

## Section 742.APPENDIX A: General

Section 742.TABLE A: Soil Saturation Limits ( $C_{sat}$ ) for Chemicals Whose Melting Point is Less than 30° C

CAS No.	Chemical Name	$C_{sat}$ (mg/kg)
67-64-1	Acetone	100,000
71-43-2	Benzene	870
111-44-4	Bis(2-chloroethyl)ether	3,300
117-81-7	Bis(2-ethylhexyl)phthalate	31,000
75-27-4	Bromodichloromethane (Dichlorobromomethane)	3,000
75-25-2	Bromoform	1,900
71-36-3	Butanol	10,000
85-68-7	Butyl benzyl phthalate	930
75-15-0	Carbon disulfide	720
56-23-5	Carbon tetrachloride	1,100
108-90-7	Chlorobenzene (Monochlorobenzene)	680
124-48-1	Chlorodibromomethane (Dibromochloromethane)	1,300
67-66-3	Chloroform	2,900
96-12-8	1,2-Dibromo-3-chloropropane	1,400
106-93-4	1,2-Dibromoethane (Ethylene dibromide)	2,800
84-74-2	Di- <i>n</i> -butyl phthalate	2,300
95-50-1	1,2-Dichlorobenzene (o-Dichlorobenzene)	560
75-34-3	1,1-Dichloroethane	1,700
107-06-2	1,2-Dichloroethane (Ethylene dichloride)	1,800
75-35-4	1,1-Dichloroethylene	1,500
156-59-2	<i>cis</i> -1,2-Dichloroethylene	1,200
156-60-5	<i>trans</i> -1,2-Dichloroethylene	3,100
78-87-5	1,2-Dichloropropane	1,100
542-75-6	1,3-Dichloropropene (1,3-Dichloropropylene, <i>cis</i> + <i>trans</i> )	1,400

CAS No.	Chemical Name	C <sub>sat</sub> (mg/kg)
84-66-2	Diethyl phthalate	2,000
117-84-0	Di- <i>n</i> -octyl phthalate	10,000
100-41-4	Ethylbenzene	400
77-47-4	Hexachlorocyclopentadiene	2,200
78-59-1	Isophorone	4,600
74-83-9	Methyl bromide (Bromomethane)	3,200
<u>1634-04-4</u>	<u>Methyl tert-butyl ether</u>	<u>8,800</u>
75-09-2	Methylene chloride (Dichloromethane)	2,400
98-95-3	Nitrobenzene	1,000
100-42-5	Styrene	1,500
127-18-4	Tetrachloroethylene (Perchloroethylene)	240
108-88-3	Toluene	650
120-82-1	1,2,4-Trichlorobenzene	3,200
71-55-6	1,1,1-Trichloroethane	1,200
79-00-5	1,1,2-Trichloroethane	1,800
79-01-6	Trichloroethylene	1,300
108-05-4	Vinyl acetate	2,700
75-01-4	Vinyl chloride	1,200
108-38-3	m-Xylene	420
95-47-6	o-Xylene	410
106-42-3	p-Xylene	460
1330-20-7	Xylenes (total)	<del>440</del> 320
	<b>Ionizable Organics</b>	
95-57-8	2-Chlorophenol	53,000

(Source: Amended in R00-19(B) at 24 Ill. Reg. \_\_\_\_\_, effective\_\_\_\_\_)

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Section 742.TABLE D: Percentage Points of the W Test for  $N_1=3(1)50$

$N_1$	0.01	0.05
3	0.753	0.767
4	0.687	0.748
5	0.686	0.762
6	0.713	0.788
7	0.730	0.803
8	0.749	0.818
9	0.764	0.829
10	0.781	0.842
11	0.792	0.850
12	0.805	0.859
13	0.814	0.866
14	0.825	0.874
15	0.835	0.881
16	0.844	0.887
17	0.851	0.892
18	0.858	0.897
19	0.863	0.901
20	0.868	0.905
21	0.873	0.908
22	0.878	0.911
23	0.881	0.914
24	0.884	0.916
25	0.888	0.918
26	0.891	0.920
27	0.894	0.923
28	0.896	0.924
29	0.898	0.926
30	0.900	0.927
31	0.902	0.929
32	0.904	0.930
33	0.906	0.931
34	0.908	0.933
35	0.910	0.934

(Source: Amended in R00-19(B) at 24 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_)

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Section 742.TABLE E: Similar-Acting Noncarcinogenic Chemicals

Kidney

Acetone (Ingestion only)  
Cadmium (Ingestion only)  
Chlorobenzene  
Dalapon  
1,1-Dichloroethane  
Di-n-octyl phthalate (Ingestion only)  
Endosulfan  
Ethylbenzene  
Fluoranthene  
Methyl tert-butyl ether (Inhalation only)  
Nitrobenzene  
Pyrene  
Toluene (Ingestion only)  
2,4,5-Trichlorophenol  
Vinyl acetate (Ingestion only)

Liver

Acenaphthene  
Acetone (Ingestion only)  
Butylbenzyl phthalate (Ingestion only)  
Chlorobenzene (Ingestion only)  
1,1-Dichloroethylene (Ingestion only)  
Di-n-octyl phthalate (Ingestion only)  
Endrin  
Ethylbenzene  
Fluoranthene  
Methyl tert-butyl ether (Inhalation only)  
Nitrobenzene  
Picloram  
Styrene (Ingestion only)  
2,4,5-TP (Silvex)  
Toluene (Ingestion only)  
1,2,4-Trichlorobenzene (Inhalation only)  
2,4,5-Trichlorophenol

Central Nervous System

Butanol (Ingestion only)  
Cyanide (amenable)  
2,4-Dimethylphenol  
Endrin  
Manganese  
2-Methylphenol  
Mercury (Inhalation only)  
Styrene (Inhalation only)  
Toluene (Inhalation only)  
Xylenes (Ingestion only)

Circulatory System

Antimony  
Barium (Ingestion only)  
2,4-D

cis-1,2-Dichloroethylene (Ingestion only)  
Nitrobenzene  
trans-1,2-Dichloroethylene (Ingestion only)  
2,4-Dimethylphenol  
Fluoranthene  
Fluorene  
Styrene (Ingestion only)  
Zinc

Cholinesterase Inhibition

Aldicarb  
Carbofuran

Decreased Body Weight Gains  
and Circulatory System Effects

Atrazine  
Simazine

Adrenal Gland

Nitrobenzene  
1,2,4-Trichlorobenzene (Ingestion only)

Respiratory System

1,2-Dichloropropane (Inhalation only)  
Hexachlorocyclopentadiene (Inhalation only)  
Methyl bromide (Inhalation only)  
Naphthalene (Inhalation only)  
Toluene (Inhalation only)  
Vinyl acetate (Inhalation only)

Immune System

2,4-Dichlorophenol  
p-Chloroaniline  
Styrene  
Mercury (Ingestion only)  
Styrene  
Zinc

Gastrointestinal System

Endothall  
Hexachlorocyclopentadiene (Ingestion only)  
Methyl bromide (Ingestion only)  
Methyl tert-butyl ether (Ingestion only)

Reproductive System

Barium (Inhalation only)  
Boron (Ingestion only)  
Carbon disulfide  
2-Chlorophenol (Ingestion only)  
1,2 Dibromo-3-Chloropropane (Inhalation only)  
Dinoseb  
Ethylbenzene (Inhalation only)  
Methoxychlor  
Phenol

(Source: Amended in R00-19(B) at 24 Ill. Reg. \_\_\_\_, effective \_\_\_\_\_)

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**Section 742.TABLE F: Similar-Acting Carcinogenic Chemicals**

Kidney

Bromodichloromethane (Ingestion only)  
Chloroform (Ingestion only)  
1,2-Dibromo-3-chloropropane (Ingestion only)  
2,4-Dinitrotoluene  
2,6-Dinitrotoluene  
Hexachlorobenzene

Liver

Aldrin  
Bis(2-chloroethyl)ether  
Bis(2-ethylhexyl)phthalate (Ingestion only)  
Carbazole  
Carbon tetrachloride  
Chlordane  
Chloroform (Inhalation only)  
DDD  
DDE  
DDT  
1,2-Dibromo-3-chloropropane (Ingestion only)  
1,2-Dibromoethane(Ingestion only)  
3,3'-Dichlorobenzidine  
1,2-Dichloroethane  
~~1,3~~1,2-Dichloropropane (Ingestion only)  
1,3-Dichloropropylene (Ingestion only)  
Dieldrin  
2,4-Dinitrotoluene  
2,6-Dinitrotoluene  
Heptachlor  
Heptachlor epoxide  
Hexachlorobenzene  
alpha-HCH  
gamma-HCH (Lindane)  
Methylene chloride  
N-Nitrosodiphenylamine  
N-Nitrosodi-n-propylamine  
Pentachlorophenol  
Tetrachloroethylene  
Trichloroethylene  
2,4,6-Trichlorophenol  
Toxaphene  
Vinyl chloride

Circulatory System

Benzene  
2,4,6-Trichlorophenol

Gastrointestinal System

Benzo(a)anthracene  
Benzo(b)fluoranthene  
Benzo(k)fluoranthene  
Benzo(a)pyrene  
Chrysene  
Dibenzo(a,h)anthracene  
Indeno(1,2,3-c,d)pyrene  
Bromodichloromethane (Ingestion only)  
Bromoform  
1,2-Dibromo-3-chloropropane (Ingestion only)  
1,2-Dibromoethane (Ingestion only)  
1,3-Dichloropropylene (Ingestion only)

Lung

Arsenic (Inhalation only)  
Beryllium (Inhalation only)  
Cadmium (Inhalation only)  
Chromium, hexavalent (Inhalation only)  
1,3-Dichloropropylene (Inhalation only)  
Methylene chloride (Inhalation only)  
N-Nitrosodi-n-propylamine  
Nickel (Inhalation only)  
Vinyl chloride

Nasal Cavity

1,2-Dibromo-3-chloropropane (Inhalation only)  
1,2-Dibromoethane (Inhalation only)  
N-Nitrosodi-n-propylamine

Bladder

3,3'-Dichlorobenzidine  
1,3-Dichloropropylene (Ingestion only)  
N-Nitrosodiphenylamine

(Source: Amended in R00-19(B) at 24 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_)

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Section 742.TABLE G: Concentrations of Inorganic Chemicals in Background Soils

Chemical Name	Counties Within Metropolitan Statistical Areas <sup>a</sup> (mg/kg)	Counties Outside Metropolitan Statistical Areas (mg/kg)
Aluminum	9,500	9,200
Antimony	4.0	3.3
Arsenic	<del>7.2</del> 13.0	<del>5.2</del> 11.3
Barium	110	122
Beryllium	0.59	0.56
Cadmium	0.6	0.50
Calcium	9,300	5,525
Chromium	16.2	13.0
Cobalt	8.9	8.9
Copper	19.6	12.0
Cyanide	0.51	0.50
Iron	15,900	15,000
Lead	36.0	20.9
Magnesium	4,820	2,700
Manganese	636	630
Mercury	0.06	0.05

<sup>a</sup>Counties within Metropolitan Statistical Areas: Boone, Champaign, Clinton, Cook, DuPage, Grundy, Henry, Jersey, Kane, Kankakee, Kendall, Lake, Macon, Madison, McHenry, McLean, Menard, Monroe, Peoria, Rock Island, Sangamon, St. Clair, Tazewell, Will, Winnebago and Woodford.

Chemical Name	Counties Within Metropolitan Statistical Areas <sup>a</sup> (mg/kg)	Counties Outside Metropolitan Statistical Areas (mg/kg)
Nickel	18.0	13.0
Potassium	1,268	1,100
Selenium	0.48	0.37
Silver	0.55	0.50
Sodium	130	130.0
Sulfate	85.5	110
Sulfide	3.1	2.9
Thallium	0.32	0.42
Vanadium	25.2	25.0
Zinc	95.0	60.2

(Source: Amended in R00-19(B) at 24 Ill. Reg. \_\_\_\_, effective\_\_\_\_)

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TABLE H: Chemicals Whose Tier 1 Class I Groundwater Remediation Objective Exceeds the 1 in 1,000,000 Cancer Risk Concentration

<u>Chemical</u>	<u>Class I Groundwater Remediation Objective (mg/l)</u>	<u>1 in 1,000,000 Cancer Risk Concentration (mg/l)</u>	<u>ADL (mg/l)</u>
Aldrin	<del>0.00004</del> <u>0.014</u>	0.000005	<del>0.00004</del> <u>0.014</u>
Benzo(a)pyrene	0.0002	0.0000012	0.00023
Bis(2-chloroethyl)ether	0.01	0.000077	0.01
<u>Bis(2-ethylhexyl)phthalate</u>	<u>0.006</u>	<u>0.0061</u>	<u>0.0027</u>
Carbon Tetrachloride	0.005	0.00066	<del>0.00030</del> <u>0.0001</u>
Chlordane	0.002	0.000066	0.00014
<u>DDD</u>	<u>0.014</u>	<u>0.00023</u>	<u>0.014</u>
<u>DDE</u>	<u>0.01</u>	<u>0.00023</u>	<u>0.01</u>
<u>DDT</u>	<u>0.006</u>	<u>0.00023</u>	<u>0.006</u>
Dibenzo(a,h)anthracene	0.0003	0.000012	0.0003
1,2-Dibromo-3-chloropropane	0.0002	0.000061	<del>0.00020</del> <u>0.001</u>
1,2-dibromoethane	0.00005	0.0000010	<del>0.000050</del> <u>0.001</u>
3,3'-Dichlorobenzidine	0.02	0.00019	0.02
1,2-Dichloroethane	0.005	0.00094	0.0003
Dieldrin	<del>0.00020</del> <u>0.009</u>	0.0000053	<del>0.00020</del> <u>0.009</u>
<u>2,6-Dinitrotoluene</u>	<u>0.00031</u>	<u>0.0001</u>	<u>0.00031</u>
Heptachlor	0.0004	0.000019	<del>0.00030</del> <u>0.013</u>
Heptachlor epoxide	0.0002	0.0000094	<del>0.000320</del> <u>0.015</u>
Hexachlorobenzene	0.00006	0.000053	0.00006
Alpha-HCH	<del>0.00030</del> <u>0.00011</u>	0.000014	<del>0.00030</del> <u>0.00011</u>
Tetrachloroethylene	0.005	0.0016	<del>0.00040</del> <u>0.0004</u>
Toxaphene	0.003	0.000077	0.00086
Vinyl chloride	0.002	0.000045	<del>0.00060</del> <u>0.0002</u>
<u>Ionizable Organics</u>			
N-Nitrosodi-n-propylamine	<del>0.010</del> <u>0.0018</u>	0.000012	<del>0.010</del> <u>0.0018</u>
Pentachlorophenol	0.001	0.00071	<del>0.0010</del> <u>0.00076</u>
<u>2,4,6-Trichlorophenol</u>	<u>0.01</u>	<u>0.007</u>	<u>0.01</u>
<u>Inorganics Organics</u>			



Arsenic	0.05	0.000057	0.001
Beryllium	0.004	0.00002	0.004

(Source: Amended in R00-19(B) at 24 Ill. Reg. \_\_\_\_\_, effective\_\_\_\_\_)

Section 742.APPENDIX B: Tier 1 Tables and Illustrations

Section 742.TABLE A: Tier 1 Soil Remediation Objectives\* for Residential Properties

CAS No.	Chemical Name	Exposure Route-Specific Values for Soils		Soil Component of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	
83-32-9	Acenaphthene	4,700 <sup>b</sup>	--- <sup>c</sup>	570 <sup>b</sup>	2,900	*
67-64-1	Acetone	7,800 <sup>b</sup>	100,000 <sup>d</sup>	16 <sup>b</sup>	16	*
15972-60-8	Alachlor <sup>o</sup>	8 <sup>e</sup>	--- <sup>c</sup>	0.04	0.2	NA
116-06-3	Aldicarb <sup>o</sup>	78 <sup>b</sup>	--- <sup>c</sup>	0.013	0.07	NA
309-00-2	Aldrin	0.04 <sup>e</sup>	3 <sup>e</sup>	0.5 <sup>e</sup>	2.5	<u>0.94</u>
120-12-7	Anthracene	23,000 <sup>b</sup>	--- <sup>c</sup>	12,000 <sup>b</sup>	59,000	*
1912-24-9	Atrazine <sup>o</sup>	2700 <sup>b</sup>	--- <sup>c</sup>	0.066	0.33	NA
71-43-2	Benzene	<del>22</del> <sup>e</sup> 12 <sup>c</sup>	0.8 <sup>e</sup>	0.03	0.17	*
56-55-3	Benzo(a)anthracene	0.9 <sup>e</sup>	--- <sup>c</sup>	2	8	*
205-99-2	Benzo(b)fluoranthene	0.9 <sup>e</sup>	--- <sup>c</sup>	5	25	*

CAS No.	Chemical Name	Exposure Route-Specific Values for Soils		Soil Component of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	
207-08-9	Benzo( <i>k</i> )fluroanthene	9 <sup>e</sup>	--- <sup>c</sup>	49	250	*
50-32-8	Benzo( <i>a</i> )pyrene	0.09 <sup>e,f</sup>	--- <sup>c</sup>	8	82	*
111-44-4	Bis(2-chloroethyl)ether	0.6 <sup>e</sup>	0.2 <sup>e,f</sup>	0.0004 <sup>e,f</sup>	0.0004	0.66
117-81-7	Bis(2-ethylhexyl)phthalate	46 <sup>e</sup>	31,000 <sup>d</sup>	3,600	31,000 <sup>d</sup>	*
75-27-4	Bromodichloromethane (Dichlorobromomethane)	10 <sup>e</sup>	3,000 <sup>d</sup>	0.6	0.6	*
75-25-2	Bromoform	81 <sup>e</sup>	53 <sup>e</sup>	0.8	0.8	*
71-36-3	Butanol	7,800 <sup>b</sup>	10,000 <sup>d</sup>	17 <sup>b</sup>	17	NA
85-68-7	Butyl benzyl phthalate	16,000 <sup>b</sup>	930 <sup>d</sup>	930 <sup>d</sup>	930 <sup>d</sup>	*
86-74-8	Carbazole	32 <sup>e</sup>	--- <sup>c</sup>	0.6 <sup>e</sup>	2.8	NA
1563-66-2	Carbofuran <sup>o</sup>	390 <sup>b</sup>	--- <sup>c</sup>	0.22	1.1	NA
75-15-0	Carbon disulfide	7,800 <sup>b</sup>	720 <sup>d</sup>	32 <sup>b</sup>	160	*

CAS No.	Chemical Name	Exposure Route-Specific Values for Soils		Soil Component of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	
56-23-5	Carbon tetrachloride	5 <sup>e</sup>	0.3 <sup>e</sup>	0.07	0.33	*
57-74-9	Chlordane	<del>0.5</del> 1.8 <sup>e</sup>	<del>2072</del> <sup>e</sup>	10	48	*
106-47-8	4-Chloroaniline ( <i>p</i> -Chloroaniline)	310 <sup>b</sup>	--- <sup>c</sup>	0.7 <sup>b</sup>	0.7	<del>1.3</del> *
108-90-7	Chlorobenzene (Monochlorobenzene)	1,600 <sup>b</sup>	130 <sup>b</sup>	1	6.5	*
124-48-1	Chlorodibromomethane (Dibromochloromethane)	1,600 <sup>b</sup>	1,300 <sup>d</sup>	0.4	0.4	*
67-66-3	Chloroform	100 <sup>e</sup>	0.3 <sup>e</sup>	0.6	2.9	*
218-01-9	Chrysene	88 <sup>e</sup>	--- <sup>c</sup>	160	800	*
94-75-7	2,4-D <sup>o</sup>	780 <sup>b</sup>	--- <sup>c</sup>	1.5	7.7	*
75-99-0	Dalapon <sup>o</sup>	2,300 <sup>b</sup>	--- <sup>c</sup>	0.85	8.5	<del>1.2</del> *
72-54-8	DDD	3 <sup>e</sup>	--- <sup>c</sup>	16 <sup>e</sup>	80	*
72-55-9	DDE	2 <sup>e</sup>	--- <sup>c</sup>	54 <sup>e</sup>	270	*

CAS No.	Chemical Name	Exposure Route-Specific Values for Soils		Soil Component of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	
50-29-3	DDT	2 <sup>e</sup>	--- <sup>g</sup>	32 <sup>e</sup>	160	*
53-70-3	Dibenzo( <i>a,h</i> )anthracene	0.09 <sup>e,f</sup>	--- <sup>c</sup>	2	7.6	*
96-12-8	1,2-Dibromo-3-chloropropane	0.46 <sup>e</sup>	11 <sup>b</sup>	0.002	0.002	*
106-93-4	1,2-Dibromoethane (Ethylene dibromide)	0.0075 <sup>e</sup>	0.17 <sup>e</sup>	0.0004	0.004	0.005
84-74-2	Di- <i>n</i> -butyl phthalate	7,800 <sup>b</sup>	2,300 <sup>d</sup>	2,300 <sup>d</sup>	2,300 <sup>d</sup>	*
95-50-1	1,2-Dichlorobenzene ( <i>o</i> -Dichlorobenzene)	7,000 <sup>b</sup>	560 <sup>d</sup>	17	43	*
106-46-7	1,4-Dichlorobenzene ( <i>p</i> -Dichlorobenzene)	--- <sup>c</sup>	--- <sup>e</sup> <u>11,000<sup>b</sup></u>	2	11	*
91-94-1	3,3'-Dichlorobenzidine	1 <sup>e</sup>	--- <sup>c</sup>	0.007 <sup>e,f</sup>	0.033	1.3
75-34-3	1,1-Dichloroethane	7,800 <sup>b</sup>	1,300 <sup>b</sup>	23 <sup>b</sup>	110	*

CAS No.	Chemical Name	Exposure Route-Specific Values for Soils		Soil Component of the Groundwater Ingestion Exposure Route Values		
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
107-06-2	1,2-Dichloroethane (Ethylene dichloride)	7 <sup>e</sup>	0.4 <sup>e</sup>	0.02	0.1	*
75-35-4	1,1-Dichloroethylene	700 <sup>b</sup>	1,500 <sup>d</sup>	0.06	0.3	*
156-59-2	<i>cis</i> -1,2-Dichloroethylene	780 <sup>b</sup>	1,200 <sup>d</sup>	0.4	1.1	*
156-60-5	<i>trans</i> -1,2-Dichloroethylene	1,600 <sup>b</sup>	3,100 <sup>d</sup>	0.7	3.4	*
78-87-5	1,2-Dichloropropane	9 <sup>e</sup>	15 <sup>b</sup>	0.03	0.15	*
542-75-6	1,3-Dichloropropene (1,3-Dichloropropylene, <i>cis</i> + <i>trans</i> )	4 <sup>e</sup>	0.1 <sup>e</sup>	0.004 <sup>e</sup>	0.02	0.005
60-57-1	Dieldrin <sup>n</sup>	0.04 <sup>e</sup>	1 <sup>e</sup>	0.004 <sup>e</sup>	0.02	<u>0.603</u>
84-66-2	Diethyl phthalate	63,000 <sup>b</sup>	2,000 <sup>d</sup>	470 <sup>b</sup>	470	*
105-67-9	2,4-Dimethylphenol	1,600 <sup>b</sup>	--- <sup>c</sup>	9 <sup>b</sup>	9	*
121-14-2	2,4-Dinitrotoluene	0.9 <sup>e</sup>	--- <sup>c</sup>	0.0008 <sup>e,f</sup>	0.0008	<del>0.0130,250</del>

CAS No.	Chemical Name	Exposure Route-Specific Values for Soils		Soil Component of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	
606-20-2	2,6-Dinitrotoluene	0.9 <sup>e</sup>	--- <sup>c</sup>	0.0007 <sup>e,f</sup>	0.0007	<del>0.006</del> <u>70,260</u>
117-84-0	Di- <i>n</i> -octyl phthalate	1,600 <sup>b</sup>	10,000 <sup>d</sup>	10,000 <sup>d</sup>	10,000 <sup>d</sup>	*
115-29-7	Endosulfan <sup>o</sup>	470 <sup>b</sup>	--- <sup>c</sup>	18 <sup>b</sup>	90	*
145-73-3	Endothall <sup>o</sup>	1,600 <sup>b</sup>	--- <sup>c</sup>	0.4	0.4	NA
72-20-8	Endrin	23 <sup>b</sup>	--- <sup>c</sup>	1	5	*
100-41-4	Ethylbenzene	7,800 <sup>b</sup>	400 <sup>d</sup>	13	19	*
206-44-0	Fluoranthene	3,100 <sup>b</sup>	--- <sup>c</sup>	4,300 <sup>b</sup>	21,000	*
86-73-7	Fluorene	3,100 <sup>b</sup>	--- <sup>c</sup>	560 <sup>b</sup>	2,800	*
76-44-8	Heptachlor	0.1 <sup>e</sup>	0.1 <sup>e</sup>	23	110	<u>0.871</u>
1024-57-3	Heptachlor epoxide	0.07 <sup>e</sup>	5 <sup>e</sup>	0.7	3.3	<u>1.005</u>
118-74-1	Hexachlorobenzene	0.4 <sup>e</sup>	1 <sup>e</sup>	2	11	*
319-84-6	<i>alpha</i> -HCH ( <i>alpha</i> -BHC)	0.1 <sup>e</sup>	0.8 <sup>e</sup>	0.0005 <sup>e,f</sup>	0.003	<del>0.002</del> <u>0.0074</u>

CAS No.	Chemical Name	Exposure Route-Specific Values for Soils		Soil Component of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	
58-89-9	<i>gamma</i> -HCH (Lindane) <sup>n</sup>	0.5 <sup>e</sup>	--- <sup>c</sup>	0.009	0.047	*
77-47-4	Hexachlorocyclopentadiene	550 <sup>b</sup>	10 <sup>b</sup>	400	2,200 <sup>d</sup>	*
67-72-1	Hexachloroethane	78 <sup>b</sup>	--- <sup>c</sup>	0.5 <sup>b</sup>	2.6	*
193-39-5	Indeno(1,2,3- <i>c,d</i> )pyrene	0.9 <sup>e</sup>	--- <sup>c</sup>	14	69	*
78-59-1	Isophorone	15,600 <sup>b</sup>	4,600 <sup>d</sup>	8 <sup>b</sup>	8	*
72-43-5	Methoxychlor <sup>o</sup>	390 <sup>b</sup>	--- <sup>c</sup>	160	780	*
74-83-9	Methyl bromide (Bromomethane)	110 <sup>b</sup>	10 <sup>b</sup>	0.2 <sup>b</sup>	1.2	*
<u>1634-04-4</u>	<u>Methyl tert-butyl ether</u>	<u>780<sup>b</sup></u>	<u>8,800<sup>d</sup></u>	<u>0.32</u>	<u>0.32</u>	<u>*</u>
75-09-2	Methylene chloride (Dichloromethane)	85 <sup>e</sup>	13 <sup>e</sup>	0.02 <sup>e</sup>	0.2	*
95-48-7	2-Methylphenol ( <i>o</i> - Cresol)	3,900 <sup>b</sup>	--- <sup>c</sup>	15 <sup>b</sup>	15	*
91-20-3	Naphthalene	<del>3,100</del> 1,600 <sup>b</sup>	<del>---</del> 170 <sup>b</sup>	<del>84</del> 12 <sup>b</sup>	<del>420</del> 18	*
98-95-3	Nitrobenzene	39 <sup>b</sup>	92 <sup>b</sup>	0.1 <sup>b,f</sup>	0.1	0.26



CAS No.	Chemical Name	Exposure Route-Specific Values for Soils		Soil Component of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	
86-30-6	<i>N</i> -Nitrosodiphenylamine	130 <sup>e</sup>	--- <sup>c</sup>	1 <sup>e</sup>	5.6	*
621-64-7	<i>N</i> -Nitrosodi- <i>n</i> -propylamine	0.09 <sup>e,f</sup>	--- <sup>c</sup>	0.00005 <sup>e,f</sup>	0.00005	<del>0.66</del> 0.0018
108-95-2	Phenol	47,000 <sup>b</sup>	--- <sup>c</sup>	100 <sup>b</sup>	100	*
1918-02-1	Picloram <sup>o</sup>	5,500 <sup>b</sup>	--- <sup>c</sup>	2	20	NA
1336-36-3	Polychlorinated biphenyls (PCBs) <sup>n</sup>	<del>14</del> 10 <sup>h</sup>	--- <sup>c,h</sup>	--- <sup>h</sup>	--- <sup>h</sup>	*
129-00-0	Pyrene	2,300 <sup>b</sup>	--- <sup>c</sup>	4,200 <sup>b</sup>	21,000	*
122-34-9	Simazine <sup>o</sup>	390 <sup>b</sup>	--- <sup>c</sup>	0.04	0.37	NA
100-42-5	Styrene	16,000 <sup>b</sup>	1,500 <sup>d</sup>	4	18	*
127-18-4	Tetrachloroethylene (Perchloroethylene)	12 <sup>e</sup>	11 <sup>e</sup>	0.06	0.3	*
108-88-3	Toluene	16,000 <sup>b</sup>	650 <sup>d</sup>	12	29	*

CAS No.	Chemical Name	Exposure Route-Specific Values for Soils		Soil Component of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	
8001-35-2	Toxaphene <sup>n</sup>	0.6 <sup>e</sup>	89 <sup>e</sup>	31	150	*
120-82-1	1,2,4-Trichlorobenzene	780 <sup>b</sup>	3,200 <sup>b</sup>	5	53	*
71-55-6	1,1,1-Trichloroethane	--- <sup>c</sup>	1,200 <sup>d</sup>	2	9.6	*
79-00-5	1,1,2-Trichloroethane	310 <sup>b</sup>	1,800 <sup>d</sup>	0.02	0.3	*
79-01-6	Trichloroethylene	58 <sup>e</sup>	5 <sup>e</sup>	0.06	0.3	*
108-05-4	Vinyl acetate	78,000 <sup>b</sup>	1,000 <sup>b</sup>	170 <sup>b</sup>	170	*
75-01-4	Vinyl chloride	0.3 <sup>e</sup>	0.03 <sup>e</sup>	0.01 <sup>f</sup>	0.07	*
108-38-3	m-Xylene	160,000 <sup>b</sup>	420 <sup>d</sup>	210	210	*
95-47-6	o-Xylene	160,000 <sup>b</sup>	410 <sup>d</sup>	190	190	*
106-42-3	p-Xylene	160,000 <sup>b</sup>	460 <sup>d</sup>	200	200	*

CAS No.	Chemical Name	Exposure Route-Specific Values for Soils		Soil Component of the Groundwater Ingestion Exposure Route Values		
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
1330-20-7	Xylenes (total)	160,000 <sup>b</sup>	<del>410<sup>d</sup></del> <u>320<sup>d</sup></u>	150	150	<del>1</del>
	<b>Ionizable Organics</b>					
65-85-0	Benzoic Acid	310,000 <sup>b</sup>	--- <sup>c</sup>	400 <sup>b,i</sup>	400 <sup>i</sup>	*
95-57-8	2-Chlorophenol	390 <sup>b</sup>	53,000 <sup>d</sup>	4 <sup>b,i</sup>	4 <sup>i</sup>	*
120-83-2	2,4-Dichlorophenol	230 <sup>b</sup>	--- <sup>c</sup>	1 <sup>b,i</sup>	1 <sup>i</sup>	*
51-28-5	2,4-Dinitrophenol	160 <sup>b</sup>	--- <sup>c</sup>	0.2 <sup>b,f</sup>	0.2	3.3
88-85-7	Dinoseb <sup>o</sup>	78 <sup>b</sup>	--- <sup>c</sup>	0.34 <sup>b,i</sup>	3.4 <sup>i</sup>	*
87-86-5	Pentachlorophenol	3 <sup>e,j</sup>	--- <sup>c</sup>	0.03 <sup>f,i</sup>	0.14 <sup>i</sup>	<del>2.4</del> *
93-72-1	2,4,5-TP (Silvex)	630 <sup>b</sup>	--- <sup>c</sup>	11 <sup>i</sup>	55 <sup>i</sup>	*
95-95-4	2,4,5-Trichlorophenol	7,800 <sup>b</sup>	--- <sup>c</sup>	270 <sup>b,i</sup>	1,400 <sup>i</sup>	*
88-06-2	2,4,6 Trichlorophenol	58 <sup>e</sup>	200 <sup>e</sup>	0.2 <sup>e,f,i</sup>	0.77 <sup>i</sup>	<del>0.43</del> <u>0.66</u>

CAS No.	Chemical Name	Exposure Route-specific Values for Soils		Soil Component of the Groundwater Ingestion Exposure Route Values		
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/L)	Class II (mg/L)	ADL (mg/kg)
	<b>Inorganics</b>					
7440-36-0	Antimony	31 <sup>b</sup>	--- <sup>c</sup>	0.006 <sup>m</sup>	0.024 <sup>m</sup>	*
7440-38-2	Arsenic <sup>1,n</sup>	0.4 <sup>s,t</sup>	750 <sup>e</sup>	0.05 <sup>m</sup>	0.2 <sup>m</sup>	*
7440-39-3	Barium	5,500 <sup>b</sup>	690,000 <sup>b</sup>	2.0 <sup>m</sup>	2.0 <sup>m</sup>	*
7440-41-7	Beryllium	0.1 <sup>s,t</sup> 160 <sup>b</sup>	1,300 <sup>e</sup>	0.004 <sup>m</sup>	0.5 <sup>m</sup>	*
7440-42-8	Boron	7,000 <sup>b</sup>	--- <sup>g</sup>	2.0 <sup>m</sup>	2.0 <sup>m</sup>	*
7440-43-9	Cadmium <sup>1,n</sup>	78 <sup>b,r</sup>	1,800 <sup>e</sup>	0.005 <sup>m</sup>	0.05 <sup>m</sup>	*
16887-00-6	Chloride	--- <sup>c</sup>	--- <sup>c</sup>	200 <sup>m</sup>	200 <sup>m</sup>	*
7440-47-3	Chromium, total	390 230 <sup>b</sup>	270 <sup>e</sup>	0.1 <sup>m</sup>	1.0 <sup>m</sup>	*
16065-83-1	Chromium, ion, trivalent	78,000 120,000 <sup>b</sup>	--- <sup>c</sup>	--- <sup>g</sup>	--- <sup>g</sup>	*
18540-29-9	Chromium, ion, hexavalent	390 230 <sup>b</sup>	270 <sup>e</sup>	---	---	*
7440-48-4	Cobalt	4,700 <sup>b</sup>	--- <sup>c</sup>	1.0 <sup>m</sup>	1.0 <sup>m</sup>	*

CAS No.	Chemical Name	Exposure Route-specific Values for Soils		Soil Component of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/L)	Class II (mg/L)	
7440-50-8	Copper <sup>n</sup>	2,900 <sup>b</sup>	--- <sup>c</sup>	0.65 <sup>m</sup>	0.65 <sup>m</sup>	*
57-12-5	Cyanide (amenable)	1,600 <sup>b</sup>	--- <sup>c</sup>	0.2 <sup>q,m</sup>	0.6 <sup>q,m</sup>	*
7782-41-4	Fluoride	4,700 <sup>b</sup>	--- <sup>c</sup>	4.0 <sup>m</sup>	4.0 <sup>m</sup>	*
15438-31-0	Iron	--- <sup>c</sup>	--- <sup>c</sup>	5.0 <sup>m</sup>	5.0 <sup>m</sup>	*
7439-92-1	Lead	400 <sup>k</sup>	--- <sup>c</sup>	0.0075 <sup>m</sup>	0.1 <sup>m</sup>	*
7439-96-5	Manganese	3,700 <sup>b</sup>	69,000 <sup>b</sup>	0.15 <sup>m</sup>	10.0 <sup>m</sup>	*
7439-97-6	Mercury <sup>l,n,s</sup>	23 <sup>b,r</sup>	10 <sup>b,r</sup>	0.002 <sup>m</sup>	0.01 <sup>m</sup>	*
7440-02-0	Nickel <sup>l</sup>	1,600 <sup>b</sup>	13,000 <sup>e</sup>	0.1 <sup>m</sup>	2.0 <sup>m</sup>	*
14797-55-8	Nitrate as N <sup>p</sup>	130,000 <sup>b</sup>	--- <sup>c</sup>	10.0 <sup>q</sup>	100 <sup>q</sup>	*
7782-49-2	Selenium <sup>l,n</sup>	390 <sup>b</sup>	--- <sup>c</sup>	0.05 <sup>m</sup>	0.05 <sup>m</sup>	*

CAS No.	Chemical Name	Exposure Route-specific Values for Soils		Soil Component of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/L)	Class II (mg/L)	
7440-22-4	Silver	390 <sup>b</sup>	--- <sup>c</sup>	0.05 <sup>m</sup>	---	*
14808-79-8	Sulfate	--- <sup>c</sup>	--- <sup>c</sup>	400 <sup>m</sup>	400 <sup>m</sup>	*
7440-28-0	Thallium	6.3 <sup>b,u</sup>	--- <sup>c</sup>	0.002 <sup>m</sup>	0.02 <sup>m</sup>	*
7440-62-2	Vanadium	550 <sup>b</sup>	--- <sup>c</sup>	0.049 <sup>m</sup>	<del>0.1</del> <sup>m</sup>	*
7440-66-6	Zinc <sup>1</sup>	23,000 <sup>b</sup>	--- <sup>c</sup>	5.0 <sup>m</sup>	10 <sup>m</sup>	*

"\*" indicates that the ADL is less than or equal to the specified remediation objective.  
NA means not available; no PQL or EQL available in USEPA analytical methods.

### Chemical Name and Soil Remediation Objective Notations

- <sup>a</sup> Soil remediation objectives based on human health criteria only.
- <sup>b</sup> Calculated values correspond to a target hazard quotient of 1.
- <sup>c</sup> No toxicity criteria available for the route of exposure.
- <sup>d</sup> Soil saturation concentration ( $C_{[satt]}$ ) = the concentration at which the absorptive limits of the soil particles, the solubility limits of the available soil moisture, and saturation of soil pore air have been reached. Above the soil saturation concentration, the assumptions regarding vapor transport to air and/or dissolved phase transport to groundwater (for chemicals which are liquid at ambient soil temperatures) have been violated, and alternative modeling approaches are required.
- <sup>e</sup> Calculated values correspond to a cancer risk level of 1 in 1,000,000.
- <sup>f</sup> Level is at or below Contract Laboratory Program required quantitation limit for Regular Analytical Services (RAS).
- <sup>g</sup> Chemical-specific properties are such that this route is not of concern at any soil contaminant concentration.
- <sup>h</sup> ~~A preliminary goal of 1 ppm has been set for PCBs based on *Guidance on Remedial Actions for Superfund Sites with PCB Contamination*, EPA/540G-90/007, and on USEPA efforts to manage PCB contamination. See 40 CFR 761.120—USEPA "PCB Spill Cleanup Policy." This regulation goes on to say that the remediation goal for an unrestricted area is 10 ppm and 25 ppm for a restricted area, provided both have at least 10 inches of clean cover. 40 CFR 761 contains applicability requirements and methodologies for the development of PCB remediation objectives. Requests for approval of a Tier 3 evaluation must address the applicability of 40 CFR 761.~~
- <sup>i</sup> Soil remediation objective for pH of 6.8. If soil pH is other than 6.8, refer to Appendix B, Tables C and D of this Part.
- <sup>j</sup> Ingestion soil remediation objective adjusted by a factor of 0.5 to account for dermal route.
- <sup>k</sup> A preliminary remediation goal of 400 mg/kg has been set for lead based on *Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities*, OSWER Directive #9355.4-12.
- <sup>l</sup> Potential for soil-plant-human exposure.
- <sup>m</sup> The person conducting the remediation has the option to use: 1) TCLP or SPLP test results to compare with the remediation objectives listed in this Table; or 2) the total amount of contaminant in the soil sample results to compare with pH specific remediation objectives listed in Appendix B, Table C or D of this Part. (See Section 742.510.) If the person conducting the remediation wishes to calculate soil remediation objectives based on background concentrations, this should be done in accordance with Subpart D of this Part.
- <sup>n</sup> The Agency reserves the right to evaluate the potential for remaining contaminant concentrations to pose significant threats to crops, livestock, or wildlife.
- <sup>o</sup> For agrichemical facilities, remediation objectives for surficial soils which are based on field application rates may be more appropriate for currently registered pesticides. Consult the Agency for further information.
- <sup>p</sup> For agrichemical facilities, soil remediation objectives based on site-specific background concentrations of Nitrate as N may be more appropriate. Such determinations shall be conducted in accordance with the procedures set forth in Subparts D and I of this Part.
- <sup>q</sup> The TCLP extraction must be done using water at a pH of 7.0.
- <sup>r</sup> Value based on dietary Reference Dose.
- <sup>s</sup> ~~Value based on Reference Dose for Mercuric chloride (CAS No. 7487-94-7). Value for Ingestion based on Reference Dose for Mercuric chloride (CAS No. 7487-94-7); value for Inhalation based on Reference Concentration for elemental Mercury (CAS No. 7439-97-6).~~
- <sup>t</sup> ~~Note that Table value is likely to be less than background concentration for this chemical; screening or remediation concentrations using the procedures of Subpart D of this Part may be more appropriate. For the ingestion route for arsenic, see 742.Appendix A, Table G.~~
- <sup>u</sup> Value based on Reference Dose for thallium sulfate (CAS No. 7446-18-6).

(Source: Amended in R00-19(B) at 24 Ill. Reg. \_\_\_\_, effective \_\_\_\_\_)

Section 742.APPENDIX B: Tier 1 Tables and Illustrations

Section 742.Table B: Tier 1 Soil Remediation Objectives\* for Industrial/Commercial Properties

CAS No.	Chemical Name	Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route		
		Industrial-Commercial		Construction Worker		Values		
		Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	ClassII (mg/kg)	ADL (mg/kg)
83-32-9	Acenaphthene	120,000 <sup>b</sup>	---- <sup>c</sup>	120,000 <sup>b</sup>	---- <sup>c</sup>	570 <sup>b</sup>	2,900	*
67-64-1	Acetone	200,000 <sup>b</sup>	100,000 <sup>d</sup>	200,000 <sup>b</sup>	100,000 <sup>d</sup>	16 <sup>b</sup>	16	*
15972-60-8	Alachlor <sup>o</sup>	72 <sup>e</sup>	---- <sup>c</sup>	1,600 <sup>e</sup>	---- <sup>c</sup>	0.04	0.2	NA
116-06-3	Aldicarb <sup>o</sup>	2,000 <sup>b</sup>	---- <sup>c</sup>	200 <sup>b</sup>	---- <sup>c</sup>	0.013	0.07	NA
309-00-2	Aldrin	0.3 <sup>e</sup>	6.6 <sup>e</sup>	6.1 <sup>b</sup>	9.3 <sup>e</sup>	0.5 <sup>e</sup>	2.5	<u>0.94</u>
120-12-7	Anthracene	610,000 <sup>b</sup>	---- <sup>c</sup>	610,000 <sup>b</sup>	---- <sup>c</sup>	12,000 <sup>b</sup>	59,000	*
1912-24-9	Atrazine <sup>o</sup>	72,000 <sup>b</sup>	---- <sup>c</sup>	7,100 <sup>b</sup>	---- <sup>c</sup>	0.066	0.33	NA
71-43-2	Benzene	<del>200<sup>e</sup></del> 100 <sup>c</sup>	4.51.6 <sup>e</sup>	<del>4,300<sup>e</sup></del> 2,300 <sup>c</sup>	<del>2.12.2<sup>e</sup></del>	0.03	0.17	*



		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route		
		Industrial-Commercial		Construction Worker		Values		
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
56-55-3	Benzo( <i>a</i> )anthracene	8 <sup>e</sup>	---- <sup>c</sup>	170 <sup>e</sup>	---- <sup>c</sup>	2	8	*
205-99-2	Benzo( <i>b</i> )fluoranthene	8 <sup>e</sup>	---- <sup>c</sup>	170 <sup>e</sup>	---- <sup>c</sup>	5	25	*
207-08-9	Benzo( <i>k</i> )fluoroanthene	78 <sup>e</sup>	---- <sup>c</sup>	1,700 <sup>e</sup>	---- <sup>c</sup>	49	250	*
50-32-8	Benzo( <i>a</i> )pyrene	0.8 <sup>e</sup>	---- <sup>c</sup>	17 <sup>e</sup>	---- <sup>c</sup>	8	82	*
111-44-4	Bis(2-chloroethyl)ether	5 <sup>e</sup>	0.47 <sup>e</sup>	75 <sup>e</sup>	0.66 <sup>e</sup>	0.0004 <sup>e,f</sup>	0.0004	0.66
117-81-7	Bis(2-ethylhexyl)phthalate	410 <sup>e</sup>	31,000 <sup>d</sup>	4,100 <sup>b</sup>	31,000 <sup>d</sup>	3,600	31,000 <sup>d</sup>	*
75-27-4	Bromodichloromethane (Dichlorobromomethane)	92 <sup>e</sup>	3,000 <sup>d</sup>	2,000 <sup>e</sup>	3,000 <sup>d</sup>	0.6	0.6	*
75-25-2	Bromoform	720 <sup>e</sup>	100 <sup>e</sup>	16,000 <sup>e</sup>	140 <sup>e</sup>	0.8	0.8	*
71-36-3	Butanol	200,000 <sup>b</sup>	10,000 <sup>d</sup>	200,000 <sup>b</sup>	10,000 <sup>d</sup>	17 <sup>b</sup>	17	NA
85-68-7	Butyl benzyl phthalate	410,000 <sup>b</sup>	930 <sup>d</sup>	410,000 <sup>b</sup>	930 <sup>d</sup>	930 <sup>d</sup>	930 <sup>d</sup>	*
86-74-8	Carbazole	290 <sup>e</sup>	---- <sup>c</sup>	6,200 <sup>e</sup>	---- <sup>c</sup>	0.6 <sup>e</sup>	2.8	NA

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route		
		Industrial-Commercial		Construction Worker		Values		
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
1563-66-2	Carbofuran <sup>o</sup>	10,000 <sup>b</sup>	----- <sup>c</sup>	1,000 <sup>b</sup>	----- <sup>c</sup>	0.22	1.1	NA
75-15-0	Carbon disulfide	200,000 <sup>b</sup>	720 <sup>d</sup>	20,000 <sup>b</sup>	9.0 <sup>b</sup>	32 <sup>b</sup>	160	*
56-23-5	Carbon tetrachloride	44 <sup>e</sup>	0.64 <sup>e</sup>	410 <sup>b</sup>	0.90 <sup>e</sup>	0.07	0.33	*
57-74-9	Chlordane	<del>41.6</del> <sup>e</sup>	<del>38140</del> <sup>e</sup>	<del>42100</del> <sup>b</sup>	<del>53<sup>e</sup>-22<sup>b</sup></del>	10	48	*
106-47-8	4 - Chloroaniline ( <i>p</i> -Chloroaniline)	8,200 <sup>b</sup>	----- <sup>c</sup>	820 <sup>b</sup>	----- <sup>c</sup>	0.7 <sup>b</sup>	0.7	<del>1.3</del>
108-90-7	Chlorobenzene (Monochlorobenzene)	41,000 <sup>b</sup>	210 <sup>b</sup>	4,100 <sup>b</sup>	1.3 <sup>b</sup>	1	6.5	*
124-48-1	Chlorodibromomethane (Dibromochloromethane)	41,000 <sup>b</sup>	1,300 <sup>d</sup>	41,000 <sup>b</sup>	1,300 <sup>d</sup>	0.4	0.4	*
67-66-3	Chloroform	940 <sup>e</sup>	0.54 <sup>e</sup>	2,000 <sup>b</sup>	0.76 <sup>e</sup>	0.6	2.9	*
218-01-9	Chrysene	780 <sup>e</sup>	----- <sup>c</sup>	17,000 <sup>e</sup>	----- <sup>e</sup>	160	800	*
94-75-7	2,4-D <sup>2</sup>	20,000 <sup>b</sup>	----- <sup>c</sup>	2,000 <sup>b</sup>	----- <sup>c</sup>	1.5	7.7	*

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route		
		Industrial-Commercial		Construction Worker		Values		
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
75-99-0	Dalapon <sup>o</sup>	61,000 <sup>b</sup>	----- <sup>c</sup>	6,100 <sup>b</sup>	----- <sup>c</sup>	0.85	8.5	1.2
72-54-8	DDD	24 <sup>e</sup>	----- <sup>c</sup>	520 <sup>e</sup>	----- <sup>c</sup>	16 <sup>e</sup>	80	*
72-55-9	DDE	17 <sup>e</sup>	----- <sup>c</sup>	370 <sup>e</sup>	----- <sup>c</sup>	54 <sup>e</sup>	270	*
50-29-3	DDT	17 <sup>e</sup>	1,500 <sup>e</sup>	100 <sup>b</sup>	2,100 <sup>e</sup>	32 <sup>e</sup>	160	*
53-70-3	Dibenzo( <i>a,h</i> )anthracene	0.8 <sup>e</sup>	----- <sup>c</sup>	17 <sup>e</sup>	----- <sup>c</sup>	2	7.6	*
96-12-8	1,2-Dibromo-3-chloropropane	4 <sup>e</sup>	17 <sup>b</sup>	89 <sup>e</sup>	0.11 <sup>b</sup>	0.002	0.002	*
106-93-4	1,2-Dibromoethane (Ethylene dibromide)	0.07 <sup>e</sup>	0.32 <sup>e</sup>	1.5 <sup>e</sup>	0.45 <sup>e</sup>	0.0004	0.004	0.005
84-74-2	Di- <i>n</i> -butyl phthalate	200,000 <sup>b</sup>	2,300 <sup>d</sup>	200,000 <sup>b</sup>	2,300 <sup>d</sup>	2,300 <sup>d</sup>	2,300 <sup>d</sup>	*
95-50-1	1,2-Dichlorobenzene ( <i>o</i> - Dichlorobenzene)	180,000 <sup>b</sup>	560 <sup>d</sup>	18,000 <sup>b</sup>	310 <sup>b</sup>	17	43	*
106-46-7	1,4-Dichlorobenzene ( <i>p</i> - Dichlorobenzene)	----- <sup>c</sup>	17,000 <sup>b</sup>	----- <sup>c</sup>	340 <sup>b</sup>	2	11	*

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
91-94-1	3,3'-Dichlorobenzidine	13 <sup>e</sup>	----- <sup>c</sup>	280 <sup>e</sup>	----- <sup>c</sup>	0.007 <sup>e,f</sup>	0.033	1.3
75-34-3	1,1-Dichloroethane	200,000 <sup>b</sup>	1,700 <sup>d</sup>	200,000 <sup>b</sup>	130 <sup>b</sup>	23 <sup>b</sup>	110	*
107-06-2	1,2-Dichloroethane (Ethylene dichloride)	63 <sup>e</sup>	0.70 <sup>e</sup>	1,400 <sup>e</sup>	0.99 <sup>e</sup>	0.02	0.1	*
75-35-4	1,1-Dichloroethylene	18,000 <sup>b</sup>	1,500 <sup>d</sup>	1,800 <sup>b</sup>	1,500 <sup>d</sup>	0.06	0.3	*
156-59-2	<i>cis</i> -1,2-Dichloroethylene	20,000 <sup>b</sup>	1,200 <sup>d</sup>	20,000 <sup>b</sup>	1,200 <sup>d</sup>	0.4	1.1	*
156-60-5	<i>trans</i> -1,2-Dichloroethylene	41,000 <sup>b</sup>	3,100 <sup>d</sup>	41,000 <sup>b</sup>	3,100 <sup>d</sup>	0.7	3.4	*
78-87-5	1,2-Dichloropropane	84 <sup>e</sup>	23 <sup>b</sup>	1,800 <sup>e</sup>	0.50 <sup>b</sup>	0.03	0.15	*
542-75-6	1,3-Dichloropropene (1,3-Dichloropropylene, <i>cis</i> + <i>trans</i> )	33 <sup>e</sup>	0.23 <sup>e</sup>	610 <sup>b</sup>	0.33 <sup>e</sup>	0.004 <sup>e</sup>	0.02	0.005
60-57-1	Dieldrin <sup>n</sup>	0.4 <sup>e</sup>	2.2 <sup>e</sup>	7.8 <sup>e</sup>	3.1 <sup>e</sup>	0.004 <sup>e</sup>	0.02	<del>0.0013</del> 0.603
84-66-2	Diethyl phthalate	1,000,000 <sup>b</sup>	2,000 <sup>d</sup>	1,000,000 <sup>b</sup>	2,000 <sup>d</sup>	470 <sup>b</sup>	470	*

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route		
		Industrial-Commercial		Construction Worker		Values		
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
105-67-9	2,4-Dimethylphenol	41,000 <sup>b</sup>	---- <sup>c</sup>	41,000 <sup>b</sup>	---- <sup>c</sup>	9 <sup>b</sup>	9	*
121-14-2	2,4-Dinitrotoluene	8.4 <sup>e</sup>	---- <sup>c</sup>	180 <sup>e</sup>	---- <sup>c</sup>	0.0008 <sup>e,f</sup>	0.0008	<del>0.013</del> 0.250
606-20-2	2,6-Dinitrotoluene	8.4 <sup>e</sup>	---- <sup>c</sup>	180 <sup>e</sup>	---- <sup>c</sup>	0.0007 <sup>e,f</sup>	0.0007	<del>0.0067</del> 0.260
117-84-0	Di- <i>n</i> -octyl phthalate	41,000 <sup>e</sup>	10,000 <sup>d</sup>	4,100 <sup>b</sup>	10,000 <sup>d</sup>	10,000 <sup>d</sup>	10,000 <sup>d</sup>	*
115-29-7	Endosulfan <sup>o</sup>	12,000 <sup>b</sup>	---- <sup>c</sup>	1,200 <sup>b</sup>	---- <sup>c</sup>	18 <sup>b</sup>	90	*
145-73-3	Endothall <sup>o</sup>	41,000 <sup>c</sup>	---- <sup>c</sup>	4,100 <sup>b</sup>	---- <sup>c</sup>	0.4	0.4	NA
72-20-8	Endrin	610 <sup>b</sup>	---- <sup>c</sup>	61 <sup>b</sup>	---- <sup>c</sup>	1	5	*
100-41-4	Ethylbenzene	200,000 <sup>b</sup>	400 <sup>d</sup>	20,000 <sup>b</sup>	58 <sup>b</sup>	13	19	*
206-44-0	Fluoranthene	82,000 <sup>b</sup>	---- <sup>c</sup>	82,000 <sup>b</sup>	---- <sup>c</sup>	4,300 <sup>b</sup>	21,000	*
86-73-7	Fluorene	82,000 <sup>b</sup>	---- <sup>c</sup>	82,000 <sup>b</sup>	---- <sup>c</sup>	560 <sup>b</sup>	2,800	*
76-44-8	Heptachlor	1 <sup>e</sup>	11 <sup>e</sup>	28 <sup>e</sup>	16 <sup>e</sup>	23	110	*

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route		
		Industrial-Commercial		Construction Worker		Values		
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
1024-57-3	Heptachlor epoxide	0.6 <sup>e</sup>	9.2 <sup>e</sup>	2.7 <sup>b</sup>	13 <sup>e</sup>	0.7	3.3	<u>1.005</u>
118-74-1	Hexachlorobenzene	4 <sup>e</sup>	1.8 <sup>e</sup>	78 <sup>e</sup>	2.6 <sup>e</sup>	2	11	*
319-84-6	<i>alpha</i> -HCH ( <i>alpha</i> -BHC)	0.9 <sup>e</sup>	1.5 <sup>e</sup>	20 <sup>e</sup>	2.1 <sup>e</sup>	0.0005 <sup>e,f</sup>	0.003	<del>0.002</del> <u>0.0074</u>
58-89-9	<i>gamma</i> -HCH (Lindane) <sup>n</sup>	4 <sup>e</sup>	----- <sup>c</sup>	96 <sup>e</sup>	----- <sup>c</sup>	0.009	0.047	*
77-47-4	Hexachlorocyclopentadiene	14,000 <sup>b</sup>	16 <sup>b</sup>	14,000 <sup>b</sup>	1.1 <sup>b</sup>	400	2,200 <sup>d</sup>	*
67-72-1	Hexachloroethane	2,000 <sup>b</sup>	----- <sup>c</sup>	2,000 <sup>b</sup>	----- <sup>c</sup>	0.5 <sup>b</sup>	2.6	*
193-39-5	Indeno(1,2,3- <i>c,d</i> )pyrene	8 <sup>e</sup>	----- <sup>c</sup>	170 <sup>e</sup>	----- <sup>c</sup>	14	69	*
78-59-1	Isophorone	410,000 <sup>b</sup>	4,600 <sup>d</sup>	410,000 <sup>b</sup>	4,600 <sup>d</sup>	8 <sup>b</sup>	8	*
72-43-5	Methoxychlor <sup>o</sup>	10,000 <sup>b</sup>	----- <sup>c</sup>	1,000 <sup>b</sup>	----- <sup>c</sup>	160	780	*
74-83-9	Methyl bromide (Bromomethane)	2,900 <sup>b</sup>	15 <sup>b</sup>	1,000 <sup>b</sup>	3.9 <sup>b</sup>	0.2 <sup>b</sup>	1.2	*

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route		
		Industrial-Commercial		Construction Worker		Values		
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
<u>1634-04-4</u>	<u>Methyl tert-butyl ether</u>	<u>20,000<sup>b</sup></u>	<u>8,800<sup>d</sup></u>	<u>2,000<sup>b</sup></u>	<u>140<sup>b</sup></u>	<u>0.32</u>	<u>0.32</u>	<u>*</u>
75-09-2	Methylene chloride (Dichloromethane)	760 <sup>e</sup>	24 <sup>e</sup>	12,000 <sup>b</sup>	34 <sup>e</sup>	0.02 <sup>e</sup>	0.2	*
95-48-7	2-Methylphenol ( <i>o</i> - Cresol)	100,000 <sup>b</sup>	----- <sup>c</sup>	100,000 <sup>b</sup>	----- <sup>c</sup>	15 <sup>b</sup>	15	*
86-30-6	<i>N</i> -Nitrosodiphenylamine	1,200 <sup>e</sup>	----- <sup>c</sup>	25,000 <sup>e</sup>	----- <sup>c</sup>	1 <sup>e</sup>	5.6	<del>0.66</del>
621-64-7	<i>N</i> -Nitrosodi- <i>n</i> -propylamine	0.8 <sup>e</sup>	----- <sup>c</sup>	18 <sup>e</sup>	----- <sup>c</sup>	0.00005 <sup>e,f</sup>	0.00005	<del>0.66</del> 0.0018
91-20-3	Naphthalene	<del>82,000</del> 41,000 <sup>b</sup>	----- <sup>e</sup> 270 <sup>b</sup>	<del>8,200</del> 4,100 <sup>b</sup>	----- <sup>e</sup> 1.8 <sup>b</sup>	<del>84</del> 12 <sup>b</sup>	<del>42</del> 18	*
98-95-3	Nitrobenzene	1,000 <sup>b</sup>	140 <sup>b</sup>	1,000 <sup>b</sup>	9.4 <sup>b</sup>	0.1 <sup>b,f</sup>	0.1	0.26
108-95-2	Phenol	1,000,000 <sup>b</sup>	----- <sup>c</sup>	120,000 <sup>b</sup>	----- <sup>c</sup>	100 <sup>b</sup>	100	*
1918-02-1	Picloram <sup>o</sup>	140,000 <sup>b</sup>	----- <sup>c</sup>	14,000 <sup>b</sup>	----- <sup>c</sup>	2	20	NA
1336-36-3	Polychlorinated biphenyls (PCBs) <sup>n</sup>	<u>1</u> <del>1; 10; 25</del> <sup>h</sup>	----- <sup>c,h</sup>	1 <sup>h</sup>	----- <sup>c,h</sup>	----- <sup>h</sup>	----- <sup>h</sup>	*
129-00-0	Pyrene	61,000 <sup>b</sup>	----- <sup>c</sup>	61,000 <sup>b</sup>	----- <sup>c</sup>	4,200 <sup>b</sup>	21,000	*

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route		
		Industrial-Commercial		Construction Worker		Values		
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
122-34-9	Simazine <sup>o</sup>	10,000 <sup>b</sup>	----- <sup>c</sup>	1,000 <sup>b</sup>	----- <sup>c</sup>	0.04	0.37	NA
100-42-5	Styrene	410,000 <sup>b</sup>	1,500 <sup>d</sup>	41,000 <sup>b</sup>	430 <sup>b</sup>	4	18	*
127-18-4	Tetrachloroethylene (Perchloroethylene)	110 <sup>e</sup>	20 <sup>e</sup>	2,400 <sup>e</sup>	28 <sup>e</sup>	0.06	0.3	*
108-88-3	Toluene	410,000 <sup>b</sup>	650 <sup>d</sup>	410,000 <sup>b</sup>	42 <sup>b</sup>	12	29	*
8001-35-2	Toxaphene <sup>n</sup>	5.2 <sup>e</sup>	170 <sup>e</sup>	110 <sup>e</sup>	240 <sup>e</sup>	31	150	*
120-82-1	1,2,4-Trichlorobenzene	20,000 <sup>b</sup>	3,200 <sup>d</sup>	2,000 <sup>b</sup>	920 <sup>b</sup>	5	53	*
71-55-6	1,1,1-Trichloroethane	----- <sup>c</sup>	1,200 <sup>d</sup>	----- <sup>c</sup>	1,200 <sup>d</sup>	2	9.6	*
79-00-5	1,1,2-Trichloroethane	8,200 <sup>b</sup>	1,800 <sup>d</sup>	8,200 <sup>b</sup>	1,800 <sup>d</sup>	0.02	0.3	*
79-01-6	Trichloroethylene	520 <sup>e</sup>	8.9 <sup>e</sup>	1,200 <sup>b</sup>	12 <sup>e</sup>	0.06	0.3	*
108-05-4	Vinyl acetate	1,000,000 <sup>b</sup>	1,600 <sup>b</sup>	200,000 <sup>b</sup>	10 <sup>b</sup>	170 <sup>b</sup>	170	*



		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route		
		Industrial-Commercial		Construction Worker		Values		
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
75-01-4	Vinyl chloride	3 <sup>e</sup>	0.06 <sup>e</sup>	65 <sup>e</sup>	0.08 <sup>e</sup>	0.01 <sup>f</sup>	0.07	*
108-38-3	m-Xylene	1,000,000	420 <sup>d</sup>	410,000 <sup>b</sup>	420 <sup>d</sup>	210	210	*
95-47-6	o-Xylene	1,000,000	410 <sup>d</sup>	410,000 <sup>b</sup>	410 <sup>d</sup>	190	190	*
106-42-3	p-Xylene	1,000,000	460 <sup>d</sup>	410,000 <sup>b</sup>	460 <sup>d</sup>	200	200	*
1330-20-7	Xylenes (total)	1,000,000 <sup>b</sup>	410 <sup>d</sup> 320 <sup>d</sup>	410,000 <sup>b</sup>	410 <sup>d</sup> 320 <sup>d</sup>	150	150	*
	<b>Ionizable Organics</b>							
65-85-0	Benzoic Acid	1,000,000 <sup>b</sup>	----- <sup>c</sup>	820,000 <sup>b</sup>	----- <sup>c</sup>	400 <sup>b,i</sup>	400 <sup>i</sup>	*
95-57-8	2-Chlorophenol	10,000 <sup>b</sup>	53,000 <sup>d</sup>	10,000 <sup>b</sup>	53,000 <sup>d</sup>	4 <sup>b,i</sup>	20 <sup>i</sup>	*
120-83-2	2,4-Dichlorophenol	6,100 <sup>b</sup>	----- <sup>c</sup>	610 <sup>b</sup>	----- <sup>c</sup>	1 <sup>b,i</sup>	1 <sup>i</sup>	*
51-28-5	2,4-Dinitrophenol	4,100 <sup>b</sup>	----- <sup>c</sup>	410 <sup>b</sup>	----- <sup>c</sup>	0.2 <sup>b,f,i</sup>	0.2 <sup>i</sup>	3.3
88-85-7	Dinoseb <sup>o</sup>	2,000 <sup>b</sup>	----- <sup>c</sup>	200 <sup>b</sup>	----- <sup>c</sup>	0.34 <sup>b,i</sup>	3.4 <sup>i</sup>	*

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route		
		Industrial-Commercial		Construction Worker		Values		
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
87-86-5	Pentachlorophenol	24 <sup>e,j</sup>	----- <sup>c</sup>	520 <sup>e,j</sup>	----- <sup>c</sup>	0.03 <sup>f,i</sup>	0.14 <sup>i</sup>	<del>2,4</del>
93-72-1	2,4,5-TP (Silvex)	16,000 <sup>b</sup>	----- <sup>c</sup>	1,600 <sup>b</sup>	----- <sup>c</sup>	11 <sup>i</sup>	55 <sup>i</sup>	*
95-95-4	2,4,5-Trichlorophenol	200,000 <sup>b</sup>	----- <sup>c</sup>	200,000 <sup>b</sup>	----- <sup>c</sup>	270 <sup>b,i</sup>	1,400 <sup>i</sup>	*
88-06-2	2,4,6-Trichlorophenol	520 <sup>e</sup>	390 <sup>e</sup>	11,000 <sup>e</sup>	540 <sup>e</sup>	0.2 <sup>e,f,i</sup>	0.77 <sup>i</sup>	<del>0.430.66</del>

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/L)	Class II (mg/L)	
	<b>Inorganics</b>							
7440-36-0	Antimony	820 <sup>b</sup>	----- <sup>c</sup>	82 <sup>b</sup>	----- <sup>c</sup>	0.006 <sup>m</sup>	0.024 <sup>m</sup>	*
7440-38-2	Arsenic <sup>1,n</sup>	3 <sup>e,t</sup>	1,200 <sup>e</sup>	61 <sup>b</sup>	25,000 <sup>e</sup>	0.05 <sup>m</sup>	0.2 <sup>m</sup>	
7440-39-3	Barium	140,000 <sup>b</sup>	910,000 <sup>b</sup>	14,000 <sup>b</sup>	870,000 <sup>b</sup>	2.0 <sup>m</sup>	2.0 <sup>m</sup>	*
7440-41-7	Beryllium	<del>1<sup>e,t</sup></del> 4,100 <sup>b</sup>	2,100 <sup>e</sup>	<del>29<sup>e</sup></del> 410 <sup>b</sup>	44,000 <sup>e</sup>	0.004 <sup>m</sup>	0.5 <sup>m</sup>	*
7440-42-8	Boron	180,000 <sup>b</sup>	1,000,000	18,000 <sup>b</sup>	1,000,000	2.0 <sup>m</sup>	2.0 <sup>m</sup>	*
7440-43-9	Cadmium <sup>1,n</sup>	2,000 <sup>b,r</sup>	2,800 <sup>e</sup>	200 <sup>b,r</sup>	59,000 <sup>e</sup>	0.005 <sup>m</sup>	0.05 <sup>m</sup>	*
16887-00-6	Chloride	----- <sup>c</sup>	----- <sup>c</sup>	----- <sup>c</sup>	----- <sup>c</sup>	200 <sup>m</sup>	200 <sup>m</sup>	*
7440-47-3	Chromium, total	<del>10,000</del> 6,100 <sup>b</sup>	420 <sup>e</sup>	4,100 <sup>b</sup>	8,800 <sup>e</sup>	0.1 <sup>m</sup>	1.0 <sup>m</sup>	*
16065-83-1	Chromium, ion, trivalent	1,000,000 <sup>b</sup>	----- <sup>c</sup>	<del>330,000</del> 310,000 <sup>b</sup>	----- <sup>c</sup>	----- <sup>g</sup>	----- <sup>g</sup>	*
18540-29-9	Chromium, ion, hexavalent	<del>10,000</del> 6,100 <sup>b</sup>	420 <sup>e</sup>	4,100 <sup>b</sup>	8,800 <sup>e</sup>	-----	-----	*

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/L)	Class II (mg/L)	
7440-48-4	Cobalt	120,000 <sup>b</sup>	----- <sup>c</sup>	12,000 <sup>b</sup>	----- <sup>c</sup>	1.0 <sup>m</sup>	1.0 <sup>m</sup>	*
7440-50-8	Copper <sup>n</sup>	82,000 <sup>b</sup>	----- <sup>c</sup>	8,200 <sup>b</sup>	----- <sup>c</sup>	0.65 <sup>m</sup>	0.65 <sup>m</sup>	*
57-12-5	Cyanide (amenable)	41,000 <sup>b</sup>	----- <sup>c</sup>	4,100 <sup>b</sup>	----- <sup>c</sup>	0.2 <sup>q,m</sup>	0.6 <sup>q,m</sup>	*
7782-41-4	Fluoride	120,000 <sup>b</sup>	----- <sup>c</sup>	12,000 <sup>b</sup>	----- <sup>c</sup>	4.0 <sup>m</sup>	4.0 <sup>m</sup>	*
15438-31-0	Iron	----- <sup>c</sup>	----- <sup>c</sup>	----- <sup>c</sup>	----- <sup>c</sup>	5.0 <sup>m</sup>	5.0 <sup>m</sup>	*
7439-92-1	Lead	400 <sup>k</sup>	----- <sup>c</sup>	400 <sup>k</sup>	----- <sup>c</sup>	0.0075 <sup>m</sup>	0.1 <sup>m</sup>	*
7439-96-5	Manganese	96,000 <sup>b</sup>	91,000 <sup>b</sup>	9,600 <sup>b</sup>	8,700 <sup>b</sup>	0.15 <sup>m</sup>	10.0 <sup>m</sup>	*
7439-97-6	Mercury <sup>l,n,s</sup>	610 <sup>b</sup>	540,000 <sup>b</sup>	61 <sup>b,s</sup>	52,000 <sup>b</sup>	0.002 <sup>m</sup>	0.01 <sup>m</sup>	*
7440-02-0	Nickel <sup>l</sup>	41,000 <sup>b</sup>	21,000 <sup>e</sup>	4,100 <sup>b</sup>	440,000 <sup>e</sup>	0.1 <sup>m</sup>	2.0 <sup>m</sup>	*
14797-55-8	Nitrate as N <sup>p</sup>	1,000,000 <sup>b</sup>	----- <sup>c</sup>	330,000 <sup>b</sup>	----- <sup>c</sup>	10.0 <sup>q</sup>	100 <sup>q</sup>	*
7782-49-2	Selenium <sup>l,n</sup>	10,000 <sup>b</sup>	----- <sup>c</sup>	1,000 <sup>b</sup>	----- <sup>c</sup>	0.05 <sup>m</sup>	0.05 <sup>m</sup>	*

CAS No.	Chemical Name	Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker		Class I (mg/L)	Class II (mg/L)	
		Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)			
7440-22-4	Silver	10,000 <sup>b</sup>	---- <sup>c</sup>	1,000 <sup>b</sup>	---- <sup>c</sup>	0.05 <sup>m</sup>	----	*
14808-79-8	Sulfate	---- <sup>c</sup>	---- <sup>c</sup>	---- <sup>c</sup>	---- <sup>c</sup>	400 <sup>m</sup>	400 <sup>m</sup>	*
7440-28-0	Thallium	160 <sup>b,u</sup>	---- <sup>c</sup>	160 <sup>b,u</sup>	---- <sup>c</sup>	0.002 <sup>m</sup>	0.02 <sup>m</sup>	*
7440-62-2	Vanadium	14,000 <sup>b</sup>	---- <sup>c</sup>	1,400 <sup>b</sup>	---- <sup>c</sup>	0.049 <sup>m</sup>	<del>0.1</del> <sup>m</sup>	*
7440-66-6	Zinc <sup>l</sup>	610,000 <sup>b</sup>	---- <sup>c</sup>	61,000 <sup>b</sup>	---- <sup>c</sup>	5.0 <sup>m</sup>	10 <sup>m</sup>	*

"\*" indicates that the ADL is less than or equal to the specified remediation objective.

NA means Not Available; no PQL or EQL available in USEPA analytical methods.

Chemical Name and Soil Remediation Objective Notations (2nd, 5th thru 8th Columns)

- <sup>a</sup> Soil remediation objectives based on human health criteria only.
- <sup>b</sup> Calculated values correspond to a target hazard quotient of 1.
- <sup>c</sup> No toxicity criteria available for this route of exposure.
- <sup>d</sup> Soil saturation concentration ( $C_{(sat)}$ ) = the concentration at which the absorptive limits of the soil particles, the solubility limits of the available soil moisture, and saturation of soil pore air have been reached. Above the soil saturation concentration, the assumptions regarding vapor transport to air and/or dissolved phase transport to groundwater (for chemicals which are liquid at ambient soil temperatures) have been violated, and alternative modeling approaches are required.
- <sup>e</sup> Calculated values correspond to a cancer risk level of 1 in 1,000,000.
- <sup>f</sup> Level is at or below Contract Laboratory Program required quantitation limit for Regular Analytical Services (RAS).
- <sup>g</sup> Chemical-specific properties are such that this route is not of concern at any soil contaminant concentration.
- <sup>h</sup> ~~A preliminary goal of 1 ppm has been set for PCBs based on *Guidance on Remedial Actions for Superfund Sites with PCB Contamination*, EPA/540G-90/007, and on USEPA efforts to manage PCB contamination. See 40 CFR 761.120 for USEPA "PCB Spill Cleanup Policy." This regulation goes on to say that the remediation goal for an unrestricted area is 10 ppm and 25 ppm for a restricted area, provided both have at least 10 inches of clean cover. 40 CFR 761 contains applicability requirements and methodologies for the development of PCB remediation objectives. Requests for approval of a Tier 3 evaluation must address the applicability of 40 CFR 761.~~
- <sup>i</sup> Soil remediation objective for pH of 6.8. If soil pH is other than 6.8, refer to Appendix B, Tables C and D in this Part.
- <sup>j</sup> Ingestion soil remediation objective adjusted by a factor of 0.5 to account for dermal route.
- <sup>k</sup> A preliminary remediation goal of 400 mg/kg has been set for lead based on *Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities*, OSWER Directive #9355.4-12.
- <sup>l</sup> Potential for soil-plant-human exposure.
- <sup>m</sup> The person conducting the remediation has the option to use: (1) TCLP or SPLP test results to compare with the remediation objectives listed in this Table; or (2) the total amount of contaminant in the soil sample results to compare with pH specific remediation objectives listed in Appendix B, Table C or D of this Part. (See Section 742.510.) If the person conducting the remediation wishes to calculate soil remediation objectives based on background concentrations, this should be done in accordance with Subpart D of this Part.
- <sup>n</sup> The Agency reserves the right to evaluate the potential for remaining contaminant concentrations to pose significant threats to crops, livestock, or wildlife.
- <sup>o</sup> For agricultural facilities, remediation objectives for surficial soils which are based on field application rates may be more appropriate for currently registered pesticides. Consult the Agency for further information.
- <sup>p</sup> For agricultural facilities, soil remediation objectives based on site-specific background concentrations of Nitrate as N may be more appropriate. Such determinations shall be conducted in accordance with the ~~located~~ procedures set forth in Subparts D and I of this Part.
- <sup>q</sup> The TCLP extraction must be done using water at a pH of 7.0.
- <sup>r</sup> Value based on dietary Reference Dose.
- <sup>s</sup> ~~Value based on Reference Dose for Mercuric chloride (CAS No. 7487-94-7). Value for Ingestion based on Reference Dose for Mercuric chloride (CAS No. 7487-94-7); value for Inhalation based on Reference Concentration for elemental Mercury (CAS No. 7439-97-6).~~
- <sup>t</sup> ~~Note that Table value is likely to be less than background concentration for this chemical; screening or remediation concentrations using the procedures of Subpart D of this Part. For the ingestion route for arsenic for industrial/commercial, see 742. Appendix A, Table G.~~
- <sup>u</sup> Value based on Reference Dose for thallium sulfate (CAS No. 7446-18-6).

(Source: Amended in R00-19(B) at 24 Ill. Reg. \_\_\_\_, effective \_\_\_\_\_)

Section 742.APPENDIX B: Tier 1 Tables and Illustrations

Section 742.Table C: pH Specific Soil Remediation Objectives for Inorganics and Ionizing Organics for the Soil Component of the Groundwater Ingestion Route (Class I Groundwater)

Chemical (totals) (mg/kg)	pH 4.5 to 4.74	pH 4.75 to 5.24	pH 5.25 to 5.74	pH 5.75 to 6.24	pH 6.25 to 6.64	pH 6.65 to 6.89	pH 6.9 to 7.24	pH 7.25 to 7.74	pH 7.75 to 8.0 8.24	<u>pH 8.25 to 8.74</u>	<u>pH 8.75 to 9.0</u>
<b>Inorganics</b>											
Antimony	5	5	5	5	5	5	5	5	5	<u>5</u>	<u>5</u>
Arsenic	25	26	27	28	29	29	29	30	31	<u>32</u>	<u>33</u>
Barium	260	490	850	1,200	1,500	1,600	1,700	1,800	2,100	<u>a</u>	<u>a</u>
Beryllium	1.1	2.1	3.4	6.6	22	63	140	1,000	8,000	<u>a</u>	<u>a</u>
Cadmium	1.0	1.7	2.7	3.7	5.2	7.5	11	59	430	<u>a</u>	<u>a</u>
Chromium (+6)	70	62	54	46	40	38	36	32	28	<u>24</u>	<u>21</u>
Copper	330	580	2,100	11,000	59,000	130,000	200,000	330,000	330,000	<u>a</u>	<u>a</u>
Cyanide	40	40	40	40	40	40	40	40	40	<u>40</u>	<u>40</u>
Mercury	0.01	0.01	0.03	0.15	0.89	2.1	3.3	6.4	8.0	<u>a</u>	<u>a</u>
Nickel	20	36	56	76	100	130	180	700	3,800	<u>a</u>	<u>a</u>
Selenium	24	17	12	8.8	6.3	5.2	4.5	3.3	2.4	<u>1.8</u>	<u>1.3</u>
Silver	0.24	0.33	0.62	1.5	4.4	8.5	13	39	110	<u>a</u>	<u>a</u>

Chemical (totals) (mg/kg)	pH 4.5 to 4.74	pH 4.75 to 5.24	pH 5.25 to 5.74	pH 5.75 to 6.24	pH 6.25 to 6.64	pH 6.65 to 6.89	pH 6.9 to 7.24	pH 7.25 to 7.74	pH 7.75 to <del>8.0</del> <u>8.24</u>	<u>pH 8.25</u> <u>to 8.74</u>	<u>pH 8.75</u> <u>to 9.0</u>
Thallium	1.6	1.8	2.0	2.4	2.6	2.8	3.0	3.4	3.8	<u>4.4</u>	<u>4.9</u>
Vanadium	980	980	980	980	980	980	980	980	980	<u>980</u>	<u>980</u>
Zinc	1,000	1,800	2,600	3,600	5,100	6,200	7,500	16,000	53,000	<u>—<sup>a</sup></u>	<u>—<sup>a</sup></u>
<b>Organics</b>											
Benzoic Acid	440	420	410	400	400	400	400	400	400	<u>400</u>	<u>400</u>
2-Chlorophenol	4.0	4.0	4.0	4.0	3.9	3.9	3.9	3.6	3.1	<u>2.2</u>	<u>1.5</u>
2,4-Dichlorophenol	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.86	0.69	<u>0.56</u>	<u>0.48</u>
Dinoseb	8.4	4.5	1.9	0.82	0.43	0.34	0.31	0.27	0.25	<u>0.25</u>	<u>0.25</u>
Pentachlorophenol	0.54	0.32	0.15	0.07	0.04	0.03	0.02	0.02	0.02	<u>0.02</u>	<u>0.02</u>
2,4,5-TP (Silvex)	26	16	12	11	11	11	11	11	11	<u>11</u>	<u>11</u>
2,4,5-Trichlorophenol	400	390	390	370	320	270	230	130	64	<u>36</u>	<u>26</u>
2,4,6-Trichlorophenol	0.37	0.36	0.34	0.29	0.20	0.15	0.13	0.09	0.07	<u>0.07</u>	<u>0.07</u>

<sup>a</sup> No data available for this pH range.

(Source: Amended in R00-19(B) at 24 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_)



Section 742.APPENDIX B

Section 742.Table D: pH Specific Soil Remediation Objectives for Inorganics and Ionizing Organics for the Soil Component of the Groundwater Ingestion Route (Class II Groundwater)

Chemical (totals) (mg/kg)	pH 4.5 to 4.74	pH 4.75 to 5.24	pH 5.25 to 5.74	pH 5.75 to 6.24	pH 6.25 to 6.64	pH 6.65 to 6.89	pH 6.9 to 7.24	pH 7.25 to 7.74	pH 7.75 to <del>8.0</del> 8.24	<u>pH 8.25 to 8.74</u>	<u>pH 8.75 to 9.0</u>
<b>Inorganics</b>											
Antimony	20	20	20	20	20	20	20	20	20	<u>20</u>	<u>20</u>
Arsenic	100	100	100	110	110	120	120	120	120	<u>130</u>	<u>130</u>
Barium	260	490	850	1,200	1,500	1,600	1,700	1,800	2,100	<u>a</u>	<u>a</u>
Beryllium	140	260	420	820	2,800	7,900	17,000	130,000	1,000,000	<u>a</u>	<u>a</u>
Cadmium	10	17	27	37	52	75	110	590	4,300	<u>a</u>	<u>a</u>
Chromium (+6)	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	<u>No Data</u>	<u>No Data</u>
Copper	330	580	2,100	11,000	59,000	130,000	200,000	330,000	330,000	<u>a</u>	<u>a</u>
Cyanide	120	120	120	120	120	120	120	120	120	<u>120</u>	<u>120</u>
Mercury	0.05	0.06	0.14	0.75	4.4	10	16	32	40	<u>a</u>	<u>a</u>
Nickel	400	730	1,100	1,500	2,000	2,600	3,500	14,000	76,000	<u>a</u>	<u>a</u>
Selenium	24	17	12	8.8	6.3	5.2	4.5	3.3	2.4	<u>1.8</u>	<u>1.3</u>
Thallium	16	18	20	24	26	28	30	34	38	<u>44</u>	<u>49</u>
Zinc	2,000	3,600	5,200	7,200	10,000	12,000	15,000	32,000	110,000	<u>a</u>	<u>a</u>

Chemical (totals) (mg/kg)	pH 4.5 to 4.74	pH 4.75 to 5.24	pH 5.25 to 5.74	pH 5.75 to 6.24	pH 6.25 to 6.64	pH 6.65 to 6.89	pH 6.9 to 7.24	pH 7.25 to 7.74	pH 7.75 to <del>8.0</del> <u>8.24</u>	<u>pH 8.25</u> to <u>8.74</u>	<u>pH 8.75</u> to <u>9.0</u>
<b>Organics</b>											
Benzoic Acid	440	420	410	400	400	400	400	400	400	<u>400</u>	<u>400</u>
2-Chlorophenol	20	20	20	20	20	20	19	3.6	3.1	<u>2.2</u>	<u>1.5</u>
2,4-Dichlorophenol	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.86	0.69	<u>0.56</u>	<u>0.48</u>
Dinoseb	84	45	19	8.2	4.3	3.4	3.1	2.7	2.5	<u>2.5</u>	<u>2.5</u>
Pentachlorophenol	2.7	1.6	0.75	0.33	0.18	0.15	0.12	0.11	0.10	<u>0.10</u>	<u>0.10</u>
2,4,5-TP (Silvex)	130	79	62	57	55	55	55	55	55	<u>55</u>	<u>55</u>
2,4,5-Trichlorophenol	2,000	2,000	1,900	1,800	1,600	1,400	1,200	640	64	<u>36</u>	<u>26</u>
2,4,6-Trichlorophenol	1.9	1.8	1.7	1.4	1.0	0.77	0.13	0.09	0.07	<u>0.07</u>	<u>0.07</u>

<sup>a</sup> No data available for this pH range.

(Source: Amended in R00-19(B) at 24 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_)

Section 742.APPENDIX B: Tier 1 Tables and Illustrations

Section 742.TABLE E: Tier 1 Groundwater Remediation Objectives for the Groundwater Component of the Groundwater Ingestion Route

CAS No.	Chemical Name	Groundwater Remediation Objective	
		Class I (mg/L)	Class II (mg/L)
83-32-9	Acenaphthene	0.42	2.1
67-64-1	Acetone	0.7	0.7
15972-60-8	Alachlor	0.002 <sup>c</sup>	0.01 <sup>c</sup>
116-06-3	Aldicarb	0.003 <sup>c</sup>	0.015 <sup>c</sup>
309-00-2	Aldrin	<del>0.00004</del> 0.014 <sup>a</sup>	<del>0.0002</del> 0.07
120-12-7	Anthracene	2.1	10.5
1912-24-9	Atrazine	0.003 <sup>c</sup>	0.015 <sup>c</sup>
71-43-2	Benzene	0.005 <sup>c</sup>	0.025 <sup>c</sup>
56-55-3	Benzo( <i>a</i> )anthracene	0.00013 <sup>a</sup>	0.00065
205-99-2	Benzo( <i>b</i> )fluoranthene	0.00018 <sup>a</sup>	0.0009
207-08-9	Benzo( <i>k</i> )fluoranthene	0.00017 <sup>a</sup>	0.00085
50-32-8	Benzo( <i>a</i> )pyrene	0.0002 <sup>a,c</sup>	0.002 <sup>c</sup>
111-44-4	Bis(2-chloroethyl)ether	0.01 <sup>a</sup>	0.01
117-81-7	Bis(2-ethylhexyl)phthalate	0.006 <sup>a,c</sup>	0.06 <sup>c</sup>
75-27-4	Bromodichloromethane (Dichlorobromomethane)	<del>0.00002</del> 0.0002 <sup>a</sup>	<del>0.00002</del> 0.0002
75-25-2	Bromoform	<del>0.0002</del> 0.001 <sup>a</sup>	<del>0.0002</del> 0.001
71-36-3	Butanol	0.7	0.7
85-68-7	Butyl benzyl phthalate	1.4	7.0
86-74-8	Carbazole	---	---
1563-66-2	Carbofuran	0.04 <sup>c</sup>	0.2 <sup>c</sup>
75-15-0	Carbon disulfide	0.7	3.5
56-23-5	Carbon tetrachloride	0.005 <sup>c</sup>	0.025 <sup>c</sup>
57-74-9	Chlordane	0.002 <sup>c</sup>	0.01 <sup>c</sup>

CAS No.	Chemical Name	Groundwater Remediation Objective	
		Class I (mg/L)	Class II (mg/L)
108-90-7	Chlorobenzene (Monochlorobenzene)	0.1 <sup>c</sup>	0.5 <sup>c</sup>
124-48-1	Chlorodibromomethane (Dibromochloromethane)	0.14	0.14
67-66-3	Chloroform	<del>0.000020</del> 0.0002 <sup>a</sup>	<del>0.0004</del> 0.001
218-01-9	Chrysene	0.0015 <sup>a</sup>	0.0075
94-75-7	2,4-D	0.07 <sup>c</sup>	0.35 <sup>c</sup>
75-99-0	Dalapon	0.2 <sup>c</sup>	2.0 <sup>c</sup>
72-54-8	DDD	<del>0.0001</del> 0.014 <sup>a</sup>	<del>0.0005</del> 0.07
72-55-9	DDE	<del>0.00004</del> 0.01 <sup>a</sup>	<del>0.0002</del> 0.05
50-29-3	DDT	<del>0.00012</del> 0.006 <sup>a</sup>	<del>0.0006</del> 0.03
53-70-3	Dibenzo( <i>a,h</i> )anthracene	0.0003 <sup>a</sup>	0.0015
96-12-8	1,2-Dibromo-3-chloropropane	0.0002 <sup>c</sup>	0.0002 <sup>c</sup>
106-93-4	1,2-Dibromoethane (Ethylene dibromide)	0.00005 <sup>a,c</sup>	0.0005 <sup>c</sup>
84-74-2	Di- <i>n</i> -butyl phthalate	0.7	3.5
95-50-1	1,2-Dichlorobenzene ( <i>o</i> - Dichlorobenzene)	0.6 <sup>c</sup>	1.5 <sup>c</sup>
106-46-7	1,4-Dichlorobenzene ( <i>p</i> - Dichlorobenzene)	0.075 <sup>c</sup>	0.375 <sup>c</sup>
91-94-1	3,3'-Dichlorobenzidine	0.02 <sup>a</sup>	0.1
75-34-3	1,1-Dichloroethane	0.7	3.5
107-06-2	1,2-Dichloroethane (Ethylene dichloride)	0.005 <sup>c</sup>	0.025 <sup>c</sup>
75-35-4	1,1-Dichloroethylene <sup>b</sup>	0.007 <sup>c</sup>	0.035 <sup>c</sup>
156-59-2	<i>cis</i> -1,2-Dichloroethylene	0.07 <sup>c</sup>	0.2 <sup>c</sup>
156-60-5	<i>trans</i> -1,2-Dichloroethylene	0.1 <sup>c</sup>	0.5 <sup>c</sup>
78-87-5	1,2-Dichloropropane	0.005 <sup>c</sup>	0.025 <sup>c</sup>
542-75-6	1,3-Dichloropropene (1,3-Dichloropropylene, <i>cis</i> + <i>trans</i> )	0.001 <sup>a</sup>	0.005

CAS No.	Chemical Name	Groundwater Remediation Objective	
		Class I (mg/L)	Class II (mg/L)
60-57-1	Dieldrin	<del>0.00002</del> 0.009 <sup>a</sup>	<del>0.0004</del> 0.045
84-66-2	Diethyl phthalate	5.6	5.6
121-14-2	2,4-Dinitrotoluene <sup>a</sup>	0.00002 <sup>a</sup>	0.00002
606-20-2	2,6-Dinitrotoluene <sup>a</sup>	<del>0.0004</del> 0.00031 <sup>a</sup>	<del>0.0004</del> 0.00031
88-85-7	Dinoseb	0.007 <sup>c</sup>	0.07 <sup>c</sup>
117-84-0	Di- <i>n</i> -octyl phthalate	0.14	0.7
115-29-7	Endosulfan	0.042	0.21
145-73-3	Endothall	0.1 <sup>c</sup>	0.1 <sup>c</sup>
72-20-8	Endrin	0.002 <sup>c</sup>	0.01 <sup>c</sup>
100-41-4	Ethylbenzene	0.7 <sup>c</sup>	1.0 <sup>c</sup>
206-44-0	Fluoranthene	0.28	1.4
86-73-7	Fluorene	0.28	1.4
76-44-8	Heptachlor	0.0004 <sup>c</sup>	0.002 <sup>c</sup>
1024-57-3	Heptachlor epoxide	0.0002 <sup>c</sup>	0.001 <sup>c</sup>
118-74-1	Hexachlorobenzene	0.00006 <sup>a</sup>	0.0003
319-84-6	<i>alpha</i> -HCH ( <i>alpha</i> -BHC)	<del>0.00003</del> 0.00011 <sup>a</sup>	<del>0.00015</del> 0.00055
58-89-9	<i>gamma</i> -HCH (Lindane)	0.0002 <sup>c</sup>	0.001 <sup>c</sup>
77-47-4	Hexachlorocyclopentadiene	0.05 <sup>c</sup>	0.5 <sup>c</sup>
67-72-1	Hexachloroethane	0.007	0.035
193-39-5	Indeno(1,2,3- <i>c,d</i> )pyrene	0.00043 <sup>a</sup>	0.00215
78-59-1	Isophorone	1.4	1.4
72-43-5	Methoxychlor	0.04 <sup>c</sup>	0.2 <sup>c</sup>
74-83-9	Methyl bromide (Bromomethane)	0.0098	0.049
1634-04-4	Methyl tert-butyl ether	0.07	0.07
75-09-2	Methylene chloride (Dichloromethane)	0.005 <sup>c</sup>	0.05 <sup>c</sup>
91-20-3	Naphthalene <sup>2</sup>	<del>0.025</del> 0.14	<del>0.039</del> 0.22
98-95-3	Nitrobenzene <sup>2b</sup>	0.0035	0.0035

		Groundwater Remediation Objective	
CAS No.	Chemical Name	Class I (mg/L)	Class II (mg/L)
86-30-6	<i>N</i> -Nitrosodiphenylamine	<del>0.010</del> 0.0032 <sup>a</sup>	<del>0.050</del> 0.016
621-64-7	<i>N</i> -Nitrosodi- <i>n</i> -propylamine	<del>0.010</del> 0.0018 <sup>a</sup>	<del>0.010</del> 0.0018
87-86-5	Pentachlorophenol	0.001 <sup>a,c</sup>	0.005 <sup>c</sup>
108-95-2	Phenol	0.1 <sup>c</sup>	0.1 <sup>c</sup>
1918-02-1	Picloram	0.5 <sup>c</sup>	5.0 <sup>c</sup>
1336-36-3	Polychlorinated biphenyls (PCBs) <sup>#</sup>	0.0005 <sup>c</sup>	0.0025 <sup>c</sup>
129-00-0	Pyrene	0.21	1.05
122-34-9	Simazine	0.004 <sup>c</sup>	0.04 <sup>c</sup>
100-42-5	Styrene	0.1 <sup>c</sup>	0.5 <sup>c</sup>
93-72-1	2,4,5-TP (Silvex)	0.05 <sup>c</sup>	0.25 <sup>c</sup>
127-18-4	Tetrachloroethylene (Perchloroethylene)	0.005 <sup>c</sup>	0.025 <sup>c</sup>
108-88-3	Toluene	1.0 <sup>c</sup>	2.5 <sup>c</sup>
8001-35-2	Toxaphene	0.003 <sup>c</sup>	0.015 <sup>c</sup>
120-82-1	1,2,4-Trichlorobenzene	0.07 <sup>c</sup>	0.7 <sup>c</sup>
71-55-6	1,1,1-Trichloroethane <sup>2b</sup>	0.2 <sup>c</sup>	1.0 <sup>c</sup>
79-00-5	1,1,2-Trichloroethane	0.005 <sup>c</sup>	0.05 <sup>c</sup>
79-01-6	Trichloroethylene	0.005 <sup>c</sup>	0.025 <sup>c</sup>
108-05-4	Vinyl acetate	7.0	7.0
75-01-4	Vinyl chloride	0.002 <sup>c</sup>	0.01 <sup>c</sup>
1330-20-7	Xylenes (total)	10.0 <sup>c</sup>	10.0 <sup>c</sup>
	<b>Ionizable Organics</b>		
65-85-0	Benzoic Acid	28	28
106-47-8	4-Chloroaniline ( <i>p</i> -Chloroaniline)	0.028	0.028
95-57-8	2-Chlorophenol	0.035	0.175
120-83-2	2,4-Dichlorophenol	0.021	0.021
105-67-9	2,4-Dimethylphenol	0.14	0.14
51-28-5	2,4-Dinitrophenol	0.014	0.014
95-48-7	2-Methylphenol ( <i>o</i> - Cresol)	0.35	0.35

		Groundwater Remediation Objective	
CAS No.	Chemical Name	Class I (mg/L)	Class II (mg/L)
95-95-4	2,4,5-Trichlorophenol	0.7	3.5
88-06-2	2,4,6 Trichlorophenol	<del>0.006</del> 40.01 <sup>a</sup>	<del>0.03</del> 20.05
	<b>Inorganics</b>		
7440-36-0	Antimony	0.006 <sup>c</sup>	0.024 <sup>c</sup>
7440-38-2	Arsenic	0.05 <sup>c</sup>	0.2 <sup>c</sup>
7440-39-3	Barium	2.0 <sup>c</sup>	2.0 <sup>c</sup>
7440-41-7	Beryllium	0.004 <sup>c</sup>	0.5 <sup>c</sup>
7440-42-8	Boron	2.0 <sup>c</sup>	2.0 <sup>c</sup>
7440-43-9	Cadmium	0.005 <sup>c</sup>	0.05 <sup>c</sup>
16887-00-6	Chloride	200 <sup>c</sup>	200 <sup>c</sup>
7440-47-3	Chromium, total	0.1 <sup>c</sup>	1.0 <sup>c</sup>
18540-29-9	Chromium, ion, hexavalent	---	---
7440-48-4	Cobalt	1.0 <sup>c</sup>	1.0 <sup>c</sup>
7440-50-8	Copper	0.65 <sup>c</sup>	0.65 <sup>c</sup>
57-12-5	Cyanide	0.2 <sup>c</sup>	0.6 <sup>c</sup>
7782-41-4	Fluoride	4.0 <sup>c</sup>	4.0 <sup>c</sup>
15438-31-0	Iron	5.0 <sup>c</sup>	5.0 <sup>c</sup>
7439-92-1	Lead	0.0075 <sup>c</sup>	0.1 <sup>c</sup>
7439-96-5	Manganese	0.15 <sup>c</sup>	10.0 <sup>c</sup>
7439-97-6	Mercury	0.002 <sup>c</sup>	0.01 <sup>c</sup>
7440-02-0	Nickel	0.1 <sup>c</sup>	2.0 <sup>c</sup>
14797-55-8	Nitrate as N	10.0 <sup>c</sup>	100 <sup>c</sup>
7782-49-2	Selenium	0.05 <sup>c</sup>	0.05 <sup>c</sup>
7440-22-4	Silver	0.05 <sup>c</sup>	---
14808-79-8	Sulfate	400 <sup>c</sup>	400 <sup>c</sup>

CAS No.	Chemical Name	Groundwater Remediation Objective	
		Class I (mg/L)	Class II (mg/L)
7440-28-0	Thallium	0.002 <sup>c</sup>	0.02 <sup>c</sup>
7440-62-2	Vanadium <sup>2b</sup>	0.049	---
7440-66-6	Zinc	5.0 <sup>c</sup>	10 <sup>c</sup>

Chemical Name and Groundwater Remediation Objective Notations

<sup>a</sup> ~~The groundwater Health Advisory concentration is equal to ADL for carcinogens.~~ The groundwater remediation objective is equal to the ADL for carcinogens according to the procedures specified in 35 Ill. Adm. Code 620.

<sup>b</sup> Oral Reference Dose and/or Reference Concentration under review by USEPA. Listed values subject to change.

<sup>c</sup> Value listed is also the Groundwater Quality Standard for this chemical pursuant to 35 Ill. Adm. Code 620.410 for Class I Groundwater or 35 Ill. Adm. Code 620.420 for Class II Groundwater.

(Source: Amended in R00-19(B) at 24 Ill. Reg. \_\_\_\_, effective\_\_\_\_\_)



Section 742.APPENDIX B: Tier 1 Tables and Illustrations

Section 742.TABLE F: Values Used to Calculate the Tier 1 Soil Remediation Objectives for the Soil Component of the Groundwater Ingestion Route

CAS No.	Chemical Name	GW <sub>obj</sub> Concentration used to Calculate Tier 1 Soil Remediation Objectives <sup>a</sup>	
		Class I (mg/L)	Class II (mg/L)
83-32-9	Acenaphthene	2.0 <sup>b</sup>	10
67-64-1	Acetone	4.0 <sup>b</sup>	4.0
15972-60-8	Alachlor	0.002 <sup>c</sup>	0.01 <sup>c</sup>
116-06-3	Aldicarb	0.003 <sup>c</sup>	0.015 <sup>c</sup>
309-00-2	Aldrin	5.0E-6 <sup>b</sup>	2.5E-5
120-12-7	Anthracene	10 <sup>b</sup>	50
1912-24-9	Atrazine	0.003 <sup>c</sup>	0.015 <sup>c</sup>
71-43-2	Benzene	0.005 <sup>c</sup>	0.025 <sup>c</sup>
56-55-3	Benzo( <i>a</i> )anthracene	0.0001 <sup>b</sup>	0.0005
205-99-2	Benzo( <i>b</i> )fluoranthene	0.0001 <sup>b</sup>	0.0005
207-08-9	Benzo( <i>k</i> )fluoroanthene	0.001 <sup>b</sup>	0.005
50-32-8	Benzo( <i>a</i> )pyrene	0.0002 <sup>a,c</sup>	0.002 <sup>c</sup>
111-44-4	Bis(2-chloroethyl)ether	8.0E-5 <sup>b</sup>	8.0E-5
117-81-7	Bis(2-ethylhexyl)phthalate	0.006 <sup>a,c</sup>	0.06 <sup>c</sup>
75-27-4	Bromodichloromethane (Dichlorobromomethane)	0.1 <sup>b</sup>	0.1
75-25-2	Bromoform	0.1 <sup>b</sup>	0.01
71-36-3	Butanol	4.0 <sup>b</sup>	4.0
85-68-7	Butyl benzyl phthalate	7.0 <sup>b</sup>	35
86-74-8	Carbazole	0.004 <sup>b</sup>	0.02
1563-66-2	Carbofuran	0.04 <sup>c</sup>	0.2 <sup>c</sup>
75-15-0	Carbon disulfide	4.0 <sup>b</sup>	20
56-23-5	Carbon tetrachloride	0.005 <sup>c</sup>	0.025 <sup>c</sup>
57-74-9	Chlordane	0.002 <sup>c</sup>	0.01 <sup>c</sup>

CAS No.	Chemical Name	GW <sub>obj</sub> Concentration used to Calculate Tier 1 Soil Remediation Objectives <sup>a</sup>	
		Class I (mg/L)	Class II (mg/L)
108-90-7	Chlorobenzene (Monochlorobenzene)	0.1 <sup>c</sup>	0.5 <sup>c</sup>
124-48-1	Chlorodibromomethane (Dibromochloromethane)	0.06 <sup>b</sup>	0.06
67-66-3	Chloroform	0.1 <sup>b</sup>	0.5
218-01-9	Chrysene	0.1 <sup>b</sup>	0.05
94-75-7	2,4-D	0.07 <sup>c</sup>	0.35 <sup>c</sup>
75-99-0	Dalapon	0.2 <sup>c</sup>	2.0 <sup>c</sup>
72-54-8	DDD	0.0004 <sup>b</sup>	0.002
72-55-9	DDE	0.0003 <sup>b</sup>	0.0015
50-29-3	DDT	0.0003 <sup>b</sup>	0.0015
53-70-3	Dibenzo( <i>a,h</i> )anthracene	1.0E-5 <sup>b</sup>	5.0E-5
96-12-8	1,2-Dibromo-3-chloropropane	0.0002 <sup>c</sup>	0.0002 <sup>c</sup>
106-93-4	1,2-Dibromoethane (Ethylene dibromide)	0.00005 <sup>a,c</sup>	0.0005 <sup>c</sup>
84-74-2	Di- <i>n</i> -butyl phthalate	4.0 <sup>b</sup>	20
95-50-1	1,2-Dichlorobenzene ( <i>o</i> - Dichlorobenzene)	0.6 <sup>c</sup>	1.5 <sup>c</sup>
106-46-7	1,4-Dichlorobenzene ( <i>p</i> - Dichlorobenzene)	0.075 <sup>c</sup>	0.375 <sup>c</sup>
91-94-1	3,3'-Dichlorobenzidine	0.0002 <sup>b</sup>	0.001
75-34-3	1,1-Dichloroethane	4.0 <sup>b</sup>	20
107-06-2	1,2-Dichloroethane (Ethylene dichloride)	0.005 <sup>c</sup>	0.025 <sup>c</sup>
75-35-4	1,1-Dichloroethylene	0.007 <sup>c</sup>	0.035 <sup>c</sup>
156-59-2	<i>cis</i> -1,2-Dichloroethylene	0.07 <sup>c</sup>	0.2 <sup>c</sup>
156-60-5	<i>trans</i> -1,2-Dichloroethylene	0.1 <sup>c</sup>	0.5 <sup>c</sup>
78-97-5	1,2-Dichloropropane	0.005 <sup>c</sup>	0.025 <sup>c</sup>
542-75-6	1,3-Dichloropropene (1,3-Dichloropropylene, <i>cis</i> + <i>trans</i> )	0.0005 <sup>b</sup>	0.0025

CAS No.	Chemical Name	GW <sub>obj</sub> Concentration used to Calculate Tier 1 Soil Remediation Objectives <sup>a</sup>	
		Class I (mg/L)	Class II (mg/L)
60-57-1	Dieldrin	5.0E-6 <sup>b</sup>	2.5E-5
84-66-2	Diethyl phthalate	30 <sup>b</sup>	30
121-14-2	2,4-Dinitrotoluene	0.0001 <sup>b</sup>	0.0001
606-20-2	2,6-Dinitrotoluene	0.0001	0.0001
88-85-7	Dinoseb	0.007 <sup>c</sup>	0.07 <sup>c</sup>
117-84-0	Di- <i>n</i> -octyl phthalate	0.7 <sup>b</sup>	3.5
115-29-7	Endosulfan	0.2 <sup>b</sup>	1.0
145-73-3	Endothall	0.1 <sup>c</sup>	0.1 <sup>c</sup>
72-20-8	Endrin	0.002 <sup>c</sup>	0.01 <sup>c</sup>
100-41-4	Ethylbenzene	0.7 <sup>c</sup>	1.0 <sup>c</sup>
206-44-0	Fluoranthene	1.0 <sup>b</sup>	5.0
86-73-7	Fluorene	1.0 <sup>b</sup>	5.0
76-44-8	Heptachlor	0.0004 <sup>c</sup>	0.002 <sup>c</sup>
1024-57-3	Heptachlor epoxide	0.0002 <sup>c</sup>	0.001 <sup>c</sup>
118-74-1	Hexachlorobenzene	0.001 <sup>b</sup>	0.005
319-84-6	<i>alpha</i> -HCH ( <i>alpha</i> -BHC)	1.0E-5 <sup>b</sup>	5.0E-5
58-89-9	<i>gamma</i> -HCH (Lindane)	0.0002 <sup>c</sup>	0.001 <sup>c</sup>
77-47-4	Hexachlorocyclopentadiene	0.05 <sup>c</sup>	0.5 <sup>c</sup>
67-72-1	Hexachloroethane	0.007	0.035
193-39-5	Indeno(1,2,3- <i>c,d</i> )pyrene	0.0001 <sup>b</sup>	0.0005
78-59-1	Isophorone	1.4	1.4
72-43-5	Methoxychlor	0.04 <sup>c</sup>	0.2 <sup>c</sup>
74-83-9	Methyl bromide (Bromomethane)	0.05 <sup>b</sup>	0.25
1634-04-4	Methyl tert-butyl ether	0.07	0.07
75-09-2	Methylene chloride (Dichloromethane)	0.005 <sup>c</sup>	0.05 <sup>c</sup>
91-20-3	Naphthalene	<del>1.0</del> <sup>b</sup> 0.14	<del>5.00</del> 2.2
98-95-3	Nitrobenzene	0.02 <sup>b</sup>	0.02

CAS No.	Chemical Name	GW <sub>obj</sub> Concentration used to Calculate Tier 1 Soil Remediation Objectives <sup>a</sup>	
		Class I (mg/L)	Class II (mg/L)
1918-02-1	Picloram	0.5 <sup>c</sup>	5.0 <sup>c</sup>
1336-36-3	Polychlorinated biphenyls (PCBs)	---	---
129-00-0	Pyrene	1.0 <sup>b</sup>	5.0
122-34-9	Simazine	0.004 <sup>c</sup>	0.04 <sup>c</sup>
100-42-5	Styrene	0.1 <sup>c</sup>	0.5 <sup>c</sup>
93-72-1	2,4,5-TP (Silvex)	0.05 <sup>c</sup>	0.25 <sup>c</sup>
127-18-4	Tetrachloroethylene (Perchloroethylene)	0.005 <sup>c</sup>	0.025 <sup>c</sup>
108-88-3	Toluene	1.0 <sup>c</sup>	2.5 <sup>c</sup>
8001-35-2	Toxaphene	0.003 <sup>c</sup>	0.015 <sup>c</sup>
120-82-1	1,2,4-Trichlorobenzene	0.07 <sup>c</sup>	0.7 <sup>c</sup>
71-55-6	1,1,1-Trichloroethane <sup>2</sup>	0.2 <sup>c</sup>	1.0 <sup>c</sup>
79-00-5	1,1,2-Trichloroethane	0.005 <sup>c</sup>	0.05 <sup>c</sup>
79-01-6	Trichloroethylene	0.005 <sup>c</sup>	0.025 <sup>c</sup>
108-05-4	Vinyl acetate	40 <sup>b</sup>	40
75-01-4	Vinyl chloride	0.002 <sup>c</sup>	0.01 <sup>c</sup>
1330-20-7	Xylenes (total)	10.0 <sup>c</sup>	10.0 <sup>c</sup>
	<b>Ionizable Organics</b>		
65-85-0	Benzoic Acid	100 <sup>b</sup>	100
106-47-8	4-Chloroaniline ( <i>p</i> -Chloroaniline)	0.1 <sup>b</sup>	0.1
95-57-8	2-Chlorophenol	0.2 <sup>b</sup>	1.0
120-83-2	2,4-Dichlorophenol	0.1 <sup>b</sup>	0.1
105-67-9	2,4-Dimethylphenol	0.7 <sup>b</sup>	0.7
51-28-5	2,4-Dinitrophenol	0.04 <sup>b</sup>	0.04
95-48-7	2-Methylphenol ( <i>o</i> - Cresol)	2.0 <sup>b</sup>	2.0
86-30-6	<i>N</i> -Nitrosodiphenylamine	0.02 <sup>b</sup>	0.1

CAS No.	Chemical Name	GW <sub>obj</sub> Concentration used to Calculate Tier 1 Soil Remediation Objectives <sup>a</sup>	
		Class I (mg/L)	Class II (mg/L)
621-64-7	<i>N</i> -Nitrosodi- <i>n</i> -propylamine	1.0E-5 <sup>b</sup>	1.0E-5
87-86-5	Pentachlorophenol	0.001 <sup>a,c</sup>	0.005 <sup>c</sup>
108-95-2	Phenol	0.1 <sup>c</sup>	0.1 <sup>c</sup>
95-95-4	2,4,5-Trichlorophenol	4.0 <sup>b</sup>	20
88-06-2	2,4,6-Trichlorophenol	0.008 <sup>b</sup>	0.04
	<b>Inorganics</b>		
7440-36-0	Antimony	0.006 <sup>c</sup>	0.024 <sup>c</sup>
7440-38-2	Arsenic	0.05 <sup>c</sup>	0.2 <sup>c</sup>
7440-39-3	Barium	2.0 <sup>c</sup>	2.0 <sup>c</sup>
7440-41-7	Beryllium	0.004 <sup>c</sup>	0.5 <sup>c</sup>
7440-42-8	Boron	2.0 <sup>c</sup>	2.0 <sup>c</sup>
7440-43-9	Cadmium	0.005 <sup>c</sup>	0.05 <sup>c</sup>
16887-00-6	Chloride	200 <sup>c</sup>	200 <sup>c</sup>
7440-47-3	Chromium, total	0.1 <sup>c</sup>	1.0 <sup>c</sup>
18540-29-9	Chromium, ion, hexavalent	---	---
7440-48-4	Cobalt	1.0 <sup>c</sup>	1.0 <sup>c</sup>
7440-50-8	Copper	0.65 <sup>c</sup>	0.65 <sup>c</sup>
57-12-5	Cyanide	0.2 <sup>c</sup>	0.6 <sup>c</sup>
7782-41-4	Fluoride	4.0 <sup>c</sup>	4.0 <sup>c</sup>
15438-31-0	Iron	5.0 <sup>c</sup>	5.0 <sup>c</sup>
7439-92-1	Lead	0.0075 <sup>c</sup>	0.1 <sup>c</sup>
7439-96-5	Manganese	0.15 <sup>c</sup>	10.0 <sup>c</sup>
7439-97-6	Mercury	0.002 <sup>c</sup>	0.01 <sup>c</sup>
7440-02-0	Nickel	0.1 <sup>c</sup>	2.0 <sup>c</sup>
14797-55-8	Nitrate as N	10.0 <sup>c</sup>	100 <sup>c</sup>
7782-49-2	Selenium	0.05 <sup>c</sup>	0.05 <sup>c</sup>
7440-22-4	Silver	0.05 <sup>c</sup>	---
14808-79-8	Sulfate	400 <sup>c</sup>	400 <sup>c</sup>

CAS No.	Chemical Name	GW <sub>obj</sub> Concentration used to Calculate Tier 1 Soil Remediation Objectives <sup>a</sup>	
		Class I (mg/L)	Class II (mg/L)
7440-28-0	Thallium	0.002 <sup>c</sup>	0.02 <sup>c</sup>
7440-62-2	Vanadium	0.049	---
7440-66-6	Zinc	5.0 <sup>c</sup>	10 <sup>c</sup>

Chemical Name and Groundwater Remediation Objective Notations

- <sup>a</sup> The Equation S17 is used to calculate the Soil Remediation Objective for the Soil Component of the Groundwater Ingestion Route; this equation requires calculation of the Target Soil Leachate Concentration (C<sub>w</sub>) from Equation S18: C<sub>w</sub> = DF x GW<sub>obj</sub>.
- <sup>b</sup> Value listed is the Water Health Based Limit (HBL) for this chemical from Soil Screening Guidance: User's Guide, incorporated by reference at Section 742.210; ~~for carcinogens, the HBL is equal to the non-zero MCLG (if available); the MCL (if available); or, for carcinogens,~~ a cancer risk of 1.0E-6, and for noncarcinogens is equal to a Hazard Quotient of 1.0. NOTE: These GW<sub>obj</sub> concentrations are not equal to the Tier 1 Groundwater Remediation Objectives for the Direct Ingestion of Groundwater Component of the Groundwater Ingestion Route, listed in Section 742.Appendix B, Table E.
- <sup>c</sup> Value listed is also the Groundwater Quality Standard for this chemical pursuant to 35 Ill. Adm. Code 620.410 for Class I Groundwater or 35 Ill. Adm. Code 620.420 for Class II Groundwater.

(Source: Amended in R00-19(B) at 24 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_)

Section 742.APPENDIX C: Tier 2 Tables and Illustrations

Section 742.Table A: SSL Equations

<p>Equations for Soil Ingestion Exposure Route</p>	<p>Remediation Objectives for Noncarcinogenic Contaminants (mg/kg)</p>	$\frac{THQ \cdot BW \cdot AT \cdot 365 \frac{d}{yr}}{\frac{1}{RfD_o} \cdot 10^{-6} \frac{kg}{mg} \cdot EF \cdot ED \cdot IR_{soil}}$	<p>S1</p>
	<p>Remediation Objectives for Carcinogenic Contaminants - Residential (mg/kg)</p>	$\frac{TR \cdot AT_c \cdot 365 \frac{d}{yr}}{SF_o \cdot 10^{-6} \frac{kg}{mg} \cdot EF \cdot IF_{soil-adj}}$	<p>S2</p>
	<p>Remediation Objectives for Carcinogenic Contaminants - Industrial/Commercial, Construction Worker (mg/kg)</p>	$\frac{TR \cdot BW \cdot AT_c \cdot 365 \frac{d}{yr}}{SF_o \cdot 10^{-6} \frac{kg}{mg} \cdot EF \cdot ED \cdot IR_{soil}}$	<p>S3</p>
<p>Equations for Inhalation Exposure Route (<del>Volatiles</del> Organic Contaminants)</p>	<p>Remediation Objectives for Noncarcinogenic Contaminants - Residential, Industrial/Commercial (mg/kg)</p>	$\frac{THQ \cdot AT \cdot 365 \frac{d}{yr}}{EF \cdot ED \cdot \left( \frac{1}{RfC} \cdot \frac{1}{VF} \right)}$	<p>S4</p>

Remediation Objectives for Noncarcinogenic Contaminants - Construction Worker (mg/kg)	$\frac{THQ \cdot AT \cdot 365 \frac{d}{yr}}{EF \cdot ED \cdot \left( \frac{1}{RfC} \cdot \frac{1}{VF'} \right)}$	S5
Remediation Objectives for Carcinogenic Contaminants - Residential, Industrial/ Commercial (mg/kg)	$\frac{TR \cdot AT_c \cdot 365 \frac{d}{yr}}{URF \cdot 1,000 \frac{ug}{mg} \cdot EF \cdot ED \cdot \frac{1}{VF}}$	S6
Remediation Objectives for Carcinogenic Contaminants - Construction Worker (mg/kg)	$\frac{TR \cdot AT_c \cdot 365 \frac{d}{yr}}{URF \cdot 1,000 \frac{ug}{mg} \cdot EF \cdot ED \cdot \frac{1}{VF'}}$	S7
Equation for Derivation of the Volatilization Factor - Residential, Industrial/ Commercial, VF (m <sup>3</sup> /kg)	$VF = \frac{Q}{C} \cdot \frac{(314 \cdot D_A \cdot T)^{1/2}}{(2 \cdot r_b \cdot D_A)} \cdot 10^{-4} \frac{m^2}{cm^2}$	S8
Equation for Derivation of the Volatilization Factor - Construction Worker, VF' (m <sup>3</sup> /kg)	$VF' = \frac{VF}{10}$	S9
Equation for Derivation of Apparent Diffusivity, D <sub>A</sub> (cm <sup>2</sup> /s)	$D_A = \frac{(q_a^{3.33} \cdot D_i \cdot H') + (q_w^{3.33} \cdot D_w)}{\eta^2} \cdot \frac{1}{(r_b \cdot K_d) + q_w + (q_a \cdot H')}$	S10



Equations for Inhalation Exposure Route (Fugitive Dusts)	Remediation Objectives for Noncarcinogenic Contaminants - Residential, Industrial/Commercial (mg/kg)	$\frac{THQ \cdot AT \cdot 365 \frac{d}{yr}}{EF \cdot ED \cdot \left( \frac{1}{RfC} \cdot \frac{1}{PEF} \right)}$	S11
	Remediation Objectives for Noncarcinogenic Contaminants - Construction Worker (mg/kg)	$\frac{THQ \cdot AT \cdot 365 \frac{d}{yr}}{EF \cdot ED \cdot \left( \frac{1}{RfC} \cdot \frac{1}{PEF'} \right)}$	S12
	Remediation Objectives for Carcinogenic Contaminants - Residential, Industrial/ Commercial (mg/kg)	$\frac{TR \cdot AT_c \cdot 365 \frac{d}{yr}}{URF \cdot 1,000 \frac{ug}{mg} \cdot EF \cdot ED \cdot \frac{1}{PEF}}$	S13
	Remediation Objectives for Carcinogenic Contaminants - Construction Worker (mg/kg)	$\frac{TR \cdot AT_c \cdot 365 \frac{d}{yr}}{URF \cdot 1,000 \frac{ug}{mg} \cdot EF \cdot ED \cdot \frac{1}{PEF'}}$	S14
	Equation for Derivation of Particulate Emission Factor, PEF (m <sup>3</sup> /kg)	$PEF = \frac{Q}{C} \cdot \frac{3,600 \frac{s}{hr}}{0.036 \cdot (1 - V) \cdot \left( \frac{U_m}{U_t} \right)^3 \cdot F(x)}$	S15

	Equation for Derivation of Particulate Emission Factor, PEF' - Construction Worker (m <sup>3</sup> /kg)	$PEF' = \frac{PEF}{10}$	S16
		NOTE: PEF must be the industrial/commercial value	
Equations for the Soil Component of the Groundwater Ingestion Exposure Route	Remediation Objective (mg/kg)	$C_w \cdot \left[ K_d + \frac{(q_w + q_a \cdot H')}{r_b} \right]$	S17
		NOTE: This equation can only be used to model contaminant migration not in the water bearing unit.	
	Target Soil Leachate Concentration, C <sub>w</sub> (mg/L)	$C_w = DF \cdot GW_{obj}$	S18
	Soil-Water Partition Coefficient, K <sub>d</sub> (cm <sup>3</sup> /g)	$K_d = K_{oc} \cdot f_{oc}$	S19
	Water-Filled Soil Porosity, θ <sub>w</sub> (L <sub>water</sub> /L <sub>soil</sub> )	$q_w = h \cdot \left( \frac{I}{K_s} \right)^{1/(2b+3)}$	S20
	Air-Filled Soil Porosity, θ <sub>a</sub> (L <sub>air</sub> /L <sub>soil</sub> )	$q_a = h - q_w$	S21
Dilution Factor, DF (unitless)	$DF = 1 + \frac{K \cdot i \cdot d}{I \cdot L}$	S22	

Groundwater Remediation Objective for Carcinogenic Contaminants, $GW_{obj}$ (mg/L)	$\frac{TR \cdot BW \cdot AT_c \cdot 365 \frac{d}{yr}}{SF_o \cdot IR_w \cdot EF \cdot ED}$	S23
Total Soil Porosity, $\eta$ ( $L_{pore}/L_{soil}$ )	$h = 1 - \frac{r_b}{r_s}$	S24
Equation for Estimation of Mixing Zone Depth, $d$ (m)	$d = (0.0112 \cdot L^2)^{0.5} + d_a \left[ 1 - \exp\left(\frac{-L \cdot I}{K \cdot i \cdot d_a}\right) \right]$	S25
Mass-Limit Equations for Inhalation Exposure Route and Soil Component of the Groundwater Ingestion Exposure Route	<p data-bbox="489 605 829 716">Mass-Limit Volatilization Factor for the Inhalation Exposure Route - Residential, Industrial/ Commercial, VF (<math>m^3/kg</math>)</p> $VF_{M-L} = \frac{Q}{C} \cdot \frac{\left[ T_{M-L} \cdot \left( 3.15 \cdot 10^7 \frac{s}{yr} \right) \right]}{r_b \cdot d_s \cdot 10^6 \frac{g \cdot cm^3}{mg \cdot m^3}}$ <p data-bbox="863 865 1724 919">NOTE: This equation may be used when <u>area and depth of contaminant source are vertical thickness of contamination</u> is known or can be estimated reliably.</p>	S26
Mass-Limit Volatilization Factor for Inhalation Exposure Route - Construction Worker, VF' - ( $m^3/kg$ )	$VF'_{M-L} = \frac{VF_{M-L}}{10}$	S27

	Mass-Limit Remediation Objective for Soil Component of the Groundwater Ingestion Exposure Route (mg/kg)	$\frac{(C_w \cdot I_{M-L} \cdot ED_{M-L})}{r_b \cdot d_s}$ <p>NOTE: This equation may be used when <del>area and depth of contaminant source are</del> <u>vertical thickness is</u> known or can be estimated reliably.</p>	<b>S28</b>
Equation for Derivation of the Soil Saturation Limit, $C_{sat}$	$C_{sat} = \frac{S}{r_b} \cdot [(K_d \cdot r_b) + q_w + (H' \cdot q_a)]$	<b>S29</b>	

(Source: Amended in R00-19(B) at 24 Ill. Reg. \_\_\_\_, effective\_\_\_\_)

Section 742.APPENDIX C: Tier 2 Tables and Illustrations

Section 742.Table B: SSL Parameters

Symbol	Parameter	Units	Source	Parameter Value(s)
AT	Averaging Time for Noncarcinogens in Ingestion Equation	yr		Residential = 6 Industrial/Commercial = 25 Construction Worker = 0.115
AT	Averaging Time for Noncarcinogens in Inhalation Equation	yr		Residential = 30 Industrial/Commercial = 25 Construction Worker = 0.115
AT <sub>c</sub>	Averaging Time for Carcinogens	yr	SSL	70
BW	Body Weight	kg		Residential = 15, noncarcinogens 70, carcinogens Industrial/Commercial = 70 Construction Worker = 70
C <sub>sat</sub>	Soil Saturation Concentration	mg/kg	Appendix A, Table A or Equation S29 in Appendix C, Table A	Chemical-Specific or Calculated Value
C <sub>w</sub>	Target Soil Leachate Concentration	mg/L	Equation S18 in Appendix C, Table A	Groundwater Standard, Health Advisory concentration, or Calculated Value
d	Mixing Zone Depth	m	SSL or Equation S25 in Appendix C, Table A	2 m or Calculated Value
d <sub>a</sub>	Aquifer Thickness	m	Field Measurement	Site-Specific

Symbol	Parameter	Units	Source	Parameter Value(s)
$d_s$	Depth of Source ( <u>Vertical thickness of contamination</u> )	m	Field Measurement or Estimation	Site-Specific
$D_A$	Apparent Diffusivity	$\text{cm}^2/\text{s}$	Equation S10 in Appendix C, Table A	Calculated Value
$D_i$	Diffusivity in Air	$\text{cm}^2/\text{s}$	Appendix C, Table E	Chemical-Specific
$D_w$	Diffusivity in Water	$\text{cm}^2/\text{s}$	Appendix C, Table E	Chemical-Specific
DF	Dilution Factor	unitless	Equation S22 in Appendix C, Table A	20 or Calculated Value
ED	Exposure Duration for Ingestion of Carcinogens	yr		Industrial/Commercial = 25 Construction Worker = 1
ED	Exposure Duration for Inhalation of Carcinogens	yr		Residential = 30 Industrial/Commercial = 25 Construction Worker = 1
ED	Exposure Duration for Ingestion of Noncarcinogens	yr		Residential = 6 Industrial/Commercial = 25 Construction Worker = 1
ED	Exposure Duration for Inhalation of Noncarcinogens	yr		Residential = 30 Industrial/Commercial = 25 Construction Worker = 1
ED	Exposure Duration for the Direct Ingestion of Groundwater	yr		Residential = 30 Industrial/Commercial = 25 Construction Worker = 1

Symbol	Parameter	Units	Source	Parameter Value(s)
$ED_{M-L}$	Exposure Duration for Migration to Groundwater Mass-Limit Equation S28	yr	SSL	70
EF	Exposure Frequency	d/yr		Residential = 350 Industrial/Commercial = 250 Construction Worker = 30
F(x)	Function dependent on $U_m/U_t$	unitless	SSL	0.194
$f_{oc}$	Organic Carbon Content of Soil	g/g	SSL or Field Measurement (See Appendix C, Table F)	Surface Soil = 0.006 Subsurface soil = 0.002, or Site-Specific
$GW_{obj}$	Groundwater Remediation Remediation Objective	mg/L	Appendix B, Table E, 35 IAC 620.Subpart F, or Equation S23 in Appendix C, Table A	Chemical-Specific or Calculated
H'	Henry's Law Constant	unitless	Appendix C, Table E	Chemical-Specific
i	Hydraulic Gradient	m/m	Field Measurement (See Appendix C, Table F)	Site-Specific
I	Infiltration Rate	m/yr	SSL	0.3
$I_{M-L}$	Infiltration Rate for Migration to Groundwater Mass-Limit Equation S28	m/yr	SSL	0.18

Symbol	Parameter	Units	Source	Parameter Value(s)
IF <sub>soil-adj</sub> (residential)	Age Adjusted Soil Ingestion Factor for Carcinogens	(mg-yr)/(kg-d)	SSL	114
IR <sub>soil</sub>	Soil Ingestion Rate	mg/d		Residential = 200 Industrial/Commercial = 50 Construction Worker = 480
IR <sub>w</sub>	Daily Water Ingestion Rate	L/d		Residential = 2 Industrial/Commercial = 1
K	Aquifer Hydraulic Conductivity	m/yr	Field Measurement (See Appendix C, Table F)	Site-Specific
K <sub>d</sub> ( <u>Non-ionizing organics</u> )	Soil-Water Partition Coefficient	cm <sup>3</sup> /g or L/kg	Equation S19 in Appendix C, Table A	Calculated Value
K <sub>d</sub> ( <u>Ionizing organics</u> )	<u>Soil-Water Partition Coefficient</u>	<u>cm<sup>3</sup>/g or L/kg</u>	<u>Equation S19 in Appendix C, Table A</u>	<u>Chemical and pH-Specific (see Appendix C, Table I)</u>
K <sub>d</sub> ( <u>Inorganics</u> )	<u>Soil-Water Partition Coefficient</u>	<u>cm<sup>3</sup>/g or L/kg</u>	<u>Appendix C, Table J</u>	<u>Chemical and pH-Specific</u>
K <sub>oc</sub>	Organic Carbon Partition Coefficient	cm <sup>3</sup> /g or L/kg	Appendix C, Table E or Appendix C, Table I	Chemical-Specific
K <sub>s</sub>	Saturated Hydraulic Conductivity	m/yr	Appendix C, Table K Appendix C, Illustration C	Site-Specific
L	Source Length Parallel to Groundwater Flow	m	Field Measurement	Site-Specific
PEF	Particulate Emission Factor	m <sup>3</sup> /kg	SSL or Equation S15 in Appendix C, Table A	Residential = 1.32 • 10 <sup>9</sup> or Site-Specific Industrial/Commercial = 1.24 • 10 <sup>9</sup> or Site-Specific
PEF'	Particulate Emission Factor adjusted for Agitation (construction worker)	m <sup>3</sup> /kg	Equation S16 in Appendix C, Table A using PEF (industrial/commercial)	1.24 • 10 <sup>8</sup> or Site-Specific



Symbol	Parameter	Units	Source	Parameter Value(s)
Q/C (used in VF equations)	Inverse of the mean concentration at the center of a square source	$(\text{g}/\text{m}^2\text{-s})/(\text{kg}/\text{m}^3)$	Appendix C, Table H	Residential = 68.81 Industrial/Commercial = 85.81 Construction Worker = 85.81
Q/C (used in PEF equations)	Inverse of the mean concentration at the center of a square source	$(\text{g}/\text{m}^2\text{-s})/(\text{kg}/\text{m}^3)$	SSL or Appendix C, Table H	Residential = 90.80 Industrial/Commercial = 85.81 Construction Worker = 85.81
RfC	Inhalation Reference Concentration	$\text{mg}/\text{m}^3$	IEPA (IRIS/HEAST <sup>a</sup> )	Toxicological-Specific (Note: for Construction Workers use subchronic reference concentrations)
RfD <sub>o</sub>	Oral Reference Dose	$\text{mg}/(\text{kg}\text{-d})$	IEPA (IRIS/HEAST <sup>a</sup> )	Toxicological-Specific (Note: for Construction Worker use subchronic reference doses)
S	Solubility in Water	$\text{mg}/\text{L}$	Appendix C, Table E	Chemical-Specific
SF <sub>o</sub>	Oral Slope Factor	$(\text{mg}/\text{kg}\text{-d})^{-1}$	IEPA (IRIS/HEAST <sup>a</sup> )	Toxicological-Specific
T	Exposure Interval	s		Residential = $9.5 \cdot 10^8$ Industrial/Commercial = $7.9 \cdot 10^8$ Construction Worker = $3.6 \cdot 10^6$
T <sub>M-L</sub>	Exposure Interval for Mass-Limit Volatilization Factor Equation S26	yr	SSL	30
THQ	Target Hazard Quotient	unitless	SSL	1

Symbol	Parameter	Units	Source	Parameter Value(s)
TR	Target Cancer Risk	unitless		Residential = $10^{-6}$ at the point of human exposure Industrial/Commercial = $10^{-6}$ at the point of human exposure Construction Worker = $10^{-6}$ at the point of human exposure
$U_m$	Mean Annual Windspeed	m/s	SSL	4.69
URF	Inhalation Unit Risk Factor	$(\mu\text{g}/\text{m}^3)^{-1}$	IEPA (IRIS/HEAST <sup>a</sup> )	Toxicological-Specific
$U_t$	Equivalent Threshold Value of Windspeed at 7 m	m/s	SSL	11.32
V	Fraction of Vegetative Cover	unitless	SSL or Field Measurement	0.5 or Site-Specific
VF	Volatilization Factor	$\text{m}^3/\text{kg}$	Equation S8 in Appendix C, Table A	Calculated Value
VF'	Volatilization Factor adjusted for Agitation	$\text{m}^3/\text{kg}$	Equation S9 in Appendix C, Table A	Calculated Value
$\text{VF}_{\text{M-L}}$	Mass-Limit Volatilization Factor	$\text{m}^3/\text{kg}$	Equation S26 in Appendix C, Table A	Calculated Value
$\text{VF}'_{\text{M-L}}$	Mass-Limit Volatilization Factor adjusted for Agitation	$\text{m}^3/\text{kg}$	Equation S27 in Appendix C, Table A	Calculated Value

Symbol	Parameter	Units	Source	Parameter Value(s)
$\eta$	Total Soil Porosity	$L_{\text{pore}}/L_{\text{soil}}$	SSL or Equation S24 in Appendix C, Table A	0.43, or Gravel = 0.25 Sand = 0.32 Silt = 0.40 Clay = 0.36, or Calculated Value
$\theta_a$	Air-Filled Soil Porosity	$L_{\text{air}}/L_{\text{soil}}$	SSL or Equation S21 in Appendix C, Table A	Surface Soil (top 1 meter) = 0.28 Subsurface Soil (below 1 meter) = 0.13, or Gravel = 0.05 Sand = 0.14 Silt = 0.24 Clay = 0.19, or Calculated Value
$\theta_w$	Water-Filled Soil Porosity	$L_{\text{water}}/L_{\text{soil}}$	SSL or Equation S20 in Appendix C, Table A	Surface Soil (top 1 meter) = 0.15 Subsurface Soil (below 1 meter) = 0.30, or Gravel = 0.20 Sand = 0.18 Silt = 0.16 Clay = 0.17, or Calculated Value

Symbol	Parameter	Units	Source	Parameter Value(s)
$\rho_b$	Dry Soil Bulk Density	kg/L or g/cm <sup>3</sup>	SSL or Field Measurement (See Appendix C, Table F)	1.5, or Gravel = 2.0 Sand = 1.8 Silt = 1.6 Clay = 1.7, or Site-Specific
$\rho_s$	Soil Particle Density	g/cm <sup>3</sup>	SSL or Field Measurement (See Appendix C, Table F)	2.65, or Site-Specific
$\rho_w$	Water Density	g/cm <sup>3</sup>	SSL	1
1/(2b+3)	Exponential in Equation S20	unitless	Appendix C, Table K Appendix C, Illustration C	Site-Specific

a HEAST = Health Effects Assessment Summary Tables. USEPA, Office of Solid Waste and Emergency Response. EPA/SQO/R-95/036. Updated Quarterly.

(Source: Amended in R00-19(B) at 24 Ill. Reg. \_\_\_\_, effective\_\_\_\_\_)

Section 742. Appendix C: Tier 2 Tables and Illustrations

Section 742. Table C: RBCA Equations

<p>Equations for the combined exposures routes of soil ingestion inhalation of vapors and particulates, and dermal contact with soil</p>	<p>Remediation Objectives for Carcinogenic Contaminants (mg/kg)</p>	$\frac{TR \cdot BW \cdot AT_C \cdot 365 \frac{d}{yr}}{EF \cdot ED \cdot \left\{ \left[ SF_o \cdot 10^{-6} \frac{kg}{mg} \cdot \left( (IR_{soil} \cdot RAF_o) + (SA \cdot M \cdot RAF_d) \right) \right] + \left[ SF_i \cdot IR_{air} \cdot (VF_{ss} + VF_p) \right] \right\}}$	R1
	<p>Remediation Objectives for Non-carcinogenic Contaminants (mg/kg)</p>	$EF \cdot ED \cdot \left[ \frac{10^{-6} \frac{kg}{mg} \left[ (IR_{soil} \cdot RAF_o) + (SA \cdot M \cdot RAF_d) \right]}{RfD_o} + \frac{IR_{air} \cdot (VF_{ss} + VF_p)}{RfD_i} \right]$	R2
	<p>Volatilization Factor for Surficial Soils, <math>VF_{ss}</math> (kg/m<sup>3</sup>)  Whichever is less between R3 and R4</p>	$VF_{ss} = \frac{2 \cdot W \cdot r_s \cdot 10^3 \frac{cm^3 \cdot kg}{m^3 \cdot g}}{U_{air} \cdot d_{air}} \cdot \sqrt{\frac{D_s^{eff} \cdot H'}{p \cdot [q_{ws} + (k_s \cdot r_s) + (H' \cdot q_{as})] \cdot t}}$	R3
	$VF_{ss} = \frac{W \cdot r_s \cdot d \cdot 10^3 \frac{cm^3 \cdot kg}{m^3 \cdot g}}{U_{air} \cdot d_{air} \cdot t}$	R4	

	Volatilization Factor for Surficial Soils Regarding Particulates, $VF_p$ (kg/m <sup>3</sup> )	$VF_p = \frac{P_e \cdot W \cdot 10^3 \frac{cm^3 \cdot kg}{m^3 \cdot g}}{U_{air} \cdot d_{air}}$	<b>R5</b>
	Effective Diffusion Coefficient in Soil Based on Vapor-Phase Concentration $D_s^{eff}$ (cm <sup>2</sup> /s)	$D_s^{eff} = \frac{D^{air} \cdot q_{as}^{3.33}}{q_T^2} + \frac{D^{water} \cdot q_{ws}^{3.33}}{H' \cdot q_T^2}$	<b>R6</b>
Equations for the ambient vapor inhalation (outdoor) route from subsurface soils	Remediation Objectives for Carcinogenic Contaminants (mg/kg)	$\frac{RBSL_{air} \cdot 10^{-3}}{VF_{samb}}$	<b>R7</b>
	Remediation Objectives for Non-carcinogenic Contaminants (mg/kg)	$\frac{RBSL_{air} \cdot 10^{-3}}{VF_{samb}}$	<b>R8</b>

<p>Carcinogenic Risk-Based Screening Level for Air, <math>RBSL_{air}</math> (<math>ug/m^3</math>)</p>	$RBSL_{air} = \frac{TR \cdot BW \cdot AT_c \cdot 365 \frac{d}{yr} \cdot 10^3 \frac{ug}{mg}}{SF_i \cdot IR_{air} \cdot EF \cdot ED}$	<p><b>R9</b></p>
<p>Noncarcinogenic Risk-Based Screening Level for Air, <math>RBSL_{air}</math> (<math>ug/m^3</math>)</p>	$RBSL_{air} = \frac{THQ \cdot RfD_i \cdot BW \cdot AT_n \cdot 365 \frac{d}{yr} \cdot 10^3 \frac{ug}{mg}}{IR_{air} \cdot EF \cdot ED}$	<p><b>R10</b></p>
<p>Volatilization Factor - Subsurface Soil to Ambient Air, <math>VF_{samb}</math> (<math>mg/m^3</math>)/(<math>mg/kg_{soil}</math>)</p>	$VF_{samb} = \frac{H' \cdot r_s \cdot 10^3 \frac{cm^3 \cdot kg}{m^3 \cdot g}}{[q_{ws} + (k_s \cdot r_s) + (H' \cdot q_{as})] \cdot \left[ 1 + \frac{(U_{air} \cdot d_{air} \cdot L_s)}{(D_s^{eff} \cdot W)} \right]}$	<p><b>R11</b></p>

Equations for the Soil Component of the Groundwater Ingestion Exposure Route	Remediation Objective (mg/kg)	$\frac{GW_{source}}{LF_{sw}}$ <p>NOTE: This equation can only be used to model contaminant migration not in the water bearing unit.</p>	R12
	Groundwater at the source, $GW_{source}$ (mg/L)	$GW_{source} = \frac{GW_{comp}}{C_{(x)}/C_{source}}$	R13
	Leaching Factor, $LF_{sw}$  (mg/L <sub>water</sub> )/(mg/kg <sub>soil</sub> )	$LF_{sw} = \frac{r_s \cdot \frac{cm^3 \cdot kg}{L \cdot g}}{[q_{ws} + (k_s \cdot r_s) + (H' \cdot q_{as})] \cdot \left[ 1 + \frac{(U_{gw} \cdot d_{gw})}{(I \cdot W)} \right]}$	R14
	Steady-State Attenuation Along the Centerline of a Dissolved Plume, $C_{(x)}/C_{source}$	$C_{(x)}/C_{source} = \exp \left[ \left( \frac{X}{2a_x} \right) \cdot \left( 1 - \sqrt{1 + \frac{4I \cdot a_x}{U}} \right) \right] \cdot erf \left[ \frac{S_w}{4 \cdot \sqrt{a_y} \cdot X} \right] \cdot erf \left[ \frac{S_d}{2 \cdot \sqrt{a_z} \cdot X} \right]$ <p>NOTE:</p> <ol style="list-style-type: none"> <li>This equation does not predict the contaminant flow within bedrock <u>and may not accurately predict downgradient concentrations in the presence of a confining layer.</u></li> <li>If the value of the First Order Degradation Constant (<math>\lambda</math>) is not readily available, then set <math>\lambda = 0</math>.</li> </ol>	R15
	Longitudinal Dispersivity, $\alpha_x$ (cm)	$a_x = 0.10 \cdot X$	R16



Transverse Dispersivity, $\alpha_y$ (cm)	$a_y = \frac{a_x}{3}$	R17
Vertical Dispersivity, $\alpha_z$ (cm)	$a_z = \frac{a_x}{20}$	R18
Specific Discharge, U (cm/d)	$U = \frac{K \cdot i}{q_T}$	R19
Soil-Water Sorption Coefficient, $k_s$	$k_s = K_{oc} \cdot f_{oc}$	R20
Volumetric Air Content in Vadose Zone Soils, $\theta_{as}$ (cm <sup>3</sup> <sub>air</sub> /cm <sup>3</sup> <sub>soil</sub> )	$q_{as} = q_T - \frac{(w \cdot r_s)}{r_w}$	R21
Volumetric Water Content in Vadose Zone Soils, $\theta_{ws}$ (cm <sup>3</sup> <sub>water</sub> /cm <sup>3</sup> <sub>soil</sub> )	$q_{ws} = \frac{w \cdot r_s}{r_w}$	R22
Total Soil Porosity, $\theta_T$ (cm <sup>3</sup> /cm <sup>3</sup> <sub>soil</sub> )	$q_T = q_{as} + q_{ws}$	R23

	Groundwater Darcy Velocity, $U_{gw}$ (cm/yr)	$U_{gw} = K \cdot i$	<b>R24</b>
Equations for the Groundwater Ingestion Exposure Route	Remediation Objective for Carcinogenic Contaminants (mg/L)	$\frac{TR \cdot BW \cdot AT_c \cdot 365 \frac{d}{yr}}{SF_o \cdot IR_w \cdot EF \cdot ED}$	<b>R25</b>
	Dissolved Hydrocarbon Concentration along Centerline, $C_{(x)}$ ( $\frac{g}{cm^3}$ $\frac{mg}{L}$ water)	$C_{(x)} = C_{source} \cdot \exp \left[ \left( \frac{X}{2a_x} \right) \cdot \left( 1 - \sqrt{1 + \frac{4I \cdot a_x}{U}} \right) \right] \cdot erf \left[ \frac{S_w}{4 \cdot \sqrt{a_y \cdot X}} \right] \cdot erf \left[ \frac{S_d}{2 \cdot \sqrt{a_z \cdot X}} \right]$ <p>NOTE:</p> <ol style="list-style-type: none"> <li>1. This equation does not predict the contaminant flow within bedrock <u>and may not accurately predict downgradient concentrations in the presence of a confining layer.</u></li> <li>2. If the value of the First Order Degradation Constant (<math>\lambda</math>) is not readily available, then set <math>\lambda = 0</math>.</li> </ol>	<b>R26</b>

(Source: Amended in R00-19(B) at 24 Ill. Reg. \_\_\_\_, effective \_\_\_\_\_)

Section 742.APPENDIX C: Tier 2 Tables and Illustrations

Section 742.Table D: RBCA Parameters

Symbol	Parameter	Units	Source	Parameter Value(s)
AT <sub>c</sub>	Averaging Time for Carcinogens	yr	RBCA	70
AT <sub>n</sub>	Averaging Time for Noncarcinogens	yr	RBCA	Residential = 30 Industrial/Commercial = 25 Construction Worker = 0.115
BW	Adult Body Weight	kg	RBCA	70
C <sub>source</sub>	The greatest potential concentration of the contaminant of concern in the groundwater at the source of the contamination, based on the concentrations of contaminants in groundwater due to the release and the projected concentration of the contaminant migrating from the soil to the groundwater.	mg/L	Field Measurement	Site-Specific
C <sub>(x)</sub>	Concentration of Contaminant in Groundwater at Distance X from the source	mg/L	Equation R26 in Appendix C, Table C	Calculated Value

Symbol	Parameter	Units	Source	Parameter Value(s)
$C_{(x)}/C_{\text{source}}$	Steady-State Attenuation Along the Centerline of a Dissolved Plume	unitless	Equation R15 in Appendix C, Table C	Calculated Value
d	Lower Depth of Surficial Soil Zone	cm	Field Measurement	100 or Site-Specific (not to exceed 100)
$D^{\text{air}}$	Diffusion Coefficient in Air	$\text{cm}^2/\text{s}$	Appendix C, Table E	Chemical-Specific
$D^{\text{water}}$	Diffusion Coefficient in Water	$\text{cm}^2/\text{s}$	Appendix C, Table E	Chemical-Specific
$D_s^{\text{eff}}$	Effective Diffusion Coefficient in Soil Based on Vapor-Phase Concentration	$\text{cm}^2/\text{s}$	Equation R6 in Appendix C, Table C	Calculated Value
ED	Exposure Duration	yr	RBCA	Residential = 30 Industrial/Commercial = 25 Construction Worker = 1
EF	Exposure Frequency	d/yr	RBCA	Residential = 350 Industrial/Commercial = 250 Construction Worker = 30
erf	Error Function	unitless	Appendix C, Table G	Mathematical Function

Symbol	Parameter	Units	Source	Parameter Value(s)
$f_{oc}$	Organic Carbon Content of Soil	g/g	RBCA or Field Measurement (See Appendix C, Table F)	Surface Soil = 0.006 Subsurface Soil = 0.002 or  Site-Specific
$GW_{comp}$	Groundwater Objective at the Compliance Point	mg/L	Appendix B, Table E, 35 IAC 620.Subpart F, or Equation R25 in Appendix C, Table C	Site-Specific
$GW_{source}$	Groundwater Concentration at the Source	mg/L	Equation R13 in Appendix C, Table C	Calculated Value
$H'$	Henry's Law Constant	$cm^3_{water}/cm^3_{air}$	Appendix C, Table E	Chemical-Specific
$i$	Hydraulic Gradient	cm/cm (unitless)	Field Measurement (See Appendix C, Table F)	Site-Specific
$I$	Infiltration Rate	cm/yr	RBCA	30
$IR_{air}$	Daily Outdoor Inhalation Rate	$m^3/d$	RBCA	20
$IR_{soil}$	Soil Ingestion Rate	mg/d	RBCA	Residential = 100 Industrial/Commercial = 50 Construction Worker = 480
$IR_w$	Daily Water Ingestion Rate	L/d	RBCA	Residential = 2 Industrial/Commercial = 1

Symbol	Parameter	Units	Source	Parameter Value(s)
K	Aquifer Hydraulic Conductivity	cm/d for Equations R15, R19 and R26 cm/yr for Equation R24	Field Measurement (See Appendix C, Table F)	Site-Specific
K <sub>oc</sub>	Organic Carbon Partition Coefficient	cm <sup>3</sup> /g or L/kg	Appendix C, Table E or Appendix C, Table I	Chemical-Specific
k <sub>s</sub> (non-ionizing organics)	Soil Water Sorption Coefficient	cm <sup>3</sup> <sub>water</sub> /g <sub>soil</sub>	Equation R20 in Appendix C, Table C	Calculated Value
k <sub>s</sub> (ionizing organics)	Soil Water Sorption Coefficient	cm <sup>3</sup> <sub>water</sub> /g <sub>soil</sub>	Equation R20 in Appendix C, Table C	Chemical and pH-Specific (See Appendix C, Table D)
k <sub>s</sub> (inorganics)	Soil Water Sorption Coefficient	cm <sup>3</sup> <sub>water</sub> /g <sub>soil</sub>	Appendix C, Table J	Chemical and pH-Specific
L <sub>s</sub>	Depth to Subsurface Soil Sources	cm	RBCA	100
LF <sub>sw</sub>	Leaching Factor	(mg/L <sub>water</sub> )/ (mg/kg <sub>soil</sub> )	Equation R14 in Appendix C, Table C	Calculated Value
M	Soil to Skin Adherence Factor	mg/cm <sup>2</sup>	RBCA	0.5

Symbol	Parameter	Units	Source	Parameter Value(s)
Pe	Particulate Emission Rate	g/cm <sup>2</sup> -s	RBCA	6.9 • 10 <sup>-14</sup>
RAF <sub>d</sub>	Dermal Relative Absorption Factor	unitless	RBCA	0.5
RAF <sub>d</sub> (PNAs)	Dermal Relative Absorption Factor	unitless	RBCA	0.05
RAF <sub>d</sub> (inorganics)	Dermal Relative Absorption Factor	unitless	RBCA	0
RAF <sub>o</sub>	Oral Relative Absorption Factor	unitless	RBCA	1.0
RBSL <sub>air</sub>	Carcinogenic Risk-Based Screening Level for Air	ug/m <sup>3</sup>	Equation R9 in Appendix C, Table C	Chemical-, Media-, and Exposure Route-Specific
RBSL <sub>air</sub>	Noncarcinogenic Risk-Based Screening Level for Air	ug/m <sup>3</sup>	Equations R10 in Appendix C, Table C	Chemical-, Media-, and Exposure Route-Specific
RfD <sub>i</sub>	Inhalation Reference Dose	mg/kg-d	IEPA (IRIS/HEAST <sup>®</sup> )	Toxicological-Specific
RfD <sub>o</sub>	Oral Reference Dose	mg/(kg-d)	IEPA (IRIS/HEAST <sup>®</sup> )	Toxicological-Specific (Note: for Construction Worker use subchronic reference doses)
SA	Skin Surface Area	cm <sup>2</sup> /d	RBCA	3,160

Symbol	Parameter	Units	Source	Parameter Value(s)
$S_d$	Source Width Perpendicular to Groundwater Flow Direction in Vertical Plane	cm	Field Measurement	For Migration to Groundwater Route: Use 200 or Site-Specific  For Groundwater remediation objective: Use Site-Specific
$S_w$	Source Width Perpendicular to Groundwater Flow Direction in Horizontal Plane	cm	Field Measurement	Site-Specific
$SF_i$	Inhalation Cancer Slope Factor	$(\text{mg/kg-d})^{-1}$	IEPA (IRIS/HEAST <sup>d</sup> )	Toxicological-Specific
$SF_o$	Oral Slope Factor	$(\text{mg/kg-d})^{-1}$	IEPA (IRIS/HEAST <sup>d</sup> )	Toxicological-Specific
THQ	Target Hazard Quotient	unitless	RBCA	1
TR	Target Cancer Risk	unitless	RBCA	Residential = $10^{-6}$ at the point of human exposure Industrial/Commercial = $10^{-6}$ at the point of human exposure Construction Worker = $10^{-6}$ at the point of human exposure
U	Specific Discharge	cm/d	Equation R19 in Appendix C, Table C	Calculated Value



Symbol	Parameter	Units	Source	Parameter Value(s)
$U_{air}$	Average Wind Speed Above Ground Surface in Ambient Mixing Zone	cm/s	RBCA	225
$U_{gw}$	Groundwater Darcy Velocity	cm/yr	Equation R24 in Appendix C, Table C	Calculated Value
$VF_p$	Volatilization Factor for Surficial Soils Regarding Particulates	$kg/m^3$	Equation R5 in Appendix C, Table C	Calculated Value
$VF_{samb}$	Volatilization Factor (Subsurface Soils to Ambient Air)	$(mg/m^3_{air})/(mg/kg_{soil})$ or $kg/m^3$	Equation R11 in Appendix C, Table C	Calculated Value
$VF_{ss}$	Volatilization Factor for Surficial Soils	$kg/m^3$	Use Equations R3 and R4 in Appendix C, Table C	Calculated Value from Equation R3 or R4 (whichever is less)
$W$	Width of Source Area Parallel to Direction to Wind or Groundwater Movement	cm	Field Measurement	Site-Specific

Symbol	Parameter	Units	Source	Parameter Value(s)
w	Average Soil Moisture Content	$\frac{g_{\text{water}}}{g_{\text{soil}}}$	RBCA or Field Measurement (See Appendix C, Table F)	0.1, or Surface Soil (top 1 meter) = 0.1 Subsurface Soil (below 1 meter) = 0.2, or Site-Specific
X	Distance along the Centerline of the Groundwater Plume Emanating from a Source. The x direction is the direction of groundwater flow	cm	Field Measurement	Site-Specific
$\alpha_x$	Longitudinal Dispersivity	cm	Equation R16 in Appendix C, Table C	Calculated Value
$\alpha_y$	Transverse Dispersivity	cm	Equation R17 in Appendix C, Table C	Calculated Value
$\alpha_z$	Vertical Dispersivity	cm	Equation R18 in Appendix C, Table C	Calculated Value
$\delta_{\text{air}}$	Ambient Air Mixing Zone Height	cm	RBCA	200

Symbol	Parameter	Units	Source	Parameter Value(s)
$\delta_{gw}$	Groundwater Mixing Zone Thickness	cm	RBCA	200
$\theta_{as}$	Volumetric Air Content in Vadose Zone Soils	$\text{cm}^3_{\text{air}}/\text{cm}^3_{\text{soil}}$	RBCA or Equation R21 in Appendix C, Table C	Surface Soil (top 1 meter) = 0.28 Subsurface Soil (below 1 meter) = 0.13, Or  Gravel = 0.05 Sand = 0.14 Silt = 0.16 Clay = 0.17, or  Calculated Value
$\theta_{ws}$	Volumetric Water Content in Vadose Zone Soils	$\text{cm}^3_{\text{water}}/\text{cm}^3_{\text{soil}}$	RBCA or Equation R22 in Appendix C, Table C	Surface Soil (top 1 meter) = 0.15 Subsurface Soil (below 1 meter) = 0.30, or  Gravel = 0.20 Sand = 0.18 Silt = 0.16 Clay = 0.17, or  Calculated Value

Symbol	Parameter	Units	Source	Parameter Value(s)
$\theta_T$	Total Soil Porosity	$\text{cm}^3/\text{cm}^3_{\text{soil}}$	RBCA or Equation R23 in Appendix C, Table C	0.43, or  Gravel = 0.25 Sand = 0.32 Silt = 0.40 Clay = 0.36, or  Calculated Value
$\lambda$	First Order Degradation Constant	$\text{d}^{-1}$	Appendix C, Table E	Chemical-Specific
$\pi$	pi			3.1416
$\rho_s$	Soil Bulk Density	$\text{g}/\text{cm}^3$	RBCA or Field Measurement (See Appendix C, Table F)	1.5, or  Gravel = 2.0 Sand = 1.8 Silt = 1.6 Clay = 1.7, or  Site-Specific
$\rho_w$	Water Density	$\text{g}/\text{cm}^3$	RBCA	1
$\tau$	Averaging Time for Vapor Flux	s	RBCA	$9.46 \cdot 10^8$

<sup>a</sup> HEAST = Health Effects Assessment Summary Tables. USEPA, Office of Solid Waste and Emergency Response. EPA/540/R-95/036. Updated Quarterly.

(Source: Amended in R00-19(B) at 24 Ill. Reg. \_\_\_\_, effective\_\_\_\_\_)

Section 742.APPENDIX C: Tier 2 Tables and Illustrations

Section 742.Table E: Default Physical and Chemical Parameters

CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (Di) (cm <sup>2</sup> /s)	Diffusivity in Water (D <sub>w</sub> ) (cm <sup>2</sup> /s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K <sub>oc</sub> ) (L/kg)	First Order Degradation Constant (λ) (d <sup>-1</sup> )
Neutral Organics							
83-32-9	Acenaphthene	4.24	0.0421	7.69E-6	0.00636	7,080	0.0034
67-64-1	Acetone	1,000,000	0.124	1.14E-5	0.00159	0.575	0.0495
15972-60-8	Alachlor	242	0.0198	5.69E-6	0.00000132	394	No Data
116-06-3	Aldicarb	6,000	0.0305	7.19E-6	0.0000000574	12	0.00109
309-00-2	Aldrin	0.18	0.0132	4.86E-6	0.00697	2,450,000	0.00059
120-12-7	Anthracene	0.0434	0.0324	7.74E-6	0.00267	29,500	0.00075
1912-24-9	Atrazine	70	0.0258	6.69E-6	0.00000005	451	No Data
71-43-2	Benzene	1,750	0.088	9.80E-6	0.228	58.9	0.0009

CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (Di) (cm <sup>2</sup> /s)	Diffusivity in Water (D <sub>w</sub> ) (cm <sup>2</sup> /s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K <sub>oc</sub> ) (L/kg)	First Order Degradation Constant (λ) (d <sup>-1</sup> )
56-55-3	Benzo(a)anthracene	0.0094	0.0510	9.00E-6	0.000137	398,000	0.00051
205-99-2	Benzo(b)fluoranthene	0.0015	0.0226	5.56E-6	0.00455	1,230,000	0.00057
207-08-9	Benzo(k)fluoranthene	0.0008	0.0226	5.56E-6	0.000034	1,230,000	0.00016
65-85-0	Benzoic Acid	3,500	0.0536	7.97E-6	0.0000631	0.600	No Data
50-32-8	Benzo(a)pyrene	0.00162	0.043	9.00E-6	0.0000463	1,020,000	0.00065
111-44-4	Bis(2-chloroethyl)ether	17,200	0.0692	7.53E-6	0.000738	15.5	0.0019
117-81-7	Bis(2-ethylhexyl)phthalate	0.34	0.0351	3.66E-6	0.00000418	15,100,000	0.0018
75-27-4	Bromodichloromethane	6,740	0.0298	1.06E-5	0.0656	55.0	No Data
75-25-2	Bromoform	3,100	0.0149	1.03E-5	0.0219	87.1	0.0019
71-36-3	Butanol	74,000	0.0800	9.30E-6	0.000361	6.92	0.01283
85-68-7	Butyl Benzyl Phthalate	2.69	0.0174	4.83E-6	0.0000517	57,500	0.00385
86-74-8	Carbazole	7.48	0.0390	7.03E-6	0.000000626	3,390	No Data

CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (Di) (cm <sup>2</sup> /s)	Diffusivity in Water (D <sub>w</sub> ) (cm <sup>2</sup> /s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K <sub>oc</sub> ) (L/kg)	First Order Degradation Constant (λ) (d <sup>-1</sup> )
1563-66-2	Carbofuran	320	0.0249	6.63E-6	.00377	37	No Data
75-15-0	Carbon Disulfide	1,190	0.104	1.00E-5	1.24	45.7	No Data
56-23-5	Carbon Tetrachloride	793	0.0780	8.80E-6	1.25	174	0.0019
57-74-9	Chlordane	0.056	0.0118	4.37E-6	0.00199	120,000	0.00025
106-47-8	p-Chloroaniline	5,300	0.0483	1.01E-5	0.0000136	66.1	No Data
108-09-7	Chlorobenzene	472	0.0730	8.70E-6	0.152	219	0.0023
124-48-1	Chlorodibromomethane	2,600	0.0196	1.05E-5	0.0321	63.1	0.00385
67-66-3	Chloroform	7,920	0.104	1.00E-5	0.15	39.8	0.00039
95-57-8	2-Chlorophenol	22,000	0.0501	9.46E-6	0.016	388	No Data
218-01-9	Chrysene	0.0016	0.0248	6.21E-6	0.00388	398,000	0.00035
94-75-7	2,4-D	680	0.0231	7.31E-6	0.00000041	451	0.00385
72-54-8	4,4'-DDD	0.09	0.0169	4.76E-6	0.000164	1,000,000	0.000062

CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (Di) (cm <sup>2</sup> /s)	Diffusivity in Water (D <sub>w</sub> ) (cm <sup>2</sup> /s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K <sub>oc</sub> ) (L/kg)	First Order Degradation Constant (λ) (d <sup>-1</sup> )
72-55-9	4,4'-DDE	0.12	0.0144	5.87E-6	0.000861	4,470,000	0.000062
50-29-3	4,4'-DDT	0.025	0.0137	4.95E-6	0.000332	2,630,000	0.000062
75-99-0	Dalapon	900,000	0.0414	9.46E-6	0.00000264	5.8	0.005775
53-70-3	Dibenzo(a,h)anthracene	0.00249	0.0202	5.18E-6	0.000000603	3,800,000	0.00037
96-12-8	1,2-Dibromo-3-chloropropane	1,200	0.0212	7.02E-6	0.00615	182	0.001925
106-93-4	1,2-Dibromoethane	4,200	0.0287	8.06E-6	0.0303	93	0.005775
84-74-2	Di-n-butyl Phthalate	11.2	0.0438	7.86E-6	0.0000000385	33,900	0.03013
95-50-1	1,2-Dichlorobenzene	156	0.0690	7.90E-6	0.0779	617	0.0019
106-46-7	1,4-Dichlorobenzene	73.8	0.0690	7.90E-6	0.0996	617	0.0019
91-94-1	3,3-Dichlorobenzidine	3.11	0.0194	6.74E-6	0.000000164	724	0.0019



CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (Di) (cm <sup>2</sup> /s)	Diffusivity in Water (D <sub>w</sub> ) (cm <sup>2</sup> /s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K <sub>oc</sub> ) (L/kg)	First Order Degradation Constant (λ) (d <sup>-1</sup> )
75-34-3	1,1-Dichloroethane	5,060	0.0742	1.05E-5	0.23	31.6	0.0019
107-06-2	1,2-Dichloroethane	8,520	0.104	9.90E-6	0.0401	17.4	0.0019
75-35-4	1,1-Dichloroethylene	2,250	0.0900	1.04E-5	1.07	58.9	0.0053
156-59-2	cis-1,2-Dichloroethylene	3,500	0.0736	1.13E-5	0.167	35.5	0.00024
156-60-5	trans-1,2-Dichloroethylene	6,300	0.0707	1.19E-5	0.385	52.5	0.00024
120-83-2	2,4-Dichlorophenol	4,500	0.0346	8.77E-6	0.00013	147	0.00027
78-87-5	1,2-Dichloropropane	2,800	0.0782	8.73E-6	0.115	43.7	0.00027
542-75-6	1,3-Dichloropropylene (cis + trans)	2,800	0.0626	1.00E-5	0.726	45.7	0.061
60-57-1	Dieldrin	0.195	0.0125	4.74E-6	0.000619	21,400	0.00032
84-66-2	Diethyl Phthalate	1,080	0.0256	6.35E-6	0.0000185	288	0.00619
105-67-9	2,4-Dimethylphenol	7,870	0.0584	8.69E-6	0.000082	209	0.0495
51-28-5	2,4-Dinitrophenol	2,790	0.0273	9.06E-6	0.0000182	0.01	0.00132

CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (Di) (cm <sup>2</sup> /s)	Diffusivity in Water (D <sub>w</sub> ) (cm <sup>2</sup> /s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K <sub>oc</sub> ) (L/kg)	First Order Degradation Constant (λ) (d <sup>-1</sup> )
121-14-2	2,4-Dinitrotoluene	270	0.203	7.06E-6	0.0000038	95.5	0.00192
606-20-2	2,6-Dinitrotoluene	182	0.0327	7.26E-6	0.0000306	69.2	0.00192
88-85-7	Dinoseb	52	0.0215	6.62E-6	0.0000189	1,120	0.002817
117-84-0	Di-n-octyl Phthalate	0.02	0.0151	3.58E-6	0.00274	83,200,000	0.0019
115-29-7	Endosulfan	0.51	0.0115	4.55E-6	0.000459	2,140	0.07629
145-73-3	Endothall	21,000	0.0291	8.07E-6	0.0000000107	0.29	No Data
72-20-8	Endrin	0.25	0.0125	4.74E-6	0.000308	12,300	0.00032
100-41-4	Ethylbenzene	169	0.0750	7.80E-6	0.323	363	0.003
206-44-0	Fluoranthene	0.206	0.0302	6.35E-6	0.00066	107,000	0.00019
86-73-7	Fluorene	1.98	0.0363	7.88E-6	0.00261	13,800	0.000691
76-44-8	Heptachlor	0.18	0.0112	5.69E-6	60.7	1,410,000	0.13
1024-57-3	Heptachlor epoxide	0.2	0.0132	4.23E-6	0.00039	83,200	0.00063

CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (Di) (cm <sup>2</sup> /s)	Diffusivity in Water (D <sub>w</sub> ) (cm <sup>2</sup> /s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K <sub>oc</sub> ) (L/kg)	First Order Degradation Constant (λ) (d <sup>-1</sup> )
118-74-1	Hexachlorobenzene	6.2	0.0542	5.91E-6	0.0541	55,000	0.00017
319-84-6	alpha-HCH (alpha-BHC)	2.0	0.0142	7.34E-6	0.000435	1,230	0.0025
58-89-9	gamma-HCH (Lindane)	6.8	0.0142	7.34E-6	0.000574	1,070	0.0029
77-47-4	Hexachlorocyclopentadiene	1.8	0.0161	7.21E-6	1.11	200,000	0.012
67-72-1	Hexachloroethane	50	0.0025	6.80E-6	0.159	1,780	0.00192
193-39-5	Indeno(1,2,3-c,d)pyrene	0.000022	0.0190	5.66E-6	0.0000656	3,470,000	0.00047
78-59-1	Isophorone	12,000	0.0623	6.76E-6	0.000272	46.8	0.01238
7439-97-6	Mercury	---	0.0307	6.30E-6	0.467	---	No Data
72-43-5	Methoxychlor	0.045	0.0156	4.46E-6	0.000648	97,700	0.0019
74-83-9	Methyl Bromide	15,200	0.0728	1.21E-5	0.256	10.5	0.01824
<u>1634-04-4</u>	<u>Methyl tert-butyl ether</u>	<u>51,000</u>	<u>0.102</u>	<u>1.10E-5</u>	<u>0.0241</u>	<u>11.5</u>	<u>0.00193</u>
75-09-2	Methylene Chloride	13,000	0.101	1.17E-5	0.0898	11.7	0.012
95-48-7	2-Methylphenol	26,000	0.0740	8.30E-6	0.0000492	91.2	0.0495

CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (Di) (cm <sup>2</sup> /s)	Diffusivity in Water (D <sub>w</sub> ) (cm <sup>2</sup> /s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K <sub>oc</sub> ) (L/kg)	First Order Degradation Constant (λ) (d <sup>-1</sup> )
91-20-3	Naphthalene	31.0	0.0590	7.50E-6	0.0198	2,000	0.0027
98-95-3	Nitrobenzene	2,090	0.0760	8.60E-6	0.000984	64.6	0.00176
86-30-6	N-Nitrosodiphenylamine	35.1	0.0312	6.35E-6	0.000205	1,290	0.01
621-64-7	N-Nitrosodi-n-propylamine	9,890	0.0545	8.17E-6	0.0000923	24.0	0.0019
87-86-5	Pentachlorophenol	1,950	0.0560	6.10E-6	0.000001	592	0.00045
108-95-2	Phenol	82,800	0.0820	9.10E-6	0.0000163	28.8	0.099
1918-02-1	Picloram	430	0.0255	5.28E-6	0.00000000166	1.98	No Data
1336-36-3	Polychlorinated biphenyls (PCBs)	0.7	----- <sup>a</sup>	----- <sup>a</sup>	----- <sup>a</sup>	309,000	No Data
129-00-0	Pyrene	0.135	0.0272	7.24E-6	0.000451	105,000	0.00018
122-34-9	Simazine	5	0.027	7.36E-6	0.0000000133	133	No Data
100-42-5	Styrene	310	0.0710	8.00E-6	0.113	776	0.0033
93-72-1	2,4,5-TP (Silvex)	31	0.0194	5.83E-6	0.0000000032	5,440	No Data

CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (Di) (cm <sup>2</sup> /s)	Diffusivity in Water (D <sub>w</sub> ) (cm <sup>2</sup> /s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K <sub>oc</sub> ) (L/kg)	First Order Degradation Constant (λ) (d <sup>-1</sup> )
127-18-4	Tetrachloroethylene	200	0.0720	8.20E-6	0.754	155	0.00096
108-88-3	Toluene	526	0.0870	8.60E-6	0.272	182	0.011
8001-35-2	Toxaphene	0.74	0.0116	4.34E-6	0.000246	257,000	No Data
120-82-1	1,2,4-Trichlorobenzene	300	0.0300	8.23E-6	0.0582	1,780	0.0019
71-55-6	1,1,1-Trichloroethane	1,330	0.0780	8.80E-6	0.705	110	0.0013
79-00-5	1,1,2-Trichloroethane	4,420	0.0780	8.80E-6	0.0374	50.1	0.00095
79-01-6	Trichloroethylene	1,100	0.0790	9.10E-6	0.422	166	0.00042
95-95-4	2,4,5-Trichlorophenol	1,200	0.0291	7.03E-6	0.000178	1,600	0.00038
88-06-2	2,4,6-Trichlorophenol	800	0.0318	6.25E-6	0.000319	381	0.00038
108-05-4	Vinyl Acetate	20,000	0.0850	9.20E-6	0.021	5.25	No Data
57-01-4	Vinyl Chloride	2,760	0.106	1.23E-6	1.11	18.6	0.00024
108-38-3	m-Xylene	161	0.070	7.80E-6	0.301	407	0.0019

CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (Di) (cm <sup>2</sup> /s)	Diffusivity in Water (D <sub>w</sub> ) (cm <sup>2</sup> /s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K <sub>oc</sub> ) (L/kg)	First Order Degradation Constant (λ) (d <sup>-1</sup> )
95-47-6	o-Xylene	178	0.087	1.00E-5	0.213	363	0.0019
106-42-3	p-Xylene	185	0.0769	8.44E-6	0.314	389	0.0019
1330-20-7	Xylenes (total)	186	0.0720	9.34E-6	0.25	260	0.0019

Chemical Abstracts Service (CAS) registry number. This number in the format xxx-xx-x, is unique for each chemical and allows efficient searching on computerized data bases.

<sup>a</sup>Soil Remediation objectives are determined pursuant to 40 CFR 761.120, as incorporated by reference at Section 732.104 (the USEPA "PCB Spill Cleanup Policy"), for most sites; persons remediating sites should consult with BOL if calculation of Tier 2 soil remediation objectives is desired.

(Source: Amended in R00-19(B) at 24 Ill. Reg. \_\_\_\_, effective\_\_\_\_\_)

Section 742.APPENDIX C: Tier 2 Tables and Illustrations

Section 742.TABLE I:  $K_{oc}$  Values for Ionizing Organics as a Function of pH ( $cm^3/g$  or  $L/kg$  or  $cm^3water/g_{soil}$ )

pH	Benzoic Acid	2-Chloro- phenol	2,4-Dichloro-phenol	Pentachloro-phenol	2,4,5-Trichloro-phenol	2,4,6-Trichloro-phenol	Dinoseb	2,3,5-TP (Silvex)
4.5	1.07E+01	3.98E+02	1.59E+02	1.34E+04	2.37E+03	1.06E+03	3.00E+04	1.28E+04
4.6	9.16E+00	3.98E+02	1.59E+02	1.24E+04	2.37E+03	1.05E+03	2.71E+04	1.13E+04
4.7	7.79E+00	3.98E+02	1.59E+02	1.13E+04	2.37E+03	1.05E+03	2.41E+04	1.01E+04
4.8	6.58E+00	3.98E+02	1.59E+02	1.02E+04	2.37E+03	1.05E+03	2.12E+04	9.16E+03
4.9	5.54E+00	3.98E+02	1.59E+02	9.05E+03	2.37E+03	1.04E+03	1.85E+04	8.40E+03
5.0	4.64E+00	3.98E+02	1.59E+02	7.96E+03	2.36E+03	1.03E+03	1.59E+04	7.76E+03
5.1	3.88E+00	3.98E+02	1.59E+02	6.93E+03	2.36E+03	1.02E+03	1.36E+04	7.30E+03
5.2	3.25E+00	3.98E+02	1.59E+02	5.97E+03	2.35E+03	1.01E+03	1.15E+04	6.91E+03
5.3	2.72E+00	3.98E+02	1.59E+02	5.10E+03	2.34E+03	9.99E+02	9.66E+03	6.60E+03
5.4	2.29E+00	3.98E+02	1.58E+02	4.32E+03	2.33E+03	9.82E+02	8.10E+03	6.36E+03
5.5	1.94E+00	3.97E+02	1.58E+02	3.65E+03	2.32E+03	9.62E+02	6.77E+03	6.16E+03
5.6	1.65E+00	3.97E+02	1.58E+02	3.07E+03	2.31E+03	9.38E+02	5.65E+03	6.00E+03
5.7	1.42E+00	3.97E+02	1.58E+02	2.58E+03	2.29E+03	9.10E+02	4.73E+03	5.88E+03
5.8	1.24E+00	3.97E+02	1.58E+02	2.18E+03	2.27E+03	8.77E+02	3.97E+03	5.78E+03
5.9	1.09E+00	3.97E+02	1.57E+02	1.84E+03	2.24E+03	8.39E+02	3.35E+03	5.70E+03

pH	Benzoic Acid	2-Chloro- phenol	2,4-Dichloro-phenol	Pentachloro-phenol	2,4,5-Trichloro-phenol	2,4,6-Trichloro-phenol	Dinoseb	2,3,5-TP (Silvex)
6.0	9.69E-01	3.96E+02	1.57E+02	1.56E+03	2.21E+03	7.96E+02	2.84E+03	5.64E+03
6.1	8.75E-01	3.96E+02	1.57E+02	1.33E+03	2.17E+03	7.48E+02	2.43E+03	5.59E+03
6.2	7.99E-01	3.96E+02	1.56E+02	1.15E+03	2.12E+03	6.97E+02	2.10E+03	5.55E+03
6.3	7.36E-01	3.95E+02	1.55E+02	9.98E+02	2.06E+03	6.44E+02	1.83E+03	5.52E+03
6.4	6.89E-01	3.94E+02	1.54E+02	8.77E+02	1.99E+03	5.89E+02	1.62E+03	5.50E+03
6.5	6.51E-01	3.93E+02	1.53E+02	7.81E+02	1.91E+03	5.33E+02	1.45E+03	5.48E+03
6.6	6.20E-01	3.92E+02	1.52E+02	7.03E+02	1.82E+03	4.80E+02	1.32E+03	5.46E+03
6.7	5.95E-01	3.90E+02	1.50E+02	6.40E+02	1.71E+03	4.29E+02	1.21E+03	5.45E+03
6.8	5.76E-01	3.88E+02	1.47E+02	5.92E+02	1.60E+03	3.81E+02	1.12E+03	5.44E+03
6.9	5.60E-01	3.86E+02	1.45E+02	5.52E+02	1.47E+03	3.38E+02	1.05E+03	5.43E+03
7.0	5.47E-01	3.83E+02	1.41E+02	5.21E+02	1.34E+03	3.00E+02	9.96E+02	5.43E+03
7.1	5.38E-01	3.79E+02	1.38E+02	4.96E+02	1.21E+03	2.67E+02	9.52E+02	5.42E+03
7.2	5.32E-01	3.75E+02	1.33E+02	4.76E+02	1.07E+03	2.39E+02	9.18E+02	5.42E+03
7.3	5.25E-01	3.69E+02	1.28E+02	4.61E+02	9.43E+02	2.15E+02	8.90E+02	5.42E+03
7.4	5.19E-01	3.62E+02	1.21E+02	4.47E+02	8.19E+02	1.95E+02	8.68E+02	5.41E+03
7.5	5.16E-01	3.54E+02	1.14E+02	4.37E+02	7.03E+02	1.78E+02	8.50E+02	5.41E+03
7.6	5.13E-01	3.44E+02	1.07E+02	4.29E+02	5.99E+02	1.64E+02	8.36E+02	5.41E+03



pH	Benzoic Acid	2-Chloro- phenol	2,4-Dichloro-phenol	Pentachloro-phenol	2,4,5-Trichloro-phenol	2,4,6-Trichloro-phenol	Dinoseb	2,3,5-TP (Silvex)
7.7	5.09E-01	3.33E+02	9.84E+01	4.23E+02	5.07E+02	1.53E+02	8.25E+02	5.41E+03
7.8	5.06E-01	3.19E+02	8.97E+01	4.18E+02	4.26E+02	1.44E+02	8.17E+02	5.41E+03
7.9	5.06E-01	3.04E+02	8.07E+01	4.14E+02	3.57E+02	1.37E+02	8.10E+02	5.41E+03
8.0	5.06E-01	2.86E+02	7.17E+01	4.10E+02	2.98E+02	1.31E+02	8.04E+02	5.41E+03

(Source: Amended in R00-19(B) at 24 Ill. Reg. \_\_\_\_, effective \_\_\_\_\_)

Section 742.APPENDIX C: Tier 2 Tables and Illustrations

Section 742.TABLE J: Values to be Substituted for  $K_d$  OR  $K_{oc}$ , when Evaluating Inorganics as a Function of pH (cm<sup>3</sup>/g or L/kg or cm<sup>3</sup> /g<sub>water/soil</sub>)

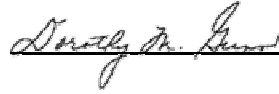
pH	As	Ba	Be	Cd	Cr (+3)	Cr (+6)	Hg	Ni	Ag	Se	Tl	Zn
4.9	2.5E+01	1.1E+01	2.3E+01	1.5E+01	1.2E+03	3.1E+01	4.0E-02	1.6E+01	1.0E-01	1.8E+01	4.4E+01	1.6E+01
5.0	2.5E+01	1.2E+01	2.6E+01	1.7E+01	1.9E+03	3.1E+01	6.0E-02	1.8E+01	1.3E-01	1.7E+01	4.5E+01	1.8E+01
5.1	2.5E+01	1.4E+01	2.8E+01	1.9E+01	3.0E+03	3.0E+01	9.0E-02	2.0E+01	1.6E-01	1.6E+01	4.6E+01	1.9E+01
5.2	2.6E+01	1.5E+01	3.1E+01	2.1E+01	4.9E+03	2.9E+01	1.4E-01	2.2E+01	2.1E-01	1.5E+01	4.7E+01	2.1E+01
5.3	2.6E+01	1.7E+01	3.5E+01	2.3E+01	8.1E+03	2.8E+01	2.0E-01	2.4E+01	2.6E-01	1.4E+01	4.8E+01	2.3E+01
5.4	2.6E+01	1.9E+01	3.8E+01	2.5E+01	1.3E+04	2.7E+01	3.0E-01	2.6E+01	3.3E-01	1.3E+01	5.0E+01	2.5E+01
5.5	2.6E+01	2.1E+01	4.2E+01	2.7E+01	2.1E+04	2.7E+01	4.6E-01	2.8E+01	4.2E-01	1.2E+01	5.1E+01	2.6E+01
5.6	2.6E+01	2.2E+01	4.7E+01	2.9E+01	3.5E+04	2.6E+01	6.9E-01	3.0E+01	5.3E-01	1.1E+01	5.2E+01	2.8E+01
5.7	2.7E+01	2.4E+01	5.3E+01	3.1E+01	5.5E+04	2.5E+01	1.0E-00	3.2E+01	6.7E-01	1.1E+01	5.4E+01	3.0E+01
5.8	2.7E+01	2.6E+01	6.0E+01	3.3E+01	8.7E+04	2.5E+01	1.6E-00	3.4E+01	8.4E-01	9.8E+00	5.5E+01	3.2E+01
5.9	2.7E+01	2.8E+01	6.9E+01	3.5E+01	1.3E+05	2.4E+01	2.3E-00	3.6E+01	1.1E+00	9.2E+00	5.6E+01	3.4E+01
6.0	2.7E+01	3.0E+01	8.2E+01	3.7E+01	2.0E+05	2.3E+01	3.5E-00	3.8E+01	1.3E+00	8.6E+00	5.8E+01	3.6E+01
6.1	2.7E+01	3.1E+01	9.9E+01	4.0E+01	3.0E+05	2.3E+01	5.1E-00	4.0E+01	1.7E+00	8.0E+00	5.9E+01	3.9E+01
6.2	2.8E+01	3.3E+01	1.2E+02	4.2E+01	4.2E+05	2.2E+01	7.5E-00	4.2E+01	2.1E+00	7.5E+00	6.1E+01	4.2E+01
6.3	2.8E+01	3.5E+01	1.6E+02	4.4E+01	5.8E+05	2.2E+01	1.1E+01	4.5E+01	2.7E+00	7.0E+00	6.2E+01	4.4E+01
6.4	2.8E+01	3.6E+01	2.1E+02	4.8E+01	7.7E+05	2.1E+01	1.6E+01	4.7E+01	3.4E+00	6.5E+00	6.4E+01	4.7E+01
6.5	2.8E+01	3.7E+01	2.8E+02	5.2E+01	9.9E+05	2.0E+01	2.2E+01	5.0E+01	4.2E+00	6.1E+00	6.6E+01	5.1E+01
6.6	2.8E+01	3.9E+01	3.9E+02	5.7E+01	1.2E+06	2.0E+01	3.0E+01	5.4E+01	5.3E+00	5.7E+00	6.7E+01	5.4E+01

pH	As	Ba	Be	Cd	Cr (+3)	Cr (+6)	Hg	Ni	Ag	Se	Tl	Zn
6.7	2.9E+01	4.0E+01	5.5E+02	6.4E+01	1.5E+06	1.9E+01	4.0E+01	5.8E+01	6.6E+00	5.3E+00	6.9E+01	5.8E+01
6.8	2.9E+01	4.1E+01	7.9E+02	7.5E+01	1.8E+06	1.9E+01	5.2E+01	6.5E+01	8.3E+00	5.0E+00	7.1E+01	6.2E+01
6.9	2.9E+01	4.2E+01	1.1E+03	9.1E+01	2.1E+06	1.8E+01	6.6E+01	7.4E+01	1.0E+01	4.7E+00	7.3E+01	6.8E+01
7.0	2.9E+01	4.2E+01	1.7E+03	1.1E+02	2.5E+06	1.8E+01	8.2E+01	8.8E+01	1.3E+01	4.3E+00	7.4E+01	7.5E+01
7.1	2.9E+01	4.3E+01	2.5E+03	1.5E+02	2.8E+06	1.7E+01	9.9E+01	1.1E+02	1.6E+01	4.1E+00	7.6E+01	8.3E+01
7.2	3.0E+01	4.4E+01	3.8E+03	2.0E+02	3.1E+06	1.7E+01	1.2E+02	1.4E+02	2.0E+01	3.8E+00	7.8E+01	9.5E+01
7.3	3.0E+01	4.4E+01	5.7E+03	2.8E+02	3.4E+06	1.6E+01	1.3E+02	1.8E+02	2.5E+01	3.5E+00	8.0E+01	1.1E+02
7.4	3.0E+01	4.5E+01	8.6E+03	4.0E+02	3.7E+06	1.6E+01	1.5E+02	2.5E+02	3.1E+01	3.3E+00	8.2E+01	1.3E+02
7.5	3.0E+01	4.6E+01	1.3E+04	5.9E+02	3.9E+06	1.6E+01	1.6E+02	3.5E+02	3.9E+01	3.1E+00	8.5E+01	1.6E+02
7.6	3.1E+01	4.6E+01	2.0E+04	8.7E+02	4.1E+06	1.5E+01	1.7E+02	4.9E+02	4.8E+01	2.9E+00	8.7E+01	1.9E+02
7.7	3.1E+01	4.7E+01	3.0E+04	1.3E+03	4.2E+06	1.5E+01	1.8E+02	7.0E+02	5.9E+01	2.7E+00	8.9E+01	2.4E+02
7.8	3.1E+01	4.9E+01	4.6E+04	1.9E+03	4.3E+06	1.4E+01	1.9E+02	9.9E+02	7.3E+01	2.5E+00	9.1E+01	3.1E+02
7.9	3.1E+01	5.0E+01	6.9E+04	2.9E+03	4.3E+06	1.4E+01	1.9E+02	1.4E+03	8.9E+01	2.4E+00	9.4E+01	4.0E+02
8.0	3.1E+01	5.2E+01	1.0E+05	4.3E+03	4.3E+06	1.4E+01	2.0E+02	1.9E+03	1.1E+02	2.2E+00	9.6E+01	5.3E+02

(Source: Amended in R00-19(B) at 24 Ill. Reg. \_\_\_\_, effective \_\_\_\_\_)

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, do hereby certify that the above opinion and order was adopted on the 27<sup>th</sup> day of July, 2000 by a vote of 6-0.

A handwritten signature in cursive script, reading "Dorothy M. Gunn", written in black ink.

Dorothy M. Gunn, Clerk  
Illinois Pollution Control Board