APPENDIX O

ECOLOGICAL RISK ASSESSMENT DATA

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APPENDIX O
(PART 1)

OHIO RAPID ASSESSMENT METHOD FOR WETLANDS APPLIED TO ERIE BURNING GROUND

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Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary Worksheet** **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Background Information

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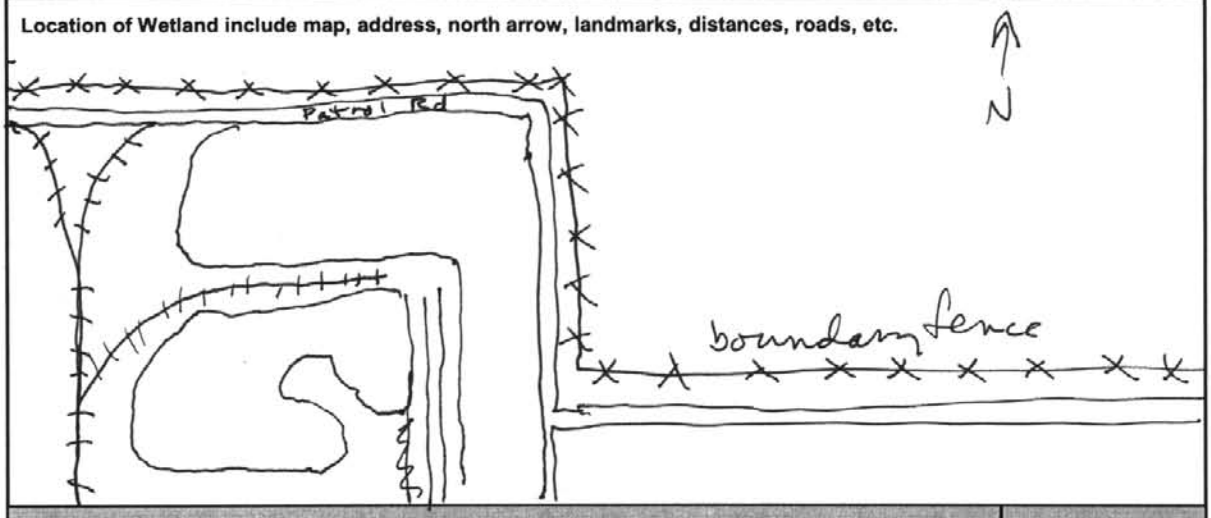
Date:	5/19/04
Affiliation:	SAIC Wetland Ecologist
Address:	151 Lafayette Dr. Oak Ridge, TN 37830
Phone Number:	865/481-8732
e-mail address:	grotonj@saic.com
Name of Wetland:	Erie Burning Ground
Vegetation Communit(ies):	
HGM Class(es):	

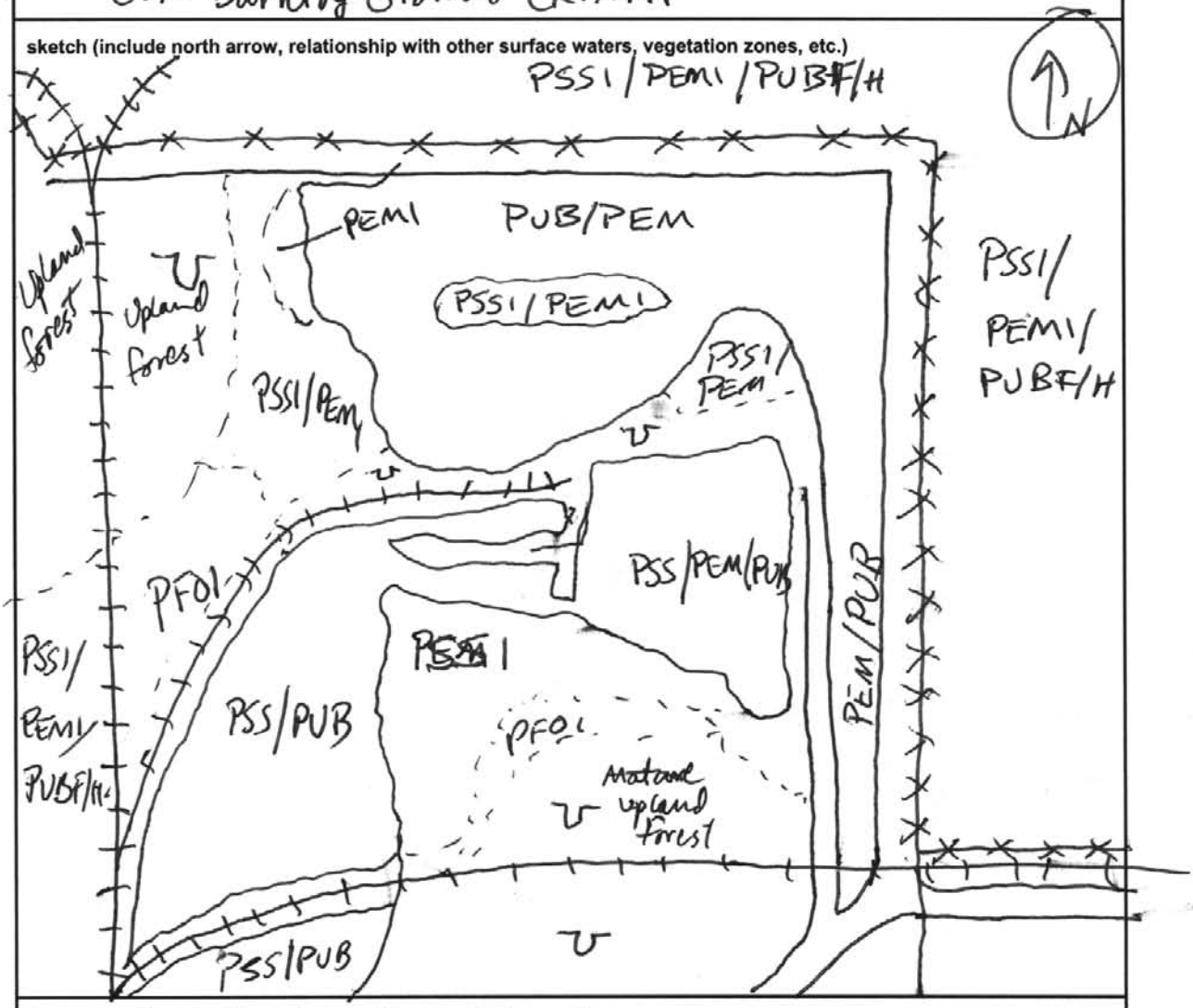
Location of Wetland include map, address, north arrow, landmarks, distances, roads, etc.



Lat/Long or UTM Coordinate	UTM Zone 17 490380 E 4563944 N
USGS Quad Name	Windham
County	Portage
Township	
Section and Subsection	
Hydrologic Unit Code	
Site Visit	10/27-30/2003
National Wetland Inventory Map	
Ohio Wetland Inventory Map	
Soil Survey	
Delineation report/map	
Wetland Size (acres, hectares)	

Name: Erie Burning Ground CRVAAP

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)



Comments, Narrative Discussion, Justification of Category Changes

Erie Burning Ground is part of very large wetland complex heavily influenced by historic and ongoing beaver activity

Hydrology is a composite of previous human alteration and beavers.

Wetland boundary extends well beyond fence line and site may cover 50-100 acres of wetlands.

Waste disposal activities began in 1941 - mostly explosives & propellants; also heavy metals and SVOCs possible

Final score : 81	Category 3

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Unit if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a mitigation site, conservation site, etc.		
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.		
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.		
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.		
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	(NO) Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	(NO) Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	(NO) Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	(NO) Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	(NO) Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	(NO) Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	(NO) Go to Question 8a

#	Question	Circle one	
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b
8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 9d	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 9d
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio, Erie County, and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Quantitative Rating

Metric 1. Wetland area (max 6 pts). Estimate the area of wetland. Select the appropriate size class and assign score. Estimated areas should clearly place the wetland within the appropriate class.		**score**
6pts	≥50 acres (≥ 20.2ha)	
5pts	25 - <50 acres (10.1 - <20.2ha)	5
4pts	10 - <25 acres (4.0 - <10.1ha)	
3pts	3 - <10 acres (1.2 - <4.0ha)	
2pts	0.3 - <3 acres (0.12 - <1.2ha)	
1pt	0.1 - <0.3 acres (0.04 - <0.12ha)	
0pts	< 0.1 acres (0.04ha)	

Table 2. Metric to English conversion table with visual estimation sizes.

acres	ft^2	yd^2	ft on side	yd on side	ha	m^2	m on side
50	2,177,983	241,998	1476	492	20.2	202,000	449
25	1,088,992	120,999	1044	348	10.1	101,000	318
10	435,596	48,340	660	220	4.1	41,000	203
3	130,679	14,520	362	121	1.2	12,000	110
0.3	13,067	1,452	114	38	0.12	1,200	35
0.1	4,356	484	66	22	0.04	400	20

Metric 2. Upland buffers and intensity of surrounding land uses. Maximum 14 points. Wetlands are systems transitional between upland and aquatic environments. Wetlands without "buffers", or that are located where human land use is more intensive, are often, but not always, more degraded.		**score**
2a. Average Buffer Width (abw). Calculate the average buffer width and select only one score. To calculate abw, estimate buffer width on each side (max of 50m) and divide by the number of sides. Example: abw of a wetland with buffers of 100m, 25m, 10m and 0m would be calculated as follows: abw = (50m + 25m + 10m + 0m)/4 = 21.25m. Intensive land uses are not buffers, e.g. active row cropping, recently abandoned fields, paved areas, housing developments, unfenced pasture, etc.		
7pts	WIDE. >50m (164ft) or more around perimeter.	7
4pts	MEDIUM. 25m to <50m (82 to <164ft) around the perimeter.	
1pt	NARROW. 10m to <25m (32 to <82ft) around the perimeter.	
0pts	VERY NARROW. <10m (<32ft) around perimeter.	
2b. Intensity of predominant surrounding land use(s). Select one, or double check up to two and average score, for the intensity of the predominant land use(s) outside the wetland's buffer zone (if any).		
7pts	VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc.	7
5pts	LOW. Old field (>10 yrs), shrubland, young 2nd growth forest, etc.	
3pts	MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field, etc.	
1pt	HIGH. urban, industrial, open pasture, row cropping, mining, construction, etc.	

19

subtotal

19

subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	3
1pts	Precipitation	1
3pts	Seasonal surface water	3
5pts	Perennial surface water (lake or stream)	5
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** "Floodplain" is defined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	1
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. "Different adjacent land uses" include agricultural, commercial, industrial, mining, or residential uses.	1
1pt	**part of wetland or upland (e.g. forest, prairie) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish"like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply	1
1pt	**part of riparian or upland corridor**. See description above.	1
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	3
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	4
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

17

23

subtotal

42

subtotal from previous page

3e. Modifications to natural hydrologic regime. Check all observable modifications from list below. Score by selecting the most appropriate description of the wetland. Scores may be double checked and averaged. This question asks the Rater to evaluate the "intactness" of, or lack of disturbance to, the natural hydrologic regime of the type of wetland that is being evaluated.

It is very important to stress that this question does not discriminate between wetlands with different types of hydrologic regimes, e.g. between a forested seep wetland located on a floodplain with seasonal inundation and a leatherleaf (*Chamaedaphne calyculata*) bog with precipitation and minor amounts of surface run-off from a small watershed. Rather, it asks the rater to evaluate the "intactness" of the hydrologic regime attributable to *that type of wetland*. In the example above, both the forested seep wetland and the leatherleaf bog can score the maximum points (12) if there no, or no apparent, modifications to the natural hydrologic regime.

Once the Rater has listed all possible past and ongoing disturbances, the Rater should check the most appropriate category to describe the present state of the wetland. In instances where the Rater believes that a wetland falls between two categories, or where the Rater is uncertain as to which category is appropriate, it is appropriate to "double check" and average the score.

The labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a hydrologic disturbance continuum, from very high to very low or no disturbance.

The Rater may check one or several of these possible disturbances, yet still determine that the natural hydrologic regime is intact. However, see Metric 4 where these same disturbances may be habitat alterations.

Check all that are observed present in or near the wetland.

X	ditch(es), in or near the wetland		point source discharges to the (non-stormwater)
	tile(s), in or near the wetland		filling/grading activities in or near the wetland
X	dike(s), in or near the wetland	X	road beds/RR beds in or near the wetland
	weir(s), in or near the wetland		dredging activities in or near the wetland
	stormwater inputs (addition of water)	X	other (specify)

Circle one answer. Have any of the disturbances identified above caused or appear to have caused more than trivial alterations to the wetland's natural hydrologic regime, or have they occurred so far in the past that current hydrology should be considered to be "natural."?	**YES** Assign a score 1, 3 or 7, or an intermediate score, depending on degree of recovery from the disturbance.	**NO** Assign a score of 12 since there are no or no apparent modifications.	**NOT SURE** Double check "none or none apparent" and "recovered" and assign a score of 9.5.

Select one or double check adjoining numbers and average the score.		**score**
12pts	NONE OR NONE APPARENT. There are no modifications or no modifications that are apparent to the rater.	
7pts	RECOVERED. The wetland appears to have recovered from past modifications.	
3pts	RECOVERING. The wetland appears to be in the process of recovering from past modifications.	
1pt	RECENT OR NO RECOVERY. The modifications have occurred recently occurred, and/or the wetland has not recovered from past modifications, and/or the modifications are ongoing.	

9.5

This could change depending on remediation requirements

9.5

subtotal

32.5 (30 max allowed)

51.5

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be "natural."?	**YES** Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	**NO** Assign a score of 4 since there are no or no apparent modifications.	**NOT SURE** Double check "none or none apparent" and "recovered" and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	2.5
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	6
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to <u>not</u> be a good example of its type or class because of past or present disturbances, successional state, etc.	

8.5

subtotal

60

subtotal from previous page

4c. Habitat alteration. This question evaluates the "intactness" the natural habitat of the type of wetland that is being evaluated. This question does not discriminate between wetlands with different types of habitat. Check all possible alterations that are observed. All available information, field visits, aerial photos, maps, etc. can be used to identify a possible alterations. Evaluate whether the alteration is trivial in relation to the wetlands overall habitat. Select the most appropriate score that best describes the present state of the wetland. It is appropriate to "double check" and average scores. In some instances, the scores can be viewed as a habitat alteration continuum, from very high to very low or no disturbance. **The Rater may check one or several of these possible disturbances, yet still determine that the natural habitat is intact.**

Check all that are observed present in or near the wetland.

	Mowing		Herbaceous layer/aquatic bed removal
	Grazing (cattle, sheep, pigs, etc.)		Sedimentation
	Clearcutting		Dredging
	Selective cutting		Farming
	Woody debris removal		Nutrient enrichment, e.g. nuisance algae
X	Toxic pollutants		Other (specify)
	Shrub/sapling removal		Other (specify)

Circle one answer. Have any of the disturbances identified above caused or appeared to cause more than trivial alterations to the wetland's natural habitat, or have occurred so far in the past that current habitat should be considered to be "natural."?	YES Assign a score 1, 3 or 6, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 9 since there are no or no apparent modifications.	NOT SURE Double check "none or none apparent" and "recovered" and assign a score of 7.5.

Select one score or double check adjoining numbers and average the score.		
9pts	NONE OR NONE APPARENT. There are no alterations, or no alterations that are apparent to the Rater.	
6pts	RECOVERED. The wetland appears to have recovered from past alterations.	
3pts	RECOVERING. The wetland appears to be in the process of recovering from past alterations.	
1pt	RECENT OR NO RECOVERY. The alterations have occurred recently, and/or the wetland has not recovered from past alterations, and/or the alterations are ongoing.	

4.5

Metric 5. Special wetland communities. Maximum 10 points. Assign or deduct points if wetland has the feature described. Refer to Narrative Rating for guidance. No wetland can receive more than 10 points even if multiple categories are applicable.			**score**
	Bog (10 pts)		Lake plains sand prairies (Oak Openings) (10 pts)
	Fen (10 pts)		Relict wet prairies (10 pts)
	Old Growth Forest (10 pts)		Known occurrence of threatened/endangered species (10 pts)
	Mature Forested Wetland (5 pts)		Significant migratory songbird/waterfowl habitat (10 pts)
	Coastal wetlands, unrestricted hydrology (10 pts)		Category 1 wetlands (See Narrative Rating #5) (-10 pts)
	Coastal wetlands, restricted hydrology (5 pts)		

4.5

subtotal

64.5

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	2
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	2
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	2
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	2
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	2
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

10

subtotal

74.5

subtotal from previous page

6b. Horizontal (plan view) interspersion. Select only one and assign score. Evaluate the wetland from a "plan view," i.e. as if the looking down upon it. See Figure 1.		
5pts	HIGH. Wetland has a high degree of interspersion.	5
4pts	MODERATELY HIGH. Wetland has a moderately high degree of interspersion.	
3pts	MODERATE. Wetland has a moderate degree of interspersion.	
2pts	MODERATELY LOW. Wetland has a moderately low degree of interspersion.	
1pt	LOW. Wetland has a low degree of interspersion.	
0pts	NONE. Wetland has no plan view interspersion.	

6c. Coverage of Invasive Plant Species. Refer to Table 1 on Page 7 for list. Select only one and assign score.		
-5pts	Extensive. >75% areal cover of invasive species	
-3pts	Moderate 25-75% areal cover of invasive species	
-1pt	Sparse. 5-25% areal cover of invasive species	-1
0pts	Nearly absent. <5% areal cover of invasive species	0
1pt	Absent.	

6d. Microtopography. Check each feature present in the wetland. Assign cover score of 0 to 3 using Table 6. Evaluate various microtopograhic habitat features often present in wetlands.	
Vegetated hummocks and tussocks.	2
Coarse woody debris >15cm (6in) in diameter	1
Standing dead trees >25cm (10in) diameter at breast height	
Amphibian breeding habitat, e.g. vernal pools with standing water of sufficient duration and depth to support reproduction, or habitat for frog reproduction.	2

Table 6. Cover scale for microtopographic habitat features.

microtopographic habitat quality	narrative description
0	feature is absent or functionally absent from the wetland
1	feature is present in the wetland in very small amounts or if more common, of low quality
2	feature is present in moderate amounts, but not of highest quality, or in small amounts of highest quality
3	present in moderate or greater amounts and of highest quality

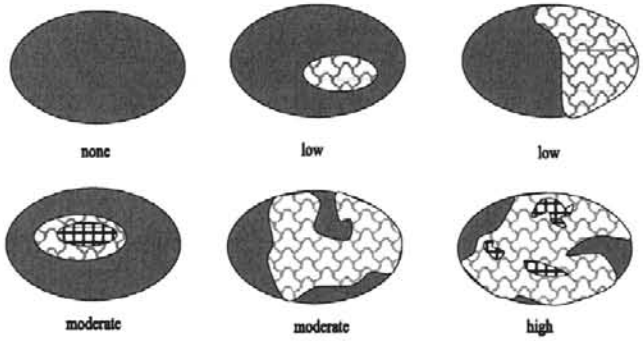


Figure 1. Hypothetical wetlands for estimating degree of interspersion.

83.5 81

GRAND TOTAL

End of Quantitative Rating. Complete Categorization Worksheets.

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: http://www.epa.state.oh.us/dsw/401/401.html

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES (NO)	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES (NO)	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES (NO)	If yes, Category 3.
	Question 4. Significant bird habitat	YES (NO)	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES (NO)	If yes, Category 1.
	Question 6. Bogs	YES (NO)	If yes, Category 3.
	Question 7. Fens	YES (NO)	If yes, Category 3.
	Question 8a. Old Growth Forest	YES (NO)	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES (NO)	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES (NO)	If yes, Category 3
	Question 11. Relict Wet Prairies	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	5	
	Metric 2. Buffers and surrounding land use	14	
	Metric 3. Hydrology (Max 30)	30	32.5 actual *
	Metric 4. Habitat	13	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	19	
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	81	Category based on score breakpoints

* ~~could be 37.5 w/ high pH GW~~ 993

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	NO	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	NO	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	NO	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on an quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	Category 2	Category 3

End of Ohio Rapid Assessment Method for Wetlands.

APPENDIX O
(PART 2)

COMPUTATIONS FOR LEVEL II ECOLOGICAL RISK ASSESSMENT

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Table O-1. Log Octanol-Water Partition Coefficients (Kow) for Erie Burning Ground Chemicals of Interest

Chemicals of Interest	CAS Number	Log Kow[a] (L/kg)	Source
1,1,1-Trichloroethane	71-55-6	2.48	EPA 1995a in Jones, et al 1996
1,1,2,2-Tetrachloroethane	79-34-5	2.39	EPA 1995a in Jones, et al 1996
1,1,2,2-Tetrachloroethylene	127-18-4	2.67	EPA 1995e in Sample, et al 1996
1,1,2-Trichloroethane	79-00-5	2.17	EPA 1995
1,1'-Biphenyl	92-52-4	4.09	Schwarzenbch, et al 1993
1,1-Dichloroethane	75-34-3	4.00	EPA 1995a in Jones, et al 1996
1,1-Dichloroethene	75-35-4	2.13	EPA 1995a in Jones, et al 1996
1,1-Dichloroethylene	75-35-4	5.00	EPA 1995e in Sample, et al 1996
1,2,2-Trichloro-1,1,2-trifluoroe	76-13-1	3.16	Hansch and Leo 1985 in Syracuse 1996
1,2,3,4-Tetrachlorobenzene	634-66-2	4.55	Swarzenbch, et al 1993
1,2,3-Trichlorobenzene	87-61-6	4.05	Sangster 1994 in Syracuse 1996
1,2,3-Trichloropropane	96-18-4	1.98	Russom, et al 1996
1,2,4,5-Tetrachlorobenzene	95-94-3	4.64	Hansch and Leo 1985 in Syracuse 1996
1,2,4-Trichlorobenzene	120-82-1	4.02	EPA 1995d
1,2,4-Trimethyl benzene	95-63-6	3.63	Hansch, et al 1995 in Syracuse 1996
1,2-Dibromo-3-Chloropropane	96-12-8	2.96	Chem Inspect Test Inst. 1992 in Syracuse 1996
Indeno(1,2,3-*cd*)pyrene	193-39-5	6.60	GEMS Graphicla Exposure Modeling System CLOGP3 (1986)
1,2-Dichloro-1,1,2,2-tetrafluor	76-14-2	2.82	Hansch and Leo 1985 in Syracuse 1996
1,2-Dichlorobenzene	95-50-1	3.38	EPA 1995d
1,2-Dichloroethane	107-06-2	1.47	EPA 1995a in Jones, et al 1996
1,2-Dichloroethene	540-59-0	1.86	EPA 1995a in Jones, et al 1996
1,2-Dichloroethylene	540-59-0	1.86	EPA 1995e in Sample, et al 1996
1,2-Dimethylbenzene	95-47-6	3.12	Schwarzenbch, et al 1993
1,2-Diphenylhydrazine	122-66-7	2.94	Hansch and Leo 1985 in Syracuse 1996
1,3,5-Trinitrobenzene	99-35-4	1.18	Hansch and Leo 1985 in Syracuse 1996
1,3-Butadiene	106-99-0	1.99	Hansch and Leo 1985 in Syracuse 1996
1,3-Dichlorobenzene	541-73-1	3.43	EPA 1995a in Jones, et al 1996
1,3-Dichloropropene	542-75-6	2.00	EPA 1995a in Jones, et al 1996
1,3-Dinitrobenzene	99-65-0	1.49	Hansch and Leo 1985 in Syracuse 1996
1,4-Dichlorobenzene	95-50-1	3.42	EPA 1995a in Jones, et al 1996
1,4-Dinitrobenzene	100-25-4	1.46	Hansch and Leo 1985 in Syracuse 1996
1,4-Dioxane	123-91-1	-0.39	EPA 1995e in Sample, et al 1996
1,4-Naphthoquinone	130-15-4	1.71	Hansch, et al 1995 in Syracuse 1996
1-12'-Dimethybenz(a)anthracene	57-97-6	5.80	Hansch and Leo 1985 in Syracuse 1996
1-Hexanol	111-27-3	2.03	Schwarzenbch, et al 1993
1-Methylnapthalene	90-12-0	3.87	Syracuse 1996 in Jones, et al 1996
1-Nitropropane	108-03-2	0.87	Hansch and Leo 1985 in Syracuse 1996
1-Octanol	111-87-5	2.84	Schwarzenbch, et al 1993
1-Pentanol	71-41-0	1.51	Syracuse 1996 in Jones, et al 1996
2,2'-oxybis(1-chloropropane)	108-60-1	2.48	Kawamoto, K and Urano, K 1989 in Syracuse 1996
2,3,4,5-Tetrachlorophenol	4901-51-3	4.21	Hansch and Leo 1985 in Syracuse 1996
2,3,4,6-Tetrachlorophenol	58-90-2	4.45	Russom, et al 1996i
2,3,5,6-Tetrachloroaniline	3481-20-7	4.10	Russom, et al 1996
2,3,7,8-Tetrachloro-Dibenzodioxin	1746-01-6	6.53	EPA 1995e in Sample, et al 1996f
2,4,5-Trichloroaniline	636-30-6	4.01	EPA 1995a in Jones, et al 1996
2,4,5-Trichlorophenoxyacetic acid	93-76-5	3.31	Hansch and Leo 1985 in Syracuse 1996
2,4,6-Trichlorophenol	88-06-2	3.69	Hansch and Leo 1985 in Syracuse 1996
2,4,6-Trinitrotoluene	118-96-7	1.60	Hansch and Leo 1985 in Syracuse 1996
2,4-D	94-75-7	2.81	EPA 1995ck
2,4-Dichloroaniline	554-00-7	2.78	Sangster 1994 in Syracuse 1996
2,4-Dichlorophenol	120-83-2	3.06	Russom, et al 1996
2,4-Dimethylphenol	105-67-9	2.35	Swarzenbch, et al 1993
2,4-Dinitrophenol	51-28-5	1.54	Howard 1990
2,4-Dinitrotoluene	121-14-2	1.98	Howard 1990
2,6-Dichlorophenol	87-65-0	2.75	Hansch, et al 1995 in Syracuse 1996
2,6-Dinitrotoluene	606-20-2	1.72	Howard 1990
2-Butanone	79-93-3	0.29	EPA 1995a in Jones et al 1996
2-Chloronaphthalene	91-58-7	3.98	Sangster 1994 in Syracuse 1996
2-Chlorophenol	95-57-8	2.15	Howard 1990.

Table O-1. Log Octanol-Water Partition Coefficients (Kow) for Erie Burning Ground Chemicals of Interest

Chemicals of Interest	CAS Number	Log Kow[a] (L/kg)	Source
2-Chloropropane	75-29-6	1.90	Hansch and Leo 1985 in Syracuse 1996
2-Chlorotoluene	95-49-8	3.42	Hansch and Leo 1985 in Syracuse 1996
2-Hexanone	591-78-6	1.38	EPA 1995a in Jones, et al 1996
2-Methylnaphthalene	91-57-6	-1.90	SCDM 1993 in HAZWRAP 1994
2-Methylnapthalene	91-57-6	3.86	Hansch and Leo 1985 in Syracuse 1996
2-Methylphenol	95-48-7	1.99	EPA 1995a in Jones, et al 1996
2-Naphthylamine	91-59-8	2.28	Hansch and Leo 1985 in Syracuse 1996
2-Nitrophenol	88-75-5	1.79	Howard 1990
2-Octanone	111-13-7	2.37	Syracuse 1996 in Jones, et al 1996
2-Picoline	109-06-8	1.11	Russom, et al 1996
2-Propanol	67-63-0	0.05	Hansch and Leo 1985 in Syracuse 1996
2-Propenoic Acid	79-10-7	0.35	Hansch, et al 1995 in Syracuse 1996
3,3'-Dichlorobenzidine	91-94-1	3.51	Howard 1990j
3,3'-Dimethoxybenzidine	119-90-4	1.81	Debnath, et al 1992 in Syracuse 1996
3,3'-Dimethylbenziding	119-93-7	2.34	Hansch and Leo 1985 in Syracuse 1996
3,4-Dichloroaniline	95-76-1	2.69	Russom, et al 1996
3,4-Dichlorophenol	95-77-2	3.33	Hansch and Leo 1985 in Syracuse 1996
3-Chloroaniline	108-42-9	1.88	Hansch and Leo 1985 in Syracuse 1996
3-Chlorophenol	108-43-0	2.50	Howard 1990.
3-Nitroaniline	99-09-2	1.37	Hansch and Leo 1985 in Syracuse 1996
3-Pentanone	96-22-0	0.99	Hansch and Leo 1985 in Syracuse 1996
4,4-Methylenedianiline	101-77-9	1.59	Hansch and Leo 1985 in Syracuse 1996
4,6-Dinitro-2-methylphenol	534-52-1	2.12	Hansch and Leo 1985 in Syracuse 1996
4-Bromoaniline	106-40-1	2.26	Hansch and Leo 1985 in Syracuse 1996
4-Bromophenyl phenyl-ether	101-55-3	5.00	EPA 1995a in Jones et al 1996
4-Chloro-3-methylphenol	35421-08-0	3.10	Russom, et al 1996
4-chloroaniline	106-47-8	1.83	Howard 1990
4-Chlorophenol	106-48-9	2.39	Howard 1990.
4-Chlorophenyl-phenyl ether	7005-72-3	4.08	Sangster 1994 in Syracuse 1996
4-Chlorotoluene	106-43-4	3.33	Hansch and Leo 1985 in Syracuse 1996
4-Methyl 2-Pentanone	108-10-1	1.31	Syracuse 1996 in Jones, et al 1996
4-Methylphenol	106-44-5	1.90	SCDM 1993 in HAZWRAP 1994
4-Nitroaniline	100-01-6	1.39	Hansch and Leo 1985 in Syracuse 1996
4-Nitrophenol	100-02-7	1.91	Howard 1990
4-Nitroquinoline-1-oxide	56-57-5	1.09	Hansch and Leo 1985 in Syracuse 1996
4-Toluidine	106-49-0	1.39	Russom, et al 1996
5-Nitro-o-Toluidine	99-55-8	1.87	Hansch, et al 1995 in Syracuse 1996
Acenaphthene	83-32-9	3.92	EPA 1995a in Jones, et al 1996
Acenaphthylene	208-96-8	4.10	SCDM 1993 in HAZWRAP 1994
Acetone	67-64-1	-0.24	EPA 1995a in Jones, et al 1996
Acetonitrile	75-05-8	0.25	Howard 1990
Acetonitrile	75-05-8	-0.34	Hansch and Leo 1995 in Syracuse 1996
Acrolein	107-02-8	-0.01	Hansch and Leo 1985 in Syracuse 1996
Acrylamide	79-06-1	-0.67	Howard 1990
Aldicarb	116-06-3	1.13	EPA 1995c
Aldrin	309-00-2	6.50	EPA 1995e in Sample, et al 1996
alpha, alpha-Dimethylphenethylamine	122-09-8	1.90	Hansch and Leo 1985 in Syracuse 1996
alpha-BHC	319-84-6	3.80	SCDM 1993 in HAZWRAP 1994
2-Amino-4,6-dinitrotoluene	35572-78-2	1.94	(estimated, Talmage et al. 1999)
4-Amino-2,6-dinitrotoluene	19406-51-0	no data	No Source
Aniline	62-53-3	0.90	Howard 1990
Anthracene	120-12-7	4.55	EPA 1995a in Jones, et al 1996
PCB-1016	1264-11-2	5.60	ATSDR 1989 in Jones, et al 1996
Aroclor 1221	11104-28-2	4.70	ATSDR 1989 in Jones, et al 1996
Aroclor 1232	11141-16-5	5.10	ATSDR 1989 in Jones, et al 1996
Aroclor 1242	53469-21-9	5.60	ATSDR 1989 in Jones, et al 1996
Aroclor 1248	12672-29-6	6.20	ATSDR 1989 in Jones, et al 1996
PCB-1248	12672-29-6	6.20	ATSDR 1989 in Jones, et al 1996
PCB-1254	27323-18-8	6.50	ATSDR 1989 in Jones, et al 1996

Table O-1. Log Octanol-Water Partition Coefficients (Kow) for Erie Burning Ground Chemicals of Interest

Chemicals of Interest	CAS Number	Log Kow[a] (L/kg)	Source
Aroclor 1260	11096-82-5	6.80	ATSDR 1989 in Jones, et al 1996
Atrazine	1912-24-9	2.75	EPA 1995c
Azobenzene	103-33-3	3.82	Hansch and Leo 1985 in Syracuse 1996
Benzaldehyde	100-52-7	1.48	Schwarzenbch, et al 1993
Benzene	71-43-2	2.13	EPA 1995a in Jones et al 1996
Benzidine	92-87-5	1.66	EPA 1995a in Jones et al 1996
Benzo(*a*)anthracene	56-55-3	5.70	EPA 1995a in Jones et al 1996
Benzo(*a*)pyrene	50-32-8	6.11	EPA 1995a in Jones et al 1996
Benzo(*b*)fluoranthene	205-99-2	6.10	SCDM 1993 in HAZWRAP 1994
Benzo(*e*)pyrene	192-97-2	6.44	Devoogt, et al 1990 in Syracuse 1996
Benzo(*g,h,i*)perylene	191-24-2	6.60	SCDM 1993 in HAZWRAP 1994e
Benzo(*k*)fluoranthene	207-08-9	6.10	SCDM 1993 in HAZWRAP 1994
Benzoic Acid	65-85-0	1.87	Hansch and Leo 1985 in Syracuse 1996
Benzyl alcohol	100-51-6	1.11	EPA 1995a in Jones et al 1996
Benzyl chloride	100-44-7	2.30	Hansch and Leo 1985 in Syracuse 1996
beta-BHC	319-85-7	3.81	EPA 1995e in Sample, et al 1996
BHC-mixed isomers	_ _	5.89	EPA 1995e in Sample, et al 1996
Biphenyl	95-52-4	3.96	EPA 1995b in Jones et al 1996
bis(2-chloroethyl)ether	111-44-4	1.29	Howard 1990
Bis(2-ethylhexyl)phthalate	117-81-7	7.60	Syracuse 1996 in Jones, et al 1996c
Bromobenzene	108-86-1	2.99	Schwarzenbch, et al 1993
Bromodichloromethane	75-27-4	1.41	Syracuse 1996 in Jones, et al 1996
Butane	106-97-8	2.89	Schwarzenbch, et al 1993
Butylbenzyl phthalate	85-68-7	4.84	EPA 1995a in Jones, et al 1996
Captan	133-06-2	2.35	Hansch and Leo 1985 in Syracuse 1996
Carbaryl	65-25-2	2.36	Schwarzenbch, et al 1993
Carbazole	86-74-8	3.76	Hansch and Leo 1979 in HAZWRAP 1994
Carbofuran	1563-66-2	2.32	EPA 1995c
Carbon Disulfide	75-15-0	2.00	EPA1995a in Jones, et al 1996
Carbon Tetrachloride	56-23-5	2.73	EPA 1995a in Jones, et al 1996
Chloracetamide	79-07-2	-0.53	Hansch and Leo 1985 in Syracuse 1996
gamma-Chlordane	57-74-9	6.32	EPA 1995a in Jones, et al 1996
alpha-Chlordane	57-74-9	6.32	EPA 1995a in Jones, et al 1996
Chlordecone	143-50-0	5.30	EPA 1995e in Sample, et al 1996
Chlorobenzene	108-90-7	2.86	EPA 1995a in Jones, et al 1996
Chlorobenzilate	510-15-6	4.74	Chem Inspect Test Inst. 1992 in Syracuse 1996
Chlorodifluoromethane	75-45-6	1.08	Hansch and Leo 1985 in Syracuse 1996
Chloroethane	75-00-3	1.43	Hansch and Leo 1985 in Syracuse 1996
Chloroform	67-66-3	1.92	EPA 1995e in Sample, et al 1996
Chloromethane	74-87-3	0.91	Schwarzenbch, et al 1993
Chloropropene	107-05-1	2.03	Howard 1990
Chrysene	218-01-9	5.70	SCDM 1993 in HAZWRAP 1994
cis -1,3-Dichloropropene	10061-02-6	2.06	Tomlin 1994 in Syracuse 1996
Cumene	98-82-8	3.66	Hansch and Leo 1985 in Syracuse 1996
Cyanogen	460-19-5	0.07	Hansch, et al 1995 in Syracuse 1996
Cyclohexanol	108-93-0	1.23	Schwarzenbch, et al 1993
Cyclohexanone	108-94-1	0.81	Hansch and Leo 1985 in Syracuse 1996
Cyclopentane	287-92-3	3.00	Hansch and Leo 1985 in Syracuse 1996
Dalapon	75-99-0	0.78	EPA 1995c
4,4'-DDT	50-29-3	6.53	EPA 1995a in Jones, et al 1996
Decane	124-18-5	5.01	EPA 1995a in Jones, et al 1996
delta-BHC	319-86-8	4.10	SCDM 1993 in HAZWRAP 1994
Diallate	2303-16-4	4.49	Ellington and Stancil 1988 in Syracuse 1996
Diazinon	333-41-5	3.70	EPA 1995a in Jones, et al 1996
Dibenzo(a,h)anthracene	53-70-3	6.50	SCDM 1993 in HAZWRAP 1994
Dibenzofuran	132-64-9	4.12	EPA 1995a in Jones, et al 1996
Dibromochloromethane	124-48-1	2.16	Sangster 1994 in Syracuse 1996
Dibromomethane	74-95-3	1.70	Martiska, A, Bekarek, V 1990 in Syracuse 1996
Dichlorodifluromethane	74-71-8	2.53	Swarzenbch, et al1993

Table O-1. Log Octanol-Water Partition Coefficients (Kow) for Erie Burning Ground Chemicals of Interest

Chemicals of Interest	CAS Number	Log Kow[a] (L/kg)	Source
Dieldrin	60-57-1	5.37	EPA 1995a in Jones, et al 1996
Dienochlor	2227-17-0	3.50	British Crop Protection Council 1987 in ARS 1999
Diethyl Sulfide	352-93-2	1.95	Schwarzenbch, et al 1993
Diethylphthalate	84-66-2	2.50	EPA 1995a in Jones, et al 1996
Diisobutylphthalate	84-69-5	4.11	Schwarzenbch, et al 1993
Dimethoate	60-51-5	0.78	Hansch and Leo 1985 in Syracuse 1996
Dimethylphthalate	131-11-3	1.53	Schwarzenbch, et al 1993
Di-n-butylphthalate	84-74-2	4.61	EPA 1995a in Jones, et al 1996
Di-n-octylphthalate	117-84-0	8.10	Ellington and Floyd 1996 in Syracuse 1996
Dinoseb	88-85-7	3.56	Hansch, et al 1995 in Syracuse 1996
Dioxin	1746-01-6	6.80	EPA 1995dd
Diphenyl ether	101-84-8	4.21	Hansch and Leo 1985 in Syracuse 1996
Diphenylamine	122-39-4	3.50	Russom, et al 1996
Diquat	85-00-7	-3.05	EPA 1995c
Disulfoton	298-04-4	4.02	Hansch and Leo 1985 in Syracuse 1996
Diuron	330-54-1	2.80	Dupon Cortporation Data 1989 in ARS 1999
Endosulfan	115-29-7	4.10	EPA 1995a in Jones, et al 1996
Endosulfan Sulfate	1031-07-8	3.66	Hansch, et al 1995 in Syracuse 1996
Endosulfan, alpha	959-98-8	3.83	Hansch and Leo 1985 in Syracuse 1996
Endrin	72-20-8	5.06	EPA 1995a in Jones, et al 1996
Endrin Aldehyde	7421-93-4	3.14	Arthur D. Little, Inc. 1981 in HAZWRAP 1994+D24
Epichlorohydrin	106-89-8	0.45	Deneer, et al 1988 in Syracuse 1996
Ethane	74-84-0	1.81	Schwarzenbch, et al 1993
Ethanol	64-17-5	-0.31	EPA 1992b in Sample, et al 1996
Ethyl Acetate	141-78-6	0.69	EPA 1995e in Sample, et al 1996
Ethyl benzene	100-41-4	3.14	EPA 1995a in Jones, et al 1996
Ethyl carbamate	51-79-6	-0.15	Hansch and Leo 1985 in Syracuse 1996
Ethyl ether	60-29-7	0.89	Hansch and Leo 1985 in Syracuse 1996
Ethylene Dibromide	106-93-4	1.96	Hansch, et al 1995 in Syracuse 1996
Ethylene glycol	107-21-1	-1.36	Hansch and Leo 1985 in Syracuse 1996
Famphur	52-85-7	2.23	Hansch and Leo 1985 in Syracuse 1996
Fluometuron	2164-17-2	1.34	Schwarzenbch et al 1993
Fluoranthene	206-44-0	5.12	EPA 1995a in Jones, et al 1996
Fluorene	86-73-7	4.21	EPA 1995a in Jones, et al 1996
Fluorobenzene	462-06-6	2.27	Swarzenbch et al 1993
Formaldehyde	50-00-0	-0.05	EPA 1995e in Sample, et al 1996
Formamide	75-12-7	-1.51	Hansch and Leo 1985 in Syracuse 1996
Formic Acid	64-18-6	-0.54	Hansch and Leo 1985 in Syracuse 1996
Furan	110-00-9	1.34	Hansch and Leo 1985 in Syracuse 1996
Furfural	98-01-1	0.41	Hansch and Leo 1985 in Syracuse 1996
Heptachlor	76-44-8	6.10	EPA 1995a in Jones, et al 1996
Heptachlor Epoxide	102-57-3	5.40	SCDM 1993 in HAZWRAP 1994
Heptane	142-82-5	4.66	Miller, M.M., et al 1985 in Syracuse 1996
Hexachlorobenzene	118-74-1	5.50	Schwarzenbch, et al 1993
Hexachlorobutadiene	87-68-3	4.90	Schwarzenbch, et al 1993
Hexachlorocyclopentadiene	77-47-4	5.04	Hansch and Leo 1985 in Syracuse 1996
Hexachloroethane	67-72-1	4.00	EPA 1995a in Jones, et al 1996
Hexachlorophene	70-30-4	7.54	Hansch, et al 1995 in Syracuse 1996
HMX	2691-41-0	no data	No Source
Imazaquin-ammonium	81335-47-9	0.34	Pesticide Manual, 1994in ARS 1999
Imazilil	35554-44-0	3.82	British Crop Protection Council 1986 in ARS 1999
Isobutyl alcohol	78-83-1	0.76	Hansch and Leo 1985 in Syracuse 1996
Isophorone	78-59-1	1.70	Veith, G.D., et al 1980 in Syracuse 1996
Lindane (gamma-BHC)	58-89-9	3.73	EPA 1995a in Jones, et al 1996
Malathion	121-75-5	2.89	Schwarzenbch, et al 1993
MCPA	94-74-6	2.80	Pionke, H.B., Deangelis, R.J. 1980 in ARS 1999
m-cresol	108-39-4	1.96	Howard 1990.
Methacrylonitril	126-98-7	0.68	Tanii and Hashimoto 1994 in Syracuse 1996
Methanol	67-56-1	-0.71	EPA 1995e in Sample, et al 1996

Table O-1. Log Octanol-Water Partition Coefficients (Kow) for Erie Burning Ground Chemicals of Interest

Chemicals of Interest	CAS Number	Log Kow[a] (L/kg)	Source
Methapyrilene	91-80-5	2.87	Sangster 1994 in Syracuse 1996
Methomyl	16752-77-5	0.57	Dupont Corporation Data 1989 In ARS 1999
Methoxychlor	72-43-5	5.08	EPA 1995a in Jones, et al 1996
Methyl bromide	74-83-9	1.19	Hansch and Leo 1985 in Syracuse 1996
Methyl iodide	74-88-4	3.36	EPA 1995a in Jones, et al 1996
Methyl metharcrylate	80-62-6	1.38	Hansch and Leo 1985 in Syracuse 1996
Methylcyclohexane	108-87-2	3.61	Hansch, et al 1995 in Syracuse 1996
Methylene Chloride	75-09-2	1.25	EPA 1995a in Jones, et al 1996
Methylhydrazine	60-34-4	-1.06	Hansch and Leo 1985 in Syracuse 1996
Methylstyrene	98-83-9	3.48	Hansch, et al 1995 in Syracuse 1996
Mirex	2385-85-5	6.89	Veith, et al 1979 in Syracuse 1996
n-nitrosodiphenylamine	86-30-6	3.13	Hansch and Leo 1985 in Syracuse 1996
3-Nitrotoluene	99-08-1	2.45	Russom, et al 1996
Naphthalene	91-20-3	3.36	EPA 1995a in Jones, et al 1996
n-Butyl benzene	104-51-8	4.38	DeBruijn, J, et al 1989 in Syracuse 1996
n-Hexane	110-54-3	4.11	Schwarzenbch, et al 1993
Nitrobenzene	98-95-3	1.83	Schwarzenbch et al 1993
Nitroglycerin	55-63-0	1.62	Hansch and Leo 1985 in Syracuse 1996
Nitromethane	75-52-5	-0.35	Hansch and Leo 1985 in Syracuse 1996
n-Nitrochlorobenzene	100-00-5	2.39	Hansch and Leo 1985 in Syracuse 1996
N-Nitrosodiethylamine	55-18-5	0.48	Hansch and Leo 1985 in Syracuse 1996
N-Nitrosomorpholine	59-89-2	-0.44	Hansch and Leo 1985 in Syracuse 1996
N-Nitrosopiperidine	100-75-4	0.36	Hansch and Leo 1985 in Syracuse 1996
N-Nitrosopyrrolidine	930-55-2	-0.19	Hansch and Leo 1985 in Syracuse 1996
n-Pentane	109-66-0	3.62	Swarzenbch, et al 1993
n-Pentylbenzene	538-68-1	4.90	Schwarzenbch, et al 1993
n-propyl benzene	103-65-1	3.69	Sangster 1994 in Syracuse 1996
o-Cresol	95-48-7	1.99	EPA 1995e in Sample, et al 1996
Octachloronaphthalene	2234-13-1	8.24	Opperhuizen, A 1985 in Syracuse 1996b
o-Dichlorobenzene	95-50-1	3.38	EPA 1995d
o-Dinitrobenzene	528-29-0	1.69	Hansch, et al 1995 in Syracuse 1996
o-Nitroaniline	88-74-4	1.85	Hansch and Leo 1985 in Syracuse 1996
o-Nitrophenol	88-75-5	1.79	Howard 1990
Nitrocellulose	9004-70-0	-4.56	
2-Nitrotoluene	88-72-2	2.30	Opperhuizen, A 1985 in Syracuse 1996
Oxadiazon	19666-30-9	4.70	Rhone-Poulenc Corporation Data in ARS 1999
4,4'-DDD	72-54-8	6.10	EPA 1995a in Jones, et al 1996
4,4'-DDE	72-55-9	5.69	Chiou, CT et al 1977
Parathion	56-38-2	3.81	Schwarzenbch, et al 1993
DDT	106-44-5	1.94	Hansch and Leo 1985 in Syracuse 1996
p-Dichlorobenzene	106-46-7	3.37	EPA 1995d
Pentachloroaniline	527-20-8	4.82	Sangster 1994 in Syracuse 1996
Pentachlorobenzene	608-93-5	5.26	EPA1995a in Jones, et al 1996
Pentachloroethane	76-01-7	3.63	Russom, et al 1996
Pentachloro-nitrobenzene	82-68-8	4.64	EPA 1995e in Sample, et al 1996
Pentachlorophenol	87-86-5	5.09	EPA 1995e in Sample, et al 1996

Table O-1. Log Octanol-Water Partition Coefficients (Kow) for Erie Burning Ground Chemicals of Interest

Chemicals of Interest	CAS Number	Log Kow[a] (L/kg)	Source
Phenacetin	62-44-2	1.58	Nakagawa, Y, et al 1992 in Syracuse 1996
Phenanthrene	85-01-8	4.55	EPA1995a in Jones, et al 1996
Phenmediphan	13684-63-4	3.59	Noram Company Data in ARS 1999
Phenol	108-95-2	1.48	EPA1995a in Jones, et al 1996
Phorate	298-02-2	3.56	Hansch, et al 1995 in Syracuse 1996
Phosmet	732-11-6	3.00	Beguhn, M.A. 1989 in ARS 1989
Phthalic Acid	100-21-0	2.00	Hansch and Leo 1985 in Syracuse 1996
Phthalic anhydride	85-44-9	1.60	Panoma 1987 in Syracuse 1996
p-Nitrophenol	100-02-07	1.91	Howard 1990
4-Nitrotoluene	99-99-0	2.37	Howard 1990
p-Phenylenediamine	106-50-3	-0.30	Hansch, et al 1995 in Syracuse 1996
Profenofos	41198-08-7	1.70	Ciba-Geigy Corporation Data 1989 in ARS 1999
Pronamide	23950-58-5	0.05	EPA1995a in Jones, et al 1996
Propionitril	107-12-0	0.16	Hansch and Leo 1985 in Syracuse 1996
Pryidine	110-86-1	0.65	Russom, et al 1996
Pyrene	129-00-0	5.13	Schwarzenbch, et al 1993g
Quinoline	91-22-5	2.03	Hansch and Leo 1985 in Syracuse 1996
Quinone	106-51-4	0.20	Hansch and Leo 1985 in Syracuse 1996
RDX	121-82-4	0.87	Schwarzenbch, et al 1993
sec-Butyl benzene	135-98-8	4.57	Sherblom, et al 1988 in Syracuse 1996
Silvex	93-72-1	3.80	Hansch , et al 1995 in Syracuse 1996
Simazine	122-34-9	2.18	EPA 1995c
Strychnine	57-24-9	1.93	Panoma 1987 in Syracuse 1996
Styrene	100-42-5	2.95	Schwarzenbch, et al 1993
Tebuthiuron	34014-18-1	1.79	ARS 1999
Temephos	3383-96-8	4.90	British Crop Protection Council 1994 in ARS 1999h
tert-Butyl benzene	98-06-6	4.11	Hansch and Leo 1985 in Syracuse 1996
Tetrachloroethane	25322-20-7	2.39	Schwarzenbch, et al 1993
Tetrachloroethene	127-18-4	2.88	Schwarzenbch, et al 1993
Tetrachloroethylene	127-18-4	3.40	EPA 1995d
Tetrachloromethane	56-23-5	2.73	EPA 1995a in Jones, et al 1996
Tetrahydrofuran	109-99-9	0.46	Hansch and Leo 1985 in Syracuse 1996
Tetryl	479-45-8		
Toluene	108-883	2.75	EPA 1995a in Jones, et al 1996
Toxaphene	8001-35-2	5.50	EPA 1995e in Sample, et al 1996
trans -1,3-Dichloropropene	10061-02-6	2.03	Tomlin 1994 in Syracuse 1996
Tribromomethane	75-25-2	2.35	EPA 1995a in Jones, et al 1996
Tributyl phosphate	126-73-8	4.00	Hansch and Leo 1985 in Syracuse 1996
Trichloroethene	636-30-6	2.71	EPA 1995a in Jones, et al 1996
Trichloroethylene	79-01-6	2.71	EPA 1995e in Sample, et al 1996
Trichlorofluoromethane	75-69-4	2.16	Schwarzenbch, et al 1993
Triethylamine	121-44-8	1.45	Hansch and Leo 1985 in Syracuse 1996
Trifluorobromomethane	75-63-8	1.86	Hansch and Leo 1985 in Syracuse 1996
Vinyl Acetate	108-05-4	0.73	EPA 1995a in Jones, et al 1996
Vinyl Chloride	75-01-4	1.50	EPA 1995e in Sample, et al 1996
Xylene	1330-20-7	3.13	EPA 1995a in Jones, et al 1996
Xylene (mixed isomers)	_ _	3.20	EPA 1995e in Sample, et al 1996
Ziram	137-30-4	1.09	British Crop Protection Council 1994 in ARS 1999

Table O-1. Log Octanol-Water Partition Coefficients (Kow) for Erie Burning Ground Chemicals of Interest

Chemicals of Interest	CAS Number	Log Kow[a] (L/kg)	Source

a Log Octanol-Water partition coefficient.
b Syracuse 1996. Syracuse Research Corporation, Environmental Sciences Center's on-line experimental Log P database conducted June 7, 1996.
c Jones, D.S., R N. Hull, G.W. Suter II 1996. *Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Sediment-Associated Biota: 1996 Revision.* Lockheed Martin Energy Systems, Inc., Oak Ridge, TN, 37831.
d EPA 1995d. National Primary Drinking Water Regulations; Contaminated Specific Fact Sheets Volatile Organic Chemicals, Technical Version, EPA Office of Water, EPA 811-F-95-004-T.
e HAZWRAP (Hazardous Waste Remedial Action Program) 1994. Loring Air Force Base, Ecological Risk Assessment Methodology.
f Sample, B.E., D.M. Opresko, G.W. Suter II 1996. *Toxicological Benchmarks for Wildlife,* Lockheed Martin Energy Systems, Inc., Oak Ridge, TN, 37381.
g Schwarzenbch, R.E., P.M. Gschwend, D.M. Imboden 1993. Environmental Organic Chemistry. John Wiley & Sons, New York.
h United States Department of Agriculture, Agricultural Research Service (ARS) 1999. Remote Sensing and Modeling Lab. 10300 Baltimore Ave., Bldg. 007, Beltsville, MD, 20705.
i Russon, C.L., S. Bradbury, S. Broderius 1996. Environmental Toxicology and Chemistry, V. 16, No. 5, pp.948-967, *Predicting Modes of Toxic Action from chemical* Structure: Acute Toxicity in the Fathead Minnow (*pimephales Promelas*).
j Howard, Philip, H. 1990. *Handbook of Environmental Fate and Exposure Data for Organic Chemicals VI,* Lewis Publishers, Chelsea, MI.
k EPA 1995c. National Primary Drinking Water Regulations; Contaminant-Specific Fact Sheets, EPA Ofice of Water, EPA 811-F-95-004-T.
BHC = Benzene hexachloride.
CAS = Chemical Abstracts Service.
DDD = Dichlorodiphenyldichloroethene.
DDE = Dichlorodiphenyldichloroethane.
DDT = Dichlorodiphenyltrichloroethene.
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.
PCB = Polychlorinated biphenyl.

Table O-2. Soil Ecological Screening Values For Level II Screen For Erie Burning Ground at Ravenna, Ohio

Chemicals of Interest	CAS Registry Number	Soil Screening Values											
		Efroymson et al. (1997a)		Screening Value for Earthworms and Soil Microorganisms (Efroymson et al. 1997b)[b]									
		PRGs for Ecological Endpoints[a]		Benchmarks for Earthworm		Benchmarks for Soil Microorganism		Soil Screening values for Plants (Efroymson et al. 1997c)[c]		ESL[d]		ESV[e]	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source	Number mg/kg mg/L	Source (Soil) (Solution)	Number (mg/kg)	Source	Number (mg/kg)	Source
Inorganics													
(Target Analyte List)													
Aluminum	7429-90-5	--		--		600	LOEC	50	Soil, LOEC	--		6.00E+02	LOEC
Antimony	7440-36-0	5	PRGs	--		--		5	Soil, LOEC	0.1423	ESL EPA Region 5 (2003)	5.00E+00	PRGs
Arsenic	7440-38-2	9.9	PRGs	60	LOEC	100	LOEC	10	Soil, NOEC	5.7	ESL EPA Region 5 (2003)	9.90E+00	PRGs
Barium	7440-39-3	283	PRGs	--		3000	LOEC	500	Soil, LOEC	1.04	ESL EPA Region 5 (2003)	2.83E+02	PRGs
Beryllium		10	PRGs							1.06	ESL EPA Region 5 (2003)	1.00E+01	PRGs
Bismuth	7440-69-9	--		--		--		20	No Soil, only Solution, LOEC	--		2.00E+01	No Soil, only Solution, LOEC
Boron	7440-42-8	0.5	PRGs	--		20	LOEC	0.5	Soil, LOEC	--		5.00E-01	PRGs
Bromine	7726-95-6	10	PRGs	--		--		10	Soil, LOEC	--		1.00E+01	PRGs
Cadmium	7440-43-9	4	PRGs	20	LOEC	20	LOEC	4	Soil, LOEC	0.00222	ESL EPA Region 5 (2003)	4.00E+00	PRGs
Calcium	7440-70-2	--		--		--		--		--		No ESV	No Source
Chromium	16065-83-1	0.4	PRGs	0.4	LOEC	10	NOEC	1	Soil, LOEC	0.4	ESL EPA Region 5 (2003)	4.00E-01	PRGs
Chromium, hexavalent	18540-29-9	0.4	PRGs	0.4	LOEC	10	NOEC	1	Soil, LOEC	--		4.00E-01	PRGs
Cobalt	7440-48-4	20	PRGs	--		1000	LOEC	20	Soil, LOEC	0.14033	ESL EPA Region 5 (2003)	2.00E+01	PRGs
Copper	7440-50-8	60	PRGs	60	LOEC	100	LOEC	100	Soil ,NOEC	5.4	ESL EPA Region 5 (2003)	1.39E+01	PPL (SAIC 2002)
Cyanide	57-12-5	--		--		--		--		1.33	ESL EPA Region 5 (2003)	1.08E+00	PPL (SAIC 2002)
Fluorine	7782-41-4	200	PRGs	--		30	LOEC	200	Soil, LOEC	--		2.00E+02	PRGs
Iodine	7553-56-2	4	PRGs	--		--		4	Soil, LOEC	--		4.00E+00	PRGs
Iron	7439-89-6	--		--		200	NOEC	10	No Soil, only Solution, LOEC	--		2.00E+02	NOEC
Lanthanum	7439-91-0	--		--		50	LOEC	--		--		5.00E+01	LOEC
Lead	7439-92-1	40.5	PRGs	500	NOEC	900	NOEC	50	Soil ,NOEC	0.05373	ESL EPA Region 5 (2003)	4.05E+01	PRGs
Lithium	7439-93-2	2	PRGs	--		10	LOEC	2	Soil, LOEC	--		2.00E+00	PRGs
Magnesium	7439-95-4	--		--		--		--		--		No ESV	No Source
Manganese	7439-96-5	--		--		100	LOEC	500	Soil, LOEC	--		1.00E+02	LOEC
Mercury	7439-97-6	0.00051	PRGs	0.1	LOEC	30	NOEC	0.3	Soil, LOEC	0.1	ESL EPA Region 5 (2003)	5.10E-04	PRGs
Molybdenum	7439-98-7	2	PRGs	--		200	LOEC	2	Soil, LOEC	--		2.00E+00	PRGs
Nickel	7440-02-0	30	PRGs	200	NOEC	90	LOEC	30	Soil ,NOEC	13.6	ESL EPA Region 5 (2003)	3.00E+01	PRGs
Nitrate/nitrite		--		--		--		--		--		No ESV	No Source
Potassium	7440-09-7	--		--		--		--		--		No ESV	No Source
Selenium	7782-49-2	0.21	PRGs	70	LOEC	100	LOEC	1	Soil, LOEC	0.02765	ESL EPA Region 5 (2003)	2.10E-01	PRGs
Silver	7440-22-4	2	PRGs	--		50	NOEC	2	Soil, LOEC	4.04	ESL EPA Region 5 (2003)	2.00E+00	PRGs
Sodium	7440-23-5	--		--		--		--		--		No ESV	No Source
Sulfide	18496-25-8	--		--		--		--		0.00358	ESL EPA Region 5 (2003)	3.58E-03	ESL EPA Region 5 (2003)
Technetium	7440-26-8	0.2	PRGs	--		--		0.2	Soil ,NOEC	--		2.00E-01	PRGs
Tellurium	13494-80-9	--		--		--		2	No Soil, only Solution, LOEC	--		2.00E+00	No Soil, only Solution, LOEC
Thallium	7440-28-0	1	PRGs	--		--		1	Soil, LOEC	0.05692	ESL EPA Region 5 (2003)	1.00E+00	PRGs
Tin	7440-31-5	50	PRGs	--		2000	LOEC	50	Soil, LOEC	7.62	ESL EPA Region 5 (2003)	5.00E+01	PRGs
Titanium	7440-32-6	--		--		1000	LOEC	0.06	No Soil, only Solution, LOEC	--		1.00E+03	LOEC
Tungsten	7440-33-7	--		--		400	NOEC	--		--		4.00E+02	NOEC
Uranium	7440-61-1	5	PRGs	--		--		5	Soil, NOEC	--		5.00E+00	PRGs

Table O-2. Soil Ecological Screening Values For Level II Screen For Erie Burning Ground at Ravenna, Ohio

Chemicals of Interest	CAS Registry Number	Soil Screening Values											
		Efroymson et al. (1997a)		Screening Value for Earthworms and Soil Microorganisms (Efroymson et al. 1997b)[b]									
		PRGs for Ecological Endpoints[a]		Benchmarks for Earthworm		Benchmarks for Soil Microorganism		Soil Screening values for Plants (Efroymson et al. 1997c)[c]		ESL[d]		ESV[e]	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source	Number mg/kg mg/L	Source (Soil) (Solution)	Number (mg/kg)	Source	Number (mg/kg)	Source
Vanadium	7440-62-2	2	PRGs	--		20	LOEC	2	Soil, LOEC	1.59	ESL EPA Region 5 (2003)	2.00E+00	PRGs
Zinc	7440-66-6	8.5	PRGs	200	LOEC	100	NOEC	50	Soil, NOEC	6.62	ESL EPA Region 5 (2003)	8.50E+00	PRGs
Organic Compounds													No Source
Acenaphthene	83-32-9	20	PRGs	--		--		20	Soil, LOEC	682		2.00E+01	PRGs
Acenaphthylene	208-96-8	--		--		--		--		682		6.82E+02	No Source
Acetone	67-64-1	--		--		--		--		2.5	ESL EPA Region 5 (2003)	2.50E+00	ESL EPA Region 5 (2003)
Acrylonitrile	107-13-1	--		--		1000	LOEC	--		1.37		1.00E+03	LOEC
Aldrin	309-00-2	--		--		--		--		0.00332		3.32E-03	No Source
4-Aminobiphenyl	92-67-1	--		--		--		--		0.00305	ESL EPA Region 5 (2003)	3.05E-03	ESL EPA Region 5 (2003)
2-Amino-4,6-dinitrotoluene	35572-78-2	--		--		--		--		--		No ESV	No Source
4-Amino-2,6-dinitrotoluene	19406-51-0	--		--		--		--		--		No ESV	No Source
Aniline	62-53-3	--		--		--		200	No Soil, only Solution, LOEC	0.05678	ESL EPA Region 5 (2003)	2.00E+02	No Soil, only Solution, LOEC
Anthracene	120-12-7	--		--		--		--		1480	ESL EPA Region 5 (2003)	1.48E+03	ESL EPA Region 5 (2003)
PCB-1016	12674-11-2	--		--		--		--		--		No ESV	No Source
Arochlor-1221	11104-28-2	--		--		--		--		--		No ESV	No Source
Arochlor-1232	11141-16-5	--		--		--		--		--		No ESV	No Source
Arochlor-1242	53469-21-9	--		--		--		--		--		No ESV	No Source
Arochlor-1248	12672-29-6	--		--		--		--		--		No ESV	No Source
PCB-1254	11097-69-1	--		--		--		--		--		No ESV	No Source
Arochlor-1260	11096-82-5	--		--		--		--		--		No ESV	No Source
Benzene	71-43-2	--		--		--		--		0.25462	ESL EPA Region 5 (2003)	2.55E-01	ESL EPA Region 5 (2003)
Benzo(*a*)anthracene	56-55-3	--		--		--		--		5.21	ESL EPA Region 5 (2003)	5.21E+00	ESL EPA Region 5 (2003)
Benzo(*a*)pyrene	50-32-8	--		--		--		--		1.52	ESL EPA Region 5 (2003)	1.52E+00	ESL EPA Region 5 (2003)
Benzo(*b*)fluoranthene	205-99-2	--		--		--		--		59.8	ESL EPA Region 5 (2003)	5.98E+01	ESL EPA Region 5 (2003)
Benzo(*g,h,i*)perylene	191-24-2	--		--		--		--		119	ESL EPA Region 5 (2003)	1.19E+02	ESL EPA Region 5 (2003)
Benzo(*k*)fluoranthene	207-08-9	--		--		--		--		148	ESL EPA Region 5 (2003)	1.48E+02	ESL EPA Region 5 (2003)
BHC	608-73-1	--		--		--		--		--		No ESV	No Source
BHC, alpha	319-84-6	--		--		--		--		0.09939	ESL EPA Region 5 (2003)	9.94E-02	ESL EPA Region 5 (2003)
beta-BHC	319-85-7	--		--		--		--		0.00398	ESL EPA Region 5 (2003)	3.98E-03	ESL EPA Region 5 (2003)
BHC, delta	319-86-8	--		--		--		--		9.94	ESL EPA Region 5 (2003)	9.94E+00	ESL EPA Region 5 (2003)
BHC, gamma	58-89-9	--		--		--		--		0.005	ESL EPA Region 5 (2003)	5.00E-03	ESL EPA Region 5 (2003)
Biphenyl	92-52-4	60	PRGs	--		--		60	Soil, LOEC	--		6.00E+01	PRGs
bis(2-chloroethoxy) methane	111-91-1	--		--		--		--		0.302	ESL EPA Region 5 (2003)	3.02E-01	ESL EPA Region 5 (2003)
bis(2-Chloroethyl) ether	111-44-4	--		--		--		--		23.7	ESL EPA Region 5 (2003)	2.37E+01	ESL EPA Region 5 (2003)
bis(2-Ethylhexyl)phthalate	117-81-7	--		--		--		--		0.92594	ESL EPA Region 5 (2003)	9.26E-01	ESL EPA Region 5 (2003)
4-Bromoaniline	106-40-1	--		--		--		100	No Soil, only Solution, LOEC	--		1.00E+02	No Soil, only Solution, LOEC
Bromodichloromethane	75-27-4	--		--		--		--		0.54	ESL EPA Region 5 (2003)	5.40E-01	ESL EPA Region 5 (2003)
Bromoform	75-25-2	--		--		--		--		15.9	ESL EPA Region 5 (2003)	1.59E+01	ESL EPA Region 5 (2003)
Bromomethane	74-83-9	--		--		--		--		--		No ESV	No Source
4-bromophenyl-phenylether	101-55-3	--		--		--		--		--		No ESV	No Source
2-Butanone	78-93-3	--		--		--		--		89.6	ESL EPA Region 5 (2003)	8.96E+01	ESL EPA Region 5 (2003)

Table O-2. Soil Ecological Screening Values For Level II Screen For Erie Burning Ground at Ravenna, Ohio

Chemicals of Interest	CAS Registry Number	Soil Screening Values											
		Efroymson et al. (1997a)		Screening Value for Earthworms and Soil Microorganisms (Efroymson et al. 1997b)[b]									
		PRGs for Ecological Endpoints[a]		Benchmarks for Earthworm		Benchmarks for Soil Microorganism		Soil Screening values for Plants (Efroymson et al. 1997c)[c]		ESL[d]		ESV[e]	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source	Number mg/kg mg/L	Source (Soil) (Solution)	Number (mg/kg)	Source	Number (mg/kg)	Source
Butylbenzyl phthalate	85-68-7	--		--		--		--		0.239	ESL EPA Region 5 (2003)	2.39E-01	ESL EPA Region 5 (2003)
N-Nitrosodi-n-Butylamine	924-16-3	--		--		--		--		0.26707	ESL EPA Region 5 (2003)	2.67E-01	ESL EPA Region 5 (2003)
Carbazole	86-74-8	--		--		--		--		--		No ESV	No Source
Carbon Disulfide	75-15-0	--		--		--		--		0.09412	ESL EPA Region 5 (2003)	9.41E-02	ESL EPA Region 5 (2003)
Carbon Tetrachloride	56-23-5	--		--		1000	LOEC	--		2.98	ESL EPA Region 5 (2003)	1.00E+03	LOEC
Chloroacetamide	79-07-2	2	PRGs	2	LOEC	--		--		--		2.00E+00	PRGs
p-chloroaniline	106-47-8	--		--		--		--		1.1	ESL EPA Region 5 (2003)	1.10E+00	ESL EPA Region 5 (2003)
3-Chloroaniline	108-42-9	20	PRGs	30	LOEC	--		20	Soil, LOEC	--		2.00E+01	PRGs
4-chloroaniline	106-47-8	--		--		--		--		1.1	ESL EPA Region 5 (2003)	1.10E+00	ESL EPA Region 5 (2003)
Chlorobenzene	108-90-7	40	PRGs	40	LOEC	--		--		13.1	ESL EPA Region 5 (2003)	4.00E+01	PRGs
Chlorobenzilate	510-15-6	--		--		--		--		5.05	ESL EPA Region 5 (2003)	5.05E+00	ESL EPA Region 5 (2003)
Chlordane	12789-03-6	--		--		--		--		0.224	ESL EPA Region 5 (2003)	2.24E-01	ESL EPA Region 5 (2003)
alpha-Chlordane	12789-03-6	--		--		--		--		0.224	ESL EPA Region 5 (2003)	2.24E-01	ESL EPA Region 5 (2003)
gamma-Chlordane	12789-03-6	--		--		--		--		0.224	ESL EPA Region 5 (2003)	2.24E-01	ESL EPA Region 5 (2003)
Chloroethane	75-00-3	--		--		--		--		--		No ESV	No Source
Chloroform	67-66-3	--		--		--		--		1.19	ESL EPA Region 5 (2003)	1.19E+00	ESL EPA Region 5 (2003)
Chloromethane	74-87-3	--		--		--		--		--		No ESV	No Source
2-Chloronaphthalene	91-58-7	--		--		--		--		0.0122	ESL EPA Region 5 (2003)	1.22E-02	ESL EPA Region 5 (2003)
2-Chlorophenol	95-57-8	--		--		--		60	No Soil, only Solution, LOEC	0.243	ESL EPA Region 5 (2003)	6.00E+01	No Soil, only Solution, LOEC
3-Chlorophenol	108-43-0	7	PRGs	10	LOEC	--		7	Soil, LOEC	--		7.00E+00	PRGs
4-Chlorophenol	106-48-9	--		--		--		50	No Soil, only Solution, LOEC	--		5.00E+01	No Soil, only Solution, LOEC
4-Chlorophenyl-phenyl ether	7005-72-3	--		--		--		--		--		No ESV	No Source
4-chloro-3-methylphenol	59-50-7	--		--		--		--		--		No ESV	No Source
Chloropropene	107-05-1	--		--		--		--		0.0029	ESL EPA Region 5 (2003)	2.90E-03	ESL EPA Region 5 (2003)
Chrysene	218-01-9	--		--		--		--		4.73	ESL EPA Region 5 (2003)	4.73E+00	ESL EPA Region 5 (2003)
4,6-dinitro-o-Cresol	534-52-1	--		--		--		--		0.144	ESL EPA Region 5 (2003)	1.44E-01	ESL EPA Region 5 (2003)
m-Cresol	108-39-4	--		--		--		--		3.49	ESL EPA Region 5 (2003)	3.49E+00	ESL EPA Region 5 (2003)
o-Cresol	95-48-7	--		--		--		--		40.4	ESL EPA Region 5 (2003)	4.04E+01	ESL EPA Region 5 (2003)
2-Cresol	95-48-7	--		--		--		--		40.4	ESL EPA Region 5 (2003)	4.04E+01	ESL EPA Region 5 (2003)
p-chloro-m-Cresol	59-50-7	--		--		--		--		7.95	ESL EPA Region 5 (2003)	7.95E+00	ESL EPA Region 5 (2003)
p-Cresol	106-44-5	--		--		--		--		163	ESL EPA Region 5 (2003)	1.63E+02	ESL EPA Region 5 (2003)
Diallate	2303-16-4	--		--		--		--		0.452	ESL EPA Region 5 (2003)	4.52E-01	ESL EPA Region 5 (2003)
2,4-D	94-75-7	--		--		--		--		0.0272	ESL EPA Region 5 (2003)	2.72E-02	ESL EPA Region 5 (2003)
4,4'-DDD	72-54-8	--		--		--		--		0.758	ESL EPA Region 5 (2003)	7.58E-01	ESL EPA Region 5 (2003)
4,4'-DDE	72-55-9	--		--		--		--		0.596	ESL EPA Region 5 (2003)	5.96E-01	ESL EPA Region 5 (2003)
4,4'-DDT	50-29-3	--		--		--		--		0.0035	ESL EPA Region 5 (2003)	3.50E-03	ESL EPA Region 5 (2003)
Diazinon	333-41-5	--		--		--		--		--		No ESV	No Source
Dibenzo(a,h)anthracene	53-70-3	--		--		--		--		18.4	ESL EPA Region 5 (2003)	1.84E+01	ESL EPA Region 5 (2003)
Dibenzofuran	132-64-9	--		--		--		--		--		No ESV	No Source
1,2-Dibromo-3-Chloropropane	96-12-8	--		--		--		--		0.0352	ESL EPA Region 5 (2003)	3.52E-02	ESL EPA Region 5 (2003)
Dibromochloromethane	124-48-1	--		--		--		--		2.05	ESL EPA Region 5 (2003)	2.05E+00	ESL EPA Region 5 (2003)

Table O-2. Soil Ecological Screening Values For Level II Screen For Erie Burning Ground at Ravenna, Ohio

Chemicals of Interest	CAS Registry Number	Soil Screening Values											
		Efroymson et al. (1997a)		Screening Value for Earthworms and Soil Microorganisms (Efroymson et al. 1997b)[b]									
		PRGs for Ecological Endpoints[a]		Benchmarks for Earthworm		Benchmarks for Soil Microorganism		Soil Screening values for Plants (Efroymson et al. 1997c)[c]		ESL[d]		ESV[e]	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source	Number mg/kg mg/L	Source (Soil) (Solution)	Number (mg/kg)	Source	Number (mg/kg)	Source
Dibromoethane	106-93-4	--		--		--		--		1.23	ESL EPA Region 5 (2003)	1.23E+00	ESL EPA Region 5 (2003)
2,4-Dichloroaniline	554-00-7	100	PRGs	100	NOEC	--		--		--		1.00E+02	PRGs
3,4-Dichloroaniline	95-76-1	20	PRGs	20	LOEC	--		10	No Soil, only Solution, LOEC	--		2.00E+01	PRGs
o-Dichlorobenzene	95-50-1	--		--		--		--		2.96	ESL EPA Region 5 (2003)	2.96E+00	ESL EPA Region 5 (2003)
p-Dichlorobenzene	106-46-7	20	PRGs	20	LOEC	--		--		0.546	ESL EPA Region 5 (2003)	2.00E+01	PRGs
1,2-Dichlorobenzene	95-50-1	--		--		--		--		2.96	ESL EPA Region 5 (2003)	2.96E+00	ESL EPA Region 5 (2003)
1,3-Dichlorobenzene	541-73-1	--		--		--		--		37.7	ESL EPA Region 5 (2003)	3.77E+01	ESL EPA Region 5 (2003)
1,4-Dichlorobenzene	106-46-7	20	PRGs	20	LOEC	--		--		0.546	ESL EPA Region 5 (2003)	2.00E+01	PRGs
3,3'-Dichlorobenzidine	91-94-1	--		--		--		--		0.646	ESL EPA Region 5 (2003)	6.46E-01	ESL EPA Region 5 (2003)
cis -1,4-dichloro-2-butene	1476-11-5	--		--		1000	LOEC	--		--		1.00E+03	LOEC
trans -1,4-Dichloro-2-butene	110-57-6	--		--		1000	LOEC	--		--		1.00E+03	LOEC
1,1-Dichloroethane	75-34-3	--		--		--		--		20.1	ESL EPA Region 5 (2003)	2.01E+01	ESL EPA Region 5 (2003)
1,2-Dichloroethane	107-06-2	--		--		--		--		21.2	ESL EPA Region 5 (2003)	2.12E+01	ESL EPA Region 5 (2003)
1,1-Dichloroethene	75-35-4	--		--		--		--		8.28	ESL EPA Region 5 (2003)	8.28E+00	ESL EPA Region 5 (2003)
1,2-Dichloroethene	540-59-0	--		--		--		--		--		No ESV	No Source
Dichlorodifluromethane	75-71-8	--		--		--		--		39.5	ESL EPA Region 5 (2003)	3.95E+01	ESL EPA Region 5 (2003)
2,4-Dichlorophenol	120-83-2	--		--		--		20	No Soil, only Solution, LOEC	87.5	ESL EPA Region 5 (2003)	2.00E+01	No Soil, only Solution, LOEC
2,6-Dichlorophenol	87-65-0	--		--		--		--		1.17	ESL EPA Region 5 (2003)	1.17E+00	ESL EPA Region 5 (2003)
3,4-Dichlorophenol	95-77-2	20	PRGs	20	LOEC	--		20	Soil, LOEC	--		2.00E+01	PRGs
1,2-Dichloropropane	78-87-5	700	PRGs	700	LOEC	--		--		32.7	ESL EPA Region 5 (2003)	7.00E+02	PRGs
cis -1,3-Dichloropropene	10061-01-5	--		--		--		--		0.398	ESL EPA Region 5 (2003)	3.98E-01	ESL EPA Region 5 (2003)
trans -1,3-Dichloropropene	10061-02-6	--		--		--		--		0.398	ESL EPA Region 5 (2003)	3.98E-01	ESL EPA Region 5 (2003)
Dieldrin	60-57-1	--		--		--		--		0.00238	ESL EPA Region 5 (2003)	2.38E-03	ESL EPA Region 5 (2003)
Diethylphthalate	84-66-2	100	PRGs	--		--		100	Soil, LOEC	24.8	ESL EPA Region 5 (2003)	1.00E+02	PRGs
3,3'-Dimethylbenzidine	119-93-7	--		--		--		--		0.104	ESL EPA Region 5 (2003)	1.04E-01	ESL EPA Region 5 (2003)
Dimethoate	60-51-5	--		--		--		--		0.218	ESL EPA Region 5 (2003)	2.18E-01	ESL EPA Region 5 (2003)
7,12'-Dimethylbenz(a)anthracene	57-97-6	--		--		--		--		16.3	ESL EPA Region 5 (2003)	1.63E+01	ESL EPA Region 5 (2003)
Dimethylphthalate	131-11-3	200	PRGs	200	LOEC	--		--		734	ESL EPA Region 5 (2003)	2.00E+02	PRGs
alpha,alpha-Dimethylphenethylamine	122-09-8	--		--		--		--		0.3	ESL EPA Region 5 (2003)	3.00E-01	ESL EPA Region 5 (2003)
2,4-Dimethylphenol	105-67-9	--		--		--		--		0.01	ESL EPA Region 5 (2003)	1.00E-02	ESL EPA Region 5 (2003)
Di-n-butylphthalate	84-74-2	200	PRGs	--		--		200	Soil, NOEC	0.15	ESL EPA Region 5 (2003)	2.00E+02	PRGs
Di-n-octylphthalate	117-84-0	--		--		--		--		709	ESL EPA Region 5 (2003)	7.09E+02	ESL EPA Region 5 (2003)
m-Dinitrobenzene	99-65-0	--		--		--		--		0.655	ESL EPA Region 5 (2003)	6.55E-01	ESL EPA Region 5 (2003)
1,3-Dinitrobenzene	99-65-0	--		--		--		--		0.655	ESL EPA Region 5 (2003)	6.55E-01	ESL EPA Region 5 (2003)
2,4-Dinitrophenol	51-28-5	20	PRGs	--		--		20	Soil, NOEC	0.0609	ESL EPA Region 5 (2003)	2.00E+01	PRGs
2,4-Dinitrotoluene	121-14-2	--		--		--		--		1.28	ESL EPA Region 5 (2003)	1.28E+00	ESL EPA Region 5 (2003)
2,6-Dinitrotoluene	606-20-2	--		--		--		--		0.0328	ESL EPA Region 5 (2003)	3.28E-02	ESL EPA Region 5 (2003)
4,6-Dinitro-2-methylphenol	534-52-1	--		--		--		--		--		No ESV	No Source
Dinoseb	88-85-7	--		--		--		--		0.0218	ESL EPA Region 5 (2003)	2.18E-02	ESL EPA Region 5 (2003)
1,4-Dioxane	123-91-1	--		--		--		--		2.05	ESL EPA Region 5 (2003)	2.05E+00	ESL EPA Region 5 (2003)
Diphenylamine	122-39-4	--		--		--		--		1.01	ESL EPA Region 5 (2003)	1.01E+00	ESL EPA Region 5 (2003)

Table O-2. Soil Ecological Screening Values For Level II Screen For Erie Burning Ground at Ravenna, Ohio

		Soil Screening Values											
		Efroymson et al. (1997a)		Screening Value for Earthworms and Soil Microorganisms (Efroymson et al. 1997b)[b]									
	CAS	PRGs for Ecological Endpoints[a]		Benchmarks for Earthworm		Benchmarks for Soil Microorganism		Soil Screening values for Plants (Efroymson et al. 1997c)[c]		ESL[d]		ESV[e]	
Chemicals of Interest	Registry Number	Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source	Number mg/kg mg/L	Source (Soil) (Solution)	Number (mg/kg)	Source	Number (mg/kg)	Source
Disulfoton	298-04-4	--		--		--		--		0.0199	ESL EPA Region 5 (2003)	1.99E-02	ESL EPA Region 5 (2003)
Endosulfan, alpha	959-98-8	--		--		--		--		0.119	ESL EPA Region 5 (2003)	1.19E-01	ESL EPA Region 5 (2003)
Endosulfan, beta	33213-65-9	--		--		--		--		0.119	ESL EPA Region 5 (2003)	1.19E-01	ESL EPA Region 5 (2003)
Endosulfan, mixed isomers		--		--		--		--		--		No ESV	No Source
Endosulfan Sulfate	1031-07-8	--		--		--		--		0.0358	ESL EPA Region 5 (2003)	3.58E-02	ESL EPA Region 5 (2003)
Endrin	72-20-8	--		--		--		--		0.0101	ESL EPA Region 5 (2003)	1.01E-02	ESL EPA Region 5 (2003)
Endrin Aldehyde	7421-93-4	--		--		--		--		0.0105	ESL EPA Region 5 (2003)	1.05E-02	ESL EPA Region 5 (2003)
Ethyl metharcrylate	97-63-2	--		--		--		--		30	ESL EPA Region 5 (2003)	3.00E+01	ESL EPA Region 5 (2003)
Ethylbenzene	100-41-4	--		--		--		--		5.16	ESL EPA Region 5 (2003)	5.16E+00	ESL EPA Region 5 (2003)
Famphur	52-85-7	--		--		--		--		0.0497	ESL EPA Region 5 (2003)	4.97E-02	ESL EPA Region 5 (2003)
Fluoranthene	206-44-0	--		--		--		--		122	ESL EPA Region 5 (2003)	1.22E+02	ESL EPA Region 5 (2003)
Fluorene	86-73-7	30	PRGs	30	LOEC	--		--		122	ESL EPA Region 5 (2003)	3.00E+01	PRGs
Furan	110-00-9	600	PRGs	--		--		600	Soil, LOEC	--		6.00E+02	PRGs
gamma-BHC (lindane)	58-89-9	--		--		--		--		0.005	ESL EPA Region 5 (2003)	5.00E-03	ESL EPA Region 5 (2003)
Heptane	142-82-5	--		--		--		1	No Soil, only Solution, LOEC	--		1.00E+00	No Soil, only Solution, LOEC
Heptachlor	76-44-8	--		--		--		--		0.00598	ESL EPA Region 5 (2003)	5.98E-03	ESL EPA Region 5 (2003)
Heptachlor Epoxide	1024-57-3	--		--		--		--		0.152	ESL EPA Region 5 (2003)	1.52E-01	ESL EPA Region 5 (2003)
Hexachlorobenzene	118-74-1	--		--		1000	LOEC	--		0.199	ESL EPA Region 5 (2003)	1.00E+03	LOEC
Hexachlorobutadiene	87-68-3	--		--		--		--		0.0398	ESL EPA Region 5 (2003)	3.98E-02	ESL EPA Region 5 (2003)
Hexachlorocyclopentadiene	77-47-4	10	PRGs	--		--		10	Soil, LOEC	0.755	ESL EPA Region 5 (2003)	1.00E+01	PRGs
Hexachloroethane	67-72-1	--		--		--		--		0.596	ESL EPA Region 5 (2003)	5.96E-01	ESL EPA Region 5 (2003)
Hexachorophene	70-30-4	--		--		--		--		0.199	ESL EPA Region 5 (2003)	1.99E-01	ESL EPA Region 5 (2003)
2-Hexanone	591-78-6	--		--		--		--		12.6	ESL EPA Region 5 (2003)	1.26E+01	ESL EPA Region 5 (2003)
HMX	2691-41-0	--		--		--		--		--		No ESV	No Source
Indeno(1,2,3-cd)pyrene	193-39-5	--		--		--		--		109	ESL EPA Region 5 (2003)	1.09E+02	ESL EPA Region 5 (2003)
Isobutyl alcohol	78-83-1	--		--		--		--		20.8	ESL EPA Region 5 (2003)	2.08E+01	ESL EPA Region 5 (2003)
Isodrin	465-73-6	--		--		--		--		0.00332	ESL EPA Region 5 (2003)	3.32E-03	ESL EPA Region 5 (2003)
Isophorone	78-59-1	--		--		--		--		139	ESL EPA Region 5 (2003)	1.39E+02	ESL EPA Region 5 (2003)
Isosafrole	120-58-1	--		--		--		--		9.94	ESL EPA Region 5 (2003)	9.94E+00	ESL EPA Region 5 (2003)
Kepone	143-50-0	--		--		--		--		0.0327	ESL EPA Region 5 (2003)	3.27E-02	ESL EPA Region 5 (2003)
Malathion	121-75-5	--		--		--		--		--		No ESV	No Source
Methacrylonitrile	126-98-7	--		--		--		--		0.057	ESL EPA Region 5 (2003)	5.70E-02	ESL EPA Region 5 (2003)
Methapyrilene	91-80-5	--		--		--		--		2.78	ESL EPA Region 5 (2003)	2.78E+00	ESL EPA Region 5 (2003)
Methoxychlor	72-43-5	--		--		--		--		0.0199	ESL EPA Region 5 (2003)	1.99E-02	ESL EPA Region 5 (2003)
Methyl bromide	74-83-9	--		--		--		--		0.235	ESL EPA Region 5 (2003)	2.35E-01	ESL EPA Region 5 (2003)
Methyl chloride	74-87-3	--		--		--		--		10.4	ESL EPA Region 5 (2003)	1.04E+01	ESL EPA Region 5 (2003)
Methyl iodide	74-88-4	--		--		--		--		1.23	ESL EPA Region 5 (2003)	1.23E+00	ESL EPA Region 5 (2003)
Methylene Chloride	75-09-2	--		--		--		--		1.05	ESL EPA Region 5 (2003)	1.05E+00	ESL EPA Region 5 (2003)
2-Methylnaphthalene	91-57-6	--		--		--		--		3.24	ESL EPA Region 5 (2003)	3.24E+00	ESL EPA Region 5 (2003)
2-Methylphenol	95-48-7	--		--		--		--		--		No ESV	No Source
4-Methylphenol	106-44-5	--		--		--		--		--		No ESV	No Source

Table O-2. Soil Ecological Screening Values For Level II Screen For Erie Burning Ground at Ravenna, Ohio

Chemicals of Interest	CAS Registry Number	Soil Screening Values											
		Efroymson et al. (1997a)		Screening Value for Earthworms and Soil Microorganisms (Efroymson et al. 1997b)[b]									
		PRGs for Ecological Endpoints[a]		Benchmarks for Earthworm		Benchmarks for Soil Microorganism		Soil Screening values for Plants (Efroymson et al. 1997c)[c]		ESL[d]		ESV[e]	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source	Number mg/kg mg/L	Source (Soil) (Solution)	Number (mg/kg)	Source	Number (mg/kg)	Source
4-Methyl-2-pentanone	108-10-1	--		--		--		--		443	ESL EPA Region 5 (2003)	4.43E+02	ESL EPA Region 5 (2003)
Mirex	2385-85-5	--		--		--		--		--		No ESV	No Source
Naphthalene	91-20-3	--		--		--		10	No Soil, only Solution, LOEC	0.0994	ESL EPA Region 5 (2003)	1.00E+01	No Soil, only Solution, LOEC
1-Naphthylamine	134-32-7	--		--		--		--		9.34	ESL EPA Region 5 (2003)	9.34E+00	ESL EPA Region 5 (2003)
2-Naphthylamine	91-59-8	--		--		--		--		3.03	ESL EPA Region 5 (2003)	3.03E+00	ESL EPA Region 5 (2003)
1,4-Naphthoquinone	130-15-4	--		--		--		--		1.67	ESL EPA Region 5 (2003)	1.67E+00	ESL EPA Region 5 (2003)
m-Nitroaniline	99-09-2	--		--		--		--		3.16	ESL EPA Region 5 (2003)	3.16E+00	ESL EPA Region 5 (2003)
o-Nitroaniline	88-74-4	--		--		--		--		74.1	ESL EPA Region 5 (2003)	7.41E+01	ESL EPA Region 5 (2003)
p-Nitroaniline	100-01-6	--		--		--		--		21.9	ESL EPA Region 5 (2003)	2.19E+01	ESL EPA Region 5 (2003)
2-Nitroaniline	88-74-4	--		--		--		--		74.1	ESL EPA Region 5 (2003)	7.41E+01	ESL EPA Region 5 (2003)
3-Nitroaniline	99-09-2	--		--		--		--		3.16	ESL EPA Region 5 (2003)	3.16E+00	ESL EPA Region 5 (2003)
4-Nitroaniline	100-01-6	--		--		--		--		21.9	ESL EPA Region 5 (2003)	2.19E+01	ESL EPA Region 5 (2003)
Nitrobenzene	99-95-3	40	PRGs	40	LOEC	1000	LOEC	8	No Soil, only Solution, LOEC	1.31	ESL EPA Region 5 (2003)	4.00E+01	PRGs
Nitrocellulose	9004-70-0	--		--		--		--		--		No ESV	No Source
Nitroglycerin	55-63-0	--		--		--		--		--		No ESV	No Source
Nitroquanidine		--		--		--		--		--		No ESV	No Source
o-Nitrophenol	88-75-5	--		--		--		--		1.6	ESL EPA Region 5 (2003)	1.60E+00	ESL EPA Region 5 (2003)
p-Nitrophenol	100-02-7	--		--		--		--		5.12	ESL EPA Region 5 (2003)	5.12E+00	ESL EPA Region 5 (2003)
2-Nitrophenol	88-75-5	--		--		--		--		1.6	ESL EPA Region 5 (2003)	1.60E+00	ESL EPA Region 5 (2003)
4-Nitrophenol	100-02-7	--		--		--		--		5.12	ESL EPA Region 5 (2003)	5.12E+00	ESL EPA Region 5 (2003)
4-Nitroquinoline-1-oxide	56-57-5	--		--		--		--		0.122	ESL EPA Region 5 (2003)	1.22E-01	ESL EPA Region 5 (2003)
3-Nitrotoluene	99-08-1	--		--		--		--		--		No ESV	No Source
N-Nitrosodiethylamine	55-18-5	--		--		--		--		0.0693	ESL EPA Region 5 (2003)	6.93E-02	ESL EPA Region 5 (2003)
N-Nitrosodimethylamine	62-75-9	--		--		--		--		0.0000321	ESL EPA Region 5 (2003)	3.21E-05	ESL EPA Region 5 (2003)
N-Nitrosomethylamine	10595-95-6	--		--		--		--		0.00166	ESL EPA Region 5 (2003)	1.66E-03	ESL EPA Region 5 (2003)
N-Nitrosomorpholine	59-89-2	--		--		--		--		0.0706	ESL EPA Region 5 (2003)	7.06E-02	ESL EPA Region 5 (2003)
N-Nitrosopiperidine	100-75-4	--		--		--		--		0.00665	ESL EPA Region 5 (2003)	6.65E-03	ESL EPA Region 5 (2003)
N-Nitrosopyrrolidine	930-55-2	--		--		--		--		0.0126	ESL EPA Region 5 (2003)	1.26E-02	ESL EPA Region 5 (2003)
N-nitroso-di-n-dipropylamine	621-64-7	--		--		--		--		--		No ESV	No Source
N-nitrosodiphenylamine	86-30-6	20	PRGs	20	LOEC	--		--		0.545	ESL EPA Region 5 (2003)	2.00E+01	PRGs
2-Nitrotoluene	88-72-2	--		--		--		--		--		No ESV	No Source
5-nitro-o-Toluidine	99-55-8	--		--		--		--		8.73	ESL EPA Region 5 (2003)	8.73E+00	ESL EPA Region 5 (2003)
2,2'- oxybis(1-Chloropropane)	108-60-1	--		--		--		--		--		No ESV	No Source
Parathion	56-38-2	--		--		--		--		3.40E-04	ESL EPA Region 5 (2003)	3.40E-04	ESL EPA Region 5 (2003)
PCDD-S		--		--		--		--		1.99E-07	ESL EPA Region 5 (2003)	1.99E-07	ESL EPA Region 5 (2003)
Pentachlorophenol	87-86-5	3	PRGs	6	NOEC	400	LOEC	3	Soil, LOEC	0.119	ESL EPA Region 5 (2003)	3.00E+00	PRGs
Pentachloroaniline	527-20-8	100	PRGs	100	LOEC	--		--		--		1.00E+02	PRGs
Pentachlorobenzene	608-93-5	20	PRGs	20	LOEC	--		--		0.497	ESL EPA Region 5 (2003)	2.00E+01	PRGs
Pentachloroethane	76-01-7	--		--		--		--		10.7	ESL EPA Region 5 (2003)	1.07E+01	ESL EPA Region 5 (2003)
Pentachloronitrobenzene	82-68-8	--		--		--		--		7.09	ESL EPA Region 5 (2003)	7.09E+00	ESL EPA Region 5 (2003)
Phenacetin	62-44-2	--		--		--		--		11.7	ESL EPA Region 5 (2003)	1.17E+01	ESL EPA Region 5 (2003)

Table O-2. Soil Ecological Screening Values For Level II Screen For Erie Burning Ground at Ravenna, Ohio

Chemicals of Interest	CAS Registry Number	Soil Screening Values											
		Efroymson et al. (1997a)		Screening Value for Earthworms and Soil Microorganisms (Efroymson et al. 1997b)[b]									
		PRGs for Ecological Endpoints[a]		Benchmarks for Earthworm		Benchmarks for Soil Microorganism		Soil Screening values for Plants (Efroymson et al. 1997c)[c]		ESL[d]		ESV[e]	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source	Number mg/kg mg/L	Source (Soil) (Solution)	Number (mg/kg)	Source	Number (mg/kg)	Source
Phenanthrene	85-01-8	--		--		--		--		45.7	ESL EPA Region 5 (2003)	4.57E+01	ESL EPA Region 5 (2003)
Phenol	108-95-2	30	PRGs	30	LOEC	100	LOEC	70	Soil, LOEC	120	ESL EPA Region 5 (2003)	3.00E+01	PRGs
p-Phenylenediamine	106-50-3	--		--		--		--		6.16	ESL EPA Region 5 (2003)	6.16E+00	ESL EPA Region 5 (2003)
phorate	298-02-2	--		--		--		--		4.96E-04	ESL EPA Region 5 (2003)	4.96E-04	ESL EPA Region 5 (2003)
2-Picoline	109-06-8	--		--		--		--		9.9	ESL EPA Region 5 (2003)	9.90E+00	ESL EPA Region 5 (2003)
Polynuclear Aromatic Hydrocarbons		--		--		--		--		--		No ESV	No Source
Polychlorinated Biphenyls	1336-36-3	0.371	PRGs	--		--		40	Soil, NOEC	3.32E-04	ESL EPA Region 5 (2003)	3.71E-01	PRGs
Polychlorinated dibenzofurans	51207-31-9	--		--		--		--		3.86E-05	ESL EPA Region 5 (2003)	3.86E-05	ESL EPA Region 5 (2003)
Pronamide	23950-58-5	--		--		--		--		0.0136	ESL EPA Region 5 (2003)	1.36E-02	ESL EPA Region 5 (2003)
Propionitrile	107-12-0	--		--		--		--		0.0498	ESL EPA Region 5 (2003)	4.98E-02	ESL EPA Region 5 (2003)
4-Nitrotoluene	99-99-0	--		--		--		--		--		No ESV	No Source
Pyrene	129-00-0	--		--		--		--		78.5	ESL EPA Region 5 (2003)	7.85E+01	ESL EPA Region 5 (2003)
Pryidine	110-86-1	--		--		--		--		1.03	ESL EPA Region 5 (2003)	1.03E+00	ESL EPA Region 5 (2003)
RDX (cyclonite)	121-82-4	--		--		--		--		--		No ESV	No Source
RDX	121-82-4	--		--		--		--		--		No ESV	No Source
Safrole	94-59-7	--		--		--		--		0.404	ESL EPA Region 5 (2003)	4.04E-01	ESL EPA Region 5 (2003)
2,4,5-TP (Silvex)	93-72-1	--		--		--		--		0.109	ESL EPA Region 5 (2003)	1.09E-01	ESL EPA Region 5 (2003)
Styrene	100-42-5	300	PRGs	--		--		300	Soil	4.69	ESL EPA Region 5 (2003)	3.00E+02	PRGs
TCDD	1746-1-6	3.15E-06	PRGs							1.99E-08	ESL EPA Region 5 (2003)	3.15E-06	PRGs
TCDF		8.40E-04	PRGs							--		8.40E-04	PRGs
2,3,5,6-Tetrachloroaniline	3481-20-7	20	PRGs	20	LOEC	--		20	Soil, LOEC	--		2.00E+01	PRGs
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	--		--		--		--		1.99E-07	ESL EPA Region 5 (2003)	1.99E-07	ESL EPA Region 5 (2003)
1,2,4,5-Tetrachlorobenzene	95-94-3	--		--		--		--		2.02	ESL EPA Region 5 (2003)	2.02E+00	ESL EPA Region 5 (2003)
1,2,3,4-Tetrachlorobenzene	634-66-2	10	PRGs	10	LOEC	--		--		--		1.00E+01	PRGs
Tetrachloroethene	127-18-4	--		--		--		10	No Soil, only Solution	9.92	ESL EPA Region 5 (2003)	1.00E+01	No Soil, only Solution
Tetrachloroethylene	127-18-4	--		--		--		--		9.92	ESL EPA Region 5 (2003)	9.92E+00	ESL EPA Region 5 (2003)
1,1,1,2-Tetrachloroethane	630-20-6	--		--		--		--		225	ESL EPA Region 5 (2003)	2.25E+02	ESL EPA Region 5 (2003)
1,1,2,2-Tetrachloroethane	79-34-5	--		--		--		--		0.127	ESL EPA Region 5 (2003)	1.27E-01	ESL EPA Region 5 (2003)
Tetrachloromethane	56-23-5	--		--		--		--		--		No ESV	No Source
2,3,4,5-Tetrachlorophenol	4901-51-3	20	PRGs	20	LOEC	--		--		--		2.00E+01	PRGs
2,3,4,6-Tetrachlorophenol	58-90-2	--		--		--		--		0.199	ESL EPA Region 5 (2003)	1.99E-01	ESL EPA Region 5 (2003)
Tetraethyl dithiopyrophosphate	3689-24-5	--		--		--		--		0.596	ESL EPA Region 5 (2003)	5.96E-01	ESL EPA Region 5 (2003)
Tetryl	479-45-8	--		--		--		--		--		No ESV	No Source
Toluene	108-88-3	200	PRGs	--		--		200	Soil, NOEC	5.45	ESL EPA Region 5 (2003)	2.00E+02	PRGs
o-Toluidine	95-53-4	--		--		--		--		2.97	ESL EPA Region 5 (2003)	2.97E+00	ESL EPA Region 5 (2003)
4-Toluidine	106-49-0	--		--		--		100	No Soil, only Solution, LOEC	--		1.00E+02	No Soil, only Solution, LOEC
Toxaphene	8001-35-2	--		--		--		--		0.119	ESL EPA Region 5 (2003)	1.19E-01	ESL EPA Region 5 (2003)
Tribromomethane	75-25-2	--		--		--		--		--		No ESV	No Source
2,4,5-Trichloroaniline	636-30-6	20	PRGs	20	LOEC	--		20	Soil, LOEC	--		2.00E+01	PRGs
Trichloroethene	79-01-6	--		--		--		100	No Soil, only Solution	12.4	ESL EPA Region 5 (2003)	1.00E+02	No Soil, only Solution
1,2,3-Trichlorobenzene	87-61-6	20	PRGs	20	LOEC	--		--		--		2.00E+01	PRGs

Table O-2. Soil Ecological Screening Values For Level II Screen For Erie Burning Ground at Ravenna, Ohio

Chemicals of Interest	CAS Registry Number	Soil Screening Values: Efroymson et al. (1997a) PRGs for Ecological Endpoints[a] Number (mg/kg)	Source	Screening Value for Earthworms and Soil Microorganisms (Efroymson et al. 1997b)[b] Benchmarks for Earthworm Number (mg/kg)	Source	Benchmarks for Soil Microorganism Number (mg/kg)	Source	Soil Screening values for Plants (Efroymson et al. 1997c)[c] Number mg/kg mg/L	Source (Soil) (Solution)	ESL[d] Number (mg/kg)	Source	ESV[e] Number (mg/kg)	Source
1,2,4-Trichlorobenzene	120-82-1	20	PRGs	20	LOEC	--		--		11.1	ESL EPA Region 5 (2003)	2.00E+01	PRGs
1,1,1-Trichloroethane	71-55-6	--		--		--		--		29.8	ESL EPA Region 5 (2003)	2.98E+01	ESL EPA Region 5 (2003)
1,1,2-Trichloroethane	79-00-5	--		--		--		--		28.6	ESL EPA Region 5 (2003)	2.86E+01	ESL EPA Region 5 (2003)
Trichloroethylene	79-01-6	--		--		--		--		12.4	ESL EPA Region 5 (2003)	1.24E+01	ESL EPA Region 5 (2003)
Trichlorofluoromethane	75-69-4	--		--		--		--		16.4	ESL EPA Region 5 (2003)	1.64E+01	ESL EPA Region 5 (2003)
2,4,5-Trichlorophenol	95-95-4	9	PRGs	9	LOEC	--		4	Soil, LOEC	14.1	ESL EPA Region 5 (2003)	9.00E+00	PRGs
2,4,6-Trichlorophenol	88-06-2	4	PRGs	10	LOEC	--		10	No Soil, only Solution, LOEC	9.94	ESL EPA Region 5 (2003)	4.00E+00	PRGs
1,2,3-Trichloropropane	96-18-4	--		--		--		--		3.36	ESL EPA Region 5 (2003)	3.36E+00	ESL EPA Region 5 (2003)
2,4,5-Trichlorophenoxyacetic acid	93-76-5	--		--		--		--		0.596	ESL EPA Region 5 (2003)	5.96E-01	ESL EPA Region 5 (2003)
1,3,5-Trinitrobenzene	99-35-4	--		--		--		--		0.376	ESL EPA Region 5 (2003)	8.60E-01	PPL (SAIC 2002)
2,4,6-Trinitrotoluene	118-96-7	--		--		--		--		--		7.10E+01	PPL (SAIC 2002)
Vinyl Acetate	108-05-4	--		--		--		--		12.7	ESL EPA Region 5 (2003)	1.27E+01	ESL EPA Region 5 (2003)
Vinyl Chloride	75-01-4	--		--		--		--		0.646	ESL EPA Region 5 (2003)	6.46E-01	ESL EPA Region 5 (2003)
Xylenes (total)	1330-20-7	--		--		--		100	No Soil, only Solution, LOEC	10	ESL EPA Region 5 (2003)	1.00E+02	No Soil, only Solution, LOEC

[a] Efrroymson, R.A, G.W Suter, II, B.E. Sample, and D.S. Jones 1997a. Preliminary Remediation Goals for Ecological Endpoints, ES/ER/TM-162/R

[b] Efroymson, R.A, M.E Will., and G.W Suter 1997b.*Toxicological Benchmarks for Potential Contaminants of Concern for Effects on Soil and Litter Invertebrates and Heterotrophic Process*

Martin Marietta Energy Systems, Inc., ES/ER/TM-126/R1, Oak Ridge National Laboratory, Oak Ridge, TN.

[c] Efroymson, R.A., M.E. Will, G.W. Suter, and A.C. Wooten 1997c.*Toxicological Benchmarks for Screening Contaminants of Concern for Effects on Terrestrial Plants*: 1997 Revision,

Lockheed Martin Energy Systems, Inc., ES/ER/TM-85/R3, Oak Ridge National Laboratory, Oak Ridge, TN.

[d] Ecological Screening Levels (ESL), EPA Region 5, Updated per website: http://www.epa.gov/reg5rcra/ca/edql.htm, August, 2003.

[e] The Prefered Soil Value heirarcy is as follows: Efroymson et al. (1997a), followed by Efroymson et al. (1997b), followed by Efroymson et al. (1997c), followed by ESLs. Note that plant protection levels (PPLs) (SAIC 2002) that were developed for Winklepeck Burning Grounds are used for copper; cyanide; 1,3,5-trinitrobenzene; and 2,4,6-trinitrotoluen

BHC = Benzene hexachloride.

CAS = Chemical Abstracts Service.

DDD = Dichlorodiphenyldichloroethane.

DDE = Dichlorodiphenyldichloroethene.

DDT = Dichlorodiphenyltrichloroethane.

diss = Dissolved analyte.

EPA = U. S. Environmental Protection Agency.

ESL = Ecological screening level.

ESV = Preferred ecological screening value.

HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-triazine.

LOEC = Lowest observed effect concentration.

NOEC = No observed effect concentration.

PCB = Polychlorinated biphenyl.

PRG = Preliminary remediation goal.

RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.

-- = No value.

Table O-3. Derivation of Sediment Ecological Screening Values for Erie Burning Ground, Ravenna, Ohio

Analyte	CAS Registry Number	Sediment Screening Values					
		Consensus-Based Sediment Quality Guidelines[a]		ESL[b]		ESV[c]	
		Number	Source	Number	Source	Number	Source
Metals							
(Target Analyte List)		**(mg/kg)**		**(mg/kg)**		**(mg/kg)**	
Aluminum	7429-90-5					No ESV	No Source
Antimony	7440-36-0					No ESV	No Source
Arsenic	7440-38-2	9.79	MacDonald et al. (2000)	9.79	ESL EPA Region 5 (2003)	9.79E+00	MacDonald et al. (2000)
Barium	7440-39-3					No ESV	No Source
Beryllium	7440-41-7					No ESV	No Source
Cadmium	7440-43-9	0.99	MacDonald et al. (2000)	0.99	ESL EPA Region 5 (2003)	9.90E-01	MacDonald et al. (2000)
Calcium	7440-70-2					No ESV	No Source
Chromium	7440-47-3	43.4	MacDonald et al. (2000)	43.4	ESL EPA Region 5 (2003)	4.34E+01	MacDonald et al. (2000)
Chromium, hexavalent	7440-47-3	43.4	MacDonald et al. (2000)	43.4	ESL EPA Region 5 (2003)	4.34E+01	MacDonald et al. (2000)
Cobalt	7440-48-4			50	ESL EPA Region 5 (2003)	5.00E+01	ESL EPA Region 5 (2003)
Copper	7440-50-8	31.6	MacDonald et al. (2000)	31.6	ESL EPA Region 5 (2003)	3.16E+01	MacDonald et al. (2000)
Cyanide	57-12-5			0.0001	ESL EPA Region 5 (2003)	1.00E-04	ESL EPA Region 5 (2003)
Iron	7439-89-6					No ESV	No Source
Lead	7439-92-1	35.8	MacDonald et al. (2000)	35.8	ESL EPA Region 5 (2003)	3.58E+01	MacDonald et al. (2000)
Magnesium	7439-95-4					No ESV	No Source
Manganese	7439-96-5					No ESV	No Source
Mercury	7439-97-6	0.18	MacDonald et al. (2000)	0.174	ESL EPA Region 5 (2003)	1.80E-01	MacDonald et al. (2000)
Nickel	7440-02-0	22.7	MacDonald et al. (2000)	22.7	ESL EPA Region 5 (2003)	2.27E+01	MacDonald et al. (2000)
Nitrate/Nitrite						No ESV	No Source
Potassium	7440-07-7					No ESV	No Source
Selenium	7782-49-2					No ESV	No Source
Silver	7440-22-4			0.5	ESL EPA Region 5 (2003)	5.00E-01	ESL EPA Region 5 (2003)
Sodium	7440-23-5					No ESV	No Source
Sulfide	18496-25-8					No ESV	No Source
Thallium	7440-28-0					No ESV	No Source
Vanadium	7440-62-2					No ESV	No Source

Table O-3. Derivation of Sediment Ecological Screening Values for Erie Burning Ground, Ravenna, Ohio

Analyte	CAS Registry Number	Sediment Screening Values					
		Consensus-Based Sediment Quality Guidelines[a]		ESL[b]		ESV[c]	
		Number	Source	Number	Source	Number	Source
Zinc	7440-66-6	121	MacDonald et al. (2000)	121	ESL EPA Region 5 (2003)	1.21E+02	MacDonald et al. (2000)
Organic Compounds		(mg/kg)		(mg/kg)			
Acenaphthene	83-32-9			0.00671	ESL EPA Region 5 (2003)	6.71E-03	ESL EPA Region 5 (2003)
Acenaphthylene	208-96-8			0.00587	ESL EPA Region 5 (2003)	5.87E-03	ESL EPA Region 5 (2003)
Acetone	67-64-1			0.0099	ESL EPA Region 5 (2003)	9.90E-03	ESL EPA Region 5 (2003)
Aldrin	309-00-2			0.002	ESL EPA Region 5 (2003)	2.00E-03	ESL EPA Region 5 (2003)
Anthracene	120-12-7	0.0572	MacDonald et al. (2000)	0.0572	ESL EPA Region 5 (2003)	5.72E-02	MacDonald et al. (2000)
Arochlor-1016	12674-11-2			5.98E-02	ESL EPA Region 5 (2003)	5.98E-02	ESL EPA Region 5 (2003)
Arochlor-1221	11104-28-2			5.98E-02	ESL EPA Region 5 (2003)	5.98E-02	ESL EPA Region 5 (2003)
Arochlor-1232	11141-16-5			5.98E-02	ESL EPA Region 5 (2003)	5.98E-02	ESL EPA Region 5 (2003)
Arochlor-1242	53469-21-9			5.98E-02	ESL EPA Region 5 (2003)	5.98E-02	ESL EPA Region 5 (2003)
Arochlor-1248	12672-29-6			5.98E-02	ESL EPA Region 5 (2003)	5.98E-02	ESL EPA Region 5 (2003)
PCB-1248	12672-29-6			5.98E-02	ESL EPA Region 5 (2003)	5.98E-02	ESL EPA Region 5 (2003)
PCB-1254	11097-69-1			5.98E-02	ESL EPA Region 5 (2003)	5.98E-02	ESL EPA Region 5 (2003)
Arochlor-1260	11096-82-5			5.98E-02	ESL EPA Region 5 (2003)	5.98E-02	ESL EPA Region 5 (2003)
Benzene	71-43-2			0.142	ESL EPA Region 5 (2003)	1.42E-01	ESL EPA Region 5 (2003)
Benzenemethanol						No ESV	No Source
Benzo(*a*)anthracene	56-55-3	0.108	MacDonald et al. (2000)	0.108	ESL EPA Region 5 (2003)	1.08E-01	MacDonald et al. (2000)
Benzo(*a*)pyrene	50-32-8	0.15	MacDonald et al. (2000)	0.15	ESL EPA Region 5 (2003)	1.50E-01	MacDonald et al. (2000)
Benzo(*b*)fluoranthene	205-99-2			10.4	ESL EPA Region 5 (2003)	1.04E+01	ESL EPA Region 5 (2003)
Benzo(*g,h,i*)perylene	191-24-2			0.17	ESL EPA Region 5 (2003)	1.70E-01	ESL EPA Region 5 (2003)
Benzo(*k*)fluoranthene	207-08-9			0.24	ESL EPA Region 5 (2003)	2.40E-01	ESL EPA Region 5 (2003)
Benzoic Acid						No ESV	No Source
BHC	608-73-1					No ESV	No Source
BHC, alpha	319-84-6			0.006	ESL EPA Region 5 (2003)	6.00E-03	ESL EPA Region 5 (2003)
Beta-BHC	319-85-7			0.005	ESL EPA Region 5 (2003)	5.00E-03	ESL EPA Region 5 (2003)
Biphenyl	92-52-4				No Source	No ESV	No Source
bis(2-chloroethoxy) methane	111-91-1				No Source	No ESV	No Source

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Analyte	CAS Registry Number	Sediment Screening Values					
		Consensus-Based Sediment Quality Guidelines[a]		ESL[b]		ESV[c]	
		Number	Source	Number	Source	Number	Source
bis(2-Chloroethyl) ether	111-44-4			3.52	ESL EPA Region 5 (2003)	3.52E+00	ESL EPA Region 5 (2003)
Bis(2-chloroisopropyl) ether	108-60-1				No Source	No ESV	No Source
bis(2-Ethylhexyl)phthalate	117-81-7			0.182	ESL EPA Region 5 (2003)	1.82E-01	ESL EPA Region 5 (2003)
Bromodichloromethane	74-97-5				No Source	No ESV	No Source
Bromochloromethane	74-97-5					No ESV	No Source
Bromoform	75-25-2			0.492	ESL EPA Region 5 (2003)	4.92E-01	ESL EPA Region 5 (2003)
Bromomethane	74-83-9				No Source	No ESV	No Source
4-bromophenyl-phenylether	101-55-3			1.55	ESL EPA Region 5 (2003)	1.55E+00	ESL EPA Region 5 (2003)
2-Butanone	78-93-3			0.0424	ESL EPA Region 5 (2003)	4.24E-02	ESL EPA Region 5 (2003)
Butylbenzyl phthalate	85-68-7			1.97	ESL EPA Region 5 (2003)	1.97E+00	ESL EPA Region 5 (2003)
Carbazole	86-74-8					No ESV	No Source
Carbon Disulfide	75-15-0			0.0239	ESL EPA Region 5 (2003)	2.39E-02	ESL EPA Region 5 (2003)
Carbon Tetrachloride	56-23-5			1.45	ESL EPA Region 5 (2003)	1.45E+00	ESL EPA Region 5 (2003)
4-Chloroaniline	106-47-8			0.146	ESL EPA Region 5 (2003)	1.46E-01	ESL EPA Region 5 (2003)
Chlorobenzene	108-90-7			0.291	ESL EPA Region 5 (2003)	2.91E-01	ESL EPA Region 5 (2003)
alpha-Chlordane	5103-71-9	0.00324	MacDonald et al. (2000)	0.00324	ESL EPA Region 5 (2003)	3.24E-03	MacDonald et al. (2000)
gamma-Chlordane	5103-74-2	0.00324	MacDonald et al. (2000)	0.00324	ESL EPA Region 5 (2003)	3.24E-03	MacDonald et al. (2000)
Chloroethane	75-00-3				No Source	No ESV	No Source
Chloroform	67-66-3			0.121	ESL EPA Region 5 (2003)	1.21E-01	ESL EPA Region 5 (2003)
Chloromethane	74-87-3				No Source	No ESV	No Source
2-Chloronaphthalene	91-58-7			0.417	ESL EPA Region 5 (2003)	4.17E-01	ESL EPA Region 5 (2003)
2-Chlorophenol	95-57-8			0.0319	ESL EPA Region 5 (2003)	3.19E-02	ESL EPA Region 5 (2003)
4-Chlorobenzenamine	106-47-8			0.146	ESL EPA Region 5 (2003)	1.46E-01	ESL EPA Region 5 (2003)
4-Chlorophenyl-phenyl ether	7005-72-3				No Source	No ESV	No Source
4-chloro-3-methylphenol	59-50-7				No Source	No ESV	No Source
Chrysene	218-01-9	0.166	MacDonald et al. (2000)	0.166	ESL EPA Region 5 (2003)	1.66E-01	MacDonald et al. (2000)
4,4'-DDD	72-54-8	0.00488	MacDonald et al. (2000)	0.00488	ESL EPA Region 5 (2003)	4.88E-03	MacDonald et al. (2000)
4,4'-DDE	72-55-9	0.00316	MacDonald et al. (2000)	0.00316	ESL EPA Region 5 (2003)	3.16E-03	MacDonald et al. (2000)

Table O-3. Derivation of Sediment Ecological Screening Values for Erie Burning Ground, Ravenna, Ohio

Analyte	CAS Registry Number	Sediment Screening Values					
		Consensus-Based Sediment Quality Guidelines[a]		ESL[b]		ESV[c]	
		Number	Source	Number	Source	Number	Source
4,4'-DDT	50-29-3	0.00416	MacDonald et al. (2000)	0.00416	ESL EPA Region 5 (2003)	4.16E-03	MacDonald et al. (2000)
Diazinon	333-41-5					No ESV	No Source
Dibenzo(a,h)anthracene	53-70-3	0.033	MacDonald et al. (2000)	0.033	ESL EPA Region 5 (2003)	3.30E-02	MacDonald et al. (2000)
Dibenzofuran	132-64-9			0.449	ESL EPA Region 5 (2003)	4.49E-01	ESL EPA Region 5 (2003)
Dibromochloromethane	124-48-1				No Source	No ESV	No Source
1,2-Dibromoethane	106-93-4				No Source	No ESV	No Source
1,2-Dichlorobenzene	95-50-1			0.294	ESL EPA Region 5 (2003)	2.94E-01	ESL EPA Region 5 (2003)
1,3-Dichlorobenzene	541-73-1			1.315	ESL EPA Region 5 (2003)	1.32E+00	ESL EPA Region 5 (2003)
1,4-Dichlorobenzene	106-46-7			0.318	ESL EPA Region 5 (2003)	3.18E-01	ESL EPA Region 5 (2003)
3,3'-Dichlorobenzidine	91-94-1			0.127	ESL EPA Region 5 (2003)	1.27E-01	ESL EPA Region 5 (2003)
1,1-Dichloroethane	75-34-3			0.000575	ESL EPA Region 5 (2003)	5.75E-04	ESL EPA Region 5 (2003)
1,2-Dichloroethane	107-06-2			0.26	ESL EPA Region 5 (2003)	2.60E-01	ESL EPA Region 5 (2003)
1,1-Dichloroethene	75-35-4			0.0194	ESL EPA Region 5 (2003)	1.94E-02	ESL EPA Region 5 (2003)
1,2-Dichloroethene	540-59-0					No ESV	No Source
2,4-Dichlorophenol	120-83-2			0.0817	ESL EPA Region 5 (2003)	8.17E-02	ESL EPA Region 5 (2003)
1,2-Dichloropropane	78-87-5			0.333	ESL EPA Region 5 (2003)	3.33E-01	ESL EPA Region 5 (2003)
cis -1,3-Dichloropropene	10061-02-6				No Source	No ESV	No Source
trans -1,3-Dichloropropene	10061-02-6				No Source	No ESV	No Source
Dieldrin	60-57-1	0.0019	MacDonald et al. (2000)	0.0019	ESL EPA Region 5 (2003)	1.90E-03	MacDonald et al. (2000)
Diethylphthalate	84-66-2			0.295	ESL EPA Region 5 (2003)	2.95E-01	ESL EPA Region 5 (2003)
Dimethylbenzene	1330-20-7				No Source	No ESV	No Source
Dimethylphthalate	131-11-3				No Source	No ESV	No Source
2,4-Dimethylphenol	105-67-9			0.304	ESL EPA Region 5 (2003)	3.04E-01	ESL EPA Region 5 (2003)
Di-n-butylphthalate	84-74-2			1.114	ESL EPA Region 5 (2003)	1.11E+00	ESL EPA Region 5 (2003)
Di-n-octylphthalate	117-84-0			40.6	ESL EPA Region 5 (2003)	4.06E+01	ESL EPA Region 5 (2003)
1,3-Dinitrobenzene	99-65-0			0.00861	ESL EPA Region 5 (2003)	8.61E-03	ESL EPA Region 5 (2003)
2,4-Dinitrophenol	51-28-5			0.00621	ESL EPA Region 5 (2003)	6.21E-03	ESL EPA Region 5 (2003)
2,4-Dinitrotoluene	121-14-2			0.0144	ESL EPA Region 5 (2003)	1.44E-02	ESL EPA Region 5 (2003)

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Analyte	CAS Registry Number	Sediment Screening Values					
		Consensus-Based Sediment Quality Guidelines[a]		ESL[b]		ESV[c]	
		Number	Source	Number	Source	Number	Source
2,6-Dinitrotoluene	606-20-2			0.0398	ESL EPA Region 5 (2003)	3.98E-02	ESL EPA Region 5 (2003)
2-Amino-4,6-dinitrotoluene	35572-78-					No ESV	No Source
4-Amino-2,6-dinitrotoluene	19406-51-					No ESV	No Source
2-Methyl-4,6-dinitrophenol	534-52-1				No Source	No ESV	No Source
4,6-Dinitro-2-methylphenol	534-52-1				No Source	No ESV	No Source
Endosulfan, alpha	959-98-8			0.0026	ESL EPA Region 5 (2003)	2.60E-03	ESL EPA Region 5 (2003)
Endosulfan, beta	33213-65-9			0.00194	ESL EPA Region 5 (2003)	1.94E-03	ESL EPA Region 5 (2003)
Endosulfan, mixed isomers	--					No ESV	No Source
Endosulfan Sulfate	1031-07-8			0.0346	ESL EPA Region 5 (2003)	3.46E-02	ESL EPA Region 5 (2003)
Endrin	72-20-8	0.00222	MacDonald et al. (2000)	0.00222	ESL EPA Region 5 (2003)	2.22E-03	MacDonald et al. (2000)
Endrin Aldehyde	7421-93-4			0.48	ESL EPA Region 5 (2003)	4.80E-01	ESL EPA Region 5 (2003)
Endrin Ketone	53494-70-					No ESV	No Source
Ethylbenzene	100-41-4			0.175	ESL EPA Region 5 (2003)	1.75E-01	ESL EPA Region 5 (2003)
Fluoranthene	206-44-0	0.423	MacDonald et al. (2000)	0.423	ESL EPA Region 5 (2003)	4.23E-01	MacDonald et al. (2000)
Fluorene	86-73-7	0.0774	MacDonald et al. (2000)	0.0774	ESL EPA Region 5 (2003)	7.74E-02	MacDonald et al. (2000)
gamma-BHC (lindane)	58-89-9	0.00237	MacDonald et al. (2000)	0.00237	ESL EPA Region 5 (2003)	2.37E-03	MacDonald et al. (2000)
Heptachlor	76-44-8			0.0006	ESL EPA Region 5 (2003)	6.00E-04	ESL EPA Region 5 (2003)
Heptachlor Epoxide	1024-57-3	0.00247	MacDonald et al. (2000)	0.00247	ESL EPA Region 5 (2003)	2.47E-03	MacDonald et al. (2000)
Hexachlorobenzene	118-74-1			0.02	ESL EPA Region 5 (2003)	2.00E-02	ESL EPA Region 5 (2003)
Hexachlorobutadiene	87-68-3			0.00265	ESL EPA Region 5 (2003)	2.65E-03	ESL EPA Region 5 (2003)
Hexachlorocyclopentadiene	77-47-4			0.901	ESL EPA Region 5 (2003)	9.01E-01	ESL EPA Region 5 (2003)
Hexachloroethane	67-72-1			0.584	ESL EPA Region 5 (2003)	5.84E-01	ESL EPA Region 5 (2003)
2-Hexanone	591-78-6			0.0582	ESL EPA Region 5 (2003)	5.82E-02	ESL EPA Region 5 (2003)
HMX	2691-41-0					No ESV	No Source
HMX	2691-41-0					No ESV	No Source
Indeno(1,2,3-cd)pyrene	193-39-5			0.2	ESL EPA Region 5 (2003)	2.00E-01	ESL EPA Region 5 (2003)
Isophorone	78-59-1			0.4232	ESL EPA Region 5 (2003)	4.23E-01	ESL EPA Region 5 (2003)
Malathion	121-75-5					No ESV	No Source
Methoxychlor	72-43-5			0.0136	ESL EPA Region 5 (2003)	1.36E-02	ESL EPA Region 5 (2003)

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Analyte	CAS Registry Number	Sediment Screening Values					
		Consensus-Based Sediment Quality Guidelines[a]		ESL[b]		ESV[c]	
		Number	Source	Number	Source	Number	Source
Methylene Chloride	75-09-2			0.159	ESL EPA Region 5 (2003)	1.59E-01	ESL EPA Region 5 (2003)
Methy Chloride	74-87-3					No ESV	No Source
2-Methylnaphthalene	91-57-6			0.0202	ESL EPA Region 5 (2003)	2.02E-02	ESL EPA Region 5 (2003)
2-Methylphenol	95-48-7				No Source	No ESV	No Source
4-Methylphenol	106-44-5				No Source	No ESV	No Source
4-Methyl-2-pentanone	108-10-1			0.0251	ESL EPA Region 5 (2003)	2.51E-02	ESL EPA Region 5 (2003)
Mirex	2385-85-5					No ESV	No Source
Naphthalene	91-20-3	0.176	MacDonald et al. (2000)	0.176	ESL EPA Region 5 (2003)	1.76E-01	MacDonald et al. (2000)
2-Nitroaniline	88-74-4				No Source	No ESV	No Source
3-Nitroaniline	99-09-2				No Source	No ESV	No Source
4-Nitroaniline	100-01-6				No Source	No ESV	No Source
2-Nitrobenzenamine	88-74-4				No Source	No ESV	No Source
3-Nitrobenzenamine	99-09-2				No Source	No ESV	No Source
Nitrobenzene	99-95-3			0.145	ESL EPA Region 5 (2003)	1.45E-01	ESL EPA Region 5 (2003)
4-Nitrobenzenamine	100-01-6				No Source	No ESV	No Source
Nitrocellulose	9004-70-0					No ESV	No Source
Nitroglycerin	55-63-0					No ESV	No Source
Nitroquanidine	--					No ESV	No Source
2-Nitrophenol	88-75-5				No Source	No ESV	No Source
4-Nitrophenol	100-02-7			0.0133	ESL EPA Region 5 (2003)	1.33E-02	ESL EPA Region 5 (2003)
m-Nitrotoluene	99-08-1					No ESV	No Source
3-Nitrotoluene	99-08-1					No ESV	No Source
N-nitroso-di-n-dipropylamine	621-64-7				No Source	No ESV	No Source
N-nitrosodiphenylamine	86-30-6				No Source	No ESV	No Source
N-Nitroso-di-n-propylamine	621-64-7				No Source	No ESV	No Source
o-Nitrotoluene	88-72-2					No ESV	No Source
2,2'- oxybis(1-Chloropropane)	108-60-1				No Source	No ESV	No Source
Pentachlorophenol	87-86-5			23	ESL EPA Region 5 (2003)	2.30E+01	ESL EPA Region 5 (2003)

Table O-3. Derivation of Sediment Ecological Screening Values for Erie Burning Ground, Ravenna, Ohio

Analyte	CAS Registry Number	Sediment Screening Values					
		Consensus-Based Sediment Quality Guidelines[a]		ESL[b]		ESV[c]	
		Number	Source	Number	Source	Number	Source
Pentachlorobenzene	608-93-5			0.024	ESL EPA Region 5 (2003)	2.40E-02	ESL EPA Region 5 (2003)
Phenanthrene	85-01-8	0.204	MacDonald et al. (2000)	0.204	ESL EPA Region 5 (2003)	2.04E-01	MacDonald et al. (2000)
Phenol	108-95-2			0.0491	ESL EPA Region 5 (2003)	4.91E-02	ESL EPA Region 5 (2003)
Polynuclear Aromatic Hydrocarbons						No ESV	No Source
Polychorinated Biphenyls	1336-36-3			0.0598	ESL EPA Region 5 (2003)	5.98E-02	ESL EPA Region 5 (2003)
p-Nitrotoluene	99-99-0					No ESV	No Source
Pyrene	129-00-0	0.195	MacDonald et al. (2000)	0.195	ESL EPA Region 5 (2003)	1.95E-01	MacDonald et al. (2000)
RDX (cyclonite)	121-82-4					No ESV	No Source
Styrene	100-42-5			0.254	ESL EPA Region 5 (2003)	2.54E-01	ESL EPA Region 5 (2003)
Tetrachloroethene	127-18-4			0.99	ESL EPA Region 5 (2003)	9.90E-01	ESL EPA Region 5 (2003)
Tetrachloroethylene	127-18-4			0.99	ESL EPA Region 5 (2003)	9.90E-01	ESL EPA Region 5 (2003)
1,1,2,2-Tetrachloroethane	79-34-5			0.85	ESL EPA Region 5 (2003)	8.50E-01	ESL EPA Region 5 (2003)
Tetrachloromethane	56-23-5			1.45	ESL EPA Region 5 (2003)	1.45E+00	ESL EPA Region 5 (2003)
Tetryl	479-45-8					No ESV	No Source
Toluene	108-88-3			1.22	ESL EPA Region 5 (2003)	1.22E+00	ESL EPA Region 5 (2003)
Total Organic Carbon						No ESV	No Source
Toxaphene	8001-35-2			7.70E-05	ESL EPA Region 5 (2003)	7.70E-05	ESL EPA Region 5 (2003)
Tribromomethane	75-25-2			0.492	ESL EPA Region 5 (2003)	4.92E-01	ESL EPA Region 5 (2003)
Trichloroethene	79-01-6			0.112	ESL EPA Region 5 (2003)	1.12E-01	ESL EPA Region 5 (2003)
1,2,4-Trichlorobenzene	120-82-1			5.062	ESL EPA Region 5 (2003)	5.06E+00	ESL EPA Region 5 (2003)
1,1,1-Trichloroethane	71-55-6			0.213	ESL EPA Region 5 (2003)	2.13E-01	ESL EPA Region 5 (2003)
1,1,2-Trichloroethane	79-00-5			0.518	ESL EPA Region 5 (2003)	5.18E-01	ESL EPA Region 5 (2003)
Trichloroethylene	79-01-6			0.112	ESL EPA Region 5 (2003)	1.12E-01	ESL EPA Region 5 (2003)
2,4,5-Trichlorophenol	95-95-4				No Source	No ESV	No Source
2,4,6-Trichlorophenol	88-06-2			0.208	ESL EPA Region 5 (2003)	2.08E-01	ESL EPA Region 5 (2003)
1,3,5-Trinitrobenzene	99-35-4				ESL EPA Region 5 (2003)	No ESV	ESL EPA Region 5 (2003)
2,4,6-Trinitrotoluene	118-96-7				No Source	No ESV	No Source
Vinyl Chloride	75-01-4			0.202	ESL EPA Region 5 (2003)	2.02E-01	ESL EPA Region 5 (2003)

Table O-3. Derivation of Sediment Ecological Screening Values for Erie Burning Ground, Ravenna, Ohio

Analyte	CAS Registry Number	Sediment Screening Values					
		Consensus-Based Sediment Quality Guidelines[a]		ESL[b]		ESV[c]	
		Number	Source	Number	Source	Number	Source
Xylenes (total)	1330-20-7			0.433	ESL EPA Region 5 (2003)	4.33E-01	ESL EPA Region 5 (2003)

[a] D.D. MacDonald, C.G. Ingersoll, T.A. Berger. 2000. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems.

[b] EPA 1998d. RCRA QAPP Instructions, EPA Region 5, Chicago, IL, April 1998 revision, http://www.epa.gov/reg5rcra/wptdiv/cars/cars.htm.

[c] The Prefered Soil Value is MacDonald et al. (2000) value (first choice if it is available) else the EDQL

[d] Preferred ESV based on EDQL EPA Region 5 value for PCBs.

BHC = Benzene hexachloride.
CAS = Chemical Abstracts Service.
DDD = Dichlorodiphenyldichloroethene.
DDE = Dichlorodiphenyldichloroethane.
DDT = Dichlorodiphenyltrichloroethane.
EPA = U. S. Environmental Protection Agency.
ESL = Ecological screening level.
ESV = Preferred ecological screening value.
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.
PCB = Polychlorinated bipheny.
RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.

Table O-4. OAC Water Quality Criteria for Chemical Constituents in Surface Water at Erie Burning Ground, Ravenna, Ohio

Chemicals of Interest	CAS Registry Number	Surface Water	
		Ohio EPA Outside Mixing Zone Average[a]	
		Number (ug/L)	Source
Inorganics			
(Target Analyte List)			
Aluminum	7429-90-5	--	no source
Antimony	7440-36-0	190	Ohio Administrative Code
Arsenic	7440-38-2	150	Ohio Administrative Code
Arsenic III (Diss)	7440-38-2	150	Ohio Administrative Code
Arsenic (TR)	7440-38-2	150	Ohio Administrative Code
Arsenic V (Diss)	7440-38-2	--	No source
Barium	7440-39-3	220	Ohio Administrative Code
Cadmium	7440-43-9	2.5	Ohio Administrative Code
Cadmium[b] (diss)	7440-43-9	2.2	Ohio Administrative Code
Cadmium[b] (TR)	7440-43-9	2.5	Ohio Administrative Code
Calcium	7440-70-2	--	no source
Chromium	7440-47-3	86	Ohio Administrative Code
Chromium[b] (diss)	7440-47-3	74	Ohio Administrative Code
Cobalt	7440-48-4	24	Ohio Administrative Code
Copper	7440-50-8	9.3	Ohio Administrative Code
Copper[b] (diss)	7440-50-8	9	Ohio Administrative Code
Copper[b] (TR)	7440-50-8	9.3	Ohio Administrative Code
Cyanide[c]	57-12-5	5.2	Ohio Administrative Code
Iron	7439-89-6	--	no source
Lead[b] (diss)	7439-92-1	5.1	Ohio Administrative Code
Lead	7439-92-1	6.4	Ohio Administrative Code
Magnesium	7439-95-4	--	no source
Manganese	7439-96-5	--	Ohio Administrative Code
Mercury	7439-97-6	0.91	Ohio Administrative Code
Mercury (CVAA) (diss)	7439-97-6	0.77	Ohio Administrative Code
Mercury (TR)	7439-97-6	0.91	Ohio Administrative Code
Nickel	7440-02-0	52	Ohio Administrative Code
Nickel[b] (diss)	7440-02-0	52	Ohio Administrative Code
Nickel[b] (TR)	7440-02-1	52	Ohio Administrative Code
Nitrate/nitrite		--	no source
Potassium	7440-09-7	--	no source
Selenium (diss)	7782-49-2	4.6	no source
Selenium	7782-49-2	5	no source
Sodium	7440-23-5	--	no source
Sulfate	14808-79-8	--	no source
Sulfide	18496-25-8	--	no source
Thallium	7440-28-0	17	Ohio Administrative Code
Vanadium	7440-62-2	44	Ohio Administrative Code
Zinc	7440-66-6	120	Ohio Administrative Code
Zinc[b] (diss)	7440-66-6	120	Ohio Administrative Code
Zinc[b] (TR)	7440-66-6	120	Ohio Administrative Code
Organic Compounds			
Acetone	67-64-1	--	no source
Aldrin	309-00-2	--	no source
bis(2-Ethylhexyl)phthalate	117-81-7	8.4	Ohio Administrative Code
2-Butanone	78-93-3	22000	Ohio Administrative Code
Carbon Disulfide	75-15-0	15	Ohio Administrative Code
Chloride	16887-00-6	--	no source
Chloroform	67-66-3	140	Ohio Administrative Code
Chloromethane	74-87-3	--	no source
Chrysene	218-01-9	--	no source
2-Amino-4,6-dinitrotoluene	35572-78-2	18	Ohio Administrative Code
4-Amino-2,6-dinitrotoluene	19406-51-0	11	Ohio Administrative Code
4,4'-DDT	50-29-3	--	no source
4,4'-DDD	72-54-8	--	no source
1,3-Dinitrobenzene	99-65-0	22	Ohio Administrative Code
2,4-Dinitrotoluene	121-14-2	390	Ohio Administrative Code
2,6-Dinitrotoluene	606-20-2	730	Ohio Administrative Code
Fluoranthene	206-44-0	2.3	Ohio Administrative Code

Table O-4. OAC Water Quality Criteria for Chemical Constituents in Surface Water at Erie Burning Ground, Ravenna, Ohio

Chemicals of Interest	CAS Registry Number	Surface Water	
		Ohio EPA Outside Mixing Zone Average[a]	
		Number (ug/L)	Source
Methylene Chloride	75-09-2	1900	no source
4-Methylphenol	106-44-5	53	Ohio Administrative Code
Nitrocellulose	9004-70-0	ID	Ohio Administrative Code
2-Nitrotoluene	88-72-2	71	Ohio Administrative Code
3-Nitrotoluene	99-08-1	42	Ohio Administrative Code
4-Nitrotoluene	99-99-0	46	Ohio Administrative Code
n-Nitrosodiphenylamine	86-30-6	--	no source
Phenol	108-95-2	400	Ohio Administrative Code
2,4,6-Trinitrotoluene	118-96-7	13	Ohio Administrative Code
HMX	2691-41-0	220	Ohio Administrative Code
Pyrene	129-00-0	42	Ohio Administrative Code
RDX	121-82-4	79	Ohio Administrative Code
Tetrachloroethene	127-18-4	53	Ohio Administrative Code
Tetryl	479-45-8	ID	no source
Toluene	108-88-3	62	Ohio Administrative Code

[a] Ohio EPA, Division of Surface Water, 2002. Aquatic Life Tier I Criteria and Tier II Screening Values pirsueant to OAC Chapters 3745-1 and 3745-2, December 30.

[b] Hardness adjusted to 100 mg/L $CaCO_3$.

[c] Free cyanide.

-- = No value.
ID = Insufficient data available to calculate criterion.
CAS = Chemical Abstracts Service.
DDD = Dichlorodiphenyldichloroethane.
DDT = Dichlorodiphenyltrichloroethene.
diss = Dissolved.
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.
OAC = Ohio Administrative Code.
Ohio EPA = Ohio Environmental Protection Agency.
RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.
TR = Target risk.

Table O-5. Media Evaluations for Frequency of Detection, Background Comparison, and PBT Identification for Surface Soil at Erie Burning Ground, Ravenna

Detected COI	CAS Registry Number	Frequency of Detect	% Results > Detect Limit	Maximum Detect (mg/kg)	Log Kow	Is the COI a PBT?[a]	Site Background (mg/kg)	Is Maximum Detect > Background?[b]	COPEC?[c]	Justification
Inorganics										
Aluminum	7429-90-5	69/ 69	100	3.02E+04	--	no	1.77E+04	yes	**yes**	COPEC per freq of detect > 5%, maximum detect > background
Antimony	7440-36-0	32/ 69	46	9.17E+01	--	no	9.60E-01	yes	**yes**	COPEC per freq of detect > 5%, maximum detect > background
Arsenic	7440-38-2	69/ 69	100	2.56E+01	--	no	1.54E+01	yes	**yes**	COPEC per freq of detect > 5%, maximum detect > background
Barium	7440-39-3	69/ 69	100	1.76E+03	--	no	8.84E+01	yes	**yes**	COPEC per freq of detect > 5%, maximum detect > background
Beryllium	7440-41-7	26/ 69	38	3.80E+00	--	no	8.80E-01	yes	**yes**	COPEC per freq of detect > 5%, maximum detect > background
Cadmium	7440-43-9	19/ 69	28	1.98E+01	--	yes	no data	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, and no background
Calcium	7440-70-2	68/ 69	99	1.22E+05	--	no	1.58E+04	yes	**yes**	COPEC per freq of detect > 5%, maximum detect > background
Chromium	7440-47-3	69/ 69	100	1.02E+02	--	no	1.74E+01	yes	**yes**	COPEC per freq of detect > 5%, maximum detect > background
Cobalt	7440-48-4	68/ 69	99	1.82E+01	--	no	1.04E+01	yes	**yes**	COPEC per freq of detect > 5%, maximum detect > background
Copper	7440-50-8	69/ 69	100	5.86E+02	--	no	1.77E+01	yes	**yes**	COPEC per freq of detect > 5%, maximum detect > background
Cyanide	57-12-5	14/ 69	20	3.25E+01	--	no	no data	yes	**yes**	COPEC per freq of detect > 5%, and no background
Iron	7439-89-6	69/ 69	100	1.52E+05	--	no	2.31E+04	yes	**yes**	COPEC per freq of detect > 5%, maximum detect > background
Lead	7439-92-1	69/ 69	100	1.18E+03	--	yes	2.61E+01	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, maximum detect > background
Magnesium	7439-95-4	69/ 69	100	2.28E+04	--	no	3.03E+03	yes	**yes**	COPEC per freq of detect > 5% and maximum detect > background
Manganese	7439-96-5	69/ 69	100	3.82E+03	--	no	1.45E+03	yes	**yes**	COPEC per freq of detect > 5% and maximum detect > background
Mercury	7487-94-6	26/ 69	38	1.40E-01	--	yes	3.60E-02	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, maximum detect > background
Nickel	7440-02-0	69/ 69	100	1.21E+02	--	no	2.11E+01	yes	**yes**	COPEC per freq of detect > 5%, maximum detect > background
Potassium	7440-09-7	66/ 69	96	2.42E+03	--	no	9.27E+02	yes	**yes**	COPEC per freq of detect > 5%, maximum detect > background
Selenium	7782-49-2	1/ 69	1	3.50E+00	--	no	1.40E+00	yes	no	Not a COPEC per freq of detection <=5% and not a PBT compound
Silver	7440-22-4	9/ 69	13	8.70E+00	--	no	no data	yes	**yes**	COPEC per freq of detect > 5%, maximum detect > background
Sodium	7440-23-5	43/ 48	90	2.51E+03	--	no	1.23E+02	yes	**yes**	COPEC per freq of detect > 5%, maximum detect > background
Thallium	7440-28-0	14/ 27	52	5.00E-01	--	no	no data	yes	**yes**	COPEC per freq of detect > 5%, maximum detect > background
Vanadium	7440-62-2	69/ 69	100	1.12E+02	--	no	3.11E+01	yes	**yes**	COPEC per freq of detect > 5%, maximum detect > background

Table O-5. Media Evaluations for Frequency of Detection, Background Comparison, and PBT Identification for Surface Soil at Erie Burning Ground, Ravenna

Detected COI	CAS Registry Number	Frequency of Detect	% Results > Detect Limit	Maximum Detect (mg/kg)	Log Kow	Is the COI a PBT?[a]	Site Background (mg/kg)	Is Maximum Detect > Background?[b]	COPEC?[c]	Justification
Zinc	7440-66-6	64/ 69	93	5.34E+03	--	yes	6.18E+01	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, maximum detect > background
Organics-Explosives										
2-Amino-4,6-dinitrotoluene	35572-78-2	5/ 10	50	1.30E-01	1.94E+00	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background data
4-Amino-2,6-dinitrotoluene	19406-51-0	5/ 10	50	1.70E-01	No Kow	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background data
2,4-Dinitrotoluene	121-14-2	1/ 66	2	6.20E-01	1.98E+00	no	no data	yes	no	Not a COPEC per freq of detect < 5% and not a PBT compound
2,6-Dinitrotoluene	606-20-2	1/ 66	2	1.00E-01	1.72E+00	no	no data	yes	no	Not a COPEC per freq of detect < 5% and not a PBT compound
Nitrocellulose	9004-70-0	4/ 51	8	5.90E+00	-4.56E+00	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background data
4-Nitrotoluene	99-99-0	4/ 67	6	2.00E-01	2.37E+00	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background data
RDX	121-82-4	2/ 67	3	7.30E-01	8.70E-01	no	no data	yes	no	Not a COPEC per freq of detect < 5% and not a PBT compound
1,3,5-Trinitrobenzene	99-35-4	2/ 67	3	9.10E-01	1.18E+00	no	no data	yes	no	Not a COPEC per freq of detect < 5% and not a PBT compound
2,4,6-Trinitrotoluene	121-14-2	16/ 67	24	7.10E+00	1.60E+00	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background data
Organics-Semivolatiles										
2-Methylnaphthalene	91-57-6	4/ 66	6	6.30E-02	-1.90E+00	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background data
Acenaphthylene	208-96-8	1/ 66	2	2.30E-01	4.10E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound and no background
Anthracene	120-12-7	4/ 66	6	4.60E-01	4.55E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, and no background
Benzo(*a*)anthracene	56-55-3	11/ 66	17	1.70E+00	5.70E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, and no background
Benzo(*a*)pyrene	50-32-8	12/ 66	18	1.80E+00	6.11E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, and no background
Benzo(*b*)fluoranthene	205-99-2	16/ 66	24	3.90E+00	6.10E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, and no background
Benzo(*g,h,i*)perylene	191-24-2	10/ 66	15	9.50E-01	6.60E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, and no background
Benzo(*k*)fluoranthene	207-08-9	10/ 66	15	1.50E+00	6.10E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, and no background
Bis(2-ethylhexyl)phthalate	117-81-7	26/ 66	39	3.50E+00	7.60E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, and no background
Carbazole	86-74-8	3/ 66	5	1.60E-01	3.76E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound and no background
Chrysene	218-01-9	14/ 66	21	2.40E+00	5.70E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, and no background
Dibenzo(a,h)anthracene	53-70-3	2/ 66	3	3.20E-01	6.50E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound and no background
Fluoranthene	206-44-0	18/ 66	27	1.90E+00	5.12E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, and no background
Indeno(1,2,3-*cd*)pyrene	193-39-5	9/ 66	14	1.10E+00	6.60E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, and no background
Naphthalene	91-20-3	2/ 66	3	1.00E-01	3.36E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound and no background

Table O-5. Media Evaluations for Frequency of Detection, Background Comparison, and PBT Identification for Surface Soil at Erie Burning Ground, Ravenna

Detected COI	CAS Registry Number	Frequency of Detect	% Results > Detect Limit	Maximum Detect (mg/kg)	Log Kow	Is the COI a PBT?[a]	Site Background (mg/kg)	Is Maximum Detect > Background?[b]	COPEC?[c]	Justification
Phenanthrene	85-01-8	10/ 66	15	4.50E-01	4.55E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, and no background
Pyrene	129-00-0	15/ 66	23	1.90E+00	5.13E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, and no background
Organics-Volatiles										
Acetone	67-64-1	1/ 7	14	1.30E-02	-2.40E-01	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background
Methylene Chloride	75-09-2	1/ 7	14	5.90E-04	1.25E+00	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background
Toluene	108-88-3	2/ 7	29	4.00E-03	2.75E+00	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background

[a] Yes = COI meets the criterion for being a PBT compound; else no.

[b] Yes = maximum detect is > than the background value; else no.

[c] **Yes** = COI frequencey of detection is > 5% and maximum detect exceeds the background value and/or the COI is a PBT; else no.

"**--**" = Not applicable, Kow applies only to organic compounds.

CAS = Chemical Abstract Service.

COI = Chemical of interest.

COPEC = Chemical of potential ecological concern.

Log Kow = Log of octanol-water partition coefficient (Kow).

PBT = Persistent, bioaccumulative, and toxic compound (inorganics include cadmium, lead, mercury, and zinc; organics include Log Kow of at least 3.0).

RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.

Table O-6. Media Evaluations for Frequency of Detection, Background Comparison, and PBT Identification for Subsurface Soil at Erie Burning Ground, Ravenna

Detected COI	CAS Registry Number	Frequency of Detect	% Results > Detect Limit	Maximum Detect (mg/kg)	Log Kow	Is the COI a PBT?[a]	Site Background (mg/kg)	Is Maximum Detect > Background?[b]	COPEC?[c]	Justification
Inorganics										
Aluminum	7429-90-5	42/ 42	100	1.83E+04	--	no	1.95E+04	no	no	Not a COPEC per maximum detect < background and not a PBT compound
Antimony	7440-36-0	4/ 42	10	7.00E+00	--	no	9.60E-01	yes	**yes**	COPEC per freq of detect > 5%, maximum detect > background
Arsenic	7440-38-2	42/ 42	100	1.94E+01	--	no	1.98E+01	no	no	Not a COPEC per maximum detect < background and not a PBT compound
Barium	7440-39-3	42/ 42	100	2.63E+02	--	no	1.24E+02	yes	**yes**	COPEC per freq of detect > 5%, maximum detect > background
Beryllium	7440-41-7	5/ 42	12	1.40E+00	--	no	8.80E-01	yes	**yes**	COPEC per freq of detect > 5%, maximum detect > background
Cadmium	7440-43-9	5/ 42	12	1.80E+00	--	yes	no data	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, and no background
Calcium	7440-70-2	42/ 42	100	2.00E+04	--	no	3.55E+04	no	no	Not a COPEC per maximum detect < background and not a PBT compound
Chromium	7440-47-3	42/ 42	100	2.60E+01	--	no	2.72E+01	no	no	Not a COPEC per maximum detect < background and not a PBT compound
Cobalt	7440-48-4	42/ 42	100	1.49E+01	--	no	2.32E+01	no	no	Not a COPEC per maximum detect < background and not a PBT compound
Copper	7440-50-8	42/ 42	100	9.05E+01	--	no	3.23E+01	yes	**yes**	COPEC per freq of detect > 5%, maximum detect > background
Cyanide	57-12-5	1/ 42	2	6.50E-01	--	no	no data	yes	no	Not a COPEC per freq of detection <= 5% and not a PBT compound
Iron	7439-89-6	42/ 42	100	2.61E+04	--	no	3.52E+04	no	no	Not a COPEC per maximum detect < background and not a PBT compound
Lead	7439-92-1	42/ 42	100	1.29E+02	--	yes	1.91E+01	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, maximum detect > background
Magnesium	7439-95-4	42/ 42	100	3.95E+03	--	no	8.79E+03	no	no	Not a COPEC per maximum detect < background and not a PBT compound
Manganese	7439-96-5	42/ 42	100	1.23E+03	--	no	3.03E+03	no	no	Not a COPEC per maximum detect < background and not a PBT
Mercury	7487-94-6	11/ 42	26	1.00E-01	--	yes	4.40E-02	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, maximum detect > background
Nickel	7440-02-0	42/ 42	100	3.59E+01	--	no	6.07E+01	no	no	Not a COPEC per maximum detect < background and not a PBT
Potassium	7440-09-7	40/ 42	95	1.37E+03	--	no	3.35E+03	no	no	Not a COPEC per maximum detect < background and not a PBT
Selenium	7782-49-2	2/ 42	5	3.20E+00	--	no	1.50E+00	yes	no	Not a COPEC per freq of detection <= 5% and not a PBT compound
Sodium	7440-23-5	19/ 25	76	3.65E+02	--	no	1.45E+02	yes	**yes**	COPEC per freq of detect > 5%, maximum detect > background
Thallium	7440-28-0	10/ 15	67	8.80E-01	--	no	9.10E-01	no	no	Not a COPEC per maximum detect < background and not a PBT
Vanadium	7440-62-2	42/ 42	100	3.60E+01	--	no	3.76E+01	no	no	Not a COPEC per maximum detect < background and not a PBT
Zinc	7440-66-6	38/ 42	90	6.22E+02	--	yes	9.33E+01	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, maximum detect > background
Organics-Explosives										
2,4-Dinitrotoluene	121-14-2	1/ 40	3	8.90E-02	1.98E+00	no	no data	yes	no	Not a COPEC per freq of detection <= 5% and not a PBT compound
HMX	2691-41-0	1/ 41	2	2.00E-01	No Kow	no	no data	yes	no	Not a COPEC per freq of detection <= 5% and not a PBT compound
Nitrocellulose	9004-70-0	1/ 14	7	2.90E+00	########	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background data
3-Nitrotoluene	99-08-1	1/ 41	2	2.20E-01	2.45E+00	no	no data	yes	no	Not a COPEC per freq of detection <= 5% and not a PBT compound
4-Nitrotoluene	99-99-0	2/ 41	5	1.20E-01	2.37E+00	no	no data	yes	no	Not a COPEC per freq of detection <= 5% and not a PBT compound
2,4,6-Trinitrotoluene	121-14-2	3/ 41	7	3.20E+00	1.60E+00	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background data
Organics-Semivolatiles										
Benzo(*a*)anthracene	56-55-3	2/ 42	5	5.70E-02	5.70E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound and no background
Benzo(*a*)pyrene	50-32-8	3/ 42	7	6.80E-02	6.11E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, and no background
Benzo(*b*)fluoranthene	205-99-2	3/ 42	7	1.50E-01	6.10E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, and no background
Benzo(*k*)fluoranthene	207-08-9	3/ 42	7	6.50E-02	6.10E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, and no background
Bis(2-ethylhexyl)phthalate	117-81-7	19/ 42	45	1.20E+00	7.60E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, and no background
Chrysene	218-01-9	3/ 42	7	9.70E-02	5.70E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, and no background
Fluoranthene	206-44-0	3/ 42	7	2.50E-01	5.12E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, and no background
Indeno(1,2,3-*cd*)pyrene	193-39-5	1/ 42	2	5.30E-02	6.60E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound and no background
Phenanthrene	85-01-8	1/ 42	2	2.80E-01	4.55E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound and no background
Phenol	108-95-2	1/ 42	2	5.40E-02	1.48E+00	no	no data	yes	no	Not a COPEC per freq of detect <= 5%, and not being a PBT compound
Pyrene	129-00-0	3/ 42	7	1.60E-01	5.13E+00	yes	no data	yes	**yes**	COPEC per being a PBT compound, freq of detect > 5%, and no background

Table O-6. Media Evaluations for Frequency of Detection, Background Comparison, and PBT Identification for Subsurface Soil at Erie Burning Ground, Ravenna

Detected COI	CAS Registry Number	Frequency of Detect	% Results > Detect Limit	Maximum Detect (mg/kg)	Log Kow	Is the COI a PBT?[a]	Site Background (mg/kg)	Is Maximum Detect > Background?[b]	COPEC?[c]	Justification
Organics-Volatiles										
Acetone	67-64-1	3/ 4	75	2.30E-02	-2.40E-01	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background
Methylene Chloride	75-09-2	1/ 7	14	3.80E-03	1.25E+00	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background
Toluene	108-88-3	1/ 7	14	3.40E-02	2.75E+00	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background

[a] Yes = COI meets the criterion for being a PBT compound; else no.

[b] Yes = Maximum detect is > than the background value; else no.

[c] **Yes** = COI frequencey of detection is > 5% and maximum detect exceeds the background value and/or the COI is a PBT; else no.

"--" = Not applicable, Kow applies only to organic compounds.

CAS = Chemical Abstract Service.

COI = Chemical of interest.

COPEC = Chemical of potential ecological concern.

HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.

Log Kow = Log of octanol-water partition coefficient (Kow).

PBT = Persistent, bioaccumulative, and toxic compound (inorganics include cadmium, lead, mercury, and zinc; organics include Log Kow of at least 3.0).

Table O-7. Data and Media Evaluations for Frequency of Detection, Sediment Reference Values and Background Comparison, and PBT Identification for Sediment at Erie Burning Ground, Ravenna

Detected COI	CAS Registry Number	Frequency of Detect	% Results > Detect Limit	Maximum Detect (mg/kg)	Log Kow	Is the COI a PBT?[a]	EOLP SRV (mg/kg)	Is Maximum Detect > SRV?[b]	Site Background (mg/kg)	Is Maximum Detect > Background?[c]	COPEC?[d]	Justification
Inorganics												
Aluminum	7429-90-5	92/ 92	100	3.48E+04	--	no	2.90E+04	yes	1.39E+04	yes	**yes**	COPEC per freq of detect > 5% and maximum detect > SRV
Antimony	7440-36-0	31/ 92	34	3.16E+03	--	no	1.30E+00	yes	no data	yes	**yes**	COPEC per freq of detect > 5% and maximum detect > SRV
Arsenic	7440-38-2	92/ 92	100	1.19E+02	--	no	2.50E+01	yes	1.95E+01	yes	**yes**	COPEC per freq of detect > 5% and maximum detect > SRV
Barium	7440-39-3	92/ 92	100	2.17E+03	--	no	1.90E+02	yes	1.23E+02	yes	**yes**	COPEC per freq of detect > 5% and maximum detect > SRV
Beryllium	7440-41-7	7/ 92	8	2.10E+00	--	no	8.00E-01	yes	3.80E-01	yes	**yes**	COPEC per freq of detect > 5% and maximum detect > SRV
Cadmium	7440-43-9	20/ 92	22	4.48E+01	--	yes	7.90E-01	yes	no data	yes	**yes**	COPEC per being a PBT chemical, freq of detect > 5%, maximum detect > SRV
Calcium	7440-70-2	92/ 92	100	8.26E+04	--	no	2.10E+04	yes	5.51E+03	yes	**yes**	COPEC per freq of detect > 5% and maximum detect > SRV
Chromium	7440-47-3	90/ 90	100	2.53E+02	--	no	2.90E+01	yes	1.81E+01	yes	**yes**	COPEC per freq of detect > 5% and maximum detect > SRV
Cobalt	7440-48-4	87/ 92	95	1.75E+01	--	no	1.20E+01	yes	9.10E+00	yes	**yes**	COPEC per freq of detect > 5% and maximum detect > SRV
Copper	7440-50-8	92/ 92	100	1.14E+03	--	no	3.20E+01	yes	2.76E+01	yes	**yes**	COPEC per freq of detect > 5% and maximum detect > SRV
Cyanide	57-12-5	6/ 92	7	8.30E+00	--	no	No SRV	No SRV	no data	yes	**yes**	COPEC per freq of detect > 5% and no SRV or background
Iron	7439-89-6	92/ 92	100	2.42E+05	--	no	4.10E+04	yes	2.82E+04	yes	**yes**	COPEC per freq of detect > 5% and maximum detect > SRV
Lead	7439-92-1	92/ 92	100	1.87E+03	--	yes	4.70E+01	yes	2.74E+01	yes	**yes**	COPEC per being a PBT chemical, freq of detect > 5%, maximum detect > SRV
Magnesium	7439-95-4	92/ 92	100	1.03E+04	--	no	7.10E+03	yes	2.76E+03	yes	**yes**	COPEC per freq of detect > 5% and maximum detect > SRV
Manganese	7439-96-5	92/ 92	100	7.39E+03	--	no	1.50E+03	yes	1.95E+03	yes	**yes**	COPEC per freq of detect > 5% and maximum detect > SRV
Mercury	7439-97-6	26/ 92	28	3.40E-01	--	yes	1.20E-01	yes	5.90E-02	yes	**yes**	COPEC per being a PBT chemical, freq of detect > 5%, maximum detect > SRV
Nickel	7440-02-0	91/ 92	99	1.77E+02	--	no	3.30E+01	yes	1.77E+01	yes	**yes**	COPEC per freq of detect > 5% and maximum detect > SRV
Potassium	7440-09-7	92/ 92	100	2.18E+03	--	no	6.80E+03	no	1.95E+03	yes	no	Not a COPEC per maximum detect < SRV and not a PBT compound
Silver	7440-22-4	22/ 92	24	6.20E+00	--	no	4.30E-01	yes	no data	yes	**yes**	COPEC per freq of detection > 5% and maximum detect > SRV
Sodium	7440-23-5	35/ 46	76	2.46E+03	--	no	No SRV	No SRV	1.12E+02	yes	**yes**	COPEC per freq of detection > 5% and maximum detect > background (no SRV)
Thallium	7440-28-0	3/ 20	15	7.20E-01	--	no	4.70E+00	no	8.90E-01	no	no	Not a COPEC per maximum detect < SRV and not a PBT compound
Vanadium	7440-62-2	91/ 92	99	5.10E+01	--	no	4.00E+01	yes	2.61E+01	yes	**yes**	COPEC per freq of detection > 5% and maximum detect > SRV
Zinc	7440-66-6	90/ 92	98	1.84E+04	--	yes	1.60E+02	yes	5.32E+02	yes	**yes**	COPEC per being a PBT chemical, freq of detect > 5%, maximum detect > SRV
Organics-Explosives												
2,4-Dinitrotoluene	121-14-2	5/ 92	5	1.40E-01	1.98E+00	no	No SRV	No SRV	no data	yes	no	Not a COPEC per freq of detect < 5% and not a PBT compound
2,6-Dinitrotoluene	606-20-2	7/ 92	8	2.80E-01	1.72E+00	no	No SRV	No SRV	no data	yes	**yes**	COPEC per freq of detect > 5%, no SRV or background
HMX	2691-41-0	2/ 92	2	1.10E+00	No Kow	no	No SRV	No SRV	no data	yes	no	Not a COPEC per freq of detect < 5% and not a PBT compound
Nitrobenzene	98-95-3	12/ 92	13	1.90E-01	1.83E+00	no	No SRV	No SRV	no data	yes	**yes**	COPEC per freq of detect > 5%, no SRV or background
Nitrocellulose	9004-70-4	7/ 27	26	1.97E+00	-4.56E+00	no	No SRV	No SRV	no data	yes	**yes**	COPEC per freq of detect > 5%, no SRV or background
2-Nitrotoluene	88-72-2	1/ 92	1	2.30E-01	2.30E+00	no	No SRV	No SRV	no data	yes	no	Not a COPEC per freq of detect < 5% and not a PBT compound
3-Nitrotoluene	99-08-1	2/ 92	2	1.60E-01	2.45E+00	no	No SRV	No SRV	no data	yes	no	Not a COPEC per freq of detect < 5% and not a PBT compound
4-Nitrotoluene	99-99-0	5/ 92	5	2.20E-01	2.37E+00	no	No SRV	No SRV	no data	yes	no	Not a COPEC per freq of detect < 5% and not a PBT compound
1,3,5-Trinitrobenzene	99-45-4	1/ 92	1	1.50E-01	1.18E+00	no	No SRV	No SRV	no data	yes	no	Not a COPEC per freq of detect < 5% and not a PBT compound

Table O-7. Data and Media Evaluations for Frequency of Detection, Sediment Reference Values and Background Comparison, and PBT Identification for Sediment at Erie Burning Ground, Ravenna

Detected COI	CAS Registry Number	Frequency of Detect	% Results > Detect Limit	Maximum Detect (mg/kg)	Log Kow	Is the COI a PBT?[a]	EOLP SRV (mg/kg)	Is Maximum Detect > SRV?[b]	Site Background (mg/kg)	Is Maximum Detect > Background?[c]	COPEC?[d]	Justification
2,4,6-Trinitrotoluene	118-96-7	16/ 92	17	9.50E+01	1.60E+00	no	No SRV	No SRV	no data	yes	**yes**	COPEC per freq of detect > 5%, no SRV or background
Organics-Pesticide/PCBs												
PCB-1254	11097-69-1	1/ 23	4	1.10E-01	6.50E+00	yes	No SRV	No SRV	no data	yes	**yes**	COPEC per being a PBT chemical, freq of detect > 5%, no SRV or background
Methoxychlor	72-43-5	1/ 6	17	7.30E-03	5.08E+00	yes	No SRV	No SRV	no data	yes	**yes**	COPEC per being a PBT chemical, freq of detect > 5%, no SRV or background
Organics-Semivolatiles												
Benzo(*a*)anthracene	56-55-3	9/ 92	10	2.70E-01	5.70E+00	yes	No SRV	No SRV	no data	yes	**yes**	COPEC per being a PBT chemical, freq of detect > 5%, no SRV or background
Benzo(*a*)pyrene	50-32-8	3/ 92	3	3.70E-01	6.11E+00	yes	No SRV	No SRV	no data	yes	**yes**	COPEC per being a PBT chemical, freq of detect > 5%, no SRV or background
Benzo(*b*)fluoranthene	205-99-2	9/ 92	10	7.00E-01	6.10E+00	yes	No SRV	No SRV	no data	yes	**yes**	COPEC per being a PBT chemical, freq of detect > 5%, no SRV or background
Benzo(*g,h,i*)perylene	191-24-2	1/ 92	1	8.20E-02	6.60E+00	yes	No SRV	No SRV	no data	yes	**yes**	COPEC per being a PBT chemical, freq of detect > 5%, no SRV or background
Benzo(*k*)fluoranthene	207-08-9	4/ 92	4	3.50E-01	6.10E+00	yes	No SRV	No SRV	no data	yes	**yes**	COPEC per being a PBT chemical, freq of detect > 5%, no SRV or background
Bis(2-ethylhexyl)phthalate	117-81-7	14/ 92	15	1.30E+00	7.60E+00	yes	No SRV	No SRV	no data	yes	**yes**	COPEC per being a PBT chemical, freq of detect > 5%, no SRV or background
Butylbenzyl phthalate	85-68-7	1/ 92	1	5.30E-02	4.84E+00	yes	No SRV	No SRV	no data	yes	**yes**	COPEC per being a PBT chemical, freq of detect > 5%, no SRV or background
Carbazole	86-74-8	1/ 92	1	6.60E-02	3.76E+00	yes	No SRV	No SRV	no data	yes	**yes**	COPEC per being a PBT chemical, freq of detect > 5%, no SRV or background
Chrysene	218-01-9	10/ 92	11	9.40E-01	5.70E+00	yes	No SRV	No SRV	no data	yes	**yes**	COPEC per being a PBT chemical, freq of detect > 5%, no SRV or background
Di-n-butylphthalate	84-74-2	2/ 92	2	8.30E+00	4.61E+00	yes	No SRV	No SRV	no data	yes	**yes**	COPEC per being a PBT chemical, freq of detect > 5%, no SRV or background
Fluoranthene	206-44-0	8/ 92	9	2.40E+00	5.12E+00	yes	No SRV	No SRV	no data	yes	**yes**	COPEC per being a PBT chemical, freq of detect > 5%, no SRV or background
Fluorene	86-73-7	1/ 92	1	2.40E-01	4.21E+00	yes	No SRV	No SRV	no data	yes	**yes**	COPEC per being a PBT chemical, freq of detect > 5%, no SRV or background
Indeno(1,2,3-*cd*)pyrene	193-39-5	2/ 92	2	2.80E-01	6.60E+00	yes	No SRV	No SRV	no data	yes	**yes**	COPEC per being a PBT chemical, freq of detect > 5%, no SRV or background
4-Methylphenol	106-44-5	5/ 92	5	1.50E-01	1.90E+00	no	No SRV	No SRV	no data	yes	no	Not a COPEC per freq of detect <= 5% and not a PBT compound
N-Nitrosodiphenylamine	86-30-6	1/ 92	1	6.20E-01	3.13E+00	yes	No SRV	No SRV	no data	yes	**yes**	COPEC per being a PBT chemical, freq of detect > 5%, no SRV or background
Phenanthrene	85-01-8	6/ 92	7	1.50E+00	4.55E+00	yes	No SRV	No SRV	no data	yes	**yes**	COPEC per being a PBT chemical, freq of detect > 5%, no SRV or background
Phenol	108-95-2	1/ 92	1	1.60E-01	1.48E+00	no	No SRV	No SRV	no data	yes	no	Not a COPEC per freq of detect <= 5% and not a PBT compound
Pyrene	129-00-0	9/ 92	10	1.20E+00	5.13E+00	yes	No SRV	No SRV	no data	yes	**yes**	COPEC per being a PBT chemical, freq of detect > 5%, no SRV or background
Organics-Volatiles												
Acetone	67-64-1	16/ 22	73	2.80E-01	-2.40E-01	no	No SRV	No SRV	no data	yes	**yes**	COPEC per freq of detect > 5%, no SRV or background
Benzene	74-1-43-2	1/ 22	5	1.80E-03	2.13E+00	no	No SRV	No SRV	no data	yes	no	Not a COPEC per freq of detect <= 5% and not a PBT compound
2-Butanone	78-93-3	13/ 22	59	1.00E-01	2.90E-01	no	No SRV	No SRV	no data	yes	**yes**	COPEC per freq of detect > 5%, no SRV or background

Table O-7. Data and Media Evaluations for Frequency of Detection, Sediment Reference Values and Background Comparison, and PBT Identification for Sediment at Erie Burning Ground, Ravenna

Detected COI	CAS Registry Number	Frequency of Detect	% Results > Detect Limit	Maximum Detect (mg/kg)	Log Kow	Is the COI a PBT?[a]	EOLP SRV (mg/kg)	Is Maximum Detect > SRV?[b]	Site Background (mg/kg)	Is Maximum Detect > Background?[c]	COPEC?[d]	Justification
Methylene Chloride	75-09-2	1/ 22	5	1.20E-03	1.25E+00	no	No SRV	No SRV	no data	yes	no	Not a COPEC per freq of detect <= 5% and not a PBT compound
Toluene	108-88-3	9/ 22	41	5.40E-02	2.75E+00	no	No SRV	No SRV	no data	yes	**yes**	COPEC per freq of detect > 5%, no SRV or background

[a] Yes = COI meets the criterion for being a PBT compound; else no.
[b] Yes = COI maximum detect exceeds the SRV; else no.
[c] Yes = maximum detect is > than the background value; else no.
[d] **Yes** = COI frequencey of detection is > 5% and maximum detect exceeds the SRV or background value and/or the COI is a PBT; else no.
CAS = Chemical Abstract Service.
COI = Chemical of interest.
COPEC = Chemical of potential ecological concern.
EOLP = Erie Ontario Lake Plain ecoregion (Ohio EPA 2003).
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.
Log Kow = Log of octanol-water partition coefficient (Kow).
PBT = Persistent, bioaccumulative, and toxic compound (inorganics include cadmium, lead, mercury, and zinc; organics include Log Kow of at least 3.0).
PCB = Polychlorinated biphenyl.
SRV = Sediment reference value (Ohio EPA 2003).

Table O-8. Data and Media Evaluations for Frequency of Detection, Background Comparison, and PBT Identification Surface Water at Erie Burning Ground, Ravenna

Detected COI	CAS Registry Number	Frequency of Detect	% Results > Detect Lmit	Maximum Detect (µg/L)	Log Kow	Is the COI a PBT?[a]	Site Background (µg/L)	Is Maximum Detect > Background?[b]	COPEC?[c]	Justification
Inorganics										
Aluminum	7429-90-5	22/ 26	85	1.23E+05	--	no	3.37E+03	yes	**yes**	COPEC per freq of detect > 5% and maximum detect > background
Antimony	7440-36-0	12/ 25	47	6.70E+01	--	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background
Arsenic	7440-38-2	26/ 26	100	1.20E+02	--	no	3.20E+00	yes	**yes**	COPEC per freq of detect > 5% and maximum detect > background
Barium	7440-39-3	25/ 26	96	1.90E+03	--	no	4.75E+01	yes	**yes**	COPEC per freq of detect > 5% and maximum detect > background
Beryllium	7440-41-7	1/ 26	4	2.10E-02	--	no	no data	yes	no	Not a COPEC per freq of detect <= 5% and not a PBT compound
Cadmium	7440-43-9	2/ 26	8	2.30E+01	--	yes	no data	yes	**yes**	COPEC per being PBT compound, freq of detect > 5%, and no background
Calcium	7440-70-2	25/ 26	96	1.14E+05	--	no	4.14E+04	yes	**yes**	COPEC per freq of detect > 5% and maximum detect > background
Chromium	7440-47-3	7/ 22	32	1.50E+02	--	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background
Cobalt	7440-48-4	8/ 26	31	5.90E+01	--	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background
Copper	7440-50-8	13/ 23	56	6.30E+02	--	no	7.90E+00	yes	**yes**	COPEC per freq of detect > 5% and maximum detect > background
Cyanide	57-12-5	2/ 26	8	6.50E+01	--	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background
Iron	7439-89-6	25/ 26	96	1.97E+05	--	no	2.56E+03	yes	**yes**	COPEC per freq of detect > 5% and maximum detect > background
Lead	7439-92-1	15/ 26	58	7.90E+02	--	yes	no data	yes	**yes**	COPEC per being PBT compound, freq of detect > 5%, and no background
Magnesium	7439-95-4	25/ 26	96	2.68E+04	--	no	1.08E+04	yes	**yes**	COPEC per freq of detect > 5% and maximum detect > background
Manganese	7439-96-5	25/ 26	96	1.13E+04	--	no	3.91E+02	yes	**yes**	COPEC per freq of detect > 5% and maximum detect > background
Mercury	7439-97-6	4/ 26	15	2.70E-01	--	yes	no data	yes	**yes**	COPEC per being PBT compound, freq of detect > 5%, and no background
Nickel	7440-02-0	16/ 26	62	2.40E+02	--	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background
Potassium	7440-09-7	26/ 26	100	4.25E+04	--	no	3.17E+03	yes	**yes**	COPEC per freq of detect > 5% and maximum is > background
Selenium	7782-49-2	1/ 26	4	1.60E+01	--	no	no data	yes	no	Not a COPEC per freq of detect <= 5% and not a PBT compound
Sodium	7440-23-5	24/ 24	100	5.02E+04	--	no	2.13E+04	yes	**yes**	COPEC per freq of detect > 5% and maximum detect > background
Vanadium	7440-62-2	11/ 26	42	2.10E+02	--	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background
Zinc	7440-66-6	14/ 26	54	5.40E+03	--	yes	4.20E+01	yes	**yes**	COPEC per being a PBT chemical, freq of detect > 5%, maximum detect > background
Organics-Explosives										
1,3-Dinitrobenzene	99-65-0	4/ 26	15	8.00E-02	1.49E+00	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background
2,4-Dinitrotoluene	121-14-2	1/ 26	4	8.80E-02	1.98E+00	no	no data	yes	no	Not a COPEC per freq of detect <= 5% and not a PBT compound
HMX	2691-41-0	2/ 26	8	4.10E-01	No Kow	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background
Nitrobenzene	98-95-3	1/ 26	4	6.60E-02	1.83E+00	no	no data	yes	no	Not a COPEC per freq of detect <= 5% and not a PBT compound
Nitrocellulose	9004-70-0	2/ 25	8	8.20E+02	-4.56E+00	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background
3-Nitrotoluene	99-08-1	2/ 26	8	4.00E-01	2.45E+00	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background
2,4,6-Trinitrotoluene	118-96-7	3/ 26	12	1.10E+00	1.60E+00	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background
Organics-Semivolatiles										

Table O-8. Data and Media Evaluations for Frequency of Detection, Background Comparison, and PBT Identification Surface Water at Erie Burning Ground, Ravenna

Detected COI	CAS Registry Number	Frequency of Detect	% Results > Detect Lmit	Maximum Detect (µg/L)	Log Kow	Is the COI a PBT?[a]	Site Background (µg/L)	Is Maximum Detect > Background?[b]	COPEC?[c]	Justification
4-Methylphenol	106-44-5	6/ 26	23	1.20E+02	1.90E+00	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background
Phenol	108-95-2	4/ 26	15	7.80E+00	1.48E+00	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background
Organics-Volatiles										
Acetone	67-64-1	6/ 26	23	1.30E+01	-2.40E-01	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background
Carbon Disulfide	75-15-0	5/ 26	19	3.70E+00	2.00E+00	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background
Chloroform	67-66-3	3/ 26	12	7.10E-01	1.92E+00	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background
Chloromethane	74-87-3	2/ 26	8	3.80E-01	9.10E-01	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background
Diethylbenzene	1330-20-7	1/ 26	4	1.70E+00	No Kow	no	no data	yes	no	Not a COPEC per freq of detect <= 5% and not a PBT compound
1,1,2,2-Tetrachloroethane	79-34-5	1/ 26	4	2.10E+00	2.39E+00	no	no data	yes	no	Not a COPEC per freq of detect <= 5% and not a PBT compound
Toluene	108-88-3	7/ 26	27	1.10E+00	2.75E+00	no	no data	yes	**yes**	COPEC per freq of detect > 5% and no background
Trichloroethene	79-01-6	1/ 26	4	4.60E-01	2.71E+00	no	no data	yes	no	Not a COPEC per freq of detect <= 5% and not a PBT compound

[a] Yes = COI meets the criterion for being a PBT compound; else no.

[b] Yes = maximum detect is > than the background value; else no.

[c] **Yes** = COI frequencey of detection is > 5% and maximum detect exceeds the background value and/or the COI is a PBT; else no.

"--" = Not applicable, Kow applies only to organic compounds.

CAS = Chemical Abstract Service.

COI = Chemical of interest.

COPEC = Chemical of potential ecological concern.

HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.

Log Kow = Log of octanol-water partition coefficient (Kow).

PBT = Persistent, bioaccumulative, and toxic compound (inorganics include cadmium, lead, mercury, and zinc; organics include Log Kow of at least 3.0).

Table O-9. Erie Burning Ground Media Screening Table for Surface Soil at Ravenna, Ohio

COPECs from Data and Media Evaluation	CAS Registry Number	Surface Soil Maximum Concentrations (mg/kg)	Preferred ESV (mg/kg)	Reference	Is Maximum Above or Below the Preferred ESV?	PBT Compound? [a]	COPEC Retained? [b]
Inorganics							
Aluminum	7429-90-5	3.02E+04	6.00E+02	LOEC	above	no	**yes**
Antimony	7440-36-0	9.17E+01	5.00E+00	PRGs	above	no	**yes**
Arsenic	7440-38-2	2.56E+01	9.90E+00	PRGs	above	no	**yes**
Barium	7440-39-3	1.76E+03	2.83E+02	PRGs	above	no	**yes**
Beryllium	7440-41-7	3.80E+00	1.00E+01	PRGs	below	no	no
Cadmium	7440-43-9	1.98E+01	4.00E+00	PRGs	above	yes	**yes**
Calcium	7440-70-2	1.22E+05	No ESV	No Source	no screening value	no	**yes**
Chromium	7440-47-3	1.02E+02	4.00E-01	PRGs	above	no	**yes**
Cobalt	7440-48-4	1.82E+01	2.00E+01	PRGs	below	no	no
Copper	7440-50-8	5.86E+02	1.39E+01	PPL (SAIC 2002)	above	no	**yes**
Cyanide	57-12-5	3.25E+01	1.08E+00	PPL (SAIC 2002)	above	no	**yes**
Iron	7439-89-6	1.52E+05	2.00E+02	NOEC	above	no	**yes**
Lead	7439-92-1	1.18E+03	4.05E+01	PRGs	above	yes	**yes**
Magnesium	7439-95-4	2.28E+04	No ESV	No Source	no screening value	no	**yes**
Manganese	7439-96-5	3.82E+03	1.00E+02	LOEC	above	no	**yes**
Mercury	7439-97-6	1.40E-01	5.10E-04	PRGs	above	yes	**yes**
Nickel	7440-02-0	1.21E+02	3.00E+01	PRGs	above	no	**yes**
Potassium	7440-09-7	2.42E+03	No ESV	No Source	no screening value	no	**yes**
Silver	7440-22-4	8.70E+00	2.00E+00	PRGs	above	no	**yes**
Sodium	7440-23-5	2.51E+03	No ESV	No Source	no screening value	no	**yes**
Thallium	7440-28-0	5.00E-01	1.00E+00	PRGs	below	no	no
Vanadium	7440-62-2	1.12E+02	2.00E+00	PRGs	above	no	**yes**
Zinc	7440-66-6	5.34E+03	8.50E+00	PRGs	above	yes	**yes**
Organics-Explosives							
2-Amino-4,6-dinitrotoluene	35572-78-2	1.30E-01	No ESV	No Source	no screening value	no	**yes**
4-Amino-2,6-dinitrotoluene	19406-51-0	1.70E-01	No ESV	No Source	no screening value	No Kow	**yes**
Nitrocellulose	9004-70-0	5.90E+00	No ESV	No Source	no screening value	No Kow	**yes**
4-Nitrotoluene	99-99-0	2.00E-01	No ESV	No Source	no screening value	no	**yes**
2,4,6-Trinitrotoluene	118-96-7	7.10E+00	7.10E+01	PPL (SAIC 2002)	below	no	no
Organics-Semivolatiles							
2-Methylnaphthalene	91-57-6	6.30E-02	3.24E+00	ESL EPA Region 5 (2003)	below	no	no
Acenaphthylene	208-96-8	2.30E-01	6.82E+02	No Source	below	yes	**yes**
Anthracene	120-12-7	4.60E-01	1.48E+03	ESL EPA Region 5 (2003)	below	yes	**yes**
Benzo(*a*)anthracene	56-55-3	1.70E+00	5.21E+00	ESL EPA Region 5 (2003)	below	yes	**yes**
Benzo(*a*)pyrene	50-32-8	1.80E+00	1.52E+00	ESL EPA Region 5 (2003)	above	yes	**yes**
Benzo(*b*)fluoranthene	205-99-2	3.90E+00	5.98E+01	ESL EPA Region 5 (2003)	below	yes	**yes**
Benzo(*g,h,i*)perylene	191-24-2	9.50E-01	1.19E+02	ESL EPA Region 5 (2003)	below	yes	**yes**
Benzo(*k*)fluoranthene	207-08-9	1.50E+00	1.48E+02	ESL EPA Region 5 (2003)	below	yes	**yes**
Bis(2-ethylhexyl)phthalate	117-81-7	3.50E+00	9.26E-01	ESL EPA Region 5 (2003)	above	yes	**yes**
Carbazole	86-74-8	1.60E-01	No ESV	No Source	no screening value	yes	**yes**
Chrysene	218-01-9	2.40E+00	4.73E+00	ESL EPA Region 5 (2003)	below	yes	**yes**
Dibenzo(a,h)anthracene	53-70-3	3.20E-01	1.84E+01	ESL EPA Region 5 (2003)	below	yes	**yes**
Fluoranthene	206-44-0	1.90E+00	1.22E+02	ESL EPA Region 5 (2003)	below	yes	**yes**
Indeno(1,2,3-*cd*)pyrene	193-39-5	1.10E+00	1.09E+02	ESL EPA Region 5 (2003)	below	yes	**yes**
Naphthalene	91-20-3	1.00E-01	1.00E+01	No Soil, only Solution, LOEC	below	yes	**yes**
Phenanthrene	85-01-8	4.50E-01	4.57E+01	ESL EPA Region 5 (2003)	below	yes	**yes**
Pyrene	129-00-0	1.90E+00	7.85E+01	ESL EPA Region 5 (2003)	below	yes	**yes**
Organics-Volatiles							
Acetone	67-64-1	1.30E-02	2.50E+00	ESL EPA Region 5 (2003)	below	no	no
Methylene Chloride	75-09-2	5.90E-04	1.05E+00	ESL EPA Region 5 (2003)	below	no	no
Toluene	108-88-3	4.00E-03	2.00E+02	PRGs	below	no	no

[a] Yes = cadmium, mercury, lead, and zinc are inorganic PBTs; or log Kow is 3 or greater for organics; else, no.

Kow = Octanol-water partition coefficient.

[b] **Yes** = Maximum detect > preferred ecological screening value or no ecological screening value, and/or PBT compound;
no = Maximum detect < preferred ecological screening value.

CAS = Chemical Abstract Service.

COPEC = Chemical of potential ecological concern.

EDQL = Ecological data quality level.

EPA = U. S. Environmental Protection Agency.

ESL = Ecological screening level.

ESV = Preferred ecological screening value.

Kow = Octanol-water partition coefficient.

LOEC = Lowest observed effect concentration.

NOEC = No observed effect concentration.

PBT = Persistent, bioaccumulative, and toxic compound.

PPL = Plant protection level.

PRG = Preliminary remediation goal.

Table O-10. Erie Burning Ground Media Screening Table for Subsurface Soil at Ravenna, Ohio

COPECs from Data and Media Evaluation	CAS Registry Number	Surface Soil Maximum Concentrations (mg/kg)	Preferred ESV (mg/kg)	Reference	Is Maximum Above or Below the Preferred ESV?	PBT Compound? [a]	COPEC Retained? [b]
Inorganics							
Antimony	7440-36-0	7.00E+00	5.00E+00	PRGs	above	no	**yes**
Barium	7440-39-3	2.63E+02	2.83E+02	PRGs	below	no	no
Beryllium	7440-41-7	1.40E+00	1.00E+01	PRGs	below	no	no
Cadmium	7440-43-9	1.80E+00	4.00E+00	PRGs	below	yes	**yes**
Copper	7440-50-8	9.05E+01	1.39E+01	PPL (SAIC 2002)	above	no	**yes**
Lead	7439-92-1	1.29E+02	4.05E+01	PRGs	above	yes	**yes**
Mercury	7439-97-6	1.00E-01	5.10E-04	PRGs	above	yes	**yes**
Sodium	7440-23-5	3.65E+02	No ESV	No Source	no screening value	no	**yes**
Zinc	7440-66-6	6.22E+02	8.50E+00	PRGs	above	yes	**yes**
Organics-Explosives							
Nitrocellulose	9004-70-0	2.90E+00	No ESV	No Source	no screening value	No Kow	**yes**
2,4,6-Trinitrotoluene	121-14-2	3.20E+00	7.10E+01	PPL (SAIC 2002)	below	No Kow	no
Organics-Semivolatiles							
Benzo(*a*)anthracene	56-55-3	5.70E-02	5.21E+00	ESL EPA Region 5 (2003)	below	No Kow	**no**
Benzo(*a*)pyrene	50-32-8	6.80E-02	1.52E+00	ESL EPA Region 5 (2003)	below	No Kow	**no**
Benzo(*b*)fluoranthene	205-99-2	1.50E-01	5.98E+01	ESL EPA Region 5 (2003)	below	No Kow	**no**
Benzo(*k*)fluoranthene	207-08-9	6.50E-02	1.48E+02	ESL EPA Region 5 (2003)	below	No Kow	**no**
Bis(2-ethylhexyl)phthalate	117-81-7	1.20E+00	9.26E-01	ESL EPA Region 5 (2003)	above	No Kow	**yes**
Chrysene	218-01-9	9.70E-02	4.73E+00	ESL EPA Region 5 (2003)	below	No Kow	**no**
Fluoranthene	206-44-0	2.50E-01	1.22E+02	ESL EPA Region 5 (2003)	below	No Kow	**no**
Indeno(1,2,3-*cd*)pyrene	193-39-5	5.30E-02	1.09E+02	ESL EPA Region 5 (2003)	below	No Kow	**no**
Phenanthrene	85-01-8	2.80E-01	4.57E+01	ESL EPA Region 5 (2003)	below	No Kow	**no**
Pyrene	129-00-0	1.60E-01	7.85E+01	ESL EPA Region 5 (2003)	below	No Kow	**no**
Organics-Volatiles							
Acetone	67-64-1	2.30E-02	2.50E+00	ESL EPA Region 5 (2003)	below	no	no
Methylene Chloride	75-09-2	3.80E-03	1.05E+00	ESL EPA Region 5 (2003)	below	no	no
Toluene	108-88-3	3.40E-02	2.00E+02	PRGs	below	no	no

[a] Yes = cadmium, mercury, lead, and zinc are inorganic PBTs; or log Kow is 3 or greater for organics; else, no.

Kow = Octanol-water partition coefficient.

[b] Yes = Maximum detect > preferred ecological screening value or no ecological screening value, and/or PBT compound;
no = Maximum detect < preferred ecological screening value.

CAS = Chemical Abstract Service.

COPEC = Chemical of potential ecological concern.

EPA = U. S. Environmental Protection Agency.

ESL = Ecological screening level.

ESV = Preferred ecological screening value.

PBT = Persistent, bioaccumulative, and toxic compound.

PPL = Plant protection level.

PRG = Preliminary remediation goal.

Table O-11. Erie Burning Ground Media Screening Table for Sediment at Ravenna, Ohio

COPECs from Data and Media Evaluation	CAS Registry Number	Sediment Maximum Concentrations (mg/kg)	Preferred ESV (mg/kg)	Reference	Is Maximum Above or Below the Preferred ESV?	PBT Compound? [a]	COPEC Retained? [b]
Inorganics							
Aluminum	7429-90-5	3.48E+04	No ESV	No Source	no screening value	no	**yes**
Antimony	7440-36-0	3.16E+03	No ESV	No Source	no screening value	no	**yes**
Arsenic	7440-38-2	1.19E+02	9.79E+00	MacDonald et al. (2000)	above	no	**yes**
Barium	7440-39-3	2.17E+03	No ESV	No Source	no screening value	no	**yes**
Beryllium	7440-41-7	2.10E+00	No ESV	No Source	no screening value	no	**yes**
Cadmium	7440-43-9	4.48E+01	9.90E-01	MacDonald et al. (2000)	above	yes	**yes**
Calcium	7440-70-2	8.26E+04	No ESV	No Source	no screening value	no	**yes**
Chromium	7440-47-3	2.53E+02	4.34E+01	MacDonald et al. (2000)	above	no	**yes**
Cobalt	7440-48-4	1.75E+01	5.00E+01	ESL EPA Region 5 (2003)	below	no	no
Copper	7440-50-8	1.14E+03	3.16E+01	MacDonald et al. (2000)	above	no	**yes**
Cyanide	51-12-5	8.30E+00	1.00E-04	ESL EPA Region 5 (2003)	above	no	**yes**
Iron	7439-89-6	2.42E+05	No ESV	No Source	no screening value	no	**yes**
Lead	7439-92-1	1.87E+03	3.58E+01	MacDonald et al. (2000)	above	yes	**yes**
Magnesium	7439-95-4	1.03E+04	No ESV	No Source	no screening value	no	**yes**
Manganese	7439-96-5	7.39E+03	No ESV	No Source	no screening value	no	**yes**
Mercury	7439-97-6	3.40E-01	1.80E-01	MacDonald et al. (2000)	above	yes	**yes**
Nickel	7440-02-0	1.77E+02	2.27E+01	MacDonald et al. (2000)	above	no	**yes**
Silver	7440-22-4	6.20E+00	5.00E-01	ESL EPA Region 5 (2003)	above	no	**yes**
Sodium	7440-23-5	2.46E+03	No ESV	No Source	no screening value	no	**yes**
Vanadium	7440-62-2	5.10E+01	No ESV	No Source	no screening value	no	**yes**
Zinc	7440-66-6	1.84E+04	1.21E+02	MacDonald et al. (2000)	above	yes	**yes**
Organics-Explosives							
2,6-Dinitrotoluene	606-20-2	2.80E-01	3.98E-02	ESL EPA Region 5 (2003)	above	no	**yes**
Nitrobenzene	98-95-3	1.90E-01	1.45E-01	ESL EPA Region 5 (2003)	above	no	**yes**
Nitrocellulose	9004-70-4	1.97E+01	No ESV	No Source	no screening value	no	**yes**
2,4,6-Trinitrotoluene	118-96-7	9.50E+01	No ESV	No Source	no screening value	no	**yes**
Organics-Pesticide/PCBs							
PCB-1254	11097-69-1	1.10E-01	5.98E-02	ESL EPA Region 5 (2003)	above	yes	**yes**
Methoxychlor	72-43-5	7.30E-03	1.36E-02	ESL EPA Region 5 (2003)	below	yes	**yes**
Organics-Semivolatiles							
Benzo(*a*)anthracene	56-55-3	2.70E-01	1.08E-01	MacDonald et al. (2000)	above	yes	**yes**
Benzo(*a*)pyrene	50-32-8	3.70E-01	1.50E-01	MacDonald et al. (2000)	above	yes	**yes**
Benzo(*b*)fluoranthene	205-99-2	7.00E-01	1.04E+01	ESL EPA Region 5 (2003)	below	yes	**yes**
Benzo(*g,h,i*)perylene	191-24-2	8.10E-02	1.70E-01	ESL EPA Region 5 (2003)	below	yes	**yes**
Benzo(*k*)fluoranthene	207-08-9	3.50E-01	2.40E-01	ESL EPA Region 5 (2003)	above	yes	**yes**
Bis(2-ethylhexyl)phthalate	117-81-7	1.30E+00	1.82E-01	ESL EPA Region 5 (2003)	above	yes	**yes**
Butylbenzyl phthalate	85-68-7	5.30E-02	1.97E+00	ESL EPA Region 5 (2003)	below	yes	**yes**
Carbazole	86-74-8	6.60E-02	No ESV	No Source	no screening value	yes	**yes**
Chrysene	218-01-9	9.40E-01	1.66E-01	MacDonald et al. (2000)	above	yes	**yes**
Di-n-butylphthalate	84-74-2	8.30E+00	1.11E+00	ESL EPA Region 5 (2003)	above	yes	**yes**
Fluoranthene	206-44-0	2.40E+00	4.23E-01	MacDonald et al. (2000)	above	yes	**yes**
Fluorene	86-73-7	2.40E-01	7.74E-02	MacDonald et al. (2000)	above	yes	**yes**
Indeno(1,2,3-*cd*)pyrene	193-39-5	2.80E-01	2.00E-01	ESL EPA Region 5 (2003)	above	yes	**yes**
N-Nitrosodiphenylamine	86-30-6	6.20E-01	No ESV	No Source	no screening value	yes	**yes**
Phenanthrene	85-01-8	1.50E+00	2.04E-01	MacDonald et al. (2000)	above	yes	**yes**
Pyrene	129-00-0	1.20E+00	1.95E-01	MacDonald et al. (2000)	above	yes	**yes**
Organics-Volatiles							
Acetone	67-64-1	2.80E-01	9.90E-03	ESL EPA Region 5 (2003)	above	no	**yes**
2-Butanone	78-93-3	1.00E-01	4.24E-02	ESL EPA Region 5 (2003)	above	no	**yes**
Toluene	108-88-3	5.40E-02	1.22E+00	ESL EPA Region 5 (2003)	below	no	no

[a] Yes = cadmium, mercury, lead, and zinc are inorganic PBTs; or log Kow is 3 or greater for organics; else, no.

[b] **Yes** = Maximum detect > preferred ecological screening value or no ecological screening value, and/or PBT compound;
no = Maximum detect < preferred ecological screening value.

CAS = Chemical Abstract Service.

COPEC = Chemical of potential ecological concern.

EPA = U. S. Environmental Protection Agency.

ESL = Ecological screening level.

ESV = Preferred ecological screening value.

PBT = Persistent, bioaccumulative, and toxic compound.

PCB = Polychlorinated biphenyl.

Table O-12. Erie Burning Ground Media Screening Table for Surface Water at Ravenna, Ohio

Inputted COPECs from Data Evaluation Screen	CAS Registry Number	Surface Water Average Concentrations (µg/L)	OAC WQC (µg/L)	Reference	Is Average Above or Below the OAC WQC?	PBT Compound?[a]	COPEC Retained[b]?
Inorganics							
Aluminum	7429-90-5	1.82E+04	No WQC	no source	no screening value	no	**yes**
Antimony	7440-36-0	6.48E+00	1.90E+02	Ohio Administrative Code	below	no	no
Arsenic	7440-38-2	1.93E+01	1.50E+02	Ohio Administrative Code	below	no	no
Barium	7440-39-3	2.86E+02	2.20E+02	Ohio Administrative Code	above	no	**yes**
Cadmium	7440-43-9	2.50E+00	2.50E+00	Ohio Administrative Code	below	yes	**yes**
Calcium	7440-70-2	3.99E+04	No WQC	no source	no screening value	no	**yes**
Chromium	7440-47-3	2.25E+01	8.60E+01	Ohio Administrative Code	below	no	no
Cobalt	7440-48-4	1.86E+01	2.40E+01	Ohio Administrative Code	below	no	no
Copper	7440-50-8	6.19E+01	9.30E+00	Ohio Administrative Code	above	no	**yes**
Cyanide	57-12-5	7.33E+00	5.20E+00	Ohio Administrative Code	above	no	**yes**
Iron	7439-89-6	2.86E+04	No WQC	no source	no screening value	no	**yes**
Lead	7439-92-1	5.83E+01	6.40E+00	Ohio Administrative Code	above	yes	**yes**
Magnesium	7439-95-4	1.02E+04	No WQC	no source	no screening value	no	**yes**
Manganese	7439-96-5	2.36E+03	No WQC	no source	no screening value	no	**yes**
Mercury	7439-97-6	1.01E-01	9.10E-01	Ohio Administrative Code	below	yes	**yes**
Nickel	7440-02-0	3.95E+01	5.20E+01	Ohio Administrative Code	below	no	no
Potassium	7440-09-7	1.15E+04	No WQC	no source	no screening value	no	**yes**
Sodium	7440-23-5	1.86E+04	No WQC	no source	no screening value	no	**yes**
Vanadium	7440-62-2	3.89E+01	4.40E+01	Ohio Administrative Code	below	no	no
Zinc	7440-66-6	4.24E+02	1.20E+02	Ohio Administrative Code	above	yes	**yes**
Organics-Explosives							
1,3-Dinitrobenzene	99-65-0	1.19E-01	2.20E+01	Ohio Administrative Code	below	no	no
HMX	2691-41-0	1.22E+00	2.20E+02	Ohio Administrative Code	below	No Kow	no
Nitrocellulose	9004-70-0	2.34E+02	ID	Ohio Administrative Code	no screening value	No Kow	**yes**
3-Nitrotoluene	99-08-1	1.70E-01	4.20E+01	Ohio Administrative Code	below	no	no
2,4,6-Trinitrotoluene	118-96-7	1.74E-01	1.30E+01	Ohio Administrative Code	below	no	no
Organics-Semivolatiles							
4-Methylphenol	106-44-5	1.72E+01	5.30E+01	Ohio Administrative Code	below	no	no
Phenol	108-95-2	5.42E+00	4.00E+02	Ohio Administrative Code	below	no	no
Organics-Volatiles							
Acetone	67-64-1	5.43E+00	No WQC	no source	no screening value	no	**yes**
Carbon Disulfide	75-15-0	1.86E+00	1.50E+01	Ohio Administrative Code	below	no	no
Chloroform	67-66-3	1.67E+00	1.40E+02	Ohio Administrative Code	below	no	no
Chloromethane	74-87-3	3.60E+00	No WQC	Ohio Administrative Code	no screening value	no	**yes**
Toluene	108-88-3	1.41E+00	6.20E+01	Ohio Administrative Code	below	no	no

a Yes = cadmium, mercury, lead, and zinc are inorganic PBTs; or log Kow is 3 or greater for organics; else, no.

b **Yes** = Average concentration detect > WQC or no WQC, and/or PBT compound;

no = Average concentration detect < WQC.

Note: WQC for chromium and zinc are hardness-dependent and based on hardness of 100 mg/L as CaCO3.

CAS = Chemical Abstract Service.

COPEC = Chemical of potential ecological concern.

HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.

ID = Insufficient data available to calculate a criterion by the Ohio Environmental Protection Agency.

Kow = Octanol-water partition coefficient.

OAC = Ohio Administrative Code.

PBT = Persistent, bioaccumulative, and toxic compound. (If PBT, analyte is retained even if concentration is below the ecological screening value.)

WQC = Water quality criteria.

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APPENDIX O
(PART 3)

COMPUTATIONS FOR LEVEL III ECOLOGICAL RISK ASSESSMENT

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Appendix Table O-13. Receptor Parameters for Eastern cottontail[a]

Parameter	Definition	Receptor: Value	Eastern cottontail *(Sylvilagus floridanus)* Reference / Notes
BW	Body weight (kg)	1.22	Arithmetic mean of means, adult, both sexes, all seasons (EPA 1993)
IR_F	Food ingestion rate (g/g-day = kg/kgBW/day)[b]	0.200	Dalke and Sime 1941
PF	Plant fraction	0.94	Exclusively herbivorous, assumed to be vegetative parts (EPA 1993)
AF	Animal fraction	0	Not stated in EPA (1993); assumed to be negligible
SF	Soil fraction	0.06	Assumed comparable to that for black-tailed jackrabbit (6.3%) (Arthur and Gates 1988)
IR_w	Water ingestion rate (g/g-da	0.10	EPA 1993
HR	Home range (ha)	3	EPA 1993
TUF	Temporal use factor	1	Assumed to be present year-round

[a] Values and references as presented in *Ecological Risk Assessment Guidance Document* (Ohio EPA 2003).

Appendix Table O-14. Receptor Parameters for Short-tailed Shrew[a]

Parameter	Definition	Receptor: Value	Short-tailed shrew *(Blarina brevicauda)* Reference / Notes
BW	Body weight (kg)	0.017	Arithmetic mean of mean, adult, both sexes, summer and fall (EPA 1993)
IR_F	Food ingestion rate (g/g-day = kg/kgBW/day)	0.56	Arithmetic mean of adults, both sexes, 25° C, Wisconsin (EPA 1993)
PF	Plant fraction	0.13	June through October, New York (EPA 1993); assuming vegetative parts and fungi
AF	Animal fraction	0.87	June through October, New York (EPA 1993); assuming 100% earthworms
SF	Soil fraction	0.060	EPA 1999
IR_w	Water ingestion rate (g/g-day = L/kgBW/day)	0.226	Adult, both sexes, Illinois, lab (EPA 1993)
HR	Home range (ha)	0.390	EPA 1993
TUF	Temporal use factor	1.0	Assumed to be present year-round

[a] Values and references as presented in *Ecological Risk Assessment Guidance Document* (Ohio EPA 2003).

Appendix Table O-15. Receptor Parameters for Red Fox[a]

Parameter	Definition	Receptor: Red fox *(Vulpes vulpes)* Value	Reference / Notes
BW	Body weight (kg)	4.535	Arithmetic mean of means, adult, both sexes (EPA 1993)
IR_F	Food ingestion rate (g/g-day = kg/kgBW/day)[b]	0.095	Adult non-breeding, North Dakota (EPA 1993)
PF	Plant fraction	0.016	Illinois farm/woods, spring, percent wet weight (EPA 1993); assumed to be reproductive parts
AF	Animal fraction	0.95	Illinois farm/woods, spring, percent wet weight (EPA 1993)
SF	Soil fraction	0.028	Estimated percent soil in diet, dry weight (EPA 1993)
IR_w	Water ingestion rate (g/g-day = L/kgBW/day)	0.085	Arithmetic mean, adult, both sexes (EPA 1993)
HR	Home range (ha)	504	Arithmetic mean, adult, both sexes, Minnesota and Wisconsin (EPA 1993)
TUF	Temporal use factor	1.000	Assumed to be present year-round

[a] Values and references as presented in *Ecological Risk Assessment Guidance Document* (Ohio EPA 2003).

Appendix Table O-16. Receptor Parameters for Red-tailed Hawk[a]

Parameter	Definition	Receptor: Red-tailed Hawk *(Buteo jamaicensis)* Value	Reference / Notes
BW	Body weight (kg)	1.13	Arithmetic mean of means, adult, both sexes (EPA 1993)
IR_F	Food ingestion rate (g/g-day = kg/kgBW/day)	0.1	Arithmetic mean of means, adult, both sexes, captive, outdoors (EPA 1993)
PF	Plant fraction	0	Not stated in EPA (1993); assumed to be negligible.
AF	Animal fraction	1	Prey brought to nests (EPA 1993).
SF	Soil fraction	0	Not stated in EPA (1993) and Beyer et al. (1994); assumed to be negligible.
IR_w	Water ingestion rate (g/g-day = L/kgBW/d)	0.057	Estimated (EPA 1993)
HR	Home range (ha)	876	Mean, adults, both sexes (EPA 1993)
TUF	Temporal use factor	1	Assumed to be present year-round

Appendix Table O-17. Receptor Parameters for Muskrats[a]

Parameter	Definition	Receptor: Muskrat *(Ondatra zibethicus)* Value	Reference / Notes
BW	Body weight (kg)	1.174	Arithmetic mean of means, adult, both sexes, all seasons (EPA 1993)
IR_F	Food ingestion rate (g/g-day = kg/kgBW/day)	0.3	Arithmetic mean of means (EPA 1993)
PF	Plant fraction	1	Exclusively herbivorous, assumed to be vegetative parts (EPA 1993)
AF	Animal fraction	0	Assumed to be negligible
SF	Soil fraction	0	Assumed to be negligible
IR_w	Water ingestion rate (g/g-day = L/kgBW/day)	0.98	Estimated (EPA 1993)
HR	Home range (ha)	0.13	Arithmetic mean of means (EPA 1993)
TUF	Temporal use factor	1	Assumed to be present year-round

[a] Values and references as presented in *Ecological Risk Assessment Guidance Document* (Ohio EPA 2003).

Appendix Table O-18. Receptor Parameters for Mallard Ducks[a]

Parameter	Definition	Receptor: Value	Mallard duck *(Anas platyrhynchos)* Reference / Notes
BW	Body weight (kg)	1.162	Arithmetic mean of means, adult, both sexes, all seasons (EPA 1993)
IR_F	Food ingestion rate (g/g-day = kg/kgBW/day)	0.063	Estimated based on $F=0.648(bw)^{0.651}$, ingestion rate for birds (Opresko et al. 1994)
PF	Plant fraction	0.98	Assumed to be a 50% mixture of vegetation and fruit/seed
AF	Animal fraction	0	Assumed to be negligible
SF	Soil fraction	0.03	Beyer et al. 1994
IR_w	Water ingestion rate (g/g-day = L/kgBW/day)	0.057	Estimated (EPA 1993)
HR	Home range (ha)	435	Arithmetic mean of means, adult, both sexes, spring (EPA 1993)
TUF	Temporal use factor	1	Assumed to be present year-round

[a] Values and references as presented in *Ecological Risk Assessment Guidance Document* (Ohio EPA 2003).

Appendix Table O-19. Receptor Parameters for Mink[a]

Parameter	Definition	Receptor: Mink *(Mustela vison)* Value	Reference / Notes
BW	Body weight (kg)	1.02	Arithmetic mean of means, adult, both sexes, Montana (EPA 1993)
IR_F	Food ingestion rate (g/g-day = kg/kgBW/day)	0.16	Arithmetic mean of means, adult, both sexes (EPA 1993)
PF	Plant fraction	0	Assumed to be negligible
AF	Animal fraction	1	Assumed to be fish, may also include site-specific prey items (EPA 1993)
SF	Soil fraction	0	Assumed to be negligible
IR_w	Water ingestion rate (g/g-day = L/kgBW/day)	0.08	Arithmetic man of means, both sexes (EPA 1993)
HR	Home range	470 ha	Arithmetic mean of means, adult, both sexes (EPA 1993)
		2.24 km	Foraging length of stream, mean of means, adult, both sexes (EPA 1993)
TUF	Temporal use factor	1	Assumed to be present year-round; however, site-specific or other information may be used to estimate a site-specific TUF

[a] Values and references as presented in *Ecological Risk Assessment Guidance Document* (Ohio EPA 2003).

Appendix Table O-20. Receptor Parameters for Great Blue Herons[a]

Parameter	Definition	Receptor: Great Blue Heron *(Ardea herodias)* Value	Reference / Notes
BW	Body weight (kg)	2.336	Arithmetic mean of means, adult, both sexes (EPA 1993)
IR_F	Food ingestion rate (g/g-day = kg/kgBW/day)	0.18	Mean, adults, both sexes (EPA 1993)
PF	Plant fraction	0	Assumed to be negligible
AF	Animal fraction	1	Assumed to be fish, may also include site-specific prey items (EPA 1993)
SF	Soil fraction	0	Assumed to be negligible
IR_w	Water ingestion rate (g/g-day = L/kgBW/day)	0.045	Estimated (EPA 1993)
HR	Home range	0.6 ha 3.1 km	Size of feeding area only (ha) or forage area (lenth of shoreline, km) (EPA 1993)
TUF	Temporal use factor	1	Assumed to be present year-round; however, site-specific or other information may be used to estimate a site-specific TUF

[a] Values and references as presented in *Ecological Risk Assessment Guidance Document* (Ohio EPA 2003).

Appendix Table O-21. Ecological Transfer Factors for COPECs for Erie Burning Ground Baseline Risk Assessment

Constituent of Potential Concern	CAS Registry Number	Log K_{ow} [a]	Log K_{oc} [a]	SPv (kg dry soil/kg dry tissue)	Source	SPr (kg dry soil/kg dry tissue)	Source	BAF-S (kg dry soil/ kg tissue)	Source
Organic Compounds									
Aromatic Nonhalogenated Hydrocarbons									
2-Nitrotoluene	88-72-2	2.30	2.63	1.81E+00	Equation 1	1.81E+00	Equation 1	5.47E+00	Equation 2
4-Nitrobiphenyl	92-93-3	3.77	3.09	2.56E-01	Equation 1	2.56E-01	Equation 1	8.74E+01	Equation 2[b]
Benzaldehyde	100-52-7	1.48	1.30	5.42E+00	Equation 1	5.42E+00	Equation 1	1.16E+00	Equation 2
Benzene	71-43-2	2.14	1.79	2.25E+00	Equation 1	2.25E+00	Equation 1	4.02E+00	Equation 2
Benzyl alcohol	100-51-6	1.10	1.01	8.95E+00	Equation 1	8.95E+00	Equation 1	5.69E-01	Equation 2
Ethyl benzene	100-41-4	3.12	2.31	6.06E-01	Equation 1	6.06E-01	Equation 1	2.58E+01	Equation 2[b]
m-Xylene	108-38-3	3.20	2.29	5.47E-01	Equation 1	5.47E-01	Equation 1	2.99E+01	Equation 2[b]
o-Xylene	95-47-6	3.13	2.38	6.01E-01	Equation 1	6.01E-01	Equation 1	2.62E+01	Equation 2[b]
p-Xylene	106-42-3	3.17	2.49	5.70E-01	Equation 1	5.70E-01	Equation 1	2.82E+01	Equation 2[b]
Styrene	100-42-5	2.93	2.96	7.85E-01	Equation 1	7.85E-01	Equation 1	1.79E+01	Equation 2[b]
Toluene	108-88-3	2.67	2.15	1.11E+00	Equation 1	1.11E+00	Equation 1	1.09E+01	Equation 2[b]
Non-aromatic Nonhalogenated Hydrocarbons									
1-Nitropropane	108-03-2	0.87	0.83	1.22E+01	Equation 1	1.22E+01	Equation 1	3.69E-01	Equation 2
2,2,4-Trimethylpentane	540-84-1	5.02	4.07	4.86E-02	Equation 1	4.86E-02	Equation 1	9.23E+02	Equation 2[b]
2-Butanone	78-93-3	0.28	0.37	2.66E+01	Equation 1	2.66E+01	Equation 1	1.21E-01	Equation 2
2-Hexanone	591-78-6	1.38	2.13	6.17E+00	Equation 1	6.17E+00	Equation 1	9.64E-01	Equation 2
2-Methoxyethanol	109-86-4	-0.77	0.00	1.08E+02	Equation 1	1.08E+02	Equation 1	1.67E-02	Equation 2
2-Methyl-2-propanol	75-65-0	0.35	1.57	2.43E+01	Equation 1	2.43E+01	Equation 1	1.38E-01	Equation 2
2-Propanone (Acetone)	67-64-1	-0.22	-0.02	5.20E+01	EPA (1999a)	5.20E+01	EPA (1999a)	5.00E-02	EPA (1999a)
2-Propene-1-ol	107-18-6	0.17	0.28	3.09E+01	Equation 1	3.09E+01	Equation 1	9.85E-02	Equation 2
2-Propyl alcohol	67-63-0	0.05	0.19	3.62E+01	Equation 1	3.62E+01	Equation 1	7.85E-02	Equation 2
3-Heptanone	106-35-4	NA	NA	No data	No data	No data	No data	No data	No data
3-Methyl-1-butanol	123-51-3	NA	NA	No data	No data	No data	No data	No data	No data
3-Methyl-2-butanone	563-80-4	NA	NA	No data	No data	No data	No data	No data	No data
3-Pentanone	96-22-0	0.99	1.08	1.04E+01	Equation 1	1.04E+01	Equation 1	4.62E-01	Equation 2
4-Heptanone	123-19-3	NA	NA	No data	No data	No data	No data	No data	No data
4-Methyl-2-pentanone	108-10-1	1.19	1.08	7.94E+00	Equation 1	7.94E+00	Equation 1	6.74E-01	Equation 2
Acetaldehyde	75-07-0	-0.22	-0.02	5.19E+01	Equation 1	5.19E+01	Equation 1	4.72E-02	Equation 2
Acetamide	60-35-5	-1.26	-1.55	2.07E+02	Equation 1	2.07E+02	Equation 1	6.64E-03	Equation 2
Acetic acid	64-19-7	-0.17	0.00	4.86E+01	Equation 1	4.86E+01	Equation 1	5.19E-02	Equation 2
Acetic acid ethyl ester	141-78-6	0.73	0.36	1.47E+01	Equation 1	1.47E+01	Equation 1	2.83E-01	Equation 2
Acetic acid n-butyl ester	123-86-4	1.73	1.50	3.87E+00	Equation 1	3.87E+00	Equation 1	1.87E+00	Equation 2
Acetonitrile	75-05-8	-0.34	-0.11	6.09E+01	Equation 1	6.09E+01	Equation 1	3.76E-02	Equation 2
Acrolein	107-02-8	-0.01	0.14	3.92E+01	Equation 1	3.92E+01	Equation 1	7.03E-02	Equation 2
Acrylonitrile	107-13-1	0.25	0.35	2.78E+01	EPA (1999a)	2.78E+01	EPA (1999a)	1.10E-01	EPA (1999a)
Non-aromatic Halogenated Hydrocarbons									
1,1,1,2-Tetrachloro-2,2-difluoroethane	76-11-9	3.41	2.54	4.14E-01	Equation 1	4.14E-01	Equation 1	4.43E+01	Equation 2[b]
1,1,1,2-Tetrachloroethane	630-20-6	2.63	2.20	1.17E+00	Equation 1	1.17E+00	Equation 1	1.02E+01	Equation 2[b]
1,1,1-Trichloroethane	71-55-6	2.42	5.13	1.54E+00	Equation 1	1.54E+00	Equation 1	6.88E+00	Equation 2
1,1,2,2-Tetrachloro-1,2-difluoroethane	76-12-0	3.73	2.50	2.70E-01	Equation 1	2.70E-01	Equation 1	8.11E+01	Equation 2
1,1,2,2-Tetrachloroethane	79-34-5	4.64	1.90	8.02E-02	Equation 1	8.02E-02	Equation 1	4.54E+02	Equation 2[b]

Appendix Table O-21. Ecological Transfer Factors for COPECs for Erie Burning Ground Baseline Risk Assessment

Constituent of Potential Concern	CAS Registry Number	Mammal Ba ([mg/kg tissue] / [mg ingested /day])	Source
Organic Compounds			
Aromatic Nonhalogenated Hydrocarbons			
2-Nitrotoluene	88-72-2	5.01E-06	Equation 3
4-Nitrobiphenyl	92-93-3	1.48E-04	Equation 3
Benzaldehyde	100-52-7	7.54E-07	Equation 3
Benzene	71-43-2	3.44E-06	Equation 3
Benzyl alcohol	100-51-6	3.16E-07	Equation 3
Ethyl benzene	100-41-4	3.34E-05	Equation 3
m-Xylene	108-38-3	3.99E-05	Equation 3
o-Xylene	95-47-6	3.39E-05	Equation 3
p-Xylene	106-42-3	3.72E-05	Equation 3
Styrene	100-42-5	2.13E-05	Equation 3
Toluene	108-88-3	1.17E-05	Equation 3
Non-aromatic Nonhalogenated Hydrocarbons			
1-Nitropropane	108-03-2	1.86E-07	Equation 3
2,2,4-Trimethylpentane	540-84-1	2.63E-03	Equation 3
2-Butanone	78-93-3	4.80E-08	Equation 3
2-Hexanone	591-78-6	6.03E-07	Equation 3
2-Methoxyethanol	109-86-4	4.27E-09	Equation 3
2-Methyl-2-propanol	75-65-0	5.62E-08	Equation 3
2-Propanone (Acetone)	67-64-1	1.51E-08	Equation 3
2-Propene-1-ol	107-18-6	3.72E-08	Equation 3
2-Propyl alcohol	67-63-0	2.82E-08	Equation 3
3-Heptanone	106-35-4	No data	No data
3-Methyl-1-butanol	123-51-3	No data	No data
3-Methyl-2-butanone	563-80-4	No data	No data
3-Pentanone	96-22-0	2.45E-07	Equation 3
4-Heptanone	123-19-3	No data	No data
4-Methyl-2-pentanone	108-10-1	3.89E-07	Equation 3
Acetaldehyde	75-07-0	1.51E-08	Equation 3
Acetamide	60-35-5	1.38E-09	Equation 3
Acetic acid	64-19-7	1.70E-08	Equation 3
Acetic acid ethyl ester	141-78-6	1.35E-07	Equation 3
Acetic acid n-butyl ester	123-86-4	1.35E-06	Equation 3
Acetonitrile	75-05-8	1.15E-08	Equation 3
Acrolein	107-02-8	2.46E-08	Equation 3
Acrylonitrile	107-13-1	4.47E-08	Equation 3
Non-aromatic Halogenated Hydrocarbons			
1,1,1,2-Tetrachloro-2,2-difluoroethane	76-11-9	6.46E-05	Equation 3
1,1,1,2-Tetrachloroethane	630-20-6	1.07E-05	Equation 3
1,1,1-Trichloroethane	71-55-6	6.63E-06	Equation 3
1,1,2,2-Tetrachloro-1,2-difluoroethane	76-12-0	1.35E-04	Equation 3
1,1,2,2-Tetrachloroethane	79-34-5	1.11E-03	Equation 3

Appendix Table O-21. Ecological Transfer Factors for COPECs for Erie Burning Ground Baseline Risk Assessment

Constituent of Potential Concern	CAS Registry Number	Log K_{ow} [a]	Log K_{oc} [a]	SPv (kg dry soil/kg dry tissue)	Source	SPr (kg dry soil/kg dry tissue)	Source	BAF-S (kg dry soil/ kg tissue)	Source
1,1,2,2-Tetrachloroethene	127-18-4	2.55	2.42	1.31E+00	Equation 1	1.31E+00	Equation 1	8.68E+00	Equation 2
1,1,2-Trichloroethane	79-00-5	2.10	1.88	2.38E+00	Equation 1	2.38E+00	Equation 1	3.73E+00	Equation 2
1,1,2-Trichloroethylene	79-01-6	2.43	1.97	1.52E+00	Equation 1	1.52E+00	Equation 1	7.02E+00	Equation 2
1,1-Dichloroethane	75-34-3	1.79	1.72	3.56E+00	Equation 1	3.56E+00	Equation 1	2.10E+00	Equation 2
1,1-Dichloroethene	75-35-4	2.12	1.81	2.30E+00	Equation 1	2.30E+00	Equation 1	3.90E+00	Equation 2
1,2-Dichloroethane	107-06-2	1.46	1.29	5.53E+00	Equation 1	5.53E+00	Equation 1	1.13E+00	Equation 2
1,2-Dichloroethylene	540-59-0	2.09	1.64	2.40E+00	Equation 1	2.40E+00	Equation 1	3.68E+00	Equation 2
1,2-Dichloropropane	78-87-5	2.25	1.67	1.94E+00	Equation 1	1.94E+00	Equation 1	4.98E+00	Equation 2
1,3-Dichloropropene	542-75-6	1.75	1.43	3.78E+00	Equation 1	3.78E+00	Equation 1	1.93E+00	Equation 2
Carbon tetrachloride	56-23-5	2.72	2.18	1.04E+00	EPA (1999a)	1.04E+00	EPA (1999a)	1.20E+01	EPA (1999a)
Chlorodibromomethane	124-48-1	2.18	1.85	2.14E+00	Equation 1	2.14E+00	Equation 1	4.33E+00	Equation 2
Chlorodifluoromethane	75-45-6	1.08	0.99	9.21E+00	Equation 1	9.21E+00	Equation 1	5.47E-01	Equation 2
Chloroethane	75-00-3	3.10	2.57	6.25E-01	Equation 1	6.25E-01	Equation 1	2.47E+01	Equation 2[b]
Chloroform	67-66-3	1.95	1.72	2.90E+00	EPA (1999a)	2.90E+00	EPA (1999a)	2.82E+00	EPA (1999a)
Chloromethane	74-87-3	0.90	0.78	1.16E+01	Equation 1	1.16E+01	Equation 1	3.92E-01	Equation 2
Methylene bromide	74-95-3	1.62	1.41	4.48E+00	Equation 1	4.48E+00	Equation 1	1.52E+00	Equation 2
Pentachloroethane	76-01-7	3.05	2.53	6.68E-01	Equation 1	6.68E-01	Equation 1	2.25E+01	Equation 2[b]
trans-1,2-Dichloroethylene	156-60-5	1.98	1.58	2.77E+00	Equation 1	2.77E+00	Equation 1	3.00E+00	Equation 2
trans-1,3-Dichloropropene	10061-02-6	2.06	1.76	2.50E+00	Equation 1	2.50E+00	Equation 1	3.48E+00	Equation 2
Trichloroacetic acid	76-03-9	1.33	1.19	6.60E+00	Equation 1	6.60E+00	Equation 1	8.78E-01	Equation 2
Dioxin and Furan Compounds (PCDDs/PCDFs)									
Dibenzofuran	132-64-9	4.33	4.12	1.22E-01	Equation 1	1.22E-01	Equation 1	2.51E+02	Equation 2[b]
Polychlorinated Biphenyls (PCBs)									
Aroclor-1254		6.29	4.65	8.96E-03	Equation 1	8.96E-03	Equation 1	8.91E+00	Sample et al. 1999
Polychlorinated biphenyls (PCBs)[f]	1336-36-3	6.29	4.65	8.96E-03	Equation 1	8.96E-03	Equation 1	1.13E+00	EPA (1999a)
Phthalates									
Bis(2-ethylhexyl)phthalate (DEHP)	117-81-7	5.20	5.05	3.80E-02	EPA (1999a)	3.80E-02	EPA (1999a)	1.31E+03	EPA (1999a)
Butylbenzyl phthalate	85-68-7	4.41	4.14	1.09E-01	Equation 1	1.09E-01	Equation 1	2.94E+02	Equation 2[b]
Dibutyl phthalate	84-74-2	4.72	3.20	7.24E-02	Equation 1	7.24E-02	Equation 1	5.25E+02	Equation 2[b]
Diethyl phthalate	84-66-2	4.44	1.91	1.06E-01	Equation 1	1.06E-01	Equation 1	3.07E+02	Equation 2[b]
Dimethyl phthalate	131-11-3	1.63	1.49	4.40E+00	Equation 1	4.40E+00	Equation 1	1.56E+00	Equation 2
n-Dioctyl phthalate	117-84-0	9.33	8.96	1.57E-04	EPA (1999a)	1.57E-04	EPA (1999a)	4.88E+03	Mass-limited

Appendix Table O-21. Ecological Transfer Factors for COPECs for Erie Burning Ground Baseline Risk Assessment

Constituent of Potential Concern	CAS Registry Number	Mammal Ba ([mg/kg tissue] / [mg ingested /day])	Source
1,1,2,2-Tetrachloroethene	127-18-4	8.82E-06	Equation 3
1,1,2-Trichloroethane	79-00-5	3.14E-06	Equation 3
1,1,2-Trichloroethylene	79-01-6	6.81E-06	Equation 3
1,1-Dichloroethane	75-34-3	1.56E-06	Equation 3
1,1-Dichloroethene	75-35-4	3.32E-06	Equation 3
1,2-Dichloroethane	107-06-2	7.28E-07	Equation 3
1,2-Dichloroethylene	540-59-0	3.09E-06	Equation 3
1,2-Dichloropropane	78-87-5	4.47E-06	Equation 3
1,3-Dichloropropene	542-75-6	1.41E-06	Equation 3
Carbon tetrachloride	56-23-5	1.31E-05	Equation 3
Chlorodibromomethane	124-48-1	3.77E-06	Equation 3
Chlorodifluoromethane	75-45-6	3.01E-07	Equation 3
Chloroethane	75-00-3	3.16E-05	Equation 3
Chloroform	67-66-3	2.24E-06	Equation 3
Chloromethane	74-87-3	2.01E-07	Equation 3
Methylene bromide	74-95-3	1.05E-06	Equation 3
Pentachloroethane	76-01-7	2.82E-05	Equation 3
trans-1,2-Dichloroethylene	156-60-5	2.41E-06	Equation 3
trans-1,3-Dichloropropene	10061-02-6	2.88E-06	Equation 3
Trichloroacetic acid	76-03-9	5.37E-07	Equation 3
Dioxin and Furan Compounds (PCDDs/PCDFs)			
Dibenzofuran	132-64-9	5.37E-04	Equation 3
Polychlorinated Biphenyls (PCBs)			
Aroclor-1254		4.90E-02	Equation 3
Polychlorinated biphenyls (PCBs)[þ]	1336-36-3	4.90E-02	Equation 3
Phthalates			
Bis(2-ethylhexyl)phthalate (DEHP)	117-81-7	4.02E-03	Equation 3
Butylbenzyl phthalate	85-68-7	6.51E-04	Equation 3
Dibutyl phthalate	84-74-2	1.32E-03	Equation 3
Diethyl phthalate	84-66-2	6.86E-04	Equation 3
Dimethyl phthalate	131-11-3	1.08E-06	Equation 3
n-Dioctyl phthalate	117-84-0	5.37E+01	Equation 3

Appendix Table O-21. Ecological Transfer Factors for COPECs for Erie Burning Ground Baseline Risk Assessment

Constituent of Potential Concern	CAS Registry Number	Log K_{ow} [a]	Log K_{oc} [a]	SPv (kg dry soil/kg dry tissue)	Source	SPr (kg dry soil/kg dry tissue)	Source	BAF-S (kg dry soil/ kg tissue)	Source
Light Polycyclic Aromatic Hydrocarbons (molecular weight <200 g/mole)									
2-Methyl naphthalene	91-57-6	3.86	3.65	2.27E-01	Equation 1	2.27E-01	Equation 1	1.04E+02	Equation 2[b]
5-Nitroacenaphthene	602-87-9	NA	NA	No data	No data	No data	No data	No data	No data
Acenaphthene	83-32-9	3.96	3.69	1.98E-01	Equation 1	1.98E-01	Equation 1	1.26E+02	Equation 2[b]
Acenaphthylene	208-96-8	4.07	3.83	1.72E-01	Equation 1	1.72E-01	Equation 1	1.54E+02	Equation 2[b]
Anthracene	120-12-7	4.47	4.37	1.01E-01	Equation 1	1.01E-01	Equation 1	3.27E+02	Equation 2[b]
Fluorene	86-73-7	4.17	3.89	1.51E-01	Equation 1	1.51E-01	Equation 1	1.86E+02	Equation 2[b]
Indene	95-13-6	NA	NA	No data	No data	No data	No data	No data	No data
Naphthalene	91-20-3	3.37	3.08	4.35E-01	Equation 1	4.35E-01	Equation 1	4.13E+01	Equation 2[b]
Phenanthrene	85-01-8	4.55	4.32	9.08E-02	Equation 1	9.08E-02	Equation 1	3.81E+02	Equation 2[b]
Pyrene	129-00-0	5.00	4.83	4.99E-02	Equation 1	4.99E-02	Equation 1	8.89E+02	Equation 2[b]
Heavy Polycyclic Aromatic Hydrocarbons (molecular weight >200 g/mole)									
3-Methylcholanthrene	56-49-5	7.11	6.18	3.01E-03	Equation 1	3.01E-03	Equation 1	4.88E+03	Mass-limited
5-Methylchrysene	3697-24-3	NA	NA	No data	No data	No data	No data	No data	No data
Benzo[a]anthracene	56-55-3	5.68	5.41	2.02E-02	EPA (1999a)	2.02E-02	EPA (1999a)	3.00E-02	EPA (1999a)
Benzo(a)pyrene	50-32-8	6.13	5.99	1.11E-02	EPA (1999a)	1.11E-02	EPA (1999a)	7.00E-02	EPA (1999a)
Benzo[a,i]pyrene	191-30-0	NA	NA	No data	No data	No data	No data	No data	No data
Benzo[b]fluoranthene	205-99-2	6.20	5.92	1.01E-02	EPA (1999a)	1.01E-02	EPA (1999a)	7.00E-02	EPA (1999a)
Benzo[e]pyrene	192-97-2	7.40	7.20	2.05E-03	Equation 1	2.05E-03	Equation 1	4.88E+03	Mass-limited
Benzo[g,h,i]perylene	191-24-2	7.10	6.26	3.05E-03	Equation 1	3.05E-03	Equation 1	4.88E+03	Mass-limited
Benzo[j]fluoranthene	205-82-3	6.44	6.15	7.34E-03	Equation 1	7.34E-03	Equation 1	4.88E+03	Mass-limited
Benzo[k]fluoranthene	207-08-9	6.19	5.92	1.01E-02	EPA (1999a)	1.01E-02	EPA (1999a)	8.00E-02	EPA (1999a)
Chrysene	218-01-9	5.74	5.47	1.87E-02	EPA (1999a)	1.87E-02	EPA (1999a)	4.00E-02	EPA (1999a)
Dibenz[a,h]acridine	226-36-8	NA	NA	No data	No data	No data	No data	No data	No data
Dibenz[a,h]anthracene	53-70-3	6.55	6.25	6.40E-03	EPA (1999a)	6.40E-03	EPA (1999a)	7.00E-02	EPA (1999a)
Dibenz[a,j]acridine	224-42-0	NA	NA	No data	No data	No data	No data	No data	No data
Dibenzo[a,e]fluoranthene	5385-75-1	NA	NA	No data	No data	No data	No data	No data	No data
Dibenzo[a,e]pyrene	192-65-4	NA	NA	No data	No data	No data	No data	No data	No data
Dibenzo[a,h]fluoranthene	No CAS #	NA	NA	No data	No data	No data	No data	No data	No data
Dibenzo[a,h]pyrene	189-64-0	NA	NA	No data	No data	No data	No data	No data	No data
Dibenzo[a,i]pyrene	189-55-9	7.29	6.98	2.37E-03	Equation 1	2.37E-03	Equation 1	4.88E+03	Mass-limited
Fluoranthene	206-44-0	5.08	4.69	4.47E-02	Equation 1	4.47E-02	Equation 1	1.04E+03	Equation 2[b]
Hexachloronaphthalene	1335-87-1	7.59	7.27	1.59E-03	Equation 1	1.59E-03	Equation 1	4.88E+03	Mass-limited
Indeno[1,2,3-cd]pyrene	193-39-5	6.91	6.61	3.90E-03	EPA (1999a)	3.90E-03	EPA (1999a)	8.00E-02	EPA (1999a)
Octachloronaphthalene	2234-13-1	6.42	6.13	7.54E-03	Equation 1	7.54E-03	Equation 1	4.88E+03	Mass-limited
Pentachloronaphthalene	1321-64-8	NA	NA	No data	No data	No data	No data	No data	No data
Tetrachloronaphthalene	1335-88-2	NA	NA	No data	No data	No data	No data	No data	No data
Trichloronaphthalene	1321-65-9	NA	NA	No data	No data	No data	No data	No data	No data

Appendix Table O-21. Ecological Transfer Factors for COPECs for Erie Burning Ground Baseline Risk Assessment

Constituent of Potential Concern	CAS Registry Number	Mammal Ba ([mg/kg tissue] / [mg ingested /day])	Source
Light Polycyclic Aromatic Hydrocarbons (mole wt <200 g/mole)			
2-Methyl naphthalene	91-57-6	1.82E-04	Equation 3
5-Nitroacenaphthene	602-87-9	No data	No data
Acenaphthene	83-32-9	2.32E-04	Equation 3
Acenaphthylene	208-96-8	2.95E-04	Equation 3
Anthracene	120-12-7	7.41E-04	Equation 3
Fluorene	86-73-7	3.72E-04	Equation 3
Indene	95-13-6	No data	No data
Naphthalene	91-20-3	5.93E-05	Equation 3
Phenanthrene	85-01-8	8.92E-04	Equation 3
Pyrene	129-00-0	2.51E-03	Equation 3
Heavy Polycyclic Aromatic Hydrocarbons (mole wt >200 g/mole)			
3-Methylcholanthrene	56-49-5	3.24E-01	Equation 3
5-Methylchrysene	3697-24-3	No data	No data
Benzo[a]anthracene	56-55-3	1.20E-02	Equation 3
Benzo[a]pyrene	50-32-8	2.74E-02	EPA (1999a)
Benzo[a,i]pyrene	191-30-0	No data	No data
Benzo[b]fluoranthene	205-99-2	4.00E-02	Equation 3
Benzo[e]pyrene	192-97-2	6.31E-01	Equation 3
Benzo[g,h,i]perylene	191-24-2	3.16E-01	Equation 3
Benzo[j]fluoranthene	205-82-3	6.92E-02	Equation 3
Benzo[k]fluoranthene	207-08-9	3.98E-02	Equation 3
Chrysene	218-01-9	1.38E-02	Equation 3
Dibenz[a,h]acridine	226-36-8	No data	No data
Dibenz[a,h]anthracene	53-70-3	8.86E-02	Equation 3
Dibenz[a,j]acridine	224-42-0	No data	No data
Dibenzo[a,e]fluoranthene	5385-75-1	No data	No data
Dibenzo[a,e]pyrene	192-65-4	No data	No data
Dibenzo[a,h]fluoranthene	No CAS #	No data	No data
Dibenzo[a,h]pyrene	189-64-0	No data	No data
Dibenzo[a,i]pyrene	189-55-9	4.90E-01	Equation 3
Fluoranthene	206-44-0	3.04E-03	Equation 3
Hexachloronaphthalene	1335-87-1	9.77E-01	Equation 3
Indeno[1,2,3-cd]pyrene	193-39-5	2.07E-01	Equation 3
Octachloronaphthalene	2234-13-1	6.61E-02	Equation 3
Pentachloronaphthalene	1321-64-8	No data	No data
Tetrachloronaphthalene	1335-88-2	No data	No data
Trichloronaphthalene	1321-65-9	No data	No data

Appendix Table O-21. Ecological Transfer Factors for COPECs for Erie Burning Ground Baseline Risk Assessment

Constituent of Potential Concern	CAS Registry Number	Log K_{ow} [a]	Log K_{oc} [a]	SPv (kg dry soil/kg dry tissue)	Source	SPr (kg dry soil/kg dry tissue)	Source	BAF-S (kg dry soil/ kg tissue)	Source
Light Substituted Benzene Compounds (molecular weight <200 g/mole)									
1,2,3-Trichlorobenzene	87-61-6	4.05	3.31	1.78E-01	Equation 1	1.78E-01	Equation 1	1.47E+02	Equation 2[b]
1,2,4-Trichlorobenzene	120-82-1	3.99	3.22	1.92E-01	Equation 1	1.92E-01	Equation 1	1.32E+02	Equation 2[b]
1,2,4-Trimethyl benzene	95-63-6	3.65	3.00	3.01E-01	Equation 1	3.01E-01	Equation 1	6.97E+01	Equation 2[b]
1,2-Dichlorobenzene	95-50-1	3.45	2.58	3.95E-01	Equation 1	3.95E-01	Equation 1	4.74E+01	Equation 2[b]
1,3,5-Trimethyl benzene	108-67-8	3.42	3.22	4.09E-01	Equation 1	4.09E-01	Equation 1	4.52E+01	Equation 2[b]
1,3-Dichlorobenzene	541-73-1	3.53	2.90	3.53E-01	Equation 1	3.53E-01	Equation 1	5.56E+01	Equation 2[b]
1,3-Dinitrobenzene	99-65-0	1.49	1.31	5.32E+00	EPA (1999a)	5.32E+00	EPA (1999a)	1.19E+00	EPA (1999a)
1,4-Dichlorobenzene	106-46-7	3.41	2.79	4.13E-01	Equation 1	4.13E-01	Equation 1	4.45E+01	Equation 2[b]
1,4-Dinitrobenzene	100-25-4	1.50	2.34	5.26E+00	Equation 1	5.26E+00	Equation 1	1.21E+00	Equation 2
2,4,5-Trichlorophenol	95-95-4	3.87	3.05	2.25E-01	Equation 1	2.25E-01	Equation 1	1.06E+02	Equation 2[b]
2,4,6-Trichlorophenol	88-06-2	3.71	2.35	2.77E-01	Equation 1	2.77E-01	Equation 1	7.83E+01	Equation 2[b]
2,4-Dichlorophenol	120-83-2	3.04	2.14	6.80E-01	Equation 1	6.80E-01	Equation 1	2.20E+01	Equation 2[b]
2,4-Dimethylphenol	105-67-9	2.36	2.10	1.68E+00	Equation 1	1.68E+00	Equation 1	6.12E+00	Equation 2
2,4-Dinitrophenol	51-28-5	1.52	-2.00	5.13E+00	Equation 1	5.13E+00	Equation 1	1.25E+00	Equation 2
2,4-Dinitrotoluene	121-14-2	2.00	1.71	2.72E+00	EPA (1999a)	2.72E+00	EPA (1999a)	3.08E+00	EPA (1999a)
2,6-Dinitrotoluene	606-20-2	1.89	1.62	3.15E+00	EPA (1999a)	3.15E+00	EPA (1999a)	2.50E+00	EPA (1999a)
2-Chlorophenol	95-57-8	2.16	2.59	2.18E+00	Equation 1	2.18E+00	Equation 1	4.21E+00	Equation 2
2-Chlorotoluene	95-49-8	3.42	2.65	3.50E-01	Equation 1	3.50E-01	Equation 1	5.63E+01	Equation 2[b]
2-Nitrophenol	88-75-5	1.79	1.55	3.57E+00	Equation 1	3.57E+00	Equation 1	2.09E+00	Equation 2
4-Nitrophenol	100-02-7	1.91	1.64	3.05E+00	Equation 1	3.05E+00	Equation 1	2.62E+00	Equation 2
Benzyl chloride	100-44-7	2.30	1.95	1.81E+00	Equation 1	1.81E+00	Equation 1	5.47E+00	Equation 2
Bromobenzene	108-86-1	2.99	2.65	7.24E-01	Equation 1	7.24E-01	Equation 1	2.01E+01	Equation 2[b]
Chlorobenzene	108-90-7	2.79	2.35	9.45E-01	Equation 1	9.45E-01	Equation 1	1.38E+01	Equation 2[b]
n-Butyl benzene	104-51-8	4.28	3.40	1.30E-01	Equation 1	1.30E-01	Equation 1	2.29E+02	Equation 2[b]
Nitrobenzene	98-95-3	1.83	2.08	3.38E+00	EPA (1999a)	3.38E+00	EPA (1999a)	2.26E+00	EPA (1999a)
o-Dinitrobenzene	528-29-0	1.69	2.35	4.08E+00	Equation 1	4.08E+00	Equation 1	1.73E+00	Equation 2
o-Nitroaniline	88-74-4	1.85	1.59	3.30E+00	Equation 1	3.30E+00	Equation 1	2.34E+00	Equation 2
o-Toluidine	95-53-4	1.34	1.20	6.50E+00	Equation 1	6.50E+00	Equation 1	8.95E-01	Equation 2
p-Chloroaniline	106-47-8	1.87	1.61	3.22E+00	Equation 1	3.22E+00	Equation 1	2.43E+00	Equation 2
p-Cresol	106-44-5	1.94	1.66	2.93E+00	Equation 1	2.93E+00	Equation 1	2.77E+00	Equation 2
Phenol	108-95-2	1.48	1.34	5.42E+00	Equation 1	5.42E+00	Equation 1	1.16E+00	Equation 2
p-Nitrochlorobenzene	100-00-5	2.39	2.02	1.61E+00	Equation 1	1.61E+00	Equation 1	6.48E+00	Equation 2
p-Toluidine	106-49-0	1.40	1.24	6.01E+00	Equation 1	6.01E+00	Equation 1	1.00E+00	Equation 2
Toluene-2,6-diamine	823-40-5	0.16	2.09	3.13E+01	Equation 1	3.13E+01	Equation 1	9.66E-02	Equation 2
Trimethyl benzene	25551-13-7	3.42	2.85	4.09E-01	Equation 1	4.09E-01	Equation 1	4.52E+01	Equation 2[b]

Appendix Table O-21. Ecological Transfer Factors for COPECs for Erie Burning Ground Baseline Risk Assessment

Constituent of Potential Concern	CAS Registry Number	Mammal Ba ([mg/kg tissue] / [mg ingested /day])	Source
Light Substituted Benzene Compounds (mole wt <200 g/mole)			
1,2,3-Trichlorobenzene	87-61-6	2.79E-04	Equation 3
1,2,4-Trichlorobenzene	120-82-1	2.44E-04	Equation 3
1,2,4-Trimethyl benzene	95-63-6	1.12E-04	Equation 3
1,2-Dichlorobenzene	95-50-1	7.01E-05	Equation 3
1,3,5-Trimethyl benzene	108-67-8	6.61E-05	Equation 3
1,3-Dichlorobenzene	541-73-1	8.52E-05	Equation 3
1,3-Dinitrobenzene	99-65-0	7.79E-07	Equation 3
1,4-Dichlorobenzene	106-46-7	6.48E-05	Equation 3
1,4-Dinitrobenzene	100-25-4	7.94E-07	Equation 3
2,4,5-Trichlorophenol	95-95-4	1.86E-04	Equation 3
2,4,6-Trichlorophenol	88-06-2	1.29E-04	Equation 3
2,4-Dichlorophenol	120-83-2	2.74E-05	Equation 3
2,4-Dimethylphenol	105-67-9	5.75E-06	Equation 3
2,4-Dinitrophenol	51-28-5	8.29E-07	Equation 3
2,4-Dinitrotoluene	121-14-2	2.49E-06	Equation 3
2,6-Dinitrotoluene	606-20-2	1.93E-06	Equation 3
2-Chlorophenol	95-57-8	3.64E-06	Equation 3
2-Chlorotoluene	95-49-8	8.64E-05	Equation 3
2-Nitrophenol	88-75-5	1.55E-06	Equation 3
4-Nitrophenol	100-02-7	2.04E-06	Equation 3
Benzyl chloride	100-44-7	5.01E-06	Equation 3
Bromobenzene	108-86-1	2.45E-05	Equation 3
Chlorobenzene	108-90-7	1.55E-05	Equation 3
n-Butyl benzene	104-51-8	4.79E-04	Equation 3
Nitrobenzene	98-95-3	1.71E-06	Equation 3
o-Dinitrobenzene	528-29-0	1.23E-06	Equation 3
o-Nitroaniline	88-74-4	1.78E-06	Equation 3
o-Toluidine	95-53-4	5.50E-07	Equation 3
p-Chloroaniline	106-47-8	1.86E-06	Equation 3
p-Cresol	106-44-5	2.19E-06	Equation 3
Phenol	108-95-2	7.54E-07	Equation 3
p-Nitrochlorobenzene	100-00-5	6.17E-06	Equation 3
p-Toluidine	106-49-0	6.31E-07	Equation 3
Toluene-2,6-diamine	823-40-5	3.63E-08	Equation 3
Trimethyl benzene	25551-13-7	6.61E-05	Equation 3

Appendix Table O-21. Ecological Transfer Factors for COPECs for Erie Burning Ground Baseline Risk Assessment

Constituent of Potential Concern	CAS Registry Number	Log K_{ow} [a]	Log K_{oc} [a]	SPv (kg dry soil/kg dry tissue)	Source	SPr (kg dry soil/kg dry tissue)	Source	BAF-S (kg dry soil/ kg tissue)	Source
Other Light Semivolatile Compounds (molecular weight <200 g/mole)									
Benzoic acid	65-85-0	1.87	-0.26	3.21E+00	Equation 1	3.21E+00	Equation 1	2.43E+00	Equation 2
Cyclohexanol	108-93-0	1.23	1.11	7.53E+00	Equation 1	7.53E+00	Equation 1	7.27E-01	Equation 2
Dichloroisopropyl ether	108-60-1	2.58	1.78	1.25E+00	Equation 1	1.25E+00	Equation 1	9.27E+00	Equation 2
Dichloromethyl ether	542-88-1	0.58	0.64	1.79E+01	Equation 1	1.79E+01	Equation 1	2.13E-01	Equation 2
Dichloropentadiene	61626-71-9	NA	NA	No data	No data	No data	No data	No data	No data
N-Nitrosomorpholine	59-89-2	0.98	0.92	1.05E+01	Equation 1	1.05E+01	Equation 1	4.54E-01	Equation 2
N-Nitroso-N,N-dimethylamine	62-75-9	-0.57	1.58	8.27E+01	Equation 1	8.27E+01	Equation 1	2.44E-02	Equation 2
Quinoline	91-22-5	2.03	3.26	2.60E+00	Equation 1	2.60E+00	Equation 1	3.29E+00	Equation 2
Quinone	106-51-4	0.20	0.31	2.97E+01	Equation 1	2.97E+01	Equation 1	1.04E-01	Equation 2
Other Heavy Semivolatile Compounds (molecular weight >200 g/mole)									
1,2,4,5-Tetrachlorobenzene	95-94-3	4.64	3.77	8.06E-02	Equation 1	8.06E-02	Equation 1	4.51E+02	Equation 2[b]
1,3,5-Trinitrobenzene	99-35-4	1.18	1.07	8.06E+00	Equation 1	8.06E+00	Equation 1	6.60E-01	Equation 2
2-Cyclohexyl-4,6-dinitrophenol	131-89-5	4.54	3.69	9.20E-02	Equation 1	9.20E-02	Equation 1	3.73E+02	Equation 2[b]
2-sec-Butyl-4,6-dinitrophenol	88-85-7	3.56	3.55	3.39E-01	Equation 1	3.39E-01	Equation 1	5.88E+01	Equation 2[b]
3,3'-Dichlorobenzidine	91-94-1	3.58	2.94	3.30E-01	Equation 1	3.30E-01	Equation 1	6.11E+01	Equation 2[b]
3,3'-Dimethoxybenzidine	119-90-4	1.81	1.56	3.48E+00	Equation 1	3.48E+00	Equation 1	2.17E+00	Equation 2
Dibutylphosphate	107-66-4	NA	NA	No data	No data	No data	No data	No data	No data
Dimethyl aminoazobenzene	60-11-7	4.58	3.72	8.72E-02	Equation 1	8.72E-02	Equation 1	4.03E+02	Equation 2[b]
Hexachlorobenzene	118-74-1	5.50	4.90	2.55E-02	EPA (1999a)	2.55E-02	EPA (1999a)	2.30E+03	EPA (1999a)
Hexachlorobutadiene	87-68-3	4.73	3.84	7.14E-02	EPA (1999a)	7.14E-02	EPA (1999a)	5.35E+02	EPA (1999a)
Hexachlorocyclopentadiene	77-47-4	4.91	3.98	5.65E-02	EPA (1999a)	5.65E-02	EPA (1999a)	7.45E+02	EPA (1999a)
Pentachlorobenzene	608-93-5	5.09	4.51	4.40E-02	EPA (1999a)	4.40E-02	EPA (1999a)	1.05E+03	EPA (1999a)
Pentachloronitrobenzene	82-68-8	4.64	3.77	8.00E-02	EPA (1999a)	8.00E-02	EPA (1999a)	4.51E+02	EPA (1999a)
Pentachlorophenol	87-86-5	5.08	2.70	4.49E-02	EPA (1999a)	4.49E-02	EPA (1999a)	1.03E+03	EPA (1999a)
Herbicides and Organochlorinated Pesticides									
4,4'-DDD	72-54-8	6.12	4.66	1.12E-02	Equation 1	1.12E-02	Equation 1	4.88E+03	Mass-limited
4,4'-DDE	72-55-9	6.26	4.94	9.37E-03	EPA (1999a)	9.37E-03	EPA (1999a)	1.26E+00	EPA (1999a)
4,4'-DDT	50-29-3	6.07	5.83	1.20E-02	Equation 1	1.20E-02	Equation 1	4.88E+03	Mass-limited
Aldrin	309-00-2	6.18	4.69	1.04E-02	Equation 1	1.04E-02	Equation 1	4.88E+03	Mass-limited
alpha-BHC	319-84-6	3.80	3.25	2.47E-01	Equation 1	2.47E-01	Equation 1	9.24E+01	Equation 2[b]
beta-BHC	319-85-7	3.83	3.33	2.36E-01	Equation 1	2.36E-01	Equation 1	9.85E+01	Equation 2[b]
Chlordane	57-74-9	5.94	4.71	1.43E-02	Equation 1	1.43E-02	Equation 1	5.21E+03	Equation 2[b]
Delta-BHC	319-86-8	4.14	2.82	1.57E-01	Equation 1	1.57E-01	Equation 1	1.76E+02	Equation 2[b]
Dieldrin	60-57-1	5.27	4.41	3.49E-02	Equation 1	3.49E-02	Equation 1	1.48E+03	Equation 2[b]
Endrin	72-20-8	4.89	4.03	5.76E-02	Equation 1	5.76E-02	Equation 1	7.25E+02	Equation 2[b]
gamma-BHC (Lindane)	58-89-9	3.72	3.03	2.74E-01	Equation 1	2.74E-01	Equation 1	7.96E+01	Equation 2[b]

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Constituent of Potential Concern	CAS Registry Number	Mammal Ba ([mg/kg tissue] / [mg ingested /day])	Source
Other Light Semivolatile Compounds (mole wt <200 g/mole)			
Benzoic acid	65-85-0	1.86E-06	Equation 3
Cyclohexanol	108-93-0	4.27E-07	Equation 3
Dichloroisopropyl ether	108-60-1	9.55E-06	Equation 3
Dichloromethyl ether	542-88-1	9.55E-08	Equation 3
Dichloropentadiene	61626-71-9	No data	No data
N-Nitrosomorpholine	59-89-2	2.40E-07	Equation 3
N-Nitroso-N,N-dimethylamine	62-75-9	6.76E-09	Equation 3
Quinoline	91-22-5	2.69E-06	Equation 3
Quinone	106-51-4	3.98E-08	Equation 3
Other Heavy Semivolatile Compounds (mole wt >200 g/mole)			
1,2,4,5-Tetrachlorobenzene	95-94-3	1.10E-03	Equation 3
1,3,5-Trinitrobenzene	99-35-4	3.79E-07	Equation 3
2-Cyclohexyl-4,6-dinitrophenol	131-89-5	8.71E-04	Equation 3
2-sec-Butyl-4,6-dinitrophenol	88-85-7	9.12E-05	Equation 3
3,3'-Dichlorobenzidine	91-94-1	9.44E-05	Equation 3
3,3'-Dimethoxybenzidine	119-90-4	1.62E-06	Equation 3
Dibutylphosphate	107-66-4	No data	No data
Dimethyl aminoazobenzene	60-11-7	9.55E-04	Equation 3
Hexachlorobenzene	118-74-1	7.99E-03	Equation 3
Hexachlorobutadiene	87-68-3	1.35E-03	Equation 3
Hexachlorocyclopentadiene	77-47-4	2.03E-03	EPA (1999a)
Pentachlorobenzene	608-93-5	3.08E-03	Equation 3
Pentachloronitrobenzene	82-68-8	1.10E-03	Equation 3
Pentachlorophenol	87-86-5	3.01E-03	EPA (1999a)
Herbicides and Organochlorinated Pesticides			
4,4'-DDD	72-54-8	3.32E-02	Equation 3
4,4'-DDE	72-55-9	4.54E-02	Equation 3
4,4'-DDT	50-29-3	2.95E-02	Equation 3
Aldrin	309-00-2	3.79E-02	Equation 3
alpha-BHC	319-84-6	1.58E-04	Equation 3
beta-BHC	319-85-7	1.71E-04	Equation 3
Chlordane	57-74-9	2.18E-02	Equation 3
Delta-BHC	319-86-8	3.47E-04	Equation 3
Dieldrin	60-57-1	4.67E-03	Equation 3
Endrin	72-20-8	1.96E-03	Equation 3
gamma-BHC (Lindane)	58-89-9	1.32E-04	Equation 3

Appendix Table O-21. Ecological Transfer Factors for COPECs for Erie Burning Ground Baseline Risk Assessment

Constituent of Potential Concern	CAS Registry Number	Log K_{ow} [a]	Log K_{oc} [a]	SPv (kg dry soil/kg dry tissue)	Source	SPr (kg dry soil/kg dry tissue)	Source	BAF-S (kg dry soil/ kg tissue)	Source
Heptachlor	76-44-8	5.02	3.98	4.89E-02	EPA (1999a)	4.89E-02	EPA (1999a)	1.40E+00	EPA (1999a)
Methoxychlor	72-43-5	4.53	4.90	9.37E-02	Equation 1	9.37E-02	Equation 1	3.64E+02	Equation 2[b]
Toxaphene	8001-35-2	5.50	5.00	2.56E-02	Equation 1	2.56E-02	Equation 1	2.28E+03	Equation 2[b]
Inorganic Chemicals and Compounds									
Metals									
Aluminum	7429-90-5	NA	NA	4.00E-03	Baes et al. (1984)	6.50E-04	Baes et al. (1984)	2.20E-01	EPA (1999a)
Antimony	7440-36-0	NA	NA	2.00E-01	Baes et al. (1984)	3.00E-02	Baes et al. (1984)	2.20E-01	EPA (1999a)
Arsenic	7440-38-2	NA	NA	4.00E-02	Baes et al. (1984)	6.00E-03	Baes et al. (1984)	2.58E-01	Sample et al. 1999
Barium	7440-39-3	NA	NA	1.50E-01	Baes et al. (1984)	1.50E-01	Baes et al. (1984)	2.20E-01	EPA (1999a)
Beryllium	7440-41-7	NA	NA	1.00E-02	Baes et al. (1984)	1.50E-03	Baes et al. (1984)	2.20E-01	EPA (1999a)
Bismuth	7440-69-9	NA	NA	3.50E-02	Baes et al. (1984)	5.00E-03	Baes et al. (1984)	3.21E-01	Average[d]
Boron	7440-42-8	NA	NA	4.00E+00	Baes et al. (1984)	2.00E+00	Baes et al. (1984)	3.21E-01	Average[d]
Cadmium	7440-43-9	NA	NA	5.50E-01	Baes et al. (1984)	1.50E-01	Baes et al. (1984)	1.71E+01	Sample et al. 1999
Calcium	7440-70-2	NA	NA	3.50E+00	Baes et al. (1984)	3.50E-01	Baes et al. (1984)	3.21E-01	Average[d]
Chromium	18540-29-9	NA	NA	7.50E-03	Baes et al. (1984)	4.50E-03	Baes et al. (1984)	1.10E+00	Sample et al. 1999
Cobalt	7440-48-4	NA	NA	2.00E-02	Baes et al. (1984)	7.00E-03	Baes et al. (1984)	3.21E-01	Average[d]
Copper	7440-50-8	NA	NA	4.00E-01	Baes et al. (1984)	2.50E-01	Baes et al. (1984)	4.00E-02	EPA (1999a)
Iron	7439-89-6	NA	NA	4.00E-03	Baes et al. (1984)	1.00E-03	Baes et al. (1984)	3.21E-01	Average[d]
Lead	7439-92-1	NA	NA	4.50E-02	Baes et al. (1984)	9.00E-03	Baes et al. (1984)	3.34E+00	Sample et al. 1999
Lithium	7439-93-2	NA	NA	2.50E-02	Baes et al. (1984)	4.00E-03	Baes et al. (1984)	3.21E-01	Average[d]
Magnesium	7439-95-4	NA	NA	1.00E+00	Baes et al. (1984)	5.50E-01	Baes et al. (1984)	3.21E-01	Average[d]
Manganese	7439-96-5	NA	NA	2.50E-01	Baes et al. (1984)	5.00E-02	Baes et al. (1984)	6.40E-02	Sample et al. 1999
Mercury	7439-97-6	NA	NA	9.00E-01	Baes et al. (1984)	2.00E-01	Baes et al. (1984)	5.23E+00	Sample et al. 1999
Mercury - Hg+2	7487-94-7	NA	NA	3.75E-02	EPA (1999a)	3.75E-02	EPA (1999a)	4.00E-02	EPA (1999a)
Methylmercury	22967-92-6	NA	NA	1.37E-01	EPA (1999a)	1.37E-01	EPA (1999a)	8.50E+00	EPA (1999a)
Molybdenum	7439-98-7	NA	NA	2.50E-01	Baes et al. (1984)	6.00E-02	Baes et al. (1984)	3.21E-01	Average[d]
Nickel	7440-02-0	NA	NA	6.00E-02	Baes et al. (1984)	6.00E-02	Baes et al. (1984)	1.66E+00	Sample et al. 1999
Potassium	7440-09-7	NA	NA	1.00E+00	Baes et al. (1984)	5.50E-01	Baes et al. (1984)	3.21E-01	Average[d]
Selenium	7782-49-2	NA	NA	2.50E-02	Baes et al. (1984)	2.50E-02	Baes et al. (1984)	2.20E-01	EPA (1999a)
Silicon	7440-21-3	NA	NA	3.50E-01	Baes et al. (1984)	7.00E-02	Baes et al. (1984)	3.21E-01	Average[d]
Silver	7440-22-4	NA	NA	4.00E-01	Baes et al. (1984)	1.00E-01	Baes et al. (1984)	2.20E-01	EPA (1999a)
Sodium	7440-23-5	NA	NA	7.50E-02	Baes et al. (1984)	5.50E-02	Baes et al. (1984)	3.21E-01	Average[d]
Strontium	7440-24-6	NA	NA	2.50E+00	Baes et al. (1984)	2.50E-01	Baes et al. (1984)	3.21E-01	Average[d]
Thallium	7440-28-0	NA	NA	4.00E-03	Baes et al. (1984)	4.00E-04	Baes et al. (1984)	2.20E-01	EPA (1999a)
Vanadium	7440-62-2	NA	NA	5.50E-03	Baes et al. (1984)	3.00E-03	Baes et al. (1984)	3.21E-01	Average[d]
Yttrium	7440-65-5	NA	NA	1.50E-02	Baes et al. (1984)	6.00E-03	Baes et al. (1984)	3.21E-01	Average[d]
Zinc	7440-66-6	NA	NA	1.50E+00	Baes et al. (1984)	9.00E-01	Baes et al. (1984)	5.77E+00	Sample et al. 1999

Appendix Table O-21. Ecological Transfer Factors for COPECs for Erie Burning Ground Baseline Risk Assessment

Constituent of Potential Concern	CAS Registry Number	Mammal Ba ([mg/kg tissue] / [mg ingested /day])	Source
Heptachlor	76-44-8	2.60E-03	Equation 3
Methoxychlor	72-43-5	8.44E-04	Equation 3
Toxaphene	8001-35-2	7.94E-03	Equation 3
Inorganic Chemicals and Compounds			
Metals			
Aluminum	7429-90-5	1.50E-03	Baes et al. (1984)
Antimony	7440-36-0	1.00E-03	Baes et al. (1984)
Arsenic	7440-38-2	2.00E-03	Baes et al. (1984)
Barium	7440-39-3	1.50E-04	Baes et al. (1984)
Beryllium	7440-41-7	1.00E-03	Baes et al. (1984)
Bismuth	7440-69-9	4.00E-04	Baes et al. (1984)
Boron	7440-42-8	8.00E-04	Baes et al. (1984)
Cadmium	7440-43-9	3.40E-03	Baes et al. (1984)
Calcium	7440-70-2	7.00E-04	Baes et al. (1984)
Chromium	18540-29-9	5.51E-03	Baes et al. (1984)
Cobalt	7440-48-4	2.00E-02	Baes et al. (1984)
Copper	7440-50-8	1.00E-02	Baes et al. (1984)
Iron	7439-89-6	2.00E-02	Baes et al. (1984)
Lead	7439-92-1	3.00E-04	Baes et al. (1984)
Lithium	7439-93-2	1.00E-02	Baes et al. (1984)
Magnesium	7439-95-4	5.00E-03	Baes et al. (1984)
Manganese	7439-96-5	4.00E-04	Baes et al. (1984)
Mercury	7439-97-6	5.21E-03	EPA (1999a)
Mercury - Hg+2	7487-94-7	5.21E-03	EPA (1999a)
Methylmercury	22967-92-6	7.81E-04	EPA (1999a)
Molybdenum	7439-98-7	6.00E-03	Baes et al. (1984)
Nickel	7440-02-0	6.00E-03	Baes et al. (1984)
Potassium	7440-09-7	2.00E-02	Baes et al. (1984)
Selenium	7782-49-2	1.90E-03	Baes et al. (1984)
Silicon	7440-21-3	4.00E-05	Baes et al. (1984)
Silver	7440-22-4	3.00E-03	Baes et al. (1984)
Sodium	7440-23-5	5.50E-02	Baes et al. (1984)
Strontium	7440-24-6	3.00E-04	Baes et al. (1984)
Thallium	7440-28-0	4.00E-02	Baes et al. (1984)
Vanadium	7440-62-2	2.50E-03	Baes et al. (1984)
Yttrium	7440-65-5	3.00E-04	Baes et al. (1984)
Zinc	7440-66-6	1.00E-01	Baes et al. (1984)

Appendix Table O-22. Uptake Factors for Erie Burning Ground Sediment and Surface Water, Ravenna, Ohio

Analytes carried forward from EU-specific ESV screen	CAS Registry Number	log(K_{ow})	BSAF (kg sediment/ kg tissue)		WP (L/kg plant tissue)		BCF (L/kg aquatic biota tissue)		FCM[a]
			Value	Source	Value	Source	Value	Source	
Inorganics									
Aluminum	7429-90-5	none	9.00E-01	EPA (1999)	8.33E+02		NA	NA	1.0E+00
Antimony	7440-36-0	none	9.00E-01	EPA (1999)	NA	NA	NA	NA	1.0E+00
Arsenic	7440-38-2	none					NA	NA	1.0E+00
Barium	7440-39-3	none	9.00E-01	EPA (1999)	2.60E+02		NA	NA	1.0E+00
Beryllium	7440-41-7	none	9.00E-01	EPA (1999)	NA	NA	NA	NA	1.0E+00
Cadmium	7440-43-9	none	3.40E+00	EPA (1999)	7.82E+02	EPA (1999)	9.07E+02	EPA (1999)	1.0E+00
Calcium	7440-70-2	none	8.93E-01		4.07E+04		NA	NA	1.0E+00
Chromium	7440-47-3	none					NA	NA	1.0E+00
Copper	7440-50-8	none	3.00E-01	EPA (1999)	5.41E+02		NA	NA	1.0E+00
Cyanide	57-12-5	none			2.20E+01		NA	NA	1.0E+00
Iron	7439-89-6	none	8.93E-01		4.06E+03		NA	NA	1.0E+00
Lead	7439-92-1	none	6.30E-01	EPA (1999)	1.71E+03	EPA (1999)	9.00E-02	EPA (1999)	1.0E+00
Magnesium	7439-95-4	none	8.93E-01		4.06E+03		NA	NA	1.0E+00
Manganese	7439-96-5	none	8.93E-01		4.06E+03		NA	NA	1.0E+00
Mercury	7487-94-7	none	6.80E-02	EPA (1999)	2.48E+04	EPA (1999)	3.53E+03	EPA (1999)	1.0E+00
Nickel	7440-02-0	none	9.00E-01	EPA (1999)	NA	NA	NA	NA	1.0E+00
Potassium	7440-07-7	none	NA	NA	4.06E+03	NA	NA	NA	1.0E+00
Silver	7440-21-3	none	1.07E+04	EPA (1999)	NA	NA	NA	NA	1.0E+00
Sodium	7440-23-5	none	8.93E-01		4.06E+03		NA	NA	1.0E+00
Vanadium	7440-62-2	none					NA	NA	1.0E+00
Zinc	7440-66-6	none	5.70E-01	EPA (1999)	2.18E+03	NA	2.06E+03	EPA (1999)	1.0E+00
Organics-Semivolatile									
Benzo(a)anthracene	56-55-3	5.7E+00	1.45E+00	EPA (1999)	NA	NA	NA	NA	1.0E+01
Benzo(a)pyrene	50-32-8	6.1E+00	1.59E+00	EPA (1999)	NA	NA	NA	NA	1.8E+01
Benzo(b)fluoranthene	205-99-2	6.2E+00	1.61E+00	EPA (1999)	NA	NA	NA	NA	2.0E+01
Benzo(g,h,i)perylene	191-24-2	7.1E+00	4.76E-04	Equation 1	NA	NA	NA	NA	2.5E+01
Benzo(k)fluoranthene	207-08-9	6.2E+00	1.61E+00	EPA (1999)	NA	NA	NA	NA	2.0E+01
Bis(2-ethylhexyl)phthalate	117-81-7	5.2E+00	1.31E+03	EPA (1999)	NA	NA	NA	NA	3.9E+00
Butylbenzylphthalate	85-68-7	4.4E+00	2.94E+02	Equation 1	NA	NA	NA	NA	1.2E+00
Carbazole	86-74-8	3.7E+00	7.96E+01	Equation 1	NA	NA	NA	NA	1.0E+00

Appendix Table O-22. Uptake Factors for Erie Burning Ground Sediment and Surface Water, Ravenna, Ohio

Analytes carried forward from EU-specific ESV screen	CAS Registry Number	log(K_{ow})	BSAF (kg sediment/ kg tissue)		WP (L/kg plant tissue)		BCF (L/kg aquatic biota tissue)		FCM[a]
			Value	Source	Value	Source	Value	Source	
Chrysene	218-01-9	5.7E+00	1.38E+00	EPA (1999)	NA	NA	NA	NA	1.0E+01
Di-n-butylphthale	84-74-2								
Dibenzo(a,h)anthracene	53-70-3	6.5E+00	1.61E+00	EPA (1999)	NA	NA	NA	NA	2.5E+01
Fluoranthene	206-44-0	5.1E+00	3.44E-04	Equation 1	NA	NA	NA	NA	3.2E+00
Indeno(1,2,3-cd)pyrene	193-39-5	6.9E+00	1.61E+00	EPA (1999)	NA	NA	NA	NA	2.7E+02
Phenanthrene	85-01-8	4.6E+00	3.15E-04	Equation 1	NA	NA	NA	NA	1.5E+00
Pyrene	129-00-0	5.0E+00	3.39E-04	Equation 1	NA	NA	NA	NA	2.6E+00
Organics-Pesticides/PCBs									
4,4'-DDE	72-55-9	6.3E+00	9.50E-01	EPA (1999)	NA	NA	NA	NA	2.2E+01
4,4'-DDT	50-29-3	6.1E+00	4.03E-04	Equation 1	1.13E+04	EPA (1999)	NA	NA	1.8E+01
Endrin	72-20-8	4.9E+00	3.33E-04	Equation 1	NA	NA	NA	NA	2.2E+00
Methoxychlor	72-43-5				NA	NA	NA	NA	1.3E+00
gamma-Chlordane	57-74-9	5.9E+00	3.95E-04	Equation 1	NA	NA	NA	NA	1.4E+01
Aroclor 1248	12672-29-6	6.3E+00	4.21E-04	Equation 1	NA	NA	NA	NA	2.2E+01
PCB-1254	1336-36-3	6.3E+00	1.13E+00	EPA (1999)	NA	NA	NA	NA	2.2E+01
Organics-Explosives									
2,4,6-Trinitrotoluene	118-96-7	1.6E+00	1.96E-04	Equation 1	NA	NA	NA	NA	1.0E+00
2,6-Dinitrotoluene	606-20-2						NA	NA	1.0E+00
4-Amino-2,6-dinitrotoluene	19406-51-0	1.8E+00	2.04E-04	Equation 1	NA	NA	NA	NA	1.0E+00
Nitrocellulose	9004-70-0				1.32E-05		NA	NA	1.0E+00
Organics-Volatiles									
Acetone	67-64-1	-2.2E-01	5.00E-02	EPA (1999)	5.00E-02	EPA (1999)	1.00E-01	EPA (1999)	1.0E+00
2-Butanone	78-93-3						NA	NA	1.0E+00
Chloromethane	74-87-3				3.92E-01		NA	NA	1.0E+00

COPEC = Constituents of potential ecological concern.
ESV = ecological screening value.
log(K_{ow}) = logarithm of octanol/water partitioning coefficient.
BSAF = sediment to sediment biota uptake factor.
WP = water to aquatic plant uptake factor.
BCF = water to aquatic animal uptake factor.
FCM = food chain multiplier.
NA = Not applicable because analyte is not a COPEC in this medium.

[a] Tabulated in EPA (1999) for Trophic Level 4 consumers.

[b] Equation 1: log(BSAF) = 1.588 - [0.578 x log(Kow)].

[c] Equation 4: log BCF = 0.91 × log K_{ow} - 1.975 × log(6.8E-07 × K_{ow} + 1.0) - 0.786 (Bintein et al. 1993) as referenced in EPA (1999a).

Appendix Table O-23. Area Use Factors (AUFs) for Terrestrial Receptors at Erie Burning Ground

Receptor	HR ha	AUF Erie Burning Ground Area ha = 12.95 (32 ac)
Red fox	5.04E+02	2.57E-02
Red-tailed hawk	8.76E+02	1.48E-02
Eastern Cottontail	3.10E+00	1.00E+00

AUF = Fraction of receptor exposure from the unit = area of unit/ area of HR; AUF = 1 when area of unit exceeds area of HR.
HR = Home range
ha = Hectares.

Appendix Table O-24. Erie Burning Ground Area Use Factors (AUFs) for Sediment and Aquatic Receptors at Ravenna, Ohio

Receptor	HR ha	AUF Erie Burning Ground Ponds Area ha = 1.04 (2.6ac)
Muskrat	1.30E-01	1.00E+00
Mallard duck	4.35E+02	2.39E-03
Mink	4.70E+02	2.21E-03
Great blue heron	6.00E-01	1.00E+00

AUF = Fraction of receptor exposure from the unit = area of unit/ area of HR; AUF = 1 when area of unit exceeds area of HR.
HR = Home range.
ha = Hectares.
ac = Acres.

Appendix Table O-25. Ingestion rates of animal, plant, and soil for wildlife receptors at Erie Burning Ground

Receptor	IR_F (kg/kg/d)	I_P (kg/kg/d)	I_A (kg/kg/d)	I_S (kg/kg/d)	IR_W (kg/kg/d)
Terrestrial					
Cottontail rabbit	2.00E-01	1.88E-01	0.00E+00	1.26E-02	9.70E-02
Short-tailed shrew	5.60E-01	7.28E-02	4.87E-01	3.36E-02	2.23E-01
Red Fox	9.50E-02	4.37E-03	9.06E-02	2.66E-03	8.50E-02
Red-tailed hawk	1.10E-01	0.00E+00	1.10E-01	0.00E+00	5.70E-02
Aquatic					
Muskrat	3.00E-01	3.00E-01	0.00E+00	0.00E+00	9.80E-01
Mink	1.60E-01	0.00E+00	1.60E-01	0.00E+00	7.90E-02
Mallard duck	6.30E-02	6.17E-02	0.00E+00	1.89E-03	5.70E-02
Great blue heron	1.80E-01	0.00E+00	1.80E-01	0.00E+00	4.50E-02

IR_F = Ingestion rate of food (kg/kg body wt/d).
I_P = Ingestion rate of plant material (kg/kg body wt/d).
I_A = Ingestion rate of plant material (kg/kg body wt/d).
I_S = Ingestion rate of plant material (kg/kg body wt/d).
IR_W = Ingestion rate of water (kg/kg body wt/d).

Appendix Table O-26. Toxicity Reference Values (TRVs) for Plants Exposed to Soil (1997)

Analytes	Plant TRV (mg/kg)	Type of Media	Reference
Inorganics			
Aluminum	5.00E+01	Soil	Efroymson et al. (1997a)
Antimony	5.00E+00	Soil	Efroymson et al. (1997a)
Arsenic	1.00E+01	Soil	Efroymson et al. (1997a)
Barium	5.00E+02	Soil	Efroymson et al. (1997a)
Beryllium	1.00E+01	Soil	Efroymson et al. (1997a)
Bismuth	2.00E+01	Soil Solution	Efroymson et al. (1997a)
Boron	5.00E-01	Soil	Efroymson et al. (1997a)
Bromine	1.00E+01	Soil	Efroymson et al. (1997a)
Cadmium	4.00E+00	Soil	Efroymson et al. (1997a)
Chromium	1.00E+00	Soil	Efroymson et al. (1997a)
Cobalt	2.00E+01	Soil	Efroymson et al. (1997a)
Copper	1.00E+02	Soil	Efroymson et al. (1997a)
Cyanide	No TRV	None	None
Fluorine	2.00E+02	Soil	Efroymson et al. (1997a)
Iodine	4.00E+00	Soil	Efroymson et al. (1997a)
Iron	1.00E+01	Soil Solution	Efroymson et al. (1997a)
Lead	5.00E+01	Soil	Efroymson et al. (1997a)
Lithium	2.00E+00	Soil	Efroymson et al. (1997a)
Magnesium	No TRV	None	None
Manganese	5.00E+02	Soil	Efroymson et al. (1997a)
Mercury	3.00E-01	Soil	Efroymson et al. (1997a)
Methyl mercury	2.00E-04	Soil Solution	Efroymson et al. (1997a)
Molybdenum	2.00E+00	Soil	Efroymson et al. (1997a)
Nickel	3.00E+01	Soil	Efroymson et al. (1997a)
Selenium	1.00E+00	Soil	Efroymson et al. (1997a)
Silver	2.00E+00	Soil	Efroymson et al. (1997a)
Sodium	No TRV	None	None
Technetium	2.00E-01	Soil	Efroymson et al. (1997a)
Tellurium	2.00E+00	Soil Solution	Efroymson et al. (1997a)
Thallium	1.00E+00	Soil	Efroymson et al. (1997a)
Tin	5.00E+01	Soil	Efroymson et al. (1997a)
Titanium	6.00E-02	Soil Solution	Efroymson et al. (1997a)
Uranium	5.00E+00	Soil	Efroymson et al. (1997a)
Vanadium	2.00E+00	Soil	Efroymson et al. (1997a)
Zinc	5.00E+01	Soil	Efroymson et al. (1997a)
Organics			
2-Amino-4,6-Dinitrotoluene	No TRV	None	None
4-Amino-2,6-Dinitrotoluene	No TRV	None	None
2,4,6-Trinitrotoluene	No TRV	None	None
Acenaphthene	2.00E+01	Soil	Efroymson et al. (1997a)
Aroclor-1254	4.00E+01	Soil	Efroymson et al. (1997a)
Aniline	2.00E+02	Soil Solution	Efroymson et al. (1997a)
Anthracene	No TRV	None	None
Benzo(a)anthracene	No TRV	None	None
Benzo(a)pyrene	No TRV	None	None
Benzo(b)fluoranthene	No TRV	None	None
Benzo(g,h,i)perylene	No TRV	None	None
Benzoic acid	No TRV	None	None
Benzo(k)fluoranthene	No TRV	None	None
Biphenyl	6.00E+01	Soil	Efroymson et al. (1997a)

Appendix Table O-26. Toxicity Reference Values (TRVs) for Plants Exposed to Soil (1997)

Analytes	Plant TRV (mg/kg)	Type of Media	Reference
Bis(2-ethylhexyl)phthalate	No TRV	None	None
4-Bromoaniline	1.00E+02	Soil Solution	Efroymson et al. (1997a)
Carbazole	No TRV	None	None
3-Chloroaniline	2.00E+01	Soil	Efroymson et al. (1997a)
4-Chloroaniline	4.00E+01	Soil Solution	Efroymson et al. (1997a)
2-Chlorophenol	6.00E+01	Soil Solution	Efroymson et al. (1997a)
3-Chlorophenol	7.00E+00	Soil	Efroymson et al. (1997a)
4-Chlorophenol	5.00E+01	Soil Solution	Efroymson et al. (1997a)
2-Cresol	5.00E+01	Soil Solution	Efroymson et al. (1997a)
Chrysene	No TRV	None	None
4,4'-DDT	No TRV	None	None
Dibenzo(a,h)anthracene	No TRV	None	None
3,4-dichloroaniline	1.00E+01	Soil Solution	Efroymson et al. (1997a)
2,4-Dichlorophenol	2.00E+01	Soil Solution	Efroymson et al. (1997a)
3,4-Dichlorophenol	2.00E+01	Soil	Efroymson et al. (1997a)
Dieldrin	No TRV	None	None
2,4-Dinitrophenol	2.00E+01	Soil	Efroymson et al. (1997a)
Dibenzofuran	No TRV	None	None
Dimethylphthalate	No TRV	None	None
Di-n-butyl phthalate	2.00E+02	Soil	Efroymson et al. (1997a)
Diethylphthalate	1.00E+02	Soil	Efroymson et al. (1997a)
Fluoranthene	No TRV	None	None
Fluorene	No TRV	None	None
Furan	6.00E+02	Soil	Efroymson et al. (1997a)
Heptane	1.00E+00	Soil Solution	Efroymson et al. (1997a)
Hexachlorocyclopentadiene	1.00E+01	Soil	Efroymson et al. (1997a)
Indeno(1,2,3-cd)pyrene	No TRV	None	None
Naphthalene	1.00E+01	Soil Solution	Efroymson et al. (1997a)
3-Nitroaniline	7.00E+01	Soil Solution	Efroymson et al. (1997a)
4-Nitroaniline	4.00E+01	Soil Solution	Efroymson et al. (1997a)
Nitrobenzene	8.00E+00	Soil Solution	Efroymson et al. (1997a)
Nitrocellulose	No TRV	None	None
4-Nitrophenol	1.00E+01	Soil Solution	Efroymson et al. (1997a)
4-Nitrotoluene	No TRV	None	None
Pentachlorophenol	3.00E+00	Soil	Efroymson et al. (1997a)
Phenanthrene	No TRV	None	None
Phenol	7.00E+01	Soil	Efroymson et al. (1997a)
Pyrene	No TRV	None	None
PCBs	4.00E+01	Soil	Efroymson et al. (1997a)
PCB-1254	4.00E+01		
Styrene	3.00E+02	Soil	Efroymson et al. (1997a)
2,3,5,6-Tetrachloroaniline	2.00E+01	Soil	Efroymson et al. (1997a)
tetrachloroethene	1.00E+01	Soil Solution	Efroymson et al. (1997a)
Toluene	2.00E+02	Soil	Efroymson et al. (1997a)
4-Toluidine	1.00E+02	Soil Solution	Efroymson et al. (1997a)
2,4,5-Trichloroaniline	2.00E+01	Soil	Efroymson et al. (1997a)
Trichloroethene	1.00E+02	Soil Solution	Efroymson et al. (1997a)
2,4,5-Trichlorophenol	4.00E+00	Soil	Efroymson et al. (1997a)
2,4,5-Trichlorophenol	1.00E+01	Soil Solution	Efroymson et al. (1997a)
Ortho-xylene	1.00E+00	Soil Solution	Efroymson et al. (1997a)
Xylene	1.00E+02	Soil Solution	Efroymson et al. (1997a)

Appendix Table O-27. Toxicity Reference Values (TRVs) for Earthworms Exposed to Soil (1997)

Analytes	Earthworm TRV[a] (mg/kg)	Reference
Inorganics		
Aluminum	No TRV	None
Antimony	No TRV	None
Arsenic	6.00E+01	Efroymson et al. (1997b)
Barium	No TRV	None
Beryllium	No TRV	None
Cadmium	2.00E+01	Efroymson et al. (1997b)
Calcium	No TRV	None
Chromium	4.00E-01	Efroymson et al. (1997b)
Chromium VI	No TRV	None
Cobalt	No TRV	None
Copper	6.00E+01	Efroymson et al. (1997b)
Cyanide	No TRV	None
Iron	No TRV	None
Lead	5.00E+02	Efroymson et al. (1997b)
Magnesium	No TRV	None
Manganese	No TRV	None
Mercury	1.00E-01	Efroymson et al. (1997b)
Nickel	2.00E+02	Efroymson et al. (1997b)
Potassium	No TRV	None
Selenium	7.00E+01	Efroymson et al. (1997b)
Silver	No TRV	None
Sodium	No TRV	None
Thallium	No TRV	None
Vanadium	No TRV	None
Zinc	2.00E+02	Efroymson et al. (1997b)
Organics		
2,2,5-Trimethylhexane	No TRV	None
2-Amino-4,6-Dinitrotoluene	No TRV	None
4-Amino-2,6-Dinitrotoluene	No TRV	None
Acenaphthene	No TRV	None
Acenaphthylene	No TRV	None
Acetone	No TRV	None
Aldrin	No TRV	None
alpha-Chlordane	No TRV	None
Anthracene	No TRV	None
Aroclor-1254	No TRV	None
Aroclor-1260	No TRV	None
Benzo(a)anthracene	No TRV	None
Benzo(a)pyrene	No TRV	None
Benzo(b)fluoranthene	No TRV	None
Benzo(g,h,i)perylene	No TRV	None
Benzo(k)fluoranthene	No TRV	None
Benzoic Acid	No TRV	None
Bis(2-ethylhexyl)phthalate	No TRV	None

Appendix Table O-27. Toxicity Reference Values (TRVs) for Earthworms Exposed to Soil (1997)

Analytes	Earthworm TRV[a] (mg/kg)	Reference
Butylbenzylphthalate	No TRV	None
Carbazole	No TRV	None
Chrysene	No TRV	None
delta-BHC	No TRV	None
1,2-Dichlorobenzene	No TRV	None
1,2-Dichloroethene	No TRV	None
1,3-Dichlorobenzene	No TRV	None
1,4-Dichlorobenzene	2.00E+01	Efroymson et al. (1997b)
2,4-Dimethylphenol	No TRV	None
4,4'-DDD	No TRV	None
4,4'-DDE	No TRV	None
4,4'-DDT	No TRV	None
Dibenzo(a,h)anthracene	No TRV	None
Dibenzofuran	No TRV	None
Diethylphthalate	No TRV	None
Dieldrin	No TRV	None
Di-n-butylphthalate	No TRV	None
Endosulfan	No TRV	None
Endosulfan sulfate	No TRV	None
Endrin aldehyde	No TRV	None
Endrin ketone	No TRV	None
Fluoranthene	No TRV	None
Fluorene	No TRV	None
gamma-BHC (Lindane)	No TRV	None
gamma-Chlordane	No TRV	None
Heptachlor epoxide	No TRV	None
Indeno(1,2,3-cd)pyrene	No TRV	None
2-Methylnaphthalene	No TRV	None
2-Methylphenol	No TRV	None
4-Methylphenol	No TRV	None
Methoxychlor	No TRV	None
Methylene chloride	No TRV	None
Naphthalene	No TRV	None
Nitrocellulose	No TRV	None
Pentachlorophenol	6.00E+00	Efroymson et al. (1997b)
Phenanthrene	No TRV	None
Phenol	3.00E+01	Efroymson et al. (1997b)
Pyrene	No TRV	None
Toluene	No TRV	None
Trichloroethene	No TRV	None
1,2,4-Trichlorobenzene	2.00E+01	Efroymson et al. (1997b)
2,4,5-Trichlorophenol	9.00E+00	Efroymson et al. (1997b)
Dioxins and Furans		
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	No TRV	None
1,2,3,4,6,7,8-Heptachlorodibenzofuran	No TRV	None

Appendix Table O-27. Toxicity Reference Values (TRVs) for Earthworms Exposed to Soil (1997)

Analytes	Earthworm TRV[a] (mg/kg)	Reference
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	No TRV	None
1,2,3,4,7,8-Hexachlorodibenzofuran	No TRV	None
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	No TRV	None
Octachlorodibenzo-p-dioxin	1.00E-03	TEF
Octachlorodibenzofuran	1.00E-03	TEF

[a] Lowest Observed Adverse Effect Level.
TEF = Toxicity efficiency factor check with chuck.
TRV = Toxicity Reference Values.

Appendix Table O-28. Derivation of No Observed Adverse Effect Level (NOAEL) Toxicity Reference Values (TRVs) for Mammal Test Species

Analytes	Test species	Test species body weight (kg) BW_t	Benchmark (mg/kgBW/d)	Test duration	Endpoint	Effect	Source	Duration conversion factor DCF	Endpoint conversion factor ECF	TRV (mg/kgBW/d) benchmark x DCF x ECF
Inorganics										
Aluminum	Mouse	3.00E-02	1.93E+01	chronic	LOAEL	Reproduction	Ondreicka et al. (1966) in [1]	1.0	0.1	1.93E+00
Ammonia	none	none	none	none	none	none	none	none	none	No TRV
Antimony	Mouse	3.00E-02	1.25E+00	chronic	LOAEL	Longevity	Schroeder et al. (1968b) in [1]	1.0	0.1	1.25E-01
Arsenic	Mouse	3.00E-02	1.26E+00	chronic	LOAEL	Reproduction	Schroeder and Mitchner (1971) in [1]	1.0	0.1	1.26E-01
Arsenic (dissolved)	Mouse	3.00E-02	1.26E+00	chronic	LOAEL	Reproduction	Schroeder and Mitchner (1971) in [1]	1.0	0.1	1.26E-01
Barium	Rat	4.35E-01	5.06E+00	chronic	NOAEL	Growth	Perry et al. (1983) in [1]	1.0	1.0	5.06E+00
Barium (dissolved)	Rat	4.35E-01	5.06E+00	chronic	NOAEL	Growth	Perry et al. (1983) in [1]	1.0	1.0	5.06E+00
Beryllium	Rat	3.50E-01	6.60E-01	chronic	NOAEL	Longevity	Schroeder and Mitchner (1975) in [1]	1.0	1.0	6.60E-01
Beryllium (dissolved)	Rat	3.50E-01	6.60E-01	chronic	NOAEL	Longevity	Schroeder and Mitchner (1975) in [1]	1.0	1.0	6.60E-01
Boron	Rat	3.50E-01	2.80E+01	chronic	NOAEL	Reproduction	Weir and Fisher (1972) in [1]	1.0	1.0	2.80E+01
Cadmium	Rat	3.03E-01	1.00E+00	chronic	NOAEL	Reproduction	Sutou et al. (1980b) in [1]	1.0	1.0	1.00E+00
Cadmium (dissolved)	Rat	3.03E-01	1.00E+00	chronic	NOAEL	Reproduction	Sutou et al. (1980b) in [1]	1.0	1.0	1.00E+00
Calcium	none	none	none	none	none	none	none	none	none	No TRV
Chloride	none	none	none	none	none	none	none	none	none	No TRV
Chromium	Rat	3.50E-01	2.74E+03	chronic	NOAEL	Reproduction	Ivankovic and Preussmann (1975) in [	1.0	1.0	2.74E+03
Chromium, hexavalent	none	none	none	none	none	none	none	none	none	No TRV
Cobalt	Rat	none	1.00E+00	subchronic	NOAEL	Mortality	Underhill et al. (1931) in [2]	0.1	1.0	1.00E-01
Copper	Mink	1.00E+00	1.17E+01	chronic	NOAEL	Reproduction	Aulerich et al. (1982) in [1]	1.0	1.0	1.17E+01
Copper (dissolved)	Mink	1.00E+00	1.17E+01	chronic	NOAEL	Reproduction	Aulerich et al. (1982) in [1]	1.0	1.0	1.17E+01
Cyanide	Rat	2.73E-01	6.87E+01	chronic	NOAEL	Reproduction	Tewe and Maner (1981) in [1]	1.0	1.0	6.87E+01
Fluoride	Mink	1.00E+00	3.14E+01	chronic	NOAEL	Reproduction	Bleavinss et Aulerich (1981) in [1]	1.0	1.0	3.14E+01
Iron	none	none	none	none	none	none	none	none	none	No TRV
Lead	Rat	3.50E-01	8.00E+00	chronic	NOAEL	Reproduction	Azar et al. (1973) in [1]	1.0	1.0	8.00E+00
Lead (dissolved)	Rat	3.50E-01	8.00E+00	chronic	NOAEL	Reproduction	Azar et al. (1973) in [1]	1.0	1.0	8.00E+00
Magnesium	none	none	none	none	none	none	none	none	none	No TRV
Manganese	Rat	3.50E-01	8.80E+01	chronic	NOAEL	Reproduction	Laskey et al. (1982) in [1]	1.0	1.0	8.80E+01
Mercury	Mink	1.00E+00	1.01E+00	chronic	NOAEL	Reproduction	Aulerich et al. (1974) in [1]	1.0	1.0	1.01E+00
Molybdenum	Mouse	3.00E-02	2.58E+00	chronic	LOAEL	Reproduction	Schroeder and Mitchner (1971) in [1]	1.0	0.1	2.58E-01
Nickel	Rat	3.50E-01	4.00E+01	chronic	NOAEL	Reproduction	Ambrose et al. (1976) in [1]	1.0	1.0	4.00E+01
Nickel (dissolved)	Rat	3.50E-01	4.00E+01	chronic	NOAEL	Reproduction	Ambrose et al. (1976) in [1]	1.0	1.0	4.00E+01
Nitrate	none	none	none	none	none	none	none	none	none	No TRV
Phosphorus	none	none	none	none	none	none	none	none	none	No TRV
Potassium	none	none	none	none	none	none	none	none	none	No TRV
Selenium	Rat	3.50E-01	2.00E-01	chronic	NOAEL	Reproduction	Rosenfeld and Beath (1954) in [1]	1.0	1.0	2.00E-01
Silver	none	none	none	none	none	none	none	none	none	No TRV
Silicon	none	none	none	none	none	none	none	none	none	No TRV
Sodium	none	none	none	none	none	none	none	none	none	No TRV
Sulfate	none	none	none	none	none	none	none	none	none	No TRV
Thallium	Rat	3.65E-01	7.40E-01	subchronic	LOAEL	Reproduction	Formigli et al. (1986) in [1]	0.1	0.1	7.40E-03
Vanadium	Rat	2.60E-01	2.10E+00	chronic	LOAEL	Reproduction	Domingo et al. (1986) in [1]	1.0	0.1	2.10E-01
Zinc	Rat	3.50E-01	1.60E+02	chronic	NOAEL	Reproduction	Schlicker and Cox (1968) in [1]	1.0	1.0	1.60E+02

Appendix Table O-28. Derivation of No Observed Adverse Effect Level (NOAEL) Toxicity Reference Values (TRVs) for Mammal Test Species

Analytes	Test species	Test species body weight (kg) BW_t	Benchmark (mg/kgBW/d)	Test duration	Endpoint	Effect	Source	Duration conversion factor DCF	Endpoint conversion factor ECF	TRV (mg/kgBW/d) benchmark x DCF x ECF
0	Rat	3.50E-01	1.60E+02	chronic	NOAEL	Reproduction	Schlicker and Cox (1968) in [1]	1.0	1.0	1.60E+02
Organics										
1,1,1-Trichloroethane	Mouse	3.50E-02	1.00E+03	chronic	NOAEL	Reproduction	Lane et al. (1982) in [1]	1.0	1.0	1.00E+03
1,1,2,2-Tetrachloroethane	none	none	none	none	none	none	none	none	none	No TRV
1,1,2-Trichloroethane	none	none	none	none	none	none	none	none	none	No TRV
1,1-Dichloroethane	none	none	none	none	none	none	none	none	none	No TRV
1,1-Dichloroethene	Rat	3.50E-01	3.00E+01	chronic	NOAEL	Mortality	Quast et al. (1983) in [1]	1.0	1.0	3.00E+01
1,1-Dichloroethene	none	none	none	none	none	none	none	none	none	No TRV
1,2,3,4,6,7,8-HpCDF	none	none	none	none	none	none	none	none	none	No TRV
1,2,4-trichlorobenzene	none	none	none	none	none	none	none	none	none	No TRV
1,2-cis-Dichloroethene	Mouse	3.00E-02	4.52E+01	subchronic	NOAEL	Hepatotoxicity	Palmer et al. (1979) in [1]	0.1	1.0	4.52E+00
1,2-Dichlorobenzene	none	none	none	none	none	none	none	none	none	No TRV
1,2-Dichlorobenzene	none	none	none	none	none	none	none	none	none	No TRV
1,2-Dichloroethane	Mouse	3.50E-02	5.00E+01	chronic	NOAEL	Reproduction	Lane et al. (1982) in [1]	1.0	1.0	5.00E+01
1,2-Dichloroethane	Mouse	3.50E-02	5.00E+01	chronic	NOAEL	Reproduction	Lane et al. (1982) in [1]	1.0	1.0	5.00E+01
1,2-Dichloroethene	Mouse	3.00E-02	4.52E+02	subchronic	NOAEL	Blood chemistry	Palmer et al. (1979) in [1]	0.1	1.0	4.52E+01
1,2-Dichloroethene	Mouse	3.00E-02	4.52E+01	subchronic	NOAEL	Hepatotoxicity	Palmer et al. (1979) in [1]	0.1	1.0	4.52E+00
1,2-Dichloropropane	none	none	none	none	none	none	none	none	none	No TRV
1,2-trans-Dichloroethene	Mouse	3.00E-02	4.52E+01	subchronic	NOAEL	Hepatotoxicity	Palmer et al. (1979) in [1]	0.1	1.0	4.52E+00
1,3-Dichlorobenzene	none	none	none	none	none	none	none	none	none	No TRV
1,4-Dichlorobenzene	none	none	none	none	none	none	none	none	none	No TRV
2,2,5-Trimethylhexane	none	none	none	none	none	none	none	none	none	No TRV
2,4,5-trichlorophenol	none	none	none	none	none	none	none	none	none	No TRV
2,4-D	none	none	none	none	none	none	none	none	none	No TRV
2,4-Dimethylphenol	none	none	none	none	none	none	none	none	none	No TRV
2-Chlorophenol	none	none	none	none	none	none	none	none	none	No TRV
2-Hexanone	none	none	none	none	none	none	none	none	none	No TRV
2-Methylnaphthalene	none	none	none	none	none	none	none	none	none	No TRV
2-Methylnaphthalene	none	none	none	none	none	none	none	none	none	No TRV
2-Methylphenol	none	none	none	none	none	none	none	none	none	No TRV
4,4'-DDD	none	none	none	none	none	none	none	none	none	No TRV
4,4'-DDE	none	none	none	none	none	none	none	none	none	No TRV
4,4'-DDT	Rat	3.50E-01	8.00E-01	chronic	NOAEL	Reproduction	Fitzhugh (1948) in [1]	1.0	1.0	8.00E-01
4-Chloro-3-methylphenol	none	none	none	none	none	none	none	none	none	No TRV
4-Methyl-2-pentanone	Rat	3.50E-01	2.50E+02	subchronic	NOAEL	Liver/Kidney	Microbiological Associates (1986) in [	0.1	1.0	2.50E+01
4-Methylphenol	none	none	none	none	none	none	none	none	none	No TRV
4-Methylphenol	none	none	none	none	none	none	none	none	none	No TRV
4-Nitrophenol	none	none	none	none	none	none	none	none	none	No TRV
Acenaphthene	none	none	none	none	none	none	none	none	none	No TRV
Acenaphthylene	none	none	none	none	none	none	none	none	none	No TRV
Acetone	Rat	3.50E-01	1.00E+02	subchronic	NOAEL	Reproduction	EPA (1986c) in [1]	0.1	1.0	1.00E+01

Appendix Table O-28. Derivation of No Observed Adverse Effect Level (NOAEL) Toxicity Reference Values (TRVs) for Mammal Test Species

Analytes	Test species	Test species body weight (kg) BW_t	Benchmark (mg/kgBW/d)	Test duration	Endpoint	Effect	Source	Duration conversion factor DCF	Endpoint conversion factor ECF	TRV (mg/kgBW/d) benchmark x DCF x ECF
Aldrin	Rat	3.50E-01	2.00E-01	chronic	NOAEL	Reproduction	EPA (1988a) in [1]	1.0	1.0	2.00E-01
Alkalinity	none	none	none	none	none	none	none	none	none	No TRV
alpha-Chlordane	Mouse	3.00E-02	4.58E+00	chronic	NOAEL	Reproduction	Keplinger et al. (1968) in [1]	1.0	1.0	4.58E+00
Anthracene	none	none	none	none	none	none	none	none	none	No TRV
Aroclor-1242	Mink	1.00E+00	6.85E-01	chronic	LOAEL	Reproduction	Bleavins et al. (1980) in [1]	1.0	0.1	6.85E-02
Aroclor-1248	Rhesus monkey	5.00E+00	1.00E-01	chronic	LOAEL	Reproduction	Barsotti et al. (1976) in [1]	1.0	0.1	1.00E-02
Aroclor-1254	Oldfield mouse	1.40E-02	6.80E-01	chronic	LOAEL	Reproduction	McCoy et al. (1995) in [1]	1.0	0.1	6.80E-02
PCB-1254	Oldfield mouse	1.40E-02	6.80E-01	chronic	LOAEL	Reproduction	McCoy et al. (1995) in [1]	1.0	0.1	6.80E-02
Aroclor-1260	none	none	none	none	none	none	none	none	none	No TRV
Benzene	Mouse	3.00E-02	2.64E+02	chronic	LOAEL	Reproduction	Nawrot and Staples (1979) in [1]	1.0	0.1	2.64E+01
Benzo(a)anthracene	none	none	none	none	none	none	none	none	none	No TRV
Benzo(a)pyrene	Mouse	3.00E-02	1.00E+01	chronic	LOAEL	Reproduction	Mackenzie and Angevine (1981) in [1	1.0	0.1	1.00E+00
Benzo(b)fluoranthene	none	none	none	none	none	none	none	none	none	No TRV
Benzo(g,h,i)perylene	none	none	none	none	none	none	none	none	none	No TRV
Benzo(k)fluoranthene	none	none	none	none	none	none	none	none	none	No TRV
Benzoic acid	Mouse	0.03	40	chronic	LOAEL	unknown	Shtenberg and Ignat'ev (1970) in [3]	1.0	0.1	4.00E+00
Benzyl alcohol	none	none	none	none	none	none	none	none	none	No TRV
Bis(2-chloroisopropyl)ether	none	none	none	none	none	none	none	none	none	No TRV
Bis(2-ethylhexyl)phthalate	Mouse	3.00E-02	1.83E+01	chronic	NOAEL	Reproduction	Lamb et al. (1987) in [1]	1.0	1.0	1.83E+01
Butylbenzylphthalate	none	none	none	none	none	none	none	none	none	No TRV
beta-BHC	Rat	3.50E-01	4.00E+00	Subchronic	NOAEL	Reduced growth	Van Velsen et al. (1986) in Sample et al. (1996)	0.1	1	4.00E-01
Carbon disulfide	none	none	none	none	none	none	none	none	none	No TRV
Carbazole	none	none	none	none	none	none	n	none	none	No TRV
Chlordane	Mouse	3.00E-02	4.58E+00	chronic	NOAEL	Reproduction	Keplinger et al. (1968) in [1]	1.0	1.0	4.58E+00
Chlorobenzene	none	none	none	none	none	none	none	none	none	No TRV
Chloroethane	none	none	none	none	none	none	none	none	none	No TRV
Chloroform	Rat	3.50E-01	1.50E+02	subchronic	NOAEL	Gonad atrophy	Palmer et al. (1979) in [1]	0.1	1.0	1.50E+01
m,p-cresol	none	none	none	none	none	none	none	none	none	No TRV
Chrysene	none	none	none	none	none	none	none	none	none	No TRV
Dalapon	none	none	none	none	none	none	none	none	none	No TRV
delta-BHC	none	none	none	none	none	none	none	none	none	No TRV
Dibenzo(a,h)anthracene	none	none	none	none	none	none	none	none	none	No TRV
Dibenzofuran	none	none	none	none	none	none	none	none	none	No TRV
Dicamba	none	none	none	none	none	none	none	none	none	No TRV
Dichloroprop	none	none	none	none	none	none	none	none	none	No TRV
Dieldrin	Rat	3.50E-01	2.00E-01	Chronic	Loael	Reproduction	Treon and Cleveland (1955) in [1]	1.0	0.1	2.00E-02
Diethylphthalate	Mouse	3.00E-02	4.58E+03	chronic	NOAEL	Reproduction	Lamb et al. (1987) in [1]	1.0	1.0	4.58E+03
Di-n-butylphthalate	Mouse	3.00E-02	5.50E+02	chronic	NOAEL	Reproduction	Lamb et al. (1987) in [1]	1.0	1.0	5.50E+02
Di-n-octylphthalate	none	none	none	none	none	none	none	none	none	No TRV
Endosulfan	Rat	3.50E-01	1.50E+00	subchronic	NOAEL	Reproduction	Dikshith et al.(1984) in [1]	0.1	1.0	1.50E-01
Endosulfan sulfate	none	none	none	none	none	none	none	none	none	No TRV

Appendix Table O-28. Derivation of No Observed Adverse Effect Level (NOAEL) Toxicity Reference Values (TRVs) for Mammal Test Species

Analytes	Test species	Test species body weight (kg) BW_t	Benchmark (mg/kgBW/d)	Test duration	Endpoint	Effect	Source	Duration conversion factor DCF	Endpoint conversion factor ECF	TRV (mg/kgBW/d) benchmark x DCF x ECF
Endrin	Mouse	3.00E-02	9.20E-01	chronic	LOAEL	Reproduction	Good and Ware (1969) in [1]	1.0	0.1	9.20E-02
Endrin ketone	none	none	none	none	none	none	none	none	none	No TRV
Ethylbenzene	none	none	none	none	none	none	none	none	none	No TRV
Fluoranthene	none	none	none	none	none	none	none	none	none	No TRV
Fluorene	none	none	none	none	none	none	none	none	none	No TRV
gamma-Chlordane	Mouse	3.00E-02	4.58E+00	chronic	NOAEL	Reproduction	Keplinger et al. (1968) in [1]	1.0	1.0	4.58E+00
gamma-BHC (Lindane)	Rat	3.50E-01	8.00E+00	chronic	NOAEL	Reproduction	Palmer et al. (1978) in [1]	1.0	1.0	8.00E+00
Heptachlor	Mink	1.00E+00	1.00E+00	chronic	LOAEL	Reproduction	Crumet al. (1993) in [1]	1.0	0.1	1.00E-01
Heptachlor epoxide	none	none	none	none	none	none	none	none	none	No TRV
Indeno(1,2,3-cd)pyrene	none	none	none	none	none	none	none	none	none	No TRV
MCPA	none	none	none	none	none	none	none	none	none	No TRV
MCPP	none	none	none	none	none	none	none	none	none	No TRV
Methyl bromide	none	none	none	none	none	none	none	none	none	No TRV
Methyl ethyl ketone	Rat	3.50E-01	1.77E+03	chronic	NOAEL	Reproduction	Cox et al. (1975) in [1]	1.0	1.0	1.77E+03
2-Butanone	Rat	3.50E-01	1.77E+03	chronic	NOAEL	Reproduction	Cox et al. (1975) in [1]	1.0	1.0	1.77E+03
Methyl mercury chloride	Rat	3.50E-01	3.20E-02	chronic	NOAEL	Reproduction	Verschuuren et al. (1976) in [1]	1.0	1.0	3.20E-02
Methylene chloride	Rat	3.50E-01	5.85E+00	chronic	NOAEL	Liver histology	NCA (1982) in [1]	1.0	1.0	5.85E+00
Methoxychlor	Rat	3.50E-01	4.00E+00	chronic	NOAEL	Reproduction	Gray et al. (1988) in [1]	none	none	4.00E+00
Naphthalene	none	none	none	none	none	none	none	none	none	No TRV
N-Nitroso-di-N-propylamine	none	none	none	none	none	none	none	none	none	No TRV
N-Nitrosodiphenylamine	none	none	none	none	none	none	none	none	none	No TRV
Pentachlorophenol	Rat	3.50E-01	2.40E-01	chronic	NOAEL	Reproduction	Schwetz et al. (1978) in [1]	1.0	1.0	2.40E-01
Phenanthrene	none	none	none	none	none	none	none	none	none	No TRV
Phenol	none	none	none	none	none	none	none	none	none	No TRV
Pyrene	none	none	none	none	none	none	none	none	none	No TRV
Styrene	Dog	1.00E+01	2.00E+02	chronic	NOAEL	unknown	Quast et al. (1979)	1.0	1.0	2.00E+02
Tetrachloroethene	Mouse	3.00E-02	1.40E+01	subchronic	NOAEL	Hepatotoxicity	Buben and O'Flaherty (1985) in [1]	0.1	1.0	1.40E+00
Toluene	Mouse	3.00E-02	2.60E+02	chronic	LOAEL	Reproduction	Nawrot and Staples (1979) in [1]	1.0	0.1	2.60E+01
Trichloroethene	Mouse	3.00E-02	7.00E+01	subchronic	LOAEL	Hepatotoxicity	Buben and O'Flaherty (1985) in [1]	0.1	0.1	7.00E-01
Vinyl chloride	Rat	3.50E-01	1.70E+00	chronic	LOAEL	Mortality	Feron et al. (1981) in [1]	1.0	0.1	1.70E-01
Xylenes, total	Mouse	3.00E-02	2.06E+00	chronic	NOAEL	Reproduction	Marks et al. (1982) in [1]	1.0	1.0	2.06E+00
Dioxins and Furans										
1,2,3,4,6,7,8-Heptachlorodibenzofuran	none	none	none	none	none	none	none	none	none	No TRV
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	none	none	none	none	none	none	none	none	none	No TRV
1,2,3,4,7,8,9-Heptachlorodibenzofuran	none	none	none	none	none	none	none	none	none	No TRV
1,2,3,4,7,8-Hexachlorodibenzofuran	none	none	none	none	none	none	none	none	none	No TRV
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	none	none	none	none	none	none	none	none	none	No TRV
1,2,3,6,7,8-Hexachlorodibenzofuran	Rat	3.50E-01	1.60E-03	subchronic	NOAEL	Organ weight	Poiger et al. (1989) in [1]	0.1	1.0	1.60E-04
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	none	none	none	none	none	none	none	none	none	No TRV
1,2,3,7,8,9-Hexachlorodibenzofuran	none	none	none	none	none	none	none	none	none	No TRV
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	none	none	none	none	none	none	none	none	none	No TRV

Appendix Table O-28. Derivation of No Observed Adverse Effect Level (NOAEL) Toxicity Reference Values (TRVs) for Mammal Test Species

Analytes	Test species	Test species body weight (kg) BW_t	Benchmark (mg/kgBW/d)	Test duration	Endpoint	Effect	Source	Duration conversion factor DCF	Endpoint conversion factor ECF	TRV (mg/kgBW/d) benchmark x DCF x ECF
1,2,3,7,8-Pentachlorodibenzofuran	Rat	3.50E-01	1.60E-03	subchronic	NOAEL	Organ weight	Poiger et al. (1989) in [1]	0.1	1.0	1.60E-04
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	none	none	none	none	none	none	none	none	none	No TRV
2,3,4,6,7,8-Hexachlorodibenzofuran	none	none	none	none	none	none	none	none	none	No TRV
2,3,4,7,8-Pentachlorodibenzofuran	Rat	3.50E-01	1.60E-04	subchronic	NOAEL	Organ weight	Poiger et al. (1989) in [1]	0.1	1.0	1.60E-05
2,3,7,8-Tetrachlorodibenzofuran	none	none	none	none	none	none	none	none	none	No TRV
2,3,7,8-Tetrachlorodibenzo-p-dioxin	Rat	3.50E-01	1.00E-06	chronic	NOAEL	Reproduction	Murray et al. (1979) in [1]	1.0	1.0	1.00E-06
Octachlorodibenzofuran	none	none	none	none	none	none	none	none	none	No TRV
Octachlorodibenzo-p-dioxin	none	none	none	none	none	none	none	none	none	No TRV
Explosives										
1,3,5-Trinitrobenzene	none	none	none	none	none	none	none	none	none	No TRV
1,3-Dinitrobenzene	none	none	none	none	none	none	none	none	none	No TRV
2,4,6-Trinitrotoluene	Rat	3.50E-01	1.60E+02	subchronic	LOAEL	Reproduction	Dilley et al. (1982)	0.1	0.1	1.60E+00
2,4-Dinitrotoluene	Mouse	3.00E-02	1.35E+01	chronic	NOAEL	Reproduction	Ellis et al. (1979)	1.0	1.0	1.35E+01
2,6-Dinitrotoluene	Rat	3.50E-01	7.00E+00	subchronic	NOAEL	Reproduction	ATSDR (1989)	0.1	1.0	7.00E-01
2-Amino-4,6-dinitrotoluene	none	none	none	none	none	none	none	none	none	No TRV
4-Amino-2,6-dinitrotoluene	none	none	none	none	none	none	none	none	none	No TRV
Nitrobenzene	none	none	none	none	none	none	none	none	none	No TRV
Tetryl	none	none	none	none	none	none	none	none	none	No TRV

TRV = Toxicity reference value.
DCF = Duration conversion factor; 1 if chronic, 0.1 if subchronic (Sample et al. 1996).
ECF = Endpoint conversion factor; 1 if NOAEL, 0.1 if LOAEL (Sample et al. 1996).
NOAEL = No observed adverse effect level.
LOAEL = Lowest observed adverse effect level.
[1] = Sample et al. (1996).
[2] = Clayton and Clayton (1981).A223
[3] = IRIS (1996).A180.

Appendix Table O-29. Body-Weight-Adjusted NOAEL Toxicity Reference Values (TRVs) for Mammal Receptors

				Short-tailed shrew		Cottontail		Mink		Muskrat		Red Fox	
Analytes	Test species	Test species body weight (kg)	TRV_t (mg/kgBW/d)	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) TRV_t x BW_{conv}	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) TRV_t x BW_{conv}	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) TRV_t x BW_{conv}	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) TRV_t x BW_{conv}	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) TRV_t x BW_{conv}
Inorganics													
Aluminum	Mouse	3.00E-02	1.93E+00	1.15E+00	2.22E+00	3.96E-01	7.64E-01	4.14E-01	7.99E-01	4.00E-01	7.72E-01	2.85E-01	5.50E-01
Ammonia	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Antimony	Mouse	3.00E-02	1.25E-01	1.15E+00	1.44E-01	3.96E-01	4.95E-02	4.14E-01	5.18E-02	4.00E-01	5.00E-02	2.85E-01	3.56E-02
Arsenic	Mouse	3.00E-02	1.26E-01	1.15E+00	1.45E-01	3.96E-01	4.99E-02	4.14E-01	5.22E-02	4.00E-01	5.04E-02	2.85E-01	3.59E-02
Arsenic (dissolved)	Mouse	3.00E-02	1.26E-01	1.15E+00	1.45E-01	3.96E-01	4.99E-02	4.14E-01	5.22E-02	4.00E-01	5.04E-02	2.85E-01	3.59E-02
Barium	Rat	4.35E-01	5.06E+00	2.25E+00	1.14E+01	7.73E-01	3.91E+00	8.08E-01	4.09E+00	7.81E-01	3.95E+00	5.57E-01	2.82E+00
Barium (dissolved)	Rat	4.35E-01	5.06E+00	2.25E+00	1.14E+01	7.73E-01	3.91E+00	8.08E-01	4.09E+00	7.81E-01	3.95E+00	5.57E-01	2.82E+00
Beryllium	Rat	3.50E-01	6.60E-01	2.13E+00	1.41E+00	7.32E-01	4.83E-01	7.65E-01	5.05E-01	7.39E-01	4.88E-01	5.27E-01	3.48E-01
Beryllium (dissolved)	Rat	3.50E-01	6.60E-01	2.13E+00	1.41E+00	7.32E-01	4.83E-01	7.65E-01	5.05E-01	7.39E-01	4.88E-01	5.27E-01	3.48E-01
Boron	Rat	3.50E-01	2.80E+01	2.13E+00	5.96E+01	7.32E-01	2.05E+01	7.65E-01	2.14E+01	7.39E-01	2.07E+01	5.27E-01	1.48E+01
Cadmium	Rat	3.03E-01	1.00E+00	2.05E+00	2.05E+00	7.06E-01	7.06E-01	7.38E-01	7.38E-01	7.13E-01	7.13E-01	5.08E-01	5.08E-01
Cadmium (dissolved)	Rat	3.03E-01	1.00E+00	2.05E+00	2.05E+00	7.06E-01	7.06E-01	7.38E-01	7.38E-01	7.13E-01	7.13E-01	5.08E-01	5.08E-01
Calcium	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Chloride	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Chromium	Rat	3.50E-01	2.74E+03	2.13E+00	5.83E+03	7.32E-01	2.00E+03	7.65E-01	2.09E+03	7.39E-01	2.02E+03	5.27E-01	1.44E+03
Chromium, hexavalent	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Cobalt	Rat	none	1.00E-01	none	none	none	none	none	none	none	none	none	none
Copper	Mink	1.00E+00	1.17E+01	2.77E+00	3.24E+01	9.52E-01	1.11E+01	9.95E-01	1.17E+01	9.61E-01	1.13E+01	6.85E-01	8.02E+00
Copper (dissolved)	Mink	1.00E+00	1.17E+01	2.77E+00	3.24E+01	9.52E-01	1.11E+01	9.95E-01	1.17E+01	9.61E-01	1.13E+01	6.85E-01	8.02E+00
Cyanide	Rat	2.73E-01	6.87E+01	2.00E+00	1.38E+02	6.88E-01	4.73E+01	7.19E-01	4.94E+01	6.95E-01	4.77E+01	4.95E-01	3.40E+01
Fluoride	Mink	1.00E+00	3.14E+01	2.77E+00	8.69E+01	9.52E-01	2.98E+01	9.95E-01	3.12E+01	9.61E-01	3.02E+01	6.85E-01	2.15E+01
Iron	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Lead	Rat	3.50E-01	8.00E+00	2.13E+00	1.70E+01	7.32E-01	5.85E+00	7.65E-01	6.12E+00	7.39E-01	5.92E+00	5.27E-01	4.22E+00
Lead (dissolved)	Rat	3.50E-01	8.00E+00	2.13E+00	1.70E+01	7.32E-01	5.85E+00	7.65E-01	6.12E+00	7.39E-01	5.92E+00	5.27E-01	4.22E+00
Magnesium	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Manganese	Rat	3.50E-01	8.80E+01	2.13E+00	1.87E+02	7.32E-01	6.44E+01	7.65E-01	6.74E+01	7.39E-01	6.51E+01	5.27E-01	4.64E+01
Mercury	Mink	1.00E+00	1.01E+00	2.77E+00	2.80E+00	9.52E-01	9.61E-01	9.95E-01	1.01E+00	9.61E-01	9.71E-01	6.85E-01	6.92E-01
Molybdenum	Mouse	3.00E-02	2.58E-01	1.15E+00	2.98E-01	3.96E-01	1.02E-01	4.14E-01	1.07E-01	4.00E-01	1.03E-01	2.85E-01	7.37E-02
Nickel	Rat	3.50E-01	4.00E+01	2.13E+00	8.52E+01	7.32E-01	2.93E+01	7.65E-01	3.06E+01	7.39E-01	2.96E+01	5.27E-01	2.11E+01
Nickel (dissolved)	Rat	3.50E-01	4.00E+01	2.13E+00	8.52E+01	7.32E-01	2.93E+01	7.65E-01	3.06E+01	7.39E-01	2.96E+01	5.27E-01	2.11E+01
Nitrate	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Phosphorus	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Potassium	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Selenium	Rat	3.50E-01	2.00E-01	2.13E+00	4.26E-01	7.32E-01	1.46E-01	7.65E-01	1.53E-01	7.39E-01	1.48E-01	5.27E-01	1.05E-01
Silver	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Silicon	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Sodium	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Sulfate	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Thallium	Rat	3.65E-01	7.40E-03	2.15E+00	1.59E-02	7.40E-01	5.47E-03	7.73E-01	5.72E-03	7.47E-01	5.53E-03	5.33E-01	3.94E-03
Vanadium	Rat	2.60E-01	2.10E-01	1.98E+00	4.15E-01	6.79E-01	1.43E-01	7.11E-01	1.49E-01	6.86E-01	1.44E-01	4.89E-01	1.03E-01
Zinc	Rat	3.50E-01	1.60E+02	2.13E+00	3.41E+02	7.32E-01	1.17E+02	7.65E-01	1.22E+02	7.39E-01	1.18E+02	5.27E-01	8.43E+01
Organics													
1,1,1-Trichloroethane	Mouse	3.50E-02	1.00E+03	1.20E+00	1.20E+03	4.12E-01	4.12E+02	4.30E-01	4.30E+02	4.16E-01	4.16E+02	2.96E-01	2.96E+02
1,1,2,2-Tetrachloroethane	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
1,1,2-Trichloroethane	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
1,1-Dichloroethane	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
1,1-Dichloroethene	Rat	3.50E-01	3.00E+01	2.13E+00	6.39E+01	7.32E-01	2.20E+01	7.65E-01	2.30E+01	7.39E-01	2.22E+01	5.27E-01	1.58E+01
1,1-Dichloroethene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
1,2,3,4,6,7,8-HpCDF	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
1,2,4-trichlorobenzene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
1,2-cis-Dichloroethene	Mouse	3.00E-02	4.52E+00	1.15E+00	5.21E+00	3.96E-01	1.79E+00	4.14E-01	1.87E+00	4.00E-01	1.81E+00	2.85E-01	1.29E+00
1,2-Dichlorobenzene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
1,2-Dichlorobenzene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
1,2-Dichloroethane	Mouse	3.50E-02	5.00E+01	1.20E+00	5.99E+01	4.12E-01	2.06E+01	4.30E-01	2.15E+01	4.16E-01	2.08E+01	2.96E-01	1.48E+01

Appendix Table O-29. Body-Weight-Adjusted NOAEL Toxicity Reference Values (TRVs) for Mammal Receptors

				Short-tailed shrew		Cottontail		Mink		Muskrat		Red Fox	
Analytes	Test species	Test species body weight (kg)	TRV_t (mg/kgBW/d)	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) $TRV_t \times BW_{conv}$	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) $TRV_t \times BW_{conv}$	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) $TRV_t \times BW_{conv}$	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) $TRV_t \times BW_{conv}$	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) $TRV_t \times BW_{conv}$
1,2-Dichloroethane	Mouse	3.50E-02	5.00E+01	1.20E+00	5.99E+01	4.12E-01	2.06E+01	4.30E-01	2.15E+01	4.16E-01	2.08E+01	2.96E-01	1.48E+01
1,2-Dichloroethene	Mouse	3.00E-02	4.52E+01	1.15E+00	5.21E+01	3.96E-01	1.79E+01	4.14E-01	1.87E+01	4.00E-01	1.81E+01	2.85E-01	1.29E+01
1,2-Dichloroethene	Mouse	3.00E-02	4.52E+00	1.15E+00	5.21E+00	3.96E-01	1.79E+00	4.14E-01	1.87E+00	4.00E-01	1.81E+00	2.85E-01	1.29E+00
1,2-Dichloropropane	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
1,2-trans-Dichloroethene	Mouse	3.00E-02	4.52E+00	1.15E+00	5.21E+00	3.96E-01	1.79E+00	4.14E-01	1.87E+00	4.00E-01	1.81E+00	2.85E-01	1.29E+00
1,3-Dichlorobenzene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
1,4-Dichlorobenzene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
2,2,5-Trimethylhexane	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
2,4,5-trichlorophenol	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
2,4-D	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
2,4-Dimethylphenol	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
2-Chlorophenol	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
2-Hexanone	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
2-Methylnaphthalene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
2-Methylnaphthalene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
2-Methylphenol	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
4,4'-DDD	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
4,4'-DDE	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
4,4'-DDT	Rat	3.50E-01	8.00E-01	2.13E+00	1.70E+00	7.32E-01	5.85E-01	7.65E-01	6.12E-01	7.39E-01	5.92E-01	5.27E-01	4.22E-01
4-Chloro-3-methylphenol	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
4-Methyl-2-pentanone	Rat	3.50E-01	2.50E+01	2.13E+00	5.33E+01	7.32E-01	1.83E+01	7.65E-01	1.91E+01	7.39E-01	1.85E+01	5.27E-01	1.32E+01
4-Methylphenol	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
4-Methylphenol	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
4-Nitrophenol	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Acenaphthene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Acenaphthylene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Acetone	Rat	3.50E-01	1.00E+01	2.13E+00	2.13E+01	7.32E-01	7.32E+00	7.65E-01	7.65E+00	7.39E-01	7.39E+00	5.27E-01	5.27E+00
Aldrin	Rat	3.50E-01	2.00E-01	2.13E+00	4.26E-01	7.32E-01	1.46E-01	7.65E-01	1.53E-01	7.39E-01	1.48E-01	5.27E-01	1.05E-01
Alkalinity	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
alpha-Chlordane	Mouse	3.00E-02	4.58E+00	1.15E+00	5.28E+00	3.96E-01	1.81E+00	4.14E-01	1.90E+00	4.00E-01	1.83E+00	2.85E-01	1.31E+00
Anthracene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Aroclor-1242	Mink	1.00E+00	6.85E-02	2.77E+00	1.90E-01	9.52E-01	6.52E-02	9.95E-01	6.82E-02	9.61E-01	6.58E-02	6.85E-01	4.69E-02
Aroclor-1248	Rhesus monkey	5.00E+00	1.00E-02	4.14E+00	4.14E-02	1.42E+00	1.42E-02	1.49E+00	1.49E-02	1.44E+00	1.44E-02	1.02E+00	1.02E-02
Aroclor-1254	Oldfield mouse	1.40E-02	6.80E-02	9.53E-01	6.48E-02	3.27E-01	2.23E-02	3.42E-01	2.33E-02	3.31E-01	2.25E-02	2.36E-01	1.60E-02
PCB-1254	Oldfield mouse	1.40E-02	6.80E-02	9.53E-01	6.48E-02	3.27E-01	2.23E-02	3.42E-01	2.33E-02	3.31E-01	2.25E-02	2.36E-01	1.60E-02
Aroclor-1260	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Benzene	Mouse	3.00E-02	2.64E+01	1.15E+00	3.04E+01	3.96E-01	1.04E+01	4.14E-01	1.09E+01	4.00E-01	1.05E+01	2.85E-01	7.52E+00
Benzo(a)anthracene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Benzo(a)pyrene	Mouse	3.00E-02	1.00E+00	1.15E+00	1.15E+00	3.96E-01	3.96E-01	4.14E-01	4.14E-01	4.00E-01	4.00E-01	2.85E-01	2.85E-01
Benzo(b)fluoranthene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Benzo(g,h,i)perylene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Benzo(k)fluoranthene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Benzoic acid	Mouse	3.00E-02	4.00E+00	1.15E+00	4.61E+00	3.96E-01	1.58E+00	4.14E-01	1.66E+00	4.00E-01	1.60E+00	2.85E-01	1.14E+00
Benzyl alcohol	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Bis(2-chloroisopropyl)ether	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Bis(2-ethylhexyl)phthalate	Mouse	3.00E-02	1.83E+01	1.15E+00	2.11E+01	3.96E-01	7.25E+00	4.14E-01	7.58E+00	4.00E-01	7.32E+00	2.85E-01	5.22E+00
Butylbenzylphthalate	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
beta-BHC	Rat	3.50E-01	4.00E-01	2.13E+00	8.52E-01	7.32E-01	2.93E-01	7.65E-01	3.06E-01	7.39E-01	2.96E-01	5.27E-01	2.11E-01
Carbon disulfide	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Carbazole	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Chlordane	Mouse	3.00E-02	4.58E+00	1.15E+00	5.28E+00	3.96E-01	1.81E+00	4.14E-01	1.90E+00	4.00E-01	1.83E+00	2.85E-01	1.31E+00
Chlorobenzene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Chloroethane	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Chloroform	Rat	3.50E-01	1.50E+01	2.13E+00	3.20E+01	7.32E-01	1.10E+01	7.65E-01	1.15E+01	7.39E-01	1.11E+01	5.27E-01	7.91E+00
Chloromethane	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
m,p-cresol	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Chrysene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Dalapon	none	none	No TRV	none	none	none	none	none	none	none	none	none	none

Appendix Table O-29. Body-Weight-Adjusted NOAEL Toxicity Reference Values (TRVs) for Mammal Receptors

				Short-tailed shrew		Cottontail		Mink		Muskrat		Red Fox	
Analytes	Test species	Test species body weight (kg)	TRV_t (mg/kgBW/d)	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) $TRV_t \times BW_{conv}$	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) $TRV_t \times BW_{conv}$	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) $TRV_t \times BW_{conv}$	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) $TRV_t \times BW_{conv}$	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) $TRV_t \times BW_{conv}$
delta-BHC	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Dibenzo(a,h)anthracene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Dibenzofuran	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Dicamba	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Dichloroprop	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Dieldrin	Rat	3.50E-01	2.00E-02	2.13E+00	4.26E-02	7.32E-01	1.46E-02	7.65E-01	1.53E-02	7.39E-01	1.48E-02	5.27E-01	1.05E-02
Diethylphthalate	Mouse	3.00E-02	4.58E+03	1.15E+00	5.28E+03	3.96E-01	1.81E+03	4.14E-01	1.90E+03	4.00E-01	1.83E+03	2.85E-01	1.31E+03
Di-n-butylphthalate	Mouse	3.00E-02	5.50E+02	1.15E+00	6.34E+02	3.96E-01	2.18E+02	4.14E-01	2.28E+02	4.00E-01	2.20E+02	2.85E-01	1.57E+02
Di-n-octylphthalate	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Endosulfan	Rat	3.50E-01	1.50E-01	2.13E+00	3.20E-01	7.32E-01	1.10E-01	7.65E-01	1.15E-01	7.39E-01	1.11E-01	5.27E-01	7.91E-02
Endosulfan sulfate	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Endrin	Mouse	3.00E-02	9.20E-02	1.15E+00	1.06E-01	3.96E-01	3.64E-02	4.14E-01	3.81E-02	4.00E-01	3.68E-02	2.85E-01	2.62E-02
Endrin ketone	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Ethylbenzene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Fluoranthene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Fluorene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
gamma-Chlordane	Mouse	3.00E-02	4.58E+00	1.15E+00	5.28E+00	3.96E-01	1.81E+00	4.14E-01	1.90E+00	4.00E-01	1.83E+00	2.85E-01	1.31E+00
gamma-BHC (Lindane)	Rat	3.50E-01	8.00E+00	2.13E+00	1.70E+01	7.32E-01	5.85E+00	7.65E-01	6.12E+00	7.39E-01	5.92E+00	5.27E-01	4.22E+00
Heptachlor	Mink	1.00E+00	1.00E-01	2.77E+00	2.77E-01	9.52E-01	9.52E-02	9.95E-01	9.95E-02	9.61E-01	9.61E-02	6.85E-01	6.85E-02
Heptachlor epoxide	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Indeno(1,2,3-cd)pyrene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
MCPA	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
MCPP	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Methyl bromide	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Methyl ethyl ketone	Rat	3.50E-01	1.77E+03	2.13E+00	3.77E+03	7.32E-01	1.30E+03	7.65E-01	1.36E+03	7.39E-01	1.31E+03	5.27E-01	9.33E+02
2-Butanone	Rat	3.50E-01	1.77E+03	2.13E+00	3.77E+03	7.32E-01	1.30E+03	7.65E-01	1.36E+03	7.39E-01	1.31E+03	5.27E-01	9.33E+02
Methyl mercury chloride	Rat	3.50E-01	3.20E-02	2.13E+00	6.82E-02	7.32E-01	2.34E-02	7.65E-01	2.45E-02	7.39E-01	2.37E-02	5.27E-01	1.69E-02
Methylene chloride	Rat	3.50E-01	5.85E+00	2.13E+00	1.25E+01	7.32E-01	4.28E+00	7.65E-01	4.48E+00	7.39E-01	4.33E+00	5.27E-01	3.08E+00
Methoxychlor	Rat	3.50E-01	4.00E+00	2.13E+00	8.52E+00	7.32E-01	2.93E+00	7.65E-01	3.06E+00	7.39E-01	2.96E+00	5.27E-01	2.11E+00
Naphthalene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
N-Nitroso-di-N-propylamine	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
N-Nitrosodiphenylamine	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Pentachlorophenol	Rat	3.50E-01	2.40E-01	2.13E+00	5.11E-01	7.32E-01	1.76E-01	7.65E-01	1.84E-01	7.39E-01	1.77E-01	5.27E-01	1.26E-01
Phenanthrene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Phenol	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Pyrene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Styrene	Dog	1.00E+01	2.00E+02	4.92E+00	9.85E+02	1.69E+00	3.38E+02	1.77E+00	3.54E+02	1.71E+00	3.42E+02	1.22E+00	2.44E+02
Tetrachloroethene	Mouse	3.00E-02	1.40E+00	1.15E+00	1.61E+00	3.96E-01	5.54E-01	4.14E-01	5.80E-01	4.00E-01	5.60E-01	2.85E-01	3.99E-01
Toluene	Mouse	3.00E-02	2.60E+01	1.15E+00	2.99E+01	3.96E-01	1.03E+01	4.14E-01	1.08E+01	4.00E-01	1.04E+01	2.85E-01	7.41E+00
Trichloroethene	Mouse	3.00E-02	7.00E-01	1.15E+00	8.07E-01	3.96E-01	2.77E-01	4.14E-01	2.90E-01	4.00E-01	2.80E-01	2.85E-01	2.00E-01
Vinyl chloride	Rat	3.50E-01	1.70E-01	2.13E+00	3.62E-01	7.32E-01	1.24E-01	7.65E-01	1.30E-01	7.39E-01	1.26E-01	5.27E-01	8.96E-02
Xylenes, total	Mouse	3.00E-02	2.06E+00	1.15E+00	2.37E+00	3.96E-01	8.16E-01	4.14E-01	8.53E-01	4.00E-01	8.24E-01	2.85E-01	5.87E-01
Dioxins and Furans													
1,2,3,4,6,7,8-Heptachlorodibenzofuran	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dio	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
1,2,3,4,7,8,9-Heptachlorodibenzofuran	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
1,2,3,4,7,8-Hexachlorodibenzofuran	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxi	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
1,2,3,6,7,8-Hexachlorodibenzofuran	Rat	3.50E-01	1.60E-04	2.13E+00	3.41E-04	7.32E-01	1.17E-04	7.65E-01	1.22E-04	7.39E-01	1.18E-04	5.27E-01	8.43E-05
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxi	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
1,2,3,7,8,9-Hexachlorodibenzofuran	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxi	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
1,2,3,7,8-Pentachlorodibenzofuran	Rat	3.50E-01	1.60E-04	2.13E+00	3.41E-04	7.32E-01	1.17E-04	7.65E-01	1.22E-04	7.39E-01	1.18E-04	5.27E-01	8.43E-05
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
2,3,4,6,7,8-Hexachlorodibenzofuran	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
2,3,4,7,8-Pentachlorodibenzofuran	Rat	3.50E-01	1.60E-05	2.13E+00	3.41E-05	7.32E-01	1.17E-05	7.65E-01	1.22E-05	7.39E-01	1.18E-05	5.27E-01	8.43E-06
2,3,7,8-Tetrachlorodibenzofuran	none	none	No TRV	none	none	none	none	none	none	none	none	none	none

Appendix Table O-29. Body-Weight-Adjusted NOAEL Toxicity Reference Values (TRVs) for Mammal Receptors

Analytes	Test species	Test species body weight (kg)	TRV_t (mg/kgBW/d)	Short-tailed shrew: Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	Short-tailed shrew: TRV (mg/kgBW/d) TRV_t x BW_{conv}	Cottontail: Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	Cottontail: TRV (mg/kgBW/d) TRV_t x BW_{conv}	Mink: Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	Mink: TRV (mg/kgBW/d) TRV_t x BW_{conv}	Muskrat: Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	Muskrat: TRV (mg/kgBW/d) TRV_t x BW_{conv}	Red Fox: Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	Red Fox: TRV (mg/kgBW/d) TRV_t x BW_{conv}
2,3,7,8-Tetrachlorodibenzo-p-dioxin	Rat	3.50E-01	1.00E-06	2.13E+00	2.13E-06	7.32E-01	7.32E-07	7.65E-01	7.65E-07	7.39E-01	7.39E-07	5.27E-01	5.27E-07
Octachlorodibenzofuran	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Octachlorodibenzo-p-dioxin	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Explosives													
1,3,5-Trinitrobenzene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
1,3-Dinitrobenzene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
2,4,6-Trinitrotoluene	Rat	3.50E-01	1.60E+00	2.13E+00	3.41E+00	7.32E-01	1.17E+00	7.65E-01	1.22E+00	7.39E-01	1.18E+00	5.27E-01	8.43E-01
2,4-Dinitrotoluene	Mouse	3.00E-02	1.35E+01	1.15E+00	1.56E+01	3.96E-01	5.35E+00	4.14E-01	5.59E+00	4.00E-01	5.40E+00	2.85E-01	3.85E+00
2,6-Dinitrotoluene	Rat	3.50E-01	7.00E-01	2.13E+00	1.49E+00	7.32E-01	5.12E-01	7.65E-01	5.36E-01	7.39E-01	5.18E-01	5.27E-01	3.69E-01
2-Amino-4,6-dinitrotoluene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
4-Amino-2,6-dinitrotoluene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Nitrobenzene	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Nitrocellulose	none	none	No TRV	none	none	none	none	none	none	none	none	none	none
Tetryl	none	none	No TRV	none	none	none	none	none	none	none	none	none	none

Red fox =	4.535.
Muskrat =	1.171.
BW(kg) Short-tailed shrew =	0.017.
BW(kg) cottontail =	1.22.
BW(kg) Mink =	1.02.

Appendix Table O-30. Derivation of No Observed Adverse Effect Level (NOAEL) Toxicity Reference Values (TRVs) for Bird Test Species

Analytes	Test species	Test species body weight (kg) BW_t	Benchmark (mg/kgBW/d)	Test duration	Endpoint	Effect	Source	Duration conversion factor DCF	Endpoint conversion factor ECF	TRV (mg/kgBW/d) benchmark x DCF *x* ECF
Inorganics										
Aluminum	Ringed dove	1.55E-01	1.10E+02	chronic	NOAEL	Reproduction	Carriere et al. (1986) in [1]	1.0	1.0	1.10E+02
Ammonia	none	none	none	none	none	none	none	none	none	No TRV
Antimony	none	none	none	none	none	none	none	none	none	No TRV
Arsenic	Mallard duck	1.00E+00	5.14E+00	chronic	NOAEL	Mortality	USFWS (1979) in [1]	1.0	1.0	5.14E+00
Arsenic (dissolved)	Mallard duck	1.00E+00	5.14E+00	chronic	NOAEL	Mortality	USFWS (1979) in [1]	1.0	1.0	5.14E+00
Barium	Chick (14 day old)	1.21E-01	2.08E+02	subchronic	NOAEL	Mortality	Johnson et al. (1960) in [1]	0.1	1.0	2.08E+01
Barium (dissolved)	Chick (14 day old)	1.21E-01	2.08E+02	subchronic	NOAEL	Mortality	Johnson et al. (1960) in [1]	0.1	1.0	2.08E+01
Beryllium	none	none	none	none	none	none	none	none	none	No TRV
Beryllium (dissolved)	none	none	none	none	none	none	none	none	none	No TRV
Boron	Mallard duck	1.00E+00	2.88E+01	chronic	NOAEL	Reproduction	Smith and Anders (1989) in [1]	1.0	1.0	2.88E+01
Cadmium	Mallard duck	1.15E+00	1.45E+00	chronic	NOAEL	Reproduction	White and Finley (1978) in [1]	1.0	1.0	1.45E+00
Cadmium (dissolved)	Mallard duck	1.15E+00	1.45E+00	chronic	NOAEL	Reproduction	White and Finley (1978) in [1]	1.0	1.0	1.45E+00
Calcium	none	none	none	none	none	none	none	none	none	No TRV
Chloride	none	none	none	none	none	none	none	none	none	No TRV
Chromium	Black duck	1.25E+00	1.00E+00	chronic	NOAEL	Reproduction	Haseltine et al. (unpubl.) in [1]	1.0	1.0	1.00E+00
Chromium, hexavalent	none	none	none	none	none	none	none	none	none	No TRV
Cobalt	none	none	none	none	none	none	none	none	none	No TRV
Copper	Chick (5 week old)	5.34E-01	4.70E+01	chronic	NOAEL	Mortality	Mehring et al. (1960) in [1]	1.0	1.0	4.70E+01
Copper (dissolved)	Chick (5 week old)	5.34E-01	4.70E+01	chronic	NOAEL	Mortality	Mehring et al. (1960) in [1]	1.0	1.0	4.70E+01
Cyanide	none	none	none	none	none	none	none	none	none	No TRV
Fluoride	Screech Owl	1.81E-01	7.80E+00	chronic	NOAEL	Reproduction	Pattee et al. 1988	1.0	1.0	7.80E+00
Iron	none	none	none	none	none	none	none	none	none	No TRV
Lead	Quail	1.50E-01	1.13E+00	chronic	NOAEL	Reproduction	Edens et al. (1976) in [1]	1.0	1.0	1.13E+00
Lead (dissolved)	Quail	1.50E-01	1.13E+00	chronic	NOAEL	Reproduction	Edens et al. (1976) in [1]	1.0	1.0	1.13E+00
Magnesium	none	none	none	none	none	none	none	none	none	No TRV
Manganese	Quail	7.20E-02	9.77E+02	chronic	NOAEL	Growth	Laskey and Edens (1985) in [1]	1.0	1.0	9.77E+02
Mercury	Quail	1.50E-01	4.50E-01	chronic	NOAEL	Reproduction	Hill and Schaffner (1976) in [1]	1.0	1.0	4.50E-01
Molybdenum	Chicken	1.50E+00	3.53E+01	chronic	LOAEL	Reproduction	Lepore and Miller (1965) in [1]	1.0	0.1	3.53E+00
Nickel	Mallard duckling	7.82E-01	7.74E+01	chronic	NOAEL	Growth	Cain and Pafford (1981) in [1]	1.0	1.0	7.74E+01
Nickel (dissolved)	Mallard duckling	7.82E-01	7.74E+01	chronic	NOAEL	Growth	Cain and Pafford (1981) in [1]	1.0	1.0	7.74E+01
Nitrate	none	none	none	none	none	none	none	none	none	No TRV
Phosphorus	none	none	none	none	none	none	none	none	none	No TRV
Potassium	none	none	none	none	none	none	none	none	none	No TRV
Selenium	Mallard duck	1.00E+00	5.00E-01	chronic	NOAEL	Reproduction	Heinz et al. (1989) in [1]	1.0	1.0	5.00E-01
Silver	none	none	none	none	none	none	none	none	none	No TRV
Silicon	none	none	none	none	none	none	none	none	none	No TRV
Sodium	none	none	none	none	none	none	none	none	none	No TRV
Sulfate	none	none	none	none	none	none	none	none	none	No TRV
Thallium	none	none	none	none	none	none	none	none	none	No TRV
Vanadium	Mallard duck	1.17E+00	1.14E+01	chronic	NOAEL	Mortality	White and Dieter (1978) in [1]	1.0	1.0	1.14E+01
Zinc	Leghorn chicken	1.94E+00	1.45E+01	chronic	NOAEL	Reproduction	Stahl et al. (1990) in [1]	1.0	1.0	1.45E+01

Appendix Table O-30. Derivation of No Observed Adverse Effect Level (NOAEL) Toxicity Reference Values (TRVs) for Bird Test Species

Analytes	Test species	Test species body weight (kg) BW_t	Benchmark (mg/kgBW/d)	Test duration	Endpoint	Effect	Source	Duration conversion factor DCF	Endpoint conversion factor ECF	TRV (mg/kgBW/d) benchmark x DCF *x* ECF
Zinc (dissolved)	Leghorn chicken	1.94E+00	1.45E+01	chronic	NOAEL	Reproduction	Stahl et al. (1990) in [1]	1.0	1.0	1.45E+01
Organics										
1,1,1-Trichloroethane	none	none	none	none	none	none	none	none	none	No TRV
1,1,2,2-Tetrachloroethane	none	none	none	none	none	none	none	none	none	No TRV
1,1,2-Trichloroethane	none	none	none	none	none	none	none	none	none	No TRV
1,1-Dichloroethane	none	none	none	none	none	none	none	none	none	No TRV
1,1-Dichloroethene	none	none	none	none	none	none	none	none	none	No TRV
1,1-Dichloroethene	none	none	none	none	none	none	none	none	none	No TRV
1,1-Dichloroethene	none	none	none	none	none	none	none	none	none	No TRV
1,2,3,4,6,7,8-HpCDF	none	none	none	none	none	none	none	none	none	No TRV
1,2,4-trichlorobenzene	none	none	none	none	none	none	none	none	none	No TRV
1,2-cis-Dichloroethene	none	none	none	none	none	none	none	none	none	No TRV
1,2-Dichlorobenzene	none	none	none	none	none	none	none	none	none	No TRV
1,2-Dichloroethane	Chicken	1.60E+00	1.72E+01	chronic	NOAEL	Reproduction	Alumot et al. (1976b) in [1]	1.0	1.0	1.72E+01
1,2-Dichloroethane	none	none	none	none	none	none	none	none	none	No TRV
1,2-Dichloroethene	none	none	none	none	none	none	none	none	none	No TRV
1,2-Dichloroethene	none	none	none	none	none	none	none	none	none	No TRV
1,2-Dichloropropane	none	none	none	none	none	none	none	none	none	No TRV
1,2-trans-Dichloroethene	none	none	none	none	none	none	none	none	none	No TRV
1,3-Dichlorobenzene	none	none	none	none	none	none	none	none	none	No TRV
1,4-Dichlorobenzene	none	none	none	none	none	none	none	none	none	No TRV
2,2,5-Trimethylhexane	none	none	none	none	none	none	none	none	none	No TRV
2,4,5-trichlorophenol	none	none	none	none	none	none	none	none	none	No TRV
2,4-D	none	none	none	none	none	none	none	none	none	No TRV
2,4-Dimethylphenol	none	none	none	none	none	none	none	none	none	No TRV
2-Chlorophenol	none	none	none	none	none	none	none	none	none	No TRV
2-Hexanone	none	none	none	none	none	none	none	none	none	No TRV
2-Methylnaphthalene	none	none	none	none	none	none	none	none	none	No TRV
2-Methylnaphthalene	none	none	none	none	none	none	none	none	none	No TRV
2-Methylphenol	none	none	none	none	none	none	none	none	none	No TRV
4,4'-DDD	none	none	none	none	none	none	none	none	none	No TRV
4,4'-DDE	none	none	none	none	none	none	none	none	none	No TRV
4,4'-DDT	Brown pelican	3.50E+00	2.80E-02	chronic	LOAEL	Reproduction	Anderson et al. (1975) in [1]	1.0	0.1	2.80E-03
4-Chloro-3-methylphenol	none	none	none	none	none	none	none	none	none	No TRV
4-Methyl-2-pentanone	none	none	none	none	none	none	none	none	none	No TRV
4-Methylphenol	none	none	none	none	none	none	none	none	none	No TRV
4-Methylphenol	none	none	none	none	none	none	none	none	none	No TRV
4-Nitrophenol	none	none	none	none	none	none	none	none	none	No TRV
Acenaphthene	none	none	none	none	none	none	none	none	none	No TRV
Acenaphthylene	none	none	none	none	none	none	none	none	none	No TRV
Acetone	none	none	none	none	none	none	none	none	none	No TRV

Appendix Table O-30. Derivation of No Observed Adverse Effect Level (NOAEL) Toxicity Reference Values (TRVs) for Bird Test Species

Analytes	Test species	Test species body weight (kg) BW_t	Benchmark (mg/kgBW/d)	Test duration	Endpoint	Effect	Source	Duration conversion factor DCF	Endpoint conversion factor ECF	TRV (mg/kgBW/d) benchmark *x* DCF *x* ECF
Alkalinity	none	none	none	none	none	none	none	none	none	No TRV
Aldrin	none	none	none	none	none	none	none	none	none	No TRV
alpha-Chlordane	Red-winged blackbird	6.40E-02	2.14E+00	chronic	NOAEL	Mortality	Stickel et al. (1983) in [1]	1.0	1.0	2.14E+00
Anthracene	none	none	none	none	none	none	none	none	none	No TRV
Aroclor-1242	Screech owl	1.81E-01	4.10E-01	chronic	NOAEL	Reproduction	McLane and Hughes (1980) in [1]	1.0	1.0	4.10E-01
Aroclor-1248	none	none	none	none	none	none	none	none	none	No TRV
Aroclor-1254	Ring-necked pheasant	1.00E+00	1.80E+00	chronic	LOAEL	Reproduction	Dahlgren et al. (1972) in [1]	1.0	0.1	1.80E-01
PCB-1254	Ring-necked pheasant	1.00E+00	1.80E+00	chronic	LOAEL	Reproduction	Dahlgren et al. (1972) in [1]	1.0	0.1	1.80E-01
Aroclor-1260	none	none	none	none	none	none	none	none	none	No TRV
Benzene	none	none	none	none	none	none	none	none	none	No TRV
Benzo(a)anthracene	Chicken (embryo)	none	7.90E+01	Acute	LD50	Mortality	Brunström et al. (1991) in EPA (1999a)	1.00E-02	1.00E-02	7.90E-03
Benzo(a)pyrene	Chicken (embryo)	none	1.00E+02	Acute	NOAEL	Mortality	Brunström et al. (1991) in EPA (1999a)	1.00E-02	1.00E+00	1.00E+00
Benzo(b)fluoranthene	none	none	NA	NA	NA	NA	TRV for benzo[k]fluoranthene used as surrogate (EPA 1999a)	none	none	No TRV
Benzo(g,h,i)perylene	none	none	No data	No data	No data	No data	No data	none	none	No TRV
Benzo(k)fluoranthene	Chicken (embryo)	none	1.40E+01	Acute	LD50	Mortality	Brunström et al. (1991) in EPA (1999a)	1.00E-02	1.00E-02	1.40E-03
Benzoic acid	none	none	none	none	none	none	none	none	none	No TRV
Benzyl alcohol	none	none	none	none	none	none	none	none	none	No TRV
Bis(2-chloroisopropyl)ether	none	none	none	none	none	none	none	none	none	No TRV
Bis(2-ethylhexyl)phthalate	Ringed dove	1.55E-01	1.10E+00	chronic	NOAEL	Reproduction	Peakall (1974) in [1]	1.0	1.0	1.10E+00
Butylbenzylphthalate	none	none	none	none	none	none	none	none	none	No TRV
Carbazole	none	none	none	none	none	none	none	none	none	No TRV
Carbon disulfide	none	none	none	none	none	none	none	none	none	No TRV
Chlordane	Red-winged blackbird	6.40E-02	2.14E+00	chronic	NOAEL	Mortality	Stickel et al. (1983) in [1]	1.0	1.0	2.14E+00
Chlorobenzene	none	none	none	none	none	none	none	none	none	No TRV
Chloroethane	none	none	none	none	none	none	none	none	none	No TRV
Chloroform	none	none	none	none	none	none	none	none	none	No TRV
Chrysene	Chicken (embryo)	none	1.00E+02	Acute	LOAEL	Mortality	Brunström et al. (1991) in EPA (1999a)	0.0	0.1	1.00E-01
m,p-cresol	none	none	none	none	none	none	none	none	none	No TRV
Dalapon	none	none	none	none	none	none	none	none	none	No TRV
delta-BHC	none	none	none	none	none	none	none	none	none	No TRV
Dibenzo(a,h)anthracene	Chicken (embryo)	none	3.90E+01	Acute	LD50	Mortality	Brunström et al. (1991) in EPA (1999a)	0.0	0.0	3.90E-03
Dibenzofuran	none	none	none	none	none	none	none	none	none	No TRV
Dicamba	none	none	none	none	none	none	none	none	none	No TRV
Dichloroprop	none	none	none	none	none	none	none	none	none	No TRV
Dieldrin	Barn owl	4.66E-01	7.70E-02	chronic	NOAEL	Reproduction	Mendenhall et al. (1983) in [1]	1.00E+00	1.00E+00	7.70E-02
Diethylphthalate	none	none	none	none	none	none	none	none	none	No TRV

Appendix Table O-30. Derivation of No Observed Adverse Effect Level (NOAEL) Toxicity Reference Values (TRVs) for Bird Test Species

Analytes	Test species	Test species body weight (kg) BW_t	Benchmark (mg/kgBW/d)	Test duration	Endpoint	Effect	Source	Duration conversion factor DCF	Endpoint conversion factor ECF	TRV (mg/kgBW/d) benchmark$_x$ DCF *x* ECF
Di-n-butylphthalate	Ringed dove	1.55E-01	1.11E+00	chronic	LOAEL	Reproduction	Peakall (1974) in [1]	1.00E+00	1.00E-01	1.11E-01
Di-n-octylphthalate	none	none	none	none	none	none	none	none	none	No TRV
Endosulfan	Gray partridge	4.00E-01	1.00E+01	chronic	NOAEL	Reproduction	Abiola (1992) in [1]	1.00E+00	1.00E+00	1.00E+01
Endosulfan sulfate	none	none	none	none	none	none	none	none	none	No TRV
Endrin	Mallard duck	1.15E+00	3.00E-01	chronic	NOAEL	Reproduction	Spann et al. (1986) in [1]	1.00E+00	1.00E+00	3.00E-01
Endrin ketone	none	none	none	none	none	none	none	none	none	No TRV
Ethylbenzene	none	none	none	none	none	none	none	none	none	No TRV
Fluoranthene	none	none	none	none	none	none	none	none	none	No TRV
Fluorene	none	none	none	none	none	none	none	none	none	No TRV
gamma-Chlordane	Red-winged blackbird	6.40E-02	2.14E+00	chronic	NOAEL	Mortality	Stickel et al. (1983) in [1]	1.00E+00	1.00E+00	2.14E+00
gamma-BHC (Lindane)	Mallard Duck	1.00E+00	2.00E+00	chronic	NOAEL	Reproduction	Chakravarty et al. (1986) in [1]	1.00E+00	1.00E+00	2.00E+00
Heptachlor	none	none	none	none	none	none	none	none	none	No TRV
Heptachlor epoxide	none	none	none	none	none	none	none	none	none	No TRV
Indeno(1,2,3-cd)pyrene	Chicken (embryo)	none	1.00E+02	Acute	LOAEL	Mortality	Brunström et al. (1991) in EPA (1999a)	1.00E-02	1.00E-01	1.00E-01
MCPA	none	none	none	none	none	none	none	none	none	No TRV
MCPP	none	none	none	none	none	none	none	none	none	No TRV
Methyl bromide	none	none	none	none	none	none	none	none	none	No TRV
Methyl ethyl ketone	none	none	none	none	none	none	none	none	none	No TRV
Methyl mercury dicyandiamide	Mallard duck	1.00E+00	6.40E-02	chronic	LOAEL	Reproduction	Heinz (1979) in [1]	1.0	0.1	6.40E-03
Methylene chloride	none	none	none	none	none	none	none	none	none	No TRV
Methoxychlor	none	none	none	none	none	none	none	none	none	No TRV
Naphthalene	none	none	none	none	none	none	none	none	none	No TRV
N-Nitroso-di-N-propylamine	none	none	none	none	none	none	none	none	none	No TRV
N-Nitrosodiphenylamine	none	none	none	none	none	none	none	none	none	No TRV
Pentachlorophenol	none	none	none	none	none	none	none	none	none	No TRV
Phenanthrene	none	none	none	none	none	none	none	none	none	No TRV
Phenol	none	none	none	none	none	none	none	none	none	No TRV
Pyrene	none	none	none	none	none	none	none	none	none	No TRV
Styrene	none	none	none	none	none	none	none	none	none	No TRV
Tetrachloroethene	none	none	none	none	none	none	none	none	none	No TRV
Toluene	none	none	none	none	none	none	none	none	none	No TRV
Trichloroethene	none	none	none	none	none	none	none	none	none	No TRV
Vinyl chloride	none	none	none	none	none	none	none	none	none	No TRV
Xylenes, Total	none	none	none	none	none	none	none	none	none	No TRV
Dioxins and Furans										
1,2,3,4,6,7,8-Heptachlorodibenzofuran	none	none	none	none	none	none	none	none	none	No TRV
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	none	none	none	none	none	none	none	none	none	No TRV
1,2,3,4,7,8,9-Heptachlorodibenzofuran	none	none	none	none	none	none	none	none	none	No TRV
1,2,3,4,7,8-Hexachlorodibenzofuran	none	none	none	none	none	none	none	none	none	No TRV
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	none	none	none	none	none	none	none	none	none	No TRV

Appendix Table O-30. Derivation of No Observed Adverse Effect Level (NOAEL) Toxicity Reference Values (TRVs) for Bird Test Species

Analytes	Test species	Test species body weight (kg) BW_t	Benchmark (mg/kgBW/d)	Test duration	Endpoint	Effect	Source	Duration conversion factor DCF	Endpoint conversion factor ECF	TRV (mg/kgBW/d) benchmark *x* DCF *x* ECF
1,2,3,6,7,8-Hexachlorodibenzofuran	none	none	none	none	none	none	none	none	none	No TRV
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	none	none	none	none	none	none	none	none	none	No TRV
1,2,3,7,8,9-Hexachlorodibenzofuran	none	none	none	none	none	none	none	none	none	No TRV
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	none	none	none	none	none	none	none	none	none	No TRV
1,2,3,7,8-Pentachlorodibenzofuran	none	none	none	none	none	none	none	none	none	No TRV
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	none	none	none	none	none	none	none	none	none	No TRV
2,3,4,6,7,8-Hexachlorodibenzofuran	none	none	none	none	none	none	none	none	none	No TRV
2,3,4,7,8-Pentachlorodibenzofuran	none	none	none	none	none	none	none	none	none	No TRV
2,3,7,8-Tetrachlorodibenzofuran	Chick (1 day old)	1.21E-01	1.00E-04	subchronic	LOAEL	Mortality	McKinney et al. (1976) in [1]	0.1	0.1	1.00E-06
2,3,7,8-Tetrachlorodibenzo-p-dioxin	Ring-necked Pheasant	1.00E+00	1.40E-05	chronic	NOAEL	Reproduction	Nosek et al. (1992) in [1]	1.0	1.0	1.40E-05
Octachlorodibenzofuran	none	none	none	none	none	none	none	none	none	No TRV
Octachlorodibenzo-p-dioxin	none	none	none	none	none	none	none	none	none	No TRV
Explosives										
1,3,5-Trinitrobenzene	none	none	none	none	none	none	none	none	none	No TRV
1,3-Dinitrobenzene	none	none	none	none	none	none	none	none	none	No TRV
2,4,6-Trinitrotoluene	none	none	none	none	none	none	none	none	none	No TRV
2,4-Dinitrotoluene	none	none	none	none	none	none	none	none	none	No TRV
2,6-Dinitrotoluene	none	none	none	none	none	none	none	none	none	No TRV
2-Amino-4,6-dinitrotoluene	none	none	none	none	none	none	none	none	none	No TRV
4-Amino-2,6-dinitrotoluene	none	none	none	none	none	none	none	none	none	No TRV
Nitrobenzene	none	none	none	none	none	none	none	none	none	No TRV
Tetryl	none	none	none	none	none	none	none	none	none	No TRV

TRV = Toxicity reference value.
DCF = Duration conversion factor; 1 if chronic, 0.1 if subchronic (Sample et al. 1996).
ECF = Endpoint conversion factor; 1 if NOAEL, 0.1 if LOAEL (Sample et al. 1996).
NOAEL = No observed adverse effect level.
LOAEL = Lowest observed adverse effect level.
[1] = Sample et al. (1996).

Appendix Table O-31. NOAEL Toxicity Reference Values (TRVs) for Bird Receptors

Analytes	Test species	Test species body weight BW_t (kg)	TRV_t (mg/kgBW/d)	American Robin		Great Blue Heron		Mallard Duck		Red-tailed Hawk	
				Taxonomic conversion factor[a] CF_{tax}	TRV (mg/kgBW/d) $TRV_t \times CF_{tax}$	Taxonomic conversion factor[a]	TRV (mg/kgBW/d) $TRV_t \times CF_{tax}$	Taxonomic conversion factor[a]	TRV (mg/kgBW/d) $TRV_t \times CF_{tax}$	Taxonomic conversion factor[a]	TRV (mg/kgBW/d) $TRV_t \times CF_{tax}$
Inorganics											
Aluminum	Ringed dove	1.55E-01	1.10E+02	1.00E-02	1.10E+00	1.00E-02	1.10E+00	1.00E-02	1.10E+00	1.00E-02	1.10E+00
Ammonia	none	none	No TRV	none	none	none	none	none	none	none	none
Antimony	none	none	No TRV	none	none	none	none	none	none	none	none
Arsenic	Mallard duck	1.00E+00	5.14E+00	1.00E-02	5.14E-02	1.00E-02	5.14E-02	1.00E+00	5.14E+00	1.00E-02	5.14E-02
Arsenic (dissolved)	Mallard duck	1.00E+00	5.14E+00	1.00E-02	5.14E-02	1.00E-02	5.14E-02	1.00E+00	5.14E+00	1.00E-02	5.14E-02
Barium	Chick (14 day old)	1.21E-01	2.08E+01	1.00E-02	2.08E-01	1.00E-02	2.08E-01	1.00E-02	2.08E-01	1.00E-02	2.08E-01
Barium (dissolved)	Chick (14 day old)	1.21E-01	2.08E+01	1.00E-02	2.08E-01	1.00E-02	2.08E-01	1.00E-02	2.08E-01	1.00E-02	2.08E-01
Beryllium	none	none	No TRV	none	none	none	none	none	none	none	none
Beryllium (dissolved)	none	none	No TRV	none	none	none	none	none	none	none	none
Boron	Mallard duck	1.00E+00	2.88E+01	1.00E-02	2.88E-01	1.00E-02	2.88E-01	1.00E+00	2.88E+01	1.00E-02	2.88E-01
Cadmium	Mallard duck	1.15E+00	1.45E+00	1.00E-02	1.45E-02	1.00E-02	1.45E-02	1.00E+00	1.45E+00	1.00E-02	1.45E-02
Cadmium (dissolved)	Mallard duck	1.15E+00	1.45E+00	1.00E-02	1.45E-02	1.00E-02	1.45E-02	1.00E+00	1.45E+00	1.00E-02	1.45E-02
Calcium	none	none	No TRV	none	none	none	none	none	none	none	none
Chloride	none	none	No TRV	none	none	none	none	none	none	none	none
Chromium	Black duck	1.25E+00	1.00E+00	1.00E-02	1.00E-02	1.00E-02	1.00E-02	1.00E+00	1.00E+00	1.00E-02	1.00E-02
Chromium, hexavalent	none	none	No TRV	none	none	none	none	none	none	none	none
Cobalt	none	none	No TRV	none	none	none	none	none	none	none	none
Copper	Chick (5 week old)	5.34E-01	4.70E+01	1.00E-02	4.70E-01	1.00E-02	4.70E-01	1.00E-02	4.70E-01	1.00E-02	4.70E-01
Copper (dissolved)	Chick (5 week old)	5.34E-01	4.70E+01	1.00E-02	4.70E-01	1.00E-02	4.70E-01	1.00E-02	4.70E-01	1.00E-02	4.70E-01
Cyanide	none	none	No TRV	none	none	none	none	none	none	none	none
Fluoride	Screech Owl	1.81E-01	7.80E+00	1.00E-02	7.80E-02	1.00E-02	7.80E-02	1.00E-02	7.80E-02	1.00E-02	7.80E-02
Iron	none	none	No TRV	none	none	none	none	none	none	none	none
Lead	Quail	1.50E-01	1.13E+00	1.00E-02	1.13E-02	1.00E-02	1.13E-02	1.00E-02	1.13E-02	1.00E-02	1.13E-02
Lead (dissolved)	Quail	1.50E-01	1.13E+00	1.00E-02	1.13E-02	1.00E-02	1.13E-02	1.00E-02	1.13E-02	1.00E-02	1.13E-02
Magnesium	none	none	No TRV	none	none	none	none	none	none	none	none
Manganese	Quail	7.20E-02	9.77E+02	1.00E-02	9.77E+00	1.00E-02	9.77E+00	1.00E-02	9.77E+00	1.00E-02	9.77E+00
Mercury	Quail	1.50E-01	4.50E-01	1.00E-02	4.50E-03	1.00E-02	4.50E-03	1.00E-02	4.50E-03	1.00E-02	4.50E-03
Molybdenum	Chicken	1.50E+00	3.53E+00	1.00E-02	3.53E-02	1.00E-02	3.53E-02	1.00E-02	3.53E-02	1.00E-02	3.53E-02
Nickel	Mallard duckling	7.82E-01	7.74E+01	1.00E-02	7.74E-01	1.00E-02	7.74E-01	1.00E+00	7.74E+01	1.00E-02	7.74E-01
Nickel (dissolved)	Mallard duckling	7.82E-01	7.74E+01	1.00E-02	7.74E-01	1.00E-02	7.74E-01	1.00E+00	7.74E+01	1.00E-02	7.74E-01
Nitrate	none	none	No TRV	none	none	none	none	none	none	none	none
Phosphorus	none	none	No TRV	none	none	none	none	none	none	none	none
Potassium	none	none	No TRV	none	none	none	none	none	none	none	none
Selenium	Mallard duck	1.00E+00	5.00E-01	1.00E-02	5.00E-03	1.00E-02	5.00E-03	1.00E+00	5.00E-01	1.00E-02	5.00E-03
Silver	none	none	No TRV	none	none	none	none	none	none	none	none
Silicon	none	none	No TRV	none	none	none	none	none	none	none	none
Sodium	none	none	No TRV	none	none	none	none	none	none	none	none
Sulfate	none	none	No TRV	none	none	none	none	none	none	none	none
Thallium	none	none	No TRV	none	none	none	none	none	none	none	none
Vanadium	Mallard duck	1.17E+00	1.14E+01	1.00E-02	1.14E-01	1.00E-02	1.14E-01	1.00E+00	1.14E+01	1.00E-02	1.14E-01
Zinc	Leghorn chicken	1.94E+00	1.45E+01	1.00E-02	1.45E-01	1.00E-02	1.45E-01	1.00E-02	1.45E-01	1.00E-02	1.45E-01
Zinc (dissolved)	Leghorn chicken	1.94E+00	1.45E+01	1.00E-02	1.45E-01	1.00E-02	1.45E-01	1.00E-02	1.45E-01	1.00E-02	1.45E-01
Organics											
1,1,1-Trichloroethane	none	none	No TRV	none	none	none	none	none	none	none	none

Appendix Table O-31. NOAEL Toxicity Reference Values (TRVs) for Bird Receptors

Analytes	Test species	Test species body weight BW_t (kg)	TRV_t (mg/kgBW/d)	American Robin		Great Blue Heron		Mallard Duck		Red-tailed Hawk	
				Taxonomic conversion factor[a] CF_{tax}	TRV (mg/kgBW/d) $TRV_t \times CF_{tax}$	Taxonomic conversion factor[a]	TRV (mg/kgBW/d) $TRV_t \times CF_{tax}$	Taxonomic conversion factor[a]	TRV (mg/kgBW/d) $TRV_t \times CF_{tax}$	Taxonomic conversion factor[a]	TRV (mg/kgBW/d) $TRV_t \times CF_{tax}$
1,1,2,2-Tetrachloroethane	none	none	No TRV	none	none	none	none	none	none	none	none
1,1,2-Trichloroethane	none	none	No TRV	none	none	none	none	none	none	none	none
1,1-Dichloroethane	none	none	No TRV	none	none	none	none	none	none	none	none
1,1-Dichloroethene	none	none	No TRV	none	none	none	none	none	none	none	none
1,1-Dichloroethene	none	none	No TRV	none	none	none	none	none	none	none	none
1,1-Dichloroethene	none	none	No TRV	none	none	none	none	none	none	none	none
1,2,3,4,6,7,8-HpCDF	none	none	No TRV	none	none	none	none	none	none	none	none
1,2,4-trichlorobenzene	none	none	No TRV	none	none	none	none	none	none	none	none
1,2-cis-Dichloroethene	none	none	No TRV	none	none	none	none	none	none	none	none
1,2-Dichlorobenzene	none	none	No TRV	none	none	none	none	none	none	none	none
1,2-Dichloroethane	Chicken	1.60E+00	1.72E+01	1.00E-02	1.72E-01	1.00E-02	1.72E-01	1.00E-02	1.72E-01	1.00E-02	1.72E-01
1,2-Dichloroethane	none	none	No TRV	none	none	none	none	none	none	none	none
1,2-Dichloroethene	none	none	No TRV	none	none	none	none	none	none	none	none
1,2-Dichloroethene	none	none	No TRV	none	none	none	none	none	none	none	none
1,2-Dichloropropane	none	none	No TRV	none	none	none	none	none	none	none	none
1,2-trans-Dichloroethene	none	none	No TRV	none	none	none	none	none	none	none	none
1,3-Dichlorobenzene	none	none	No TRV	none	none	none	none	none	none	none	none
1,4-Dichlorobenzene	none	none	No TRV	none	none	none	none	none	none	none	none
2,2,5-Trimethylhexane	none	none	No TRV	none	none	none	none	none	none	none	none
2,4,5-trichlorophenol	none	none	No TRV	none	none	none	none	none	none	none	none
2,4-D	none	none	No TRV	none	none	none	none	none	none	none	none
2,4-Dimethylphenol	none	none	No TRV	none	none	none	none	none	none	none	none
2-Chlorophenol	none	none	No TRV	none	none	none	none	none	none	none	none
2-Hexanone	none	none	No TRV	none	none	none	none	none	none	none	none
2-Methylnaphthalene	none	none	No TRV	none	none	none	none	none	none	none	none
2-Methylnaphthalene	none	none	No TRV	none	none	none	none	none	none	none	none
2-Methylphenol	none	none	No TRV	none	none	none	none	none	none	none	none
4,4'-DDD	none	none	No TRV	none	none	none	none	none	none	none	none
4,4'-DDE	none	none	No TRV	none	none	none	none	none	none	none	none
4,4'-DDT	Brown pelican	3.50E+00	2.80E-03	1.00E-02	2.80E-05	1.00E-02	2.80E-05	1.00E-02	2.80E-05	1.00E-02	2.80E-05
4-Chloro-3-methylphenol	none	none	No TRV	none	none	none	none	none	none	none	none
4-Methyl-2-pentanone	none	none	No TRV	none	none	none	none	none	none	none	none
4-Methylphenol	none	none	No TRV	none	none	none	none	none	none	none	none
4-Methylphenol	none	none	No TRV	none	none	none	none	none	none	none	none
4-Nitrophenol	none	none	No TRV	none	none	none	none	none	none	none	none
Acenaphthene	none	none	No TRV	none	none	none	none	none	none	none	none
Acenaphthylene	none	none	No TRV	none	none	none	none	none	none	none	none
Acetone	none	none	No TRV	none	none	none	none	none	none	none	none
Alkalinity	none	none	No TRV	none	none	none	none	none	none	none	none
Aldrin	none	none	No TRV	none	none	none	none	none	none	none	none
alpha-Chlordane	Red-winged blackbird	6.40E-02	2.14E+00	3.30E-01	7.06E-01	1.00E-02	2.14E-02	1.00E-02	2.14E-02	1.00E-02	2.14E-02
Anthracene	none	none	No TRV	none	none	none	none	none	none	none	none
Aroclor-1242	Screech owl	1.81E-01	4.10E-01	1.00E-02	4.10E-03	1.00E-02	4.10E-03	1.00E-02	4.10E-03	1.00E-02	4.10E-03
Aroclor-1248	none	none	No TRV	none	none	none	none	none	none	none	none
Aroclor-1254	Ring-necked pheasant	1.00E+00	1.80E-01	1.00E-02	1.80E-03	1.00E-02	1.80E-03	1.00E-02	1.80E-03	1.00E-02	1.80E-03

Appendix Table O-31. NOAEL Toxicity Reference Values (TRVs) for Bird Receptors

Analytes	Test species	Test species body weight BW_t (kg)	TRV_t (mg/kgBW/d)	American Robin		Great Blue Heron		Mallard Duck		Red-tailed Hawk	
				Taxonomic conversion factor[a] CF_{tax}	TRV (mg/kgBW/d) $TRV_t \times CF_{tax}$	Taxonomic conversion factor[a]	TRV (mg/kgBW/d) $TRV_t \times CF_{tax}$	Taxonomic conversion factor[a]	TRV (mg/kgBW/d) $TRV_t \times CF_{tax}$	Taxonomic conversion factor[a] CF_{tax}	TRV (mg/kgBW/d) $TRV_t \times CF_{tax}$
PCB-1254	Ring-necked pheasant	1.00E+00	1.80E-01	1.00E-02	1.80E-03	1.00E-02	1.80E-03	1.00E-02	1.80E-03	1.00E-02	1.80E-03
Aroclor-1260	none	none	No TRV	none	none	none	none	none	none	none	none
Benzene	none	none	No TRV	none	none	none	none	none	none	none	none
Benzo(a)anthracene	Chicken (embryo)	none	7.90E-03	1.00E-02	7.90E-05	1.00E-02	7.90E-05	1.00E-02	7.90E-05	1.00E-02	7.90E-05
Benzo(a)pyrene	Chicken (embryo)	none	1.00E+00	1.00E-02	1.00E-02	1.00E-02	1.00E-02	1.00E-02	1.00E-02	1.00E-02	1.00E-02
Benzo(b)fluoranthene	none	none	No TRV	none	none	none	none	none	none	none	none
Benzo(g,h,i)perylene	none	none	No TRV	none	none	none	none	none	none	none	none
Benzo(k)fluoranthene	Chicken (embryo)	none	1.40E-03	1.00E-02	1.40E-05	1.00E-02	1.40E-05	1.00E-02	1.40E-05	1.00E-02	1.40E-05
Benzoic acid	none	none	No TRV	none	none	none	none	none	none	none	none
Benzyl alcohol	none	none	No TRV	none	none	none	none	none	none	none	none
Bis(2-chloroisopropyl)ether	none	none	No TRV	none	none	none	none	none	none	none	none
Bis(2-ethylhexyl)phthalate	Ringed dove	1.55E-01	1.10E+00	1.00E-02	1.10E-02	1.00E-02	1.10E-02	1.00E-02	1.10E-02	1.00E-02	1.10E-02
Butylbenzylphthalate	none	none	No TRV	none	none	none	none	none	none	none	none
Carbazole	none	none	No TRV	none	none	none	none	none	none	none	none
Carbon disulfide	none	none	No TRV	none	none	none	none	none	none	none	none
Chlordane	Red-winged blackbird	6.40E-02	2.14E+00	3.30E-01	7.06E-01	1.00E-02	2.14E-02	1.00E-02	2.14E-02	1.00E-02	2.14E-02
Chlorobenzene	none	none	No TRV	none	none	none	none	none	none	none	none
Chloroethane	none	none	No TRV	none	none	none	none	none	none	none	none
Chloroform	none	none	No TRV	none	none	none	none	none	none	none	none
Chloromethane	none	none	No TRV	none	none	none	none	none	none	none	none
Chrysene	Chicken (embryo)	none	1.00E-01	1.00E-02	1.00E-03	1.00E-02	1.00E-03	1.00E-02	1.00E-03	1.00E-02	1.00E-03
m,p-cresol	none	none	No TRV	none	none	none	none	none	none	none	none
Dalapon	none	none	No TRV	none	none	none	none	none	none	none	none
delta-BHC	none	none	No TRV	none	none	none	none	none	none	none	none
Dibenzo(a,h)anthracene	Chicken (embryo)	none	3.90E-03	1.00E-02	3.90E-05	1.00E-02	3.90E-05	1.00E-02	3.90E-05	1.00E-02	3.90E-05
Dibenzofuran	none	none	No TRV	none	none	none	none	none	none	none	none
Dicamba	none	none	No TRV	none	none	none	none	none	none	none	none
Dichloroprop	none	none	No TRV	none	none	none	none	none	none	none	none
Dieldrin	Barn owl	4.66E-01	7.70E-02	1.00E-02	7.70E-04	1.00E-02	7.70E-04	1.00E-02	7.70E-04	1.00E-02	7.70E-04
Diethylphthalate	none	none	No TRV	none	none	none	none	none	none	none	none
Di-n-butylphthalate	Ringed dove	1.55E-01	1.11E-01	1.00E-02	1.11E-03	1.00E-02	1.11E-03	1.00E-02	1.11E-03	1.00E-02	1.11E-03
Di-n-octylphthalate	none	none	No TRV	none	none	none	none	none	none	none	none
Endosulfan	Gray partridge	4.00E-01	1.00E+01	1.00E-02	1.00E-01	1.00E-02	1.00E-01	1.00E-02	1.00E-01	1.00E-02	1.00E-01
Endosulfan sulfate	none	none	No TRV	none	none	none	none	none	none	none	none
Endrin	Mallard duck	1.15E+00	3.00E-01	1.00E-02	3.00E-03	1.00E-02	3.00E-03	1.00E+00	3.00E-01	1.00E-02	3.00E-03
Endrin ketone	none	none	No TRV	none	none	none	none	none	none	none	none
Ethylbenzene	none	none	No TRV	none	none	none	none	none	none	none	none
Fluoranthene	none	none	No TRV	none	none	none	none	none	none	none	none
Fluorene	none	none	No TRV	none	none	none	none	none	none	none	none
gamma-Chlordane	Red-winged blackbird	6.40E-02	2.14E+00	3.30E-01	7.06E-01	1.00E-02	2.14E-02	1.00E-02	2.14E-02	1.00E-02	2.14E-02
gamma-BHC (Lindane)	Mallard Duck	1.00E+00	2.00E+00	1.00E-02	2.00E-02	1.00E-02	2.00E-02	1.00E+00	2.00E+00	1.00E-02	2.00E-02
Heptachlor	none	none	No TRV	none	none	none	none	none	none	none	none
Heptachlor epoxide	none	none	No TRV	none	none	none	none	none	none	none	none
Indeno(1,2,3-cd)pyrene	Chicken (embryo)	none	1.00E-01	1.00E-02	1.00E-03	1.00E-02	1.00E-03	1.00E-02	1.00E-03	1.00E-02	1.00E-03
MCPA	none	none	No TRV	none	none	none	none	none	none	none	none

Appendix Table O-31. NOAEL Toxicity Reference Values (TRVs) for Bird Receptors

Analytes	Test species	Test species body weight BW_t (kg)	TRV_t (mg/kgBW/d)	American Robin		Great Blue Heron		Mallard Duck		Red-tailed Hawk	
				Taxonomic conversion factor[a] CF_{tax}	TRV (mg/kgBW/d) $TRV_t \times CF_{tax}$	Taxonomic conversion factor[a]	TRV (mg/kgBW/d) $TRV_t \times CF_{tax}$	Taxonomic conversion factor[a]	TRV (mg/kgBW/d) $TRV_t \times CF_{tax}$	Taxonomic conversion factor[a] CF_{tax}	TRV (mg/kgBW/d) $TRV_t \times CF_{tax}$
MCPP	none	none	No TRV	none	none	none	none	none	none	none	none
Methyl bromide	none	none	No TRV	none	none	none	none	none	none	none	none
Methyl ethyl ketone	none	none	No TRV	none	none	none	none	none	none	none	none
Methyl mercury dicyandiamide	Mallard duck	1.00E+00	6.40E-03	1.00E-02	6.40E-05	1.00E-02	6.40E-05	1.00E+00	6.40E-03	1.00E-02	6.40E-05
Methylene chloride	none	none	No TRV	none	none	none	none	none	none	none	none
Methoxychlor	none	none	No TRV	none	none	none	none	none	none	none	none
Naphthalene	none	none	No TRV	none	none	none	none	none	none	none	none
N-Nitroso-di-N-propylamine	none	none	No TRV	none	none	none	none	none	none	none	none
N-Nitrosodiphenylamine	none	none	No TRV	none	none	none	none	none	none	none	none
Pentachlorophenol	none	none	No TRV	none	none	none	none	none	none	none	none
Phenanthrene	none	none	No TRV	none	none	none	none	none	none	none	none
Phenol	none	none	No TRV	none	none	none	none	none	none	none	none
Pyrene	none	none	No TRV	none	none	none	none	none	none	none	none
Styrene	none	none	No TRV	none	none	none	none	none	none	none	none
Tetrachloroethene	none	none	No TRV	none	none	none	none	none	none	none	none
Toluene	none	none	No TRV	none	none	none	none	none	none	none	none
Trichloroethene	none	none	No TRV	none	none	none	none	none	none	none	none
Vinyl chloride	none	none	No TRV	none	none	none	none	none	none	none	none
Xylenes, Total	none	none	No TRV	none	none	none	none	none	none	none	none
Dioxins and Furans											
1,2,3,4,6,7,8-Heptachlorodibenzofuran	none	none	No TRV	none	none	none	none	none	none	none	none
1,2,3,4,6,7,8-Heptachlorodibenzo-p-diox	none	none	No TRV	none	none	none	none	none	none	none	none
1,2,3,4,7,8,9-Heptachlorodibenzofuran	none	none	No TRV	none	none	none	none	none	none	none	none
1,2,3,4,7,8-Hexachlorodibenzofuran	none	none	No TRV	none	none	none	none	none	none	none	none
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	none	none	No TRV	none	none	none	none	none	none	none	none
1,2,3,6,7,8-Hexachlorodibenzofuran	none	none	No TRV	none	none	none	none	none	none	none	none
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	none	none	No TRV	none	none	none	none	none	none	none	none
1,2,3,7,8,9-Hexachlorodibenzofuran	none	none	No TRV	none	none	none	none	none	none	none	none
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	none	none	No TRV	none	none	none	none	none	none	none	none
1,2,3,7,8-Pentachlorodibenzofuran	none	none	No TRV	none	none	none	none	none	none	none	none
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	none	none	No TRV	none	none	none	none	none	none	none	none
2,3,4,6,7,8-Hexachlorodibenzofuran	none	none	No TRV	none	none	none	none	none	none	none	none
2,3,4,7,8-Pentachlorodibenzofuran	none	none	No TRV	none	none	none	none	none	none	none	none
2,3,7,8-Tetrachlorodibenzofuran	Chick (1 day old)	1.21E-01	1.00E-06	1.00E-02	1.00E-08	1.00E-02	1.00E-08	1.00E-02	1.00E-08	1.00E-02	1.00E-08
2,3,7,8-Tetrachlorodibenzo-p-dioxin	Ring-necked Pheasant	1.00E+00	1.40E-05	1.00E-02	1.40E-07	1.00E-02	1.40E-07	1.00E-02	1.40E-07	1.00E-02	1.40E-07
Octachlorodibenzofuran	none	none	No TRV	none	none	none	none	none	none	none	none
Octachlorodibenzo-p-dioxin	none	none	No TRV	none	none	none	none	none	none	none	none
Explosives											
1,3,5-Trinitrobenzene	none	none	No TRV	none	none	none	none	none	none	none	none
1,3-Dinitrobenzene	none	none	No TRV	none	none	none	none	none	none	none	none
2,4,6-Trinitrotoluene	none	none	No TRV	none	none	none	none	none	none	none	none
2,4-Dinitrotoluene	none	none	No TRV	none	none	none	none	none	none	none	none
2,6-Dinitrotoluene	none	none	No TRV	none	none	none	none	none	none	none	none

Appendix Table O-31. NOAEL Toxicity Reference Values (TRVs) for Bird Receptors

Analytes	Test species	Test species body weight BW_t (kg)	TRV_t (mg/kgBW/d)	American Robin		Great Blue Heron		Mallard Duck		Red-tailed Hawk	
				Taxonomic conversion factor[a] CF_{tax}	TRV (mg/kgBW/d) $TRV_t \times CF_{tax}$	Taxonomic conversion factor[a]	TRV (mg/kgBW/d) $TRV_t \times CF_{tax}$	Taxonomic conversion factor[a]	TRV (mg/kgBW/d) $TRV_t \times CF_{tax}$	Taxonomic conversion factor[a] CF_{tax}	TRV (mg/kgBW/d) $TRV_t \times CF_{tax}$
2-Amino-4,6-dinitrotoluene	none	none	No TRV	none	none	none	none	none	none	none	none
4-Amino-2,6-dinitrotoluene	none	none	No TRV	none	none	none	none	none	none	none	none
Nitrobenzene	none	none	No TRV	none	none	none	none	none	none	none	none
Nitrocellulose	none	none	No TRV	none	none	none	none	none	none	none	none
Tetryl	none	none	No TRV	none	none	none	none	none	none	none	none

TRV = toxicity reference value

[a] Taxonomic adjustment factor for relatedness of test species and receptor (Ohio EPA 2003): 1 if same genus, 0.33 if same family, 0.1 if same order, 0.01 if same class

Appendix Table O-32. Toxicity Reference Values for Sediment Biota Exposed to COPECs at Erie Burning Ground, Ravenna, Ohio

COPECs carried forward from media screen	CAS Registry Number	TRV (mg/kg)	
		Value	Source
Inorganics			
Aluminum	7429-90-5	none	No Source
Antimony	7440-36-0	none	No Source
Arsenic	7440-38-2	9.79E+00	MacDonald et al. (2000)
Barium	7440-39-3	none	No Source
Beryllium	7440-41-7	none	No Source
Cadmium	7440-43-9	9.90E-01	MacDonald et al. (2000)
Calcium	7440-70-2	none	No Source
Chromium	7440-47-3	4.33E+01	MacDonald et al. (2000)
Copper	7440-50-8	3.16E+01	MacDonald et al. (2000)
Cyanide	57-12-5	1.00E-04	ESL EPA Region 5 (2003)
Iron	7439-89-6	none	No Source
Lead	7439-92-1	3.58E+01	MacDonald et al. (2000)
Magnesium	7439-95-4	none	No Source
Manganese	7439-96-5	none	No Source
Mercury	7487-94-6	1.80E-01	MacDonald et al. (2000)
Nickel	7440-02-0	2.27E+01	MacDonald et al. (2000)
Silver	7440-22-4	5.00E-01	ESL EPA Region 5 (2003)
Sodium	7440-23-5	none	No Source
Vanadium	7440-62-2	none	No Source
Zinc	7440-66-6	1.21E+02	MacDonald et al. (2000)
Organics-Pesticides/PCBs			
PCB-1254	11097-69-1	5.98E-02	ESL EPA Region 5 (2003)
Methoxychlor	72-43-5	1.36E-02	ESL EPA Region 5 (2003)
Organics-Explosives			
2,6-Dinitrotoluene	606-20-2	3.98E-02	ESL EPA Region 5 (2003)
Nitrobenzene	98-95-3	1.45E-01	ESL EPA Region 5 (2003)
Nitrocellulose	9004-70-4	none	No Source
2,4,6-Trinitrotoluene	118-96-7	none	No Source
Organics-Semivolatiles			
Benzo(a)anthracene	56-55-3	1.08E-01	MacDonald et al. (2000)
Benzo(a)pyrene	50-32-8	1.50E-01	MacDonald et al. (2000)
Benzo(b)fluoranthene	205-99-2	1.04E+01	ESL EPA Region 5 (2003)
Benzo(g,h,i)perylene	191-24-2	1.70E-01	ESL EPA Region 5 (2003)
Benzo(k)fluoranthene	207-08-9	2.40E-01	ESL EPA Region 5 (2003)
Bis(2-ethylhexyl)phthalate	117-81-7	1.82E-01	ESL EPA Region 5 (2003)
Butylbenzyl phthalate	85-68-7	1.97E+00	ESL EPA Region 5 (2003)
Carbazole	86-74-8	none	No Source
Chrysene	218-01-9	1.66E-01	MacDonald et al. (2000)
Di-n-butylphthalate	84-74-2	1.11E+00	ESL EPA Region 5 (2003)
Fluoranthene	206-44-0	4.23E-01	MacDonald et al. (2000)
Fluorene	86-73-7	7.74E-02	MacDonald et al. (2000)
Indeno(1,2,3-cd)pyrene	193-39-5	2.00E-01	ESL EPA Region 5 (2003)
N-Nitrosodiphenylamine	86-30-6	none	No Source

Appendix Table O-32. Toxicity Reference Values for Sediment Biota Exposed to COPECs at Erie Burning Ground, Ravenna, Ohio

COPECs carried forward from media screen	CAS Registry Number	TRV (mg/kg)	
		Value	Source
Phenanthrene	85-01-8	2.04E-01	MacDonald et al. (2000)
Pyrene	129-00-0	1.95E-01	MacDonald et al. (2000)
Organics-Volatiles			
Acetone	67-64-1	9.90E-03	ESL EPA Region 5 (2003)
2-Butanone	78-93-3	4.24E-02	ESL EPA Region 5 (2003)

COPEC = Constituents of potential ecological concern
CAS = Chemical Abstract Service
TRV = Toxicity reference value
ESL = Ecological Screening Level
EPA = Environmental Protection Agency
PCBs = polychlorinated biphenyls

Appendix Table O-33. Toxicity Reference Values for Aquatic Biota Exposed to COPECs at Ravenna, Ohio

COPECs carried forward from OAC WQC media screen	CAS Registry Number	TRV (mg/L)	
		Value	Source
Metals			
Aluminum	7429-90-5	8.70E-01	Chronic National Ambient Water Criterion, compiled in Suter and Tsao 1996
Barium	7440-39-3	2.20E-01	Ohio Administrative Code Chapter 3745-1, Outside Mixing Zone Average
Cadmium	7440-43-9	2.50E-03	Ohio Administrative Code Chapter 3745-1, assuming a hardness of 100 mg/kg
Calcium	7440-70-2	1.16E+02	Lowest Chronic Value for daphnids, Suter and Tsao 1996
Copper	7440-50-8	9.30E-03	Ohio Administrative Code Chapter 3745-1, assuming a hardness of 100 mg/kg
Cyanide	57-12-5	5.20E-03	Ohio Administrative Code Chapter 3745-1, Outside Mixing Zone Average
Iron	7439-89-6	1.00E+00	Chronic National Ambient Water Criterion, compiled in Suter and Tsao 1996
Lead	7439-92-1	6.40E-03	Ohio Administrative Code Chapter 3745-1, assuming a hardness of 100 mg/kg
Magnesium	7439-95-4	8.20E+01	Lowest Chronic Value for daphnids, Suter and Tsao 1996
Manganese	7439-96-5	1.20E-01	Tier II Chronic Value, compiled in Suter and Tsao 1996
Mercury	7439-97-6	9.10E-03	Ohio Administrative Code Chapter 3745-1, Outside Mixing Zone Average
Potassium	7440-07-7	5.30E+01	Lowest Chronic Value for daphnids, Suter and Tsao 1996
Sodium	7440-23-5	none	No data
Zinc	7440-66-6	1.20E-01	Ohio Administrative Code Chapter 3745-1, assuming a hardness of 100 mg/kg
Organics-Explosives			
Nitrocellulose	9004-70-0	none	No data
Organics-Volatiles			
Acetone	67-64-1	1.50E+00	Tier II Chronic Value, compiled in Suter and Tsao 1996
Chloromethane	74-87-3	none	No data

COPEC = Chemicals of potential ecological concern.
OAC WQC = Ohio Administrative Code Water Quality Criteria.
TRV = Toxicity reference value .

Appendix Table O-34. Erie Burning Ground Hazard Quotients for Plants and Earthworms Exposed to Surface Soil COPECs at Ravenna, Ohio

		Plants			Earthworms		
COPECs inputted from ESV media screen	**Surface Soil RME Concentrations (mg/kg)**	**Plant TRV[a] (mg/kg)**	**Plant HQ Plant RME/TRV**	**COEC?**	**Earthworm TRV[b] (mg/kg)**	**Earthworm HQ Earthworm RME/TRV**	**COEC?**
Inorganics							
Aluminum	1.33E+04	5.00E+01	**2.66E+02**	**yes**	No TRV	No TRV	**yes**
Antimony	7.96E+00	5.00E+00	**1.59E+00**	**yes**	No TRV	No TRV	**yes**
Arsenic	1.08E+01	1.00E+01	**1.08E+00**	**yes**	6.00E+01	1.80E-01	no
Barium	2.47E+02	5.00E+02	4.94E-01	no	No TRV	No TRV	**yes**
Cadmium	1.8E+00	4.00E+00	4.40E-01	no	2.00E+01	8.80E-02	no
Calcium	3.67E+04	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Chromium	2.27E+01	1.00E+00	**2.27E+01**	**yes**	4.00E-01	**5.68E+01**	**yes**
Copper	8.24E+01	1.00E+02	8.24E-01	no	6.00E+01	**1.37E+00**	**yes**
Cyanide	1.64E+00	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Iron	2.50E+04	1.00E+01	**2.50E+03**	**yes**	No TRV	No TRV	**yes**
Lead	1.65E+02	5.00E+01	**3.30E+00**	**yes**	5.00E+02	3.30E-01	no
Magnesium	4.82E+03	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Manganese	8.04E+02	5.00E+02	**1.61E+00**	**yes**	No TRV	No TRV	**yes**
Mercury	4.62E-02	3.00E-01	1.54E-01	no	1.00E-01	4.62E-01	no
Nickel	2.43E+01	3.00E+01	8.10E-01	no	2.00E+02	1.22E-01	no
Potassium	1.06E+03	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Silver	1.17E+00	2.00E+00	5.85E-01	no	No TRV	No TRV	**yes**
Sodium	4.41E+02	No TRV	**No TRV**	**yes**	No TRV	No TRV	**yes**
Vanadium	2.06E+01	2.00E+00	**1.03E+01**	**yes**	No TRV	No TRV	**yes**
Zinc	5.71E+02	5.00E+01	**1.14E+01**	**yes**	2.00E+02	**2.86E+00**	**yes**
Organics-Explosives							
2-Amino-4,6-Dinitrotoluene	9.32E-02	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
4-Amino-2,6-Dinitrotoluene	1.00E-01	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Nitrocellulose	2.61E+00	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
4-Nitrotoluene	1.26E-01	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Organics-Semivolatiles							
Acenaphthylene	2.30E-01	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**

Appendix Table O-34. Erie Burning Ground Hazard Quotients for Plants and Earthworms Exposed to Surface Soil COPECs at Ravenna, Ohio

		Plants			Earthworms		
COPECs inputted from ESV media screen	**Surface Soil RME Concentrations (mg/kg)**	**Plant TRV[a] (mg/kg)**	**Plant HQ Plant RME/TRV**	**COEC?**	**Earthworm TRV[b] (mg/kg)**	**Earthworm HQ Earthworm RME/TRV**	**COEC?**
Anthracene	2.91E-01	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Benzo(a)anthracene	3.20E-01	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Benzo(a)pyrene	3.22E-01	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Benzo(b)fluoranthene	4.17E-01	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Benzo(g,h,i)perylene	2.93E-01	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Benzo(k)fluoranthene	3.12E-01	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Bis(2-ethylhexyl)phthalate	4.64E-01	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Carbazole	1.60E-01	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Chrysene	3.47E-01	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Dibenzo(a,h)anthracene	2.92E-01	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Fluoranthene	3.17E-01	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Indeno(1,2,3-cd)pyrene	3.01E-01	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Naphthalene	1.00E-01	1.00E+01	1.00E-02	no	No TRV	No TRV	**yes**
Phenanthrene	2.84E-01	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Pyrene	3.21E-01	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**

COPEC = Chemical of potential ecological concern.
ESV = Ecological screening value.
RME = Reasonable maximum exposure.

[a]Plant TRV reference from Efroymson et al. (1997a).
TRV = Toxicity reference value.
HQ = Hazard quotient.
COEC = Chemical of potential ecological concern.
"**yes**" = HQ > 1 or "No TRV."
"no" = HQ less than or equal to 1.

[b]Earthworm TRV reference from Efroymson et al. (1997b).
HQs in **bold font** are > 1.

Appendix Table O-35. Erie Burning Ground Hazard Quotients for Cottontail Rabbits Exposed to Surface Soil COPECs at Ravenna, Ohio

COPECs inputted from ESV media screen	RME Concentration (mg/kg)	SP_v	ADD_P (mg/kgBW/d) RME x SP_v x CF x I_P x AUF	BAF_i	ADD_A (mg/kgBW/d) RME x BAF_i x CF_i x I_A x AUF	ADD_S (mg/kgBW/d) RME x I_S x AUF	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	NOAEL TRV (mg/kgBW/d)	HQ ADD_{total} / TRV	COEC?
Inorganics										
Aluminum	1.33E+04	4.00E-03	1.50E+00	2.20E-01	0.00E+00	1.68E+02	1.69E+02	7.64E-01	**2.21E+02**	**yes**
Antimony	7.96E+00	2.00E-01	4.49E-02	2.20E-01	0.00E+00	1.00E-01	1.45E-01	4.95E-02	**2.93E+00**	**yes**
Arsenic	1.08E+01	4.00E-02	1.22E-02	2.58E-01	0.00E+00	1.36E-01	1.48E-01	4.99E-02	**2.97E+00**	**yes**
Barium	2.47E+02	1.50E-01	1.04E+00	2.20E-01	0.00E+00	3.11E+00	4.16E+00	3.91E+00	**1.06E+00**	**yes**
Cadmium	1.76E+00	5.50E-01	2.73E-02	1.71E+01	0.00E+00	2.22E-02	4.95E-02	7.06E-01	7.01E-02	no
Calcium	3.67E+04	3.50E+00	3.62E+03	3.21E-01	0.00E+00	4.62E+02	4.08E+03	No TRV	No TRV	**yes**
Chromium	2.27E+01	7.50E-03	4.80E-03	1.10E+00	0.00E+00	2.86E-01	2.91E-01	2.00E+03	1.45E-04	no
Copper	8.24E+01	4.00E-01	9.29E-01	4.00E-02	0.00E+00	1.04E+00	1.97E+00	1.11E+01	1.77E-01	no
Cyanide	1.64E+00	1.72E+00	7.95E-02	1.12E+00	0.00E+00	2.07E-02	1.00E-01	4.73E+01	2.12E-03	no
Iron	2.50E+04	4.00E-03	2.82E+00	3.21E-01	0.00E+00	3.15E+02	3.18E+02	No TRV	No TRV	**yes**
Lead	1.65E+02	4.50E-02	2.09E-01	3.34E+00	0.00E+00	2.08E+00	2.29E+00	5.85E+00	3.91E-01	no
Magnesium	4.82E+03	1.00E+00	1.36E+02	3.21E-01	0.00E+00	6.07E+01	1.97E+02	No TRV	No TRV	**yes**
Manganese	8.04E+02	2.50E-01	5.67E+00	6.40E-02	0.00E+00	1.01E+01	1.58E+01	6.44E+01	2.45E-01	no
Mercury	4.62E-02	9.00E-01	1.17E-03	5.23E+00	0.00E+00	5.82E-04	1.75E-03	9.61E-01	1.83E-03	no
Nickel	2.43E+01	6.00E-02	4.11E-02	1.66E+00	0.00E+00	3.06E-01	3.47E-01	2.93E+01	1.19E-02	no
Potassium	1.06E+03	1.00E+00	2.99E+01	3.21E-01	0.00E+00	1.34E+01	4.32E+01	No TRV	No TRV	**yes**
Silver	1.17E+00	4.00E-01	1.32E-02	2.20E-01	0.00E+00	1.47E-02	2.79E-02	No TRV	No TRV	**yes**
Sodium	4.41E+02	7.50E-02	9.33E-01	3.21E-01	0.00E+00	5.56E+00	6.49E+00	No TRV	No TRV	**yes**
Vanadium	2.06E+01	5.50E-03	3.20E-03	3.21E-01	0.00E+00	2.60E-01	2.63E-01	1.43E-01	**1.84E+00**	**yes**
Zinc	5.71E+02	1.50E+00	2.42E+01	5.77E+00	0.00E+00	7.19E+00	3.13E+01	1.17E+02	2.68E-01	no
Organics-Explosives										
2-Amino-4,6-Dinitrotoluene	9.32E-02	3.35E+00	8.79E-03	2.30E+00	0.00E+00	1.17E-03	9.97E-03	No TRV	No TRV	**yes**
4-Amino-2,6-Dinitrotoluene	1.00E-01	3.35E+00	9.43E-03	2.30E+00	0.00E+00	1.26E-03	1.07E-02	No TRV	No TRV	**yes**
Nitrocellulose	2.61E+00	1.67E+04	1.23E+03	1.32E-05	0.00E+00	3.29E-02	1.23E+03	No TRV	No TRV	**yes**
4-Nitrotoluene	1.26E-01	1.65E+00	5.87E-03	2.22E-04	0.00E+00	1.59E-03	7.46E-03	No TRV	No TRV	**yes**
Organics-Semivolatiles										
Acenaphthylene	2.30E-01	1.72E-01	1.12E-03	2.92E-04	0.00E+00	2.90E-03	4.01E-03	No TRV	No TRV	**yes**
Anthracene	2.91E-01	1.01E-01	8.29E-04	3.11E-04	0.00E+00	3.67E-03	4.50E-03	No TRV	No TRV	**yes**
Benzo(a)anthracene	3.20E-01	2.02E-02	1.82E-04	3.00E-02	0.00E+00	4.03E-03	4.21E-03	No TRV	No TRV	**yes**
Benzo(a)pyrene	3.22E-01	1.11E-02	1.01E-04	7.00E-02	0.00E+00	4.06E-03	4.16E-03	3.96E-01	1.05E-02	no
Benzo(b)fluoranthene	4.17E-01	1.01E-02	1.19E-04	7.00E-02	0.00E+00	5.25E-03	5.37E-03	No TRV	No TRV	**yes**
Benzo(g,h,i)perylene	2.93E-01	3.05E-03	2.52E-05	4.76E-04	0.00E+00	3.69E-03	3.72E-03	No TRV	No TRV	**yes**
Benzo(k)fluoranthene	3.12E-01	1.01E-02	8.89E-05	8.00E-02	0.00E+00	3.93E-03	4.02E-03	No TRV	No TRV	**yes**
Bis(2-ethylhexyl)phthalate	4.64E-01	3.80E-02	4.97E-04	3.51E-04	0.00E+00	5.85E-03	6.34E-03	7.25E+00	8.75E-04	no
Carbazole	1.60E-01	2.74E-01	1.24E-03	7.96E+01	0.00E+00	2.02E-03	3.25E-03	No TRV	No TRV	**yes**
Chrysene	3.47E-01	1.87E-02	1.83E-04	4.00E-02	0.00E+00	4.37E-03	4.56E-03	No TRV	No TRV	**yes**
Dibenzo(a,h)anthracene	2.92E-01	6.40E-03	5.27E-05	7.00E-02	0.00E+00	3.68E-03	3.73E-03	No TRV	No TRV	**yes**
Fluoranthene	3.17E-01	4.47E-02	3.99E-04	3.44E-04	0.00E+00	3.99E-03	4.39E-03	No TRV	No TRV	**yes**
Indeno(1,2,3-cd)pyrene	3.01E-01	3.90E-03	3.31E-05	8.00E-02	0.00E+00	3.79E-03	3.83E-03	No TRV	No TRV	**yes**

Appendix Table O-35. Erie Burning Ground Hazard Quotients for Cottontail Rabbits Exposed to Surface Soil COPECs at Ravenna, Ohio

COPECs inputted from ESV media screen	RME Concentration (mg/kg)	SP_v	ADD_P (mg/kgBW/d) RME *x* SP_v *x* *CF x* I_P *x* AUF	BAF_i	ADD_A (mg/kgBW/d) RME *x* BAF_i *x* CF_i *x* I_A *x* AUF	ADD_S (mg/kgBW/d) RME *x* I_S *x* AUF	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	NOAEL TRV (mg/kgBW/d)	HQ ADD_{total} / TRV	COEC?
Naphthalene	1.00E-01	4.35E-01	1.23E-03	2.61E-04	0.00E+00	1.26E-03	2.49E-03	No TRV	No TRV	**yes**
Phenanthrene	2.84E-01	9.08E-02	7.27E-04	3.15E-04	0.00E+00	3.58E-03	4.31E-03	No TRV	No TRV	**yes**
Pyrene	3.21E-01	4.99E-02	4.52E-04	3.39E-04	0.00E+00	4.04E-03	4.50E-03	No TRV	No TRV	**yes**

COPEC = Constituents of potential ecological concern.
ESV = Ecological screening value.
CF = Correction factor dry wt to wet wt[(0.15) 0.15 kd dry plant/kg wet plant].
RME = Reasonable maximum exposure (lower of maximum or 95% UCL of mean).
SP_v = Soil-to-plant uptake factor; vegetative.
ADD_P = Average daily dose; plant.
I_P (kg/kgBW/d) = Plant ingestion rate for cottontails = 1.88E-01.
AUF = Area use factor (1.0).
BAF_i = Soil-to-animal; invertebrates.
ADD_A = Average daily dose; animal.
CF_i = Correction factor (earthworms) [(0.13) for As, Cd, Cr, Cu, Hg, Mn, Ni, Pb, Zn, PCBs, and 1 for all other COPECs - fraction dry wt worm/kg wet wet].
I_A (kg/kgBW/d) = Animal ingestion rate for cottontails = 0.00E+00.
ADD_S = Average daily dose; soil.
I_S (kg/kgBW/d) = Soil ingestion rate for cottontails = 1.26E-02.
ADDtotal = Average daily dose; total.
NOAEL = Lowest observed adverse effect level.
TRV (mg/kgBW/d) = Toxicity reference value.
HQ = Hazard quotient.
COEC = Contaminant of ecological concern.
"**yes**" = HQ > 1 or "No TRV."
"no" = HQ less than or equal to 1.
HQs in **bold font** are > 1.

Appendix Table O-36. Erie Burning Ground Hazard Quotients for Shrews Exposed to Surface Soil COPECs at Ravanna, Ohio

COPECs following ESV screen	RME Concentration (mg/kg)	SP_v	ADD_P (mg/kgBW/d) RME x SP_v x CF x I_P x AUF	BAF_i	ADD_A (mg/kgBW/d) RME x BAF_i x CF_i x I_A x AUF	ADD_S (mg/kgBW/d) RME x I_S x AUF	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	NOAEL TRV (mg/kgBW/d)	HQ ADD_{total} / TRV	COEC?
Inorganics										
Aluminum	1.33E+04	4.00E-03	5.81E-01	2.20E-01	1.43E+03	4.47E+02	1.87E+03	2.22E+00	**8.42E+02**	**yes**
Antimony	7.96E+00	2.00E-01	1.74E-02	2.20E-01	8.53E-01	2.67E-01	1.14E+00	1.44E-01	**7.90E+00**	**yes**
Arsenic	1.08E+01	4.00E-02	4.72E-03	2.58E-01	1.76E-01	3.63E-01	5.44E-01	1.45E-01	**3.75E+00**	**yes**
Barium	2.47E+02	1.50E-01	4.05E-01	2.20E-01	2.65E+01	8.30E+00	3.52E+01	1.14E+01	**3.09E+00**	**yes**
Cadmium	1.8E+00	5.50E-01	1.06E-02	1.71E+01	1.91E+00	5.91E-02	1.98E+00	2.05E+00	9.62E-01	no
Calcium	3.67E+04	3.50E+00	1.40E+03	3.21E-01	5.74E+03	1.23E+03	8.38E+03	No TRV	**No TRV**	**yes**
Chromium	2.27E+01	7.50E-03	1.86E-03	1.10E+00	1.58E+00	7.63E-01	2.34E+00	5.83E+03	4.02E-04	no
Copper	8.24E+01	4.00E-01	3.60E-01	4.00E-02	2.09E-01	2.77E+00	3.34E+00	3.24E+01	1.03E-01	no
Cyanide	1.64E+00	1.72E+00	3.08E-02	1.12E+00	8.95E-01	5.51E-02	9.81E-01	1.38E+02	7.13E-03	no
Iron	2.50E+04	4.00E-03	1.09E+00	3.21E-01	3.91E+03	8.40E+02	4.75E+03	No TRV	No TRV	**yes**
Lead	1.65E+02	4.50E-02	8.11E-02	3.34E+00	3.49E+01	5.54E+00	4.06E+01	1.70E+01	**2.38E+00**	**yes**
Magnesium	4.82E+03	1.00E+00	5.26E+01	3.21E-01	7.54E+02	1.62E+02	9.68E+02	No TRV	No TRV	**yes**
Manganese	8.04E+02	2.50E-01	2.19E+00	6.40E-02	3.26E+00	2.70E+01	3.25E+01	1.87E+02	1.73E-01	no
Mercury	4.62E-02	9.00E-01	4.54E-04	5.23E+00	1.53E-02	1.55E-03	1.73E-02	2.80E+00	6.19E-03	no
Nickel	2.43E+01	6.00E-02	1.59E-02	1.66E+00	2.55E+00	8.16E-01	3.38E+00	8.52E+01	3.97E-02	no
Potassium	1.06E+03	1.00E+00	1.16E+01	3.21E-01	1.66E+02	3.56E+01	2.13E+02	No TRV	No TRV	**yes**
Silver	1.17E+00	4.00E-01	5.11E-03	2.20E-01	1.25E-01	3.93E-02	1.70E-01	No TRV	No TRV	**yes**
Sodium	4.41E+02	7.50E-02	3.61E-01	3.21E-01	6.90E+01	1.48E+01	8.41E+01	No TRV	No TRV	**yes**
Vanadium	2.06E+01	5.50E-03	1.24E-03	3.21E-01	3.22E+00	6.92E-01	3.92E+00	4.15E-01	**9.43E+00**	**yes**
Zinc	5.71E+02	1.50E+00	9.35E+00	5.77E+00	2.09E+02	1.92E+01	2.37E+02	3.41E+02	6.96E-01	no
Organics-Explosives										
2-Amino-4,6-Dinitrotoluene	9.32E-02	3.35E+00	3.41E-03	2.30E+00	1.04E-01	3.13E-03	1.11E-01	No TRV	No TRV	**yes**
4-Amino-2,6-Dinitrotoluene	1.00E-01	3.35E+00	3.65E-03	2.30E+00	1.12E-01	3.36E-03	1.19E-01	No TRV	No TRV	**yes**
Nitrocellulose	2.61E+00	1.67E+04	4.77E+02	1.32E-05	1.67E-05	8.77E-02	4.77E+02	No TRV	No TRV	**yes**
4-Nitrotoluene	1.26E-01	1.65E+00	2.27E-03	2.22E-04	1.36E-05	4.23E-03	6.52E-03	No TRV	No TRV	**yes**
Organics-Semivolatiles										
Acenaphthylene	2.30E-01	1.72E-01	4.32E-04	2.92E-04	3.27E-05	7.73E-03	8.19E-03	No TRV	No TRV	**yes**
Anthracene	2.91E-01	1.01E-01	3.21E-04	3.11E-04	4.42E-05	9.78E-03	1.01E-02	No TRV	No TRV	**yes**
Benzo(a)anthracene	3.20E-01	2.02E-02	7.06E-05	3.00E-02	4.68E-03	1.08E-02	1.55E-02	No TRV	No TRV	**yes**
Benzo(a)pyrene	3.22E-01	1.11E-02	3.90E-05	7.00E-02	1.10E-02	1.08E-02	2.18E-02	1.15E+00	1.89E-02	no
Benzo(b)fluoranthene	4.17E-01	1.01E-02	4.60E-05	7.00E-02	1.42E-02	1.40E-02	2.83E-02	No TRV	No TRV	**yes**
Benzo(g,h,i)perylene	2.93E-01	3.05E-03	9.76E-06	4.76E-04	6.79E-05	9.84E-03	9.92E-03	No TRV	No TRV	**yes**
Benzo(k)fluoranthene	3.12E-01	1.01E-02	3.44E-05	8.00E-02	1.22E-02	1.05E-02	2.27E-02	No TRV	No TRV	**yes**
Bis(2-ethylhexyl)phthalate	4.64E-01	3.80E-02	1.93E-04	3.51E-04	7.92E-05	1.56E-02	1.59E-02	2.11E+01	7.52E-04	no
Carbazole	1.60E-01	2.74E-01	4.79E-04	7.96E+01	6.20E+00	5.38E-03	6.21E+00	No TRV	No TRV	**yes**
Chrysene	3.47E-01	1.87E-02	7.09E-05	4.00E-02	6.76E-03	1.17E-02	1.85E-02	No TRV	No TRV	**yes**
Dibenzo(a,h)anthracene	2.92E-01	6.40E-03	2.04E-05	7.00E-02	9.96E-03	9.81E-03	1.98E-02	No TRV	No TRV	**yes**
Fluoranthene	3.17E-01	4.47E-02	1.55E-04	3.44E-04	5.31E-05	1.07E-02	1.09E-02	No TRV	No TRV	**yes**

Appendix Table O-36. Erie Burning Ground Hazard Quotients for Shrews Exposed to Surface Soil COPECs at Ravanna, Ohio

COPECs following ESV screen	RME Concentration (mg/kg)	SP_v	ADD_P (mg/kgBW/d) RME x SP_v x CF x I_P x AUF	BAF_i	ADD_A (mg/kgBW/d) RME x BAF_i x CF_i x I_A x AUF	ADD_S (mg/kgBW/d) RME x I_S x AUF	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	NOAEL TRV (mg/kgBW/d)	HQ ADD_{total} / TRV	COEC?
Indeno(1,2,3-cd)pyrene	3.01E-01	3.90E-03	1.28E-05	8.00E-02	1.17E-02	1.01E-02	2.19E-02	No TRV	No TRV	**yes**
Naphthalene	1.00E-01	4.35E-01	4.75E-04	2.61E-04	1.27E-05	3.36E-03	3.85E-03	No TRV	No TRV	**yes**
Phenanthrene	2.84E-01	9.08E-02	2.82E-04	3.15E-04	4.37E-05	9.54E-03	9.87E-03	No TRV	No TRV	**yes**
Pyrene	3.21E-01	4.99E-02	1.75E-04	3.39E-04	5.30E-05	1.08E-02	1.10E-02	No TRV	No TRV	**yes**

COPEC = Constituents of potential ecological concern.
ESV = Ecological screening value.
CF = Correction factor dry wt to wet wt[(0.15) 0.15 kd dry plant/kg wet plant].
RME = Reasonable maximum exposure (lower of maximum or 95% UCL of mean).
SP_v = Soil-to-plant uptake factor; vegetative.
ADD_P = Average daily dose; plant.
I_P (kg/kgBW/d) = Plant ingestion rate for shrews = 7.28E-02.
AUF = Area use factor (1.0).
BAF_i = Soil-to-animal; invertebrates.
ADD_A = Average daily dose; animal.
CF_i = correction factor (earthworms) [(0.13) for As, Cd, Cr, Cu, Hg, Mn, Ni, Pb, Zn, PCBs, and 1 for all other COPECs - fraction dry wt worm/kg wet wet].
I_A (kg/kgBW/d) = Animal ingestion rate for shrews = 4.87E-01.
ADD_S = Average daily dose; soil.
I_S (kg/kgBW/d) = Soil ingestion rate for shrews = 3.36E-02.
ADDtotal = Average daily dose; total.
NOAEL = Lowest observed adverse effect level.
TRV (mg/kgBW/d) = Toxicity reference value.
HQ = Hazard quotient.
COEC = Contaminant of ecological concern.
"**yes**" = HQ > 1 or "No TRV."
"no" = HQ less than or equal to 1.
HQs in **bold font** are >1.

Appendix Table O-37. Erie Burning Ground Hazard Quotients for Red Foxes Exposed to Surface Soil PBT COPECs at Ravenna, Ohio

PBT COPECs remaining after ESV screen	RME Concentration (mg/kg)	SP_r	ADD_P (mg/kgBW/d) RME x SP_r x CF_r x I_P x AUF_{-F}	SP_v	Prey ADD_P (mg/kgBW/d) RME x SP_v x CFv x I_{P-s} x AUF-s	BAF_i	Prey ADD_A (mg/kgBW/d) RME x BAF_i x CF_i x I_{A-s} x AUF-s	Prey ADD_S (mg/kgBW/d) RME x I_{S-s} x AUF-s	Prey ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$
Inorganics									
Cadmium	1.76E+00	5.50E-01	1.09E-05	5.50E-01	1.06E-02	1.71E+01	1.91E+00	5.91E-02	1.98E+00
Lead	1.65E+02	4.50E-02	8.34E-05	4.50E-02	8.11E-02	3.34E+00	3.49E+01	5.54E+00	4.06E+01
Mercury	4.62E-02	9.00E-01	4.67E-07	9.00E-01	4.54E-04	5.23E+00	1.53E-02	1.55E-03	1.73E-02
Zinc	5.71E+02	#######	9.62E-03	#######	9.35E+00	5.77E+00	2.09E+02	1.92E+01	2.37E+02
Organics-Semivolatiles									
Acenaphthylene	2.30E-01	1.72E-01	4.44E-07	1.72E-01	4.32E-04	2.92E-04	3.27E-05	7.73E-03	8.19E-03
Anthracene	2.91E-01	1.01E-01	3.30E-07	1.01E-01	3.21E-04	3.11E-04	4.42E-05	9.78E-03	1.01E-02
Benzo(a)anthracene	3.20E-01	2.02E-02	7.26E-08	2.02E-02	7.06E-05	3.00E-02	4.68E-03	1.08E-02	1.55E-02
Benzo(a)pyrene	3.22E-01	1.11E-02	4.01E-08	1.11E-02	3.90E-05	7.00E-02	1.10E-02	1.08E-02	2.18E-02
Benzo(b)fluoranthene	4.17E-01	1.01E-02	4.73E-08	1.01E-02	4.60E-05	7.00E-02	1.42E-02	1.40E-02	2.83E-02
Benzo(g,h,i)perylene	2.93E-01	3.05E-03	1.00E-08	3.05E-03	9.76E-06	4.76E-04	6.79E-05	9.84E-03	9.92E-03
Benzo(k)fluoranthene	3.12E-01	1.01E-02	3.54E-08	1.01E-02	3.44E-05	8.00E-02	1.22E-02	1.05E-02	2.27E-02
Bis(2-ethylhexyl)phthalate	4.64E-01	3.80E-02	1.98E-07	3.80E-02	1.93E-04	3.51E-04	7.92E-05	1.56E-02	1.59E-02
Carbazole	1.60E-01	2.74E-01	4.92E-07	2.74E-01	4.79E-04	7.96E+01	6.20E+00	5.38E-03	6.21E+00
Chrysene	3.47E-01	1.87E-02	7.29E-08	1.87E-02	7.09E-05	4.00E-02	6.76E-03	1.17E-02	1.85E-02
Dibenzo(a,h)anthracene	2.92E-01	6.40E-03	2.10E-08	6.40E-03	2.04E-05	7.00E-02	9.96E-03	9.81E-03	1.98E-02
Fluoranthene	3.17E-01	4.47E-02	1.59E-07	4.47E-02	1.55E-04	3.44E-04	5.31E-05	1.07E-02	1.09E-02
Indeno(1,2,3-cd)pyrene	3.01E-01	3.90E-03	1.32E-08	3.90E-03	1.28E-05	8.00E-02	1.17E-02	1.01E-02	2.19E-02
Naphthalene	1.00E-01	4.35E-01	4.88E-07	4.35E-01	4.75E-04	2.61E-04	1.27E-05	3.36E-03	3.85E-03
Phenanthrene	2.84E-01	9.08E-02	2.89E-07	9.08E-02	2.82E-04	3.15E-04	4.37E-05	9.54E-03	9.87E-03
Pyrene	3.21E-01	4.99E-02	1.80E-07	4.99E-02	1.75E-04	3.39E-04	6.90E-06	1.08E-02	1.10E-02

PBT = Persistent, bioaccumulative, and toxic.

RME = Reasonable maximum exposure.

SP_r = Soil-to-plant; reproductive.

SP_v = Soil-to-plant; vegetative.

I_P (kg/kgBW/d) = Plant ingestion rate for red foxes = 0.00437.

ADD_P = Average daily dose; plant.

I_{P-s} (kg/kgBW/d) = Plant ingestion rate for shrews = 0.0728.

AUF_{-F} = Area use factor for fox = 0.02569.

AUF_s = Area use factor for shrew = 1.0.

BAF_i = Soil-to-animal; invertebrates.

ADD_A = Average daily dose; animal.

I_{A-s} (kg/kgBW/d) = Animal ingestion rate for shrews = 0.487.

ADD_S = Average daily dose; soil.

I_{S-s} (kg/kgBW/d) = Soil ingestion rate for shrews = 0.0336.

Cs (mg/kg) = Concentration in the prey.

IR_f = Ingestion rate of food for shrews.

CF_r = Correction factor [0.10) 0.10 kg dry wt reproductive plant part/kg wet wt].

CF_v = Correction factor [0.15) 0.15 kg dry wt vegetative plant part/kg wet wt].

CF_i = Correction factor (earthworms) [(0.13) for As, Cd, Cr, Cu, Hg, Mn, Ni, Pb, Zn, PCBs, and 1 for all other COPECs - fraction dry wt worm/kg wet wet].

COPEC = Chemical of potential ecological concern.

I_A (kg/kgBW/d) = Animal ingestion rate for red foxes = 0.0906.

BAF_{-TP} = Animal-to-mammal transfer factor (Ba_{cow} x $BW_{receptor}$ x lipid ratio) where lipid ratio = 1 for inorganics, 0.8 for organics; mammal Ba = biotransfer food to cow, and $BW_{receptor}$ = body wt (kg) of the receptor.

I_S (kg/kgBW/d) = Soil ingestion rate for red foxes = 0.00266.

ADD_{total} = Average daily dose; total.

TRV (mg/kgBW/d) = Toxicity reference value.

HQ = Hazard quotient.

COEC = Contaminant of ecological concern.

"**yes**" = HQ > 1 or "No TRV."

"no" = HQ less than or equal to 1.

HQs in **bold font** are >1.

Appendix Table O-37. Erie Burning Ground Hazard Quotients for Red Foxes Exposed to Surface Soil PBT COPECs at Ravenna, Ohio

PBT COPECs remaining after ESV screen	Cs (mg/kg) Prey ADD_{total}/IR_f	BAF_{-TP}	ADD_A (mg/kgBW/d) $Cs\ x\ BAF_{-TP}\ x\ I_A\ x\ AUF_{-F}$	ADD_S (mg/kgBW/d) $RME\ x\ I_S\ x\ AUF_{-F}$	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	NOAEL TRV (mg/kgBW/d)	Site HQ ADD_{total} / TRV	COEC?
Inorganics								
Cadmium	3.53E+00	1.54E-02	1.27E-04	1.20E-04	2.58E-04	5.08E-01	5.07E-04	no
Lead	7.24E+01	1.36E-03	2.29E-04	1.13E-02	1.16E-02	4.22E+00	2.75E-03	no
Mercury	3.09E-02	2.36E-02	1.70E-06	3.16E-06	5.32E-06	6.92E-01	7.69E-06	no
Zinc	4.23E+02	4.54E-01	4.47E-01	3.90E-02	4.96E-01	8.43E+01	5.88E-03	no
Organics-Semivolatiles								
Acenaphthylene	1.46E-02	1.34E-03	4.56E-08	1.57E-05	1.62E-05	No TRV	No TRV	**yes**
Anthracene	1.81E-02	3.36E-03	1.42E-07	1.99E-05	2.04E-05	No TRV	No TRV	**yes**
Benzo(a)anthracene	2.77E-02	5.45E-02	3.51E-06	2.19E-05	2.55E-05	No TRV	No TRV	**yes**
Benzo(a)pyrene	3.90E-02	1.24E-01	1.13E-05	2.20E-05	3.33E-05	2.85E-01	1.17E-04	no
Benzo(b)fluoranthene	5.05E-02	1.82E-01	2.13E-05	2.85E-05	4.99E-05	No TRV	No TRV	**yes**
Benzo(g,h,i)perylene	1.77E-02	1.43E+00	5.92E-05	2.00E-05	7.92E-05	No TRV	No TRV	**yes**
Benzo(k)fluoranthene	4.05E-02	1.81E-01	1.70E-05	2.13E-05	3.84E-05	No TRV	No TRV	**yes**
Bis(2-ethylhexyl)phthalate	2.83E-02	1.82E-02	1.20E-06	3.17E-05	3.31E-05	5.22E+00	6.34E-06	no
Carbazole	1.11E+01	5.98E-04	1.54E-05	1.09E-05	2.69E-05	No TRV	No TRV	**yes**
Chrysene	3.30E-02	6.27E-02	4.82E-06	2.37E-05	2.86E-05	No TRV	No TRV	**yes**
Dibenzo(a,h)anthracene	3.53E-02	4.02E-01	3.31E-05	2.00E-05	5.30E-05	No TRV	No TRV	**yes**
Fluoranthene	1.94E-02	1.38E-02	6.22E-07	2.17E-05	2.24E-05	No TRV	No TRV	**yes**
Indeno(1,2,3-cd)pyrene	3.90E-02	9.38E-01	8.53E-05	2.06E-05	1.06E-04	No TRV	No TRV	**yes**
Naphthalene	6.87E-03	2.69E-04	4.30E-09	6.83E-06	7.33E-06	No TRV	No TRV	**yes**
Phenanthrene	1.76E-02	4.04E-03	1.66E-07	1.94E-05	1.99E-05	No TRV	No TRV	**yes**
Pyrene	1.96E-02	1.14E-02	5.20E-07	2.19E-05	2.26E-05	No TRV	No TRV	**yes**

Appendix Table O-38. Erie Burning Ground Hazard Quotients for Red-Tailed Hawks Exposed to Surface Soil PBT COPECs at Ravenna, Ohio

PBT COPECs remaining after the ESV Screen	RME Concentration (mg/kg)	SP_v	ADD_P (mg/kgBW/d) RME x SP_v x CFv x I_P x AUF_{-H}	Prey ADD_P (mg/kgBW/d) RME x SP_v x CFv x I_{P-s} x AUF-s	BAF_i	Prey ADD_A (mg/kgBW/d) RME x BAF_i x CF_i x I_{A-s} x AUF-s	Prey ADD_S (mg/kgBW/d) RME x I_{S-s} x AUF-s	Prey ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$
Inorganics								
Cadmium	1.76E+00	5.50E-01	0.00E+00	1.06E-02	1.71E+01	1.91E+00	5.91E-02	1.98E+00
Lead	1.65E+02	4.50E-02	0.00E+00	8.11E-02	3.34E+00	3.49E+01	5.54E+00	4.06E+01
Mercury	4.62E-02	9.00E-01	0.00E+00	4.54E-04	5.23E+00	1.53E-02	1.55E-03	1.73E-02
Zinc	5.71E+02	1.50E+00	0.00E+00	9.35E+00	5.77E+00	2.09E+02	1.92E+01	2.37E+02
Organics-Semivolatile								
Acenaphthylene	2.30E-01	1.72E-01	0.00E+00	4.32E-04	2.92E-04	3.27E-05	7.73E-03	8.19E-03
Anthracene	2.91E-01	1.01E-01	0.00E+00	3.21E-04	3.11E-04	4.42E-05	9.78E-03	1.01E-02
Benzo(a)anthracene	3.20E-01	2.02E-02	0.00E+00	7.06E-05	3.00E-02	4.68E-03	1.08E-02	1.55E-02
Benzo(a)pyrene	3.22E-01	1.11E-02	0.00E+00	3.90E-05	7.00E-02	1.10E-02	1.08E-02	2.18E-02
Benzo(b)fluoranthene	4.17E-01	1.01E-02	0.00E+00	4.60E-05	7.00E-02	1.42E-02	1.40E-02	2.83E-02
Benzo(g,h,i)perylene	2.93E-01	3.05E-03	0.00E+00	9.76E-06	4.76E-04	6.79E-05	9.84E-03	9.92E-03
Benzo(k)fluoranthene	3.12E-01	1.01E-02	0.00E+00	3.44E-05	8.00E-02	1.22E-02	1.05E-02	2.27E-02
Bis(2-ethylhexyl)phthalate	4.64E-01	3.80E-02	0.00E+00	1.93E-04	3.51E-04	7.92E-05	1.56E-02	1.59E-02
Carbazole	1.60E-01	2.74E-01	0.00E+00	4.79E-04	7.96E+01	6.20E+00	5.38E-03	6.21E+00
Chrysene	3.47E-01	1.87E-02	0.00E+00	7.09E-05	4.00E-02	6.76E-03	1.17E-02	1.85E-02
Dibenzo(a,h)anthracene	2.92E-01	6.40E-03	0.00E+00	2.04E-05	7.00E-02	9.96E-03	9.81E-03	1.98E-02
Fluoranthene	3.17E-01	4.47E-02	0.00E+00	1.55E-04	3.44E-04	5.31E-05	1.07E-02	1.09E-02
Indeno(1,2,3-cd)pyrene	3.01E-01	3.90E-03	0.00E+00	1.28E-05	8.00E-02	1.17E-02	1.01E-02	2.19E-02
Naphthalene	1.00E-01	4.35E-01	0.00E+00	4.75E-04	2.61E-04	1.27E-05	3.36E-03	3.85E-03
Phenanthrene	2.84E-01	9.08E-02	0.00E+00	2.82E-04	3.15E-04	4.37E-05	9.54E-03	9.87E-03
Pyrene	3.21E-01	4.99E-02	0.00E+00	1.75E-04	3.39E-04	5.30E-05	1.08E-02	1.10E-02

PBT = Persistent, bioaccumulative, and toxic.

COPEC = Contaminant of potential ecological concern.

ESV = Ecological screening value.

RME = Reasonable maximum concenetration.

SP_r = Soil-to-plant; reproductive.

SP_v = Soil-to-plant; vegetative.

I_P (kg/kgBW/d) = Plant ingestion rate for red-tailed hawks = 0.00.

ADD_P = Average daily dose; plant.

CF_v = Correction factor [0.15) 0.15 kg dry wt vegetative plant part/kg wet wt].

CF_i = Correction factor (earthworms) [(0.13) for As, Cd, Cr, Cu, Hg, Mn, Ni, Pb, Zn, PCBs, and 1 for all other COPECs - fraction dry wt worm/kg wet wet].

Cs (mg/kg) = Concentration in the prey.

IR_f (kg/kgBW/d)= Ingestion rate of food for shrews = 0.56.

BAF_{-TP} = Animal-to-mammal transfer factor (Ba_{cow} x $BW_{receptor}$ x lipid ratio) where lipid ratio = 1 for inorganics, 0.8 for organics; mammal Ba = biotransfer food to cow, and $BW_{receptor}$ = body wt (kg) of the receptor.

I_A (kg/kgBW/d) = Animal ingestion rate for red-tailed hawks = 0.11.

I_S (kg/kgBW/d) = Soil ingestion rate for red-tailed hawks = 0.00.

Appendix Table O-38. Erie Burning GroundHazard Quotients for Red-Tailed Hawks Exposed to Surface Soil PBT COPECs at Ravenna, Ohio

PBT COPECs remaining after the ESV Screen	Cs (mg/kg) ADD_{total}/IR_f	BAF_{-TP}	ADD_A (mg/kgBW/d) $Cs\ x\ BAF_{-TP}\ x\ I_A\ x\ AUF_{-H}$	ADD_S (mg/kgBW/d) RME $x\ I_S\ x\ AUF_{-H}$	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	NOAEL TRV (mg/kgBW/d)	Site HQ ADD_{total} / TRV	COEC?
Inorganics								
Cadmium	3.53E+00	3.86E-03	2.21E-05	0.00E+00	2.21E-05	1.45E-02	1.53E-03	no
Lead	7.24E+01	3.40E-04	4.01E-05	0.00E+00	4.01E-05	1.13E-02	3.55E-03	no
Mercury	3.09E-02	5.90E-03	2.97E-07	0.00E+00	2.97E-07	4.50E-03	6.60E-05	no
Zinc	4.23E+02	1.13E-01	7.81E-02	0.00E+00	7.81E-02	1.45E-01	5.39E-01	no
Organics-Semivolatile								
Acenaphthylene	1.46E-02	3.35E-04	7.96E-09	0.00E+00	7.96E-09	No TRV	No TRV	**yes**
Anthracene	1.81E-02	8.40E-04	2.47E-08	0.00E+00	2.47E-08	No TRV	No TRV	**yes**
Benzo(a)anthracene	2.77E-02	1.36E-02	6.14E-07	0.00E+00	6.14E-07	No TRV	No TRV	**yes**
Benzo(a)pyrene	3.90E-02	3.11E-02	1.97E-06	0.00E+00	1.97E-06	No TRV	No TRV	**yes**
Benzo(b)fluoranthene	5.05E-02	4.54E-02	3.73E-06	0.00E+00	3.73E-06	No TRV	No TRV	**yes**
Benzo(g,h,i)perylene	1.77E-02	3.59E-01	1.03E-05	0.00E+00	1.03E-05	No TRV	No TRV	**yes**
Benzo(k)fluoranthene	4.05E-02	4.51E-02	2.97E-06	0.00E+00	2.97E-06	No TRV	No TRV	**yes**
Bis(2-ethylhexyl)phthalate	2.83E-02	4.56E-03	2.10E-07	0.00E+00	2.10E-07	1.10E-02	1.91E-05	no
Carbazole	1.11E+01	1.49E-04	2.69E-06	0.00E+00	2.69E-06	No TRV	No TRV	**yes**
Chrysene	3.30E-02	1.57E-02	8.42E-07	0.00E+00	8.42E-07	No TRV	No TRV	**yes**
Dibenzo(a,h)anthracene	3.53E-02	1.00E-01	5.77E-06	0.00E+00	5.77E-06	No TRV	No TRV	**yes**
Fluoranthene	1.94E-02	3.45E-03	1.09E-07	0.00E+00	1.09E-07	No TRV	No TRV	**yes**
Indeno(1,2,3-cd)pyrene	3.90E-02	2.35E-01	1.49E-05	0.00E+00	1.49E-05	No TRV	No TRV	**yes**
Naphthalene	6.87E-03	6.72E-05	7.51E-10	0.00E+00	7.51E-10	No TRV	No TRV	**yes**
Phenanthrene	1.76E-02	1.01E-03	2.90E-08	0.00E+00	2.90E-08	No TRV	No TRV	**yes**
Pyrene	1.97E-02	2.85E-03	9.11E-08	0.00E+00	9.11E-08	No TRV	No TRV	**yes**

I_{P-s} (kg/kgBW/d) = Plant ingestion rate for shrews (7.28E-02).
AUF_s = Area use factor for shrew (1.0).
BAF_i = Soil-to-animal; invertebrates.
ADD_A = Average daily dose; animal.
I_{A-s} (kg/kgBW/d) = Animal ingestion rate for shrews (4.87E-01)
ADD_S = Average daily dose; soil.
AUF_{-H} = Area use factor hawk 1.48E-02

I_{S-s} (kg/kgBW/d) = Soil ingestion rate for shrews (3.36E-02).
ADD_{total} = Average daily dose; total.
TRV (mg/kgBW/d) = Toxicity reference value.
HQ = Hazard quotient.
COEC = Contaminant of ecological concern.
"**yes**" = HQ > 1 or "No TRV."
"no" = HQ less than or equal to 1.
HQs in **bold font** are > 1.

Appendix Table O-39. Erie Burning Ground Hazard Quotients for Plants and Earthworms Exposed to Subsurface Soil COPECs at Ravenna, Ohio

		Plants			Earthworms		
COPECs inputted from ESV media screen	**Subsurface Soil RME Concentrations (mg/kg)**	**Plant TRV[a] (mg/kg)**	**Plant HQ Plant RME/TRV**	**COEC?**	**Earthworm TRV[b] (mg/kg)**	**Earthworm HQ Earthworm RME/TRV**	**COEC?**
Inorganics							
Antimony	3.21E+00	5.00E+00	6.42E-01	no	No TRV	No TRV	**yes**
Cadmium	5.71E-01	4.00E+00	1.43E-01	no	2.00E+01	2.86E-02	no
Copper	3.02E+01	1.00E+02	3.02E-01	no	6.00E+01	5.03E-01	no
Lead	3.12E+01	5.00E+01	6.24E-01	no	5.00E+02	6.24E-02	no
Mercury	4.81E-02	3.00E-01	1.60E-01	no	1.00E-01	4.81E-01	no
Sodium	1.49E+02	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Zinc	1.18E+02	5.00E+01	**2.36E+00**	**yes**	2.00E+02	5.90E-01	no
Organics-Explosives							
Nitrocellulose	1.68E+00	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Organics-Semivolatiles							
Benzo(a)anthracene	5.70E-02	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Benzo(a)pyrene	6.80E-02	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Benzo(b)fluoranthene	1.50E-01	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Benzo(k)fluoranthene	6.50E-02	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Bis(2-ethylhexyl)phthalate	2.86E-01	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Chrysene	9.70E-02	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Fluoranthene	2.26E-01	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Indeno(1,2,3-cd)pyrene	5.30E-02	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Phenanthrene	2.29E-01	No TRV	No TRV	**yes**	No TRV	No TRV	**yes**
Pyrene	2.24E-01	No TRV	No TRV	yes	No TRV	No TRV	**yes**

COPEC = Chemical of potential ecological concern.
EU = Exposure unit.
ESV = Ecological screening value.
RME = Reasonable maximum exposure.

[a]Plant TRV reference from Efroymson et al. (1997a).
TRV = Toxicity reference value.
HQ = Hazard quotient.
COEC = Chemical of potential ecological concern.
"**yes**" = HQ > 1 or "No TRV."
"no" = HQ less than or equal to 1.

[b]Earthworm TRV reference from Efroymson et al. (1997b).
HQs in **bold font** are > 1.A7

Appendix Table O-40. Erie Burning Ground Hazard Quotients for Cottontail Rabbits Exposed to Subsurface Soil COPECs at Ravanna, Ohio

COPECs inputted from ESV media screen	RME Concentration (mg/kg)	SP_v	ADD_P (mg/kgBW/d) RME x SP_v x CF x I_P x AUF	BAF_i	ADD_A (mg/kgBW/d) RME x BAF_i x CF_i x I_A x AUF	ADD_S (mg/kgBW/d) RME x I_S x AUF	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	NOAEL TRV (mg/kgBW/d)	HQ ADD_{total} / TRV	COEC?
Inorganics										
Antimony	3.21E+00	2.00E-01	1.81E-02	2.20E-01	0.00E+00	4.04E-02	5.86E-02	4.95E-02	**1.18E+00**	**yes**
Cadmium	5.71E-01	5.50E-01	8.86E-03	1.71E+01	0.00E+00	7.19E-03	1.61E-02	7.06E-01	2.27E-02	no
Copper	3.02E+01	4.00E-01	3.41E-01	4.00E-02	0.00E+00	3.81E-01	7.21E-01	1.11E+01	6.47E-02	no
Lead	3.12E+01	4.50E-02	3.96E-02	3.34E+00	0.00E+00	3.93E-01	4.33E-01	5.85E+00	7.39E-02	no
Mercury	4.81E-02	9.00E-01	1.22E-03	5.23E+00	0.00E+00	6.06E-04	1.83E-03	9.61E-01	1.90E-03	no
Sodium	1.49E+02	7.50E-02	3.15E-01	3.21E-01	0.00E+00	1.88E+00	2.19E+00	No TRV	No TRV	**yes**
Zinc	1.18E+02	1.50E+00	4.99E+00	5.77E+00	0.00E+00	1.49E+00	6.48E+00	1.17E+02	5.53E-02	no
Organics-Explosives										
Nitrocellulose	1.68E+00	1.67E+04	7.93E+02	1.32E-05	0.00E+00	2.12E-02	7.93E+02	No TRV	No TRV	yes
Organics-Semivolatiles										
Benzo(a)anthracene	5.70E-02	2.02E-02	3.25E-05	3.00E-02	0.00E+00	7.18E-04	7.51E-04	No TRV	No TRV	**yes**
Benzo(a)pyrene	6.80E-02	1.11E-02	2.13E-05	7.00E-02	0.00E+00	8.57E-04	8.78E-04	3.96E-01	2.22E-03	no
Benzo(b)fluoranthene	1.50E-01	1.01E-02	4.27E-05	7.00E-02	0.00E+00	1.89E-03	1.93E-03	No TRV	No TRV	**yes**
Benzo(k)fluoranthene	6.50E-02	1.01E-02	1.85E-05	8.00E-02	0.00E+00	8.19E-04	8.38E-04	No TRV	No TRV	**yes**
Bis(2-ethylhexyl)phthalate	2.86E-01	3.80E-02	3.06E-04	3.51E-04	0.00E+00	3.60E-03	3.91E-03	7.25E+00	5.40E-04	no
Chrysene	9.70E-02	1.87E-02	5.12E-05	4.00E-02	0.00E+00	1.22E-03	1.27E-03	No TRV	No TRV	**yes**
Fluoranthene	2.26E-01	4.47E-02	2.85E-04	3.44E-04	0.00E+00	2.85E-03	3.13E-03	No TRV	No TRV	**yes**
Indeno(1,2,3-cd)pyrene	5.30E-02	3.90E-03	5.83E-06	8.00E-02	0.00E+00	6.68E-04	6.74E-04	No TRV	No TRV	**yes**
Phenanthrene	2.29E-01	9.08E-02	5.86E-04	3.15E-04	0.00E+00	2.89E-03	3.47E-03	No TRV	No TRV	**yes**
Pyrene	1.60E-01	4.99E-02	2.25E-04	3.39E-04	0.00E+00	2.02E-03	2.24E-03	No TRV	No TRV	**yes**

COPEC = Constituents of potential ecological concern.

ESV = Ecological screening value.

CF = Correction factor dry wt to wet wt[(0.15) 0.15 kd dry plant/kg wet plant].

RME = Reasonable maximum exposure (lower of maximum or 95% UCL of mean).

SP_v = Soil-to-plant uptake factor; vegetative.

ADD_P = Average daily dose; plant.

I_P (kg/kgBW/d) = Plant ingestion rate for cottontails = 1.88E-01.

AUF = Area use factor = 1.00E+00

BAF_i = Soil-to-animal; invertebrates.

ADD_A = Average daily dose; animal.

CF_i = Correction factor (earthworms) [(0.13) for As, Cd, Cr, Cu, Hg, Mn, Ni, Pb, Zn, PCBs, and 1 for all other COPECs - fraction dry wt worm/kg wet wet].

I_A (kg/kgBW/d) = Animal ingestion rate for cottontails = 0.00E+00.

ADD_S = Average daily dose; soil.

I_S (kg/kgBW/d) = Soil ingestion rate for cottontails = 1.26E-02.

ADDtotal = Average daily dose; total.

NOAEL = Lowest observed adverse effect level.

TRV (mg/kgBW/d) = toxicity reference value.

HQ = Hazard quotient.

COEC = Contaminant of ecological concern.

"**yes**" = HQ > 1 or "No TRV."

"no" = HQ less than or equal to 1.

HQs in **bold font** are > 1.

Appendix Table O-41. Erie Burning Ground Hazard Quotients for Shrews Exposed to Subsurface Soil COPECs at Ravanna, Ohio

COPECs following ESV screen	RME Concentration (mg/kg)	SP_v	ADD_P (mg/kgBW/d) RME *x* SP_v *x* *CF x* I_P *x* AUF	BAF_i	ADD_A (mg/kgBW/d) RME *x* BAF_i *x* CF_i *x* I_A *x* AUF	ADD_S (mg/kgBW/d) RME *x* I_S *x* AUF	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	NOAEL TRV (mg/kgBW/d)	HQ ADD_{total} / TRV	COEC?
Inorganics										
Antimony	3.21E+00	2.00E-01	7.01E-03	2.20E-01	3.44E-01	1.08E-01	4.59E-01	1.44E-01	**3.19E+00**	**yes**
Cadmium	5.71E-01	5.50E-01	3.43E-03	1.71E+01	6.19E-01	1.92E-02	6.41E-01	2.05E+00	3.12E-01	no
Copper	3.02E+01	4.00E-01	1.32E-01	4.00E-02	7.65E-02	1.01E+00	1.22E+00	3.24E+01	3.77E-02	no
Lead	3.12E+01	4.50E-02	1.53E-02	3.34E+00	6.60E+00	1.05E+00	7.67E+00	1.70E+01	4.50E-01	no
Mercury	4.81E-02	9.00E-01	4.73E-04	5.23E+00	1.59E-02	1.62E-03	1.80E-02	2.80E+00	6.44E-03	no
Sodium	1.49E+02	7.50E-02	1.22E-01	3.21E-01	2.33E+01	5.01E+00	2.84E+01	No TRV	No TRV	**yes**
Zinc	1.18E+02	1.50E+00	1.93E+00	5.77E+00	4.31E+01	3.96E+00	4.90E+01	3.41E+02	1.44E-01	no
Organics-Explosives										
Nitrocellulose	1.68E+00	1.67E+04	3.07E+02	1.32E-05	1.08E-05	5.64E-02	3.07E+02	No TRV	No TRV	**yes**
Organics-Semivolatiles										
Benzo(a)anthracene	5.70E-02	2.02E-02	1.26E-05	3.00E-02	8.33E-04	1.92E-03	2.76E-03	No TRV	No TRV	**yes**
Benzo(a)pyrene	6.80E-02	1.11E-02	8.24E-06	7.00E-02	2.32E-03	2.28E-03	4.61E-03	1.15E+00	4.00E-03	no
Benzo(b)fluoranthene	1.50E-01	1.01E-02	1.65E-05	7.00E-02	5.12E-03	5.04E-03	1.02E-02	No TRV	No TRV	**yes**
Benzo(k)fluoranthene	6.50E-02	1.01E-02	7.17E-06	8.00E-02	2.53E-03	2.18E-03	4.72E-03	No TRV	No TRV	**yes**
Bis(2-ethylhexyl)phthalate	2.86E-01	3.80E-02	1.19E-04	3.51E-04	4.88E-05	9.61E-03	9.78E-03	2.11E+01	4.64E-04	no
Chrysene	9.70E-02	1.87E-02	1.98E-05	4.00E-02	1.89E-03	3.26E-03	5.17E-03	No TRV	No TRV	**yes**
Fluoranthene	2.26E-01	4.47E-02	1.10E-04	3.44E-04	3.79E-05	7.59E-03	7.74E-03	No TRV	No TRV	**yes**
Indeno(1,2,3-cd)pyrene	5.30E-02	3.90E-03	2.26E-06	8.00E-02	2.07E-03	1.78E-03	3.85E-03	No TRV	No TRV	**yes**
Phenanthrene	2.29E-01	9.08E-02	2.27E-04	3.15E-04	3.52E-05	7.69E-03	7.96E-03	No TRV	No TRV	**yes**
Pyrene	1.60E-01	4.99E-02	8.72E-05	3.39E-04	3.44E-06	5.38E-03	5.47E-03	No TRV	No TRV	**yes**

COPEC = Constituents of potential ecological concern.
ESV = Ecological screening value.
CF = Correction factor dry wt to wet wt[(0.15) 0.15 kd dry plant/kg wet plant].
RME = Reasonable maximum exposure (lower of maximum or 95% UCL of mean).
SP_v = Soil-to-plant uptake factor; vegetative.
ADD_P = Average daily dose; plant.
I_P (kg/kgBW/d) = Plant ingestion rate for shrews = 7.28E-02.
AUF = Area use factor (1.0).
BAF_i = Soil-to-animal; invertebrates.
ADD_A = Average daily dose; animal.
CF_i = Correction factor (earthworms) [(0.13) for As, Cd, Cr, Cu, Hg, Mn, Ni, Pb, Zn, PCBs, and 1 for all other COPECs - fraction dry wt worm/kg wet wet].
I_A (kg/kgBW/d) = Animal ingestion rate for shrews = 4.87E-01.
ADD_S = Average daily dose; soil.
I_S (kg/kgBW/d) = Soil ingestion rate for shrews = 3.36E-02.
ADDtotal = Average daily dose; total.
NOAEL = Lowest observed adverse effect level.
TRV (mg/kgBW/d) = Toxicity reference value.
HQ = Hazard quotient.
COEC = Contaminant of ecological concern.
"**yes**" = HQ > 1 or "No TRV."
"no" = HQ less than or equal to 1.
HQs in **bold font** are >1.

Appendix Table O-42. Erie Burning Ground Hazard Quotients for Red Foxes Exposed to Subsurface Soil PBT COPECs at Ravenna, Ohio

PBT COPECs remaining after ESV screen	RME Concentration (mg/kg)	SP_r	ADD_P (mg/kgBW/d) RME x $SP_r x$ CF_r x $I_P x$ AUF_{-F}	SP_v	Prey ADD_P (mg/kgBW/d) RME x $SP_v x$ $CFv x$ $I_{P-s} x$ AUF-s	BAF_i	Prey ADD_A (mg/kgBW/d) RME x $BAF_i x$ CF_i x $I_{A-s} x$ AUF-s	Prey ADD_S (mg/kgBW/d) RME x $I_{S-s} x$ AUF-s	Prey ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$
Inorganics									
Cadmium	5.71E-01	5.50E-01	3.53E-06	5.50E-01	3.43E-03	1.71E+01	6.19E-01	1.92E-02	6.41E-01
Lead	3.12E+01	4.50E-02	1.58E-05	4.50E-02	1.53E-02	3.34E+00	6.60E+00	1.05E+00	7.67E+00
Mercury	4.81E-02	9.00E-01	4.86E-07	9.00E-01	4.73E-04	5.23E+00	1.59E-02	1.62E-03	1.80E-02
Zinc	1.18E+02	1.50E+00	1.99E-03	########	1.93E+00	5.77E+00	4.31E+01	3.96E+00	4.90E+01
Organics-Semivolatiles									
Benzo(a)anthracene	5.70E-02	2.02E-02	1.29E-08	2.02E-02	1.26E-05	3.00E-02	8.33E-04	1.92E-03	2.76E-03
Benzo(a)pyrene	6.80E-02	1.11E-02	8.48E-09	1.11E-02	8.24E-06	7.00E-02	2.32E-03	2.28E-03	4.61E-03
Benzo(b)fluoranthene	1.50E-01	1.01E-02	1.70E-08	1.01E-02	1.65E-05	7.00E-02	5.12E-03	5.04E-03	1.02E-02
Benzo(k)fluoranthene	6.50E-02	1.01E-02	7.37E-09	1.01E-02	7.17E-06	8.00E-02	2.53E-03	2.18E-03	4.72E-03
Bis(2-ethylhexyl)phthalate	2.86E-01	3.80E-02	1.22E-07	3.80E-02	1.19E-04	3.51E-04	4.88E-05	9.61E-03	9.78E-03
Chrysene	9.70E-02	1.87E-02	2.04E-08	1.87E-02	1.98E-05	4.00E-02	1.89E-03	3.26E-03	5.17E-03
Fluoranthene	2.26E-01	4.47E-02	1.13E-07	4.47E-02	1.10E-04	3.44E-04	3.79E-05	7.59E-03	7.74E-03
Indeno(1,2,3-cd)pyrene	5.30E-02	3.90E-03	2.32E-09	3.90E-03	2.26E-06	8.00E-02	2.07E-03	1.78E-03	3.85E-03
Phenanthrene	2.29E-01	9.08E-02	2.33E-07	9.08E-02	2.27E-04	3.15E-04	3.52E-05	7.69E-03	7.96E-03
Pyrene	1.60E-01	4.99E-02	8.96E-08	4.99E-02	8.72E-05	3.39E-04	2.64E-05	5.38E-03	5.49E-03

PBT = Persistent, bioaccumulative, and toxic.
RME = Reasonable maximum exposure.
SP_r = Soil-to-plant; reproductive.
SP_v = Soil-to-plant; vegetative.
I_p (kg/kgBW/d) = Plant ingestion rate for red foxes = 0.00437.
ADD_P = Average daily dose; plant.
I_{P-s} (kg/kgBW/d) = Plant ingestion rate for shrews = 0.0728.
AUF_{-F} = Area use factor for fox = 0.0257.
AUF_s = Area use factor for shrew = 1.0.
BAF_i = Soil-to-animal; invertebrates.
ADD_A = Average daily dose; animal.
I_{A-s} (kg/kgBW/d) = Animal ingestion rate for shrews = 0.487.
ADD_S = Average daily dose; soil.
I_{S-s} (kg/kgBW/d) = Soil ingestion rate for shrews = 0.0336.
Cs (mg/kg) = Concentration in the prey.
IR_f = Ingestion rate of food for shrews.

CF_r = Correction factor [0.10) 0.10 kg dry wt reproductive plant part/kg wet wt].
CF_v = Correction factor [0.15) 0.15 kg dry wt vegetative plant part/kg wet wt].
CF_i = Correction factor (earthworms) [(0.13) for As, Cd, Cr, Cu, Hg, Mn, Ni, Pb, Zn, PCBs, and 1 for all other COPECs - fraction dry wt worm/kg wet wet].
COPEC = Chemical of potential ecological concern.
I_A (kg/kgBW/d) = Animal ingestion rate for red foxes = 0.0906.
BAF_{-TP} = Animal-to-mammal transfer factor (Ba_{cow} x $BW_{receptor}$ x lipid ratio) where lipid ratio = 1 for inorganics, 0.8 for organics; mammal Ba = biotransfer food to cow, and $BW_{receptor}$ = body wt (kg) of the receptor.
I_S (kg/kgBW/d) = Soil ingestion rate for red foxes = 0.00266.
ADD_{total} = Average daily dose; total.
TRV (mg/kgBW/d) = toxicity reference value.
HQ = Hazard quotient.
COEC = Contaminant of ecological concern.
"**yes**" = HQ > 1 or "No TRV."
"no" = HQ less than or equal to 1.
HQs in **bold font** are >1.

Appendix Table O-42. Erie Burning Ground Hazard Quotients for Red Foxes Exposed to Subsurface Soil PBT COPECs at Ravenna, Ohio

PBT COPECs remaining after ESV screen	Cs (mg/kg) Prey ADD_{total}/IR_f	BAF_{-TP}	ADD_A (mg/kgBW/d) $Cs \times BAF_{-TP} \times I_A \times AUF_{-F}$	ADD_S (mg/kgBW/d) $RME \times I_S \times AUF_{-F}$	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	NOAEL TRV (mg/kgBW/d)	Site HQ ADD_{total} / TRV	COEC?
Inorganics								
Cadmium	1.15E+00	1.54E-02	4.11E-05	3.90E-05	8.37E-05	5.08E-01	1.65E-04	no
Lead	1.37E+01	1.36E-03	4.34E-05	2.13E-03	2.19E-03	4.22E+00	5.20E-04	no
Mercury	3.22E-02	2.36E-02	1.77E-06	3.29E-06	5.54E-06	6.92E-01	8.01E-06	no
Zinc	8.75E+01	4.54E-01	9.24E-02	8.07E-03	1.02E-01	8.43E+01	1.21E-03	no
Organics-Semivolatiles								
Benzo(a)anthracene	4.93E-03	5.45E-02	6.26E-07	3.90E-06	4.54E-06	No TRV	No TRV	**yes**
Benzo(a)pyrene	8.24E-03	1.24E-01	2.39E-06	4.65E-06	7.04E-06	2.85E-01	2.47E-05	no
Benzo(b)fluoranthene	1.82E-02	1.82E-01	7.68E-06	1.03E-05	1.80E-05	No TRV	No TRV	**yes**
Benzo(k)fluoranthene	8.44E-03	1.81E-01	3.55E-06	4.44E-06	8.00E-06	No TRV	No TRV	**yes**
Bis(2-ethylhexyl)phthalate	1.75E-02	1.82E-02	7.41E-07	1.96E-05	2.04E-05	5.22E+00	3.91E-06	no
Chrysene	9.23E-03	6.27E-02	1.35E-06	6.63E-06	8.00E-06	No TRV	No TRV	**yes**
Fluoranthene	1.38E-02	1.38E-02	4.44E-07	1.54E-05	1.60E-05	No TRV	No TRV	**yes**
Indeno(1,2,3-cd)pyrene	6.87E-03	9.38E-01	1.50E-05	3.62E-06	1.86E-05	No TRV	No TRV	**yes**
Phenanthrene	1.42E-02	4.04E-03	1.34E-07	1.57E-05	1.60E-05	No TRV	No TRV	**yes**
Pyrene	9.80E-03	1.14E-02	2.60E-07	1.09E-05	1.13E-05	No TRV	No TRV	**yes**

Appendix Table O-43. Erie Burning Ground Hazard Quotients for Red-Tailed Hawks Exposed to Subsurface Soil PBT COPECs at Ravenna, Ohio

PBT COPECs remaining after the ESV Media Screen	RME Concentration (mg/kg)	SP_v	ADD_P (mg/kgBW/d) RME x SP_v x CFv x I_P x AUF_{-H}	Prey ADD_P (mg/kgBW/d) RME x SP_v x CFv x I_{P-s} x AUF-s	BAF_i	Prey ADD_A (mg/kgBW/d) RME x BAF_i x CF_i x I_{A-s} x AUF-s	Prey ADD_S (mg/kgBW/d) RME x I_{S-s} x AUF-s	Prey ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$
Inorganics								
Cadmium	5.71E-01	5.50E-01	0.00E+00	3.43E-03	1.71E+01	6.19E-01	1.92E-02	6.41E-01
Lead	3.12E+01	4.50E-02	0.00E+00	1.53E-02	3.34E+00	6.60E+00	1.05E+00	7.67E+00
Mercury	4.81E-02	9.00E-01	0.00E+00	4.73E-04	5.23E+00	1.59E-02	1.62E-03	1.80E-02
Zinc	1.18E+02	1.50E+00	0.00E+00	1.93E+00	5.77E+00	4.31E+01	3.96E+00	4.90E+01
Organics-Semivolatile								
Benzo(a)anthracene	5.70E-02	2.02E-02	0.00E+00	1.26E-05	3.00E-02	8.33E-04	1.92E-03	2.76E-03
Benzo(a)pyrene	6.80E-02	1.11E-02	0.00E+00	8.24E-06	7.00E-02	2.32E-03	2.28E-03	4.61E-03
Benzo(b)fluoranthene	1.50E-01	1.01E-02	0.00E+00	1.65E-05	7.00E-02	5.12E-03	5.04E-03	1.02E-02
Benzo(k)fluoranthene	6.50E-02	1.01E-02	0.00E+00	7.17E-06	8.00E-02	2.53E-03	2.18E-03	4.72E-03
Bis(2-ethylhexyl)phthalate	2.86E-01	3.80E-02	0.00E+00	1.19E-04	3.51E-04	4.88E-05	9.61E-03	9.78E-03
Chrysene	9.70E-02	1.87E-02	0.00E+00	1.98E-05	4.00E-02	1.89E-03	3.26E-03	5.17E-03
Fluoranthene	2.26E-01	4.47E-02	0.00E+00	1.10E-04	3.44E-04	3.79E-05	7.59E-03	7.74E-03
Indeno(1,2,3-cd)pyrene	5.30E-02	3.90E-03	0.00E+00	2.26E-06	8.00E-02	2.07E-03	1.78E-03	3.85E-03
Phenanthrene	2.29E-01	9.08E-02	0.00E+00	2.27E-04	3.15E-04	3.52E-05	7.69E-03	7.96E-03
Pyrene	1.60E-01	4.99E-02	0.00E+00	8.72E-05	3.39E-04	2.64E-05	5.38E-03	5.49E-03

PBT = Persistent, bioaccumulative, and toxic.

COPEC = Contaminant of potential ecological concern.

ESV = Ecological screening value.

RME = Reasonable maximum concenetration.

SP_r = Soil-to-plant; reproductive.

SP_v = Soil-to-plant; vegetative.

I_P (kg/kgBW/d) = Plant ingestion rate for red-tailed hawks = 0.00.

ADD_P = Average daily dose; plant.

CF_v = correction factor [0.15) 0.15 kg dry wt vegetative plant part/kg wet wt].

CF_i = Correction factor (earthworms) [(0.13) for As, Cd, Cr, Cu, Hg, Mn, Ni, Pb, Zn, PCBs, and 1 for all other COPECs - fraction dry wt worm/kg wet wet].

Cs (mg/kg) = Concentration in the prey.

IR_f (kg/kgBW/d)= Ingestion rate of food for shrews = 0.56.

BAF_{-TP} = Animal-to-mammal transfer factor (Ba_{tow} x $BW_{receptor}$ x lipid ratio) where lipid ratio = 1 for inorganics, 0.8 for organics; mammal Ba = biotransfer food to c and $BW_{receptor}$ = body wt (kg) of the receptor .

I_A (kg/kgBW/d) = Animal ingestion rate for red-tailed hawks = 0.11.

I_S (kg/kgBW/d) = Soil ingestion rate for red-tailed hawks = 0.00.

Appendix Table O-43. Erie Burning Ground Hazard Quotients for Red-Tailed Hawks Exposed to Subsurface Soil PBT COPECs at Ravenna, Ohio

PBT COPECs remaining after the ESV Media Screen	Cs (mg/kg) ADD_{total}/IR_f	BAF_{-TP}	ADD_A (mg/kgBW/d) $Cs\ x\ BAF_{-TP}\ x\ I_A\ x\ AUF_{-H}$	ADD_S (mg/kgBW/d) $RME\ x\ I_S\ x\ AUF_{-H}$	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	NOAEL TRV (mg/kgBW/d)	Site HQ ADD_{total} / TRV	COEC?
Inorganics								
Cadmium	1.15E+00	3.86E-03	7.18E-06	0.00E+00	7.18E-06	1.45E-02	4.95E-04	no
Lead	1.37E+01	3.40E-04	7.57E-06	0.00E+00	7.57E-06	1.13E-02	6.70E-04	no
Mercury	3.22E-02	5.90E-03	3.09E-07	0.00E+00	3.09E-07	4.50E-03	6.87E-05	no
Zinc	8.75E+01	1.13E-01	1.61E-02	0.00E+00	1.61E-02	1.45E-01	1.11E-01	no
Organics-Semivolatile								
Benzo(a)anthracene	4.93E-03	1.36E-02	1.09E-07	0.00E+00	1.09E-07	No TRV	No TRV	**yes**
Benzo(a)pyrene	8.24E-03	3.11E-02	4.17E-07	0.00E+00	4.17E-07	No TRV	No TRV	**yes**
Benzo(b)fluoranthene	1.82E-02	4.54E-02	1.34E-06	0.00E+00	1.34E-06	No TRV	No TRV	**yes**
Benzo(k)fluoranthene	8.44E-03	4.51E-02	6.19E-07	0.00E+00	6.19E-07	No TRV	No TRV	**yes**
Bis(2-ethylhexyl)phthalate	1.75E-02	4.56E-03	1.29E-07	0.00E+00	1.29E-07	1.10E-02	1.18E-05	no
Chrysene	9.23E-03	1.57E-02	2.35E-07	0.00E+00	2.35E-07	No TRV	No TRV	**yes**
Fluoranthene	1.38E-02	3.45E-03	7.75E-08	0.00E+00	7.75E-08	No TRV	No TRV	**yes**
Indeno(1,2,3-cd)pyrene	6.87E-03	2.35E-01	2.62E-06	0.00E+00	2.62E-06	No TRV	No TRV	**yes**
Phenanthrene	1.42E-02	1.01E-03	2.34E-08	0.00E+00	2.34E-08	No TRV	No TRV	**yes**
Pyrene	9.80E-03	2.85E-03	4.54E-08	0.00E+00	4.54E-08	No TRV	No TRV	**yes**

I_{P-s} (kg/kgBW/d) = Plant ingestion rate for shrews (7.28E-02).
AUF_s = Area use factor for shrew (1.0).
BAF_i = Soil-to-animal; invertebrates.
ADD_A = Average daily dose; animal.
I_{A-s} (kg/kgBW/d) = Animal ingestion rate for shrews (4.87E-01).
ADD_S = Average daily dose; soil.
AUF_{-H} = Area use factor hawk 1.48E-02

I_{S-s} (kg/kgBW/d) = Soil ingestion rate for shrews (3.36E-02).
ADD_{total} = Average daily dose; total.
TRV (mg/kgBW/d) = toxicity reference value.
HQ = Hazard quotient.
COEC = Contaminant of ecological concern.
"**yes**" = HQ > 1 or "No TRV."
"no" = HQ less than or equal to 1.

Appendix Table O-44. Erie Burning Ground Hazard Quotients for Sediment Biota Exposed to Sediment COPECs at Ravenna, Ohio

Analytes carried forward from Media ESV screen	CAS Registry Number	RME (mg/kg)	NOAEL TRV (mg/kg)	Site HQ (RME/TRV)	COEC?
Metals					
Aluminum	7429-90-5	1.29E+04	none	No TRV	**yes**
Antimony	7440-36-0	1.56E+02	none	No TRV	**yes**
Arsenic	7440-38-2	1.40E+01	9.79E+00	1.43E+00	**yes**
Barium	7440-39-3	3.15E+02	none	No TRV	**yes**
Beryllium	7440-41-7	5.75E-01	none	No TRV	**yes**
Cadmium	7440-43-9	3.52E+00	9.90E-01	3.56E+00	**yes**
Calcium	7440-70-2	1.08E+04	none	No TRV	**yes**
Chromium	7440-47-3	3.84E+01	4.33E+01	8.87E-01	no
Copper	7440-50-8	1.49E+02	3.16E+01	4.72E+00	**yes**
Cyanide	51-12-5	1.01E+00	1.00E-04	1.01E+04	**yes**
Iron	7439-89-6	3.03E+04	none	No TRV	**yes**
Lead	7439-92-1	2.40E+02	3.58E+01	6.70E+00	**yes**
Magnesium	7439-95-4	2.79E+03	none	No TRV	**yes**
Manganese	7439-96-5	5.62E+02	none	No TRV	**yes**
Mercury	7487-94-7	1.17E-01	1.80E-01	6.50E-01	no
Nickel	7440-02-0	3.33E+01	2.27E+01	1.47E+00	**yes**
Silver	7440-22-4	1.83E+00	5.00E-01	3.66E+00	**yes**
Sodium	7440-23-5	5.32E+02	none	No TRV	**yes**
Vanadium	7440-62-2	2.28E+01	none	No TRV	**yes**
Zinc	7440-66-6	1.47E+03	1.21E+02	1.21E+01	**yes**
Explosives					
2,6-Dinitrotoluene	606-20-2	1.58E-01	3.98E-02	3.97E+00	**yes**
Nitrobenzene	98-95-3	1.20E-01	1.45E-01	8.28E-01	no
Nitrocellulose	9004-70-4	7.27E+00	none	No TRV	**yes**
2,4,6-Trinitrotoluene	118-96-7	2.95E+00	none	No TRV	**yes**
Organics-Pesticides/PCBs					
PCB-1254	11097-69-1	4.52E-02	5.98E-02	7.56E-01	no
Methoxychlor	72-43-5	4.55E-03	1.36E-02	3.35E-01	no
Organics-Semivolatiles					
Benzo(a)anthracene	56-55-3	2.70E-01	1.08E-01	2.50E+00	**yes**
Benzo(a)pyrene	50-32-8	3.70E-01	1.50E-01	2.47E+00	**yes**
Benzo(b)fluoranthene	205-99-2	6.44E-01	1.04E+01	6.19E-02	no
Benzo(g,h,i)perylene	191-24-2	8.10E-02	1.70E-01	4.76E-01	no
Benzo(k)fluoranthene	207-08-9	3.50E-01	2.40E-01	1.46E+00	**yes**
Bis(2-ethylhexyl)phthalate	117-81-7	6.45E-01	1.82E-01	3.54E+00	**yes**
Butylbenzyl phthalate	85-68-7	5.30E-02	1.97E+00	2.69E-02	no
Carbazole	86-74-8	6.60E-02	none	No TRV	**yes**
Chrysene	218-01-9	6.44E-01	1.66E-01	3.88E+00	**yes**
Di-n-butylphthalate	84-74-2	8.09E-01	1.11E+00	7.26E-01	no
Fluoranthene	206-44-0	6.89E-01	4.23E-01	1.63E+00	**yes**
Fluorene	86-73-7	2.40E-01	7.74E-02	3.10E+00	**yes**
Indeno(1,2,3-cd)pyrene	193-39-5	2.80E-01	2.00E-01	1.40E+00	**yes**
N-Nitrosodiphenylamine	86-30-6	6.20E-01	none	No TRV	**yes**
Phenanthrene	85-01-8	6.65E-01	2.04E-01	3.26E+00	**yes**
Pyrene	129-00-0	6.63E-01	1.95E-01	3.40E+00	**yes**

Appendix Table O-44. Erie Burning Ground Hazard Quotients for Sediment Biota Exposed to Sediment COPECs at Ravenna, Ohio

Analytes carried forward from Media ESV screen	CAS Registry Number	RME (mg/kg)	NOAEL TRV (mg/kg)	Site HQ (RME/TRV)	COEC?
Organics-Volatiles					
Acetone	67-64-1	7.61E-02	9.90E-03	7.69E+00	**yes**
2-Butanone	78-93-3	2.55E-02	4.24E-02	6.01E-01	no

CAS = Chemical abstract service.
COPEC = Constituents of potential ecological concern.
ESV = Ecological screening value.
RME = Reasonable maximum exposure (lower of maximum or 95% UCL of mean).
NOAEL = Lowest observed adverse effect level.
TRV (mg/kgBW/d) = Toxicity reference value.
HQ = Hazard quotient.
COEC = Contaminant of ecological concern.
"yes" = HQ > 1 or "No TRV."
"no" = HQ was not >1.
HQs in **bold font** are > 1.A31.

Appendix Table O-45. Erie Burning Ground Hazard Quotients for Muskrats Exposed to Sediment COPECs at Ravenna, Ohio.

Analytes carried forward from EU-specific ESV screen	CAS Registry Number	RME (mg/kg)	SP_v (kg/kg)	ADD_P (mg/kgBW/d) RME x SP_V x CF x I_P x AUF[a]	ADD_{Sed} (mg/kgBW/d) RME x I_S x AUF[a]	ADD_{total} (mg/kgBW/d) ADD_P + ADD_{Sed}	NOAEL TRV (mg/kgBW/d)	Site HQ ADD_{total} / TRV	COEC?
Metals									
Aluminum	7429-90-5	1.29E+04	4.00E-03	2.32E+00	0.00E+00	2.32E+00	7.72E-01	**3.01E+00**	**yes**
Antimony	7440-36-0	1.56E+02	2.00E-01	1.40E+00	0.00E+00	1.40E+00	5.00E-02	**2.81E+01**	**yes**
Arsenic	7440-38-2	1.40E+01	4.00E-02	2.52E-02	0.00E+00	2.52E-02	5.04E-02	5.00E-01	no
Barium	7440-39-3	3.15E+02	1.50E-01	2.13E+00	0.00E+00	2.13E+00	3.95E+00	5.38E-01	no
Beryllium	7440-41-7	5.75E-01	1.00E-02	2.59E-04	0.00E+00	2.59E-04	4.88E-01	5.30E-04	no
Cadmium	7440-43-9	3.52E+00	5.50E-01	8.71E-02	0.00E+00	8.71E-02	7.13E-01	1.22E-01	no
Calcium	7440-70-2	1.08E+04	3.50E+00	1.70E+03	0.00E+00	1.70E+03	none	No TRV	**yes**
Chromium	7440-47-3	3.84E+01	7.50E-03	1.30E-02	0.00E+00	1.30E-02	2.02E+03	6.40E-06	no
Copper	7440-50-8	1.49E+02	4.00E-01	2.68E+00	0.00E+00	2.68E+00	1.13E+01	2.38E-01	no
Cyanide	51-12-5	1.01E+00	4.00E-03	1.82E-04	0.00E+00	1.82E-04	4.77E+01	3.81E-06	no
Iron	7439-89-6	3.03E+04	4.00E-03	5.45E+00	0.00E+00	5.45E+00	none	No TRV	**yes**
Lead	7439-92-1	2.40E+02	4.50E-02	4.86E-01	0.00E+00	4.86E-01	5.92E+00	8.22E-02	no
Magnesium	7439-95-4	2.79E+03	1.00E+00	1.26E+02	0.00E+00	1.26E+02	none	No TRV	**yes**
Manganese	7439-96-5	5.62E+02	2.50E-01	6.32E+00	0.00E+00	6.32E+00	6.51E+01	9.72E-02	no
Mercury	7487-94-7	1.17E-01	3.75E-02	1.97E-04	0.00E+00	1.97E-04	9.71E-01	2.03E-04	no
Nickel	7440-02-0	3.33E+01	6.00E-02	8.99E-02	0.00E+00	8.99E-02	2.96E+01	3.04E-03	no
Silver	7440-22-4	1.83E+00	4.00E-01	3.29E-02	0.00E+00	3.29E-02	none	No TRV	**yes**
Sodium	7440-23-5	5.32E+02	7.50E-02	1.80E+00	0.00E+00	1.80E+00	none	No TRV	**yes**
Vanadium	7440-62-2	2.28E+01	5.50E-03	5.64E-03	0.00E+00	5.64E-03	1.44E-01	3.91E-02	no
Zinc	7440-66-6	1.47E+03	1.50E+00	9.92E+01	0.00E+00	9.92E+01	1.18E+02	8.39E-01	no
Explosives									
2,6-Dinitrotoluene	606-20-2	1.58E-01	3.15E+00	2.24E-02	0.00E+00	2.24E-02	5.18E-01	4.33E-02	no
Nitrobenzene	98-95-3	1.20E-01	3.38E+00	1.83E-02	0.00E+00	1.83E-02	none	No TRV	**yes**
Nitrocellulose	9004-70-4	7.27E+00	1.67E+04	5.48E+03	0.00E+00	5.48E+03	none	No TRV	**yes**
2,4,6-Trinitrotoluene	118-96-7	2.95E+00	4.60E+00	6.11E-01	0.00E+00	6.11E-01	1.18E+00	5.17E-01	no
Organics-Pesticides/PCBs									
PCB-1254	11097-69-1	4.52E-02	8.96E-03	1.82E-05	0.00E+00	1.82E-05	2.25E-02	8.11E-04	no
Methoxychlor	72-43-5	4.55E-03	9.37E-02	1.92E-05	0.00E+00	1.92E-05	2.96E+00	6.49E-06	no
Organics-Semivolatiles									
Benzo(a)anthracene	56-55-3	2.70E-01	2.02E-02	2.45E-04	0.00E+00	2.45E-04	none	No TRV	**yes**
Benzo(a)pyrene	50-32-8	3.70E-01	1.11E-02	1.85E-04	0.00E+00	1.85E-04	4.00E-01	4.62E-04	no
Benzo(b)fluoranthene	205-99-2	6.44E-01	1.01E-02	2.93E-04	0.00E+00	2.93E-04	none	No TRV	**yes**
Benzo(g,h,i)perylene	191-24-2	8.10E-02	3.05E-03	1.11E-05	0.00E+00	1.11E-05	none	No TRV	**yes**
Benzo(k)fluoranthene	207-08-9	3.50E-01	1.01E-02	1.59E-04	0.00E+00	1.59E-04	none	No TRV	**yes**
Bis(2-ethylhexyl)phthalate	117-81-7	6.45E-01	3.80E-02	1.10E-03	0.00E+00	1.10E-03	7.32E+00	1.51E-04	no
Butylbenzylphthalate	85-68-7	5.30E-02	1.09E-01	2.60E-04	0.00E+00	2.60E-04	none	No TRV	**yes**

Appendix Table O-45. Erie Burning Ground Hazard Quotients for Muskrats Exposed to Sediment COPECs at Ravenna, Ohio.

Analytes carried forward from EU-specific ESV screen	CAS Registry Number	RME (mg/kg)	SP_v (kg/kg)	ADD_P (mg/kgBW/d) RME x SP_V x CF x I_P x AUF[a]	ADD_{Sed} (mg/kgBW/d) RME x I_S x AUF[a]	ADD_{total} (mg/kgBW/d) ADD_P + ADD_{Sed}	NOAEL TRV (mg/kgBW/d)	Site HQ ADD_{total} / TRV	COEC?
Carbazole	86-74-8	6.60E-02	2.74E-01	8.14E-04	0.00E+00	8.14E-04	none	No TRV	**yes**
Chrysene	218-01-9	6.44E-01	1.87E-02	5.42E-04	0.00E+00	5.42E-04	none	No TRV	**yes**
Di-n-butylphthalate	84-74-2	8.09E-01	7.24E-02	2.64E-03	0.00E+00	2.64E-03	2.20E+02	1.20E-05	no
Fluoranthene	206-44-0	6.89E-01	4.47E-02	1.39E-03	0.00E+00	1.39E-03	none	No TRV	**yes**
Fluorene	86-73-7	2.40E-01	1.51E-01	1.63E-03	0.00E+00	1.63E-03	none	No TRV	**yes**
Indeno(1,2,3-cd)pyrene	193-39-5	2.80E-01	3.90E-03	4.91E-05	0.00E+00	4.91E-05	none	No TRV	**yes**
N-Nitrosodiphenylamine	86-30-6	6.20E-01	#N/A	#N/A	0.00E+00	#N/A	none	No TRV	**yes**
Phenanthrene	85-01-8	6.65E-01	9.08E-02	2.72E-03	0.00E+00	2.72E-03	none	No TRV	**yes**
Pyrene	129-00-0	6.63E-01	4.99E-02	1.49E-03	0.00E+00	1.49E-03	none	No TRV	**yes**
Organics-Volatiles									
Acetone	67-64-1	7.61E-02	5.20E+01	1.78E-01	0.00E+00	1.78E-01	7.39E+00	2.41E-02	no
2-Butanone	78-93-3	2.55E-02	2.66E+01	3.06E-02	0.00E+00	3.06E-02	1.31E+03	2.33E-05	no

EU = Exposure unit.

CAS = Chemical abstract service.

COPEC = Constituents of potential ecological concern.

ESV = Ecological screening value.

RME = Reasonable maximum exposure (lower of maximum or 95% UCL of mean).

SP_v = Sediment-to-plant uptake factor; vegetative.

CF = Correction factor dry wt to wet wet [(0.15) because 0.15 kg dry plant/kg wet plant].

ADD_P = Average daily dose; plant.

I_P (kg/kgBW/d) = Plant ingestion rate for muskrats = 3.0E-01.

AUF = Area use factor.

[a] Home range is smaller than EU, therefore, AUF = 1.00E+00

ADD_{Sed} = Average daily dose; sediment.

I_S (kg/kgBW/d) = Sediment ingestion rate for muskrats = 0.

ADD_{total} = Average daily dose; total.

NOAEL = lowest observed adverse effect level.

TRV (mg/kgBW/d) = Toxicity reference value.

HQ = Hazard quotient.

COEC = Contaminant of ecological concern.

"yes" = HQ > 1 or "No TRV."

"no" = HQ was not >1.

HQs in **bold font** are > 1.

Appendix Table O-46. Erie Burning Ground Hazard Quotients for Mallard Ducks Exposed to Sediment COPECs at Ravenna, Ohio.

COPECs carried forward from EU-specific ESV screen	CAS Registry Number	RME (mg/kg)	SP_v (kg/kg)	SPr (kg/kg)	ADD_P (mg/kgBW/d) RME x (0.5 x SP_v x CFv + 0.5 x SPr x CFr) x I_P x AUF[a,b]	ADD_{Sed} (mg/kgBW/d) RME x I_S x AUF[b]	ADD_{total} (mg/kgBW/d) ADD_P + ADD_{Sed}	NOAEL TRV (mg/kgBW/d)	Site HQ ADD_{total} / TRV	COEC?
Metals										
Aluminum	7429-90-5	1.29E+04	4.00E-03	6.50E-04	1.13E-03	5.83E-02	5.94E-02	1.10E+00	5.41E-02	no
Antimony	7440-36-0	1.56E+02	2.00E-01	3.00E-02	6.56E-04	7.05E-04	1.36E-03	none	No TRV	**yes**
Arsenic	7440-38-2	1.40E+01	4.00E-02	6.00E-03	1.18E-05	6.32E-05	7.50E-05	5.14E+00	1.46E-05	no
Barium	7440-39-3	3.15E+02	1.50E-01	1.50E-01	3.66E-03	1.42E-03	5.08E-03	2.08E-01	2.44E-02	no
Beryllium	7440-41-7	5.75E-01	1.00E-02	1.50E-03	1.21E-07	2.60E-06	2.72E-06	none	No TRV	**yes**
Cadmium	7440-43-9	3.52E+00	5.50E-01	1.50E-01	5.65E-05	1.59E-05	7.24E-05	1.45E+00	4.99E-05	no
Calcium	7440-70-2	1.08E+04	3.50E+00	3.50E-01	6.69E-01	4.88E-02	7.18E-01	none	No TRV	**yes**
Chromium	7440-47-3	3.84E+01	7.50E-03	4.50E-03	1.47E-05	1.73E-04	1.88E-04	1.00E+00	1.88E-04	no
Copper	7440-50-8	1.49E+02	4.00E-01	2.50E-01	3.13E-03	6.73E-04	3.81E-03	4.70E-01	8.10E-03	no
Cyanide	51-12-5	1.01E+00	#N/A	#N/A	#N/A	4.56E-06	#N/A	none	No TRV	**yes**
Iron	7439-89-6	3.03E+04	4.00E-03	1.00E-03	3.35E-03	1.37E-01	1.40E-01	none	No TRV	**yes**
Lead	7439-92-1	2.40E+02	4.50E-02	9.00E-03	2.63E-04	1.08E-03	1.35E-03	1.13E-02	1.19E-01	no
Magnesium	7439-95-4	2.79E+03	1.00E+00	5.50E-01	1.33E-01	1.26E-02	1.45E-01	none	No TRV	**yes**
Manganese	7439-96-5	5.62E+02	2.50E-01	5.00E-02	3.42E-03	2.54E-03	5.96E-03	9.77E+00	6.10E-04	no
Mercury	7487-94-7	1.17E-01	3.75E-02	3.75E-02	3.40E-07	5.29E-07	8.68E-07	4.50E-03	1.93E-04	no
Nickel	7440-02-0	3.33E+01	6.00E-02	6.00E-02	1.55E-04	1.50E-04	3.05E-04	7.74E+01	3.94E-06	no
Silver	7440-22-4	1.83E+00	4.00E-01	1.00E-01	2.03E-05	8.27E-06	2.85E-05	none	No TRV	**yes**
Sodium	7440-23-5	5.32E+02	7.50E-02	5.50E-02	2.38E-03	2.40E-03	4.79E-03	none	No TRV	**yes**
Vanadium	7440-62-2	2.28E+01	5.50E-03	3.00E-03	5.93E-06	1.03E-04	1.09E-04	1.14E+01	9.57E-06	no
Zinc	7440-66-6	1.47E+03	1.50E+00	9.00E-01	1.12E-01	6.64E-03	1.19E-01	1.45E-01	8.21E-01	no
Explosives										
2,6-Dinitrotoluene	606-20-2	1.58E-01	3.15E+00	3.15E+00	3.86E-05	7.14E-07	3.93E-05	none	No TRV	**yes**
Nitrobenzene	98-95-3	1.20E-01	3.38E+00	3.38E+00	3.14E-05	5.42E-07	3.20E-05	none	No TRV	**yes**
Nitrocellulose	9004-70-4	7.27E+00	1.67E+04	1.67E+04	9.43E+00	3.28E-05	9.43E+00	none	No TRV	**yes**
2,4,6-Trinitrotoluene	118-96-7	2.95E+00	4.60E+00	4.60E+00	1.05E-03	1.33E-05	1.07E-03	none	No TRV	**yes**
Organics-Pesticides/PCBs										
PCB-1254	11097-69-1	4.52E-02	8.96E-03	8.96E-03	3.14E-08	2.04E-07	2.36E-07	1.80E-03	1.31E-04	no
Methoxychlor	72-43-5	4.55E-03	9.37E-02	9.37E-02	3.30E-08	2.06E-08	5.36E-08	none	No TRV	**yes**
Organics-Semivolatiles										
Benzo(a)anthracene	56-55-3	2.70E-01	2.02E-02	2.02E-02	4.23E-07	1.22E-06	1.64E-06	7.90E-05	2.08E-02	no
Benzo(a)pyrene	50-32-8	3.70E-01	1.11E-02	1.11E-02	3.18E-07	1.67E-06	1.99E-06	1.00E-02	1.99E-04	no
Benzo(b)fluoranthene	205-99-2	6.44E-01	1.01E-02	1.01E-02	5.04E-07	2.91E-06	3.41E-06	none	No TRV	**yes**
Benzo(g,h,i)perylene	191-24-2	8.10E-02	3.05E-03	3.05E-03	1.91E-08	3.66E-07	3.85E-07	none	No TRV	**yes**
Benzo(k)fluoranthene	207-08-9	3.50E-01	1.01E-02	1.01E-02	2.74E-07	1.58E-06	1.85E-06	1.40E-05	1.32E-01	no

Appendix Table O-46. Erie Burning Ground Hazard Quotients for Mallard Ducks Exposed to Sediment COPECs at Ravenna, Ohio.

COPECs carried forward from EU-specific ESV screen	CAS Registry Number	RME (mg/kg)	SP_v (kg/kg)	SPr (kg/kg)	ADD_P (mg/kgBW/d) RME x (0.5 x SP_v x CFv + 0.5 x SPr x CFr) x I_P x AUF[a,b]	ADD_{Sed} (mg/kgBW/d) RME x I_S x AUF[b]	ADD_{total} (mg/kgBW/d) ADD_P + ADD_{Sed}	NOAEL TRV (mg/kgBW/d)	Site HQ ADD_{total} / TRV	COEC?
Bis(2-ethylhexyl)phthalate	117-81-7	6.45E-01	3.80E-02	3.80E-02	1.90E-06	2.91E-06	4.81E-06	1.10E-02	4.37E-04	no
Butylbenzylphthalate	85-68-7	5.30E-02	1.09E-01	1.09E-01	4.47E-07	2.39E-07	6.87E-07	none	No TRV	**yes**
Carbazole	86-74-8	6.60E-02	2.74E-01	2.74E-01	1.40E-06	2.98E-07	1.70E-06	none	No TRV	**yes**
Chrysene	218-01-9	6.44E-01	1.87E-02	1.87E-02	9.33E-07	2.91E-06	3.84E-06	1.00E-03	3.84E-03	no
Di-n-butylphthalate	84-74-2	8.09E-01	7.24E-02	7.24E-02	4.54E-06	3.65E-06	8.19E-06	1.11E-03	7.38E-03	no
Fluoranthene	206-44-0	6.89E-01	4.47E-02	4.47E-02	2.39E-06	3.11E-06	5.50E-06	none	No TRV	**yes**
Fluorene	86-73-7	2.40E-01	1.51E-01	1.51E-01	2.81E-06	1.08E-06	3.89E-06	none	No TRV	**yes**
Indeno(1,2,3-cd)pyrene	193-39-5	2.80E-01	3.90E-03	3.90E-03	8.46E-08	1.26E-06	1.35E-06	1.00E-03	1.35E-03	no
N-Nitrosodiphenylamine	86-30-6	6.20E-01	#N/A	#N/A	#N/A	2.80E-06	#N/A	none	No TRV	**yes**
Phenanthrene	85-01-8	6.65E-01	9.08E-02	9.08E-02	4.68E-06	3.00E-06	7.68E-06	none	No TRV	**yes**
Pyrene	129-00-0	6.63E-01	4.99E-02	4.99E-02	2.56E-06	2.99E-06	5.56E-06	none	No TRV	**yes**
Organics-Volatiles										
Acetone	67-64-1	7.61E-02	5.20E+01	5.20E+01	3.07E-04	3.44E-07	3.07E-04	none	No TRV	**yes**
2-Butanone	78-93-3	2.55E-02	2.66E+01	2.66E+01	5.26E-05	1.15E-07	5.27E-05	#N/A	No TRV	**yes**

EU = Exposure unit.
CAS = Chemical abstract service.
COPEC = Constituents of potential ecological concern.
ESV = Ecological screening value.
RME = Reasonable maximum exposure (lower of maximum or 95% UCL of mean).
SP_v = Sediment-to-plant uptake factor; vegetative.
SP_r = Sediment-to-plant uptake factor; reproductive.
CFv = Correction factor dry wt to wet wet (0.15 for vegetative because 0.15 kg dry plant/kg wet plant).
CFr = Correction factor dry wt to wet wet (0.9 for reproductive parts because 0.9 kg dry seeds/kg wet seeds).
ADD_P = Average daily dose; plant.
I_P (kg/kgBW/d) = Plant ingestion rate for mallards = 6.2E-02.
AUF = Area use factor.
ADD_{Sed} = Average daily dose; sediment.
I_S (kg/kgBW/d) = Sediment ingestion rate for mallards = 1.9E-03.
ADD_{total} = Average daily dose; total.
NOAEL = Lowest observed adverse effect level.
TRV (mg/kgBW/d) = Toxicity reference value.
HQ = Hazard quotient.
COEC = Chemical of ecological concern.
"yes" = HQ > 1 or "No TRV."
no = HQ was not >1.
HQs in bold font are > 1.

[a] SP = 0.5 x 0.15 x SP_V + 0.5 x 0.9 x SP_R, because duck's diet is assumed to be half vegetative parts and half seeds.

[b] AUF = 1.5 ha / 435 ha = 2.39E-03

Appendix Table O-47. Erie Burning Ground Hazard Quotients for Mink Exposed to Sediment PBT COPECs at Ravenna, Ohio.

PBT COPECs carried forward from ESV Media screen	CAS Registry Number	RME (mg/kg)	BSAF (kg/kg)	FCM	ADD_A (mg/kgBW/d) RME x BSAF x FCM x I_A x AUF[a]	ADD_{Sed} (mg/kgBW/d) RME x I_S x AUF[a]	ADD_{total} (mg/kgBW/d) ADD_A + ADD_{Sed}	NOAEL TRV (mg/kgBW/d)	Site HQ ADD_{total} / TRV	COEC?
Metals										
Cadmium	7440-43-9	3.52E+00	3.40E+00	1.00E+00	4.23E-03	0.00E+00	4.23E-03	7.38E-01	5.73E-03	no
Lead	7439-92-1	2.40E+02	6.30E-01	1.00E+00	5.35E-02	0.00E+00	5.35E-02	6.12E+00	8.73E-03	no
Mercury	7487-94-7	1.17E-01	6.80E-02	1.00E+00	2.81E-06	0.00E+00	2.81E-06	1.01E+00	2.80E-06	no
Zinc	7440-66-6	1.47E+03	5.70E-01	1.00E+00	2.96E-01	0.00E+00	2.96E-01	1.22E+02	2.42E-03	no
Organics-Pesticide/PCBs										
PCB-1254	11097-69-1	4.52E-02	1.13E+00	2.20E+01	3.97E-04	0.00E+00	3.97E-04	2.33E-02	1.71E-02	no
Methoxychlor	72-43-5	4.55E-03	3.64E+02	1.30E+00	7.61E-04	0.00E+00	7.61E-04	3.06E+00	2.49E-04	no
Organics-Semivolatiles										
Benzo(a)anthracene	56-55-3	2.70E-01	1.45E+00	1.00E+01	1.38E-03	0.00E+00	1.38E-03	none	No TRV	**yes**
Benzo(a)pyrene	50-32-8	3.70E-01	1.59E+00	1.80E+01	3.74E-03	0.00E+00	3.74E-03	4.14E-01	9.04E-03	no
Benzo(b)fluoranthene	205-99-2	6.44E-01	1.61E+00	2.00E+01	7.33E-03	0.00E+00	7.33E-03	none	No TRV	**yes**
Benzo(g,h,i)perylene	191-24-2	8.10E-02	4.76E-04	2.50E+01	3.41E-07	0.00E+00	3.41E-07	none	No TRV	**yes**
Benzo(k)fluoranthene	207-08-9	3.50E-01	1.61E+00	2.00E+01	3.99E-03	0.00E+00	3.99E-03	none	No TRV	**yes**
Bis(2-ethylhexyl)phthalate	117-81-7	6.45E-01	1.31E+03	3.90E+00	1.16E+00	0.00E+00	1.16E+00	7.58E+00	1.54E-01	no
Butylbenzylphthalate	85-68-7	5.30E-02	2.94E+02	1.20E+00	6.61E-03	0.00E+00	6.61E-03	none	No TRV	**yes**
Carbazole	86-74-8	6.60E-02	7.96E+01	1.00E+00	1.86E-03	0.00E+00	1.86E-03	none	No TRV	**yes**
Chrysene	218-01-9	6.44E-01	1.38E+00	1.00E+01	3.14E-03	0.00E+00	3.14E-03	none	No TRV	**yes**
Di-n-butylphthalate	84-74-2	8.09E-01	#N/A	1.60E+00	#N/A	0.00E+00	#N/A	2.28E+02	#N/A	**yes**
Fluoranthene	206-44-0	6.89E-01	3.44E-04	3.20E+00	2.68E-07	0.00E+00	2.68E-07	none	No TRV	**yes**
Fluorene	86-73-7	2.40E-01	#N/A	1.10E+00	#N/A	0.00E+00	#N/A	none	No TRV	**yes**
Indeno(1,2,3-cd)pyrene	193-39-5	2.80E-01	1.61E+00	2.70E+01	4.30E-03	0.00E+00	4.30E-03	none	No TRV	**yes**
N-Nitrosodiphenylamine	86-30-6	6.20E-01	#N/A	1.00E+00	#N/A	0.00E+00	#N/A	none	No TRV	**yes**
Phenanthrene	85-01-8	6.65E-01	3.15E-04	1.50E+00	1.11E-07	0.00E+00	1.11E-07	none	No TRV	**yes**
Pyrene	129-00-0	6.63E-01	3.39E-04	2.60E+00	2.07E-07	0.00E+00	2.07E-07	none	No TRV	**yes**

PBT = Persistent, bioaccumulative, and toxic.
COPEC = Chemicals of potential ecological concern.
CAS = Chemical abstract service.
ESV = Ecological screening value.
RME = Reasonable maximum exposure (lower of maximum or 95% UCL of mean).
BSAF = Sediment-to-benthic invertebrate uptake factor.
FCM = Food chain multiplier (Trophic level 4 consumers).
ADD_A = Average daily dose; animal.
I_A (kg/kgBW/d) = Animal ingestion rate for mink = 1.6E-01.
AUF = Area use factor.
I_S (kg/kgBW/d) = Sediment ingestion rate for mink = 0.
ADD_{total} = Average daily dose; total.
NOAEL = Lowest observed adverse effect level.
TRV (mg/kgBW/d) = Toxicity reference value.
HQ = Hazard quotient.
COEC = Chemical of ecological concern.
"yes" = HQ > 1 or "No TRV."
"no" = HQ was not >1.
HQs in **bold font** are > 1.

Appendix Table O-48. Erie Burning Ground Hazard Quotients
for Great Blue Herons Exposed to Sediment PBT COPECs at Ravenna, Ohio.

PBT COPECs carried forward from ESV Media screen	CAS Registry Number	RME (mg/kg)	BSAF (kg/kg)	FCM	ADD_A (mg/kgBW/d) RME x BASF x FCM x I_A x AUF[a]	ADD_{Sed} (mg/kgBW/d) RME x I_S x AUF[a]	ADD_{total} (mg/kgBW/d) ADD_A + ADD_{Sed}	NOAEL TRV (mg/kgBW/d)	Site HQ ADD_{total} / TRV	COEC?
Metals										
Cadmium	7440-43-9	3.5E+00	3.40E+00	1.00E+00	2.15E+00	0.00E+00	2.15E+00	1.45E-02	**1.49E+02**	**yes**
Lead	7439-92-1	2.4E+02	6.30E-01	1.00E+00	2.72E+01	0.00E+00	2.72E+01	1.13E-02	**2.41E+03**	**yes**
Mercury	7487-94-7	1.17E-01	6.80E-02	1.00E+00	1.43E-03	0.00E+00	1.43E-03	4.50E-03	3.18E-01	no
Zinc	7440-66-6	1.47E+03	5.70E-01	1.00E+00	1.51E+02	0.00E+00	1.51E+02	1.45E-01	**1.04E+03**	**yes**
Organics-Pesticide/PCBs										
PCB-1254	11097-69-1	4.52E-02	1.13E+00	2.00E+01	1.84E-01	0.00E+00	1.84E-01	1.80E-03	**1.02E+02**	**yes**
Methoxychlor	72-43-5	4.55E-03	0.00E+00	1.30E+00	0.00E+00	0.00E+00	0.00E+00	none	No TRV	**yes**
Organics-Semivolatiles										
Benzo(a)anthracene	56-55-3	2.70E-01	1.45E+00	1.00E+01	7.05E-01	0.00E+00	7.05E-01	7.90E-05	**8.92E+03**	**yes**
Benzo(a)pyrene	50-32-8	3.70E-01	1.59E+00	1.80E+01	1.91E+00	0.00E+00	1.91E+00	1.00E-02	**1.91E+02**	**yes**
Benzo(b)fluoranthene	205-99-2	6.44E-01	1.61E+00	2.00E+01	3.73E+00	0.00E+00	3.73E+00	none	No TRV	**yes**
Benzo(g,h,i)perylene	191-24-2	8.10E-02	4.76E-04	2.50E+01	1.73E-04	0.00E+00	1.73E-04	none	No TRV	**yes**
Benzo(k)fluoranthene	207-08-9	3.50E-01	1.61E+00	2.00E+01	2.03E+00	0.00E+00	2.03E+00	1.40E-05	1.45E+05	**yes**
Bis(2-ethylhexyl)phthalate	117-81-7	6.45E-01	1.31E+03	3.90E+00	5.93E+02	0.00E+00	5.93E+02	1.10E-02	**5.39E+04**	**yes**
Butylbenzylphthalate	85-68-7	5.30E-02	2.94E+02	1.20E+00	3.37E+00	0.00E+00	3.37E+00	none	No TRV	**yes**
Carbazole	86-74-8	6.60E-02	7.96E+01	1.00E+00	9.46E-01	0.00E+00	9.46E-01	none	No TRV	**yes**
Chrysene	218-01-9	6.44E-01	1.38E+00	1.00E+01	1.60E+00	0.00E+00	1.60E+00	1.00E-03	**1.60E+03**	**yes**
Di-n-butylphthalate	84-74-2	8.09E-01	#N/A	1.60E+00	#N/A	0.00E+00	#N/A	1.11E-03	#N/A	**yes**
Fluoranthene	206-44-0	6.89E-01	3.44E-04	3.20E+00	1.36E-04	0.00E+00	1.36E-04	none	No TRV	**yes**
Fluorene	86-73-7	2.40E-01	#N/A	1.10E+00	#N/A	0.00E+00	#N/A	none	No TRV	**yes**
Indeno(1,2,3-cd)pyrene	193-39-5	2.80E-01	1.61E+00	2.70E+01	2.19E+00	0.00E+00	2.19E+00	1.00E-03	**2.19E+03**	**yes**
N-Nitrosodiphenylamine	86-30-6	6.20E-01	#N/A	1.00E+00	#N/A	0.00E+00	#N/A	none	No TRV	**yes**
Phenanthrene	85-01-8	6.65E-01	3.15E-04	1.50E+00	5.66E-05	0.00E+00	5.66E-05	none	No TRV	**yes**
Pyrene	129-00-0	6.63E-01	3.39E-04	2.60E+00	1.05E-04	0.00E+00	1.05E-04	none	No TRV	**yes**

PBT = Persistent, bioaccumulative, and toxic.
COPEC = Chemicals of potential ecological concern.
CAS = Chemical abstract service.
ESV = Ecological screening value.
RME = Reasonable maximum exposure (lower of maximum or 95% UCL of mean).
BSAF = Sediment-to-benthic invertebrate uptake factor.
FCM = Food chain multiplier (Trophic level 4 consumers).
ADD_A = Average daily dose; animal.
I_A (kg/kgBW/d) = Animal ingestion rate for heron = 1.8E-01.
AUF = Area use factor 1.00E+00
[a] Home range is smaller than EU, therefore, AUF = 1.00E+00

I_S (kg/kgBW/d) = Sediment ingestion rate for heron = 0.
ADD_{total} = Average daily dose; total.
NOAEL = Lowest observed adverse effect level.
TRV (mg/kgBW/d) = Toxicity reference value.
HQ = Hazard quotient.
COEC = Contaminant of ecological concern.
"yes" = HQ > 1 or "No TRV."
"no" = HQ was not >1.
HQs in **bold font** are > 1.

Appendix Table O-49. Erie Burning Ground Hazard Quotients for Aquatic Biota Exposed to Surface Water COPECs at Ravenna, Ohio.

COPECs carried forward from OAC WQC Media Screen	CAS Registry Number	RME (mg/L)	NOAEL TRV (mg/L)	Site HQ (RME/TRV)	COEC?
Inorganics					
Aluminum	7429-90-5	2.94E+01	8.70E-01	**3.38E+01**	**yes**
Barium	7440-39-3	7.69E-01	2.20E-01	**3.50E+00**	**yes**
Cadmium	7440-43-9	3.95E-03	2.50E-03	**1.58E+00**	**yes**
Calcium	7440-70-2	5.35E+01	1.16E+02	4.61E-01	no
Copper	7440-50-8	6.30E-01	9.30E-03	**6.77E+01**	**yes**
Cyanide	57-12-5	1.13E-02	5.20E-03	**2.17E+00**	**yes**
Iron	7439-89-6	1.27E+02	1.00E+00	**1.27E+02**	**yes**
Lead	7439-92-1	1.11E-01	6.40E-03	**1.73E+01**	**yes**
Magnesium	7439-95-4	1.35E+01	8.20E+01	1.65E-01	no
Manganese	7439-96-5	9.91E+00	1.20E-01	**8.26E+01**	**yes**
Mercury	7439-97-6	1.20E-04	9.10E-03	1.32E-02	no
Potassium	7440-07-7	1.54E+01	5.30E+01	2.91E-01	no
Sodium	7440-23-5	2.77E+01	none	No TRV	**yes**
Zinc	7440-66-6	7.90E-01	1.20E-01	**6.58E+00**	**yes**
Organics-Explosives					
Nitrocellulose	9004-70-0	2.82E-01	none	No TRV	**yes**
Organics-Volatiles					
Acetone	67-64-1	6.47E-03	1.50E+00	4.31E-03	no
Chloromethane	74-87-3	3.80E-04	none	No TRV	**yes**

COPEC = Chemicals of potential ecological concern.
OAC WQC = Ohio Administrative Code Water Quality Criterion.
CAS = Chemical abstract service.
ESV = Ecological screening value.
RME = Reasonable maximum exposure (lower of maximum or 95% UCL of mean).
NOAEL = Lowest observed adverse effect level.
TRV (mg/kgBW/d) = Toxicity reference value.
HQ = Hazard quotient.
COEC = Chemical of ecological concern.
"yes" = HQ > 1 or "No TRV."
"no" = HQ was not >1.
HQs in **bold font** are > 1.

Appendix Table O-50. Erie Burning Ground Hazard Quotients for Muskrats Exposed to Surface Water COPECs at Ravenna, Ohio.

COPECs carried forward from OAC WQC media screen	CAS Registry Number	RME (mg/L)	WP (L/kg)	ADD_P (mg/kgBW/d) RME x WP x I_P x AUF[a]	ADD_W (mg/kgBW/d) RME x IR_W x AUF[a]	ADD_{total} (mg/kgBW/d) ADD_P + ADDw	NOAEL TRV (mg/kgBW/d)	Site HQ ADD_{total} / TRV	COEC?
Inorganics									
Aluminum	7429-90-5	2.94E+01	8.33E+02	7.35E+03	2.88E+01	7.38E+03	7.72E-01	**9.55E+03**	**yes**
Barium	7440-39-3	7.69E-01	2.60E+02	6.00E+01	7.54E-01	6.07E+01	3.95E+00	**1.54E+01**	**yes**
Cadmium	7440-43-9	3.95E-03	7.82E+02	9.27E-01	3.87E-03	9.31E-01	7.13E-01	**1.30E+00**	**yes**
Calcium	7440-70-2	5.35E+01	4.07E+04	6.53E+05	5.24E+01	6.53E+05	none	No TRV	**yes**
Copper	7440-50-8	6.30E-01	5.41E+02	1.02E+02	6.17E-01	1.03E+02	1.13E+01	**9.14E+00**	**yes**
Cyanide	57-12-5	1.13E-02	2.20E+01	7.46E-02	1.11E-02	8.57E-02	4.77E+01	1.79E-03	no
Iron	7439-89-6	1.27E+02	4.06E+03	1.55E+05	1.24E+02	1.55E+05	none	No TRV	**yes**
Lead	7439-92-1	1.11E-01	1.71E+03	5.68E+01	1.09E-01	5.69E+01	5.92E+00	**9.62E+00**	**yes**
Magnesium	7439-95-4	1.35E+01	4.06E+03	1.64E+04	1.32E+01	1.65E+04	none	No TRV	**yes**
Manganese	7439-96-5	9.91E+00	4.06E+03	1.21E+04	9.71E+00	1.21E+04	6.51E+01	**1.86E+02**	**yes**
Mercury	7439-97-6	1.20E-04	2.48E+04	8.91E-01	1.18E-04	8.92E-01	9.71E-01	9.18E-01	no
Potassium	7440-07-7	1.54E+01	4.06E+03	1.88E+04	1.51E+01	1.88E+04	none	No TRV	**yes**
Sodium	7440-23-5	2.77E+01	4.06E+03	3.37E+04	2.71E+01	3.38E+04	none	No TRV	**yes**
Zinc	7440-66-6	7.90E-01	2.18E+03	5.15E+02	7.74E-01	5.16E+02	1.18E+02	**4.36E+00**	**yes**
Organics-Explosives									
Nitrocellulose	9004-70-0	2.82E-01	1.32E-05	1.12E-06	2.76E-01	2.76E-01	none	No TRV	**yes**
Organics-Volatiles									
Acetone	67-64-1	6.47E-03	5.00E-02	9.71E-05	6.34E-03	6.44E-03	7.39E+00	8.71E-04	no
Chloromethane	74-87-3	3.80E-04	3.92E-01	4.47E-05	3.72E-04	4.17E-04	none	No TRV	**yes**

COPEC = Chemicals of potential ecological concern.
OAC WQC = Ohio Administrative Code Water Quality Criteria.
CAS = Chemical abstract service.
RME = Reasonable maximum exposure (lower of maximum or 95% UCL of mean).
WP = Sediment-to-plant uptake factor; vegetative.A57
CF = Correction factor dry wt to wet wet (0.15 for vegetative because+A2
0.15 kg dry plant/kg wet plant).
ADD_P = Average daily dose; plant.
I_P (kg/kgBW/d) = Plant ingestion rate for muskrats = 3.0E-01.
AUF = Area use factor.
[a] AUF = 1.04 ha / 0.13 ha = 1.00E+00

ADD_W = Average daily dose; water.
IR_W (L/kgBW/d) = Water ingestion rate for muskrats = 9.8E-01.
ADD_{total} = Average daily dose; total.
NOAEL = Lowest observed adverse effect level.
TRV (mg/kgBW/d) = Toxicity reference value.
HQ = Hazard quotient.
COEC = Contaminant of ecological concern.
"yes" = HQ > 1 or "No TRV."
"no" = HQ was not >1.
HQs in **bold font** are > 1.

Appendix Table O-51. Erie Burning Ground Hazard Quotients for Mallard Ducks Exposed to Surface Water COPECs at Ravenna, Ohio.

COPECs carried forward from OAC WQC media screen	CAS Registry Number	RME (mg/L)	WP (L/kg)	ADD_P (mg/kgBW/d) RME x WP x I_P x AUF[a]	ADD_W (mg/kgBW/d) RME x IR_W x AUF[a]	ADD_{total} (mg/kgBW/d) ADD_P + ADDw	NOAEL TRV (mg/kgBW/d)	Site HQ ADD_{total} / TRV	COEC?
Inorganics									
Aluminum	7429-90-5	2.94E+01	8.33E+02	3.61E+00	4.01E-03	3.62E+00	1.10E+00	**3.30E+00**	**yes**
Barium	7440-39-3	7.69E-01	2.60E+02	2.95E-02	1.05E-04	2.96E-02	2.08E-01	1.42E-01	no
Cadmium	7440-43-9	3.95E-03	7.82E+02	4.56E-04	5.38E-07	4.56E-04	1.45E+00	3.15E-04	no
Calcium	7440-70-2	5.35E+01	4.07E+04	3.21E+02	7.29E-03	3.21E+02	none	No TRV	**yes**
Copper	7440-50-8	6.30E-01	5.41E+02	5.03E-02	8.58E-05	5.04E-02	4.70E-01	1.07E-01	no
Cyanide	57-12-5	1.13E-02	2.20E+01	3.67E-05	1.54E-06	3.82E-05	none	No TRV	**yes**
Iron	7439-89-6	1.27E+02	4.06E+03	7.61E+01	1.73E-02	7.61E+01	none	No TRV	**yes**
Lead	7439-92-1	1.11E-01	1.71E+03	2.79E-02	1.51E-05	2.80E-02	1.13E-02	**2.47E+00**	**yes**
Magnesium	7439-95-4	1.35E+01	4.06E+03	8.09E+00	1.84E-03	8.09E+00	none	No TRV	**yes**
Manganese	7439-96-5	9.91E+00	4.06E+03	5.94E+00	1.35E-03	5.94E+00	9.77E+00	6.08E-01	no
Mercury	7439-97-6	1.20E-04	2.48E+04	4.38E-04	1.63E-08	4.38E-04	4.50E-03	9.74E-02	no
Potassium	7440-07-7	1.54E+01	4.06E+03	9.23E+00	2.10E-03	9.23E+00	none	No TRV	**yes**
Sodium	7440-23-5	2.77E+01	4.06E+03	1.66E+01	3.77E-03	1.66E+01	none	No TRV	**yes**
Zinc	7440-66-6	7.90E-01	2.18E+03	2.54E-01	1.08E-04	2.54E-01	1.45E-01	**1.75E+00**	**yes**
Organics-Explosives									
Nitrocellulose	9004-70-0	2.80E-01	#N/A	#N/A	3.81E-05	#N/A	none	No TRV	**yes**
Organics-Volatiles									
Acetone	67-64-1	6.47E-03	#N/A	#N/A	8.81E-07	#N/A	none	No TRV	**yes**
Chloromethane	74-87-3	3.80E-04	#N/A	#N/A	5.18E-08	#N/A	none	No TRV	**yes**

COPEC = Chemicals of potential ecological concern.
OAC WQC = Ohio Administrative Code Water Quality Criteria.
CAS = Chemical abstract service.
RME = Reasonable maximum exposure (lower of maximum or 95% UCL of mean).
WP = Sediment-to-plant uptake factor; vegetative.
CF = Correction factor dry wt to wet wet (0.15 for vegetative because 0.15 kg dry plant/kg wet plant).
ADD_P = Average daily dose; plant.
I_P (kg/kgBW/d) = Plant ingestion rate for mallards = 6.2E-02.
AUF = Area use factor.
[a] AUF = 1.04 ha / 435 ha = 2.39E-03

ADD_W = Average daily dose; water.
IR_W (L/kgBW/d) = Water ingestion rate for mallards = 5.7E-02.
ADD_{total} = Average daily dose; total.
NOAEL = Lowest observed adverse effect level.
TRV (mg/kgBW/d) = Toxicity reference value.
HQ = Hazard quotient.
COEC = Contaminant of ecological concern.
"yes" = HQ > 1 or "No TRV."
"no" = HQ was not >1.
HQs in **bold font** are > 1.

Appendix Table O-52. Erie Burning Ground Hazard Quotients for Mink Exposed to Surface Water PBT COPECs at Ravenna, Ohio.

PBT COPECs carried forward from OAC WQC media screen	CAS Registry Number	RME (mg/L)	BCF (L/kg)	FCM	ADD_A (mg/kgBW/d) RME x BCF x FCM x I_A x AUF[a]	ADD_W (mg/kgBW/d) RME x IR_W x AUF[a]	ADD_{total} (mg/kgBW/d) ADD_A + ADD_W	NOAEL TRV (mg/kgBW/d)	Site HQ ADD_{total} / TRV	COEC?
Metals										
Cadmium	7440-43-9	3.95E-03	9.07E+02	1.00E+00	1.27E-03	6.90E-07	1.27E-03	7.38E-01	1.72E-03	no
Lead	7439-92-1	1.11E-01	9.00E-02	1.00E+00	3.54E-06	1.94E-05	2.29E-05	6.12E+00	3.75E-06	no
Mercury	7439-97-6	1.20E-04	3.53E+03	1.00E+00	1.50E-04	2.10E-08	1.50E-04	1.01E+00	1.49E-04	no
Zinc	7440-66-6	7.90E-01	2.06E+03	1.00E+00	5.76E-01	1.38E-04	5.76E-01	1.22E+02	4.71E-03	no

PBT = Persistent, bioaccumulative, and toxic compound.

COPEC = Chemicals of potential ecological concern.

OAC WQC = Ohio Administrative Code Water Quality Criteria.

CAS = Chemical abstract service.

RME = Reasonable maximum exposure (lower of maximum or 95% UCL of mean).

BCF = Water-to-aquatic biota uptake factor.

FCM = Food chain multiplier.

ADD_A = Average daily dose; animal.

I_A (kg/kgBW/d) = Animal ingestion rate for mink = 1.6E-01.

AUF = Area use factor.

[a] AUF = 1.04 ha / 470 ha = 2.21E-03

ADD_W = Average daily dose; water.

IR_W (L/kgBW/d) = Water ingestion rate for mink = 7.9E-02.

ADD_{total} = Average daily dose; total.

NOAEL = Lowest observed adverse effect level.

TRV (mg/kgBW/d) = Toxicity reference value.

HQ = Hazard quotient.

COEC = Contaminant of ecological concern.

"yes" = HQ > 1 or "No TRV."

"no" = HQ was not >1.

HQs in **bold font** are > 1.

Appendix Table O-53. Erie Burning Ground Hazard Quotients for Great Blue Herons Exposed to Surface Water PBT COPECs at Ravenna, Ohio.

PBT COPECs carried forward from OAC WQC media screen	CAS Registry Number	RME (mg/L)	BCF (L/kg)	FCM	ADD_A (mg/kgBW/d) RME x BCF x FCM x I_A x AUF[a]	ADD_W (mg/kgBW/d) RME x IR_W x AUF[a]	ADD_{total} (mg/kgBW/d) $ADD_A + ADD_W$	NOAEL TRV (mg/kgBW/d)	Site HQ ADD_{total} / TRV	COEC?
Metals										
Cadmium	7440-43-9	3.95E-03	9.07E+02	1.00E+00	6.45E-01	1.78E-04	6.45E-01	1.45E-02	4.45E+01	**yes**
Lead	7439-92-1	1.11E-01	9.00E-02	1.00E+00	1.80E-03	5.00E-03	6.79E-03	1.13E-02	6.01E-01	no
Mercury	7439-97-6	1.20E-04	3.53E+03	1.00E+00	7.62E-02	5.40E-06	7.63E-02	4.50E-03	1.69E+01	**yes**
Zinc	7440-66-6	7.90E-01	2.06E+03	1.00E+00	2.93E+02	3.56E-02	2.93E+02	1.45E-01	2.02E+03	**yes**

PBT = Persistent, bioaccumulative, and toxic compound.

COPEC = Chemicals of potential ecological concern.

OAC WQC = Ohio Administrative Code Water Quality Criteria.

CAS = Chemical abstract service.

RME = Reasonable maximum exposure (lower of maximum or 95% UCL of mean).

BCF = Water-to-aquatic biota uptake factor.

FCM = Food chain multiplier.

ADD_A = Average daily dose; animal.

I_A (kg/kgBW/d) = Animal ingestion rate for heron = 1.8E-01.

AUF = Area use factor.

[a] AUF = 1.04 ha / 0.6 ha = 1.00E+00

ADD_W = Average daily dose; water.

IR_W (L/kgBW/d) = Water ingestion rate for heron = 4.5E-02.

ADD_{total} = Average daily dose; total.

NOAEL = Lowest observed adverse effect level.

TRV (mg/kgBW/d) = Toxicity reference value.

HQ = Hazard quotient.

COEC = Contaminant of ecological concern.

"yes" = HQ > 1 or "No TRV."

"no" = HQ was not >1.

HQs in **bold font** are > 1.