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Risk Assessment Technical Background Document for the Paint and Coatings Hazardous Waste Listing Determination

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Prepared for

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1.0 Introduction

1.1 Background

The U.S. Environmental Protection Agency (EPA) is required under the Resource Conservation and Recovery Act (RCRA), Section 3001(e)(2), to make hazardous waste listing determinations on certain wastes generated during the manufacture of paints in the United States. These determinations were to be made within 15 months of enactment of the Hazardous Solid Waste Amendment (HSWA) of 1984. In March 1989, the Environmental Defense Fund (EDF) sued EPA for failing to meet that statutory deadline (EDF vs. Browner; Civ. No. 89-0598 D.D.C.). To resolve most of the issues in the case, EDF and EPA entered into a consent decree in 1991 that added to the scope of the waste streams EPA would evaluate. The 1991 consent decree also set out an extensive series of deadlines. This consent decree has since been modified. Under a new agreement, the Agency must finalize a hazardous waste listing determination on wastes generated during paint manufacture no later than March 30, 2002, and propose these determinations by January 28, 2001.

For listing determinations, three key documents summarize the results of EPA's technical data collection and analysis efforts: a Listing Determination Technical Background Document, an Economics Background Document, and a Risk Assessment Technical Background Document. The Listing Determination Technical Background Document is the "primary" background document and provides a description of the methodologies EPA employed to characterize the industry and wastes that are the subject of the listing determination, a summary of the data and information collected, and supporting data analyses. The Economics Background Document provides estimates of national industry compliance costs for the proposed listing decisions. The Risk Assessment Technical Background Document provides the results of EPA's human health and ecological risk assessments for the wastes that are the subject of the listing determination. This document is the risk assessment technical background document for the Paint and Coatings Listing Determination.

1.2 Purpose of the Risk Assessment

This risk assessment was conducted to provide concentrations of individual constituents that can be present in each industry waste stream and remain "protective" (below a specified level of risk) of both human health and the environment. These risk-based concentration limits were generated by evaluating both cancer and noncancer human health risks for individuals (receptors) who may be exposed to releases from commonly used waste management units (treatment tanks, surface impoundments, and landfills). Information provided from the paint and coatings manufacturers on the management of their nonhazardous wastes was used to create the waste management scenarios modeled in this risk assessment. This risk assessment also includes

a screening analysis that provides a general indication of the potential risks to ecological receptors.

There are several reasons for potentially listing the waste streams generated during paint manufacture with a risk-based, protective concentration approach. First, paints and coatings formulations are highly variable because they are used for a wide number of applications, each with different performance requirements. As such, paints and coatings are manufactured using a batch process so that unique characteristics and performance requirements can be met. Batch operations may result in highly variable wastes at the same facility as well as at different facilities. A concentration-based approach allows the variable wastes generated at these facilities to be evaluated individually for hazard so only the truly hazardous wastes are designated as such.

Second, a concentration-based listing approach may provide an incentive for hazardous waste generating facilities to modify their manufacturing process or treat their wastes. For example, if a facility has a listed hazardous waste based on constituent-specific concentration levels established by EPA, the facility may decide to modify its manufacturing process or treat its waste so that it generates a nonhazardous waste.

1.3 Overview of Risk Assessment Methodology

This human health risk assessment provides estimates of constituent concentrations that can be present in each of the identified or selected waste streams and remain protective of human health at specified target risk levels. One of two target risk levels was used in this analysis:

- An estimate of the excess lifetime cancer risk for individuals exposed to carcinogenic (cancer-causing) contaminants of 1 chance in 100,000 (1E-5)

or

- A measure of safe intake levels to projected intake levels, a hazard quotient (HQ) of 1, for constituents that can produce noncancer health effects.

The human health risk assessment included seven primary tasks:

1. Establish the characteristics of the waste management units where each waste stream may be managed.

2. Construct the environmental setting where waste management units receiving paint wastes are located.

3. Identify scenarios under which contaminants are released from a waste management unit and transported to a human receptor.

4. Predict the fate and transport of constituents in the environment once they are released from the waste management unit.

5. Quantify an individual's exposure to the contaminant in the environment.

6. Describe the receptor's predicted risk to the exposure and determine concentrations of each constituent that can be safely managed in each waste management unit.

7. Determine if the risk-based protective concentrations for human health are also protective for ecological receptors that may come into contact with contaminated media.

EPA used three analytical approaches to estimate the protective constituent concentrations: deterministic analysis, probabilistic analysis, and bounding analysis. A deterministic risk analysis produces a point estimate of risk or hazard for each receptor based on using a single value for each parameter in the analysis (i.e., any one of a number of input variables required for the fate and transport, exposure, and risk models that EPA uses to assess risk). A probabilistic risk analysis produces a distribution of risks or hazard for each receptor by allowing some of the parameters in the analysis to have more than one value. A probabilistic analysis is ideal for this risk assessment because there are numerous facilities in the contiguous United States that produce paint and coatings. The probabilistic analysis not only captures the variability in waste management practices, it also captures the differences in environmental settings (e.g., hydrology, meteorology) where paint wastes may be managed. A bounding analysis is used as a quick and simple way to "screen out" potential scenarios through the use of very conservative assumptions. For this risk assessment, a bounding analysis was used to evaluate constituents managed in on-site tanks. Similar to the deterministic and probabilistic analyses, the results of the bounding analysis estimated the concentration of a constituent that could be present in an on-site tank and remain protective of human health. In addition, a bounding analysis was used to determine if the transformation products of groundwater contaminants could pose a risk to receptors.

1.4 Document Organization

This background document is organized into the following sections:

- Section 2, Analysis Results, presents a summary of risk assessment results and the risk-based concentration values that are protective of human health. Results are presented for four waste management scenarios: landfill disposal of emission control dust, landfill disposal of combined solids, treatment tank handling of wastewater, and surface impoundment handling of wastewater. Also presented in this section are results from the ecological risk assessment for each of the four waste management scenarios.

- Section 3, Risk Assessment Overview, describes the conceptual framework for the paints risk assessment. It presents the conceptual framework for the human health risk assessment including a description of waste streams and waste management practices, fate and transport modeling, exposure assessment, and calculation of protective waste and leachate concentrations. In addition, it provides a detailed

explanation of the framework for the probabilistic and deterministic analyses and an overview of the ecological risk assessment.

- Section 4, Source Characterization, presents the methodologies used to characterize the environmental setting, including delineation of the site layout and environmental setting (e.g., meteorology, climate, soils, and aquifers). It also describes how we characterized the waste management units including capacities and surface areas.

- Section 5, Estimating Exposure Point Concentrations, describes the models and methods used for source partition modeling, air dispersion and deposition modeling, watershed and waterbody modeling, groundwater modeling, terrestrial food chain modeling, and aquatic food chain modeling.

- Section 6, Human Exposure Assessment, presents an overview of the human receptors, selected exposure pathways, and exposure scenarios considered for this assessment. It also presents particular exposure factors (i.e., values needed to calculate human exposure) used in the analysis and presents methods used to estimate dose, including average daily dose (ADD) and lifetime average daily dose (LADD).

- Section 7, Human Health Toxicity Assessments, presents the noncancer and cancer benchmarks used to evaluate human health effects that may result from exposure to constituents modeled for this risk assessment.

- Section 8, Generating Results, presents the methods used to characterize the risk posed to an individual. It describes the calculation methods used to generate risk-based constituent concentrations that are protective of human health.

- Section 9, Ecological Risk Assessment of Paint Wastes, describes the screening ecological risk assessment (SERA) developed to evaluate the potential ecological risks associated with the management of paint manufacturing wastes.

- Section 10, Analysis of Variability and Uncertainty, discusses the methods that were used in the paints listing risk assessment to account for variability and uncertainty.

The following appendixes, A through W, provide supplemental technical information and supporting data:

- A – Human Health Risk Results

- B – Ecological Risk Results

- C – Sensitivity Analysis

- D – Chemical-Specific Parameters for Source Partitioning and Fate and Transport Models
- E – Waste Management Unit Parameters
- F – Variable Summary of Aboveground Fate and Transport Model
- G – Human Exposure Factors
- H – Distribution Coefficients
- I – Site Data
- J – Statistical Sampling Procedures for Selection of Waste Management Units
- K – Modifications to HWIR Source Partition Model Programs
- L – Source Data
- M – Direct and Indirect Exposure Equations
- N – Air Dispersion and Deposition Modeling
- O – Groundwater Modeling Parameters
- P – Shower Model
- Q – Health Benchmarks
- R – Screening Ecological Risk Assessment Inputs and Calculations
- S – Waste Stream Data
- T – Screening Analysis of Groundwater Daughter Products
- U – Analysis of Groundwater Constituent Time to Impact
- V – Onsite Tank Bounding Analysis
- W – Results of Literature Search on Metal Complexes.

2.0 Analysis Results

This section provides summaries of human health and ecological risk assessments for the paints listing risk assessment. The primary analysis conducted for this risk assessment was a probabilistic analysis, the results of which are presented in this section. Additionally, a deterministic analysis was conducted and those results are presented in Appendix A. Results are presented for the probabilistic analyses and are in terms of protective waste concentrations and protective leachate concentrations. These protective concentrations were established to ensure that 90 percent of the time target risk levels of 1 in 100,000 (1×10^{-5}) individual lifetime cancer risk or hazard quotient of 1.0 for noncancer health effects are not exceeded for the waste management scenarios evaluated. The screening level ecological risk assessment was conducted to evaluate whether maximum (highest physical limit) waste concentrations are protective of ecological receptors. Constituents for which the screening ecological assessment indicated risks of potential concern were assessed further in a Tier 2 ecological analysis. Results of this analysis are also reported in this section.

An overview of the assessment on which these results are based (e.g., waste management scenarios, analysis framework) is provided in Section 3.0. Other sections of this report provide more details on analysis methodologies, parameter values, assumptions, and uncertainties. In this section, Section 2.1 presents results from the human health risk assessment, and Section 2.2 presents the results from the ecological risk assessment. Tables summarizing these results are presented at the end of this section. Appendixes A and B provide more detailed results for human health and ecological risk, respectively.

2.1 Human Health Risk Results

This section presents the protective waste and leachate concentrations that have been determined in the initial human health risk assessment to be protective of human health 90 percent of the time at the target risk levels. Results are presented for four waste management scenarios:

- Landfill disposal of combined solid wastes
- Landfill disposal of emission control dust
- Surface impoundment handling of wastewater
- Treatment tank handling of wastewater.

Probabilistic results are based on a Monte Carlo simulation in which many model input parameter values are varied over 10,000 iterations of the model to yield a statistical distribution of exposures and risks. Results shown in this section are based on the 90th percentile level identified from these distributions. The 90th percentile level means that the waste concentration

listed in the results tables will be protective of human health at the specified target risk level for 90 percent of the scenarios in the Monte Carlo analysis. Results at other percentile levels and the deterministic analysis are presented in Appendix A.

A summary table format is used to present results for each type of analysis. The table shows results for both the air pathway (aboveground) and the groundwater pathway. For each constituent, the waste concentration reported is the paint waste concentration that corresponds to the target risk levels. That is, it is the maximum paint waste concentration that can be disposed of in the WMU and still be protective of 90 percent of the human receptors evaluated in this risk assessment 90 percent of the time.

For the aboveground and groundwater pathways, protective waste concentrations are reported. In addition, protective leachate concentrations are reported for the groundwater pathway. Similar to the protective waste concentrations, protective leachate concentrations are the leachate concentrations for landfills and surface impoundments that correspond to the target risk levels. As such, they are the maximum leachate concentrations that can be generated by a WMU in which paint waste is disposed of and still be protective of human receptors evaluated in this risk assessment 90 percent of the time.

Additionally, the tables show the receptor and pathway that are the basis for the waste concentrations and leachate concentrations presented. For example, if the 90th percentile waste concentration for a given constituent indicates that adult farmer ingestion was the limiting receptor pathway, it means that the adult farmer receptor exposed via the ingestion pathway had the lowest protective concentration for all receptors and pathways evaluated for a given waste management scenario and constituent. It should be noted that the receptor for the inhalation pathway will always be the adult resident because the inhalation noncancer effects are evaluated based on a reference air concentration that is not receptor-specific. Results for other receptors and pathways are presented in Appendix A.

2.1.1 Risk Results for Landfill Disposal of Combined Solid Wastes

Table 2-1 presents the constituent concentration in the waste and leachate that, when used in the Monte Carlo analysis, yielded a distribution of risk levels with a target risk at the 90th percentile level. In these tables, landfill combined solid wastes management scenario results are presented for aboveground and groundwater pathways for all constituents.

2.1.2 Risk Results for Landfill Disposal of Emission Control Dust

Table 2-2 presents the constituent concentration in the waste and leachate that, when used in the Monte Carlo analysis, yielded a distribution of risk levels with a target risk at the 90th percentile level. In these tables, landfill dust waste management scenario results are presented for aboveground and groundwater pathways for all constituents.

2.1.3 Risk Results for Surface Impoundment Handling of Wastewaters

Table 2-3 presents the constituent concentration in the waste and leachate that, when used in the Monte Carlo analysis, yielded a distribution of risk levels with a target risk at the 90th percentile level.

In Table 2-3, surface impoundment aqueous waste management scenario results are presented for aboveground and groundwater pathways. For the aboveground pathway, results are reported only for organic constituents and volatile metals (i.e., mercury species) because only volatile constituents are released from a surface impoundment. For the groundwater pathway, results are reported for all constituents.

2.1.4 Risk Results for Treatment Tank Handling of Wastewaters

Table 2-4 presents the constituent concentration in the waste and leachate that, when used in the Monte Carlo analysis, yielded a distribution of risk levels with a target risk at the 90th percentile level.

In Table 2-4, tank aqueous waste management scenario results are presented only for the aboveground pathway. Because there is no release of constituents to the ground from treatment tanks, there are no groundwater pathway results to report. For the aboveground pathway, results are reported for all organic constituents and volatile metals (i.e., mercury species) because only volatile constituents are released from a tank.

2.2 Ecological Risk Screening Results

This section presents the results of a two-tier screening ecological risk assessment (SERA). Ecological risks were initially evaluated for waste concentrations set to 750,000 ppm. Using a hazard quotient approach, the screening assessment evaluated these waste concentrations for all constituents to determine if they were protective of the environment. The ecological assessment considered the modeled media concentrations (soil, surface water, and sediment) associated with the 750,000-ppm waste concentrations. These media concentrations were compared with chemical stressor concentration limits (CSCLs), which are media concentrations that are protective of ecological receptors. HQs were calculated by dividing the media concentrations by the corresponding CSCLs for several receptors in each medium. HQs of 1 or higher indicate that the human health protective waste concentration may not be protective of ecological receptors.

The ecological assessment was based on media concentrations derived from the probabilistic fate and transport modeling (e.g., 90th percentile media concentrations). However, the ecological assessment itself was a deterministic analysis: a single CSCL was generated for each receptor in each medium. CSCLs were derived using conservative assumptions (e.g., receptors are assumed to derive all of their food from the contaminated area, diets are assumed to consist predominantly of diet items with the highest contaminant uptake rates). HQs were calculated using 90th percentile media concentrations from the probabilistic human health

assessment. Tables 2-5 through 2-8 present the maximum HQs in each medium for the 90th percentile media concentrations for each of the four waste management scenarios.

A second tier analysis was performed for any constituent that had HQs greater than 1 at the 50^{th} or 90^{th} percentile levels in the initial screening assessment. Only two constituents, lead and mercury, did not screen out at the 750,000-ppm level. For the ecological risk assessment, mercury was modeled assuming that the divalent form of mercury was in the waste. Fate and transport modeling accounted for chemical transformation and concentrations of both divalent and methyl species of mercury in surface waters. It is the predicted methylmercury concentrations in surface water that result in HQs greater than 1. In the Tier 2 assessment, constituent-specific waste concentrations that result in a maximum HQ of 1 at the 50^{th} and 90^{th} percentile exposure levels were calculated using the same conservative exposure scenarios in the initial ecological screening assessment. The Tier 2 calculated waste concentrations that would result in a maximum HQ of 1 are as follows:

- Lead
  - 90^{th} percentile – 2.7E+5 ppm
  - 50^{th} percentile – all HQs less than 1
- Divalent mercury
  - 90^{th} percentile – 7.4E+3 ppm
  - 50^{th} percentile – 2.1E+5 ppm.

Table 2-1. Summary of 90th Percentile Target Waste Concentrations in Landfill, Combined Solids

Constituent	CAS No.	Aboveground		Groundwater		
		Target Waste Concentration (mg/kg)	Basis	Target Waste Concentration (mg/kg)	Target Leachate Concentration (mg/L)	Basis
Acrylamide	79-06-1	1.9E+07 E	CF 1	4.7E+02	9.7E-01	AR 1
Acrylonitrile	107-13-1	1.7E+05	CF 1	6.0E+01	1.2E+00	NA 3
Antimony	7440-36-0	4.4E+06 E	CF 2	3.2E+03	8.2E+01	CR 2
Barium	7440-39-3	2.5E+08 E	NA 3	5.7E+07 E	1.6E+05	CR 2
Benzene	71-43-2	7.9E+05	CF 1	4.7E+04	8.3E+01	AR 1
Butylbenzylphthalate	85-68-7	3.5E+11 E	CF 2	L		
Cadmium	7440-43-9	2.8E+06 E	CF 2	2.8E+05	9.5E+02	CR 2
Chloroform	67-66-3	4.0E+07 E	NA 3	1.2E+06 E	1.5E+01	NA 3
Chromium (III)	16065-83-1	1.7E+11 E	CF 2	6.0E+21 E	1.6E+18 E	CR 2
Chromium (VI)	18540-29-9	9.5E+06 E	CF 1	6.6E+04	1.5E+03	CR 2
Cobalt	7440-48-4	6.9E+06 E	NA 3	3.5E+09 E	4.4E+06 E	CR 2
Copper	7440-50-8	1.2E+07 E	NA 3	1.1E+08 E	2.5E+05	NA 5
Cresol, m-	108-39-4	2.7E+10 E	CF 2	3.7E+08 E	3.7E+03	CR 2
Cresol, o-	95-48-7	5.9E+10 E	CF 2	4.3E+09 E	3.7E+03	CR 2
Cresol, p-	106-44-5	1.2E+10 E	CF 2	4.3E+08 E	3.7E+02	CR 2
Di(2-ethylhexylphthalate)	117-81-7	5.0E+09 E	AF 1	L		
Dibutylphthalate	84-74-2	3.2E+11 E	CF 2	L		
Dichloromethane	75-09-2	7.9E+06 E	CF 1	3.3E+05	5.4E+02	NA 3
Dimethylphenol, 2,4-	105-67-9	1.0E+11 E	CF 2	6.4E+12 E	6.7E+02	CR 2
Divalent mercury	7439-97-6(d)	8.7E+05	F 2	2.4E+07 E	3.6E+04	CR 2
Ethylbenzene	100-41-4	2.1E+09 E	NA 3	L		
Ethylene glycol	107-21-1	1.1E+12 E	CF 2	6.2E+06 E	1.5E+05	CR 2
Formaldehyde	50-00-0	4.0E+07 E	CF 1	1.4E+06 E	1.5E+04	CR 2
Lead	7439-92-1	4.3E+08 E	NA 4	8.3E+11 E	2.9E+08 E	NA 5
Mercury	7439-97-6(e)	2.1E+05	NA 3	8.9E+08 E	2.9E+05 S	NA 3
Methanol	67-56-1	3.4E+10 E	CF 2	3.3E+07 E	3.7E+04	CR 2
Methyl ethyl ketone	78-93-3	1.2E+09 E	NA 3	2.2E+05	1.4E+03	NA 3
Methyl isobutyl ketone	108-10-1	1.4E+08 E	NA 3	1.2E+05	6.0E+01	NA 3
Methyl methacrylate	80-62-6	3.8E+08 E	NA 3	4.1E+04	2.3E+02	NA 3
n-Butyl alcohol	71-36-3	4.1E+09 E	CF 2	1.5E+06 E	7.4E+03	CR 2
Nickel	7440-02-0	5.0E+07 E	NA 3	1.8E+08 E	3.8E+05	CR 2
Nickel oxide	1313-99-1	9.1E+07 E	NA 3	B		
Pentachlorophenol	87-86-5	1.7E+08 E	CF 1	1.6E+05	1.2E+02	AR 1

(continued)

Table 2-1. (continued)

Constituent	CAS No.	Aboveground		Groundwater		
		Target Waste Concentration (mg/kg)	Basis	Target Waste Concentration (mg/kg)	Target Leachate Concentration (mg/L)	Basis
Phenol	108-95-2	4.7E+11 E	CF 2	5.7E+08 E	4.4E+04	CR 2
Selenium	7782-49-2	6.3E+07 E	CF 2	3.4E+04	8.4E+02	CR 2
Silver	7440-22-4	5.2E+06 E	CF 2	9.8E+08 E	1.2E+06 E	CR 2
Styrene	100-42-5	3.9E+09 E	NA 3	1.7E+33 E	6.7E+03 S	CR 2
Tetrachloroethylene	127-18-4	2.4E+07 E	CF 1	2.1E+04	3.5E+01	NA 3
Tin	7440-31-5	9.5E+09 E	CF 2	7.4E+18 E	1.6E+15 E	CR 2
Toluene	108-88-3	2.8E+08 E	NA 3	7.8E+06 E	3.9E+02	NA 3
Vinyl acetate	108-05-4	1.4E+08 E	NA 3	G		
Xylene (mixed isomers)	1330-20-7	1.1E+09 E	NA 3	L		
Zinc	7440-66-6	1.3E+08 E	CF 2	4.8E+10 E	4.5E+07 E	CR 2

AF = Adult farmer.
AR = Adult resident.
B = Screened out of pathway due to no benchmark.
CF = Child farmer.
CR = Child resident.
E = The concentration exceeded 1 million ppm.
F = Fisher.
G = Screened out of pathway due to zero well concentration.
L = Screened out of pathway since there was no constituent concentration in the leachate.
M = Screened out of pathway since chemical is a nonvolatile metal.
NA = Not applicable to a particular receptor group.
S = The concentration exceeded solubility checks.

1 = Risk.
2 = HQ ingestion.
3 = HQ inhalation.
4 = Soil Screening Level.
5 = Drinking water action level.

Table 2-2. Summary of 90th Percentile Target Waste Concentrations in Landfill, Dust

Constituent	CAS No.	Aboveground		Groundwater		
		Target Waste Concentration (mg/kg)	Basis	Target Waste Concentration (mg/kg)	Target Leachate Concentration (mg/L)	Basis
Acrylamide	79-06-1	1.4E+07 E	CF 1	3.1E+02	7.0E-01	AR 1
Acrylonitrile	107-13-1	1.3E+05	CF 1	4.3E+01	9.1E-01	NA 3
Antimony	7440-36-0	3.2E+06 E	CF 2	2.3E+03	5.8E+01	CR 2
Barium	7440-39-3	1.9E+08 E	NA 3	2.7E+07 E	9.2E+04	CR 2
Benzene	71-43-2	6.3E+05	CF 1	3.1E+04	5.5E+01	AR 1
Butylbenzylphthalate	85-68-7	3.0E+11 E	CF 2	L		
Cadmium	7440-43-9	2.2E+06 E	CF 2	1.3E+05	5.1E+02	CR 2
Chloroform	67-66-3	3.1E+07 E	NA 3	6.0E+05	9.4E+00	NA 3
Chromium (III)	16065-83-1	1.6E+11 E	CF 2	3.1E+21 E	9.5E+17 E	CR 2
Chromium (VI)	18540-29-9	7.5E+06 E	CF 1	6.8E+04	1.4E+03	CR 2
Cobalt	7440-48-4	5.7E+06 E	NA 3	1.7E+09 E	2.3E+06 E	CR 2
Copper	7440-50-8	9.3E+06 E	NA 3	5.0E+07 E	1.3E+05	NA 5
Cresol, m-	108-39-4	2.1E+10 E	CF 2	1.9E+08 E	2.6E+03	CR 2
Cresol, o-	95-48-7	3.9E+10 E	CF 2	2.0E+09 E	2.6E+03	CR 2
Cresol, p-	106-44-5	8.4E+09 E	CF 2	2.0E+08 E	2.6E+02	CR 2
Di(2-ethylhexylphthalate)	117-81-7	3.9E+09 E	CF 1	L		
Dibutylphthalate	84-74-2	2.8E+11 E	CF 2	L		
Dichloromethane	75-09-2	6.3E+06 E	CF 1	2.4E+05	3.9E+02	NA 3
Dimethylphenol, 2,4-	105-67-9	7.9E+10 E	CF 2	3.0E+12 E	4.7E+02	CR 2
Divalent mercury	7439-97-6(d)	6.0E+05	F 2	8.9E+06 E	1.2E+04	CR 2
Ethylbenzene	100-41-4	1.5E+09 E	NA 3	L		
Ethylene glycol	107-21-1	1.1E+12 E	CF 2	4.3E+06 E	1.1E+05	CR 2
Formaldehyde	50-00-0	2.6E+07 E	CF 1	9.3E+05	1.1E+04	CR 2
Lead	7439-92-1	3.6E+08 E	NA 4	4.0E+11 E	8.2E+07 E	NA 5
Mercury	7439-97-6(e)	1.6E+05	NA 3	3.9E+08 E	1.1E+05 S	NA 3
Methanol	67-56-1	2.2E+10 E	CF 2	2.1E+07 E	2.6E+04	CR 2
Methyl ethyl ketone	78-93-3	8.9E+08 E	NA 3	1.5E+05	1.0E+03	NA 3
Methyl isobutyl ketone	108-10-1	1.0E+08 E	NA 3	7.3E+04	4.2E+01	NA 3
Methyl methacrylate	80-62-6	2.8E+08 E	NA 3	2.8E+04	1.6E+02	NA 3
n-Butyl alcohol	71-36-3	2.7E+09 E	CF 2	9.7E+05	5.3E+03	CR 2
Nickel	7440-02-0	3.6E+07 E	NA 3	1.3E+08 E	2.2E+05	CR 2
Nickel oxide	1313-99-1	7.3E+07 E	NA 3	B		
Pentachlorophenol	87-86-5	1.4E+08 E	CF 1	9.6E+04	6.6E+01	AR 1
Phenol	108-95-2	3.2E+11 E	CF 2	3.2E+08 E	3.2E+04	CR 2
Selenium	7782-49-2	5.0E+07 E	CF 2	2.5E+04	5.9E+02	CR 2

(continued)

Table 2-2. (continued)

Constituent	CAS No.	Aboveground		Groundwater		
		Target Waste Concentration (mg/kg)	Basis	Target Waste Concentration (mg/kg)	Target Leachate Concentration (mg/L)	Basis
Silver	7440-22-4	4.2E+06 E	CF 2	4.4E+08 E	5.5E+05	CR 2
Styrene	100-42-5	2.9E+09 E	NA 3	1.4E+33 E	4.7E+03 S	CR 2
Tetrachloroethylene	127-18-4	1.9E+07 E	CF 1	1.4E+04	2.4E+01	NA 3
Tin	7440-31-5	7.8E+09 E	CF 2	4.1E+18 E	8.9E+14 E	CR 2
Toluene	108-88-3	2.1E+08 E	NA 3	3.7E+06 E	1.8E+02	NA 3
Vinyl acetate	108-05-4	1.1E+08 E	NA 3	G		
Xylene (mixed isomers)	1330-20-7	7.6E+08 E	NA 3	L		
Zinc	7440-66-6	1.1E+08 E	CF 2	1.8E+10 E	1.6E+07 E	CR 2

AF = Adult farmer.
AR = Adult resident.
B = Screened out of pathway due to no benchmark.
CF = Child farmer.
CR = Child resident.
E = The concentration exceeded 1 million ppm.
F = Fisher.
G = Screened out of pathway due to zero well concentration.
L = Screened out of pathway since there was no constituent concentration in the leachate.
M = Screened out of pathway since chemical is a nonvolatile metal.
NA = Not applicable to a particular receptor group.
S = The concentration exceeded solubility checks.

1 = Risk.
2 = HQ ingestion.
3 = HQ inhalation.
4 = Soil Screening Level.
5 = Drinking water action level.

Table 2-3. Summary of 90th Percentile Target Waste Concentrations in Surface Impoundment, Wastewater

Constituent	CAS No.	Aboveground			Groundwater		
		Target Waste Concentration (mg/kg)		Basis	Target Waste Concentration (mg/kg)		Basis
Acrylamide	79-06-1	2.3E+05		AF 1	1.2E+01		AR 1
Acrylonitrile	107-13-1	1.9E+04		CF 1	9.3E+00		NA 3
Antimony	7440-36-0		M		3.9E+02		CR 2
Barium	7440-39-3		M		7.2E+06	E	CR 2
Benzene	71-43-2	1.0E+05		CF 1	5.6E+02		AR 1
Butylbenzylphthalate	85-68-7	5.3E+11	E	F 2	5.6E+07	E	CR 2
Cadmium	7440-43-9		M		3.9E+04		CR 2
Chloroform	67-66-3	2.0E+06	E	NA 3	1.5E+02		NA 3
Chromium (III)	16065-83-1		M		9.7E+18	E	CR 2
Chromium (VI)	18540-29-9		M		8.8E+03		CR 2
Cobalt	7440-48-4		M		2.4E+08	E	CR 2
Copper	7440-50-8		M		1.3E+07	E	NA 5
Cresol, m-	108-39-4	2.0E+07	E	CF 2	2.2E+04		CR 2
Cresol, o-	95-48-7	2.3E+08	E	CF 2	2.5E+04		CR 2
Cresol, p-	106-44-5	1.9E+08	E	AF 2	2.6E+03		CR 2
Di(2-ethylhexylphthalate)	117-81-7	6.3E+08	E	AF 1	1.3E+08	E	CR 1
Dibutylphthalate	84-74-2	4.4E+09	E	CF 2	5.8E+07	E	CR 2
Dichloromethane	75-09-2	1.1E+06	E	CF 1	4.5E+03		NA 3
Dimethylphenol, 2,4-	105-67-9	2.9E+08	E	CF 2	1.7E+04		CR 2
Divalent mercury	7439-97-6(d)	2.5E+04		F 2	6.4E+05		CR 2
Ethylbenzene	100-41-4	4.7E+07	E	NA 3	1.1E+04		NA 3
Ethylene glycol	107-21-1	8.3E+07	E	NA 3	7.9E+05		CR 2
Formaldehyde	50-00-0	1.3E+06	E	CF 1	8.2E+04		CR 2
Lead	7439-92-1		M		1.3E+10	E	NA 5
Mercury	7439-97-6(e)	5.9E+03		NA 3	1.4E+06	E	NA 3
Methanol	67-56-1	1.8E+09	E	CF 2	2.0E+05		CR 2
Methyl ethyl ketone	78-93-3	1.0E+08	E	NA 3	8.2E+03		NA 3
Methyl isobutyl ketone	108-10-1	6.8E+06	E	NA 3	3.4E+02		NA 3
Methyl methacrylate	80-62-6	3.0E+07	E	NA 3	2.1E+03		NA 3
n-Butyl alcohol	71-36-3	2.5E+08	E	CF 2	4.1E+04		CR 2
Nickel	7440-02-0		M		1.8E+07	E	CR 2
Nickel oxide	1313-99-1		M			B	
Pentachlorophenol	87-86-5	1.1E+07	E	CF 1	1.0E+04		AR 1
Phenol	108-95-2	4.9E+09	E	CF 2	2.7E+05		CR 2
Selenium	7782-49-2		M		6.1E+03		CR 2
Silver	7440-22-4		M		4.0E+07	E	CR 2
Styrene	100-42-5	4.7E+07	E	NA 3	4.6E+03		NA 3

(continued)

Table 2-3. (continued)

Constituent	CAS No.	Aboveground		Groundwater	
		Target Waste Concentration (mg/kg)	Basis	Target Waste Concentration (mg/kg)	Basis
Tetrachloroethylene	127-18-4	1.9E+06 E	CF 1	4.8E+02	NA 3
Tin	7440-31-5	M		9.1E+15 E	CR 2
Toluene	108-88-3	1.2E+07 E	NA 3	1.2E+03	NA 3
Vinyl acetate	108-05-4	6.6E+06 E	NA 3	G	
Xylene (mixed isomers)	1330-20-7	1.7E+07 E	NA 3	3.9E+03	NA 3
Zinc	7440-66-6	M		2.9E+09 E	CR 2

AF = Adult farmer.
AR = Adult resident.
B = Screened out of pathway due to no benchmark.
CF = Child farmer.
CR = Child resident.
E = The concentration exceeded 1 million ppm.
F = Fisher.
G = Screened out of pathway due to zero well concentration.
L = Screened out of pathway since there was no constituent concentration in the leachate.
M = Screened out of pathway since chemical is a nonvolatile metal.
NA = Not applicable to a particular receptor group.
S = The concentration exceeded solubility checks.
1 = Risk.
2 = HQ ingestion.
3 = HQ inhalation.
4 = Soil Screening Level.
5 = Drinking water action level.

Table 2-4. Summary of 90th Percentile Target Waste Concentrations in Tanks, Wastewater

Constituent	CAS No.	Aboveground		
		Target Waste Concentration (mg/kg)		Basis
Acrylamide	79-06-1	3.2E+07	E	CF 1
Acrylonitrile	107-13-1	6.9E+04		CF 1
Benzene	71-43-2	1.9E+05		CF 1
Butylbenzylphthalate	85-68-7	1.0E+13	E	CF 2
Chloroform	67-66-3	3.3E+06	E	NA 3
Cresol, m-	108-39-4	1.6E+08	E	CF 2
Cresol, o-	95-48-7	3.4E+09	E	CF 2
Cresol, p-	106-44-5	4.0E+09	E	CF 2
Di(2-ethylhexylphthalate)	117-81-7	3.5E+09	E	AF 1
Dibutylphthalate	84-74-2	1.6E+10	E	CF 2
Dichloromethane	75-09-2	2.1E+06	E	CF 1
Dimethylphenol, 2,4-	105-67-9	4.9E+09	E	CF 2
Divalent mercury	7439-97-6(d)	1.1E+07	E	F 2
Ethylbenzene	100-41-4	1.0E+08	E	NA 3
Ethylene glycol	107-21-1	2.6E+08	E	NA 3
Formaldehyde	50-00-0	2.5E+07	E	CF 1
Mercury	7439-97-6(e)	1.0E+04		NA 3
Methanol	67-56-1	1.7E+10	E	CF 2
Methyl ethyl ketone	78-93-3	5.6E+08	E	NA 3
Methyl isobutyl ketone	108-10-1	3.0E+07	E	NA 3
Methyl methacrylate	80-62-6	8.5E+07	E	NA 3
n-Butyl alcohol	71-36-3	2.4E+09	E	CF 2
Pentachlorophenol	87-86-5	4.4E+08	E	CF 1
Phenol	108-95-2	1.3E+11	E	CF 2
Styrene	100-42-5	1.0E+08	E	NA 3
Tetrachloroethylene	127-18-4	3.5E+06	E	CF 1
Toluene	108-88-3	2.4E+07	E	NA 3
Vinyl acetate	108-05-4	1.6E+07	E	NA 3
Xylene (mixed isomers)	1330-20-7	3.7E+07	E	NA 3

AF = Adult farmer.
AR = Adult resident.
B = Screened out of pathway due to no benchmark.
CF = Child farmer.
CR = Child resident.
E = The concentration exceeded 1 million ppm.
F = Fisher.
G = Screened out of pathway due to zero well concentration.
L = Screened out of pathway since there was no constituent concentration in the leachate.
M = Screened out of pathway since chemical is a nonvolatile metal.
NA = Not applicable to a particular receptor group.
S = The concentration exceeded solubility checks.

1 = Risk.
2 = HQ ingestion.
3 = HQ inhalation.
4 = Soil Screening Level.
5 = Drinking water action level.

Table 2-5. Landfill, Combined Solids—Maximum Ecological HQs in Each Medium (90th Percentile Media Concentrations)

Constituent	CAS No.	Soil		Water		Sediment	
		HQ	Receptor	HQ	Receptor	HQ	Receptor
Acrylamide	79-06-1	ID		ID		ID	
Acrylonitrile	10713-1	<1	Soil Community	ID		ID	
Antimony	7440-36-0	<1	Mammal (Coyote)	<1	Freshwater Community (T)	<1	Benthic Community
Barium	7440-39-3	<1	Bird (Cerulean Warbler)	<1	Freshwater Community (T)	<1	Bird (Green Heron)
Benzene	71-43-2	<1	Mammal (Mule Deer)	<1	Freshwater Community (T)	<1	Benthic Community
Butylbenzylphthalate	85-68-7	<1	Mammal (Black Bear)	<1	Mammal (River Otter)	<1	Benthic Community
Cadmium	7440-43-9	<1	Soil Community	<1	Mammal (Muskrat)	<1	Benthic Community
Chloroform	67-66-3	<1	Mammal (Mule Deer)	<1	Freshwater Community (T)	<1	Benthic Community
Chromium (III)	16065-83-1	<1	Bird (Cerulean Warbler)	<1	Bird (Belted Kingfisher)	<1	Bird (Green Heron)
Chromium (VI)	18540-29-9	<1	Soil Community	<1	Aquatic Plants	<1	Mammal (River Otter)
Cobalt	7440-48-4	<1	Terrestrial Plants	<1	Freshwater Community (T)	ID	
Copper	7440-50-8	<1	Mammal (Raccoon)	<1	Aquatic Plants	<1	Benthic Community
Cresol, m-	108-39-4	ID		ID		ID	
Cresol, o-	95-48-7	ID		ID		ID	
Cresol, p-	106-44-5	ID		ID		ID	
Di(2-ethylhexylphthalate)	117-81-7	<1	Bird (Cerulean Warbler)	<1	Freshwater Community (T)	<1	Benthic Community
Dibutylphthalate	84-74-2	<1	Bird (Cerulean Warbler)	<1	Bird (Belted Kingfisher)	<1	Bird (Green Heron)
Dichloromethane	75-09-2	ID		<1	Freshwater Community (T)	<1	Benthic Community
Dimethylphenol, 2,4-	105-67-9	ID		ID		ID	
Divalent mercury	7439-97-6(d)	<1	Bird (Cerulean Warbler)	9E+01[a]	Bird (Osprey)	<1	Benthic Community
Ethylbenzene	100-41-4	<1	Soil Community	<1	Freshwater Community (T)	<1	Benthic Community
Ethylene glycol	107-21-1	<1	Soil Community	ID		ID	
Formaldehyde	50-00-0	ID		ID		ID	
Lead	7439-92-1	2E+00	Mammal (Mink)	<1	Mammal (River Otter)	<1	Mammal (River Otter)
Mercury	7439-97-6(e)	<1	Soil Community	ID		ID	

(continued)

Table 2-5. (continued)

Constituent	CAS No.	Soil		Water		Sediment	
		HQ	Receptor	HQ	Receptor	HQ	Receptor
Methanol	67-56-1	ID		ID		ID	
Methyl ethyl ketone	78-93-3	<1	Mammal (Mule Deer)	<1	Mammal (River Otter)	<1	Mammal (River Otter)
Methyl isobutyl ketone	108-10-1	ID		ID		ID	
Methyl methacrylate	80-62-6	ID		ID		ID	
n-Butyl alcohol	71-36-3	ID		ID		ID	
Nickel	7440-02-0	<1	Terrestrial Plants	<1	Aquatic Plants	<1	Benthic Community
Pentachlorophenol	87-86-5	<1	Terrestrial Plants	<1	Freshwater Community (T)	<1	Benthic Community
Phenol	108-95-2	<1	Soil Community	<1	Freshwater Community (T)	<1	Benthic Community
Selenium	7782-49-2	<1	Mammal (Mink)	<1	Mammal (River Otter)	<1	Mammal (River Otter)
Silver	7440-22-4	<1	Terrestrial Plants	<1	Freshwater Community (T)	<1	Benthic Community
Styrene	100-42-5	<1	Terrestrial Plants	ID		ID	
Tetrachloroethylene	127-18-4	<1	Soil Community	<1	Freshwater Community (T)	<1	Benthic Community
Tin	7440-31-5	<1	Terrestrial Plants	<1	Freshwater Community (T)	ID	
Toluene	108-88-3	<1	Soil Community	<1	Mammal (Beaver)	<1	Benthic Community
Vinyl acetate	108-05-4	ID		<1	Freshwater Community (T)	<1	Benthic Community
Xylene (mixed isomers)	1330-20-7	<1	Soil Community	<1	Freshwater Community (T)	<1	Benthic Community
Zinc	7440-66-6	<1	Bird (Cerulean Warbler)	<1	Aquatic Plants	<1	Benthic Community

ID = Insufficient data.
T = Total.
[a] Number is based on the transformation of divalent mercury to methylmercury in the waterbody.

Table 2-6. Landfill, Emission Control Dust—Maximum Ecological HQs in Each Medium (90th Percentile Media Concentrations)

Constitutent	CAS	Soil		Water		Sediment	
		HQ	Receptor	HQ	Receptor	HQ	Receptor
Acrylamide	79-06-1	ID		ID		ID	
Acrylonitrile	10713-1	<1	Soil Community	ID		ID	
Antimony	7440-36-0	<1	Mammal (Coyote)	<1	Freshwater Community (T)	<1	Benthic Community
Barium	7440-39-3	<1	Bird (Cerulean Warbler)	<1	Freshwater Community (T)	<1	Bird (Green Heron)
Benzene	71-43-2	<1	Mammal (Mule Deer)	<1	Freshwater Community (T)	<1	Benthic Community
Butylbenzylphthalate	85-68-7	<1	Mammal (Black Bear)	<1	Mammal (River Otter)	<1	Benthic Community
Cadmium	7440-43-9	<1	Soil Community	<1	Mammal (Muskrat)	<1	Benthic Community
Chloroform	67-66-3	<1	Mammal (Mule Deer)	<1	Freshwater Community (T)	<1	Benthic Community
Chromium (III)	16065-83-1	<1	Bird (Cerulean Warbler)	<1	Bird (Belted Kingfisher)	<1	Bird (Green Heron)
Chromium (VI)	18540-29-9	<1	Soil Community	<1	Aquatic Plants	<1	Mammal (River Otter)
Cobalt	7440-48-4	<1	Terrestrial Plants	<1	Freshwater Community (T)	ID	
Copper	7440-50-8	<1	Mammal (Raccoon)	<1	Aquatic Plants	<1	Benthic Community
Cresol, m-	108-39-4	ID		ID		ID	
Cresol, o-	95-48-7	ID		ID		ID	
Cresol, p-	106-44-5	ID		ID		ID	
Di(2-ethylhexylphthalate)	117-81-7	<1	Bird (Cerulean Warbler)	<1	Freshwater Community (T)	<1	Benthic Community
Dibutylphthalate	84-74-2	<1	Bird (Cerulean Warbler)	<1	Bird (Belted Kingfisher)	<	1Bird (Green Heron)
Dichloromethane	75-09-2	ID		<1	Freshwater Community (T)	<1	Benthic Community
Dimethylphenol, 2,4-	105-67-9	ID		ID		ID	
Divalent mercury	7439-97-6(d)	<1	Bird (Cerulean Warbler)	1E+02[a]	Bird (Osprey)	<1	Benthic Community
Ethylbenzene	100-41-4	<1	Soil Community	<1	Freshwater Community (T)	<1	Benthic Community
Ethylene glycol	107-21-1	<1	Soil Community	ID		ID	
Formaldehyde	50-00-0	ID		ID		ID	
Lead	7439-92-1	3E+00	Mammal (Mink)	<1	Mammal (River Otter)	<1	Mammal (River Otter)
Mercury	7439-97-6(e)	<1	Soil Community	ID		ID	

(continued)

Table 2-6. (continued)

Constitutent	CAS	Soil		Water		Sediment	
		HQ	Receptor	HQ	Receptor	HQ	Receptor
Methanol	67-56-1	ID		ID		ID	
Methyl ethyl ketone	78-93-3	<1	Mammal (Mule Deer)	<1	Mammal (River Otter)	<1	Mammal (River Otter)
Methyl isobutyl ketone	108-10-1	ID		ID		ID	
Methyl methacrylate	80-62-6	ID		ID		ID	
n-Butyl alcohol	71-36-3	ID		ID		ID	
Nickel	7440-02-0	<1	Terrestrial Plants	<1	Aquatic Plants	<1	Benthic Community
Pentachlorophenol	87-86-5	<1	Terrestrial Plants	<1	Freshwater Community (T)	<1	Benthic Community
Phenol	108-95-2	<1	Soil Community	<1	Freshwater Community (T)	<1	Benthic Community
Selenium	7782-49-2	<1	Mammal (Mink)	<1	Mammal (River Otter)	<1	Mammal (River Otter)
Silver	7440-22-4	<1	Terrestrial Plants	<1	Freshwater Community (T)	<	1Benthic Community
Styrene	100-42-5	<1	Terrestrial Plants	ID		ID	
Tetrachloroethylene	127-18-4	<1	Soil Community	<1	Freshwater Community (T)	<1	Benthic Community
Tin	7440-31-5	<1	Terrestrial Plants	<1	Freshwater Community (T)	ID	
Toluene	108-88-3	<1	Soil Community	<1	Mammal (Beaver)	<1	Benthic Community
Vinyl acetate	108-05-4	ID		<1	Freshwater Community (T)	<1	Benthic Community
Xylene (mixed isomers)	1330-20-7	<1	Soil Community	<1	Freshwater Community (T)	<1	Benthic Community
Zinc	7440-66-6	<1	Bird (Cerulean Warbler)	<1	Aquatic Plants	<1	Benthic Community

ID = Insufficient data.
T = Total.
[a] Number is based on the transformation of divalent mercury to methylmercury in the waterbody.

Table 2-7. Surface Impoundment, Wastewater—Maximum Ecological HQs in Each Medium (90th Percentile Media Concentrations)

Constitutent	CAS	Soil		Water		Sediment	
		HQ	Receptor	HQ	Receptor	HQ	Receptor
Acrylamide	79-06-1	ID		ID		ID	
Acrylonitrile	107-13-1	<1	Soil Community	ID		ID	
Benzene	71-43-2	<1	Mammal (Mule Deer)	<1	Freshwater Community (T)	<1	Benthic Community
Butylbenzylphthalate	85-68-7	<1	Mammal (Black Bear)	<1	Mammal (River Otter)	<1	Benthic Community
Chloroform	67-66-3	<1	Mammal (Mule Deer)	<1	Freshwater Community (T)	<1	Benthic Community
Cresol, m-	108-39-4	ID		ID		ID	
Cresol, o-	95-48-7	ID		ID		ID	
Cresol, p-	106-44-5	ID		ID		ID	
Di(2-ethylhexylphthalate)	117-81-7	<1	Bird (Cerulean Warbler)	<1	Freshwater Community (T)	<1	Benthic Community
Dibutylphthalate	84-74-2	<1	Bird (Cerulean Warbler)	<1	Bird (Belted Kingfisher)	<1	Bird (Green Heron)
Dichloromethane	75-09-2	ID		<1	Freshwater Community (T)	<1	Benthic Community
Dimethylphenol, 2,4-	105-67-9	ID		ID		ID	
Divalent mercury	7439-97-6(d)	<1	Bird (Cerulean Warbler)	2E+00[a]	Bird (Osprey)	<1	Benthic Community
Ethylbenzene	100-41-4	<1	Soil Community	<1	Freshwater Community (T)	<1	Benthic Community
Ethylene glycol	10-72-11	<1	Soil Community	ID		ID	
Formaldehyde	50-00-0	ID		ID		ID	
Mercury	7439-97-6(e)	<1	Soil Community	ID		ID	
Methanol	67-56-1	ID		ID		ID	
Methyl ethyl ketone	78-93-3	<1	Mammal (Mule Deer)	<1	Mammal (River Otter)	<1	Mammal (River Otter)
Methyl isobutyl ketone	108-10-1	ID		ID		ID	
Methyl methacrylate	80-62-6	ID		ID		ID	
n-Butyl alcohol	71-36-3	ID		ID		ID	
Pentachlorophenol	87-86-5	<1	Terrestrial Plants	<1	Freshwater Community (T)	<1	Benthic Community
Phenol	108-95-2	<1	Soil Community	<1	Freshwater Community (T)	<1	Benthic Community
Styrene	100-42-5	<1	Terrestrial Plants	ID		ID	

(continued)

Table 2-7. (continued)

Constitutent	CAS	Soil		Water		Sediment	
		HQ	Receptor	HQ	Receptor	HQ	Receptor
Tetrachloroethylene	127-18-4	<1	Soil Community	<1	Freshwater Community (T)	<1	Benthic Community
Toluene	108-88-3	<1	Soil Community	<1	Mammal (Beaver)	<1	Benthic Community
Vinyl acetate	108-05-4	ID		<1	Freshwater Community (T)	<1	Benthic Community
Xylene (mixed isomers)	1330-20-7	<1	Soil Community	<1	Freshwater Community (T)	<1	Benthic Community

ID = Insufficient data.
T = Total.
[a] Number is based on the transformation of divalent mercury to methylmercury in the waterbody.

Table 2-8. Treatment Tanks, Wastewater—Maximum Ecological HQs in Each Medium (90th Percentile Media Concentrations)

Constitutent	CAS	Soil		Water		Sediment	
		HQ	Receptor	HQ	Receptor	HQ	Receptor
Acrylamide	79-06-1	ID		ID		ID	
Acrylonitrile	107-13-1	<1	Soil Community	ID		ID	
Benzene	71-43-2	<1	Mammal (Mule Deer)	<1	Freshwater Community (T)	<1	Benthic Community
Butylbenzylphthalate	85-68-7	<1	Mammal (Black Bear)	<1	Mammal (River Otter)	<1	Benthic Community
Chloroform	67-66-3	<1	Mammal (Mule Deer)	<1	Freshwater Community (T)	<1	Benthic Community
Cresol, m-	108-39-4	ID		ID		ID	
Cresol, o-	95-48-7	ID		ID		ID	
Cresol, p-	106-44-5	ID		ID		ID	
Di(2-ethylhexylphthalate)	117-81-7	<1	Bird (Cerulean Warbler)	<1	Freshwater Community (T)	<1	Benthic Community
Dibutylphthalate	84-74-2	<1	Bird (Cerulean Warbler)	<1	Bird (Belted Kingfisher)	<1	Bird (Green Heron)
Dichloromethane	75-09-2	ID		<1	Freshwater Community (T)	<1	Benthic Community
Dimethylphenol, 2,4-	105-67-9	ID		ID		ID	
Divalent mercury	7439-97-6(d)	<1	Bird (Cerulean Warbler)	<1[a]	Bird (Osprey)	<1	Benthic Community
Ethylbenzene	100-41-4	<1	Soil Community	<1	Freshwater Community (T)	<1	Benthic Community
Ethylene glycol	107-21-1	<1	Soil Community	ID		ID	
Formaldehyde	50-00-0	ID		ID		ID	
Mercury	7439-97-6(e)	<1	Soil Community	ID		ID	
Methanol	67-56-1	ID		ID		ID	
Methyl ethyl ketone	78-93-3	<1	Mammal (Mule Deer)	<1	Mammal (River Otter)	<1	Mammal (River Otter)
Methyl isobutyl ketone	108-10-1	ID		ID		ID	
Methyl mercury	22967-92-6	NA		<1	Bird (Osprey)	NA	
Methyl methacrylate	80-62-6	ID		ID		ID	
n-Butyl alcohol	71-36-3	ID		ID		ID	
Pentachlorophenol	87-86-5	<1	Terrestrial Plants	<1	Freshwater Community (T)	<1	Benthic Community
Phenol	108-95-2	<1	Soil Community	<1	Freshwater Community (T)	<1	Benthic Community

(continued)

Table 2-8. (continued)

Constitutent	CAS	Soil		Water		Sediment	
		HQ	Receptor	HQ	Receptor	HQ	Receptor
Styrene	100-42-5	<1	Terrestrial Plants	ID		ID	
Tetrachloroethylene	127-18-4	<1	Soil Community	<1	Freshwater Community (T)	<1	Benthic Community
Toluene	108-88-3	<1	Soil Community	<1	Mammal (Beaver)	<1	Benthic Community
Vinyl acetate	108-05-4	ID		<1	Freshwater Community (T)	<1	Benthic Community
Xylene (mixed isomers)	1330-20-7	<1	Soil Community	<1	Freshwater Community (T)	<1	Benthic Community

ID = Insufficient data.
T = Total.
[a] Number is based on the transformation of divalent mercury to methylmercury in the waterbody.