1.11E-08
BRASTK	Arsenic compounds	ESQ_CM	EQDIET	2.81E-09
BRASTK	Barium compounds	ESQ_CM	EQDIET	4.03E-09
BRASTK	Beryllium compounds	ESQ_CM	EQDIET	2.47E-10

Source	COPC	Guild	Diet Type	ESQ
BRASTK	Boron compounds	ESQ_CM	EQDIET	2.06E-09
BRASTK	Cadmium compounds	ESQ_CM	EQDIET	9.65E-08
BRASTK	Chromium compounds	ESQ_CM	EQDIET	1.53E-09
BRASTK	Cobalt compounds	ESQ_CM	EQDIET	3.51E-11
BRASTK	Copper compounds	ESQ_CM	EQDIET	2.28E-09
BRASTK	EA 2192	ESQ_CM	EQDIET	0.00E+00
BRASTK	GB	ESQ_CM	EQDIET	1.83E-07
BRASTK	Lead compounds	ESQ_CM	EQDIET	2.84E-12
BRASTK	Manganese compounds	ESQ_CM	EQDIET	1.28E-10
BRASTK	Mercuric chloride	ESQ_CM	EQDIET	5.01E-08
BRASTK	Methyl mercury	ESQ_CM	EQDIET	9.80E-07
BRASTK	Nickel compounds	ESQ_CM	EQDIET	9.07E-09
BRASTK	o-Cresol	ESQ_CM	EQDIET	5.01E-10
BRASTK	Phosphoric acid	ESQ_CM	EQDIET	4.14E-07
BRASTK	Selenium compounds	ESQ_CM	EQDIET	7.62E-08
BRASTK	Silver compounds	ESQ_CM	EQDIET	1.03E-08
BRASTK	Sulfur mustard (or H/HD)	ESQ_CM	EQDIET	0.00E+00
BRASTK	Thallium compounds	ESQ_CM	EQDIET	4.47E-05
BRASTK	Tin compounds	ESQ_CM	EQDIET	3.00E-10
BRASTK	Vanadium compounds	ESQ_CM	EQDIET	1.22E-11
BRASTK	VX	ESQ_CM	EQDIET	1.20E-05
BRASTK	Zinc compounds	ESQ_CM	EQDIET	4.17E-09
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_CM	EQDIET	8.50E-15
COMSTK	1,1-Dichloroethylene	ESQ_CM	EQDIET	1.68E-15
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_CM	EQDIET	3.02E-12
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_CM	EQDIET	4.83E-12
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_CM	EQDIET	1.98E-11
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_CM	EQDIET	3.18E-11
COMSTK	1,2-Dichlorobenzene	ESQ_CM	EQDIET	5.09E-13
COMSTK	1,4-Dichlorobenzene	ESQ_CM	EQDIET	1.61E-12
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_CM	EQDIET	1.90E-13
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_CM	EQDIET	3.40E-09
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_CM	EQDIET	1.92E-08
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_CM	EQDIET	2.50E-09
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_CM	EQDIET	1.34E-08
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_CM	EQDIET	4.61E-08
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_CM	EQDIET	2.75E-12
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_CM	EQDIET	8.45E-07
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_CM	EQDIET	5.41E-09
COMSTK	2,4,6-Trinitrotoluene	ESQ_CM	EQDIET	1.43E-09
COMSTK	2,4-Dinitrotoluene	ESQ_CM	EQDIET	3.03E-10
COMSTK	2-Methylnaphthalene	ESQ_CM	EQDIET	5.85E-11
COMSTK	2-Xylene	ESQ_CM	EQDIET	1.23E-10
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_CM	EQDIET	4.73E-08
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_CM	EQDIET	1.30E-12

Source	COPC	Guild	Diet Type	ESQ
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_CM	EQDIET	6.08E-10
COMSTK	Acetone	ESQ_CM	EQDIET	3.99E-11
COMSTK	Aluminum compounds	ESQ_CM	EQDIET	8.18E-09
COMSTK	Antimony compounds	ESQ_CM	EQDIET	4.02E-09
COMSTK	Arsenic compounds	ESQ_CM	EQDIET	2.90E-10
COMSTK	Barium compounds	ESQ_CM	EQDIET	5.01E-10
COMSTK	Benzaldehyde	ESQ_CM	EQDIET	3.35E-09
COMSTK	Benzene	ESQ_CM	EQDIET	1.32E-13
COMSTK	Benzoic acid	ESQ_CM	EQDIET	2.28E-09
COMSTK	Benzyl alcohol	ESQ_CM	EQDIET	3.65E-10
COMSTK	Beryllium compounds	ESQ_CM	EQDIET	5.13E-12
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_CM	EQDIET	1.34E-08
COMSTK	Boron compounds	ESQ_CM	EQDIET	1.26E-10
COMSTK	Bromochloromethane	ESQ_CM	EQDIET	1.48E-14
COMSTK	Bromodichloromethane	ESQ_CM	EQDIET	5.65E-13
COMSTK	Bromoethane	ESQ_CM	EQDIET	4.28E-14
COMSTK	Cadmium compounds	ESQ_CM	EQDIET	1.44E-09
COMSTK	Carbon disulfide	ESQ_CM	EQDIET	3.92E-13
COMSTK	Carbon tetrachloride	ESQ_CM	EQDIET	3.95E-14
COMSTK	Chlorine	ESQ_CM	EQDIET	0.00E+00
COMSTK	Chlorobenzene	ESQ_CM	EQDIET	6.95E-15
COMSTK	Chlorodibromomethane	ESQ_CM	EQDIET	1.89E-12
COMSTK	Chloroform	ESQ_CM	EQDIET	6.08E-13
COMSTK	Chromium compounds	ESQ_CM	EQDIET	9.59E-11
COMSTK	cis-1,3-Dichloropropene	ESQ_CM	EQDIET	0.00E+00
COMSTK	Cobalt compounds	ESQ_CM	EQDIET	2.97E-13
COMSTK	Composirte TOE - Nonvolatile	ESQ_CM	EQDIET	2.45E-02
COMSTK	Composirte TOE - Semivolatile	ESQ_CM	EQDIET	3.31E-08
COMSTK	Composite TOE - Volatile	ESQ_CM	EQDIET	7.94E-10
COMSTK	Copper compounds	ESQ_CM	EQDIET	6.05E-12
COMSTK	Dibutyl phthalate	ESQ_CM	EQDIET	1.59E-09
COMSTK	Dichlorodifluoromethane	ESQ_CM	EQDIET	0.00E+00
COMSTK	Dichloromethane	ESQ_CM	EQDIET	3.47E-12
COMSTK	Diethyl phthalate	ESQ_CM	EQDIET	2.33E-13
COMSTK	Dimethylphthalate	ESQ_CM	EQDIET	2.33E-14
COMSTK	Ethyl chloride	ESQ_CM	EQDIET	0.00E+00
COMSTK	Ethylbenzene	ESQ_CM	EQDIET	4.66E-12
COMSTK	GB	ESQ_CM	EQDIET	8.23E-09
COMSTK	Hydrochloric acid	ESQ_CM	EQDIET	3.12E-09
COMSTK	Hydrofluoric acid	ESQ_CM	EQDIET	0.00E+00
COMSTK	Lead compounds	ESQ_CM	EQDIET	8.73E-12
COMSTK	m,p-Xylene	ESQ_CM	EQDIET	9.80E-10
COMSTK	Manganese compounds	ESQ_CM	EQDIET	3.36E-12
COMSTK	Mercuric chloride	ESQ_CM	EQDIET	1.75E-09
COMSTK	Methyl bromide	ESQ_CM	EQDIET	2.66E-11

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Methyl chloride	ESQ_CM	EQDIET	6.36E-13
COMSTK	Methyl ethyl ketone	ESQ_CM	EQDIET	2.07E-14
COMSTK	Methyl iodide	ESQ_CM	EQDIET	5.18E-12
COMSTK	Methyl isobutyl ketone	ESQ_CM	EQDIET	2.06E-12
COMSTK	Methyl mercury	ESQ_CM	EQDIET	3.51E-08
COMSTK	Naphthalene	ESQ_CM	EQDIET	4.71E-12
COMSTK	n-Hexane	ESQ_CM	EQDIET	1.44E-09
COMSTK	Nickel compounds	ESQ_CM	EQDIET	2.42E-10
COMSTK	Nitrogen dioxide	ESQ_CM	EQDIET	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_CM	EQDIET	7.84E-06
COMSTK	Phosphoric acid	ESQ_CM	EQDIET	3.53E-08
COMSTK	Selenium compounds	ESQ_CM	EQDIET	1.21E-09
COMSTK	Silver compounds	ESQ_CM	EQDIET	1.65E-10
COMSTK	Styrene	ESQ_CM	EQDIET	2.09E-11
COMSTK	Sulfur dioxide	ESQ_CM	EQDIET	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_CM	EQDIET	0.00E+00
COMSTK	Thallium compounds	ESQ_CM	EQDIET	8.11E-06
COMSTK	Tin compounds	ESQ_CM	EQDIET	8.94E-12
COMSTK	Toluene	ESQ_CM	EQDIET	3.70E-14
COMSTK	trans-1,3-Dichloropropene	ESQ_CM	EQDIET	0.00E+00
COMSTK	Tribromomethane	ESQ_CM	EQDIET	7.56E-14
COMSTK	Trichloroethylene	ESQ_CM	EQDIET	2.32E-14
COMSTK	Trichlorofluoromethane	ESQ_CM	EQDIET	0.00E+00
COMSTK	Vanadium compounds	ESQ_CM	EQDIET	8.67E-14
COMSTK	Vinyl acetate	ESQ_CM	EQDIET	3.90E-14
COMSTK	Vinyl chloride	ESQ_CM	EQDIET	5.31E-12
COMSTK	VX	ESQ_CM	EQDIET	3.27E-07
COMSTK	Xylene (mixed)	ESQ_CM	EQDIET	4.19E-10
COMSTK	Zinc compounds	ESQ_CM	EQDIET	3.43E-09
LABSTK	GB	ESQ_CM	EQDIET	2.07E-08
LABSTK	Sulfur mustard (or H/HD)	ESQ_CM	EQDIET	0.00E+00
LABSTK	VX	ESQ_CM	EQDIET	1.36E-06
MDBSTK	GB	ESQ_CM	EQDIET	8.73E-08
MDBSTK	Sulfur mustard (or H/HD)	ESQ_CM	EQDIET	0.00E+00
MDBSTK	VX	ESQ_CM	EQDIET	5.70E-06
BRASTK	Antimony compounds	ESQ_CSB	EQDIET	0.00E+00
BRASTK	Arsenic compounds	ESQ_CSB	EQDIET	9.01E-10
BRASTK	Barium compounds	ESQ_CSB	EQDIET	2.36E-09
BRASTK	Beryllium compounds	ESQ_CSB	EQDIET	0.00E+00
BRASTK	Boron compounds	ESQ_CSB	EQDIET	4.25E-09
BRASTK	Cadmium compounds	ESQ_CSB	EQDIET	8.36E-09
BRASTK	Chromium compounds	ESQ_CSB	EQDIET	5.80E-10
BRASTK	Cobalt compounds	ESQ_CSB	EQDIET	7.18E-11
BRASTK	Copper compounds	ESQ_CSB	EQDIET	5.05E-12
BRASTK	EA 2192	ESQ_CSB	EQDIET	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
BRASTK	GB	ESQ_CSB	EQDIET	0.00E+00
BRASTK	Lead compounds	ESQ_CSB	EQDIET	5.23E-10
BRASTK	Manganese compounds	ESQ_CSB	EQDIET	7.82E-11
BRASTK	Mercuric chloride	ESQ_CSB	EQDIET	7.66E-07
BRASTK	Methyl mercury	ESQ_CSB	EQDIET	2.54E-07
BRASTK	Nickel compounds	ESQ_CSB	EQDIET	7.72E-10
BRASTK	o-Cresol	ESQ_CSB	EQDIET	0.00E+00
BRASTK	Phosphoric acid	ESQ_CSB	EQDIET	0.00E+00
BRASTK	Selenium compounds	ESQ_CSB	EQDIET	5.65E-09
BRASTK	Silver compounds	ESQ_CSB	EQDIET	1.09E-08
BRASTK	Sulfur mustard (or H/HD)	ESQ_CSB	EQDIET	0.00E+00
BRASTK	Thallium compounds	ESQ_CSB	EQDIET	2.44E-08
BRASTK	Tin compounds	ESQ_CSB	EQDIET	2.19E-09
BRASTK	Vanadium compounds	ESQ_CSB	EQDIET	3.15E-10
BRASTK	VX	ESQ_CSB	EQDIET	0.00E+00
BRASTK	Zinc compounds	ESQ_CSB	EQDIET	4.07E-09
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_CSB	EQDIET	0.00E+00
COMSTK	1,1-Dichloroethylene	ESQ_CSB	EQDIET	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_CSB	EQDIET	1.27E-08
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_CSB	EQDIET	1.55E-09
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_CSB	EQDIET	1.48E-07
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_CSB	EQDIET	1.25E-06
COMSTK	1,2-Dichlorobenzene	ESQ_CSB	EQDIET	0.00E+00
COMSTK	1,4-Dichlorobenzene	ESQ_CSB	EQDIET	0.00E+00
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_CSB	EQDIET	9.57E-14
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_CSB	EQDIET	7.31E-05
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_CSB	EQDIET	4.42E-05
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_CSB	EQDIET	3.85E-06
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_CSB	EQDIET	6.99E-06
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_CSB	EQDIET	1.70E-04
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_CSB	EQDIET	9.20E-08
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_CSB	EQDIET	5.21E-02
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_CSB	EQDIET	5.00E-05
COMSTK	2,4,6-Trinitrotoluene	ESQ_CSB	EQDIET	5.04E-10
COMSTK	2,4-Dinitrotoluene	ESQ_CSB	EQDIET	7.20E-08
COMSTK	2-Methylnaphthalene	ESQ_CSB	EQDIET	0.00E+00
COMSTK	2-Xylene	ESQ_CSB	EQDIET	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_CSB	EQDIET	1.16E-02
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_CSB	EQDIET	6.54E-11
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_CSB	EQDIET	9.22E-11
COMSTK	Acetone	ESQ_CSB	EQDIET	1.38E-11
COMSTK	Aluminum compounds	ESQ_CSB	EQDIET	5.06E-11
COMSTK	Antimony compounds	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Arsenic compounds	ESQ_CSB	EQDIET	9.29E-11
COMSTK	Barium compounds	ESQ_CSB	EQDIET	2.95E-10

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Benzaldehyde	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Benzene	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Benzoic acid	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Benzyl alcohol	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Beryllium compounds	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_CSB	EQDIET	1.81E-02
COMSTK	Boron compounds	ESQ_CSB	EQDIET	2.60E-10
COMSTK	Bromochloromethane	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Bromodichloromethane	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Bromoethane	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Cadmium compounds	ESQ_CSB	EQDIET	1.24E-10
COMSTK	Carbon disulfide	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Carbon tetrachloride	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Chlorine	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Chlorobenzene	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Chlorodibromomethane	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Chloroform	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Chromium compounds	ESQ_CSB	EQDIET	3.64E-11
COMSTK	cis-1,3-Dichloropropene	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Cobalt compounds	ESQ_CSB	EQDIET	6.06E-13
COMSTK	Composirte TOE - Nonvolatile	ESQ_CSB	EQDIET	2.63E+04
COMSTK	Composirte TOE - Semivolatile	ESQ_CSB	EQDIET	1.48E-05
COMSTK	Composite TOE - Volatile	ESQ_CSB	EQDIET	8.89E-07
COMSTK	Copper compounds	ESQ_CSB	EQDIET	1.34E-14
COMSTK	Dibutyl phthalate	ESQ_CSB	EQDIET	7.95E-06
COMSTK	Dichlorodifluoromethane	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Dichloromethane	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Diethyl phthalate	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Dimethylphthalate	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Ethyl chloride	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Ethylbenzene	ESQ_CSB	EQDIET	0.00E+00
COMSTK	GB	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Hydrochloric acid	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Hydrofluoric acid	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Lead compounds	ESQ_CSB	EQDIET	1.61E-09
COMSTK	m,p-Xylene	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Manganese compounds	ESQ_CSB	EQDIET	2.05E-12
COMSTK	Mercuric chloride	ESQ_CSB	EQDIET	2.67E-08
COMSTK	Methyl bromide	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Methyl chloride	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Methyl ethyl ketone	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Methyl iodide	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Methyl isobutyl ketone	ESQ_CSB	EQDIET	3.63E-11
COMSTK	Methyl mercury	ESQ_CSB	EQDIET	9.08E-09
COMSTK	Naphthalene	ESQ_CSB	EQDIET	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	n-Hexane	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Nickel compounds	ESQ_CSB	EQDIET	2.06E-11
COMSTK	Nitrogen dioxide	ESQ_CSB	EQDIET	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_CSB	EQDIET	5.26E-07
COMSTK	Phosphoric acid	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Selenium compounds	ESQ_CSB	EQDIET	8.99E-11
COMSTK	Silver compounds	ESQ_CSB	EQDIET	1.74E-10
COMSTK	Styrene	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Sulfur dioxide	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Thallium compounds	ESQ_CSB	EQDIET	4.42E-09
COMSTK	Tin compounds	ESQ_CSB	EQDIET	6.53E-11
COMSTK	Toluene	ESQ_CSB	EQDIET	0.00E+00
COMSTK	trans-1,3-Dichloropropene	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Tribromomethane	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Trichloroethylene	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Trichlorofluoromethane	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Vanadium compounds	ESQ_CSB	EQDIET	2.25E-12
COMSTK	Vinyl acetate	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Vinyl chloride	ESQ_CSB	EQDIET	0.00E+00
COMSTK	VX	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Xylene (mixed)	ESQ_CSB	EQDIET	0.00E+00
COMSTK	Zinc compounds	ESQ_CSB	EQDIET	3.35E-09
LABSTK	GB	ESQ_CSB	EQDIET	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	ESQ_CSB	EQDIET	0.00E+00
LABSTK	VX	ESQ_CSB	EQDIET	0.00E+00
MDBSTK	GB	ESQ_CSB	EQDIET	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	ESQ_CSB	EQDIET	0.00E+00
MDBSTK	VX	ESQ_CSB	EQDIET	0.00E+00
BRASTK	Antimony compounds	ESQ_HB	EQDIET	0.00E+00
BRASTK	Arsenic compounds	ESQ_HB	EQDIET	3.15E-11
BRASTK	Barium compounds	ESQ_HB	EQDIET	1.73E-10
BRASTK	Beryllium compounds	ESQ_HB	EQDIET	0.00E+00
BRASTK	Boron compounds	ESQ_HB	EQDIET	1.29E-09
BRASTK	Cadmium compounds	ESQ_HB	EQDIET	2.47E-09
BRASTK	Chromium compounds	ESQ_HB	EQDIET	7.72E-11
BRASTK	Cobalt compounds	ESQ_HB	EQDIET	2.19E-11
BRASTK	Copper compounds	ESQ_HB	EQDIET	1.54E-12
BRASTK	EA 2192	ESQ_HB	EQDIET	0.00E+00
BRASTK	GB	ESQ_HB	EQDIET	0.00E+00
BRASTK	Lead compounds	ESQ_HB	EQDIET	1.12E-10
BRASTK	Manganese compounds	ESQ_HB	EQDIET	2.38E-11
BRASTK	Mercuric chloride	ESQ_HB	EQDIET	1.25E-07
BRASTK	Methyl mercury	ESQ_HB	EQDIET	2.94E-08
BRASTK	Nickel compounds	ESQ_HB	EQDIET	1.56E-10

Source	COPC	Guild	Diet Type	ESQ
BRASTK	o-Cresol	ESQ_HB	EQDIET	0.00E+00
BRASTK	Phosphoric acid	ESQ_HB	EQDIET	0.00E+00
BRASTK	Selenium compounds	ESQ_HB	EQDIET	1.79E-10
BRASTK	Silver compounds	ESQ_HB	EQDIET	1.98E-09
BRASTK	Sulfur mustard (or H/HD)	ESQ_HB	EQDIET	0.00E+00
BRASTK	Thallium compounds	ESQ_HB	EQDIET	2.63E-10
BRASTK	Tin compounds	ESQ_HB	EQDIET	6.66E-10
BRASTK	Vanadium compounds	ESQ_HB	EQDIET	9.59E-11
BRASTK	VX	ESQ_HB	EQDIET	0.00E+00
BRASTK	Zinc compounds	ESQ_HB	EQDIET	4.66E-11
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_HB	EQDIET	0.00E+00
COMSTK	1,1-Dichloroethylene	ESQ_HB	EQDIET	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_HB	EQDIET	3.06E-13
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_HB	EQDIET	5.00E-13
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_HB	EQDIET	5.20E-12
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_HB	EQDIET	1.38E-12
COMSTK	1,2-Dichlorobenzene	ESQ_HB	EQDIET	0.00E+00
COMSTK	1,4-Dichlorobenzene	ESQ_HB	EQDIET	0.00E+00
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_HB	EQDIET	2.91E-14
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_HB	EQDIET	5.00E-12
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_HB	EQDIET	1.61E-11
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_HB	EQDIET	3.22E-13
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_HB	EQDIET	1.27E-12
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_HB	EQDIET	4.12E-11
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_HB	EQDIET	1.70E-15
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_HB	EQDIET	1.86E-07
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_HB	EQDIET	2.52E-11
COMSTK	2,4,6-Trinitrotoluene	ESQ_HB	EQDIET	5.72E-10
COMSTK	2,4-Dinitrotoluene	ESQ_HB	EQDIET	1.43E-09
COMSTK	2-Methylnaphthalene	ESQ_HB	EQDIET	0.00E+00
COMSTK	2-Xylene	ESQ_HB	EQDIET	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_HB	EQDIET	5.96E-09
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_HB	EQDIET	1.99E-11
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_HB	EQDIET	2.81E-11
COMSTK	Acetone	ESQ_HB	EQDIET	2.34E-11
COMSTK	Aluminum compounds	ESQ_HB	EQDIET	1.54E-11
COMSTK	Antimony compounds	ESQ_HB	EQDIET	0.00E+00
COMSTK	Arsenic compounds	ESQ_HB	EQDIET	3.25E-12
COMSTK	Barium compounds	ESQ_HB	EQDIET	2.16E-11
COMSTK	Benzaldehyde	ESQ_HB	EQDIET	0.00E+00
COMSTK	Benzene	ESQ_HB	EQDIET	0.00E+00
COMSTK	Benzoic acid	ESQ_HB	EQDIET	0.00E+00
COMSTK	Benzyl alcohol	ESQ_HB	EQDIET	0.00E+00
COMSTK	Beryllium compounds	ESQ_HB	EQDIET	0.00E+00
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_HB	EQDIET	3.21E-07

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Boron compounds	ESQ_HB	EQDIET	7.92E-11
COMSTK	Bromochloromethane	ESQ_HB	EQDIET	0.00E+00
COMSTK	Bromodichloromethane	ESQ_HB	EQDIET	0.00E+00
COMSTK	Bromoethane	ESQ_HB	EQDIET	0.00E+00
COMSTK	Cadmium compounds	ESQ_HB	EQDIET	3.68E-11
COMSTK	Carbon disulfide	ESQ_HB	EQDIET	0.00E+00
COMSTK	Carbon tetrachloride	ESQ_HB	EQDIET	0.00E+00
COMSTK	Chlorine	ESQ_HB	EQDIET	0.00E+00
COMSTK	Chlorobenzene	ESQ_HB	EQDIET	0.00E+00
COMSTK	Chlorodibromomethane	ESQ_HB	EQDIET	0.00E+00
COMSTK	Chloroform	ESQ_HB	EQDIET	0.00E+00
COMSTK	Chromium compounds	ESQ_HB	EQDIET	4.84E-12
COMSTK	cis-1,3-Dichloropropene	ESQ_HB	EQDIET	0.00E+00
COMSTK	Cobalt compounds	ESQ_HB	EQDIET	1.85E-13
COMSTK	Composirte TOE - Nonvolatile	ESQ_HB	EQDIET	4.32E-03
COMSTK	Composirte TOE - Semivolatile	ESQ_HB	EQDIET	1.70E-07
COMSTK	Composite TOE - Volatile	ESQ_HB	EQDIET	2.10E-07
COMSTK	Copper compounds	ESQ_HB	EQDIET	4.08E-15
COMSTK	Dibutyl phthalate	ESQ_HB	EQDIET	6.26E-10
COMSTK	Dichlorodifluoromethane	ESQ_HB	EQDIET	0.00E+00
COMSTK	Dichloromethane	ESQ_HB	EQDIET	0.00E+00
COMSTK	Diethyl phthalate	ESQ_HB	EQDIET	0.00E+00
COMSTK	Dimethylphthalate	ESQ_HB	EQDIET	0.00E+00
COMSTK	Ethyl chloride	ESQ_HB	EQDIET	0.00E+00
COMSTK	Ethylbenzene	ESQ_HB	EQDIET	0.00E+00
COMSTK	GB	ESQ_HB	EQDIET	0.00E+00
COMSTK	Hydrochloric acid	ESQ_HB	EQDIET	0.00E+00
COMSTK	Hydrofluoric acid	ESQ_HB	EQDIET	0.00E+00
COMSTK	Lead compounds	ESQ_HB	EQDIET	3.46E-10
COMSTK	m,p-Xylene	ESQ_HB	EQDIET	0.00E+00
COMSTK	Manganese compounds	ESQ_HB	EQDIET	6.24E-13
COMSTK	Mercuric chloride	ESQ_HB	EQDIET	4.36E-09
COMSTK	Methyl bromide	ESQ_HB	EQDIET	0.00E+00
COMSTK	Methyl chloride	ESQ_HB	EQDIET	0.00E+00
COMSTK	Methyl ethyl ketone	ESQ_HB	EQDIET	0.00E+00
COMSTK	Methyl iodide	ESQ_HB	EQDIET	0.00E+00
COMSTK	Methyl isobutyl ketone	ESQ_HB	EQDIET	9.81E-11
COMSTK	Methyl mercury	ESQ_HB	EQDIET	1.05E-09
COMSTK	Naphthalene	ESQ_HB	EQDIET	0.00E+00
COMSTK	n-Hexane	ESQ_HB	EQDIET	0.00E+00
COMSTK	Nickel compounds	ESQ_HB	EQDIET	4.16E-12
COMSTK	Nitrogen dioxide	ESQ_HB	EQDIET	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_HB	EQDIET	1.02E-08
COMSTK	Phosphoric acid	ESQ_HB	EQDIET	0.00E+00
COMSTK	Selenium compounds	ESQ_HB	EQDIET	2.85E-12

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Silver compounds	ESQ_HB	EQDIET	3.16E-11
COMSTK	Styrene	ESQ_HB	EQDIET	0.00E+00
COMSTK	Sulfur dioxide	ESQ_HB	EQDIET	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_HB	EQDIET	0.00E+00
COMSTK	Thallium compounds	ESQ_HB	EQDIET	4.76E-11
COMSTK	Tin compounds	ESQ_HB	EQDIET	1.99E-11
COMSTK	Toluene	ESQ_HB	EQDIET	0.00E+00
COMSTK	trans-1,3-Dichloropropene	ESQ_HB	EQDIET	0.00E+00
COMSTK	Tribromomethane	ESQ_HB	EQDIET	0.00E+00
COMSTK	Trichloroethylene	ESQ_HB	EQDIET	0.00E+00
COMSTK	Trichlorofluoromethane	ESQ_HB	EQDIET	0.00E+00
COMSTK	Vanadium compounds	ESQ_HB	EQDIET	6.84E-13
COMSTK	Vinyl acetate	ESQ_HB	EQDIET	0.00E+00
COMSTK	Vinyl chloride	ESQ_HB	EQDIET	0.00E+00
COMSTK	VX	ESQ_HB	EQDIET	0.00E+00
COMSTK	Xylene (mixed)	ESQ_HB	EQDIET	0.00E+00
COMSTK	Zinc compounds	ESQ_HB	EQDIET	3.84E-11
LABSTK	GB	ESQ_HB	EQDIET	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	ESQ_HB	EQDIET	0.00E+00
LABSTK	VX	ESQ_HB	EQDIET	0.00E+00
MDBSTK	GB	ESQ_HB	EQDIET	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	ESQ_HB	EQDIET	0.00E+00
MDBSTK	VX	ESQ_HB	EQDIET	0.00E+00
BRASTK	Antimony compounds	ESQ_HM	EQDIET	1.77E-09
BRASTK	Arsenic compounds	ESQ_HM	EQDIET	3.87E-11
BRASTK	Barium compounds	ESQ_HM	EQDIET	3.03E-11
BRASTK	Beryllium compounds	ESQ_HM	EQDIET	2.63E-11
BRASTK	Boron compounds	ESQ_HM	EQDIET	3.37E-09
BRASTK	Cadmium compounds	ESQ_HM	EQDIET	1.91E-09
BRASTK	Chromium compounds	ESQ_HM	EQDIET	7.77E-11
BRASTK	Cobalt compounds	ESQ_HM	EQDIET	5.74E-11
BRASTK	Copper compounds	ESQ_HM	EQDIET	2.81E-12
BRASTK	EA 2192	ESQ_HM	EQDIET	0.00E+00
BRASTK	GB	ESQ_HM	EQDIET	5.78E-06
BRASTK	Lead compounds	ESQ_HM	EQDIET	1.23E-11
BRASTK	Manganese compounds	ESQ_HM	EQDIET	2.09E-10
BRASTK	Mercuric chloride	ESQ_HM	EQDIET	1.63E-08
BRASTK	Methyl mercury	ESQ_HM	EQDIET	2.29E-08
BRASTK	Nickel compounds	ESQ_HM	EQDIET	2.63E-10
BRASTK	o-Cresol	ESQ_HM	EQDIET	2.38E-10
BRASTK	Phosphoric acid	ESQ_HM	EQDIET	6.76E-07
BRASTK	Selenium compounds	ESQ_HM	EQDIET	5.49E-10
BRASTK	Silver compounds	ESQ_HM	EQDIET	3.45E-10
BRASTK	Sulfur mustard (or H/HD)	ESQ_HM	EQDIET	0.00E+00
BRASTK	Thallium compounds	ESQ_HM	EQDIET	5.28E-09

Source	COPC	Guild	Diet Type	ESQ
BRASTK	Tin compounds	ESQ_HM	EQDIET	4.90E-10
BRASTK	Vanadium compounds	ESQ_HM	EQDIET	1.99E-11
BRASTK	VX	ESQ_HM	EQDIET	3.83E-04
BRASTK	Zinc compounds	ESQ_HM	EQDIET	2.00E-12
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_HM	EQDIET	4.29E-16
COMSTK	1,1-Dichloroethylene	ESQ_HM	EQDIET	1.43E-14
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_HM	EQDIET	8.49E-13
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_HM	EQDIET	1.38E-12
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_HM	EQDIET	4.76E-12
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_HM	EQDIET	1.95E-12
COMSTK	1,2-Dichlorobenzene	ESQ_HM	EQDIET	1.29E-14
COMSTK	1,4-Dichlorobenzene	ESQ_HM	EQDIET	4.30E-14
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_HM	EQDIET	3.10E-13
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_HM	EQDIET	1.92E-12
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_HM	EQDIET	8.96E-12
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_HM	EQDIET	1.28E-12
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_HM	EQDIET	5.95E-12
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_HM	EQDIET	2.08E-11
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_HM	EQDIET	5.43E-15
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_HM	EQDIET	2.46E-09
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_HM	EQDIET	5.08E-11
COMSTK	2,4,6-Trinitrotoluene	ESQ_HM	EQDIET	9.41E-10
COMSTK	2,4-Dinitrotoluene	ESQ_HM	EQDIET	9.64E-11
COMSTK	2-Methylnaphthalene	ESQ_HM	EQDIET	4.01E-12
COMSTK	2-Xylene	ESQ_HM	EQDIET	5.06E-12
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_HM	EQDIET	2.42E-11
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_HM	EQDIET	2.12E-12
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_HM	EQDIET	9.94E-10
COMSTK	Acetone	ESQ_HM	EQDIET	9.54E-11
COMSTK	Aluminum compounds	ESQ_HM	EQDIET	2.21E-09
COMSTK	Antimony compounds	ESQ_HM	EQDIET	6.44E-10
COMSTK	Arsenic compounds	ESQ_HM	EQDIET	3.99E-12
COMSTK	Barium compounds	ESQ_HM	EQDIET	3.77E-12
COMSTK	Benzaldehyde	ESQ_HM	EQDIET	2.45E-09
COMSTK	Benzene	ESQ_HM	EQDIET	1.08E-12
COMSTK	Benzoic acid	ESQ_HM	EQDIET	1.70E-10
COMSTK	Benzyl alcohol	ESQ_HM	EQDIET	3.71E-10
COMSTK	Beryllium compounds	ESQ_HM	EQDIET	5.47E-13
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_HM	EQDIET	5.71E-09
COMSTK	Boron compounds	ESQ_HM	EQDIET	2.06E-10
COMSTK	Bromochloromethane	ESQ_HM	EQDIET	8.27E-15
COMSTK	Bromodichloromethane	ESQ_HM	EQDIET	4.24E-12
COMSTK	Bromoethane	ESQ_HM	EQDIET	1.13E-13
COMSTK	Cadmium compounds	ESQ_HM	EQDIET	2.84E-11
COMSTK	Carbon disulfide	ESQ_HM	EQDIET	3.05E-12

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Carbon tetrachloride	ESQ_HM	EQDIET	3.31E-13
COMSTK	Chlorine	ESQ_HM	EQDIET	0.00E+00
COMSTK	Chlorobenzene	ESQ_HM	EQDIET	7.12E-14
COMSTK	Chlorodibromomethane	ESQ_HM	EQDIET	1.48E-11
COMSTK	Chloroform	ESQ_HM	EQDIET	6.85E-13
COMSTK	Chromium compounds	ESQ_HM	EQDIET	4.87E-12
COMSTK	cis-1,3-Dichloropropene	ESQ_HM	EQDIET	0.00E+00
COMSTK	Cobalt compounds	ESQ_HM	EQDIET	4.85E-13
COMSTK	Composirte TOE - Nonvolatile	ESQ_HM	EQDIET	1.11E-05
COMSTK	Composirte TOE - Semivolatile	ESQ_HM	EQDIET	5.46E-09
COMSTK	Composite TOE - Volatile	ESQ_HM	EQDIET	5.74E-08
COMSTK	Copper compounds	ESQ_HM	EQDIET	7.46E-15
COMSTK	Dibutyl phthalate	ESQ_HM	EQDIET	1.58E-12
COMSTK	Dichlorodifluoromethane	ESQ_HM	EQDIET	0.00E+00
COMSTK	Dichloromethane	ESQ_HM	EQDIET	1.87E-12
COMSTK	Diethyl phthalate	ESQ_HM	EQDIET	2.28E-14
COMSTK	Dimethylphthalate	ESQ_HM	EQDIET	1.59E-14
COMSTK	Ethyl chloride	ESQ_HM	EQDIET	0.00E+00
COMSTK	Ethylbenzene	ESQ_HM	EQDIET	1.68E-13
COMSTK	GB	ESQ_HM	EQDIET	2.59E-07
COMSTK	Hydrochloric acid	ESQ_HM	EQDIET	5.10E-09
COMSTK	Hydrofluoric acid	ESQ_HM	EQDIET	0.00E+00
COMSTK	Lead compounds	ESQ_HM	EQDIET	3.77E-11
COMSTK	m,p-Xylene	ESQ_HM	EQDIET	1.60E-09
COMSTK	Manganese compounds	ESQ_HM	EQDIET	5.49E-12
COMSTK	Mercuric chloride	ESQ_HM	EQDIET	5.69E-10
COMSTK	Methyl bromide	ESQ_HM	EQDIET	1.76E-11
COMSTK	Methyl chloride	ESQ_HM	EQDIET	6.47E-13
COMSTK	Methyl ethyl ketone	ESQ_HM	EQDIET	3.72E-14
COMSTK	Methyl iodide	ESQ_HM	EQDIET	2.53E-12
COMSTK	Methyl isobutyl ketone	ESQ_HM	EQDIET	1.96E-12
COMSTK	Methyl mercury	ESQ_HM	EQDIET	8.20E-10
COMSTK	Naphthalene	ESQ_HM	EQDIET	4.19E-13
COMSTK	n-Hexane	ESQ_HM	EQDIET	2.30E-11
COMSTK	Nickel compounds	ESQ_HM	EQDIET	6.99E-12
COMSTK	Nitrogen dioxide	ESQ_HM	EQDIET	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_HM	EQDIET	2.49E-09
COMSTK	Phosphoric acid	ESQ_HM	EQDIET	5.77E-08
COMSTK	Selenium compounds	ESQ_HM	EQDIET	8.74E-12
COMSTK	Silver compounds	ESQ_HM	EQDIET	5.52E-12
COMSTK	Styrene	ESQ_HM	EQDIET	3.80E-12
COMSTK	Sulfur dioxide	ESQ_HM	EQDIET	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_HM	EQDIET	0.00E+00
COMSTK	Thallium compounds	ESQ_HM	EQDIET	9.56E-10
COMSTK	Tin compounds	ESQ_HM	EQDIET	1.46E-11

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Toluene	ESQ_HM	EQDIET	2.98E-13
COMSTK	trans-1,3-Dichloropropene	ESQ_HM	EQDIET	0.00E+00
COMSTK	Tribromomethane	ESQ_HM	EQDIET	8.04E-13
COMSTK	Trichloroethylene	ESQ_HM	EQDIET	1.90E-13
COMSTK	Trichlorofluoromethane	ESQ_HM	EQDIET	0.00E+00
COMSTK	Vanadium compounds	ESQ_HM	EQDIET	1.42E-13
COMSTK	Vinyl acetate	ESQ_HM	EQDIET	5.34E-14
COMSTK	Vinyl chloride	ESQ_HM	EQDIET	9.09E-12
COMSTK	VX	ESQ_HM	EQDIET	1.04E-05
COMSTK	Xylene (mixed)	ESQ_HM	EQDIET	2.02E-11
COMSTK	Zinc compounds	ESQ_HM	EQDIET	1.64E-12
LABSTK	GB	ESQ_HM	EQDIET	6.51E-07
LABSTK	Sulfur mustard (or H/HD)	ESQ_HM	EQDIET	0.00E+00
LABSTK	VX	ESQ_HM	EQDIET	4.33E-05
MDBSTK	GB	ESQ_HM	EQDIET	2.75E-06
MDBSTK	Sulfur mustard (or H/HD)	ESQ_HM	EQDIET	0.00E+00
MDBSTK	VX	ESQ_HM	EQDIET	1.82E-04
BRASTK	Antimony compounds	ESQ_OB	EQDIET	0.00E+00
BRASTK	Arsenic compounds	ESQ_OB	EQDIET	1.44E-10
BRASTK	Barium compounds	ESQ_OB	EQDIET	4.18E-10
BRASTK	Beryllium compounds	ESQ_OB	EQDIET	0.00E+00
BRASTK	Boron compounds	ESQ_OB	EQDIET	1.42E-09
BRASTK	Cadmium compounds	ESQ_OB	EQDIET	2.12E-09
BRASTK	Chromium compounds	ESQ_OB	EQDIET	8.20E-11
BRASTK	Cobalt compounds	ESQ_OB	EQDIET	2.40E-11
BRASTK	Copper compounds	ESQ_OB	EQDIET	1.69E-12
BRASTK	EA 2192	ESQ_OB	EQDIET	0.00E+00
BRASTK	GB	ESQ_OB	EQDIET	0.00E+00
BRASTK	Lead compounds	ESQ_OB	EQDIET	8.77E-11
BRASTK	Manganese compounds	ESQ_OB	EQDIET	2.62E-11
BRASTK	Mercuric chloride	ESQ_OB	EQDIET	1.21E-07
BRASTK	Methyl mercury	ESQ_OB	EQDIET	4.71E-08
BRASTK	Nickel compounds	ESQ_OB	EQDIET	1.21E-10
BRASTK	o-Cresol	ESQ_OB	EQDIET	0.00E+00
BRASTK	Phosphoric acid	ESQ_OB	EQDIET	0.00E+00
BRASTK	Selenium compounds	ESQ_OB	EQDIET	9.30E-10
BRASTK	Silver compounds	ESQ_OB	EQDIET	2.39E-09
BRASTK	Sulfur mustard (or H/HD)	ESQ_OB	EQDIET	0.00E+00
BRASTK	Thallium compounds	ESQ_OB	EQDIET	3.72E-09
BRASTK	Tin compounds	ESQ_OB	EQDIET	7.32E-10
BRASTK	Vanadium compounds	ESQ_OB	EQDIET	1.05E-10
BRASTK	VX	ESQ_OB	EQDIET	0.00E+00
BRASTK	Zinc compounds	ESQ_OB	EQDIET	6.15E-10
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_OB	EQDIET	0.00E+00
COMSTK	1,1-Dichloroethylene	ESQ_OB	EQDIET	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_OB	EQDIET	1.99E-09
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_OB	EQDIET	2.44E-10
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_OB	EQDIET	2.33E-08
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_OB	EQDIET	1.96E-07
COMSTK	1,2-Dichlorobenzene	ESQ_OB	EQDIET	0.00E+00
COMSTK	1,4-Dichlorobenzene	ESQ_OB	EQDIET	0.00E+00
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_OB	EQDIET	3.20E-14
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_OB	EQDIET	1.15E-05
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_OB	EQDIET	6.95E-06
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_OB	EQDIET	6.05E-07
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_OB	EQDIET	1.10E-06
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_OB	EQDIET	2.67E-05
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_OB	EQDIET	1.45E-08
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_OB	EQDIET	8.20E-03
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_OB	EQDIET	7.87E-06
COMSTK	2,4,6-Trinitrotoluene	ESQ_OB	EQDIET	2.98E-10
COMSTK	2,4-Dinitrotoluene	ESQ_OB	EQDIET	1.19E-08
COMSTK	2-Methylnaphthalene	ESQ_OB	EQDIET	0.00E+00
COMSTK	2-Xylene	ESQ_OB	EQDIET	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_OB	EQDIET	1.82E-03
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_OB	EQDIET	2.19E-11
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_OB	EQDIET	3.08E-11
COMSTK	Acetone	ESQ_OB	EQDIET	1.19E-11
COMSTK	Aluminum compounds	ESQ_OB	EQDIET	1.69E-11
COMSTK	Antimony compounds	ESQ_OB	EQDIET	0.00E+00
COMSTK	Arsenic compounds	ESQ_OB	EQDIET	1.48E-11
COMSTK	Barium compounds	ESQ_OB	EQDIET	5.20E-11
COMSTK	Benzaldehyde	ESQ_OB	EQDIET	0.00E+00
COMSTK	Benzene	ESQ_OB	EQDIET	0.00E+00
COMSTK	Benzoic acid	ESQ_OB	EQDIET	0.00E+00
COMSTK	Benzyl alcohol	ESQ_OB	EQDIET	0.00E+00
COMSTK	Beryllium compounds	ESQ_OB	EQDIET	0.00E+00
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_OB	EQDIET	2.84E-03
COMSTK	Boron compounds	ESQ_OB	EQDIET	8.69E-11
COMSTK	Bromochloromethane	ESQ_OB	EQDIET	0.00E+00
COMSTK	Bromodichloromethane	ESQ_OB	EQDIET	0.00E+00
COMSTK	Bromoethane	ESQ_OB	EQDIET	0.00E+00
COMSTK	Cadmium compounds	ESQ_OB	EQDIET	3.16E-11
COMSTK	Carbon disulfide	ESQ_OB	EQDIET	0.00E+00
COMSTK	Carbon tetrachloride	ESQ_OB	EQDIET	0.00E+00
COMSTK	Chlorine	ESQ_OB	EQDIET	0.00E+00
COMSTK	Chlorobenzene	ESQ_OB	EQDIET	0.00E+00
COMSTK	Chlorodibromomethane	ESQ_OB	EQDIET	0.00E+00
COMSTK	Chloroform	ESQ_OB	EQDIET	0.00E+00
COMSTK	Chromium compounds	ESQ_OB	EQDIET	5.14E-12

Source	COPC	Guild	Diet Type	ESQ
COMSTK	cis-1,3-Dichloropropene	ESQ_OB	EQDIET	0.00E+00
COMSTK	Cobalt compounds	ESQ_OB	EQDIET	2.03E-13
COMSTK	Composirte TOE - Nonvolatile	ESQ_OB	EQDIET	4.13E+03
COMSTK	Composirte TOE - Semivolatile	ESQ_OB	EQDIET	2.38E-06
COMSTK	Composite TOE - Volatile	ESQ_OB	EQDIET	2.18E-07
COMSTK	Copper compounds	ESQ_OB	EQDIET	4.48E-15
COMSTK	Dibutyl phthalate	ESQ_OB	EQDIET	1.25E-06
COMSTK	Dichlorodifluoromethane	ESQ_OB	EQDIET	0.00E+00
COMSTK	Dichloromethane	ESQ_OB	EQDIET	0.00E+00
COMSTK	Diethyl phthalate	ESQ_OB	EQDIET	0.00E+00
COMSTK	Dimethylphthalate	ESQ_OB	EQDIET	0.00E+00
COMSTK	Ethyl chloride	ESQ_OB	EQDIET	0.00E+00
COMSTK	Ethylbenzene	ESQ_OB	EQDIET	0.00E+00
COMSTK	GB	ESQ_OB	EQDIET	0.00E+00
COMSTK	Hydrochloric acid	ESQ_OB	EQDIET	0.00E+00
COMSTK	Hydrofluoric acid	ESQ_OB	EQDIET	0.00E+00
COMSTK	Lead compounds	ESQ_OB	EQDIET	2.70E-10
COMSTK	m,p-Xylene	ESQ_OB	EQDIET	0.00E+00
COMSTK	Manganese compounds	ESQ_OB	EQDIET	6.85E-13
COMSTK	Mercuric chloride	ESQ_OB	EQDIET	4.20E-09
COMSTK	Methyl bromide	ESQ_OB	EQDIET	0.00E+00
COMSTK	Methyl chloride	ESQ_OB	EQDIET	0.00E+00
COMSTK	Methyl ethyl ketone	ESQ_OB	EQDIET	0.00E+00
COMSTK	Methyl iodide	ESQ_OB	EQDIET	0.00E+00
COMSTK	Methyl isobutyl ketone	ESQ_OB	EQDIET	4.37E-11
COMSTK	Methyl mercury	ESQ_OB	EQDIET	1.69E-09
COMSTK	Naphthalene	ESQ_OB	EQDIET	0.00E+00
COMSTK	n-Hexane	ESQ_OB	EQDIET	0.00E+00
COMSTK	Nickel compounds	ESQ_OB	EQDIET	3.23E-12
COMSTK	Nitrogen dioxide	ESQ_OB	EQDIET	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_OB	EQDIET	7.90E-08
COMSTK	Phosphoric acid	ESQ_OB	EQDIET	0.00E+00
COMSTK	Selenium compounds	ESQ_OB	EQDIET	1.48E-11
COMSTK	Silver compounds	ESQ_OB	EQDIET	3.82E-11
COMSTK	Styrene	ESQ_OB	EQDIET	0.00E+00
COMSTK	Sulfur dioxide	ESQ_OB	EQDIET	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_OB	EQDIET	0.00E+00
COMSTK	Thallium compounds	ESQ_OB	EQDIET	6.75E-10
COMSTK	Tin compounds	ESQ_OB	EQDIET	2.18E-11
COMSTK	Toluene	ESQ_OB	EQDIET	0.00E+00
COMSTK	trans-1,3-Dichloropropene	ESQ_OB	EQDIET	0.00E+00
COMSTK	Tribromomethane	ESQ_OB	EQDIET	0.00E+00
COMSTK	Trichloroethylene	ESQ_OB	EQDIET	0.00E+00
COMSTK	Trichlorofluoromethane	ESQ_OB	EQDIET	0.00E+00
COMSTK	Vanadium compounds	ESQ_OB	EQDIET	7.51E-13

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Vinyl acetate	ESQ_OB	EQDIET	0.00E+00
COMSTK	Vinyl chloride	ESQ_OB	EQDIET	0.00E+00
COMSTK	VX	ESQ_OB	EQDIET	0.00E+00
COMSTK	Xylene (mixed)	ESQ_OB	EQDIET	0.00E+00
COMSTK	Zinc compounds	ESQ_OB	EQDIET	5.06E-10
LABSTK	GB	ESQ_OB	EQDIET	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	ESQ_OB	EQDIET	0.00E+00
LABSTK	VX	ESQ_OB	EQDIET	0.00E+00
MDBSTK	GB	ESQ_OB	EQDIET	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	ESQ_OB	EQDIET	0.00E+00
MDBSTK	VX	ESQ_OB	EQDIET	0.00E+00
BRASTK	Antimony compounds	ESQ_OM	EQDIET	5.84E-09
BRASTK	Arsenic compounds	ESQ_OM	EQDIET	2.59E-10
BRASTK	Barium compounds	ESQ_OM	EQDIET	1.25E-10
BRASTK	Beryllium compounds	ESQ_OM	EQDIET	1.35E-09
BRASTK	Boron compounds	ESQ_OM	EQDIET	2.16E-09
BRASTK	Cadmium compounds	ESQ_OM	EQDIET	2.12E-09
BRASTK	Chromium compounds	ESQ_OM	EQDIET	1.06E-10
BRASTK	Cobalt compounds	ESQ_OM	EQDIET	3.69E-11
BRASTK	Copper compounds	ESQ_OM	EQDIET	1.72E-12
BRASTK	EA 2192	ESQ_OM	EQDIET	0.00E+00
BRASTK	GB	ESQ_OM	EQDIET	1.11E-07
BRASTK	Lead compounds	ESQ_OM	EQDIET	2.17E-11
BRASTK	Manganese compounds	ESQ_OM	EQDIET	1.28E-10
BRASTK	Mercuric chloride	ESQ_OM	EQDIET	4.12E-08
BRASTK	Methyl mercury	ESQ_OM	EQDIET	6.91E-08
BRASTK	Nickel compounds	ESQ_OM	EQDIET	4.03E-10
BRASTK	o-Cresol	ESQ_OM	EQDIET	1.80E-10
BRASTK	Phosphoric acid	ESQ_OM	EQDIET	4.64E-07
BRASTK	Selenium compounds	ESQ_OM	EQDIET	1.72E-09
BRASTK	Silver compounds	ESQ_OM	EQDIET	5.16E-10
BRASTK	Sulfur mustard (or H/HD)	ESQ_OM	EQDIET	0.00E+00
BRASTK	Thallium compounds	ESQ_OM	EQDIET	1.51E-07
BRASTK	Tin compounds	ESQ_OM	EQDIET	3.17E-10
BRASTK	Vanadium compounds	ESQ_OM	EQDIET	1.22E-11
BRASTK	VX	ESQ_OM	EQDIET	4.56E-04
BRASTK	Zinc compounds	ESQ_OM	EQDIET	4.84E-11
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_OM	EQDIET	1.39E-14
COMSTK	1,1-Dichloroethylene	ESQ_OM	EQDIET	1.63E-14
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_OM	EQDIET	6.95E-08
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_OM	EQDIET	8.52E-09
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_OM	EQDIET	2.71E-07
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_OM	EQDIET	2.28E-06
COMSTK	1,2-Dichlorobenzene	ESQ_OM	EQDIET	8.06E-13
COMSTK	1,4-Dichlorobenzene	ESQ_OM	EQDIET	4.15E-12

Source	COPC	Guild	Diet Type	ESQ
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_OM	EQDIET	2.22E-13
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_OM	EQDIET	4.01E-05
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_OM	EQDIET	2.43E-05
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_OM	EQDIET	2.11E-05
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_OM	EQDIET	3.84E-05
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_OM	EQDIET	9.32E-05
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_OM	EQDIET	5.05E-07
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_OM	EQDIET	6.81E-04
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_OM	EQDIET	9.15E-05
COMSTK	2,4,6-Trinitrotoluene	ESQ_OM	EQDIET	3.00E-10
COMSTK	2,4-Dinitrotoluene	ESQ_OM	EQDIET	1.41E-09
COMSTK	2-Methylnaphthalene	ESQ_OM	EQDIET	1.57E-09
COMSTK	2-Xylene	ESQ_OM	EQDIET	1.27E-10
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_OM	EQDIET	4.23E-05
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_OM	EQDIET	1.52E-12
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_OM	EQDIET	7.11E-10
COMSTK	Acetone	ESQ_OM	EQDIET	3.37E-11
COMSTK	Aluminum compounds	ESQ_OM	EQDIET	1.35E-09
COMSTK	Antimony compounds	ESQ_OM	EQDIET	2.12E-09
COMSTK	Arsenic compounds	ESQ_OM	EQDIET	2.67E-11
COMSTK	Barium compounds	ESQ_OM	EQDIET	1.56E-11
COMSTK	Benzaldehyde	ESQ_OM	EQDIET	6.33E-10
COMSTK	Benzene	ESQ_OM	EQDIET	1.22E-12
COMSTK	Benzoic acid	ESQ_OM	EQDIET	1.04E-10
COMSTK	Benzyl alcohol	ESQ_OM	EQDIET	7.15E-11
COMSTK	Beryllium compounds	ESQ_OM	EQDIET	2.81E-11
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_OM	EQDIET	1.42E-04
COMSTK	Boron compounds	ESQ_OM	EQDIET	1.32E-10
COMSTK	Bromochloromethane	ESQ_OM	EQDIET	2.25E-15
COMSTK	Bromodichloromethane	ESQ_OM	EQDIET	4.75E-12
COMSTK	Bromoethane	ESQ_OM	EQDIET	3.17E-14
COMSTK	Cadmium compounds	ESQ_OM	EQDIET	3.15E-11
COMSTK	Carbon disulfide	ESQ_OM	EQDIET	4.56E-12
COMSTK	Carbon tetrachloride	ESQ_OM	EQDIET	2.49E-12
COMSTK	Chlorine	ESQ_OM	EQDIET	0.00E+00
COMSTK	Chlorobenzene	ESQ_OM	EQDIET	7.23E-13
COMSTK	Chlorodibromomethane	ESQ_OM	EQDIET	2.43E-11
COMSTK	Chloroform	ESQ_OM	EQDIET	5.11E-13
COMSTK	Chromium compounds	ESQ_OM	EQDIET	6.66E-12
COMSTK	cis-1,3-Dichloropropene	ESQ_OM	EQDIET	0.00E+00
COMSTK	Cobalt compounds	ESQ_OM	EQDIET	3.12E-13
COMSTK	Composirte TOE - Nonvolatile	ESQ_OM	EQDIET	8.07E+01
COMSTK	Composirte TOE - Semivolatile	ESQ_OM	EQDIET	1.50E-07
COMSTK	Composite TOE - Volatile	ESQ_OM	EQDIET	7.82E-08
COMSTK	Copper compounds	ESQ_OM	EQDIET	4.57E-15

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Dibutyl phthalate	ESQ_OM	EQDIET	6.24E-09
COMSTK	Dichlorodifluoromethane	ESQ_OM	EQDIET	0.00E+00
COMSTK	Dichloromethane	ESQ_OM	EQDIET	5.16E-13
COMSTK	Diethyl phthalate	ESQ_OM	EQDIET	8.18E-14
COMSTK	Dimethylphthalate	ESQ_OM	EQDIET	4.69E-15
COMSTK	Ethyl chloride	ESQ_OM	EQDIET	0.00E+00
COMSTK	Ethylbenzene	ESQ_OM	EQDIET	4.08E-12
COMSTK	GB	ESQ_OM	EQDIET	5.00E-09
COMSTK	Hydrochloric acid	ESQ_OM	EQDIET	3.12E-09
COMSTK	Hydrofluoric acid	ESQ_OM	EQDIET	0.00E+00
COMSTK	Lead compounds	ESQ_OM	EQDIET	6.68E-11
COMSTK	m,p-Xylene	ESQ_OM	EQDIET	1.15E-09
COMSTK	Manganese compounds	ESQ_OM	EQDIET	3.36E-12
COMSTK	Mercuric chloride	ESQ_OM	EQDIET	1.43E-09
COMSTK	Methyl bromide	ESQ_OM	EQDIET	4.41E-12
COMSTK	Methyl chloride	ESQ_OM	EQDIET	1.44E-13
COMSTK	Methyl ethyl ketone	ESQ_OM	EQDIET	9.26E-15
COMSTK	Methyl iodide	ESQ_OM	EQDIET	7.75E-13
COMSTK	Methyl isobutyl ketone	ESQ_OM	EQDIET	3.85E-13
COMSTK	Methyl mercury	ESQ_OM	EQDIET	2.47E-09
COMSTK	Naphthalene	ESQ_OM	EQDIET	2.32E-11
COMSTK	n-Hexane	ESQ_OM	EQDIET	8.30E-09
COMSTK	Nickel compounds	ESQ_OM	EQDIET	1.07E-11
COMSTK	Nitrogen dioxide	ESQ_OM	EQDIET	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_OM	EQDIET	8.93E-08
COMSTK	Phosphoric acid	ESQ_OM	EQDIET	3.96E-08
COMSTK	Selenium compounds	ESQ_OM	EQDIET	2.73E-11
COMSTK	Silver compounds	ESQ_OM	EQDIET	8.25E-12
COMSTK	Styrene	ESQ_OM	EQDIET	8.11E-11
COMSTK	Sulfur dioxide	ESQ_OM	EQDIET	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_OM	EQDIET	0.00E+00
COMSTK	Thallium compounds	ESQ_OM	EQDIET	2.73E-08
COMSTK	Tin compounds	ESQ_OM	EQDIET	9.45E-12
COMSTK	Toluene	ESQ_OM	EQDIET	2.09E-12
COMSTK	trans-1,3-Dichloropropene	ESQ_OM	EQDIET	0.00E+00
COMSTK	Tribromomethane	ESQ_OM	EQDIET	2.12E-12
COMSTK	Trichloroethylene	ESQ_OM	EQDIET	5.27E-13
COMSTK	Trichlorofluoromethane	ESQ_OM	EQDIET	0.00E+00
COMSTK	Vanadium compounds	ESQ_OM	EQDIET	8.67E-14
COMSTK	Vinyl acetate	ESQ_OM	EQDIET	1.09E-14
COMSTK	Vinyl chloride	ESQ_OM	EQDIET	1.64E-12
COMSTK	VX	ESQ_OM	EQDIET	1.24E-05
COMSTK	Xylene (mixed)	ESQ_OM	EQDIET	7.42E-10
COMSTK	Zinc compounds	ESQ_OM	EQDIET	3.98E-11
LABSTK	GB	ESQ_OM	EQDIET	1.26E-08

Source	COPC	Guild	Diet Type	ESQ
LABSTK	Sulfur mustard (or H/HD)	ESQ_OM	EQDIET	0.00E+00
LABSTK	VX	ESQ_OM	EQDIET	5.16E-05
MDBSTK	GB	ESQ_OM	EQDIET	5.31E-08
MDBSTK	Sulfur mustard (or H/HD)	ESQ_OM	EQDIET	0.00E+00
MDBSTK	VX	ESQ_OM	EQDIET	2.17E-04
BRASTK	Antimony compounds	ESQ_HB	FD_AV	0.00E+00
BRASTK	Arsenic compounds	ESQ_HB	FD_AV	3.15E-11
BRASTK	Barium compounds	ESQ_HB	FD_AV	1.73E-10
BRASTK	Beryllium compounds	ESQ_HB	FD_AV	0.00E+00
BRASTK	Boron compounds	ESQ_HB	FD_AV	1.29E-09
BRASTK	Cadmium compounds	ESQ_HB	FD_AV	2.47E-09
BRASTK	Chromium compounds	ESQ_HB	FD_AV	7.72E-11
BRASTK	Cobalt compounds	ESQ_HB	FD_AV	2.19E-11
BRASTK	Copper compounds	ESQ_HB	FD_AV	1.54E-12
BRASTK	EA 2192	ESQ_HB	FD_AV	0.00E+00
BRASTK	GB	ESQ_HB	FD_AV	0.00E+00
BRASTK	Lead compounds	ESQ_HB	FD_AV	1.12E-10
BRASTK	Manganese compounds	ESQ_HB	FD_AV	2.38E-11
BRASTK	Mercuric chloride	ESQ_HB	FD_AV	1.25E-07
BRASTK	Methyl mercury	ESQ_HB	FD_AV	2.94E-08
BRASTK	Nickel compounds	ESQ_HB	FD_AV	1.56E-10
BRASTK	o-Cresol	ESQ_HB	FD_AV	0.00E+00
BRASTK	Phosphoric acid	ESQ_HB	FD_AV	0.00E+00
BRASTK	Selenium compounds	ESQ_HB	FD_AV	1.79E-10
BRASTK	Silver compounds	ESQ_HB	FD_AV	1.98E-09
BRASTK	Sulfur mustard (or H/HD)	ESQ_HB	FD_AV	0.00E+00
BRASTK	Thallium compounds	ESQ_HB	FD_AV	2.63E-10
BRASTK	Tin compounds	ESQ_HB	FD_AV	6.66E-10
BRASTK	Vanadium compounds	ESQ_HB	FD_AV	9.59E-11
BRASTK	VX	ESQ_HB	FD_AV	0.00E+00
BRASTK	Zinc compounds	ESQ_HB	FD_AV	4.66E-11
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_HB	FD_AV	0.00E+00
COMSTK	1,1-Dichloroethylene	ESQ_HB	FD_AV	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_HB	FD_AV	3.06E-13
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_HB	FD_AV	5.00E-13
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_HB	FD_AV	5.20E-12
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_HB	FD_AV	1.38E-12
COMSTK	1,2-Dichlorobenzene	ESQ_HB	FD_AV	0.00E+00
COMSTK	1,4-Dichlorobenzene	ESQ_HB	FD_AV	0.00E+00
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_HB	FD_AV	2.91E-14
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_HB	FD_AV	5.00E-12
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_HB	FD_AV	1.61E-11
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_HB	FD_AV	3.22E-13
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_HB	FD_AV	1.27E-12
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_HB	FD_AV	4.12E-11

Source	COPC	Guild	Diet Type	ESQ
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_HB	FD_AV	1.70E-15
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_HB	FD_AV	1.86E-07
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_HB	FD_AV	2.52E-11
COMSTK	2,4,6-Trinitrotoluene	ESQ_HB	FD_AV	5.72E-10
COMSTK	2,4-Dinitrotoluene	ESQ_HB	FD_AV	1.43E-09
COMSTK	2-Methylnaphthalene	ESQ_HB	FD_AV	0.00E+00
COMSTK	2-Xylene	ESQ_HB	FD_AV	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_HB	FD_AV	5.96E-09
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_HB	FD_AV	1.99E-11
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_HB	FD_AV	2.81E-11
COMSTK	Acetone	ESQ_HB	FD_AV	2.34E-11
COMSTK	Aluminum compounds	ESQ_HB	FD_AV	1.54E-11
COMSTK	Antimony compounds	ESQ_HB	FD_AV	0.00E+00
COMSTK	Arsenic compounds	ESQ_HB	FD_AV	3.25E-12
COMSTK	Barium compounds	ESQ_HB	FD_AV	2.16E-11
COMSTK	Benzaldehyde	ESQ_HB	FD_AV	0.00E+00
COMSTK	Benzene	ESQ_HB	FD_AV	0.00E+00
COMSTK	Benzoic acid	ESQ_HB	FD_AV	0.00E+00
COMSTK	Benzyl alcohol	ESQ_HB	FD_AV	0.00E+00
COMSTK	Beryllium compounds	ESQ_HB	FD_AV	0.00E+00
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_HB	FD_AV	3.21E-07
COMSTK	Boron compounds	ESQ_HB	FD_AV	7.92E-11
COMSTK	Bromochloromethane	ESQ_HB	FD_AV	0.00E+00
COMSTK	Bromodichloromethane	ESQ_HB	FD_AV	0.00E+00
COMSTK	Bromoethane	ESQ_HB	FD_AV	0.00E+00
COMSTK	Cadmium compounds	ESQ_HB	FD_AV	3.68E-11
COMSTK	Carbon disulfide	ESQ_HB	FD_AV	0.00E+00
COMSTK	Carbon tetrachloride	ESQ_HB	FD_AV	0.00E+00
COMSTK	Chlorine	ESQ_HB	FD_AV	0.00E+00
COMSTK	Chlorobenzene	ESQ_HB	FD_AV	0.00E+00
COMSTK	Chlorodibromomethane	ESQ_HB	FD_AV	0.00E+00
COMSTK	Chloroform	ESQ_HB	FD_AV	0.00E+00
COMSTK	Chromium compounds	ESQ_HB	FD_AV	4.84E-12
COMSTK	cis-1,3-Dichloropropene	ESQ_HB	FD_AV	0.00E+00
COMSTK	Cobalt compounds	ESQ_HB	FD_AV	1.85E-13
COMSTK	Composirte TOE - Nonvolatile	ESQ_HB	FD_AV	4.32E-03
COMSTK	Composirte TOE - Semivolatile	ESQ_HB	FD_AV	1.70E-07
COMSTK	Composite TOE - Volatile	ESQ_HB	FD_AV	2.10E-07
COMSTK	Copper compounds	ESQ_HB	FD_AV	4.08E-15
COMSTK	Dibutyl phthalate	ESQ_HB	FD_AV	6.26E-10
COMSTK	Dichlorodifluoromethane	ESQ_HB	FD_AV	0.00E+00
COMSTK	Dichloromethane	ESQ_HB	FD_AV	0.00E+00
COMSTK	Diethyl phthalate	ESQ_HB	FD_AV	0.00E+00
COMSTK	Dimethylphthalate	ESQ_HB	FD_AV	0.00E+00
COMSTK	Ethyl chloride	ESQ_HB	FD_AV	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Ethylbenzene	ESQ_HB	FD_AV	0.00E+00
COMSTK	GB	ESQ_HB	FD_AV	0.00E+00
COMSTK	Hydrochloric acid	ESQ_HB	FD_AV	0.00E+00
COMSTK	Hydrofluoric acid	ESQ_HB	FD_AV	0.00E+00
COMSTK	Lead compounds	ESQ_HB	FD_AV	3.46E-10
COMSTK	m,p-Xylene	ESQ_HB	FD_AV	0.00E+00
COMSTK	Manganese compounds	ESQ_HB	FD_AV	6.24E-13
COMSTK	Mercuric chloride	ESQ_HB	FD_AV	4.36E-09
COMSTK	Methyl bromide	ESQ_HB	FD_AV	0.00E+00
COMSTK	Methyl chloride	ESQ_HB	FD_AV	0.00E+00
COMSTK	Methyl ethyl ketone	ESQ_HB	FD_AV	0.00E+00
COMSTK	Methyl iodide	ESQ_HB	FD_AV	0.00E+00
COMSTK	Methyl isobutyl ketone	ESQ_HB	FD_AV	9.81E-11
COMSTK	Methyl mercury	ESQ_HB	FD_AV	1.05E-09
COMSTK	Naphthalene	ESQ_HB	FD_AV	0.00E+00
COMSTK	n-Hexane	ESQ_HB	FD_AV	0.00E+00
COMSTK	Nickel compounds	ESQ_HB	FD_AV	4.16E-12
COMSTK	Nitrogen dioxide	ESQ_HB	FD_AV	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_HB	FD_AV	1.02E-08
COMSTK	Phosphoric acid	ESQ_HB	FD_AV	0.00E+00
COMSTK	Selenium compounds	ESQ_HB	FD_AV	2.85E-12
COMSTK	Silver compounds	ESQ_HB	FD_AV	3.16E-11
COMSTK	Styrene	ESQ_HB	FD_AV	0.00E+00
COMSTK	Sulfur dioxide	ESQ_HB	FD_AV	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_HB	FD_AV	0.00E+00
COMSTK	Thallium compounds	ESQ_HB	FD_AV	4.76E-11
COMSTK	Tin compounds	ESQ_HB	FD_AV	1.99E-11
COMSTK	Toluene	ESQ_HB	FD_AV	0.00E+00
COMSTK	trans-1,3-Dichloropropene	ESQ_HB	FD_AV	0.00E+00
COMSTK	Tribromomethane	ESQ_HB	FD_AV	0.00E+00
COMSTK	Trichloroethylene	ESQ_HB	FD_AV	0.00E+00
COMSTK	Trichlorofluoromethane	ESQ_HB	FD_AV	0.00E+00
COMSTK	Vanadium compounds	ESQ_HB	FD_AV	6.84E-13
COMSTK	Vinyl acetate	ESQ_HB	FD_AV	0.00E+00
COMSTK	Vinyl chloride	ESQ_HB	FD_AV	0.00E+00
COMSTK	VX	ESQ_HB	FD_AV	0.00E+00
COMSTK	Xylene (mixed)	ESQ_HB	FD_AV	0.00E+00
COMSTK	Zinc compounds	ESQ_HB	FD_AV	3.84E-11
LABSTK	GB	ESQ_HB	FD_AV	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	ESQ_HB	FD_AV	0.00E+00
LABSTK	VX	ESQ_HB	FD_AV	0.00E+00
MDBSTK	GB	ESQ_HB	FD_AV	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	ESQ_HB	FD_AV	0.00E+00
MDBSTK	VX	ESQ_HB	FD_AV	0.00E+00
BRASTK	Antimony compounds	ESQ_HM	FD_AV	1.77E-09

Source	COPC	Guild	Diet Type	ESQ
BRASTK	Arsenic compounds	ESQ_HM	FD_AV	3.87E-11
BRASTK	Barium compounds	ESQ_HM	FD_AV	3.03E-11
BRASTK	Beryllium compounds	ESQ_HM	FD_AV	2.63E-11
BRASTK	Boron compounds	ESQ_HM	FD_AV	3.37E-09
BRASTK	Cadmium compounds	ESQ_HM	FD_AV	1.91E-09
BRASTK	Chromium compounds	ESQ_HM	FD_AV	7.77E-11
BRASTK	Cobalt compounds	ESQ_HM	FD_AV	5.74E-11
BRASTK	Copper compounds	ESQ_HM	FD_AV	2.81E-12
BRASTK	EA 2192	ESQ_HM	FD_AV	0.00E+00
BRASTK	GB	ESQ_HM	FD_AV	5.78E-06
BRASTK	Lead compounds	ESQ_HM	FD_AV	1.23E-11
BRASTK	Manganese compounds	ESQ_HM	FD_AV	2.09E-10
BRASTK	Mercuric chloride	ESQ_HM	FD_AV	1.63E-08
BRASTK	Methyl mercury	ESQ_HM	FD_AV	2.29E-08
BRASTK	Nickel compounds	ESQ_HM	FD_AV	2.63E-10
BRASTK	o-Cresol	ESQ_HM	FD_AV	2.38E-10
BRASTK	Phosphoric acid	ESQ_HM	FD_AV	6.76E-07
BRASTK	Selenium compounds	ESQ_HM	FD_AV	5.49E-10
BRASTK	Silver compounds	ESQ_HM	FD_AV	3.45E-10
BRASTK	Sulfur mustard (or H/HD)	ESQ_HM	FD_AV	0.00E+00
BRASTK	Thallium compounds	ESQ_HM	FD_AV	5.28E-09
BRASTK	Tin compounds	ESQ_HM	FD_AV	4.90E-10
BRASTK	Vanadium compounds	ESQ_HM	FD_AV	1.99E-11
BRASTK	VX	ESQ_HM	FD_AV	3.83E-04
BRASTK	Zinc compounds	ESQ_HM	FD_AV	2.00E-12
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_HM	FD_AV	4.29E-16
COMSTK	1,1-Dichloroethylene	ESQ_HM	FD_AV	1.43E-14
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_HM	FD_AV	8.49E-13
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_HM	FD_AV	1.38E-12
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_HM	FD_AV	4.76E-12
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_HM	FD_AV	1.95E-12
COMSTK	1,2-Dichlorobenzene	ESQ_HM	FD_AV	1.29E-14
COMSTK	1,4-Dichlorobenzene	ESQ_HM	FD_AV	4.30E-14
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_HM	FD_AV	3.10E-13
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_HM	FD_AV	1.92E-12
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_HM	FD_AV	8.96E-12
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_HM	FD_AV	1.28E-12
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_HM	FD_AV	5.95E-12
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_HM	FD_AV	2.08E-11
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_HM	FD_AV	5.43E-15
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_HM	FD_AV	2.46E-09
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_HM	FD_AV	5.08E-11
COMSTK	2,4,6-Trinitrotoluene	ESQ_HM	FD_AV	9.41E-10
COMSTK	2,4-Dinitrotoluene	ESQ_HM	FD_AV	9.64E-11
COMSTK	2-Methylnaphthalene	ESQ_HM	FD_AV	4.01E-12

Source	COPC	Guild	Diet Type	ESQ
COMSTK	2-Xylene	ESQ_HM	FD_AV	5.06E-12
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_HM	FD_AV	2.42E-11
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_HM	FD_AV	2.12E-12
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_HM	FD_AV	9.94E-10
COMSTK	Acetone	ESQ_HM	FD_AV	9.54E-11
COMSTK	Aluminum compounds	ESQ_HM	FD_AV	2.21E-09
COMSTK	Antimony compounds	ESQ_HM	FD_AV	6.44E-10
COMSTK	Arsenic compounds	ESQ_HM	FD_AV	3.99E-12
COMSTK	Barium compounds	ESQ_HM	FD_AV	3.77E-12
COMSTK	Benzaldehyde	ESQ_HM	FD_AV	2.45E-09
COMSTK	Benzene	ESQ_HM	FD_AV	1.08E-12
COMSTK	Benzoic acid	ESQ_HM	FD_AV	1.70E-10
COMSTK	Benzyl alcohol	ESQ_HM	FD_AV	3.71E-10
COMSTK	Beryllium compounds	ESQ_HM	FD_AV	5.47E-13
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_HM	FD_AV	5.71E-09
COMSTK	Boron compounds	ESQ_HM	FD_AV	2.06E-10
COMSTK	Bromochloromethane	ESQ_HM	FD_AV	8.27E-15
COMSTK	Bromodichloromethane	ESQ_HM	FD_AV	4.24E-12
COMSTK	Bromoethane	ESQ_HM	FD_AV	1.13E-13
COMSTK	Cadmium compounds	ESQ_HM	FD_AV	2.84E-11
COMSTK	Carbon disulfide	ESQ_HM	FD_AV	3.05E-12
COMSTK	Carbon tetrachloride	ESQ_HM	FD_AV	3.31E-13
COMSTK	Chlorine	ESQ_HM	FD_AV	0.00E+00
COMSTK	Chlorobenzene	ESQ_HM	FD_AV	7.12E-14
COMSTK	Chlorodibromomethane	ESQ_HM	FD_AV	1.48E-11
COMSTK	Chloroform	ESQ_HM	FD_AV	6.85E-13
COMSTK	Chromium compounds	ESQ_HM	FD_AV	4.87E-12
COMSTK	cis-1,3-Dichloropropene	ESQ_HM	FD_AV	0.00E+00
COMSTK	Cobalt compounds	ESQ_HM	FD_AV	4.85E-13
COMSTK	Composirte TOE - Nonvolatile	ESQ_HM	FD_AV	1.11E-05
COMSTK	Composirte TOE - Semivolatile	ESQ_HM	FD_AV	5.46E-09
COMSTK	Composite TOE - Volatile	ESQ_HM	FD_AV	5.74E-08
COMSTK	Copper compounds	ESQ_HM	FD_AV	7.46E-15
COMSTK	Dibutyl phthalate	ESQ_HM	FD_AV	1.58E-12
COMSTK	Dichlorodifluoromethane	ESQ_HM	FD_AV	0.00E+00
COMSTK	Dichloromethane	ESQ_HM	FD_AV	1.87E-12
COMSTK	Diethyl phthalate	ESQ_HM	FD_AV	2.28E-14
COMSTK	Dimethylphthalate	ESQ_HM	FD_AV	1.59E-14
COMSTK	Ethyl chloride	ESQ_HM	FD_AV	0.00E+00
COMSTK	Ethylbenzene	ESQ_HM	FD_AV	1.68E-13
COMSTK	GB	ESQ_HM	FD_AV	2.59E-07
COMSTK	Hydrochloric acid	ESQ_HM	FD_AV	5.10E-09
COMSTK	Hydrofluoric acid	ESQ_HM	FD_AV	0.00E+00
COMSTK	Lead compounds	ESQ_HM	FD_AV	3.77E-11
COMSTK	m,p-Xylene	ESQ_HM	FD_AV	1.60E-09

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Manganese compounds	ESQ_HM	FD_AV	5.49E-12
COMSTK	Mercuric chloride	ESQ_HM	FD_AV	5.69E-10
COMSTK	Methyl bromide	ESQ_HM	FD_AV	1.76E-11
COMSTK	Methyl chloride	ESQ_HM	FD_AV	6.47E-13
COMSTK	Methyl ethyl ketone	ESQ_HM	FD_AV	3.72E-14
COMSTK	Methyl iodide	ESQ_HM	FD_AV	2.53E-12
COMSTK	Methyl isobutyl ketone	ESQ_HM	FD_AV	1.96E-12
COMSTK	Methyl mercury	ESQ_HM	FD_AV	8.20E-10
COMSTK	Naphthalene	ESQ_HM	FD_AV	4.19E-13
COMSTK	n-Hexane	ESQ_HM	FD_AV	2.30E-11
COMSTK	Nickel compounds	ESQ_HM	FD_AV	6.99E-12
COMSTK	Nitrogen dioxide	ESQ_HM	FD_AV	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_HM	FD_AV	2.49E-09
COMSTK	Phosphoric acid	ESQ_HM	FD_AV	5.77E-08
COMSTK	Selenium compounds	ESQ_HM	FD_AV	8.74E-12
COMSTK	Silver compounds	ESQ_HM	FD_AV	5.52E-12
COMSTK	Styrene	ESQ_HM	FD_AV	3.80E-12
COMSTK	Sulfur dioxide	ESQ_HM	FD_AV	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_HM	FD_AV	0.00E+00
COMSTK	Thallium compounds	ESQ_HM	FD_AV	9.56E-10
COMSTK	Tin compounds	ESQ_HM	FD_AV	1.46E-11
COMSTK	Toluene	ESQ_HM	FD_AV	2.98E-13
COMSTK	trans-1,3-Dichloropropene	ESQ_HM	FD_AV	0.00E+00
COMSTK	Tribromomethane	ESQ_HM	FD_AV	8.04E-13
COMSTK	Trichloroethylene	ESQ_HM	FD_AV	1.90E-13
COMSTK	Trichlorofluoromethane	ESQ_HM	FD_AV	0.00E+00
COMSTK	Vanadium compounds	ESQ_HM	FD_AV	1.42E-13
COMSTK	Vinyl acetate	ESQ_HM	FD_AV	5.34E-14
COMSTK	Vinyl chloride	ESQ_HM	FD_AV	9.09E-12
COMSTK	VX	ESQ_HM	FD_AV	1.04E-05
COMSTK	Xylene (mixed)	ESQ_HM	FD_AV	2.02E-11
COMSTK	Zinc compounds	ESQ_HM	FD_AV	1.64E-12
LABSTK	GB	ESQ_HM	FD_AV	6.51E-07
LABSTK	Sulfur mustard (or H/HD)	ESQ_HM	FD_AV	0.00E+00
LABSTK	VX	ESQ_HM	FD_AV	4.33E-05
MDBSTK	GB	ESQ_HM	FD_AV	2.75E-06
MDBSTK	Sulfur mustard (or H/HD)	ESQ_HM	FD_AV	0.00E+00
MDBSTK	VX	ESQ_HM	FD_AV	1.82E-04
BRASTK	Antimony compounds	ESQ_OB	FD_AV	0.00E+00
BRASTK	Arsenic compounds	ESQ_OB	FD_AV	2.51E-11
BRASTK	Barium compounds	ESQ_OB	FD_AV	1.33E-10
BRASTK	Beryllium compounds	ESQ_OB	FD_AV	0.00E+00
BRASTK	Boron compounds	ESQ_OB	FD_AV	1.42E-09
BRASTK	Cadmium compounds	ESQ_OB	FD_AV	1.89E-09
BRASTK	Chromium compounds	ESQ_OB	FD_AV	6.61E-11

Source	COPC	Guild	Diet Type	ESQ
BRASTK	Cobalt compounds	ESQ_OB	FD_AV	2.40E-11
BRASTK	Copper compounds	ESQ_OB	FD_AV	1.69E-12
BRASTK	EA 2192	ESQ_OB	FD_AV	0.00E+00
BRASTK	GB	ESQ_OB	FD_AV	0.00E+00
BRASTK	Lead compounds	ESQ_OB	FD_AV	8.51E-11
BRASTK	Manganese compounds	ESQ_OB	FD_AV	2.62E-11
BRASTK	Mercuric chloride	ESQ_OB	FD_AV	9.45E-08
BRASTK	Methyl mercury	ESQ_OB	FD_AV	2.24E-08
BRASTK	Nickel compounds	ESQ_OB	FD_AV	1.21E-10
BRASTK	o-Cresol	ESQ_OB	FD_AV	0.00E+00
BRASTK	Phosphoric acid	ESQ_OB	FD_AV	0.00E+00
BRASTK	Selenium compounds	ESQ_OB	FD_AV	1.70E-10
BRASTK	Silver compounds	ESQ_OB	FD_AV	1.55E-09
BRASTK	Sulfur mustard (or H/HD)	ESQ_OB	FD_AV	0.00E+00
BRASTK	Thallium compounds	ESQ_OB	FD_AV	2.07E-10
BRASTK	Tin compounds	ESQ_OB	FD_AV	7.32E-10
BRASTK	Vanadium compounds	ESQ_OB	FD_AV	1.05E-10
BRASTK	VX	ESQ_OB	FD_AV	0.00E+00
BRASTK	Zinc compounds	ESQ_OB	FD_AV	3.72E-11
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_OB	FD_AV	0.00E+00
COMSTK	1,1-Dichloroethylene	ESQ_OB	FD_AV	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_OB	FD_AV	2.26E-13
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_OB	FD_AV	3.70E-13
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_OB	FD_AV	3.84E-12
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_OB	FD_AV	1.03E-12
COMSTK	1,2-Dichlorobenzene	ESQ_OB	FD_AV	0.00E+00
COMSTK	1,4-Dichlorobenzene	ESQ_OB	FD_AV	0.00E+00
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_OB	FD_AV	3.20E-14
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_OB	FD_AV	3.70E-12
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_OB	FD_AV	1.20E-11
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_OB	FD_AV	2.39E-13
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_OB	FD_AV	9.40E-13
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_OB	FD_AV	3.06E-11
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_OB	FD_AV	1.26E-15
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_OB	FD_AV	1.38E-07
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_OB	FD_AV	1.88E-11
COMSTK	2,4,6-Trinitrotoluene	ESQ_OB	FD_AV	4.42E-10
COMSTK	2,4-Dinitrotoluene	ESQ_OB	FD_AV	1.10E-09
COMSTK	2-Methylnaphthalene	ESQ_OB	FD_AV	0.00E+00
COMSTK	2-Xylene	ESQ_OB	FD_AV	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_OB	FD_AV	4.44E-09
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_OB	FD_AV	2.19E-11
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_OB	FD_AV	3.08E-11
COMSTK	Acetone	ESQ_OB	FD_AV	1.93E-11
COMSTK	Aluminum compounds	ESQ_OB	FD_AV	1.69E-11

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Antimony compounds	ESQ_OB	FD_AV	0.00E+00
COMSTK	Arsenic compounds	ESQ_OB	FD_AV	2.59E-12
COMSTK	Barium compounds	ESQ_OB	FD_AV	1.66E-11
COMSTK	Benzaldehyde	ESQ_OB	FD_AV	0.00E+00
COMSTK	Benzene	ESQ_OB	FD_AV	0.00E+00
COMSTK	Benzoic acid	ESQ_OB	FD_AV	0.00E+00
COMSTK	Benzyl alcohol	ESQ_OB	FD_AV	0.00E+00
COMSTK	Beryllium compounds	ESQ_OB	FD_AV	0.00E+00
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_OB	FD_AV	2.42E-07
COMSTK	Boron compounds	ESQ_OB	FD_AV	8.69E-11
COMSTK	Bromochloromethane	ESQ_OB	FD_AV	0.00E+00
COMSTK	Bromodichloromethane	ESQ_OB	FD_AV	0.00E+00
COMSTK	Bromoethane	ESQ_OB	FD_AV	0.00E+00
COMSTK	Cadmium compounds	ESQ_OB	FD_AV	2.81E-11
COMSTK	Carbon disulfide	ESQ_OB	FD_AV	0.00E+00
COMSTK	Carbon tetrachloride	ESQ_OB	FD_AV	0.00E+00
COMSTK	Chlorine	ESQ_OB	FD_AV	0.00E+00
COMSTK	Chlorobenzene	ESQ_OB	FD_AV	0.00E+00
COMSTK	Chlorodibromomethane	ESQ_OB	FD_AV	0.00E+00
COMSTK	Chloroform	ESQ_OB	FD_AV	0.00E+00
COMSTK	Chromium compounds	ESQ_OB	FD_AV	4.15E-12
COMSTK	cis-1,3-Dichloropropene	ESQ_OB	FD_AV	0.00E+00
COMSTK	Cobalt compounds	ESQ_OB	FD_AV	2.03E-13
COMSTK	Composirte TOE - Nonvolatile	ESQ_OB	FD_AV	3.21E-03
COMSTK	Composirte TOE - Semivolatile	ESQ_OB	FD_AV	1.30E-07
COMSTK	Composite TOE - Volatile	ESQ_OB	FD_AV	1.60E-07
COMSTK	Copper compounds	ESQ_OB	FD_AV	4.48E-15
COMSTK	Dibutyl phthalate	ESQ_OB	FD_AV	4.82E-10
COMSTK	Dichlorodifluoromethane	ESQ_OB	FD_AV	0.00E+00
COMSTK	Dichloromethane	ESQ_OB	FD_AV	0.00E+00
COMSTK	Diethyl phthalate	ESQ_OB	FD_AV	0.00E+00
COMSTK	Dimethylphthalate	ESQ_OB	FD_AV	0.00E+00
COMSTK	Ethyl chloride	ESQ_OB	FD_AV	0.00E+00
COMSTK	Ethylbenzene	ESQ_OB	FD_AV	0.00E+00
COMSTK	GB	ESQ_OB	FD_AV	0.00E+00
COMSTK	Hydrochloric acid	ESQ_OB	FD_AV	0.00E+00
COMSTK	Hydrofluoric acid	ESQ_OB	FD_AV	0.00E+00
COMSTK	Lead compounds	ESQ_OB	FD_AV	2.62E-10
COMSTK	m,p-Xylene	ESQ_OB	FD_AV	0.00E+00
COMSTK	Manganese compounds	ESQ_OB	FD_AV	6.85E-13
COMSTK	Mercuric chloride	ESQ_OB	FD_AV	3.29E-09
COMSTK	Methyl bromide	ESQ_OB	FD_AV	0.00E+00
COMSTK	Methyl chloride	ESQ_OB	FD_AV	0.00E+00
COMSTK	Methyl ethyl ketone	ESQ_OB	FD_AV	0.00E+00
COMSTK	Methyl iodide	ESQ_OB	FD_AV	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Methyl isobutyl ketone	ESQ_OB	FD_AV	7.62E-11
COMSTK	Methyl mercury	ESQ_OB	FD_AV	8.00E-10
COMSTK	Naphthalene	ESQ_OB	FD_AV	0.00E+00
COMSTK	n-Hexane	ESQ_OB	FD_AV	0.00E+00
COMSTK	Nickel compounds	ESQ_OB	FD_AV	3.23E-12
COMSTK	Nitrogen dioxide	ESQ_OB	FD_AV	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_OB	FD_AV	7.63E-09
COMSTK	Phosphoric acid	ESQ_OB	FD_AV	0.00E+00
COMSTK	Selenium compounds	ESQ_OB	FD_AV	2.70E-12
COMSTK	Silver compounds	ESQ_OB	FD_AV	2.47E-11
COMSTK	Styrene	ESQ_OB	FD_AV	0.00E+00
COMSTK	Sulfur dioxide	ESQ_OB	FD_AV	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_OB	FD_AV	0.00E+00
COMSTK	Thallium compounds	ESQ_OB	FD_AV	3.75E-11
COMSTK	Tin compounds	ESQ_OB	FD_AV	2.18E-11
COMSTK	Toluene	ESQ_OB	FD_AV	0.00E+00
COMSTK	trans-1,3-Dichloropropene	ESQ_OB	FD_AV	0.00E+00
COMSTK	Tribromomethane	ESQ_OB	FD_AV	0.00E+00
COMSTK	Trichloroethylene	ESQ_OB	FD_AV	0.00E+00
COMSTK	Trichlorofluoromethane	ESQ_OB	FD_AV	0.00E+00
COMSTK	Vanadium compounds	ESQ_OB	FD_AV	7.51E-13
COMSTK	Vinyl acetate	ESQ_OB	FD_AV	0.00E+00
COMSTK	Vinyl chloride	ESQ_OB	FD_AV	0.00E+00
COMSTK	VX	ESQ_OB	FD_AV	0.00E+00
COMSTK	Xylene (mixed)	ESQ_OB	FD_AV	0.00E+00
COMSTK	Zinc compounds	ESQ_OB	FD_AV	3.07E-11
LABSTK	GB	ESQ_OB	FD_AV	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	ESQ_OB	FD_AV	0.00E+00
LABSTK	VX	ESQ_OB	FD_AV	0.00E+00
MDBSTK	GB	ESQ_OB	FD_AV	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	ESQ_OB	FD_AV	0.00E+00
MDBSTK	VX	ESQ_OB	FD_AV	0.00E+00
BRASTK	Antimony compounds	ESQ_CSB	FD_BI	0.00E+00
BRASTK	Arsenic compounds	ESQ_CSB	FD_BI	9.01E-10
BRASTK	Barium compounds	ESQ_CSB	FD_BI	2.36E-09
BRASTK	Beryllium compounds	ESQ_CSB	FD_BI	0.00E+00
BRASTK	Boron compounds	ESQ_CSB	FD_BI	4.25E-09
BRASTK	Cadmium compounds	ESQ_CSB	FD_BI	8.36E-09
BRASTK	Chromium compounds	ESQ_CSB	FD_BI	5.80E-10
BRASTK	Cobalt compounds	ESQ_CSB	FD_BI	7.18E-11
BRASTK	Copper compounds	ESQ_CSB	FD_BI	5.05E-12
BRASTK	EA 2192	ESQ_CSB	FD_BI	0.00E+00
BRASTK	GB	ESQ_CSB	FD_BI	0.00E+00
BRASTK	Lead compounds	ESQ_CSB	FD_BI	5.23E-10
BRASTK	Manganese compounds	ESQ_CSB	FD_BI	7.82E-11

Source	COPC	Guild	Diet Type	ESQ
BRASTK	Mercuric chloride	ESQ_CSB	FD_BI	7.66E-07
BRASTK	Methyl mercury	ESQ_CSB	FD_BI	2.54E-07
BRASTK	Nickel compounds	ESQ_CSB	FD_BI	7.72E-10
BRASTK	o-Cresol	ESQ_CSB	FD_BI	0.00E+00
BRASTK	Phosphoric acid	ESQ_CSB	FD_BI	0.00E+00
BRASTK	Selenium compounds	ESQ_CSB	FD_BI	5.65E-09
BRASTK	Silver compounds	ESQ_CSB	FD_BI	1.09E-08
BRASTK	Sulfur mustard (or H/HD)	ESQ_CSB	FD_BI	0.00E+00
BRASTK	Thallium compounds	ESQ_CSB	FD_BI	2.44E-08
BRASTK	Tin compounds	ESQ_CSB	FD_BI	2.19E-09
BRASTK	Vanadium compounds	ESQ_CSB	FD_BI	3.15E-10
BRASTK	VX	ESQ_CSB	FD_BI	0.00E+00
BRASTK	Zinc compounds	ESQ_CSB	FD_BI	4.07E-09
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_CSB	FD_BI	0.00E+00
COMSTK	1,1-Dichloroethylene	ESQ_CSB	FD_BI	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_CSB	FD_BI	1.27E-08
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_CSB	FD_BI	1.55E-09
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_CSB	FD_BI	1.48E-07
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_CSB	FD_BI	1.25E-06
COMSTK	1,2-Dichlorobenzene	ESQ_CSB	FD_BI	0.00E+00
COMSTK	1,4-Dichlorobenzene	ESQ_CSB	FD_BI	0.00E+00
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_CSB	FD_BI	9.57E-14
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_CSB	FD_BI	7.31E-05
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_CSB	FD_BI	4.42E-05
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_CSB	FD_BI	3.85E-06
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_CSB	FD_BI	6.99E-06
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_CSB	FD_BI	1.70E-04
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_CSB	FD_BI	9.20E-08
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_CSB	FD_BI	5.21E-02
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_CSB	FD_BI	5.00E-05
COMSTK	2,4,6-Trinitrotoluene	ESQ_CSB	FD_BI	5.04E-10
COMSTK	2,4-Dinitrotoluene	ESQ_CSB	FD_BI	7.20E-08
COMSTK	2-Methylnaphthalene	ESQ_CSB	FD_BI	0.00E+00
COMSTK	2-Xylene	ESQ_CSB	FD_BI	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_CSB	FD_BI	1.16E-02
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_CSB	FD_BI	6.54E-11
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_CSB	FD_BI	9.22E-11
COMSTK	Acetone	ESQ_CSB	FD_BI	1.38E-11
COMSTK	Aluminum compounds	ESQ_CSB	FD_BI	5.06E-11
COMSTK	Antimony compounds	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Arsenic compounds	ESQ_CSB	FD_BI	9.29E-11
COMSTK	Barium compounds	ESQ_CSB	FD_BI	2.95E-10
COMSTK	Benzaldehyde	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Benzene	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Benzoic acid	ESQ_CSB	FD_BI	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Benzyl alcohol	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Beryllium compounds	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_CSB	FD_BI	1.81E-02
COMSTK	Boron compounds	ESQ_CSB	FD_BI	2.60E-10
COMSTK	Bromochloromethane	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Bromodichloromethane	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Bromoethane	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Cadmium compounds	ESQ_CSB	FD_BI	1.24E-10
COMSTK	Carbon disulfide	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Carbon tetrachloride	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Chlorine	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Chlorobenzene	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Chlorodibromomethane	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Chloroform	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Chromium compounds	ESQ_CSB	FD_BI	3.64E-11
COMSTK	cis-1,3-Dichloropropene	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Cobalt compounds	ESQ_CSB	FD_BI	6.06E-13
COMSTK	Composirte TOE - Nonvolatile	ESQ_CSB	FD_BI	2.63E+04
COMSTK	Composirte TOE - Semivolatile	ESQ_CSB	FD_BI	1.48E-05
COMSTK	Composite TOE - Volatile	ESQ_CSB	FD_BI	8.89E-07
COMSTK	Copper compounds	ESQ_CSB	FD_BI	1.34E-14
COMSTK	Dibutyl phthalate	ESQ_CSB	FD_BI	7.95E-06
COMSTK	Dichlorodifluoromethane	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Dichloromethane	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Diethyl phthalate	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Dimethylphthalate	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Ethyl chloride	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Ethylbenzene	ESQ_CSB	FD_BI	0.00E+00
COMSTK	GB	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Hydrochloric acid	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Hydrofluoric acid	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Lead compounds	ESQ_CSB	FD_BI	1.61E-09
COMSTK	m,p-Xylene	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Manganese compounds	ESQ_CSB	FD_BI	2.05E-12
COMSTK	Mercuric chloride	ESQ_CSB	FD_BI	2.67E-08
COMSTK	Methyl bromide	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Methyl chloride	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Methyl ethyl ketone	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Methyl iodide	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Methyl isobutyl ketone	ESQ_CSB	FD_BI	3.63E-11
COMSTK	Methyl mercury	ESQ_CSB	FD_BI	9.08E-09
COMSTK	Naphthalene	ESQ_CSB	FD_BI	0.00E+00
COMSTK	n-Hexane	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Nickel compounds	ESQ_CSB	FD_BI	2.06E-11
COMSTK	Nitrogen dioxide	ESQ_CSB	FD_BI	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_CSB	FD_BI	5.26E-07
COMSTK	Phosphoric acid	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Selenium compounds	ESQ_CSB	FD_BI	8.99E-11
COMSTK	Silver compounds	ESQ_CSB	FD_BI	1.74E-10
COMSTK	Styrene	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Sulfur dioxide	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Thallium compounds	ESQ_CSB	FD_BI	4.42E-09
COMSTK	Tin compounds	ESQ_CSB	FD_BI	6.53E-11
COMSTK	Toluene	ESQ_CSB	FD_BI	0.00E+00
COMSTK	trans-1,3-Dichloropropene	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Tribromomethane	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Trichloroethylene	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Trichlorofluoromethane	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Vanadium compounds	ESQ_CSB	FD_BI	2.25E-12
COMSTK	Vinyl acetate	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Vinyl chloride	ESQ_CSB	FD_BI	0.00E+00
COMSTK	VX	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Xylene (mixed)	ESQ_CSB	FD_BI	0.00E+00
COMSTK	Zinc compounds	ESQ_CSB	FD_BI	3.35E-09
LABSTK	GB	ESQ_CSB	FD_BI	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	ESQ_CSB	FD_BI	0.00E+00
LABSTK	VX	ESQ_CSB	FD_BI	0.00E+00
MDBSTK	GB	ESQ_CSB	FD_BI	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	ESQ_CSB	FD_BI	0.00E+00
MDBSTK	VX	ESQ_CSB	FD_BI	0.00E+00
BRASTK	Antimony compounds	ESQ_OB	FD_BI	0.00E+00
BRASTK	Arsenic compounds	ESQ_OB	FD_BI	2.62E-10
BRASTK	Barium compounds	ESQ_OB	FD_BI	7.02E-10
BRASTK	Beryllium compounds	ESQ_OB	FD_BI	0.00E+00
BRASTK	Boron compounds	ESQ_OB	FD_BI	1.42E-09
BRASTK	Cadmium compounds	ESQ_OB	FD_BI	2.36E-09
BRASTK	Chromium compounds	ESQ_OB	FD_BI	9.79E-11
BRASTK	Cobalt compounds	ESQ_OB	FD_BI	2.40E-11
BRASTK	Copper compounds	ESQ_OB	FD_BI	1.69E-12
BRASTK	EA 2192	ESQ_OB	FD_BI	0.00E+00
BRASTK	GB	ESQ_OB	FD_BI	0.00E+00
BRASTK	Lead compounds	ESQ_OB	FD_BI	9.03E-11
BRASTK	Manganese compounds	ESQ_OB	FD_BI	2.62E-11
BRASTK	Mercuric chloride	ESQ_OB	FD_BI	1.47E-07
BRASTK	Methyl mercury	ESQ_OB	FD_BI	7.18E-08
BRASTK	Nickel compounds	ESQ_OB	FD_BI	1.21E-10
BRASTK	o-Cresol	ESQ_OB	FD_BI	0.00E+00
BRASTK	Phosphoric acid	ESQ_OB	FD_BI	0.00E+00
BRASTK	Selenium compounds	ESQ_OB	FD_BI	1.69E-09

Source	COPC	Guild	Diet Type	ESQ
BRASTK	Silver compounds	ESQ_OB	FD_BI	3.24E-09
BRASTK	Sulfur mustard (or H/HD)	ESQ_OB	FD_BI	0.00E+00
BRASTK	Thallium compounds	ESQ_OB	FD_BI	7.24E-09
BRASTK	Tin compounds	ESQ_OB	FD_BI	7.32E-10
BRASTK	Vanadium compounds	ESQ_OB	FD_BI	1.05E-10
BRASTK	VX	ESQ_OB	FD_BI	0.00E+00
BRASTK	Zinc compounds	ESQ_OB	FD_BI	1.19E-09
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_OB	FD_BI	0.00E+00
COMSTK	1,1-Dichloroethylene	ESQ_OB	FD_BI	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_OB	FD_BI	3.98E-09
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_OB	FD_BI	4.87E-10
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_OB	FD_BI	4.66E-08
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_OB	FD_BI	3.93E-07
COMSTK	1,2-Dichlorobenzene	ESQ_OB	FD_BI	0.00E+00
COMSTK	1,4-Dichlorobenzene	ESQ_OB	FD_BI	0.00E+00
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_OB	FD_BI	3.20E-14
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_OB	FD_BI	2.30E-05
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_OB	FD_BI	1.39E-05
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_OB	FD_BI	1.21E-06
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_OB	FD_BI	2.20E-06
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_OB	FD_BI	5.34E-05
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_OB	FD_BI	2.89E-08
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_OB	FD_BI	1.64E-02
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_OB	FD_BI	1.57E-05
COMSTK	2,4,6-Trinitrotoluene	ESQ_OB	FD_BI	1.55E-10
COMSTK	2,4-Dinitrotoluene	ESQ_OB	FD_BI	2.26E-08
COMSTK	2-Methylnaphthalene	ESQ_OB	FD_BI	0.00E+00
COMSTK	2-Xylene	ESQ_OB	FD_BI	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_OB	FD_BI	3.63E-03
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_OB	FD_BI	2.19E-11
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_OB	FD_BI	3.08E-11
COMSTK	Acetone	ESQ_OB	FD_BI	4.61E-12
COMSTK	Aluminum compounds	ESQ_OB	FD_BI	1.69E-11
COMSTK	Antimony compounds	ESQ_OB	FD_BI	0.00E+00
COMSTK	Arsenic compounds	ESQ_OB	FD_BI	2.70E-11
COMSTK	Barium compounds	ESQ_OB	FD_BI	8.75E-11
COMSTK	Benzaldehyde	ESQ_OB	FD_BI	0.00E+00
COMSTK	Benzene	ESQ_OB	FD_BI	0.00E+00
COMSTK	Benzoic acid	ESQ_OB	FD_BI	0.00E+00
COMSTK	Benzyl alcohol	ESQ_OB	FD_BI	0.00E+00
COMSTK	Beryllium compounds	ESQ_OB	FD_BI	0.00E+00
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_OB	FD_BI	5.68E-03
COMSTK	Boron compounds	ESQ_OB	FD_BI	8.69E-11
COMSTK	Bromochloromethane	ESQ_OB	FD_BI	0.00E+00
COMSTK	Bromodichloromethane	ESQ_OB	FD_BI	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Bromoethane	ESQ_OB	FD_BI	0.00E+00
COMSTK	Cadmium compounds	ESQ_OB	FD_BI	3.51E-11
COMSTK	Carbon disulfide	ESQ_OB	FD_BI	0.00E+00
COMSTK	Carbon tetrachloride	ESQ_OB	FD_BI	0.00E+00
COMSTK	Chlorine	ESQ_OB	FD_BI	0.00E+00
COMSTK	Chlorobenzene	ESQ_OB	FD_BI	0.00E+00
COMSTK	Chlorodibromomethane	ESQ_OB	FD_BI	0.00E+00
COMSTK	Chloroform	ESQ_OB	FD_BI	0.00E+00
COMSTK	Chromium compounds	ESQ_OB	FD_BI	6.14E-12
COMSTK	cis-1,3-Dichloropropene	ESQ_OB	FD_BI	0.00E+00
COMSTK	Cobalt compounds	ESQ_OB	FD_BI	2.03E-13
COMSTK	Composirte TOE - Nonvolatile	ESQ_OB	FD_BI	8.26E+03
COMSTK	Composirte TOE - Semivolatile	ESQ_OB	FD_BI	4.63E-06
COMSTK	Composite TOE - Volatile	ESQ_OB	FD_BI	2.76E-07
COMSTK	Copper compounds	ESQ_OB	FD_BI	4.48E-15
COMSTK	Dibutyl phthalate	ESQ_OB	FD_BI	2.50E-06
COMSTK	Dichlorodifluoromethane	ESQ_OB	FD_BI	0.00E+00
COMSTK	Dichloromethane	ESQ_OB	FD_BI	0.00E+00
COMSTK	Diethyl phthalate	ESQ_OB	FD_BI	0.00E+00
COMSTK	Dimethylphthalate	ESQ_OB	FD_BI	0.00E+00
COMSTK	Ethyl chloride	ESQ_OB	FD_BI	0.00E+00
COMSTK	Ethylbenzene	ESQ_OB	FD_BI	0.00E+00
COMSTK	GB	ESQ_OB	FD_BI	0.00E+00
COMSTK	Hydrochloric acid	ESQ_OB	FD_BI	0.00E+00
COMSTK	Hydrofluoric acid	ESQ_OB	FD_BI	0.00E+00
COMSTK	Lead compounds	ESQ_OB	FD_BI	2.78E-10
COMSTK	m,p-Xylene	ESQ_OB	FD_BI	0.00E+00
COMSTK	Manganese compounds	ESQ_OB	FD_BI	6.85E-13
COMSTK	Mercuric chloride	ESQ_OB	FD_BI	5.11E-09
COMSTK	Methyl bromide	ESQ_OB	FD_BI	0.00E+00
COMSTK	Methyl chloride	ESQ_OB	FD_BI	0.00E+00
COMSTK	Methyl ethyl ketone	ESQ_OB	FD_BI	0.00E+00
COMSTK	Methyl iodide	ESQ_OB	FD_BI	0.00E+00
COMSTK	Methyl isobutyl ketone	ESQ_OB	FD_BI	1.12E-11
COMSTK	Methyl mercury	ESQ_OB	FD_BI	2.57E-09
COMSTK	Naphthalene	ESQ_OB	FD_BI	0.00E+00
COMSTK	n-Hexane	ESQ_OB	FD_BI	0.00E+00
COMSTK	Nickel compounds	ESQ_OB	FD_BI	3.23E-12
COMSTK	Nitrogen dioxide	ESQ_OB	FD_BI	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_OB	FD_BI	1.50E-07
COMSTK	Phosphoric acid	ESQ_OB	FD_BI	0.00E+00
COMSTK	Selenium compounds	ESQ_OB	FD_BI	2.69E-11
COMSTK	Silver compounds	ESQ_OB	FD_BI	5.17E-11
COMSTK	Styrene	ESQ_OB	FD_BI	0.00E+00
COMSTK	Sulfur dioxide	ESQ_OB	FD_BI	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Sulfur mustard (or H/HD)	ESQ_OB	FD_BI	0.00E+00
COMSTK	Thallium compounds	ESQ_OB	FD_BI	1.31E-09
COMSTK	Tin compounds	ESQ_OB	FD_BI	2.18E-11
COMSTK	Toluene	ESQ_OB	FD_BI	0.00E+00
COMSTK	trans-1,3-Dichloropropene	ESQ_OB	FD_BI	0.00E+00
COMSTK	Tribromomethane	ESQ_OB	FD_BI	0.00E+00
COMSTK	Trichloroethylene	ESQ_OB	FD_BI	0.00E+00
COMSTK	Trichlorofluoromethane	ESQ_OB	FD_BI	0.00E+00
COMSTK	Vanadium compounds	ESQ_OB	FD_BI	7.51E-13
COMSTK	Vinyl acetate	ESQ_OB	FD_BI	0.00E+00
COMSTK	Vinyl chloride	ESQ_OB	FD_BI	0.00E+00
COMSTK	VX	ESQ_OB	FD_BI	0.00E+00
COMSTK	Xylene (mixed)	ESQ_OB	FD_BI	0.00E+00
COMSTK	Zinc compounds	ESQ_OB	FD_BI	9.82E-10
LABSTK	GB	ESQ_OB	FD_BI	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	ESQ_OB	FD_BI	0.00E+00
LABSTK	VX	ESQ_OB	FD_BI	0.00E+00
MDBSTK	GB	ESQ_OB	FD_BI	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	ESQ_OB	FD_BI	0.00E+00
MDBSTK	VX	ESQ_OB	FD_BI	0.00E+00
BRASTK	Antimony compounds	ESQ_OM	FD_BI	1.65E-08
BRASTK	Arsenic compounds	ESQ_OM	FD_BI	7.09E-10
BRASTK	Barium compounds	ESQ_OM	FD_BI	3.53E-10
BRASTK	Beryllium compounds	ESQ_OM	FD_BI	3.87E-09
BRASTK	Boron compounds	ESQ_OM	FD_BI	2.06E-09
BRASTK	Cadmium compounds	ESQ_OM	FD_BI	5.65E-09
BRASTK	Chromium compounds	ESQ_OM	FD_BI	1.46E-10
BRASTK	Cobalt compounds	ESQ_OM	FD_BI	3.51E-11
BRASTK	Copper compounds	ESQ_OM	FD_BI	1.72E-12
BRASTK	EA 2192	ESQ_OM	FD_BI	0.00E+00
BRASTK	GB	ESQ_OM	FD_BI	1.54E-07
BRASTK	Lead compounds	ESQ_OM	FD_BI	4.07E-11
BRASTK	Manganese compounds	ESQ_OM	FD_BI	1.28E-10
BRASTK	Mercuric chloride	ESQ_OM	FD_BI	8.41E-08
BRASTK	Methyl mercury	ESQ_OM	FD_BI	1.91E-07
BRASTK	Nickel compounds	ESQ_OM	FD_BI	6.36E-10
BRASTK	o-Cresol	ESQ_OM	FD_BI	4.97E-10
BRASTK	Phosphoric acid	ESQ_OM	FD_BI	4.14E-07
BRASTK	Selenium compounds	ESQ_OM	FD_BI	4.26E-09
BRASTK	Silver compounds	ESQ_OM	FD_BI	1.36E-09
BRASTK	Sulfur mustard (or H/HD)	ESQ_OM	FD_BI	0.00E+00
BRASTK	Thallium compounds	ESQ_OM	FD_BI	4.28E-07
BRASTK	Tin compounds	ESQ_OM	FD_BI	3.00E-10
BRASTK	Vanadium compounds	ESQ_OM	FD_BI	1.22E-11
BRASTK	VX	ESQ_OM	FD_BI	1.33E-03

Source	COPC	Guild	Diet Type	ESQ
BRASTK	Zinc compounds	ESQ_OM	FD_BI	1.35E-10
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_OM	FD_BI	4.16E-14
COMSTK	1,1-Dichloroethylene	ESQ_OM	FD_BI	4.50E-14
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_OM	FD_BI	2.08E-07
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_OM	FD_BI	2.55E-08
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_OM	FD_BI	8.12E-07
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_OM	FD_BI	6.85E-06
COMSTK	1,2-Dichlorobenzene	ESQ_OM	FD_BI	2.41E-12
COMSTK	1,4-Dichlorobenzene	ESQ_OM	FD_BI	1.24E-11
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_OM	FD_BI	1.90E-13
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_OM	FD_BI	1.20E-04
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_OM	FD_BI	7.28E-05
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_OM	FD_BI	6.34E-05
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_OM	FD_BI	1.15E-04
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_OM	FD_BI	2.80E-04
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_OM	FD_BI	1.52E-06
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_OM	FD_BI	2.04E-03
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_OM	FD_BI	2.74E-04
COMSTK	2,4,6-Trinitrotoluene	ESQ_OM	FD_BI	6.86E-10
COMSTK	2,4-Dinitrotoluene	ESQ_OM	FD_BI	4.21E-09
COMSTK	2-Methylnaphthalene	ESQ_OM	FD_BI	4.70E-09
COMSTK	2-Xylene	ESQ_OM	FD_BI	3.80E-10
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_OM	FD_BI	1.27E-04
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_OM	FD_BI	1.30E-12
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_OM	FD_BI	6.08E-10
COMSTK	Acetone	ESQ_OM	FD_BI	3.37E-11
COMSTK	Aluminum compounds	ESQ_OM	FD_BI	1.35E-09
COMSTK	Antimony compounds	ESQ_OM	FD_BI	5.99E-09
COMSTK	Arsenic compounds	ESQ_OM	FD_BI	7.30E-11
COMSTK	Barium compounds	ESQ_OM	FD_BI	4.40E-11
COMSTK	Benzaldehyde	ESQ_OM	FD_BI	1.30E-09
COMSTK	Benzene	ESQ_OM	FD_BI	3.37E-12
COMSTK	Benzoic acid	ESQ_OM	FD_BI	1.14E-10
COMSTK	Benzyl alcohol	ESQ_OM	FD_BI	9.93E-11
COMSTK	Beryllium compounds	ESQ_OM	FD_BI	8.06E-11
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_OM	FD_BI	4.26E-04
COMSTK	Boron compounds	ESQ_OM	FD_BI	1.26E-10
COMSTK	Bromochloromethane	ESQ_OM	FD_BI	3.86E-15
COMSTK	Bromodichloromethane	ESQ_OM	FD_BI	1.30E-11
COMSTK	Bromoethane	ESQ_OM	FD_BI	8.70E-14
COMSTK	Cadmium compounds	ESQ_OM	FD_BI	8.41E-11
COMSTK	Carbon disulfide	ESQ_OM	FD_BI	1.28E-11
COMSTK	Carbon tetrachloride	ESQ_OM	FD_BI	7.36E-12
COMSTK	Chlorine	ESQ_OM	FD_BI	0.00E+00
COMSTK	Chlorobenzene	ESQ_OM	FD_BI	2.15E-12

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Chlorodibromomethane	ESQ_OM	FD_BI	6.87E-11
COMSTK	Chloroform	ESQ_OM	FD_BI	1.36E-12
COMSTK	Chromium compounds	ESQ_OM	FD_BI	9.17E-12
COMSTK	cis-1,3-Dichloropropene	ESQ_OM	FD_BI	0.00E+00
COMSTK	Cobalt compounds	ESQ_OM	FD_BI	2.97E-13
COMSTK	Composirte TOE - Nonvolatile	ESQ_OM	FD_BI	2.42E+02
COMSTK	Composirte TOE - Semivolatile	ESQ_OM	FD_BI	4.50E-07
COMSTK	Composite TOE - Volatile	ESQ_OM	FD_BI	2.31E-07
COMSTK	Copper compounds	ESQ_OM	FD_BI	4.56E-15
COMSTK	Dibutyl phthalate	ESQ_OM	FD_BI	1.87E-08
COMSTK	Dichlorodifluoromethane	ESQ_OM	FD_BI	0.00E+00
COMSTK	Dichloromethane	ESQ_OM	FD_BI	7.50E-13
COMSTK	Diethyl phthalate	ESQ_OM	FD_BI	2.38E-13
COMSTK	Dimethylphthalate	ESQ_OM	FD_BI	1.04E-14
COMSTK	Ethyl chloride	ESQ_OM	FD_BI	0.00E+00
COMSTK	Ethylbenzene	ESQ_OM	FD_BI	1.22E-11
COMSTK	GB	ESQ_OM	FD_BI	6.92E-09
COMSTK	Hydrochloric acid	ESQ_OM	FD_BI	3.12E-09
COMSTK	Hydrofluoric acid	ESQ_OM	FD_BI	0.00E+00
COMSTK	Lead compounds	ESQ_OM	FD_BI	1.25E-10
COMSTK	m,p-Xylene	ESQ_OM	FD_BI	9.80E-10
COMSTK	Manganese compounds	ESQ_OM	FD_BI	3.36E-12
COMSTK	Mercuric chloride	ESQ_OM	FD_BI	2.93E-09
COMSTK	Methyl bromide	ESQ_OM	FD_BI	5.97E-12
COMSTK	Methyl chloride	ESQ_OM	FD_BI	1.67E-13
COMSTK	Methyl ethyl ketone	ESQ_OM	FD_BI	9.42E-15
COMSTK	Methyl iodide	ESQ_OM	FD_BI	1.46E-12
COMSTK	Methyl isobutyl ketone	ESQ_OM	FD_BI	5.91E-13
COMSTK	Methyl mercury	ESQ_OM	FD_BI	6.85E-09
COMSTK	Naphthalene	ESQ_OM	FD_BI	6.94E-11
COMSTK	n-Hexane	ESQ_OM	FD_BI	2.49E-08
COMSTK	Nickel compounds	ESQ_OM	FD_BI	1.69E-11
COMSTK	Nitrogen dioxide	ESQ_OM	FD_BI	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_OM	FD_BI	2.49E-07
COMSTK	Phosphoric acid	ESQ_OM	FD_BI	3.53E-08
COMSTK	Selenium compounds	ESQ_OM	FD_BI	6.78E-11
COMSTK	Silver compounds	ESQ_OM	FD_BI	2.18E-11
COMSTK	Styrene	ESQ_OM	FD_BI	2.43E-10
COMSTK	Sulfur dioxide	ESQ_OM	FD_BI	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_OM	FD_BI	0.00E+00
COMSTK	Thallium compounds	ESQ_OM	FD_BI	7.77E-08
COMSTK	Tin compounds	ESQ_OM	FD_BI	8.94E-12
COMSTK	Toluene	ESQ_OM	FD_BI	6.17E-12
COMSTK	trans-1,3-Dichloropropene	ESQ_OM	FD_BI	0.00E+00
COMSTK	Tribromomethane	ESQ_OM	FD_BI	6.18E-12

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Trichloroethylene	ESQ_OM	FD_BI	1.53E-12
COMSTK	Trichlorofluoromethane	ESQ_OM	FD_BI	0.00E+00
COMSTK	Vanadium compounds	ESQ_OM	FD_BI	8.67E-14
COMSTK	Vinyl acetate	ESQ_OM	FD_BI	1.20E-14
COMSTK	Vinyl chloride	ESQ_OM	FD_BI	2.46E-12
COMSTK	VX	ESQ_OM	FD_BI	3.63E-05
COMSTK	Xylene (mixed)	ESQ_OM	FD_BI	2.22E-09
COMSTK	Zinc compounds	ESQ_OM	FD_BI	1.11E-10
LABSTK	GB	ESQ_OM	FD_BI	1.74E-08
LABSTK	Sulfur mustard (or H/HD)	ESQ_OM	FD_BI	0.00E+00
LABSTK	VX	ESQ_OM	FD_BI	1.51E-04
MDBSTK	GB	ESQ_OM	FD_BI	7.34E-08
MDBSTK	Sulfur mustard (or H/HD)	ESQ_OM	FD_BI	0.00E+00
MDBSTK	VX	ESQ_OM	FD_BI	6.33E-04
BRASTK	Antimony compounds	ESQ_CB	FD_CF	0.00E+00
BRASTK	Arsenic compounds	ESQ_CB	FD_CF	1.02E-09
BRASTK	Barium compounds	ESQ_CB	FD_CF	7.86E-09
BRASTK	Beryllium compounds	ESQ_CB	FD_CF	0.00E+00
BRASTK	Boron compounds	ESQ_CB	FD_CF	9.04E-10
BRASTK	Cadmium compounds	ESQ_CB	FD_CF	3.96E-08
BRASTK	Chromium compounds	ESQ_CB	FD_CF	1.07E-09
BRASTK	Cobalt compounds	ESQ_CB	FD_CF	1.53E-11
BRASTK	Copper compounds	ESQ_CB	FD_CF	2.47E-09
BRASTK	EA 2192	ESQ_CB	FD_CF	0.00E+00
BRASTK	GB	ESQ_CB	FD_CF	0.00E+00
BRASTK	Lead compounds	ESQ_CB	FD_CF	5.82E-12
BRASTK	Manganese compounds	ESQ_CB	FD_CF	1.66E-11
BRASTK	Mercuric chloride	ESQ_CB	FD_CF	8.78E-08
BRASTK	Methyl mercury	ESQ_CB	FD_CF	3.62E-07
BRASTK	Nickel compounds	ESQ_CB	FD_CF	1.80E-09
BRASTK	o-Cresol	ESQ_CB	FD_CF	0.00E+00
BRASTK	Phosphoric acid	ESQ_CB	FD_CF	0.00E+00
BRASTK	Selenium compounds	ESQ_CB	FD_CF	2.98E-08
BRASTK	Silver compounds	ESQ_CB	FD_CF	2.41E-08
BRASTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_CF	0.00E+00
BRASTK	Thallium compounds	ESQ_CB	FD_CF	7.41E-07
BRASTK	Tin compounds	ESQ_CB	FD_CF	4.65E-10
BRASTK	Vanadium compounds	ESQ_CB	FD_CF	6.69E-11
BRASTK	VX	ESQ_CB	FD_CF	0.00E+00
BRASTK	Zinc compounds	ESQ_CB	FD_CF	3.61E-08
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_CB	FD_CF	0.00E+00
COMSTK	1,1-Dichloroethylene	ESQ_CB	FD_CF	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_CB	FD_CF	5.29E-14
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_CB	FD_CF	8.42E-14
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_CB	FD_CF	1.10E-12

Source	COPC	Guild	Diet Type	ESQ
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_CB	FD_CF	2.13E-12
COMSTK	1,2-Dichlorobenzene	ESQ_CB	FD_CF	0.00E+00
COMSTK	1,4-Dichlorobenzene	ESQ_CB	FD_CF	0.00E+00
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_CB	FD_CF	2.03E-14
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_CB	FD_CF	7.44E-10
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_CB	FD_CF	4.72E-09
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_CB	FD_CF	5.53E-11
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_CB	FD_CF	3.20E-10
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_CB	FD_CF	1.12E-08
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_CB	FD_CF	3.85E-14
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_CB	FD_CF	8.22E-06
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_CB	FD_CF	3.98E-10
COMSTK	2,4,6-Trinitrotoluene	ESQ_CB	FD_CF	3.11E-10
COMSTK	2,4-Dinitrotoluene	ESQ_CB	FD_CF	1.57E-09
COMSTK	2-Methylnaphthalene	ESQ_CB	FD_CF	0.00E+00
COMSTK	2-Xylene	ESQ_CB	FD_CF	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_CB	FD_CF	1.72E-06
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_CB	FD_CF	1.39E-11
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_CB	FD_CF	1.96E-11
COMSTK	Acetone	ESQ_CB	FD_CF	3.86E-12
COMSTK	Aluminum compounds	ESQ_CB	FD_CF	1.05E-10
COMSTK	Antimony compounds	ESQ_CB	FD_CF	0.00E+00
COMSTK	Arsenic compounds	ESQ_CB	FD_CF	1.05E-10
COMSTK	Barium compounds	ESQ_CB	FD_CF	9.79E-10
COMSTK	Benzaldehyde	ESQ_CB	FD_CF	0.00E+00
COMSTK	Benzene	ESQ_CB	FD_CF	0.00E+00
COMSTK	Benzoic acid	ESQ_CB	FD_CF	0.00E+00
COMSTK	Benzyl alcohol	ESQ_CB	FD_CF	0.00E+00
COMSTK	Beryllium compounds	ESQ_CB	FD_CF	0.00E+00
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_CB	FD_CF	1.64E-07
COMSTK	Boron compounds	ESQ_CB	FD_CF	5.53E-11
COMSTK	Bromochloromethane	ESQ_CB	FD_CF	0.00E+00
COMSTK	Bromodichloromethane	ESQ_CB	FD_CF	0.00E+00
COMSTK	Bromoethane	ESQ_CB	FD_CF	0.00E+00
COMSTK	Cadmium compounds	ESQ_CB	FD_CF	5.90E-10
COMSTK	Carbon disulfide	ESQ_CB	FD_CF	0.00E+00
COMSTK	Carbon tetrachloride	ESQ_CB	FD_CF	0.00E+00
COMSTK	Chlorine	ESQ_CB	FD_CF	0.00E+00
COMSTK	Chlorobenzene	ESQ_CB	FD_CF	0.00E+00
COMSTK	Chlorodibromomethane	ESQ_CB	FD_CF	0.00E+00
COMSTK	Chloroform	ESQ_CB	FD_CF	0.00E+00
COMSTK	Chromium compounds	ESQ_CB	FD_CF	6.70E-11
COMSTK	cis-1,3-Dichloropropene	ESQ_CB	FD_CF	0.00E+00
COMSTK	Cobalt compounds	ESQ_CB	FD_CF	1.29E-13
COMSTK	Composirte TOE - Nonvolatile	ESQ_CB	FD_CF	1.03E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Composirte TOE - Semivolatile	ESQ_CB	FD_CF	3.32E-07
COMSTK	Composite TOE - Volatile	ESQ_CB	FD_CF	6.41E-10
COMSTK	Copper compounds	ESQ_CB	FD_CF	6.56E-12
COMSTK	Dibutyl phthalate	ESQ_CB	FD_CF	1.74E-07
COMSTK	Dichlorodifluoromethane	ESQ_CB	FD_CF	0.00E+00
COMSTK	Dichloromethane	ESQ_CB	FD_CF	0.00E+00
COMSTK	Diethyl phthalate	ESQ_CB	FD_CF	0.00E+00
COMSTK	Dimethylphthalate	ESQ_CB	FD_CF	0.00E+00
COMSTK	Ethyl chloride	ESQ_CB	FD_CF	0.00E+00
COMSTK	Ethylbenzene	ESQ_CB	FD_CF	0.00E+00
COMSTK	GB	ESQ_CB	FD_CF	0.00E+00
COMSTK	Hydrochloric acid	ESQ_CB	FD_CF	0.00E+00
COMSTK	Hydrofluoric acid	ESQ_CB	FD_CF	0.00E+00
COMSTK	Lead compounds	ESQ_CB	FD_CF	1.79E-11
COMSTK	m,p-Xylene	ESQ_CB	FD_CF	0.00E+00
COMSTK	Manganese compounds	ESQ_CB	FD_CF	4.36E-13
COMSTK	Mercuric chloride	ESQ_CB	FD_CF	3.06E-09
COMSTK	Methyl bromide	ESQ_CB	FD_CF	0.00E+00
COMSTK	Methyl chloride	ESQ_CB	FD_CF	0.00E+00
COMSTK	Methyl ethyl ketone	ESQ_CB	FD_CF	0.00E+00
COMSTK	Methyl iodide	ESQ_CB	FD_CF	0.00E+00
COMSTK	Methyl isobutyl ketone	ESQ_CB	FD_CF	3.82E-11
COMSTK	Methyl mercury	ESQ_CB	FD_CF	1.29E-08
COMSTK	Naphthalene	ESQ_CB	FD_CF	0.00E+00
COMSTK	n-Hexane	ESQ_CB	FD_CF	0.00E+00
COMSTK	Nickel compounds	ESQ_CB	FD_CF	4.78E-11
COMSTK	Nitrogen dioxide	ESQ_CB	FD_CF	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_CB	FD_CF	5.96E-06
COMSTK	Phosphoric acid	ESQ_CB	FD_CF	0.00E+00
COMSTK	Selenium compounds	ESQ_CB	FD_CF	4.74E-10
COMSTK	Silver compounds	ESQ_CB	FD_CF	3.85E-10
COMSTK	Styrene	ESQ_CB	FD_CF	0.00E+00
COMSTK	Sulfur dioxide	ESQ_CB	FD_CF	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_CF	0.00E+00
COMSTK	Thallium compounds	ESQ_CB	FD_CF	1.34E-07
COMSTK	Tin compounds	ESQ_CB	FD_CF	1.39E-11
COMSTK	Toluene	ESQ_CB	FD_CF	0.00E+00
COMSTK	trans-1,3-Dichloropropene	ESQ_CB	FD_CF	0.00E+00
COMSTK	Tribromomethane	ESQ_CB	FD_CF	0.00E+00
COMSTK	Trichloroethylene	ESQ_CB	FD_CF	0.00E+00
COMSTK	Trichlorofluoromethane	ESQ_CB	FD_CF	0.00E+00
COMSTK	Vanadium compounds	ESQ_CB	FD_CF	4.77E-13
COMSTK	Vinyl acetate	ESQ_CB	FD_CF	0.00E+00
COMSTK	Vinyl chloride	ESQ_CB	FD_CF	0.00E+00
COMSTK	VX	ESQ_CB	FD_CF	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Xylene (mixed)	ESQ_CB	FD_CF	0.00E+00
COMSTK	Zinc compounds	ESQ_CB	FD_CF	2.97E-08
LABSTK	GB	ESQ_CB	FD_CF	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_CF	0.00E+00
LABSTK	VX	ESQ_CB	FD_CF	0.00E+00
MDBSTK	GB	ESQ_CB	FD_CF	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_CF	0.00E+00
MDBSTK	VX	ESQ_CB	FD_CF	0.00E+00
BRASTK	Antimony compounds	ESQ_CM	FD_CF	1.11E-08
BRASTK	Arsenic compounds	ESQ_CM	FD_CF	2.81E-09
BRASTK	Barium compounds	ESQ_CM	FD_CF	4.03E-09
BRASTK	Beryllium compounds	ESQ_CM	FD_CF	2.47E-10
BRASTK	Boron compounds	ESQ_CM	FD_CF	2.06E-09
BRASTK	Cadmium compounds	ESQ_CM	FD_CF	9.65E-08
BRASTK	Chromium compounds	ESQ_CM	FD_CF	1.53E-09
BRASTK	Cobalt compounds	ESQ_CM	FD_CF	3.51E-11
BRASTK	Copper compounds	ESQ_CM	FD_CF	2.28E-09
BRASTK	EA 2192	ESQ_CM	FD_CF	0.00E+00
BRASTK	GB	ESQ_CM	FD_CF	1.83E-07
BRASTK	Lead compounds	ESQ_CM	FD_CF	2.84E-12
BRASTK	Manganese compounds	ESQ_CM	FD_CF	1.28E-10
BRASTK	Mercuric chloride	ESQ_CM	FD_CF	5.01E-08
BRASTK	Methyl mercury	ESQ_CM	FD_CF	9.80E-07
BRASTK	Nickel compounds	ESQ_CM	FD_CF	9.07E-09
BRASTK	o-Cresol	ESQ_CM	FD_CF	5.01E-10
BRASTK	Phosphoric acid	ESQ_CM	FD_CF	4.14E-07
BRASTK	Selenium compounds	ESQ_CM	FD_CF	7.62E-08
BRASTK	Silver compounds	ESQ_CM	FD_CF	1.03E-08
BRASTK	Sulfur mustard (or H/HD)	ESQ_CM	FD_CF	0.00E+00
BRASTK	Thallium compounds	ESQ_CM	FD_CF	4.47E-05
BRASTK	Tin compounds	ESQ_CM	FD_CF	3.00E-10
BRASTK	Vanadium compounds	ESQ_CM	FD_CF	1.22E-11
BRASTK	VX	ESQ_CM	FD_CF	1.20E-05
BRASTK	Zinc compounds	ESQ_CM	FD_CF	4.17E-09
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_CM	FD_CF	8.50E-15
COMSTK	1,1-Dichloroethylene	ESQ_CM	FD_CF	1.68E-15
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_CM	FD_CF	3.02E-12
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_CM	FD_CF	4.82E-12
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_CM	FD_CF	2.06E-11
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_CM	FD_CF	3.83E-11
COMSTK	1,2-Dichlorobenzene	ESQ_CM	FD_CF	4.85E-13
COMSTK	1,4-Dichlorobenzene	ESQ_CM	FD_CF	1.53E-12
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_CM	FD_CF	1.90E-13
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_CM	FD_CF	3.99E-09
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_CM	FD_CF	2.53E-08

Source	COPC	Guild	Diet Type	ESQ
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_CM	FD_CF	2.96E-09
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_CM	FD_CF	1.72E-08
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_CM	FD_CF	5.99E-08
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_CM	FD_CF	2.06E-12
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_CM	FD_CF	1.05E-06
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_CM	FD_CF	7.11E-09
COMSTK	2,4,6-Trinitrotoluene	ESQ_CM	FD_CF	1.43E-09
COMSTK	2,4-Dinitrotoluene	ESQ_CM	FD_CF	3.03E-10
COMSTK	2-Methylnaphthalene	ESQ_CM	FD_CF	5.59E-11
COMSTK	2-Xylene	ESQ_CM	FD_CF	1.23E-10
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_CM	FD_CF	6.15E-08
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_CM	FD_CF	1.30E-12
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_CM	FD_CF	6.08E-10
COMSTK	Acetone	ESQ_CM	FD_CF	3.99E-11
COMSTK	Aluminum compounds	ESQ_CM	FD_CF	8.18E-09
COMSTK	Antimony compounds	ESQ_CM	FD_CF	4.02E-09
COMSTK	Arsenic compounds	ESQ_CM	FD_CF	2.90E-10
COMSTK	Barium compounds	ESQ_CM	FD_CF	5.01E-10
COMSTK	Benzaldehyde	ESQ_CM	FD_CF	3.35E-09
COMSTK	Benzene	ESQ_CM	FD_CF	1.32E-13
COMSTK	Benzoic acid	ESQ_CM	FD_CF	2.28E-09
COMSTK	Benzyl alcohol	ESQ_CM	FD_CF	3.65E-10
COMSTK	Beryllium compounds	ESQ_CM	FD_CF	5.13E-12
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_CM	FD_CF	1.27E-08
COMSTK	Boron compounds	ESQ_CM	FD_CF	1.26E-10
COMSTK	Bromochloromethane	ESQ_CM	FD_CF	1.48E-14
COMSTK	Bromodichloromethane	ESQ_CM	FD_CF	5.65E-13
COMSTK	Bromoethane	ESQ_CM	FD_CF	4.28E-14
COMSTK	Cadmium compounds	ESQ_CM	FD_CF	1.44E-09
COMSTK	Carbon disulfide	ESQ_CM	FD_CF	3.92E-13
COMSTK	Carbon tetrachloride	ESQ_CM	FD_CF	3.95E-14
COMSTK	Chlorine	ESQ_CM	FD_CF	0.00E+00
COMSTK	Chlorobenzene	ESQ_CM	FD_CF	6.95E-15
COMSTK	Chlorodibromomethane	ESQ_CM	FD_CF	1.89E-12
COMSTK	Chloroform	ESQ_CM	FD_CF	6.08E-13
COMSTK	Chromium compounds	ESQ_CM	FD_CF	9.59E-11
COMSTK	cis-1,3-Dichloropropene	ESQ_CM	FD_CF	0.00E+00
COMSTK	Cobalt compounds	ESQ_CM	FD_CF	2.97E-13
COMSTK	Composirte TOE - Nonvolatile	ESQ_CM	FD_CF	3.09E-02
COMSTK	Composirte TOE - Semivolatile	ESQ_CM	FD_CF	3.31E-08
COMSTK	Composite TOE - Volatile	ESQ_CM	FD_CF	7.94E-10
COMSTK	Copper compounds	ESQ_CM	FD_CF	6.05E-12
COMSTK	Dibutyl phthalate	ESQ_CM	FD_CF	1.33E-09
COMSTK	Dichlorodifluoromethane	ESQ_CM	FD_CF	0.00E+00
COMSTK	Dichloromethane	ESQ_CM	FD_CF	3.47E-12

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Diethyl phthalate	ESQ_CM	FD_CF	2.33E-13
COMSTK	Dimethylphthalate	ESQ_CM	FD_CF	2.33E-14
COMSTK	Ethyl chloride	ESQ_CM	FD_CF	0.00E+00
COMSTK	Ethylbenzene	ESQ_CM	FD_CF	4.66E-12
COMSTK	GB	ESQ_CM	FD_CF	8.23E-09
COMSTK	Hydrochloric acid	ESQ_CM	FD_CF	3.12E-09
COMSTK	Hydrofluoric acid	ESQ_CM	FD_CF	0.00E+00
COMSTK	Lead compounds	ESQ_CM	FD_CF	8.73E-12
COMSTK	m,p-Xylene	ESQ_CM	FD_CF	9.80E-10
COMSTK	Manganese compounds	ESQ_CM	FD_CF	3.36E-12
COMSTK	Mercuric chloride	ESQ_CM	FD_CF	1.75E-09
COMSTK	Methyl bromide	ESQ_CM	FD_CF	2.66E-11
COMSTK	Methyl chloride	ESQ_CM	FD_CF	6.36E-13
COMSTK	Methyl ethyl ketone	ESQ_CM	FD_CF	2.07E-14
COMSTK	Methyl iodide	ESQ_CM	FD_CF	5.18E-12
COMSTK	Methyl isobutyl ketone	ESQ_CM	FD_CF	2.06E-12
COMSTK	Methyl mercury	ESQ_CM	FD_CF	3.51E-08
COMSTK	Naphthalene	ESQ_CM	FD_CF	4.48E-12
COMSTK	n-Hexane	ESQ_CM	FD_CF	1.37E-09
COMSTK	Nickel compounds	ESQ_CM	FD_CF	2.42E-10
COMSTK	Nitrogen dioxide	ESQ_CM	FD_CF	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_CM	FD_CF	1.01E-05
COMSTK	Phosphoric acid	ESQ_CM	FD_CF	3.53E-08
COMSTK	Selenium compounds	ESQ_CM	FD_CF	1.21E-09
COMSTK	Silver compounds	ESQ_CM	FD_CF	1.65E-10
COMSTK	Styrene	ESQ_CM	FD_CF	2.09E-11
COMSTK	Sulfur dioxide	ESQ_CM	FD_CF	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_CM	FD_CF	0.00E+00
COMSTK	Thallium compounds	ESQ_CM	FD_CF	8.11E-06
COMSTK	Tin compounds	ESQ_CM	FD_CF	8.94E-12
COMSTK	Toluene	ESQ_CM	FD_CF	3.70E-14
COMSTK	trans-1,3-Dichloropropene	ESQ_CM	FD_CF	0.00E+00
COMSTK	Tribromomethane	ESQ_CM	FD_CF	7.56E-14
COMSTK	Trichloroethylene	ESQ_CM	FD_CF	2.32E-14
COMSTK	Trichlorofluoromethane	ESQ_CM	FD_CF	0.00E+00
COMSTK	Vanadium compounds	ESQ_CM	FD_CF	8.67E-14
COMSTK	Vinyl acetate	ESQ_CM	FD_CF	3.90E-14
COMSTK	Vinyl chloride	ESQ_CM	FD_CF	5.31E-12
COMSTK	VX	ESQ_CM	FD_CF	3.27E-07
COMSTK	Xylene (mixed)	ESQ_CM	FD_CF	4.19E-10
COMSTK	Zinc compounds	ESQ_CM	FD_CF	3.43E-09
LABSTK	GB	ESQ_CM	FD_CF	2.07E-08
LABSTK	Sulfur mustard (or H/HD)	ESQ_CM	FD_CF	0.00E+00
LABSTK	VX	ESQ_CM	FD_CF	1.36E-06
MDBSTK	GB	ESQ_CM	FD_CF	8.73E-08

Source	COPC	Guild	Diet Type	ESQ
MDBSTK	Sulfur mustard (or H/HD)	ESQ_CM	FD_CF	0.00E+00
MDBSTK	VX	ESQ_CM	FD_CF	5.70E-06
BRASTK	Antimony compounds	ESQ_CB	FD_HB	0.00E+00
BRASTK	Arsenic compounds	ESQ_CB	FD_HB	4.31E-12
BRASTK	Barium compounds	ESQ_CB	FD_HB	6.88E-12
BRASTK	Beryllium compounds	ESQ_CB	FD_HB	0.00E+00
BRASTK	Boron compounds	ESQ_CB	FD_HB	1.06E-09
BRASTK	Cadmium compounds	ESQ_CB	FD_HB	6.46E-11
BRASTK	Chromium compounds	ESQ_CB	FD_HB	2.33E-11
BRASTK	Cobalt compounds	ESQ_CB	FD_HB	1.79E-11
BRASTK	Copper compounds	ESQ_CB	FD_HB	1.07E-12
BRASTK	EA 2192	ESQ_CB	FD_HB	0.00E+00
BRASTK	GB	ESQ_CB	FD_HB	0.00E+00
BRASTK	Lead compounds	ESQ_CB	FD_HB	5.73E-12
BRASTK	Manganese compounds	ESQ_CB	FD_HB	1.66E-11
BRASTK	Mercuric chloride	ESQ_CB	FD_HB	7.25E-09
BRASTK	Methyl mercury	ESQ_CB	FD_HB	6.13E-10
BRASTK	Nickel compounds	ESQ_CB	FD_HB	1.60E-11
BRASTK	o-Cresol	ESQ_CB	FD_HB	0.00E+00
BRASTK	Phosphoric acid	ESQ_CB	FD_HB	0.00E+00
BRASTK	Selenium compounds	ESQ_CB	FD_HB	1.02E-10
BRASTK	Silver compounds	ESQ_CB	FD_HB	9.78E-11
BRASTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_HB	0.00E+00
BRASTK	Thallium compounds	ESQ_CB	FD_HB	5.45E-11
BRASTK	Tin compounds	ESQ_CB	FD_HB	5.45E-10
BRASTK	Vanadium compounds	ESQ_CB	FD_HB	6.69E-11
BRASTK	VX	ESQ_CB	FD_HB	0.00E+00
BRASTK	Zinc compounds	ESQ_CB	FD_HB	1.20E-11
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_CB	FD_HB	0.00E+00
COMSTK	1,1-Dichloroethylene	ESQ_CB	FD_HB	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_CB	FD_HB	5.13E-14
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_CB	FD_HB	8.37E-14
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_CB	FD_HB	8.76E-13
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_CB	FD_HB	2.09E-13
COMSTK	1,2-Dichlorobenzene	ESQ_CB	FD_HB	0.00E+00
COMSTK	1,4-Dichlorobenzene	ESQ_CB	FD_HB	0.00E+00
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_CB	FD_HB	2.38E-14
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_CB	FD_HB	7.77E-13
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_CB	FD_HB	2.19E-12
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_CB	FD_HB	4.96E-14
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_CB	FD_HB	1.85E-13
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_CB	FD_HB	5.86E-12
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_CB	FD_HB	2.76E-16
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_CB	FD_HB	2.56E-08
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_CB	FD_HB	3.29E-12

Source	COPC	Guild	Diet Type	ESQ
COMSTK	2,4,6-Trinitrotoluene	ESQ_CB	FD_HB	1.30E-11
COMSTK	2,4-Dinitrotoluene	ESQ_CB	FD_HB	2.47E-11
COMSTK	2-Methylnaphthalene	ESQ_CB	FD_HB	0.00E+00
COMSTK	2-Xylene	ESQ_CB	FD_HB	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_CB	FD_HB	7.78E-10
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_CB	FD_HB	1.63E-11
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_CB	FD_HB	2.30E-11
COMSTK	Acetone	ESQ_CB	FD_HB	2.92E-12
COMSTK	Aluminum compounds	ESQ_CB	FD_HB	1.08E-11
COMSTK	Antimony compounds	ESQ_CB	FD_HB	0.00E+00
COMSTK	Arsenic compounds	ESQ_CB	FD_HB	4.44E-13
COMSTK	Barium compounds	ESQ_CB	FD_HB	8.57E-13
COMSTK	Benzaldehyde	ESQ_CB	FD_HB	0.00E+00
COMSTK	Benzene	ESQ_CB	FD_HB	0.00E+00
COMSTK	Benzoic acid	ESQ_CB	FD_HB	0.00E+00
COMSTK	Benzyl alcohol	ESQ_CB	FD_HB	0.00E+00
COMSTK	Beryllium compounds	ESQ_CB	FD_HB	0.00E+00
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_CB	FD_HB	1.88E-08
COMSTK	Boron compounds	ESQ_CB	FD_HB	6.48E-11
COMSTK	Bromochloromethane	ESQ_CB	FD_HB	0.00E+00
COMSTK	Bromodichloromethane	ESQ_CB	FD_HB	0.00E+00
COMSTK	Bromoethane	ESQ_CB	FD_HB	0.00E+00
COMSTK	Cadmium compounds	ESQ_CB	FD_HB	9.60E-13
COMSTK	Carbon disulfide	ESQ_CB	FD_HB	0.00E+00
COMSTK	Carbon tetrachloride	ESQ_CB	FD_HB	0.00E+00
COMSTK	Chlorine	ESQ_CB	FD_HB	0.00E+00
COMSTK	Chlorobenzene	ESQ_CB	FD_HB	0.00E+00
COMSTK	Chlorodibromomethane	ESQ_CB	FD_HB	0.00E+00
COMSTK	Chloroform	ESQ_CB	FD_HB	0.00E+00
COMSTK	Chromium compounds	ESQ_CB	FD_HB	1.46E-12
COMSTK	cis-1,3-Dichloropropene	ESQ_CB	FD_HB	0.00E+00
COMSTK	Cobalt compounds	ESQ_CB	FD_HB	1.51E-13
COMSTK	Composirte TOE - Nonvolatile	ESQ_CB	FD_HB	6.35E-04
COMSTK	Composirte TOE - Semivolatile	ESQ_CB	FD_HB	1.90E-09
COMSTK	Composite TOE - Volatile	ESQ_CB	FD_HB	7.06E-10
COMSTK	Copper compounds	ESQ_CB	FD_HB	2.85E-15
COMSTK	Dibutyl phthalate	ESQ_CB	FD_HB	3.82E-11
COMSTK	Dichlorodifluoromethane	ESQ_CB	FD_HB	0.00E+00
COMSTK	Dichloromethane	ESQ_CB	FD_HB	0.00E+00
COMSTK	Diethyl phthalate	ESQ_CB	FD_HB	0.00E+00
COMSTK	Dimethylphthalate	ESQ_CB	FD_HB	0.00E+00
COMSTK	Ethyl chloride	ESQ_CB	FD_HB	0.00E+00
COMSTK	Ethylbenzene	ESQ_CB	FD_HB	0.00E+00
COMSTK	GB	ESQ_CB	FD_HB	0.00E+00
COMSTK	Hydrochloric acid	ESQ_CB	FD_HB	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Hydrofluoric acid	ESQ_CB	FD_HB	0.00E+00
COMSTK	Lead compounds	ESQ_CB	FD_HB	1.76E-11
COMSTK	m,p-Xylene	ESQ_CB	FD_HB	0.00E+00
COMSTK	Manganese compounds	ESQ_CB	FD_HB	4.36E-13
COMSTK	Mercuric chloride	ESQ_CB	FD_HB	2.52E-10
COMSTK	Methyl bromide	ESQ_CB	FD_HB	0.00E+00
COMSTK	Methyl chloride	ESQ_CB	FD_HB	0.00E+00
COMSTK	Methyl ethyl ketone	ESQ_CB	FD_HB	0.00E+00
COMSTK	Methyl iodide	ESQ_CB	FD_HB	0.00E+00
COMSTK	Methyl isobutyl ketone	ESQ_CB	FD_HB	3.11E-12
COMSTK	Methyl mercury	ESQ_CB	FD_HB	2.19E-11
COMSTK	Naphthalene	ESQ_CB	FD_HB	0.00E+00
COMSTK	n-Hexane	ESQ_CB	FD_HB	0.00E+00
COMSTK	Nickel compounds	ESQ_CB	FD_HB	4.25E-13
COMSTK	Nitrogen dioxide	ESQ_CB	FD_HB	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_CB	FD_HB	1.13E-09
COMSTK	Phosphoric acid	ESQ_CB	FD_HB	0.00E+00
COMSTK	Selenium compounds	ESQ_CB	FD_HB	1.63E-12
COMSTK	Silver compounds	ESQ_CB	FD_HB	1.56E-12
COMSTK	Styrene	ESQ_CB	FD_HB	0.00E+00
COMSTK	Sulfur dioxide	ESQ_CB	FD_HB	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_HB	0.00E+00
COMSTK	Thallium compounds	ESQ_CB	FD_HB	9.87E-12
COMSTK	Tin compounds	ESQ_CB	FD_HB	1.63E-11
COMSTK	Toluene	ESQ_CB	FD_HB	0.00E+00
COMSTK	trans-1,3-Dichloropropene	ESQ_CB	FD_HB	0.00E+00
COMSTK	Tribromomethane	ESQ_CB	FD_HB	0.00E+00
COMSTK	Trichloroethylene	ESQ_CB	FD_HB	0.00E+00
COMSTK	Trichlorofluoromethane	ESQ_CB	FD_HB	0.00E+00
COMSTK	Vanadium compounds	ESQ_CB	FD_HB	4.77E-13
COMSTK	Vinyl acetate	ESQ_CB	FD_HB	0.00E+00
COMSTK	Vinyl chloride	ESQ_CB	FD_HB	0.00E+00
COMSTK	VX	ESQ_CB	FD_HB	0.00E+00
COMSTK	Xylene (mixed)	ESQ_CB	FD_HB	0.00E+00
COMSTK	Zinc compounds	ESQ_CB	FD_HB	9.85E-12
LABSTK	GB	ESQ_CB	FD_HB	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_HB	0.00E+00
LABSTK	VX	ESQ_CB	FD_HB	0.00E+00
MDBSTK	GB	ESQ_CB	FD_HB	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_HB	0.00E+00
MDBSTK	VX	ESQ_CB	FD_HB	0.00E+00
BRASTK	Antimony compounds	ESQ_OM	FD_HB	5.12E-10
BRASTK	Arsenic compounds	ESQ_OM	FD_HB	3.45E-11
BRASTK	Barium compounds	ESQ_OM	FD_HB	1.12E-11
BRASTK	Beryllium compounds	ESQ_OM	FD_HB	8.87E-11

Source	COPC	Guild	Diet Type	ESQ
BRASTK	Boron compounds	ESQ_OM	FD_HB	2.36E-09
BRASTK	Cadmium compounds	ESQ_OM	FD_HB	4.08E-10
BRASTK	Chromium compounds	ESQ_OM	FD_HB	8.61E-11
BRASTK	Cobalt compounds	ESQ_OM	FD_HB	4.02E-11
BRASTK	Copper compounds	ESQ_OM	FD_HB	1.72E-12
BRASTK	EA 2192	ESQ_OM	FD_HB	0.00E+00
BRASTK	GB	ESQ_OM	FD_HB	9.02E-08
BRASTK	Lead compounds	ESQ_OM	FD_HB	1.22E-11
BRASTK	Manganese compounds	ESQ_OM	FD_HB	1.28E-10
BRASTK	Mercuric chloride	ESQ_OM	FD_HB	1.99E-08
BRASTK	Methyl mercury	ESQ_OM	FD_HB	8.02E-09
BRASTK	Nickel compounds	ESQ_OM	FD_HB	2.86E-10
BRASTK	o-Cresol	ESQ_OM	FD_HB	2.24E-11
BRASTK	Phosphoric acid	ESQ_OM	FD_HB	4.14E-07
BRASTK	Selenium compounds	ESQ_OM	FD_HB	4.94E-10
BRASTK	Silver compounds	ESQ_OM	FD_HB	9.18E-11
BRASTK	Sulfur mustard (or H/HD)	ESQ_OM	FD_HB	0.00E+00
BRASTK	Thallium compounds	ESQ_OM	FD_HB	1.19E-08
BRASTK	Tin compounds	ESQ_OM	FD_HB	3.43E-10
BRASTK	Vanadium compounds	ESQ_OM	FD_HB	1.22E-11
BRASTK	VX	ESQ_OM	FD_HB	1.83E-05
BRASTK	Zinc compounds	ESQ_OM	FD_HB	4.86E-12
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_OM	FD_HB	6.93E-17
COMSTK	1,1-Dichloroethylene	ESQ_OM	FD_HB	1.88E-15
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_OM	FD_HB	1.37E-11
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_OM	FD_HB	2.24E-11
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_OM	FD_HB	7.78E-11
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_OM	FD_HB	1.86E-11
COMSTK	1,2-Dichlorobenzene	ESQ_OM	FD_HB	2.65E-15
COMSTK	1,4-Dichlorobenzene	ESQ_OM	FD_HB	8.70E-15
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_OM	FD_HB	2.17E-13
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_OM	FD_HB	2.07E-11
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_OM	FD_HB	5.80E-11
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_OM	FD_HB	1.32E-11
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_OM	FD_HB	4.92E-11
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_OM	FD_HB	1.56E-10
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_OM	FD_HB	7.40E-14
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_OM	FD_HB	1.61E-08
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_OM	FD_HB	2.90E-10
COMSTK	2,4,6-Trinitrotoluene	ESQ_OM	FD_HB	1.06E-10
COMSTK	2,4-Dinitrotoluene	ESQ_OM	FD_HB	9.12E-12
COMSTK	2-Methylnaphthalene	ESQ_OM	FD_HB	9.64E-13
COMSTK	2-Xylene	ESQ_OM	FD_HB	9.23E-13
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_OM	FD_HB	1.37E-10
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_OM	FD_HB	1.48E-12

Source	COPC	Guild	Diet Type	ESQ
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_OM	FD_HB	6.96E-10
COMSTK	Acetone	ESQ_OM	FD_HB	3.36E-11
COMSTK	Aluminum compounds	ESQ_OM	FD_HB	1.35E-09
COMSTK	Antimony compounds	ESQ_OM	FD_HB	1.86E-10
COMSTK	Arsenic compounds	ESQ_OM	FD_HB	3.56E-12
COMSTK	Barium compounds	ESQ_OM	FD_HB	1.40E-12
COMSTK	Benzaldehyde	ESQ_OM	FD_HB	2.98E-10
COMSTK	Benzene	ESQ_OM	FD_HB	1.47E-13
COMSTK	Benzoic acid	ESQ_OM	FD_HB	9.86E-11
COMSTK	Benzyl alcohol	ESQ_OM	FD_HB	5.77E-11
COMSTK	Beryllium compounds	ESQ_OM	FD_HB	1.85E-12
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_OM	FD_HB	6.86E-09
COMSTK	Boron compounds	ESQ_OM	FD_HB	1.44E-10
COMSTK	Bromochloromethane	ESQ_OM	FD_HB	1.44E-15
COMSTK	Bromodichloromethane	ESQ_OM	FD_HB	6.23E-13
COMSTK	Bromoethane	ESQ_OM	FD_HB	4.08E-15
COMSTK	Cadmium compounds	ESQ_OM	FD_HB	6.07E-12
COMSTK	Carbon disulfide	ESQ_OM	FD_HB	4.40E-13
COMSTK	Carbon tetrachloride	ESQ_OM	FD_HB	5.04E-14
COMSTK	Chlorine	ESQ_OM	FD_HB	0.00E+00
COMSTK	Chlorobenzene	ESQ_OM	FD_HB	9.66E-15
COMSTK	Chlorodibromomethane	ESQ_OM	FD_HB	2.13E-12
COMSTK	Chloroform	ESQ_OM	FD_HB	8.87E-14
COMSTK	Chromium compounds	ESQ_OM	FD_HB	5.40E-12
COMSTK	cis-1,3-Dichloropropene	ESQ_OM	FD_HB	0.00E+00
COMSTK	Cobalt compounds	ESQ_OM	FD_HB	3.39E-13
COMSTK	Composirte TOE - Nonvolatile	ESQ_OM	FD_HB	9.46E-05
COMSTK	Composirte TOE - Semivolatile	ESQ_OM	FD_HB	5.79E-10
COMSTK	Composite TOE - Volatile	ESQ_OM	FD_HB	1.82E-09
COMSTK	Copper compounds	ESQ_OM	FD_HB	4.56E-15
COMSTK	Dibutyl phthalate	ESQ_OM	FD_HB	1.00E-12
COMSTK	Dichlorodifluoromethane	ESQ_OM	FD_HB	0.00E+00
COMSTK	Dichloromethane	ESQ_OM	FD_HB	3.98E-13
COMSTK	Diethyl phthalate	ESQ_OM	FD_HB	3.93E-15
COMSTK	Dimethylphthalate	ESQ_OM	FD_HB	1.84E-15
COMSTK	Ethyl chloride	ESQ_OM	FD_HB	0.00E+00
COMSTK	Ethylbenzene	ESQ_OM	FD_HB	3.30E-14
COMSTK	GB	ESQ_OM	FD_HB	4.05E-09
COMSTK	Hydrochloric acid	ESQ_OM	FD_HB	3.12E-09
COMSTK	Hydrofluoric acid	ESQ_OM	FD_HB	0.00E+00
COMSTK	Lead compounds	ESQ_OM	FD_HB	3.77E-11
COMSTK	m,p-Xylene	ESQ_OM	FD_HB	1.12E-09
COMSTK	Manganese compounds	ESQ_OM	FD_HB	3.36E-12
COMSTK	Mercuric chloride	ESQ_OM	FD_HB	6.92E-10
COMSTK	Methyl bromide	ESQ_OM	FD_HB	3.63E-12

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Methyl chloride	ESQ_OM	FD_HB	1.32E-13
COMSTK	Methyl ethyl ketone	ESQ_OM	FD_HB	9.18E-15
COMSTK	Methyl iodide	ESQ_OM	FD_HB	4.30E-13
COMSTK	Methyl isobutyl ketone	ESQ_OM	FD_HB	2.82E-13
COMSTK	Methyl mercury	ESQ_OM	FD_HB	2.87E-10
COMSTK	Naphthalene	ESQ_OM	FD_HB	5.70E-14
COMSTK	n-Hexane	ESQ_OM	FD_HB	6.20E-12
COMSTK	Nickel compounds	ESQ_OM	FD_HB	7.62E-12
COMSTK	Nitrogen dioxide	ESQ_OM	FD_HB	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_OM	FD_HB	9.41E-09
COMSTK	Phosphoric acid	ESQ_OM	FD_HB	3.53E-08
COMSTK	Selenium compounds	ESQ_OM	FD_HB	7.86E-12
COMSTK	Silver compounds	ESQ_OM	FD_HB	1.47E-12
COMSTK	Styrene	ESQ_OM	FD_HB	3.79E-13
COMSTK	Sulfur dioxide	ESQ_OM	FD_HB	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_OM	FD_HB	0.00E+00
COMSTK	Thallium compounds	ESQ_OM	FD_HB	2.16E-09
COMSTK	Tin compounds	ESQ_OM	FD_HB	1.02E-11
COMSTK	Toluene	ESQ_OM	FD_HB	4.64E-14
COMSTK	trans-1,3-Dichloropropene	ESQ_OM	FD_HB	0.00E+00
COMSTK	Tribromomethane	ESQ_OM	FD_HB	9.29E-14
COMSTK	Trichloroethylene	ESQ_OM	FD_HB	2.72E-14
COMSTK	Trichlorofluoromethane	ESQ_OM	FD_HB	0.00E+00
COMSTK	Vanadium compounds	ESQ_OM	FD_HB	8.67E-14
COMSTK	Vinyl acetate	ESQ_OM	FD_HB	1.04E-14
COMSTK	Vinyl chloride	ESQ_OM	FD_HB	1.23E-12
COMSTK	VX	ESQ_OM	FD_HB	4.98E-07
COMSTK	Xylene (mixed)	ESQ_OM	FD_HB	3.30E-12
COMSTK	Zinc compounds	ESQ_OM	FD_HB	4.00E-12
LABSTK	GB	ESQ_OM	FD_HB	1.02E-08
LABSTK	Sulfur mustard (or H/HD)	ESQ_OM	FD_HB	0.00E+00
LABSTK	VX	ESQ_OM	FD_HB	2.07E-06
MDBSTK	GB	ESQ_OM	FD_HB	4.29E-08
MDBSTK	Sulfur mustard (or H/HD)	ESQ_OM	FD_HB	0.00E+00
MDBSTK	VX	ESQ_OM	FD_HB	8.70E-06
BRASTK	Antimony compounds	ESQ_CB	FD_HM	0.00E+00
BRASTK	Arsenic compounds	ESQ_CB	FD_HM	4.31E-12
BRASTK	Barium compounds	ESQ_CB	FD_HM	6.88E-12
BRASTK	Beryllium compounds	ESQ_CB	FD_HM	0.00E+00
BRASTK	Boron compounds	ESQ_CB	FD_HM	9.04E-10
BRASTK	Cadmium compounds	ESQ_CB	FD_HM	3.31E-11
BRASTK	Chromium compounds	ESQ_CB	FD_HM	2.33E-11
BRASTK	Cobalt compounds	ESQ_CB	FD_HM	1.54E-11
BRASTK	Copper compounds	ESQ_CB	FD_HM	1.08E-12
BRASTK	EA 2192	ESQ_CB	FD_HM	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
BRASTK	GB	ESQ_CB	FD_HM	0.00E+00
BRASTK	Lead compounds	ESQ_CB	FD_HM	5.73E-12
BRASTK	Manganese compounds	ESQ_CB	FD_HM	1.66E-11
BRASTK	Mercuric chloride	ESQ_CB	FD_HM	6.91E-09
BRASTK	Methyl mercury	ESQ_CB	FD_HM	6.01E-10
BRASTK	Nickel compounds	ESQ_CB	FD_HM	1.60E-11
BRASTK	o-Cresol	ESQ_CB	FD_HM	0.00E+00
BRASTK	Phosphoric acid	ESQ_CB	FD_HM	0.00E+00
BRASTK	Selenium compounds	ESQ_CB	FD_HM	7.81E-11
BRASTK	Silver compounds	ESQ_CB	FD_HM	9.82E-11
BRASTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_HM	0.00E+00
BRASTK	Thallium compounds	ESQ_CB	FD_HM	5.50E-11
BRASTK	Tin compounds	ESQ_CB	FD_HM	4.81E-10
BRASTK	Vanadium compounds	ESQ_CB	FD_HM	6.70E-11
BRASTK	VX	ESQ_CB	FD_HM	0.00E+00
BRASTK	Zinc compounds	ESQ_CB	FD_HM	1.19E-11
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_CB	FD_HM	0.00E+00
COMSTK	1,1-Dichloroethylene	ESQ_CB	FD_HM	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_CB	FD_HM	5.11E-14
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_CB	FD_HM	8.35E-14
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_CB	FD_HM	8.69E-13
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_CB	FD_HM	2.07E-13
COMSTK	1,2-Dichlorobenzene	ESQ_CB	FD_HM	0.00E+00
COMSTK	1,4-Dichlorobenzene	ESQ_CB	FD_HM	0.00E+00
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_CB	FD_HM	2.92E-14
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_CB	FD_HM	7.72E-13
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_CB	FD_HM	2.16E-12
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_CB	FD_HM	4.92E-14
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_CB	FD_HM	1.83E-13
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_CB	FD_HM	5.79E-12
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_CB	FD_HM	2.76E-16
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_CB	FD_HM	2.52E-08
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_CB	FD_HM	3.24E-12
COMSTK	2,4,6-Trinitrotoluene	ESQ_CB	FD_HM	1.30E-11
COMSTK	2,4-Dinitrotoluene	ESQ_CB	FD_HM	2.45E-11
COMSTK	2-Methylnaphthalene	ESQ_CB	FD_HM	0.00E+00
COMSTK	2-Xylene	ESQ_CB	FD_HM	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_CB	FD_HM	7.65E-10
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_CB	FD_HM	2.00E-11
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_CB	FD_HM	2.81E-11
COMSTK	Acetone	ESQ_CB	FD_HM	2.92E-12
COMSTK	Aluminum compounds	ESQ_CB	FD_HM	1.08E-11
COMSTK	Antimony compounds	ESQ_CB	FD_HM	0.00E+00
COMSTK	Arsenic compounds	ESQ_CB	FD_HM	4.45E-13
COMSTK	Barium compounds	ESQ_CB	FD_HM	8.57E-13

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Benzaldehyde	ESQ_CB	FD_HM	0.00E+00
COMSTK	Benzene	ESQ_CB	FD_HM	0.00E+00
COMSTK	Benzoic acid	ESQ_CB	FD_HM	0.00E+00
COMSTK	Benzyl alcohol	ESQ_CB	FD_HM	0.00E+00
COMSTK	Beryllium compounds	ESQ_CB	FD_HM	0.00E+00
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_CB	FD_HM	1.81E-08
COMSTK	Boron compounds	ESQ_CB	FD_HM	5.53E-11
COMSTK	Bromochloromethane	ESQ_CB	FD_HM	0.00E+00
COMSTK	Bromodichloromethane	ESQ_CB	FD_HM	0.00E+00
COMSTK	Bromoethane	ESQ_CB	FD_HM	0.00E+00
COMSTK	Cadmium compounds	ESQ_CB	FD_HM	4.93E-13
COMSTK	Carbon disulfide	ESQ_CB	FD_HM	0.00E+00
COMSTK	Carbon tetrachloride	ESQ_CB	FD_HM	0.00E+00
COMSTK	Chlorine	ESQ_CB	FD_HM	0.00E+00
COMSTK	Chlorobenzene	ESQ_CB	FD_HM	0.00E+00
COMSTK	Chlorodibromomethane	ESQ_CB	FD_HM	0.00E+00
COMSTK	Chloroform	ESQ_CB	FD_HM	0.00E+00
COMSTK	Chromium compounds	ESQ_CB	FD_HM	1.46E-12
COMSTK	cis-1,3-Dichloropropene	ESQ_CB	FD_HM	0.00E+00
COMSTK	Cobalt compounds	ESQ_CB	FD_HM	1.30E-13
COMSTK	Composirte TOE - Nonvolatile	ESQ_CB	FD_HM	6.29E-04
COMSTK	Composirte TOE - Semivolatile	ESQ_CB	FD_HM	1.83E-09
COMSTK	Composite TOE - Volatile	ESQ_CB	FD_HM	6.77E-10
COMSTK	Copper compounds	ESQ_CB	FD_HM	2.86E-15
COMSTK	Dibutyl phthalate	ESQ_CB	FD_HM	3.74E-11
COMSTK	Dichlorodifluoromethane	ESQ_CB	FD_HM	0.00E+00
COMSTK	Dichloromethane	ESQ_CB	FD_HM	0.00E+00
COMSTK	Diethyl phthalate	ESQ_CB	FD_HM	0.00E+00
COMSTK	Dimethylphthalate	ESQ_CB	FD_HM	0.00E+00
COMSTK	Ethyl chloride	ESQ_CB	FD_HM	0.00E+00
COMSTK	Ethylbenzene	ESQ_CB	FD_HM	0.00E+00
COMSTK	GB	ESQ_CB	FD_HM	0.00E+00
COMSTK	Hydrochloric acid	ESQ_CB	FD_HM	0.00E+00
COMSTK	Hydrofluoric acid	ESQ_CB	FD_HM	0.00E+00
COMSTK	Lead compounds	ESQ_CB	FD_HM	1.76E-11
COMSTK	m,p-Xylene	ESQ_CB	FD_HM	0.00E+00
COMSTK	Manganese compounds	ESQ_CB	FD_HM	4.36E-13
COMSTK	Mercuric chloride	ESQ_CB	FD_HM	2.41E-10
COMSTK	Methyl bromide	ESQ_CB	FD_HM	0.00E+00
COMSTK	Methyl chloride	ESQ_CB	FD_HM	0.00E+00
COMSTK	Methyl ethyl ketone	ESQ_CB	FD_HM	0.00E+00
COMSTK	Methyl iodide	ESQ_CB	FD_HM	0.00E+00
COMSTK	Methyl isobutyl ketone	ESQ_CB	FD_HM	3.11E-12
COMSTK	Methyl mercury	ESQ_CB	FD_HM	2.15E-11
COMSTK	Naphthalene	ESQ_CB	FD_HM	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	n-Hexane	ESQ_CB	FD_HM	0.00E+00
COMSTK	Nickel compounds	ESQ_CB	FD_HM	4.26E-13
COMSTK	Nitrogen dioxide	ESQ_CB	FD_HM	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_CB	FD_HM	1.11E-09
COMSTK	Phosphoric acid	ESQ_CB	FD_HM	0.00E+00
COMSTK	Selenium compounds	ESQ_CB	FD_HM	1.24E-12
COMSTK	Silver compounds	ESQ_CB	FD_HM	1.57E-12
COMSTK	Styrene	ESQ_CB	FD_HM	0.00E+00
COMSTK	Sulfur dioxide	ESQ_CB	FD_HM	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_HM	0.00E+00
COMSTK	Thallium compounds	ESQ_CB	FD_HM	9.97E-12
COMSTK	Tin compounds	ESQ_CB	FD_HM	1.44E-11
COMSTK	Toluene	ESQ_CB	FD_HM	0.00E+00
COMSTK	trans-1,3-Dichloropropene	ESQ_CB	FD_HM	0.00E+00
COMSTK	Tribromomethane	ESQ_CB	FD_HM	0.00E+00
COMSTK	Trichloroethylene	ESQ_CB	FD_HM	0.00E+00
COMSTK	Trichlorofluoromethane	ESQ_CB	FD_HM	0.00E+00
COMSTK	Vanadium compounds	ESQ_CB	FD_HM	4.78E-13
COMSTK	Vinyl acetate	ESQ_CB	FD_HM	0.00E+00
COMSTK	Vinyl chloride	ESQ_CB	FD_HM	0.00E+00
COMSTK	VX	ESQ_CB	FD_HM	0.00E+00
COMSTK	Xylene (mixed)	ESQ_CB	FD_HM	0.00E+00
COMSTK	Zinc compounds	ESQ_CB	FD_HM	9.81E-12
LABSTK	GB	ESQ_CB	FD_HM	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_HM	0.00E+00
LABSTK	VX	ESQ_CB	FD_HM	0.00E+00
MDBSTK	GB	ESQ_CB	FD_HM	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_HM	0.00E+00
MDBSTK	VX	ESQ_CB	FD_HM	0.00E+00
BRASTK	Antimony compounds	ESQ_OM	FD_HM	5.12E-10
BRASTK	Arsenic compounds	ESQ_OM	FD_HM	3.46E-11
BRASTK	Barium compounds	ESQ_OM	FD_HM	1.12E-11
BRASTK	Beryllium compounds	ESQ_OM	FD_HM	8.87E-11
BRASTK	Boron compounds	ESQ_OM	FD_HM	2.06E-09
BRASTK	Cadmium compounds	ESQ_OM	FD_HM	2.97E-10
BRASTK	Chromium compounds	ESQ_OM	FD_HM	8.62E-11
BRASTK	Cobalt compounds	ESQ_OM	FD_HM	3.54E-11
BRASTK	Copper compounds	ESQ_OM	FD_HM	1.73E-12
BRASTK	EA 2192	ESQ_OM	FD_HM	0.00E+00
BRASTK	GB	ESQ_OM	FD_HM	9.01E-08
BRASTK	Lead compounds	ESQ_OM	FD_HM	1.22E-11
BRASTK	Manganese compounds	ESQ_OM	FD_HM	1.28E-10
BRASTK	Mercuric chloride	ESQ_OM	FD_HM	1.96E-08
BRASTK	Methyl mercury	ESQ_OM	FD_HM	7.98E-09
BRASTK	Nickel compounds	ESQ_OM	FD_HM	2.87E-10

Source	COPC	Guild	Diet Type	ESQ
BRASTK	o-Cresol	ESQ_OM	FD_HM	2.23E-11
BRASTK	Phosphoric acid	ESQ_OM	FD_HM	5.64E-07
BRASTK	Selenium compounds	ESQ_OM	FD_HM	4.04E-10
BRASTK	Silver compounds	ESQ_OM	FD_HM	9.20E-11
BRASTK	Sulfur mustard (or H/HD)	ESQ_OM	FD_HM	0.00E+00
BRASTK	Thallium compounds	ESQ_OM	FD_HM	1.20E-08
BRASTK	Tin compounds	ESQ_OM	FD_HM	3.08E-10
BRASTK	Vanadium compounds	ESQ_OM	FD_HM	1.22E-11
BRASTK	VX	ESQ_OM	FD_HM	1.81E-05
BRASTK	Zinc compounds	ESQ_OM	FD_HM	4.85E-12
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_OM	FD_HM	6.84E-17
COMSTK	1,1-Dichloroethylene	ESQ_OM	FD_HM	1.88E-15
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_OM	FD_HM	1.37E-11
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_OM	FD_HM	2.24E-11
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_OM	FD_HM	7.76E-11
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_OM	FD_HM	1.85E-11
COMSTK	1,2-Dichlorobenzene	ESQ_OM	FD_HM	2.62E-15
COMSTK	1,4-Dichlorobenzene	ESQ_OM	FD_HM	8.59E-15
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_OM	FD_HM	2.59E-13
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_OM	FD_HM	2.07E-11
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_OM	FD_HM	5.78E-11
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_OM	FD_HM	1.32E-11
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_OM	FD_HM	4.90E-11
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_OM	FD_HM	1.55E-10
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_OM	FD_HM	7.40E-14
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_OM	FD_HM	1.60E-08
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_OM	FD_HM	2.89E-10
COMSTK	2,4,6-Trinitrotoluene	ESQ_OM	FD_HM	1.06E-10
COMSTK	2,4-Dinitrotoluene	ESQ_OM	FD_HM	9.08E-12
COMSTK	2-Methylnaphthalene	ESQ_OM	FD_HM	9.44E-13
COMSTK	2-Xylene	ESQ_OM	FD_HM	9.16E-13
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_OM	FD_HM	1.36E-10
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_OM	FD_HM	1.77E-12
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_OM	FD_HM	8.30E-10
COMSTK	Acetone	ESQ_OM	FD_HM	3.36E-11
COMSTK	Aluminum compounds	ESQ_OM	FD_HM	1.36E-09
COMSTK	Antimony compounds	ESQ_OM	FD_HM	1.86E-10
COMSTK	Arsenic compounds	ESQ_OM	FD_HM	3.56E-12
COMSTK	Barium compounds	ESQ_OM	FD_HM	1.40E-12
COMSTK	Benzaldehyde	ESQ_OM	FD_HM	2.98E-10
COMSTK	Benzene	ESQ_OM	FD_HM	1.47E-13
COMSTK	Benzoic acid	ESQ_OM	FD_HM	9.86E-11
COMSTK	Benzyl alcohol	ESQ_OM	FD_HM	5.76E-11
COMSTK	Beryllium compounds	ESQ_OM	FD_HM	1.85E-12
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_OM	FD_HM	6.78E-09

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Boron compounds	ESQ_OM	FD_HM	1.26E-10
COMSTK	Bromochloromethane	ESQ_OM	FD_HM	1.44E-15
COMSTK	Bromodichloromethane	ESQ_OM	FD_HM	6.22E-13
COMSTK	Bromoethane	ESQ_OM	FD_HM	4.05E-15
COMSTK	Cadmium compounds	ESQ_OM	FD_HM	4.41E-12
COMSTK	Carbon disulfide	ESQ_OM	FD_HM	4.39E-13
COMSTK	Carbon tetrachloride	ESQ_OM	FD_HM	5.01E-14
COMSTK	Chlorine	ESQ_OM	FD_HM	0.00E+00
COMSTK	Chlorobenzene	ESQ_OM	FD_HM	9.57E-15
COMSTK	Chlorodibromomethane	ESQ_OM	FD_HM	2.13E-12
COMSTK	Chloroform	ESQ_OM	FD_HM	8.85E-14
COMSTK	Chromium compounds	ESQ_OM	FD_HM	5.41E-12
COMSTK	cis-1,3-Dichloropropene	ESQ_OM	FD_HM	0.00E+00
COMSTK	Cobalt compounds	ESQ_OM	FD_HM	2.99E-13
COMSTK	Composirte TOE - Nonvolatile	ESQ_OM	FD_HM	9.43E-05
COMSTK	Composirte TOE - Semivolatile	ESQ_OM	FD_HM	5.68E-10
COMSTK	Composite TOE - Volatile	ESQ_OM	FD_HM	1.78E-09
COMSTK	Copper compounds	ESQ_OM	FD_HM	4.58E-15
COMSTK	Dibutyl phthalate	ESQ_OM	FD_HM	9.95E-13
COMSTK	Dichlorodifluoromethane	ESQ_OM	FD_HM	0.00E+00
COMSTK	Dichloromethane	ESQ_OM	FD_HM	3.98E-13
COMSTK	Diethyl phthalate	ESQ_OM	FD_HM	3.91E-15
COMSTK	Dimethylphthalate	ESQ_OM	FD_HM	1.84E-15
COMSTK	Ethyl chloride	ESQ_OM	FD_HM	0.00E+00
COMSTK	Ethylbenzene	ESQ_OM	FD_HM	3.28E-14
COMSTK	GB	ESQ_OM	FD_HM	4.04E-09
COMSTK	Hydrochloric acid	ESQ_OM	FD_HM	3.12E-09
COMSTK	Hydrofluoric acid	ESQ_OM	FD_HM	0.00E+00
COMSTK	Lead compounds	ESQ_OM	FD_HM	3.77E-11
COMSTK	m,p-Xylene	ESQ_OM	FD_HM	1.34E-09
COMSTK	Manganese compounds	ESQ_OM	FD_HM	3.36E-12
COMSTK	Mercuric chloride	ESQ_OM	FD_HM	6.83E-10
COMSTK	Methyl bromide	ESQ_OM	FD_HM	3.63E-12
COMSTK	Methyl chloride	ESQ_OM	FD_HM	1.32E-13
COMSTK	Methyl ethyl ketone	ESQ_OM	FD_HM	9.18E-15
COMSTK	Methyl iodide	ESQ_OM	FD_HM	4.30E-13
COMSTK	Methyl isobutyl ketone	ESQ_OM	FD_HM	2.82E-13
COMSTK	Methyl mercury	ESQ_OM	FD_HM	2.85E-10
COMSTK	Naphthalene	ESQ_OM	FD_HM	5.59E-14
COMSTK	n-Hexane	ESQ_OM	FD_HM	6.10E-12
COMSTK	Nickel compounds	ESQ_OM	FD_HM	7.63E-12
COMSTK	Nitrogen dioxide	ESQ_OM	FD_HM	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_OM	FD_HM	9.36E-09
COMSTK	Phosphoric acid	ESQ_OM	FD_HM	4.82E-08
COMSTK	Selenium compounds	ESQ_OM	FD_HM	6.42E-12

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Silver compounds	ESQ_OM	FD_HM	1.47E-12
COMSTK	Styrene	ESQ_OM	FD_HM	3.72E-13
COMSTK	Sulfur dioxide	ESQ_OM	FD_HM	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_OM	FD_HM	0.00E+00
COMSTK	Thallium compounds	ESQ_OM	FD_HM	2.17E-09
COMSTK	Tin compounds	ESQ_OM	FD_HM	9.20E-12
COMSTK	Toluene	ESQ_OM	FD_HM	4.61E-14
COMSTK	trans-1,3-Dichloropropene	ESQ_OM	FD_HM	0.00E+00
COMSTK	Tribromomethane	ESQ_OM	FD_HM	9.23E-14
COMSTK	Trichloroethylene	ESQ_OM	FD_HM	2.71E-14
COMSTK	Trichlorofluoromethane	ESQ_OM	FD_HM	0.00E+00
COMSTK	Vanadium compounds	ESQ_OM	FD_HM	8.67E-14
COMSTK	Vinyl acetate	ESQ_OM	FD_HM	1.04E-14
COMSTK	Vinyl chloride	ESQ_OM	FD_HM	1.22E-12
COMSTK	VX	ESQ_OM	FD_HM	4.92E-07
COMSTK	Xylene (mixed)	ESQ_OM	FD_HM	3.26E-12
COMSTK	Zinc compounds	ESQ_OM	FD_HM	4.00E-12
LABSTK	GB	ESQ_OM	FD_HM	1.02E-08
LABSTK	Sulfur mustard (or H/HD)	ESQ_OM	FD_HM	0.00E+00
LABSTK	VX	ESQ_OM	FD_HM	2.04E-06
MDBSTK	GB	ESQ_OM	FD_HM	4.29E-08
MDBSTK	Sulfur mustard (or H/HD)	ESQ_OM	FD_HM	0.00E+00
MDBSTK	VX	ESQ_OM	FD_HM	8.60E-06
BRASTK	Antimony compounds	ESQ_CB	FD_OF	0.00E+00
BRASTK	Arsenic compounds	ESQ_CB	FD_OF	1.02E-09
BRASTK	Barium compounds	ESQ_CB	FD_OF	7.86E-09
BRASTK	Beryllium compounds	ESQ_CB	FD_OF	0.00E+00
BRASTK	Boron compounds	ESQ_CB	FD_OF	9.04E-10
BRASTK	Cadmium compounds	ESQ_CB	FD_OF	3.96E-08
BRASTK	Chromium compounds	ESQ_CB	FD_OF	1.07E-09
BRASTK	Cobalt compounds	ESQ_CB	FD_OF	1.53E-11
BRASTK	Copper compounds	ESQ_CB	FD_OF	2.47E-09
BRASTK	EA 2192	ESQ_CB	FD_OF	0.00E+00
BRASTK	GB	ESQ_CB	FD_OF	0.00E+00
BRASTK	Lead compounds	ESQ_CB	FD_OF	5.82E-12
BRASTK	Manganese compounds	ESQ_CB	FD_OF	1.66E-11
BRASTK	Mercuric chloride	ESQ_CB	FD_OF	8.78E-08
BRASTK	Methyl mercury	ESQ_CB	FD_OF	3.62E-07
BRASTK	Nickel compounds	ESQ_CB	FD_OF	1.80E-09
BRASTK	o-Cresol	ESQ_CB	FD_OF	0.00E+00
BRASTK	Phosphoric acid	ESQ_CB	FD_OF	0.00E+00
BRASTK	Selenium compounds	ESQ_CB	FD_OF	2.98E-08
BRASTK	Silver compounds	ESQ_CB	FD_OF	2.41E-08
BRASTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_OF	0.00E+00
BRASTK	Thallium compounds	ESQ_CB	FD_OF	7.41E-07

Source	COPC	Guild	Diet Type	ESQ
BRASTK	Tin compounds	ESQ_CB	FD_OF	4.65E-10
BRASTK	Vanadium compounds	ESQ_CB	FD_OF	6.69E-11
BRASTK	VX	ESQ_CB	FD_OF	0.00E+00
BRASTK	Zinc compounds	ESQ_CB	FD_OF	3.61E-08
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_CB	FD_OF	0.00E+00
COMSTK	1,1-Dichloroethylene	ESQ_CB	FD_OF	0.00E+00
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_CB	FD_OF	5.30E-14
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_CB	FD_OF	8.46E-14
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_CB	FD_OF	1.01E-12
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_CB	FD_OF	1.40E-12
COMSTK	1,2-Dichlorobenzene	ESQ_CB	FD_OF	0.00E+00
COMSTK	1,4-Dichlorobenzene	ESQ_CB	FD_OF	0.00E+00
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_CB	FD_OF	2.03E-14
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_CB	FD_OF	5.26E-10
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_CB	FD_OF	2.45E-09
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_CB	FD_OF	3.78E-11
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_CB	FD_OF	1.79E-10
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_CB	FD_OF	6.02E-09
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_CB	FD_OF	6.39E-14
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_CB	FD_OF	5.03E-06
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_CB	FD_OF	2.08E-10
COMSTK	2,4,6-Trinitrotoluene	ESQ_CB	FD_OF	3.11E-10
COMSTK	2,4-Dinitrotoluene	ESQ_CB	FD_OF	1.57E-09
COMSTK	2-Methylnaphthalene	ESQ_CB	FD_OF	0.00E+00
COMSTK	2-Xylene	ESQ_CB	FD_OF	0.00E+00
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_CB	FD_OF	9.28E-07
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_CB	FD_OF	1.39E-11
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_CB	FD_OF	1.96E-11
COMSTK	Acetone	ESQ_CB	FD_OF	3.86E-12
COMSTK	Aluminum compounds	ESQ_CB	FD_OF	1.05E-10
COMSTK	Antimony compounds	ESQ_CB	FD_OF	0.00E+00
COMSTK	Arsenic compounds	ESQ_CB	FD_OF	1.05E-10
COMSTK	Barium compounds	ESQ_CB	FD_OF	9.79E-10
COMSTK	Benzaldehyde	ESQ_CB	FD_OF	0.00E+00
COMSTK	Benzene	ESQ_CB	FD_OF	0.00E+00
COMSTK	Benzoic acid	ESQ_CB	FD_OF	0.00E+00
COMSTK	Benzyl alcohol	ESQ_CB	FD_OF	0.00E+00
COMSTK	Beryllium compounds	ESQ_CB	FD_OF	0.00E+00
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_CB	FD_OF	1.83E-07
COMSTK	Boron compounds	ESQ_CB	FD_OF	5.53E-11
COMSTK	Bromochloromethane	ESQ_CB	FD_OF	0.00E+00
COMSTK	Bromodichloromethane	ESQ_CB	FD_OF	0.00E+00
COMSTK	Bromoethane	ESQ_CB	FD_OF	0.00E+00
COMSTK	Cadmium compounds	ESQ_CB	FD_OF	5.90E-10
COMSTK	Carbon disulfide	ESQ_CB	FD_OF	0.00E+00

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Carbon tetrachloride	ESQ_CB	FD_OF	0.00E+00
COMSTK	Chlorine	ESQ_CB	FD_OF	0.00E+00
COMSTK	Chlorobenzene	ESQ_CB	FD_OF	0.00E+00
COMSTK	Chlorodibromomethane	ESQ_CB	FD_OF	0.00E+00
COMSTK	Chloroform	ESQ_CB	FD_OF	0.00E+00
COMSTK	Chromium compounds	ESQ_CB	FD_OF	6.70E-11
COMSTK	cis-1,3-Dichloropropene	ESQ_CB	FD_OF	0.00E+00
COMSTK	Cobalt compounds	ESQ_CB	FD_OF	1.29E-13
COMSTK	Composirte TOE - Nonvolatile	ESQ_CB	FD_OF	6.02E-01
COMSTK	Composirte TOE - Semivolatile	ESQ_CB	FD_OF	3.32E-07
COMSTK	Composite TOE - Volatile	ESQ_CB	FD_OF	6.41E-10
COMSTK	Copper compounds	ESQ_CB	FD_OF	6.56E-12
COMSTK	Dibutyl phthalate	ESQ_CB	FD_OF	2.39E-07
COMSTK	Dichlorodifluoromethane	ESQ_CB	FD_OF	0.00E+00
COMSTK	Dichloromethane	ESQ_CB	FD_OF	0.00E+00
COMSTK	Diethyl phthalate	ESQ_CB	FD_OF	0.00E+00
COMSTK	Dimethylphthalate	ESQ_CB	FD_OF	0.00E+00
COMSTK	Ethyl chloride	ESQ_CB	FD_OF	0.00E+00
COMSTK	Ethylbenzene	ESQ_CB	FD_OF	0.00E+00
COMSTK	GB	ESQ_CB	FD_OF	0.00E+00
COMSTK	Hydrochloric acid	ESQ_CB	FD_OF	0.00E+00
COMSTK	Hydrofluoric acid	ESQ_CB	FD_OF	0.00E+00
COMSTK	Lead compounds	ESQ_CB	FD_OF	1.79E-11
COMSTK	m,p-Xylene	ESQ_CB	FD_OF	0.00E+00
COMSTK	Manganese compounds	ESQ_CB	FD_OF	4.36E-13
COMSTK	Mercuric chloride	ESQ_CB	FD_OF	3.06E-09
COMSTK	Methyl bromide	ESQ_CB	FD_OF	0.00E+00
COMSTK	Methyl chloride	ESQ_CB	FD_OF	0.00E+00
COMSTK	Methyl ethyl ketone	ESQ_CB	FD_OF	0.00E+00
COMSTK	Methyl iodide	ESQ_CB	FD_OF	0.00E+00
COMSTK	Methyl isobutyl ketone	ESQ_CB	FD_OF	3.82E-11
COMSTK	Methyl mercury	ESQ_CB	FD_OF	1.29E-08
COMSTK	Naphthalene	ESQ_CB	FD_OF	0.00E+00
COMSTK	n-Hexane	ESQ_CB	FD_OF	0.00E+00
COMSTK	Nickel compounds	ESQ_CB	FD_OF	4.78E-11
COMSTK	Nitrogen dioxide	ESQ_CB	FD_OF	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_CB	FD_OF	3.34E-06
COMSTK	Phosphoric acid	ESQ_CB	FD_OF	0.00E+00
COMSTK	Selenium compounds	ESQ_CB	FD_OF	4.74E-10
COMSTK	Silver compounds	ESQ_CB	FD_OF	3.85E-10
COMSTK	Styrene	ESQ_CB	FD_OF	0.00E+00
COMSTK	Sulfur dioxide	ESQ_CB	FD_OF	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_OF	0.00E+00
COMSTK	Thallium compounds	ESQ_CB	FD_OF	1.34E-07
COMSTK	Tin compounds	ESQ_CB	FD_OF	1.39E-11

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Toluene	ESQ_CB	FD_OF	0.00E+00
COMSTK	trans-1,3-Dichloropropene	ESQ_CB	FD_OF	0.00E+00
COMSTK	Tribromomethane	ESQ_CB	FD_OF	0.00E+00
COMSTK	Trichloroethylene	ESQ_CB	FD_OF	0.00E+00
COMSTK	Trichlorofluoromethane	ESQ_CB	FD_OF	0.00E+00
COMSTK	Vanadium compounds	ESQ_CB	FD_OF	4.77E-13
COMSTK	Vinyl acetate	ESQ_CB	FD_OF	0.00E+00
COMSTK	Vinyl chloride	ESQ_CB	FD_OF	0.00E+00
COMSTK	VX	ESQ_CB	FD_OF	0.00E+00
COMSTK	Xylene (mixed)	ESQ_CB	FD_OF	0.00E+00
COMSTK	Zinc compounds	ESQ_CB	FD_OF	2.97E-08
LABSTK	GB	ESQ_CB	FD_OF	0.00E+00
LABSTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_OF	0.00E+00
LABSTK	VX	ESQ_CB	FD_OF	0.00E+00
MDBSTK	GB	ESQ_CB	FD_OF	0.00E+00
MDBSTK	Sulfur mustard (or H/HD)	ESQ_CB	FD_OF	0.00E+00
MDBSTK	VX	ESQ_CB	FD_OF	0.00E+00
BRASTK	Antimony compounds	ESQ_CM	FD_OF	1.11E-08
BRASTK	Arsenic compounds	ESQ_CM	FD_OF	2.81E-09
BRASTK	Barium compounds	ESQ_CM	FD_OF	4.03E-09
BRASTK	Beryllium compounds	ESQ_CM	FD_OF	2.47E-10
BRASTK	Boron compounds	ESQ_CM	FD_OF	2.06E-09
BRASTK	Cadmium compounds	ESQ_CM	FD_OF	9.65E-08
BRASTK	Chromium compounds	ESQ_CM	FD_OF	1.53E-09
BRASTK	Cobalt compounds	ESQ_CM	FD_OF	3.51E-11
BRASTK	Copper compounds	ESQ_CM	FD_OF	2.28E-09
BRASTK	EA 2192	ESQ_CM	FD_OF	0.00E+00
BRASTK	GB	ESQ_CM	FD_OF	1.83E-07
BRASTK	Lead compounds	ESQ_CM	FD_OF	2.84E-12
BRASTK	Manganese compounds	ESQ_CM	FD_OF	1.28E-10
BRASTK	Mercuric chloride	ESQ_CM	FD_OF	5.01E-08
BRASTK	Methyl mercury	ESQ_CM	FD_OF	9.80E-07
BRASTK	Nickel compounds	ESQ_CM	FD_OF	9.07E-09
BRASTK	o-Cresol	ESQ_CM	FD_OF	5.01E-10
BRASTK	Phosphoric acid	ESQ_CM	FD_OF	4.14E-07
BRASTK	Selenium compounds	ESQ_CM	FD_OF	7.62E-08
BRASTK	Silver compounds	ESQ_CM	FD_OF	1.03E-08
BRASTK	Sulfur mustard (or H/HD)	ESQ_CM	FD_OF	0.00E+00
BRASTK	Thallium compounds	ESQ_CM	FD_OF	4.47E-05
BRASTK	Tin compounds	ESQ_CM	FD_OF	3.00E-10
BRASTK	Vanadium compounds	ESQ_CM	FD_OF	1.22E-11
BRASTK	VX	ESQ_CM	FD_OF	1.20E-05
BRASTK	Zinc compounds	ESQ_CM	FD_OF	4.17E-09
COMSTK	1,1,2-Trichloro-1,2,2-trifluoroethane	ESQ_CM	FD_OF	8.50E-15
COMSTK	1,1-Dichloroethylene	ESQ_CM	FD_OF	1.68E-15

Source	COPC	Guild	Diet Type	ESQ
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	ESQ_CM	FD_OF	3.03E-12
COMSTK	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	ESQ_CM	FD_OF	4.84E-12
COMSTK	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ESQ_CM	FD_OF	1.91E-11
COMSTK	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ESQ_CM	FD_OF	2.52E-11
COMSTK	1,2-Dichlorobenzene	ESQ_CM	FD_OF	5.33E-13
COMSTK	1,4-Dichlorobenzene	ESQ_CM	FD_OF	1.69E-12
COMSTK	2,3,3',4,4',5'-Hexachlorobiphenyl	ESQ_CM	FD_OF	1.90E-13
COMSTK	2,3,3',4,4',5-Hexachlorobiphenyl	ESQ_CM	FD_OF	2.82E-09
COMSTK	2,3,3',4,4'-Pentachlorobiphenyl	ESQ_CM	FD_OF	1.31E-08
COMSTK	2,3',4,4',5,5'-Hexachlorobiphenyl	ESQ_CM	FD_OF	2.03E-09
COMSTK	2,3',4,4',5-Pentachlorobiphenyl	ESQ_CM	FD_OF	9.61E-09
COMSTK	2,3,4,4'5-Pentachlorobiphenyl	ESQ_CM	FD_OF	3.23E-08
COMSTK	2,3,4,5,3',4',5'-Heptachlorobiphenyl	ESQ_CM	FD_OF	3.43E-12
COMSTK	2,3,7,8-Tetrachlorodibenzofuran	ESQ_CM	FD_OF	6.42E-07
COMSTK	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ESQ_CM	FD_OF	3.72E-09
COMSTK	2,4,6-Trinitrotoluene	ESQ_CM	FD_OF	1.43E-09
COMSTK	2,4-Dinitrotoluene	ESQ_CM	FD_OF	3.03E-10
COMSTK	2-Methylnaphthalene	ESQ_CM	FD_OF	6.10E-11
COMSTK	2-Xylene	ESQ_CM	FD_OF	1.23E-10
COMSTK	3,3',4,4'-Tetrachlorobiphenyl	ESQ_CM	FD_OF	3.31E-08
COMSTK	3,4,4',5-Tetrachlorobiphenyl	ESQ_CM	FD_OF	1.30E-12
COMSTK	3,4,5,3',4'-Pentachlorobiphenyl	ESQ_CM	FD_OF	6.08E-10
COMSTK	Acetone	ESQ_CM	FD_OF	3.99E-11
COMSTK	Aluminum compounds	ESQ_CM	FD_OF	8.18E-09
COMSTK	Antimony compounds	ESQ_CM	FD_OF	4.02E-09
COMSTK	Arsenic compounds	ESQ_CM	FD_OF	2.90E-10
COMSTK	Barium compounds	ESQ_CM	FD_OF	5.01E-10
COMSTK	Benzaldehyde	ESQ_CM	FD_OF	3.35E-09
COMSTK	Benzene	ESQ_CM	FD_OF	1.32E-13
COMSTK	Benzoic acid	ESQ_CM	FD_OF	2.28E-09
COMSTK	Benzyl alcohol	ESQ_CM	FD_OF	3.65E-10
COMSTK	Beryllium compounds	ESQ_CM	FD_OF	5.13E-12
COMSTK	Bis(2-ethylhexyl)phthalate	ESQ_CM	FD_OF	1.41E-08
COMSTK	Boron compounds	ESQ_CM	FD_OF	1.26E-10
COMSTK	Bromochloromethane	ESQ_CM	FD_OF	1.48E-14
COMSTK	Bromodichloromethane	ESQ_CM	FD_OF	5.65E-13
COMSTK	Bromoethane	ESQ_CM	FD_OF	4.28E-14
COMSTK	Cadmium compounds	ESQ_CM	FD_OF	1.44E-09
COMSTK	Carbon disulfide	ESQ_CM	FD_OF	3.92E-13
COMSTK	Carbon tetrachloride	ESQ_CM	FD_OF	3.95E-14
COMSTK	Chlorine	ESQ_CM	FD_OF	0.00E+00
COMSTK	Chlorobenzene	ESQ_CM	FD_OF	6.95E-15
COMSTK	Chlorodibromomethane	ESQ_CM	FD_OF	1.89E-12
COMSTK	Chloroform	ESQ_CM	FD_OF	6.08E-13
COMSTK	Chromium compounds	ESQ_CM	FD_OF	9.59E-11

Source	COPC	Guild	Diet Type	ESQ
COMSTK	cis-1,3-Dichloropropene	ESQ_CM	FD_OF	0.00E+00
COMSTK	Cobalt compounds	ESQ_CM	FD_OF	2.97E-13
COMSTK	Composirte TOE - Nonvolatile	ESQ_CM	FD_OF	1.81E-02
COMSTK	Composirte TOE - Semivolatile	ESQ_CM	FD_OF	3.31E-08
COMSTK	Composite TOE - Volatile	ESQ_CM	FD_OF	7.94E-10
COMSTK	Copper compounds	ESQ_CM	FD_OF	6.05E-12
COMSTK	Dibutyl phthalate	ESQ_CM	FD_OF	1.84E-09
COMSTK	Dichlorodifluoromethane	ESQ_CM	FD_OF	0.00E+00
COMSTK	Dichloromethane	ESQ_CM	FD_OF	3.47E-12
COMSTK	Diethyl phthalate	ESQ_CM	FD_OF	2.33E-13
COMSTK	Dimethylphthalate	ESQ_CM	FD_OF	2.33E-14
COMSTK	Ethyl chloride	ESQ_CM	FD_OF	0.00E+00
COMSTK	Ethylbenzene	ESQ_CM	FD_OF	4.66E-12
COMSTK	GB	ESQ_CM	FD_OF	8.23E-09
COMSTK	Hydrochloric acid	ESQ_CM	FD_OF	3.12E-09
COMSTK	Hydrofluoric acid	ESQ_CM	FD_OF	0.00E+00
COMSTK	Lead compounds	ESQ_CM	FD_OF	8.73E-12
COMSTK	m,p-Xylene	ESQ_CM	FD_OF	9.80E-10
COMSTK	Manganese compounds	ESQ_CM	FD_OF	3.36E-12
COMSTK	Mercuric chloride	ESQ_CM	FD_OF	1.75E-09
COMSTK	Methyl bromide	ESQ_CM	FD_OF	2.66E-11
COMSTK	Methyl chloride	ESQ_CM	FD_OF	6.36E-13
COMSTK	Methyl ethyl ketone	ESQ_CM	FD_OF	2.07E-14
COMSTK	Methyl iodide	ESQ_CM	FD_OF	5.18E-12
COMSTK	Methyl isobutyl ketone	ESQ_CM	FD_OF	2.06E-12
COMSTK	Methyl mercury	ESQ_CM	FD_OF	3.51E-08
COMSTK	Naphthalene	ESQ_CM	FD_OF	4.93E-12
COMSTK	n-Hexane	ESQ_CM	FD_OF	1.50E-09
COMSTK	Nickel compounds	ESQ_CM	FD_OF	2.42E-10
COMSTK	Nitrogen dioxide	ESQ_CM	FD_OF	0.00E+00
COMSTK	PCB Mixture (non-dioxin like, 5+ chlorines)	ESQ_CM	FD_OF	5.63E-06
COMSTK	Phosphoric acid	ESQ_CM	FD_OF	3.53E-08
COMSTK	Selenium compounds	ESQ_CM	FD_OF	1.21E-09
COMSTK	Silver compounds	ESQ_CM	FD_OF	1.65E-10
COMSTK	Styrene	ESQ_CM	FD_OF	2.09E-11
COMSTK	Sulfur dioxide	ESQ_CM	FD_OF	0.00E+00
COMSTK	Sulfur mustard (or H/HD)	ESQ_CM	FD_OF	0.00E+00
COMSTK	Thallium compounds	ESQ_CM	FD_OF	8.11E-06
COMSTK	Tin compounds	ESQ_CM	FD_OF	8.94E-12
COMSTK	Toluene	ESQ_CM	FD_OF	3.70E-14
COMSTK	trans-1,3-Dichloropropene	ESQ_CM	FD_OF	0.00E+00
COMSTK	Tribromomethane	ESQ_CM	FD_OF	7.56E-14
COMSTK	Trichloroethylene	ESQ_CM	FD_OF	2.32E-14
COMSTK	Trichlorofluoromethane	ESQ_CM	FD_OF	0.00E+00
COMSTK	Vanadium compounds	ESQ_CM	FD_OF	8.67E-14

Source	COPC	Guild	Diet Type	ESQ
COMSTK	Vinyl acetate	ESQ_CM	FD_OF	3.90E-14
COMSTK	Vinyl chloride	ESQ_CM	FD_OF	5.31E-12
COMSTK	VX	ESQ_CM	FD_OF	3.27E-07
COMSTK	Xylene (mixed)	ESQ_CM	FD_OF	4.19E-10
COMSTK	Zinc compounds	ESQ_CM	FD_OF	3.43E-09
LABSTK	GB	ESQ_CM	FD_OF	2.07E-08
LABSTK	Sulfur mustard (or H/HD)	ESQ_CM	FD_OF	0.00E+00
LABSTK	VX	ESQ_CM	FD_OF	1.36E-06
MDBSTK	GB	ESQ_CM	FD_OF	8.73E-08
MDBSTK	Sulfur mustard (or H/HD)	ESQ_CM	FD_OF	0.00E+00
MDBSTK	VX	ESQ_CM	FD_OF	5.70E-06