

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 (<i>o</i> -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 _{sat} (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
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)	410320
	Ionizable Organics	
95-57-8	2-Chlorophenol	53,000

(Source: Amended ~~m R00-19(B)~~ at 24-25 Ill. Reg. ____, effective _____)

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

Nn	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 24-25 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
 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
 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)
 1,3-Dichloropropylene (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

Beryllium (Ingestion only)
 Endothall
 Hexachlorocyclopentadiene (Ingestion only)
 Methyl bromide (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 24-25 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 R90-19(B)~~ at 24-25 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	<u>0.00040.014</u>	0.00005	<u>0.00040.014</u>
Benzo(a)pyrene	0.0002	<u>0.0000120.000012</u>	0.00023
Bis(2-chloroethyl)ether	0.01	0.000077	0.01
<u>Bis(2-ethylhexyl)phthalate (Di(2-ethylhexyl)phthalate)</u>	<u>0.006</u>	<u>0.0061</u>	<u>0.0027</u>
Carbon Tetrachloride	0.005	0.00066	<u>0.00030.0001</u>
Chlordane	0.002	0.000066	0.00014
DDD	<u>0.014</u>	<u>0.00023</u>	<u>0.014</u>
DDE	<u>0.01</u>	<u>0.00023</u>	<u>0.01</u>
DDT	<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	<u>0.00020.001</u>
1,2-dibromoethane	0.00005	0.000010	<u>0.000050.001</u>
3,3'-Dichlorobenzidine	0.02	0.00019	0.02
1,2-Dichloroethane	0.005	0.00094	0.0003
Dieldrin	<u>0.00020.009</u>	0.000053	<u>0.00020.009</u>
<u>2,6-Dinitrotoluene</u>	<u>0.00031</u>	<u>0.0001</u>	<u>0.0031</u>
Heptachlor	0.0004	0.000019	<u>0.00030.013</u>
Heptachlor epoxide	0.0002	0.000094	<u>0.00020.015</u>
Hexachlorobenzene	0.00006	0.000053	0.00006
Alpha-HCH	<u>0.00030.00011</u>	0.000014	<u>0.00030.00011</u>
Tetrachloroethylene	0.005	0.0016	<u>0.00040.0004</u>
Toxaphene	0.003	0.000077	0.00086
Vinyl chloride	0.002	0.000045	<u>0.00060.0002</u>
<u>Ionizable Organics</u>			
N-Nitrosodi-n-propylamine	<u>0.040.0018</u>	0.000012	<u>0.040.0018</u>
Pentachlorophenol	0.001	0.000071	<u>0.00040.000076</u>
<u>2,4,6-Trichlorophenol</u>	<u>0.01</u>	<u>0.007</u>	<u>0.01</u>

Inorganics Organics

Arsenic	0.05	0.000057	0.001
Beryllium	0.004	0.00002	0.004

(Source: Amended § R00-19CB at 24-25 Ill. Reg., effective _____)

Section 742.APPENDIX B: Tier 1 Tables and Illustrations

Section 742.TABLE A: Tier 1 Soil Remediation Objectives^a for Residential Properties

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)
83-32-9	Acenaphthene	4,700 ^b	--- ^c		570 ^b	2,900	*
67-64-1	Acetone	7,800 ^b	100,000 ^d		16 ^b	16	*
15972-60-8	Alachlor ^o	8 ^e	--- ^c		0.04	0.2	NA
116-06-3	Aldicarb ^o	78 ^b	--- ^c		0.013	0.07	NA
309-00-2	Aldrin	0.04 ^e	3 ^e		0.5 ^e	2.5	0.94
120-12-7	Anthracene	23,000 ^b	--- ^c		12,000 ^b	59,000	*
1912-24-9	Atrazine ^o	2700 ^b	--- ^c		0.066	0.33	NA
71-43-2	Benzene	22 ^a 12 ^e	0.8 ^e		0.03	0.17	*
56-55-3	Benzo(a)anthracene	0.9 ^e	--- ^c		2	8	*
205-99-2	Benzo(b)fluoranthene	0.9 ^e	--- ^c		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(k)fluoranthene	9 ^c	--- ^c	49	250	*		
50-32-8	Benzo(a)pyrene	0.09 ^{ef}	--- ^c	8	82	*		
111-44-4	Bis(2-chloroethyl)ether	0.6 ^c	0.2 ^{ef}	0.0004 ^{ef}	0.0004	0.66		
117-81-7	Bis(2-ethylhexyl)phthalate	46 ^c	31,000 ^d	3,600	31,000 ^d	*		
75-27-4	Bromodichloromethane (Dichlorobromomethane)	10 ^e	3,000 ^d	0.6	0.6	*		
75-25-2	Bromoform	81 ^c	53 ^c	0.8	0.8	*		
71-36-3	Butanol	7,800 ^b	10,000 ^c	17 ^b	17	NA		
85-68-7	Butyl benzyl phthalate	16,000 ^b	930 ^d	930 ^d	930 ^d	*		
86-74-8	Carbazole	32 ^c	--- ^c	0.6 ^c	2.8	NA		
1563-66-2	Carbofuran ^o	390 ^b	--- ^c	0.22	1.1	NA		
75-15-0	Carbon disulfide	7,800 ^b	720 ^d	32 ^b	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 ^e	0.3 ^e	0.07	0.33		*	
57-74-9	Chlordane	0.51.8 ^e	2072 ^e	10	48		*	
106-47-8	4-Chloroaniline (<i>p</i> -Chloroaniline)	310 ^b	--- ^c	0.7 ^b	0.7		1.3*	
108-90-7	Chlorobenzene (Monochlorobenzene)	1,600 ^b	130 ^b	1	6.5		*	
124-48-1	Chlorodibromomethane (Dibromochloromethane)	1,600 ^b	1,300 ^d	0.4	0.4		*	
67-66-3	Chloroform	100 ^e	0.3 ^e	0.6	2.9		*	
218-01-9	Chrysene	88 ^e	--- ^c	160	800		*	
94-75-7	2,4-D ^e	780 ^b	--- ^c	1.5	7.7		*	
75-99-0	Dalapon ^o	2,300 ^b	--- ^c	0.85	8.5		1.2*	
72-54-8	DDD	3 ^e	--- ^c	16 ^e	80		*	
72-55-9	DDE	2 ^e	--- ^c	54 ^e	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)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)	
50-29-3	DDT	2 ^e	--- ^s	32 ^e	160			*	
53-70-3	Dibenzo(<i>a,h</i>)anthracene	0.09 ^{ef}	--- ^c	2	7.6			*	
96-12-8	1,2-Dibromo-3-chloropropane	0.46 ^e	11 ^b	0.002	0.002			*	
106-93-4	1,2-Dibromoethane (Ethylene dibromide)	0.0075 ^e	0.17 ^e	0.0004	0.004			0.005	
84-74-2	Di- <i>n</i> -butyl phthalate	7,800 ^b	2,300 ^d	2,300 ^d	2,300 ^d			*	
95-50-1	1,2-Dichlorobenzene (<i>o</i> -Dichlorobenzene)	7,000 ^b	560 ^d	17	43			*	
106-46-7	1,4-Dichlorobenzene (<i>p</i> -Dichlorobenzene)	--- ^c	--- ^s 11.00 ^b	2	11			*	
91-94-1	3,3'-Dichlorobenzidine	1 ^c	--- ^c	0.007 ^{ef}	0.033			1.3	
75-34-3	1,1-Dichloroethane	7,800 ^b	1,300 ^b	23 ^b	110			*	

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)			
107-06-2	1,2-Dichloroethane (Ethylene dichloride)	7 ^e	0.4 ^e	0.02	0.1		*	
75-35-4	1,1-Dichloroethylene	700 ^b	1,500 ^d	0.06	0.3		*	
156-59-2	<i>cis</i> -1,2-Dichloroethylene	780 ^b	1,200 ^d	0.4	1.1		*	
156-60-5	<i>trans</i> -1,2-Dichloroethylene	1,600 ^b	3,100 ^d	0.7	3.4		*	
78-87-5	1,2-Dichloropropane	9 ^e	15 ^b	0.03	0.15		*	
542-75-6	1,3-Dichloropropene (1,3-Dichloropropylene, <i>cis</i> + <i>trans</i>)	4,64 ^e	9,11 ^b	0.004 ^e	0.02		0.005	
60-57-1	Dieldrin ⁿ	0.04 ^e	1 ^e	0.004 ^e	0.02		0.603	
84-66-2	Diethyl phthalate	63,000 ^b	2,000 ^d	470 ^b	470		*	
105-67-9	2,4-Dimethylphenol	1,600 ^b	--- ^c	9 ^b	9		*	
121-14-2	2,4-Dinitrotoluene	0.9 ^e	--- ^c	0.0008 ^{e,f}	0.0008		0.0130, 250	

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)	ADL (mg/kg)		
606-20-2	2,6-Dinitrotoluene	0.9 ^e	--- ^c	0.0007 ^{e,f}	0.0007	0.00670.260		
117-84-0	Di- <i>n</i> -octyl phthalate	1,600 ^b	10,000 ^d	10,000 ^d	10,000 ^d	*	*	
115-29-7	Endosulfan ^e	470 ^b	--- ^c	18 ^b	90	*	*	
145-73-3	Endothall ^c	1,600 ^b	--- ^c	0.4	0.4	NA	NA	
72-20-8	Endrin	23 ^b	--- ^c	1	5	*	*	
100-41-4	Ethylbenzene	7,800 ^b	400 ^d	13	19	*	*	
206-44-0	Fluoranthene	3,100 ^b	--- ^c	4,300 ^b	21,000	*	*	
86-73-7	Fluorene	3,100 ^b	--- ^c	560 ^b	2,800	*	*	
76-44-8	Heptachlor	0.1 ^e	0.1 ^e	23	110	0.871	0.871	
1024-57-3	Heptachlor epoxide	0.07 ^e	5 ^e	0.7	3.3	1.005	1.005	
118-74-1	Hexachlorobenzene	0.4 ^e	1 ^e	2	11	*	*	
319-84-6	<i>alpha</i> -HCH (<i>alpha</i> -BHC)	0.1 ^e	0.8 ^e	0.0005 ^{e,f}	0.003	0.0020.0074	0.0020.0074	

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) ⁿ	0.5 ^e	--- ^c		0.009	0.047	*	
77-47-4	Hexachlorocyclopentadiene	550 ^b	10 ^b		400	2,200 ^d	*	
67-72-1	Hexachloroethane	78 ^b	--- ^c		0.5 ^b	2.6	*	
193-39-5	Indeno(1,2,3- <i>c,d</i>)pyrene	0.9 ^e	--- ^c		14	69	*	
78-59-1	Isophorone	15,600 ^b	4,600 ^d		8 ^b	8	*	
72-43-5	Methoxychlor ^e	390 ^b	--- ^c		160	780	*	
74-83-9	Methyl bromide (Bromomethane)	110 ^b	10 ^b		0.2 ^b	1.2	*	
75-09-2	Methylene chloride (Dichloromethane)	85 ^e	13 ^e		0.02 ^e	0.2	*	
95-48-7	2-Methylphenol (<i>o</i> -Cresol)	3,900 ^b	--- ^c		15 ^b	15	*	
91-20-3	Naphthalene	3,100-1,600 ^b	--- ^e 170 ^b		84-12 ^b	420-18	*	
98-95-3	Nitrobenzene	39 ^b	92 ^b		0.1 ^{b,f}	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	N-Nitrosodiphenylamine	130 ^e	--- ^c	1 ^e	5.6		*	
621-64-7	N-Nitrosodi-n-propylamine	0.09 ^{s,f}	--- ^c	0.00005 ^{s,f}	0.00005		0.660,0018	
108-95-2	Phenol	47,000 ^b	--- ^c	100 ^b	100		*	
1918-02-1	Picloram ^o	5,500 ^b	--- ^c	2	20		NA	
1336-36-3	Polychlorinated biphenyls (PCBs) ⁿ	1+10 ^h	--- ^{c,h}	--- ^h	--- ^h		*	
129-00-0	Pyrene	2,300 ^b	--- ^c	4,200 ^b	21,000		*	
122-34-9	Simazine ^o	390 ^b	--- ^c	0.04	0.37		NA	
100-42-5	Styrene	16,000 ^b	1,500 ^d	4	18		*	
127-18-4	Tetrachloroethylene (Perchloroethylene)	12 ^e	11 ^e	0.06	0.3		*	
108-88-3	Toluene	16,000 ^b	650 ^d	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 ^a	0.6 ^e	89 ^e		31	150	*	
120-82-1	1,2,4-Trichlorobenzene	780 ^b	3,200 ^b		5	53	*	
71-55-6	1,1,1-Trichloroethane	--- ^c	1,200 ^d		2	9.6	*	
79-00-5	1,1,2-Trichloroethane	310 ^b	1,800 ^d		0.02	0.3	*	
79-01-6	Trichloroethylene	58 ^e	5 ^e		0.06	0.3	*	
108-05-4	Vinyl acetate	78,000 ^b	1,000 ^b		170 ^b	170	*	
75-01-4	Vinyl chloride	0.3 0.46 ^b	0.03 0.28 ^b		0.01 ^f	0.07	*	
108-38-3	m-Xylene	160,000 ^b	420 ^d		210	210	*	
95-47-6	o-Xylene	160,000 ^b	410 ^d		190	190	*	
106-42-3	p-Xylene	160,000 ^b	460 ^d		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 ^b	410 ^d 320 ^d	150	150	*	
	Ionizable Organics						
65-85-0	Benzoic Acid	310,000 ^b	--- ^c	400 ^{b,i}	400 ⁱ	*	
95-57-8	2-Chlorophenol	390 ^b	53,000 ^d	4 ^{b,i}	4 ⁱ	*	
120-83-2	2,4-Dichlorophenol	230 ^b	--- ^c	1 ^{b,i}	1 ⁱ	*	
51-28-5	2,4-Dinitrophenol	160 ^b	--- ^c	0.2 ^{b,f}	0.2	3.3	
88-85-7	Dinoseb ^o	78 ^b	--- ^c	0.34 ^{b,i}	3.4 ⁱ	*	
87-86-5	Pentachlorophenol	3 ^{s,j}	--- ^c	0.03 ^{f,i}	0.14 ⁱ	2.4 [*]	
93-72-1	2,4,5-TP (Silvex)	630 ^b	--- ^c	11 ⁱ	55 ⁱ	*	
95-95-4	2,4,5-Trichlorophenol	7,800 ^b	--- ^c	270 ^{b,i}	1,400 ⁱ	*	
88-06-2	2,4,6 Trichlorophenol	58 ^c	200 ^e	0.2 ^{s,f,i}	0.77 ⁱ	0-430.66	

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)		
	Inorganics							
7440-36-0	Antimony	31 ^b	--- ^c		0.006 ^m	0.024 ^m	*	
7440-38-2	Arsenic ^{ln}	0.4 ^{e,t}	750 ^e		0.05 ^m	0.2 ^m	*	
7440-39-3	Barium	5,500 ^b	690,000 ^b		2.0 ^m	2.0 ^m	*	
7440-41-7	Beryllium	0.4 ^{e,t} 160 ^b	1,300 ^e		0.004 ^m	0.5 ^m	*	
7440-42-8	Boron	7,000 ^b	--- ^s		2.0 ^m	2.0 ^m	*	
7440-43-9	Cadmium ^{ln}	78 ^{b,r}	1,800 ^e		0.005 ^m	0.05 ^m	*	
16887-00-6	Chloride	--- ^c	--- ^c		200 ^m	200 ^m	*	
7440-47-3	Chromium, total	390 230 ^b	270 ^e		0.1 ^m	1.0 ^m	*	
16065-83-1	Chromium, ion, trivalent	78,000 120,000 ^b	--- ^c		--- ^s	--- ^s	*	
18540-29-9	Chromium, ion, hexavalent	390 230 ^b	270 ^e		---	---	*	
7440-48-4	Cobalt	4,700 ^b	--- ^c		1.0 ^m	1.0 ^m	*	

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 ⁱ	2,900 ^b	--- ^c		0.65 ^m	0.65 ^m	*	
57-12-5	Cyanide (amenable)	1,600 ^b	--- ^c		0.2 ^{q,m}	0.6 ^{q,m}	*	
7782-41-4	Fluoride	4,700 ^b	--- ^c		4.0 ^m	4.0 ^m	*	
15438-31-0	Iron	--- ^c	--- ^c		5.0 ^m	5.0 ^m	*	
7439-92-1	Lead	400 ^k	--- ^c		0.0075 ^m	0.1 ^m	*	
7439-96-5	Manganese	3,700 ^b	69,000 ^b		0.15 ^m	10.0 ^m	*	
7439-97-6	Mercury ^{i,n,s}	23 ^{b,s}	10 ^{b,t}		0.002 ^m	0.01 ^m	*	
7440-02-0	Nickel ^l	1,600 ^b	13,000 ^e		0.1 ^m	2.0 ^m	*	
14797-55-8	Nitrate as N ^p	130,000 ^b	--- ^c		10.0 ^q	100 ^q	*	
7782-49-2	Selenium ^{l,n}	390 ^b	--- ^c		0.05 ^m	0.05 ^m	*	

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 ^b	--- ^c		0.05 ^m	---	*	
14808-79-8	Sulfate	--- ^c	--- ^c		400 ^m	400 ^m	*	
7440-28-0	Thallium	6.3 ^{b,u}	--- ^c		0.002 ^m	0.02 ^m	*	
7440-62-2	Vanadium	550 ^b	--- ^c		0.049 ^m	---0.1 ^m	*	
7440-66-6	Zinc ^l	23,000 ^b	--- ^c		5.0 ^m	10 ^m	*	

"*" 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

- ^a Soil remediation objectives based on human health criteria only.
- ^b Calculated values correspond to a target hazard quotient of 1.
- ^c No toxicity criteria available for the route of exposure.
- ^d Soil saturation concentration ($C_{(fsat)}$) = 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.
- ^e Calculated values correspond to a cancer risk level of 1 in 1,000,000.
- ^f Level is at or below Contract Laboratory Program required quantitation limit for Regular Analytical Services (RAS).
- ^g Chemical-specific properties are such that this route is not of concern at any soil contaminant concentration.
- ^h 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 over. 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.
- ⁱ 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.
- ^j Ingestion soil remediation objective adjusted by a factor of 0.5 to account for dermal route.
- ^k 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.
- ^l Potential for soil-plant-human exposure.
- ^m 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.
- ⁿ The Agency reserves the right to evaluate the potential for remaining contaminant concentrations to pose significant threats to crops, livestock, or wildlife.
- ^o 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.
- ^p 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.
- ^q The TCLP extraction must be done using water at a pH of 7.0.
- ^r Value based on dietary Reference Dose.
- ^s 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).
- ^t 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.
- ^u Value based on Reference Dose for ~~Barium~~ sulfate (CAS No. 7446-18-6).

(Source: Amended ~~in R00-19(B)~~ at 24 25 Ill. Reg. _____, effective _____)

Section 742.APPENDIX B: Tier 1 Tables and Illustrations

Section 742. Table B: Tier 1 Soil Remediation Objectives^a 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)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
83-32-9	Acenaphthene	120,000 ^b	----- ^c	----- ^c	120,000 ^b	----- ^c	570 ^b	2,900	*	
67-64-1	Acetone	200,000 ^b	100,000 ^d	100,000 ^d	200,000 ^b	100,000 ^d	16 ^b	16	*	
15972-60-8	Alachlor ^o	72 ^e	----- ^c	----- ^c	1,600 ^e	----- ^c	0.04	0.2	NA	
116-06-3	Aldicarb ^o	2,000 ^b	----- ^c	----- ^c	200 ^b	----- ^c	0.013	0.07	NA	
309-00-2	Aldrin	0.3 ^e	6.6 ^e	9.3 ^e	6.1 ^b	9.3 ^e	0.5 ^e	2.5	0.94	
120-12-7	Anthracene	610,000 ^b	----- ^c	----- ^c	610,000 ^b	----- ^c	12,000 ^b	59,000	*	
1912-24-9	Atrazine ^o	72,000 ^b	----- ^c	----- ^c	7,100 ^b	----- ^c	0.066	0.33	NA	
71-43-2	Benzene	200 ^a 100 ^e	1-51.6 ^e	2-12.2 ^e	4-300 ^a 2,300 ^e	2-12.2 ^e	0.03	0.17	*	

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)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
56-55-3	Benzo(a)anthracene	8 ^e	----- ^c	170 ^e	----- ^c	----- ^c	2	8	*	
205-99-2	Benzo(b)fluoranthene	8 ^e	----- ^c	170 ^e	----- ^c	----- ^c	5	25	*	
207-08-9	Benzo(k)fluoranthene	78 ^e	----- ^c	1,700 ^e	----- ^c	----- ^c	49	250	*	
50-32-8	Benzo(a)pyrene	0.8 ^e	----- ^c	17 ^e	----- ^c	----- ^c	8	82	*	
111-44-4	Bis(2-chloroethyl)ether	5 ^e	0.47 ^e	75 ^e	0.66 ^e	0.66 ^e	0.0004 ^{e,f}	0.0004	0.66	
117-81-7	Bis(2-ethylhexyl)phthalate	410 ^e	31,000 ^d	4,100 ^b	31,000 ^d	31,000 ^d	3,600	31,000 ^d	*	
75-27-4	Bromodichloromethane (Dichlorobromomethane)	92 ^e	3,000 ^d	2,000 ^e	3,000 ^d	3,000 ^d	0.6	0.6	*	
75-25-2	Bromoform	720 ^e	100 ^e	16,000 ^e	140 ^e	140 ^e	0.8	0.8	*	
71-36-3	Butanol	200,000 ^b	10,000 ^d	200,000 ^b	10,000 ^d	10,000 ^d	17 ^b	17	NA	
85-68-7	Butyl benzyl phthalate	410,000 ^b	930 ^d	410,000 ^b	930 ^d	930 ^d	930 ^d	930 ^d	*	
86-74-8	Carbazole	290 ^e	----- ^c	6,200 ^e	----- ^c	----- ^c	0.6 ^e	2.8	NA	

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)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)	
1563-66-2	Carbofuran ^e	10,000 ^e	----- ^c	1,000 ^b	----- ^c	0.22	1.1	NA		
75-15-0	Carbon disulfide	200,000 ^b	720 ^d	20,000 ^b	9.0 ^b	32 ^b	160	*		
56-23-5	Carbon tetrachloride	44 ^e	0.64 ^e	410 ^b	0.90 ^e	0.07	0.33	*		
57-74-9	Chlordane	41.6 ^e	38140 ^e	42100 ^b	53 ^e 22 ^b	10	48	*		
106-47-8	4 - Chloroaniline (<i>p</i> -Chloroaniline)	8,200 ^b	----- ^c	820 ^b	----- ^c	0.7 ^b	0.7	43 ⁺		
108-90-7	Chlorobenzene (Monochlorobenzene)	41,000 ^b	210 ^b	4,100 ^b	1.3 ^b	1	6.5	*		
124-48-1	Chlorodibromomethane (Dibromochloromethane)	41,000 ^b	1,300 ^d	41,000 ^b	1,300 ^d	0.4	0.4	*		
67-66-3	Chloroform	940 ^e	0.54 ^e	2,000 ^b	0.76 ^e	0.6	2.9	*		
218-01-9	Chrysene	780 ^e	----- ^c	17,000 ^e	----- ^c	160	800	*		
94-75-7	2,4-D ^e	20,000 ^b	----- ^c	2,000 ^b	----- ^c	1.5	7.7	*		

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)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
75-99-0	Dalapon ^e	61,000 ^b	----- ^c	----- ^c	6,100 ^b	----- ^c	0.85	8.5	1-2*	
72-54-8	DDD	24 ^e	----- ^c	----- ^c	520 ^e	----- ^c	16 ^e	80	*	
72-55-9	DDE	17 ^e	----- ^c	----- ^c	370 ^e	----- ^c	54 ^e	270	*	
50-29-3	DDT	17 ^e	1,500 ^e	----- ^c	100 ^b	2,100 ^e	32 ^e	160	*	
53-70-3	Dibenzo(<i>a,h</i>)anthracene	0.8 ^e	----- ^c	----- ^c	17 ^e	----- ^c	2	7.6	*	
96-12-8	1,2-Dibromo-3-chloropropane	4 ^e	17 ^b	----- ^c	89 ^e	0.11 ^b	0.002	0.002	*	
106-93-4	1,2-Dibromoethane (Ethylene dibromide)	0.07 ^e	0.32 ^e	----- ^c	1.5 ^e	0.45 ^e	0.0004	0.004	0.005	
84-74-2	Di- <i>n</i> -butyl phthalate	200,000 ^b	2,300 ^d	----- ^c	200,000 ^b	2,300 ^d	2,300 ^d	2,300 ^d	*	
95-50-1	1,2-Dichlorobenzene (<i>o</i> -Dichlorobenzene)	180,000 ^b	560 ^d	----- ^c	18,000 ^b	310 ^b	17	43	*	
106-46-7	1,4-Dichlorobenzene (<i>p</i> -Dichlorobenzene)	----- ^c	17,000 ^b	----- ^c	----- ^c	340 ^b	2	11	*	

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/kg)	Class II (mg/kg)	ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)			
91-94-1	3,3'-Dichlorobenzidine	13 ^e	----- ^c	280 ^e	----- ^c	0.007 ^{e,f}	0.033	1.3		
75-34-3	1,1-Dichloroethane	200,000 ^b	1,700 ^d	200,000 ^b	130 ^b	23 ^b	110	*		
107-06-2	1,2-Dichloroethane (Ethylene dichloride)	63 ^e	0.70 ^e	1,400 ^e	0.99 ^e	0.02	0.1	*		
75-35-4	1,1-Dichloroethylene	18,000 ^b	1,500 ^d	1,800 ^b	1,500^b 300 ^b	0.06	0.3	*		
156-59-2	<i>cis</i> -1,2-Dichloroethylene	20,000 ^b	1,200 ^d	20,000 ^b	1,200 ^d	0.4	1.1	*		
156-60-5	<i>trans</i> -1,2-Dichloroethylene	41,000 ^b	3,100 ^d	41,000 ^b	3,100 ^d	0.7	3.4	*		
78-87-5	1,2-Dichloropropane	84 ^e	23 ^b	1,800 ^e	0.50 ^b	0.03	0.15	*		
542-75-6	1,3-Dichloropropene (1,3-Dichloropropylene, <i>cis</i> + <i>trans</i>)	33^e 57 ^e	0.23^d 2.1 ^e	610^b 1,200 ^e	0.33^b 0.39 ^b	0.004 ^e	0.02	0.005		
60-57-1	Dieldrin ⁿ	0.4 ^e	2.2 ^e	7.8 ^e	3.1 ^e	0.004 ^e	0.02	0.0013 0.603		
84-66-2	Diethyl phthalate	1,000,000 ^b	2,000 ^d	1,000,000 ^b	2,000 ^d	470 ^b	470	*		

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)	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 ^b	----- ^c	41,000 ^b	----- ^c	----- ^c	9 ^b		*	
121-14-2	2,4-Dinitrotoluene	8.4 ^e	----- ^c	180 ^e	----- ^c	----- ^c	0.0008 ^{e,f}	0.0008	0.013 0.250	
606-20-2	2,6-Dinitrotoluene	8.4 ^e	----- ^c	180 ^e	----- ^c	----- ^c	0.0007 ^{e,f}	0.0007	0.0067 0.260	
117-84-0	Di-n-octyl phthalate	41,000 ^e	10,000 ^d	4,100 ^b	10,000 ^d	10,000 ^d	10,000 ^d	10,000 ^d	*	
115-29-7	Erdosulfan ^e	12,000 ^b	----- ^c	1,200 ^b	----- ^c	----- ^c	18 ^b	90	*	
145-73-3	Erdothall ^o	41,000 ^e	----- ^c	4,100 ^b	----- ^c	----- ^c	0.4	0.4	NA	
72-20-8	Erdirin	610 ^b	----- ^c	61 ^b	----- ^c	----- ^c	1	5	*	
100-41-4	Ethylbenzene	200,000 ^b	400 ^d	20,000 ^b	400 ^d	58 ^b	13	19	*	
206-44-0	Fluoranthene	82,000 ^b	----- ^c	82,000 ^b	----- ^c	----- ^c	4,300 ^b	21,000	*	
86-73-7	Fluorene	82,000 ^b	----- ^c	82,000 ^b	----- ^c	----- ^c	560 ^b	2,800	*	
76-44-8	Heptachlor	1 ^e	11 ^e	28 ^e	11 ^e	16 ^e	23	110	*	

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)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
1024-57-3	Heptachlor epoxide	0.6 ^e	9.2 ^e	2.7 ^b	13 ^e	0.7	3.3	1.005		
118-74-1	Hexachlorobenzene	4 ^e	1.8 ^e	78 ^e	2.6 ^e	2	11	*		
319-84-6	<i>alpha</i> -HCH (<i>alpha</i> -BHC)	0.9 ^e	1.5 ^e	20 ^e	2.1 ^e	0.0005 ^{e,f}	0.003	0.002 0.0074		
58-89-9	<i>gamma</i> -HCH (Lindane) ^r	4 ^e	----- ^c	96 ^e	----- ^c	0.009	0.047	*		
77-47-4	Hexachlorocyclopentadiene	14,000 ^b	16 ^b	14,000 ^b	1.1 ^b	400	2,200 ^d	*		
67-72-1	Hexachloroethane	2,000 ^t	----- ^c	2,000 ^b	----- ^c	0.5 ^b	2.6	*		
193-39-5	Indeno(1,2,3- <i>c,d</i>)pyrene	8 ^e	----- ^c	170 ^e	----- ^c	14	69	*		
78-59-1	Isophorone	410,000 ^b	4,600 ^d	410,000 ^b	4,600 ^d	8 ^b	8	*		
72-43-5	Methoxychlor ^e	10,000 ^b	----- ^c	1,000 ^b	----- ^c	160	780	*		
74-83-9	Methyl bromide (Bromomethane)	2,900 ^t	15 ^b	1,000 ^b	3.9 ^b	0.2 ^b	1.2	*		

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)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (rrg/kg)
75-09-2	Methylene chloride (Dichloromethane)	760 ^e	24 ^e	12,000 ^b	34 ^e	0.02 ^e	0.2	*		
95-48-7	2-Methylphenol (<i>o</i> -Cresol)	100,000 ^b	----- ^c	100,000 ^b	----- ^c	15 ^b	15	*		
86-30-6	<i>N</i> -Nitrosodiphenylamine	1,200 ^e	----- ^c	25,000 ^e	----- ^c	1 ^e	5.6	0.66*		
621-64-7	<i>N</i> -Nitrosodi- <i>n</i> -propylamine	0.8 ^e	----- ^c	18 ^e	----- ^c	0.00005 ^{e,f}	0.00005	0.66 0.0018		
91-20-3	Naphthalene	82,000-1,000 ^b	----- ^e 270 ^b	8,200-100 ^b	----- ^e 1.8 ^b	8412 ^b	420-18	*		
98-95-3	Nitrobenzene	1,000 ^b	140 ^b	1,000 ^b	9.4 ^b	0.1 ^{b,f}	0.1	0.26		
108-95-2	Phenol	1,000,000 ^b	----- ^c	120,000 ^b	----- ^c	100 ^b	100	*		
1918-02-1	Picloram ^o	140,000 ^b	----- ^c	14,000 ^b	----- ^c	2	20	NA		
1336-36-3	Polychlorinated biphenyls (PCBs) ⁿ	14-14,25 ^b	----- ^{c,h}	1 ^b	----- ^{c,h}	----- ^b	----- ^b	*		
129-00-0	Pyrene	61,000 ^b	----- ^c	61,000 ^b	----- ^c	4,200 ^b	21,000	*		

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)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)	
122-34-9	Simazine ^o	10,000 ^c	----- ^c	1,000 ^b	----- ^c	430 ^b	0.04	0.37	NA			
100-42-5	Styrene	410,000 ^b	1,500 ^d	41,000 ^b	430 ^b	28 ^e	4	18	*			
127-18-4	Tetrachloroethylene (Perchloroethylene)	110 ^e	20 ^e	2,400 ^e	28 ^e	42 ^b	0.06	0.3	*			
108-88-3	Toluene	410,000 ^b	650 ^d	410,000 ^b	42 ^b	240 ^e	12	29	*			
8001-35-2	Toxaphene ⁿ	5.2 ^e	170 ^e	110 ^e	240 ^e	920 ^b	31	150	*			
120-82-1	1,2,4-Trichlorobenzene	20,000 ^b	3,200 ^d	2,000 ^b	920 ^b	----- ^c	5	53	*			
71-55-6	1,1,1-Trichloroethane	----- ^c	1,200 ^d	----- ^c	1,200 ^d	1,800 ^d	2	9.6	*			
79-00-5	1,1,2-Trichloroethane	8,200 ^b	1,800 ^d	8,200 ^b	1,800 ^d	12 ^e	0.02	0.3	*			
79-01-6	Trichloroethylene	520 ^e	8.9 ^e	1,200 ^b	12 ^e	200,000 ^b	0.06	0.3	*			
108-05-4	Vinyl acetate	1,000,000 ^b	1,600 ^b	200,000 ^b	10 ^b	-----	170 ^b	170	*			

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)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
75-01-4	Vinyl chloride	379 ^a	0.06 ^{a,i}	65 ^{a,i}	0.08 ^{a,i}	0.01 ^f	0.07	*		
108-38-3	m-Xylene	1,000,000	420 ^d	410,000 ^b	420 ^d	210	210	*		
95-47-6	o-Xylene	1,000,000	410 ^d	410,000 ^b	410 ^d	190	190	*		
106-42-3	p-Xylene	1,000,000	460 ^d	410,000 ^b	460 ^d	200	200	*		
1330-20-7	Xylenes (total)	1,000,000 ^b	410 ^d 320 ^d	410,000 ^b	410 ^d 320 ^d	150	150	*		
	Ionizable Organics									
65-85-0	Benzoic Acid	1,000,000 ^b	----- ^c	820,000 ^b	----- ^c	400 ^{b,i}	400 ⁱ	*		
95-57-8	2-Chlorophenol	10,000 ^b	53,000 ^d	10,000 ^b	53,000 ^d	4 ^{b,i}	20 ⁱ	*		
120-83-2	2,4-Dichlorophenol	6,100 ^b	----- ^c	610 ^b	----- ^c	1 ^{b,i}	1 ⁱ	*		
51-28-5	2,4-Dinitrophenol	4,100 ^b	----- ^c	410 ^b	----- ^c	0.2 ^{b,f,i}	0.2 ^j	3.3		
88-85-7	Dinoseb ^o	2,000 ^b	----- ^c	200 ^b	----- ^c	0.34 ^{b,i}	3.4 ⁱ	*		

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)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
87-86-5	Pentachlorophenol	24 ^{ej}	----- ^c	520 ^{ej}	----- ^c	0.03 ^{fi}	0.14 ⁱ	2.4 [*]		
93-72-1	2,4,5-TP (Silvex)	16,000 ^b	----- ^c	1,600 ^b	----- ^c	11 ⁱ	55 ⁱ	*		
95-95-4	2,4,5-Trichlorophenol	200,000 ^b	----- ^c	200,000 ^b	----- ^c	270 ^{bi}	1,400 ⁱ	*		
88-06-2	2,4,6-Trichlorophenol	520 ^e	390 ^e	11,000 ^e	540 ^e	0.2 ^{efi}	0.77 ⁱ	0.430.66		

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)	ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Inhalation (mg/kg)				
	Inorganics									
7440-36-0	Antimony	82 ^b	----- ^c	82 ^b	----- ^c	----- ^c	0.006 ^m	0.024 ^m	*	
7440-38-2	Arsenic ^{1,n}	3 ^{s,t}	1,200 ^e	61 ^b	25,000 ^e	25,000 ^e	0.05 ^m	0.2 ^m	*	
7440-39-3	Barium	140,000 ^t	910,000 ^b	14,000 ^b	870,000 ^b	870,000 ^b	2.0 ^m	2.0 ^m	*	
7440-41-7	Beryllium	4 ^{s,t} 4.10 ^b	2,100 ^e	29 ^s 410 ^b	44,000 ^e	44,000 ^e	0.004 ^m	0.5 ^m	*	
7440-42-8	Boron	180,000 ^t	1,000,000	18,000 ^b	1,000,000	1,000,000	2.0 ^m	2.0 ^m	*	
7440-43-9	Cadmium ^{1,n}	2,000 ^{b,r}	2,800 ^e	200 ^{b,r}	59,000 ^e	59,000 ^e	0.005 ^m	0.05 ^m	*	
16887-00-6	Chloride	----- ^c	----- ^c	----- ^c	----- ^c	----- ^c	200 ^m	200 ^m	*	
7440-47-3	Chromium, total	10,000 ^b 6.100 ^b	420 ^e	4,100 ^b	8,800 ^e 690 ^b	8,800 ^e 690 ^b	0.1 ^m	1.0 ^m	*	
16065-83-1	Chromium, ion, trivalent	1,000,000 ^b	----- ^c	330,000 ^b 10,000 ^b	----- ^c	----- ^c	----- ^s	----- ^s	*	
18540-29-9	Chromium, ion, hexavalent	10,000 ^b 6.100 ^b	420 ^e	4,100 ^b	8,800 ^e 690 ^b	8,800 ^e 690 ^b	-----	-----	*	

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)	ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)				
7440-48-4	Cobalt	120,000 ^b	----- ^c	----- ^c	12,000 ^b	----- ^c	1.0 ^m	1.0 ^m	*	
7440-50-8	Copper ⁿ	82,000 ^b	----- ^c	----- ^c	8,200 ^b	----- ^c	0.65 ^m	0.65 ^m	*	
57-12-5	Cyanide (amenable)	41,000 ^b	----- ^c	----- ^c	4,100 ^b	----- ^c	0.2 ^{u,m}	0.6 ^{u,m}	*	
7782-41-4	Fluoride	120,000 ^b	----- ^c	----- ^c	12,000 ^b	----- ^c	4.0 ^m	4.0 ^m	*	
15438-31-0	Iron	----- ^c	----- ^c	----- ^c	----- ^c	----- ^c	5.0 ^m	5.0 ^m	*	
7439-92-1	Lead	400 ^k	----- ^c	----- ^c	400 ^k	----- ^c	0.0075 ^m	0.1 ^m	*	
7439-96-5	Manganese	96,000 ^b	91,000 ^b	----- ^c	9,600 ^b	8,700 ^b	0.15 ^m	10.0 ^m	*	
7439-97-6	Mercury ^{l,n,a}	610 ^b	540,000 ^b	----- ^c	61 ^{b,s}	52,000 ^b	0.002 ^m	0.01 ^m	*	
7440-02-0	Nickel ^l	41,000 ^b	21,000 ^e	----- ^c	4,100 ^b	440,000 ^e	0.1 ^m	2.0 ^m	*	
14797-55-8	Nitrate as NP	1,000,000 ^b	----- ^c	----- ^c	330,000 ^b	----- ^c	10.0 ^q	100 ^q	*	
7782-49-2	Selenium ^{l,n}	10,000 ^b	----- ^c	----- ^c	1,000 ^b	----- ^c	0.05 ^m	0.05 ^m	*	

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)	ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Inhalation (mg/kg)				
7440-22-4	Silver	10,000 ^b	----- ^c	1,000 ^b	----- ^c	----- ^c	0.05 ^m	-----	*	
14808-79-8	Sulfate	----- ^c	----- ^c	----- ^c	----- ^c	----- ^c	400 ^m	400 ^m	*	
7440-28-0	Thallium	160 ^{b,u}	----- ^c	160 ^{b,u}	----- ^c	----- ^c	0.002 ^m	0.02 ^m	*	
7440-62-2	Vanadium	14,000 ^b	----- ^c	1,400 ^b	----- ^c	----- ^c	0.049 ^m	-----0.1 ^m	*	
7440-66-6	Zinc ¹	610,000 ^b	----- ^c	61,000 ^b	----- ^c	----- ^c	5.0 ^m	10 ^m	*	

"*" 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)

- a Soil remediation objectives based on human health criteria only.
- b Calculated values correspond to a target hazard quotient of 1.
- c No toxicity criteria available for this route of exposure.
- d 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.
- e Calculated values correspond to a cancer risk level of 1 in 1,000,000.
- f Level is at or below Contract Laboratory Program required quantitation limit for Regular Analytical Services (RAS).
- g Chemical-specific properties are such that this route is not of concern at any soil contaminant concentration.
- h ~~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.~~
- i 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.
- j Ingestion soil remediation objective adjusted by a factor of 0.5 to account for dermal route.
- k 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.
- l Potential for soil-plant-human exposure.
- m 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.
- n The Agency reserves the right to evaluate the potential for remaining contaminant concentrations to pose significant threats to crops, livestock, or wildlife.
- o 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.
- p 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 tested procedures set forth in Subparts D and I of this Part.
- q The TCLP extraction must be done using water at a pH of 7.0.
- r Value based on dietary Reference Dose.
- s ~~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).~~
- t ~~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.~~
- u Value based on Reference Dose for ~~Barium~~ sulfate (CAS No. 7446-18-6).

~~Calculated values correspond to soil concentrations that should not result in air concentrations that exceed criteria for workplace air.~~

(Source: Amended ~~HR 00-1000~~ at 24 25 III. 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 5.9 to 7.24	pH 7.25 to 7.74	pH 7.75 to 8.0 8.24	pH 8.25 to 8.74	pH 8.75 to 9.0
Inorganics											
Antimony	5	5	5	5	5	5	5	5	5	5	5
Arsenic	25	26	27	28	29	29	29	30	31	32	33
Barium	260	490	850	1,200	1,500	1,600	1,700	1,800	2,100	^a	^z
Beryllium	1.1	2.1	3.4	6.6	22	63	140	1,000	8,000	^a	^z
Cadmium	1.0	1.7	2.7	3.7	5.2	7.5	11	59	430	^a	^z
Chromium (+6)	70	62	54	46	40	38	36	32	28	24	21
Copper	330	580	2,100	11,000	59,000	130,000	200,000	330,000	330,000	^a	^z
Cyanide	40	40	40	40	40	40	40	40	40	40	40
Mercury	0.01	0.01 ¹	0.03	0.15	0.89	2.1	3.3	6.4	8.0	^a	^z
Nickel	20	36	56	76	100	130	180	700	3,800	^a	^z
Selenium	24	17	12	8.8	6.3	5.2	4.5	3.3	2.4	1.8	1.3
Silver	0.24	0.33	0.62	1.5	4.4	8.5	13	39	110	^a	^z

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	pH 8.25 to 8.74	pH 8.75 to 9.0
Thallium	1.6	1.8	2.0	2.4	2.6	2.8	3.0	3.4	3.8	4.4	4.9
Vanadium	980	980	980	980	980	980	980	980	980	980	980
Zinc	1,000	1,800	2,600	3,600	5,100	6,200	7,500	16,000	53,000	^a	^a
Organics											
Benzoic Acid	440	420	410	400	400	400	400	400	400	400	400
2-Chlorophenol	4.0	4.0	4.0	4.0	3.9	3.9	3.9	3.6	3.1	2.2	1.5
2,4-Dichlorophenol	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.86	0.69	0.56	0.48
Dinoseb	8.4	4.5	1.9	0.82	0.43	0.34	0.31	0.27	0.25	0.25	0.25
Pentachlorophenol	0.54	0.32	0.15	0.07	0.04	0.03	0.02	0.02	0.02	0.02	0.02
2,4,5-TP (Silvex)	26	16	12	11	11	11	11	11	11	11	11
2,4,5-Trichlorophenol	400	390	390	370	320	270	230	130	64	36	26
2,4,6-Trichlorophenol	0.37	0.36	0.34	0.29	0.20	0.15	0.13	0.09	0.07	0.07	0.07

^a No data available for this pH range.

(Source: Amended ~~in R-60-19(B)~~ at 24 25 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 5.24	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	pH 8.25 to 8.74	pH 8.75 to 9.0
Inorganics											
Antimony	20	20	20	20	20	20	20	20	20	20	20
Arsenic	100	100	100	110	120	120	120	120	120	130	130
Barium	260	490	850	1,200	1,500	1,600	1,700	1,800	2,100	a	a
Beryllium	140	260	420	820	2,800	7,900	17,000	130,000	1,000,000	a	a
Cadmium	10	17	27	37	52	75	110	590	4,300	a	a
Chromium (+6)	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Copper	330	580	2,100	11,000	59,000	130,000	200,000	330,000	330,000	a	a
Cyanide	120	120	120	120	120	120	120	120	120	120	120
Mercury	0.05	0.06	0.14	0.75	4.4	10	16	32	40	a	a
Nickel	400	730	1,100	1,500	2,000	2,600	3,500	14,000	76,000	a	a
Selenium	24	17	12	8.8	6.3	5.2	4.5	3.3	2.4	1.8	1.3
Thallium	16	18	20	24	26	28	30	34	38	44	49
Zinc	2,000	3,600	5,200	7,200	10,000	12,000	15,000	32,000	110,000	a	a

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	pH 8.25 to 8.74	pH 8.75 to 9.0
Organics											
Benzoic Acid	440	420	410	400	400	400	400	400	400	400	400
2-Chlorophenol	20	20	20	20	20	20	19	3.6	3.1	2.2	1.5
2,4-Dichlorophenol	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.86	0.69	0.56	0.48
Dinoseb	84	45	19	82	4.3	3.4	3.1	2.7	2.5	2.5	2.5
Pentachlorophenol	2.7	1.6	0.75	0.33	0.18	0.15	0.12	0.11	0.10	0.10	0.10
2,4,5-TP (Silvex)	130	79	62	57	55	55	55	55	55	55	55
2,4,5-Trichlorophenol	2,000	2,000	1,900	1,800	1,600	1,400	1,200	640	64	36	26
2,4,6-Trichlorophenol	1.9	1.8	1.7	1.4	1.0	0.77	0.13	0.09	0.07	0.07	0.07

^a No data available for this pH range.

(Source: Amended ~~in R60-190B~~ at 24 25 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 ^c	0.01 ^c
116-06-3	Aldicarb	0.003 ^c	0.015 ^c
309-00-2	Aldrin	0.000040.014 ^e	0.00020.07
120-12-7	Anthracene	2.1	10.5
1912-24-9	Atrazine	0.003 ^c	0.015 ^c
71-43-2	Benzene	0.005 ^c	0.025 ^c
56-55-3	Benzo(a)anthracene	0.00013 ^a	0.00065
205-99-2	Benzo(b)fluoranthene	0.00018 ^a	0.0009
207-08-9	Benzo(k)fluoranthene	0.00017 ^a	0.00085
50-32-8	Benzo(a)pyrene	0.0002 ^{a,c}	0.002 ^c
111-44-4	Bis(2-chloroethyl)ether	0.01 ^a	0.01
117-81-7	Bis(2-ethylhexyl)phthalate (Di(2-ethylhexyl)phthalate)	0.006 ^{b,c}	0.06 ^c
75-27-4	Bromodichloromethane (Dichlorobromomethane)	0.000020.0002 ^a	0.000020.0002
75-25-2	Bromoform	0.00020.001 ^a	0.00020.001
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 ^c	0.2 ^c
75-15-0	Carbon disulfide	0.7	3.5
56-23-5	Carbon tetrachloride	0.005 ^c	0.025 ^c
57-74-9	Chlordane	0.002 ^c	0.01 ^c

CAS No.	Chemical Name	Groundwater Remediation Objective	
		Class I (mg/L)	Class II (mg/L)
108-90-7	Chlorobenzene (Monochlorobenzene)	0.1 ^c	0.5 ^c
124-48-1	Chlorodibromomethane (Dibromochloromethane)	0.14	0.14
67-66-3	Chloroform	0.000020.0002 ^a	0.00010.001
218-01-9	Chrysene	0.0015 ^a	0.0075
94-75-7	2,4-D	0.07 ^c	0.35 ^c
75-99-0	Dalapon	0.2 ^c	2.0 ^c
72-54-8	DDD	0.000110.014 ^d	0.000550.07
72-55-9	DDE	0.000040.01 ^a	0.00020.05
50-29-3	DDT	0.000120.006 ^c	0.00060.03
53-70-3	Dibezo(<i>a,h</i>)anthracene	0.0003 ^a	0.0015
96-12-8	1,2-Dibromo-3-chloropropane	0.0002 ^c	0.0002 ^c
106-93-4	1,2-Dibromoethane (Ethylene dibromide)	0.00005 ^{ac}	0.0005 ^c
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 ^c	1.5 ^c
106-46-7	1,4-Dichlorobenzene (<i>p</i> -Dichlorobenzene)	0.075 ^c	0.375 ^c
91-94-1	3,3'-Dichlorobenzidine	0.02 ^a	0.1
75-34-3	1,1-Dichloroethane	0.7	3.5
107-06-2	1,2-Dichloroethane (Ethylene dichloride)	0.005 ^c	0.025 ^c
75-35-4	1,1-Dichloroethylene ^b	0.007 ^c	0.035 ^c
156-59-2	<i>cis</i> -1,2-Dichloroethylene	0.07 ^c	0.2 ^c
156-60-5	<i>trans</i> -1,2-Dichloroethylene	0.1 ^c	0.5 ^c
78-87-5	1,2-Dichloropropane	0.005 ^c	0.025 ^c
542-75-6	1,3-Dichloropropene (1,3-Dichloropropylene, <i>cis</i> + <i>trans</i>)	0.001 ^a	0.005

		Groundwater Remediation Objective		
CAS No.	Chemical Name	Class I (mg/L)	Class II (mg/L)	
60-57-1	Dieldrin	0.000020.009 ^a	0.00010.045	
84-66-2	Diethyl phthalate	5.6	5.6	
121-14-2	2,4-Dinitrotoluene ^a	0.00002 ^a	0.00002	
606-20-2	2,6-Dinitrotoluene ^a	0.00010.0003 ^a	0.00010.00031	
88-85-7	Dinoseb	0.007 ^c	0.07 ^c	
117-84-0	Di- <i>n</i> -octyl phthalate	0.14	0.7	
115-29-7	Endosulfan	0.042	0.21	
145-73-3	Endosulfan	0.1 ^c	0.1 ^c	
72-20-8	Endrin	0.002 ^c	0.01 ^c	
100-41-4	Ethylbenzene	0.7 ^c	1.0 ^c	
206-44-0	Fluoranthene	0.28	1.4	
86-73-7	Fluorene	0.28	1.4	
76-44-8	Heptachlor	0.0004 ^c	0.002 ^c	
1024-57-3	Heptachlor epoxide	0.0002 ^c	0.001 ^c	
118-74-1	Hexachlorobenzene	0.00006 ^a	0.0003	
319-84-6	<i>alpha</i> -HCH (<i>alpha</i> -BHC)	0.000030.00011 ^a	0.000150.00055	
58-89-9	<i>gamma</i> -HCH (Lindane)	0.0002 ^c	0.001 ^c	
77-47-4	Hexachlorocyclopentadiene	0.05 ^c	0.5 ^c	
67-72-1	Hexachloroethane	0.007	0.035	
193-39-5	Indeno(1,2,3- <i>c,d</i>)pyrene	0.00043 ^a	0.00215	
78-59-1	Isophorone	1.4	1.4	
72-43-5	Methoxychlor	0.04 ^c	0.2 ^c	
74-83-9	Methyl bromide (Bromomethane)	0.0098	0.049	
75-09-2	Methylene chloride (Dichloromethane)	0.005 ^c	0.05 ^c	
91-20-3	Naphthalene ^a	0.025-0.14	0.0390.22	
98-95-3	Nitrobenzene ^{ab}	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	0.040.0032 ^a	0.050.016
621-64-7	<i>N</i> -Nitrosodi- <i>n</i> -propylamine	0.040.0018 ^a	0.040.0018
87-86-5	Pentachlorophenol	0.001 ^{a,c}	0.005 ^c
108-95-2	Phenol	0.1 ^c	0.1 ^c
1918-02-1	Picloram	0.5 ^c	5.0 ^c
1336-36-3	Polychlorinated biphenyls (PCBs) ^b	0.0005 ^c	0.0025 ^c
129-00-0	Pyrene	0.21	1.05
122-34-9	Simazine	0.004 ^c	0.04 ^c
100-42-5	Styrene	0.1 ^c	0.5 ^c
93-72-1	2,4,5-TP (Silvex)	0.05 ^c	0.25 ^c
127-18-4	Tetrachloroethylene (Perchloroethylene)	0.005 ^c	0.025 ^c
108-88-3	Toluene	1.0 ^c	2.5 ^c
8001-35-2	Toxaphene	0.003 ^c	0.015 ^c
120-82-1	1,2,4-Trichlorobenzene	0.07 ^c	0.7 ^c
71-55-6	1,1,1-Trichloroethane ^{ab}	0.2 ^c	1.0 ^c
79-00-5	1,1,2-Trichloroethane	0.005 ^c	0.05 ^c
79-01-6	Trichloroethylene	0.005 ^c	0.025 ^c
108-05-4	Vinyl acetate	7.0	7.0
75-01-4	Vinyl chloride	0.002 ^c	0.01 ^c
1330-20-7	Xylenes (total)	10.0 ^c	10.0 ^c
	Ionizable Organics		
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

		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	0.00640.01 ^a	0.0320.05
	Inorganics		
7440-36-0	Antimony	0.006 ^c	0.024 ^c
7440-38-2	Arsenic	0.05 ^c	0.2 ^c
7440-39-3	Barium	2.0 ^c	2.0 ^c
7440-41-7	Beryllium	0.004 ^c	0.5 ^c
7440-42-8	Boron	2.0 ^c	2.0 ^c
7440-43-9	Cadmium	0.005 ^c	0.05 ^c
16887-00-6	Chloride	200 ^c	200 ^c
7440-47-3	Chromium, total	0.1 ^c	1.0 ^c
18540-29-9	Chromium, ion, hexavalent	---	---
7440-48-4	Cobalt:	1.0 ^c	1.0 ^c
7440-50-8	Copper	0.65 ^c	0.65 ^c
57-12-5	Cyanide	0.2 ^c	0.6 ^c
7782-41-4	Fluoride	4.0 ^c	4.0 ^c
15438-31-0	Iron	5.0 ^c	5.0 ^c
7439-92-1	Lead	0.0075 ^c	0.1 ^c
7439-96-5	Manganese	0.15 ^c	10.0 ^c
7439-97-6	Mercury	0.002 ^c	0.01 ^c
7440-02-0	Nickel	0.1 ^c	2.0 ^c
14797-55-8	Nitrate as N	10.0 ^c	100 ^c
7782-49-2	Selenium	0.05 ^c	0.05 ^c
7440-22-4	Silver	0.05 ^c	---
14808-79-8	Sulfate	400 ^c	400 ^c

		Groundwater Remediation Objective	
CAS No.	Chemical Name	Class I (mg/L)	Class II (mg/L)
7440-28-0	Thallium	0.002 ^c	0.02 ^c
7440-62-2	Vanadium ^{2b}	0.049	0.1
7440-66-6	Zinc	5.0 ^c	10 ^c

Chemical Name and Groundwater Remediation Objective Notations

^a ~~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.

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

^c 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 R04-190B~~ at 24 25 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 _{obj} Concentration used to Calculate Tier 1 Soil Remediation Objectives ^a	
		Class I (mg/L)	Class II (mg/L)
83-32-9	Acenaphthene	2.0 ^b	10
67-64-1	Acetone	4.0 ^b	4.0
15972-60-8	Alachlor	0.002 ^c	0.01 ^c
116-06-3	Aldicarb	0.003 ^c	0.015 ^c
309-00-2	Aldrin	5.0E-6 ^b	2.5E-5
120-12-7	Anthracene	10 ^b	50
1912-24-9	Atrazine	0.003 ^c	0.015 ^c
71-43-2	Benzene	0.005 ^c	0.025 ^c
56-55-3	Benzo(a)anthracene	0.0001 ^b	0.0005
205-99-2	Benzo(b)fluoranthene	0.0001 ^b	0.0005
207-08-9	Benzo(k)fluoranthene	0.001 ^b	0.005
50-32-8	Benzo(a)pyrene	0.0002 ^{a,c}	0.002 ^c
111-44-4	Bis(2-chloroethyl)ether	8.0E-5 ^b	8.0E-5
117-81-7	Bis(2-ethylhexyl)phthalate [Di(2-ethylhexyl)phthalate	0.006 ^{a,c}	0.06 ^c
75-27-4	Bromodichloromethane (Dichlorobromomethane)	0.1 ^b	0.1
75-25-2	Bromoform	0.1 ^b	0.01
71-36-3	Butanol	4.0 ^b	4.0
85-68-7	Butyl benzyl phthalate	7.0 ^b	35
86-74-8	Carbazole	0.004 ^b	0.02
1563-66-2	Carbofuran	0.04 ^c	0.2 ^c
75-15-0	Carbon disulfide	4.0 ^b	20
56-23-5	Carbon tetrachloride	0.005 ^c	0.025 ^c
57-74-9	Chlordane	0.002 ^c	0.01 ^c

		GW _{0.95} Concentration used to Calculate Tier I Soil Remediation Objectives ^a	
CAS No.	Chemical Name	Class I (mg/L)	Class II (mg/L)
108-90-7	Chlorobenzene (Monochlorobenzene)	0.1 ^c	0.5 ^c
124-48-1	Chlorodibromomethane (Dibromochloromethane)	0.06 ^b	0.06
67-66-3	Chloroform	0.1 ^b	0.5
218-01-9	Chrysene	0.1 ^b	0.05
94-75-7	2,4-D	0.07 ^c	0.35 ^c
75-99-0	Dalapon	0.2 ^c	2.0 ^c
72-54-8	DDD	0.0004 ^b	0.002
72-55-9	DDE	0.0003 ^b	0.0015
50-29-3	DDT	0.0003 ^b	0.0015
53-70-3	Dibenzo(a,h)anthracene	1.0E-5 ^b	5.0E-5
96-12-8	1,2-Dibromo-3-chloropropane	0.0002 ^c	0.0002 ^c
106-93-4	1,2-Dibromoethane (Ethylene dibromide)	0.00005 ^{a,c}	0.0005 ^c
84-74-2	Di- <i>n</i> -butyl phthalate	4.0 ^b	20
95-50-1	1,2-Dichlorobenzene (<i>o</i> -Dichlorobenzene)	0.6 ^c	1.5 ^c
106-46-7	1,4-Dichlorobenzene (<i>p</i> -Dichlorobenzene)	0.075 ^c	0.375 ^c
91-94-1	3,3'-Dichlorobenzidine	0.0002 ^b	0.001
75-34-3	1,1-Dichloroethane	4.0 ^b	20
107-06-2	1,2-Dichloroethane (Ethylene dichloride)	0.005 ^c	0.025 ^c
75-35-4	1,1-Dichloroethylene	0.007 ^c	0.035 ^c
156-59-2	<i>cis</i> -1,2-Dichloroethylene	0.07 ^c	0.2 ^c
156-60-5	<i>trans</i> -1,2-Dichloroethylene	0.1 ^c	0.5 ^c
78-97-5	1,2-Dichloropropane	0.005 ^c	0.025 ^c
542-75-6	1,3-Dichloropropene (1,3-Dichloropropylene, <i>cis</i> + <i>trans</i>)	0.0005 ^b	0.0025

CAS No.	Chemical Name	GW _{obj} Concentration used to Calculate Tier I Soil Remediation Objectives ^a	
		Class I (mg/L)	Class II (mg/L)
60-57-1	Dieldrin	5.0E-6 ^b	2.5E-5
84-66-2	Diethyl phthalate	30 ^b	30
121-14-2	2,4-Dinitrotoluene	0.0001 ^b	0.0001
606-20-2	2,6-Dinitrotoluene	0.0001	0.0001
88-85-7	Dinoseb	0.007 ^c	0.07 ^c
117-84-0	Di- <i>n</i> -octyl phthalate	0.7 ^b	3.5
115-29-7	Endosulfan	0.2 ^b	1.0
145-73-3	Endothall	0.1 ^c	0.1 ^c
72-20-8	Endrin	0.002 ^c	0.01 ^c
100-41-4	Ethylbenzene	0.7 ^c	1.0 ^c
206-44-0	Fluoranthene	1.0 ^b	5.0
86-73-7	Fluorene	1.0 ^b	5.0
76-44-8	Heptachlor	0.0004 ^c	0.002 ^c
1024-57-3	Heptachlor epoxide	0.0002 ^c	0.001 ^c
118-74-1	Hexachlorobenzene	0.001 ^b	0.005
319-84-6	<i>alpha</i> -HCH (<i>alpha</i> -BHC)	1.0E-5 ^b	5.0E-5
58-89-9	<i>gamma</i> -HCH (Lindane)	0.0002 ^c	0.001 ^c
77-47-4	Hexachlorocyclopentadiene	0.05 ^c	0.5 ^c
67-72-1	Hexachloroethane	0.007	0.035
193-39-5	Indeno(1,2,3- <i>c</i> , <i>d</i>)pyrene	0.0001 ^b	0.0005
78-59-1	Isophorone	1.4	1.4
72-43-5	Methoxychlor	0.04 ^c	0.2 ^c
74-83-9	Methyl bromide (Bromomethane)	0.05 ^b	0.25
75-09-2	Methylene chloride (Dichloromethane)	0.005 ^c	0.05 ^c
91-20-3	Naphthalene	1.0 ^b 0.14	5.00.22
98-95-3	Nitrobenzene	0.02 ^b	0.02

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

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

CAS No.	Chemical Name	GW _{obj} Concentration used to Calculate Tier I Soil Remediation Objectives ^a	
		Class I (mg/L)	Class II (mg/L)
7440-28-0	Thallium	0.002 ^c	0.02 ^c
7440-62-2	Vanadium	0.049	0.1
7440-66-6	Zinc	5.0 ^c	10 ^c

Chemical Name and Groundwater Remediation Objective Notations

- ^a 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_w) from Equation S18: C_w = DF x GW_{obj}.
- ^b 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.
- ^c NOTE: These GW_{obj} concentrations are not equal to the Tier I Groundwater Remediation Objectives for the Direct Ingestion of Groundwater Component of the Groundwater Ingestion Route, listed in Section 742-Appendix B, Table E.
- ^e Value listed is also the Groundwater Quality Standard for this chemical pursuant to 35 III. Adm. Code 620.410 for Class I Groundwater or 35 III. Adm. Code 620.420 for Class II Groundwater.

(Source: Amended ~~in R00-10CB~~ at 24 25 III. 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>	<p>S1</p> $\frac{THQ \cdot BW \cdot AT \cdot 365 \frac{d}{yr}}{\frac{1}{RfDo} \cdot 10^{-6} \frac{kg}{mg} \cdot EF \cdot ED \cdot IR_{soil}}$
<p>Equations for Inhalation Exposure Route (Volatile Organic Contaminants and Mercury)</p>	<p>Remediation Objectives for Carcinogenic Contaminants - Residential (mg/kg)</p>	<p>S2</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>Remediation Objectives for Carcinogenic Contaminants - Industrial/Commercial, Construction Worker (mg/kg)</p>	<p>S3</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>Remediation Objectives for Noncarcinogenic Contaminants - Residential, Industrial/Commercial (mg/kg)</p>	<p>S4</p> $\frac{THQ \cdot AT \cdot 365 \frac{d}{yr}}{EF \cdot ED \cdot \left(\frac{1}{RfC} \cdot \frac{1}{VF} \right)}$

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 ³ /kg)	$VF = \frac{Q}{C} \cdot \frac{(3.14 \cdot D_A \cdot T)^{1/2}}{(2 \cdot \rho_b \cdot D_A)} \cdot 10^{-4} \frac{m^2}{cm^2}$	S8
Equation for Derivation of the Volatilization Factor - Construction Worker, VF' (m ³ /kg)	$VF' = \frac{VF}{10}$	S9
Equation for Derivation of Apparent Diffusivity, D _A (cm ² /s)	$D_A = \frac{(\theta_a^{3.33} \cdot D_i \cdot H') + (\theta_w^{3.33} \cdot D_w)}{\eta^2} \cdot \frac{1}{(\rho_b \cdot K_d) + \theta_w + (\theta_a \cdot H')}$	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)	$\frac{TR \cdot AT_c \cdot 365 \frac{d}{yr}}{URF \cdot 1,000 \frac{\mu g}{mg} \cdot EF \cdot ED \cdot \frac{1}{PEF}}$	S13
	Remediation Objectives for Carcinogenic Contaminants - Construction Worker (mg/kg)	$\frac{TR \cdot AT_c \cdot 365 \frac{d}{yr}}{URF \cdot 1,000 \frac{\mu g}{mg} \cdot EF \cdot ED \cdot \frac{1}{PEF'}}$	S14
	Equation for Derivation of Particulate Emission Factor, PEF (m ³ /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 ³ /kg)	$PEF' = \frac{PEF}{10}$ <p>NOTE: PEF must be the industrial/commercial value</p>	S16
Equations for the Soil Component of the Groundwater Ingestion Exposure Route	Remediation Objective (mg/kg)	$C_w = \left[K_d + \frac{(\theta_w + \theta_a \cdot H')}{\rho_b} \right]$ <p>NOTE: This equation can only be used to model contaminant migration not in the water bearing unit.</p>	S17
	Target Soil Leachate Concentration, C _w (mg/L)	$C_w = DF \cdot GW_{obj}$	S18
	Soil-Water Partition Coefficient, K _d (cm ³ /g)	$K_d = K_{oc} \cdot f_{oc}$	S19
	Water-Filled Soil Porosity, θ _w (L _{water} /L _{soil})	$\theta_w = \eta \cdot \left(\frac{I}{K_s} \right)^{1/(2b+3)}$	S20
	Air-Filled Soil Porosity, θ _a (L _{air} /L _{soil})	$\theta_a = \eta - \theta_w$	S21
	Dilution Factor, DF (unitless)	$DF = 1 + \frac{K \cdot i \cdot d}{I \cdot L}$	S22

<p>Groundwater Remediation Objective for Carcinogenic Contaminants: (C)_{org} (mg/l)</p>	<p>Equation for Estimation of Mixing Zone Depth, d (m)</p>	$\frac{TR \cdot BW \cdot AT \cdot 365}{SF_g \cdot IR_b \cdot EF \cdot ED} \cdot d$	<p>S23</p>
<p>Total Soil Porosity, n (mg/l)</p>	<p>Equation for Estimation of Mixing Zone Depth, d (m)</p>	$n = 1 - \frac{\rho_b}{\rho_s}$	<p>S24</p>
<p>Mass-Limit Equations for Inhalation Exposure Route and Soil Component of the Groundwater Ingestion Exposure Route</p>	<p>Mass-Limit Volatilization factor for the Inhalation Exposure Route - Residential, Industrial/Commercial, VF (m³/kg)</p>	$d = \left\{ (0.0112 \cdot E^2)^{0.5} + d_m \left[1 - \exp \left(\frac{-L \cdot t}{K \cdot t \cdot h_0} \right) \right] \right\}$	<p>S25</p>
<p>Mass-Limit Volatilization Factor for Inhalation Exposure Route - Construction Worker, VF' (m³/kg)</p>	<p>NOTE: This equation may be used when <u>area and depth of contaminant source are vertical</u> <u>intensity of contamination is known or can be estimated reliably.</u></p>	$VF_{M-L} = \frac{Q}{C} \cdot \left[\frac{I_{M-L} \cdot \left(3.15 \cdot 10^7 \frac{s}{yr} \right)}{p_b \cdot d_s \cdot 10^6 \cdot \frac{g}{cm^3}} \right]$	<p>S26</p>
<p>Mass-Limit Volatilization Factor for Inhalation Exposure Route - Construction Worker, VF'' (m³/kg)</p>	<p>NOTE: This equation may be used when <u>area and depth of contaminant source are vertical</u> <u>intensity of contamination is known or can be estimated reliably.</u></p>	$VF'_{M-L} = \frac{VF_{M-L}}{10}$	<p>S27</p>

<p>Mass-Limit Remediation Objective for Soil Components of the Groundwater Ingestion Exposure Route (mg/kg)</p>	$\frac{(C_w \cdot I_{M-L} \cdot ED_{M-L})}{\rho_l \cdot d_s}$ <p>NOT: This equation may be used when area and depth of contaminated source are vertical thickness is known or can be estimated reliably.</p>	<p>S28</p>
<p>Equation for Derivation of the Soil Saturation Limit, C_{sat}</p>	$C_{sat} = \frac{S}{\rho_h} \cdot [(K_d \cdot P_0) + \theta_w + (H' \cdot \theta_w)]$	<p>S29</p>

(Source: Amended ~~40 CFR~~ 40 CFR Part 261.11, Reg. 261.11, objective _____)

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 _c	Averaging Time for Carcinogens	yr	SSL	70
BW	Body Weight	kg		Residential = 15, noncarcinogens 70, carcinogens Industrial/Commercial = 70 Construction Worker = 70
C _{soil}	Soil Saturation Concentration	mg/kg	Appendix A, Table A or Equation S29 in Appendix C, Table A	Chemical-specific or Calculated Value
C _w	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 _a	Aquifer Thickness	m	Field Measurement	Site-Specific

Symbol	Parameter	Units	Source	Parameter Value(s)
d_s	Depth of Source (Vertical thickness of contaminant)	m	Field Measurement or Estimation	Site-Specific
D_A	Apparent Diffusivity	cm^2/s	Equation S10 in Appendix C, Table A	Calculated Value
D_i	Diffusivity in Air	cm^2/s	Appendix C, Table E	Chemical-specific
D_w	Diffusivity in Water	cm^2/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)
T/D_{ML}	Exposure Duration for Migration to Groundwater Mass-Limit Equation S28	yr	SSL	70
PF	Exposure Frequency	d/yr		Residential = 350 Industrial/Commercial = 250 Construction Worker = 30
$R(x)$	Function dependent on U_p/U_i	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 F, 35 ;AC 620, Subpart F, or Equation S23 in Appendix C, Table A	Chemical-Specific or Calculated
H'	Henry's Law Constant	unitless	Appendix C, Table F	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_{ML}	Infiltration Rate for Migration to Groundwater Mass-Limit Equation S28	m/yr	SSL	0.18

Symbol	Parameter	Units	Source	Parameter Value(s)
$IF_{soil+di}$ (residential)	Age Adjusted Soil Ingestion Factor for Carcinogens	(mg-yr) ⁻¹ (kg-l)	SSL	114
IR_{soil}	Soil Ingestion Rate	mg/d		Residential = 200 Industrial/Commercial = 50 Construction Worker = 480
IR_{sw}	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_d (Non-ionizing organics)	Soil-Water Partition Coefficient	cm ³ /g or L/kg	Equation S19 in Appendix C, Table A	Calculated Value
K_d (Ionizing organics)	Soil-Water Partition Coefficient	cm ³ /g or L/kg	Equation S19 in Appendix C, Table A	Chemical and pH-Specific (see Appendix C, Table I)
K_d (Inorganic)	Soil-Water Partition Coefficient	cm ³ /g or L/kg	Appendix C, Table J	Chemical and pH-Specific
K_{oc}	Organic Carbon Partition Coefficient	cm ³ /g or L/kg	Appendix C, Table E or Appendix C, Table J	Chemical-specific
K_s	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
PEP	Particulate Emission Factor	m ³ /kg	SSL or Equation S15 in Appendix C, Table A	Residential = $1.32 \cdot 10^9$ or Site-Specific Industrial/Commercial = $1.24 \cdot 10^9$ or Site-Specific
PEP'	Particulate Emission Factor adjusted for agitation (construction worker)	m ³ /kg	Equation S16 in Appendix C, Table A using PEP (industrial/commercial)	$1.24 \cdot 10^9$ or Site-Specific

Symbol	Parameter	Units	Source	Parameter Value(s)
Q/C (used in VI equations)	Inverse of the mean concentration at the center of a square source	$(\text{m}^2\text{-s})/(\text{kg}\cdot\text{m}^3)$	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	$(\text{g}\cdot\text{m}^2\text{-s})/(\text{kg}\cdot\text{m}^3)$	SSL or Appendix C, Table H	Residential = 90.80 Industrial/Commercial = 85.81 Construction Worker = 85.81
RIC	Inhalation Reference Concentration	mg/m^3	IEPA (IRIS/HEAST [®])	Toxicological-Specific (Note: for Construction Workers use subchronic reference concentrations)
RID _c	Oral Reference Dose	$\text{mg}/(\text{kg}\cdot\text{d})$	IEPA (IRIS/HEAST [®])	Toxicological-Specific (Note: for Construction Worker use subchronic reference doses)
S	Solubility in Water	mg/L	Appendix C, Table E	Chemical-Specific
SK ₀	Oral Slope Factor	$(\text{mg}\cdot\text{kg}^{-1}\cdot\text{d})^{-1}$	IEPA (IRIS/HEAST [®])	Toxicological-Specific
T	Exposure Interval	s		Residential = $9.5 \cdot 10^8$ Industrial/Commercial = $7.9 \cdot 10^8$ Construction Worker = $3.6 \cdot 10^8$
T _{M-L}	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 (RISHT,AST)	Toxicological-Specific
U_1	Equivalent Threshold Value of Windspeed at 7 m	m/s	SSL	11.32
V	Proportion of Vegetative Cover	unitless	SSL or Field Measurement	0.5 or Site-Specific
VF	Volatilization Factor	m^3/kg	Equation S8 in Appendix C, Table A	Calculated Value
VF _{adj}	Volatilization factor adjusted for Agitation	m^3/kg	Equation S9 in Appendix C, Table A	Calculated Value
VF _{MLC}	Mass-Limit Volatilization Factor	m^3/kg	Equation S26 in Appendix C, Table A	Calculated Value
VF _{MLC,adj}	Mass-Limit Volatilization Factor adjusted for Agitation	m^3/kg	Equation S27 in Appendix C, Table A	Calculated Value

Symbol	Parameter	Units	Source	Parameter Value(s)
η	Total Soil Porosity	$L_{\text{pore}}/L_{\text{soil}}$	SSL or Equation S24 in Appendix C, Table A	0.43, or Gravel = 0.15 Sand = 0.32 Silt = 0.40 Clay = 0.36, or Calculated Value
η_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
η_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)
ρ_b	Dry Soil Bulk Density	kg/L or g/cm ³	SSL or Field Measurement (See Appendix C, Table T)	1.5, or Gravel = 2.0 Sand = 1.8 Silt = 1.6 Clay = 1.7, or Site-Specific
ρ_s	Soil Particle Density	g/cm ³	SSL or Field Measurement (See Appendix C, Table F)	2.65, or Site-Specific
ρ_w	Water Density	g/cm ³	SSL	1
$f(2b+3)$	Exponential in Equation S20	unitless	Appendix C, Table K Appendix C, Illustration C	Site-Specific

a. R6037 - Health Effects Assessment Summary Tables. USEPA, Office of Solid Waste and Emergency Response. EPA/510/P-90/006. Updated Quarterly.

(Source: Appendix B, Table B-1, Row 1, effective _____)

Section 742. Appendix C: Tier 2 Tables and Illustrations

Section 742. Table C: RBCA Equations

<p>Equations for the combined exposure routes of soil ingestion, inhalation of vapors and particulates, and dermal contact with soil</p>	<p>Remediation Objectives for Carcinogenic Contaminants (mg/kg)</p>	<p>R1</p> $EF \cdot ED \cdot \left[SV_o = 10^{-6} \frac{\text{kg}}{\text{mg}} \cdot \left((IR_{soil} \cdot RAF_o) + (SA \cdot M \cdot RAF_d) \right) \right] + \left[SI_i \cdot IR_{air} \cdot (VF_{ss} + VF_p) \right]$ $TK \cdot BW \cdot AT_C \cdot 365 \frac{d}{yr}$
<p>Remediation Objectives for Non-carcinogenic Contaminants (mg/kg)</p>	<p>R2</p>	$10^{-6} \frac{\text{kg}}{\text{mg}} \left[IR_{soil} \cdot RAF_o + (SA \cdot M \cdot RAF_d) \right] \cdot IR_{air} \cdot \left(VF_{ss} + VF_p \right)$ $EF \cdot ED \cdot \frac{R/D_o}{kFA_i}$ $THQ \cdot BW \cdot AT_n \cdot 365 \frac{d}{yr}$
<p>Volatilization Factor for Surficial Soils, VF_{ss} Which ever is less between R3 and R4</p>	<p>R3</p>	$VF_{ss} = \frac{2 \cdot W \cdot \rho_s \cdot 10^3 \frac{\text{cm}^3 \cdot \text{kg}}{\text{m}^3 \cdot \text{g}} \cdot \frac{D_n^{eff} \cdot II'}{\pi \cdot [\theta_{ns} + (k_n \cdot \rho_s) + (II' \cdot \theta_{ss})] \cdot \tau}}{U_{air} \cdot \delta_{air}}$
<p>R4</p>	<p>R4</p>	$VF_{ss} = \frac{W \cdot \rho_s \cdot d \cdot 10^3 \frac{\text{cm}^3 \cdot \text{kg}}{\text{m}^3 \cdot \text{g}}}{U_{air} \cdot \delta_{air} \cdot \tau}$

Volatilization Factor for Surficial Soils Regarding Particulates, VF_p ($\text{kg}\cdot\text{m}^{-3}$)	$VF_p = \frac{P_s \cdot W \cdot 10^3 \frac{\text{cm}^3 \cdot \text{kg}}{\text{m}^3 \cdot \text{g}}}{U_{\text{air}} \cdot \delta_{\text{air}}}$	R5
Effective Diffusion Coefficient in Soil Based on Vapor-Phase Concentration D_s or (cm^2/s)	$D_s^{\text{eff}} = \frac{D^{\text{air}} \cdot \theta_{\text{air}}^{2.33}}{\theta_T^2} + \frac{D^{\text{water}} \cdot \theta_{\text{water}}^{3.30}}{H' \cdot \theta_T^2}$	R6
Remediation Objectives for Carcinogenic Contaminants (mg/kg)	$\frac{RBSL_{\text{air}} \cdot 10^{-3}}{VF_{\text{soil}}}$	R7
Remediation Objectives for Non-carcinogenic Contaminants (mg/kg)	$\frac{RBSL_{\text{air}} \cdot 10^{-3}}{VF_{\text{soil}}}$	R8
Equations for the ambient vapor inhalation (outdoor) route from subsurface soils		

<p>Carcinogenic Risk-Based Screening Level for Air, $RBSL_{air}$ ($\mu\text{g}/\text{m}^3$)</p>	<p>R9</p> $RBSL_{air} = \frac{TR \cdot BW \cdot A''_c \cdot 365 \frac{d}{yr} \cdot 10^3 \frac{\mu\text{g}}{\text{kg}}}{SF_c \cdot IR_{air} \cdot EF \cdot ED}$
<p>Noncarcinogenic Risk-Based Screening Level for Air, $RBSL_{air}$ ($\mu\text{g}/\text{m}^3$)</p>	<p>R10</p> $RBSL_{air} = \frac{THQ \cdot RfD_i \cdot BW \cdot A''_n \cdot 365 \frac{d}{yr} \cdot 10^3 \frac{\mu\text{g}}{\text{kg}}}{IR_{air} \cdot EF \cdot ED}$
<p>Volatilization Factor - Subsurface Soil to Ambient Air, VF_{sub} (mg/m^3) ($\text{mg}/\text{kg}\cdot\text{d}$)</p>	<p>R11</p> $VF_{sub} = \frac{HV \cdot \rho_s \cdot 10^3 \frac{\text{cm}^3}{\text{m}^3} \cdot \text{kg}}{[\theta_{soil} + (k_s \cdot \rho_s) + (HV \cdot q_{air})] \left[1 + \frac{(U_{air} \cdot \delta_{air} \cdot L_s)}{(L_s^2 \cdot W)} \right]}$

<p>Equations for the Soil Component of the Groundwater Ingestion Exposure Route</p>	<p>Remediation Objective (mg/kg)</p>	<p>R12</p> $\frac{GW_{source}}{LF_{inh}}$ <p>NOTE: This equation can only be used to model contaminant migration not in the water bearing unit.</p>
<p>Groundwater at the source: GW_{source} (mg/l)</p>	<p>R13</p> $GW_{source} = \frac{GW_{comp}}{C_0/C_{source}}$	
<p>Leaching Factor, LF_{sw} (mg_{leach})/(mg_{kg soil})</p>	<p>R14</p> $LF_{sw} = \frac{\rho_s \cdot \frac{cm^3 \cdot kg}{L \cdot g}}{[\theta_{ws} + (k_s \cdot \rho_s) + (H \cdot \theta_{ws})] \cdot \left[1 + \frac{(U_{sw} \cdot \delta_{sw})}{(I \cdot W)} \right]}$	
<p>Steady-State Attenuation Along the Centerline of a Dissolved Plume, C_0/C_{source}</p>	<p>R15</p> $C_0/C_{source} = \exp\left(\frac{X}{2\alpha_s}\right) \cdot \left(1 - \sqrt{1 - \frac{4\lambda \cdot \alpha_s}{U}}\right) \cdot \operatorname{erf}\left[\frac{S_w}{4 \cdot \sqrt{\alpha_s \cdot X}}\right] \cdot \operatorname{erf}\left[\frac{S_d}{2 \cdot \sqrt{\alpha_s \cdot X}}\right]$ <p>NOTE: 1. This equation does not predict the contaminant flow width in bedrock and may not accurately predict downgradient concentrations in the presence of a confining layer. 2. If the value of the First Order Degradation Constant (λ) is not readily available, then set $\lambda = 0$.</p>	<p>R16</p> $\alpha_s = 0.10 \cdot X$
<p>Longitudinal Dispersivity, α_s (cm)</p>		

Transverse Dispersion, α_y (cm)	$\alpha_y = \frac{\alpha_r}{2}$	R17
Vertical Dispersion, α_z (cm)	$\alpha_z = \frac{\alpha_r}{20}$	R18
Specific Discharge, U (cm/d)	$U = \frac{K \cdot I}{\theta_i}$	R19
Soil-Water Sorption Coefficient, k_s	$k_s = K_{oc} \cdot f_{oc}$	R20
Volumetric Air Content in Vadose Zone Soils, θ_a ($\text{cm}^3_{\text{air}}/\text{cm}^3_{\text{soil}}$)	$\theta_{va} = \theta_r - \frac{(w \cdot \rho_s)}{\rho_w}$	R21
Volumetric Water Content in Vadose Zone Soils, θ_w ($\text{cm}^3_{\text{water}}/\text{cm}^3_{\text{soil}}$)	$\theta_{vw} = \frac{w \cdot \rho_s}{f_w}$	R22
Total Soil Porosity, θ_r ($\text{cm}^3/\text{cm}^3_{\text{soil}}$)	$\theta_r = \theta_{va} + \theta_{vw}$	R23

	Groundwater Darcy Velocity, U_{gw} (cm/yr)	$U_{gw} = \frac{K \cdot i}{\mu}$	R24
Equations for die Groundwater Ingestion Exposure Route	Remediation Objective for Carcinogenic Contaminants (mg/L)	$TR \cdot BW \cdot AT_c \cdot 365 \frac{d}{yr}$ <hr/> $\frac{SF_0 \cdot IR_n \cdot EF \cdot ED}{\dots}$	R25
	Dissolved Hydrocarbon Concentration along Centerline, $C_{(x)}$ (same $\frac{mg}{L \cdot water}$)	$C_{(x)} = C_{source} \cdot \exp\left[-\left(\frac{x}{2\alpha_x}\right) \cdot \left(1 - \sqrt{1 + \frac{4\lambda \cdot \alpha_x}{U}}\right)\right] \cdot \text{erf}\left[\frac{S_w}{4 \cdot \sqrt{\alpha_y \cdot x}}\right] \cdot \text{erf}\left[\frac{S_d}{2 \cdot \sqrt{\alpha_z \cdot x}}\right]$	R26

NOTE:

1. This equation does not predict the contaminant flow within bedrock and may not accurately predict downgradient concentrations in the presence of a confining layer.
2. If the value of the First Order Degradation Coefficient (λ) is not readily available, then set $\lambda = 0$.

(Source: Amended ~~60001~~ at 24.25 III 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_c	Averaging Time for Carcinogens	yr	RBCA	70
AT_n	Averaging Time for Noncarcinogens	yr	RBCA	Residential = 30 Industrial/Commercial = 25 Construction Worker = 0.115
BW	Adult Body Weight	kg	RBCA	70
C_{source}	The greatest potential concentration of the contaminant of concern in the groundwater, 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_{10}	Concentration of Contaminant in Groundwater at Distance X from the source.	mg/L	Equation E2.6 in Appendix C, Table C	Calculated Value

Symbol	Parameter	Units	Source	Parameter Value(s)
C_{eff}/C_{unass}	Steady-State Attenuation Along the Centerline of a Dissolved Plume	unitless	Equation E15 in Appendix D, Table C	Calculated Value
d	Lower Depth of Surficial Soil Zone	cm	Field Measurement	100 or Site-Specific (not to exceed 100)
D_{air}^{diff}	Diffusion Coefficient in Air	cm^2/s	Appendix D, Table E	Chemical-Specific
D_{water}^{diff}	Diffusion Coefficient in Water	cm^2/s	Appendix D, Table E	Chemical-Specific
D_{soil}^{eff}	Effective Diffusion Coefficient in Soil Based on Vapor-Phase Concentration	cm^2/s	Equation E16 in Appendix D, Table C	Calculated Value
ED	Exposure Duration	yr	RUCIA	Residential = 30 Industrial/Commercial = 25 Construction Worker = 1
EF	Exposure Frequency	d/yr	RUCIA	Residential = 350 Industrial/Commercial = 250 Construction Worker = 30
erf	Error Function	unitless	Appendix D, Table G	Mathematical Function

Symbol	Parameter	Units	Source	Parameter Value(s)
f_{oc}	Organic Carbon Content of Soil	%	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 630 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	$\text{cm}^3 \text{water}/\text{cm}^3 \text{air}$	Appendix C, Table E	Chemical-Specific
l	Hydraulic Gradient	cm/cm (unitless)	Field Measurement (See Appendix C, Table F)	Site-Specific
l	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 = 10H Industrial/Commercial = 5C Construction Worker = 48H
IR_{sw}	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_{oc}	Organic Carbon Partition Coefficient	cm ³ /g or L/kg	Appendix C, Table E or Appendix C, Table I	Chemical-Specific
k_s (non-ionizing organics)	Soil Water Sorption Coefficient	cm ³ water/g soil	Equation R20 in Appendix C, Table C	Calculated Value
k_s (ionizing organics)	Soil Water Sorption Coefficient	cm ³ water/g soil	Equation R20 in Appendix C, Table C	Chemical and pH-Specific (See Appendix C, Table J)
k_s (inorganics)	Soil Water Sorption Coefficient	cm ³ water/g soil	Appendix C, Table J	Chemical and pH-Specific
I_s	Depth to Subsurface Soil Sources	cm	RBCA	100
I_{fsw}	Leaching Factor	(mg/L _{water}) / (mg/kg _{soil})	Equation R14 in Appendix C, Table C	Calculated Value
M	Soil to Skin Adherence Factor	mg/cm ²	RBCA	0.5

Symbol	Parameter	Units	Source	Parameter Value(s)
P_e	Particulate Emission Rate	$g/cm^2 \cdot s$	RBCA	$6.9 \cdot 10^{-4}$
RAF_d	Dermal Relative Absorption Factor	unitless	RBCA	0.5
RAF_j (TNAs)	Dermal Relative Absorption Factor	unitless	RBCA	0.05
RAF_j (inorganics)	Dermal Relative Absorption Factor	unitless	RBCA	0
RAF_o	Oral Relative Absorption Factor	unitless	RBCA	1.0
$RUSI_{car}$	Carcinogenic Risk-Based Screening Level for Air	ug/m^3	Equation B9 in Appendix C, Table C	Chemical-, Media-, and Exposure Route-Specific
$RUSI_{ncr}$	Noncarcinogenic Risk-Based Screening Level for Air	ug/m^3	Equations R10 in Appendix C, Table C	Chemical-, Media-, and Exposure Route-Specific
RDI_i	Inhalation Reference Dose	$mg/kg \cdot d$	IEPA (IRIS/IEAST ²)	Toxicological-Specific
RDO_o	Oral Reference Dose	$mg/(kg \cdot d)$	IEPA (IRIS/IEAST ²)	Toxicological-Specific (Note: for Construction Worker use subchronic reference doses)
SA	Skin Surface Area	cm^2/ia	RBCA	3,160

Symbol	Parameter	Units	Source	Parameter Value(s)
S_v	Source Width Perpendicular to Groundwater Flow Direction in Vertical Plane	cm	Field Measurement	For Migration to Groundwater Koats: Use 200 or Site-Specific For Groundwater remediation objective: Use Site-Specific
S_h	Source Width Perpendicular to Groundwater Flow Direction in Horizontal Plane	cm	Field Measurement	Site-Specific
SF_i	Inhalation Cancer Slope Factor	(mg/kg-d) ⁻¹	IEPA (IRIS/HEAST ¹)	Toxicological-Specific
SF_o	Oral Slope Factor	(mg/kg-d) ⁻¹	IEPA (IRIS/HEAST ¹)	Toxicological-Specific
TIQ	Target Hazard Quotient	unitless	RECA	1
TR	Target Cancer Risk	unitless	RECA	Residential = 10^{-6} at the point of human exposure Industrial/Commercial = 10^{-5} at the point of human exposure Construction Worker = 10^{-4} 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_{soil}	Volatilization Factor for Surface Soils Regarding Particulates	kg/m ³	Equation R5 in Appendix C, Table C	Calculated Value
$VF_{subsoil}$	Volatilization Factor (Subsurface Soils to Ambient Air)	(mg/m ³ so ₂)/(mg/kg so ₂) or kg/m ³	Equation R11 in Appendix C, Table C	Calculated Value
VF_{sa}	Volatilization Factor for Surface 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 of Wind or Groundwater Movement	cm	Field Measurement	Site-Specific

Symbol	Parameter	Units	Source	Parameter Value(s)
w	Average Soil Moisture Content	$\frac{g_{water}}{g_{soil}}$	RBCA of 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 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	
α_x	Longitudinal Dispersivity	cm	Equation R16 in Appendix C, Table C	Calculated Value
α_y	Transverse Dispersivity	cm	Equation R17 in Appendix C, Table C	Calculated Value
α_z	Vertical Dispersivity	cm	Equation R18 in Appendix C, Table C	Calculated Value
δ_{ai}	Ambient Air Mixing Zone Height	cm	RBCA	200

Symbol	Parameter	Units	Source	Parameter Value(s)
δ_{gw}	Groundwater Mixing Zone Thickness	cm	RPCA	200
θ_{15}	Volometric Air Content in Vadose Zone Soils	$\text{cm}^3 \text{ air}/\text{cm}^3 \text{ soil}$	RPCA 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
θ_{15}	Volometric Water Content in Vadose Zone Soils	$\text{cm}^3 \text{ water}/\text{cm}^3 \text{ soil}$	RPCA 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)
θ_s	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
λ	First Order Degradation Constant	d^{-1}	Appendix C, Table E	Chemical-Specific
n				3.1416
ρ_s	Soil Bulk Density	g/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
ρ_w	Water Density	g/cm^3	RBCA	1
τ	Averaging Time for Vapor Flux	s	RBCA	9.46×10^5

³ HIFAST - Health Effects Assessment Summary Tables. USEPA, Office of Solid Waste and Emergency Response. EPA/540/R-93/036. Updated Quarterly.

(Source: Appendix B, Table B-1 at 24-25 III. 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 (D _A) (cm ² /s)	Diffusivity in Water (D _w) (cm ² /s)	Dimensionless Henry's Law Constant (H) (25°C)	Organic Carbon Partition Coefficient (K _{oc}) (L/kg)	First Order Degradation Constant (k _d) (d ⁻¹)
	Neutral Organics						
83-32-9	Acenaphthene	4.24	0.0421	7.69E-6	0.00636	7,080	0.9034
67-64-1	Acetone	1,000,000	0.124	1.14E-5	0.00159	0.575	0.0495
15972-60-4	Alachlor	242	0.0198	5.69E-6	0.00000132	394	No Data
116-06-3	Aldicarb	6,000	0.0305	7.19E-6	0.0000000074	12	0.00109
309-00-2	Aldrin	0.18	0.0132	4.86E-6	0.00697	2,450,000	0.00039
120-12-7	Anthracene	0.0454	0.0124	7.74E-6	0.00267	29,500	0.00075
1912-24-9	Atrazine	70	0.0258	6.69E-6	0.000000001	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 (D _A) (cm ² /s)	Diffusivity in Water (D _w) (cm ² /s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K _{oc}) (L/kg)	First Order Degradation Constant (k _d) (d ⁻¹)
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	0.00055	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	0.0592	7.53E-6	0.000738	15.5	0.0019
117-81-7	Bis(2-ethylhexyl)phthalate	0.34	0.0351	3.66E-6	3.00000411	15,100,000	0.0018
75-27-4	Bromodibromomethane	6,740	0.0298	1.06E-5	3.0656	55.0	No Data
75-25-2	Bromoform	3,100	0.0149	1.03E-5	9.0219	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	0.00000066	3,390	No Data

CAS No	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (D _a) (cm ² /s)	Diffusivity in Water (D _w) (cm ² /s)	Dimensionless Henry's Law Constant (H) (25°C)	Organic Carbon Partition Coefficient (K _{ow}) (L/kg)	First Order Degradation Constants (k _d) (d ⁻¹)
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	43.7	No Data
56-23-5	Carbon Tetrachloride	793	0.0780	8.80E-6	1.23	174	0.0019
57-74-9	Chloroform	0.956	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-Chloroethanol	22,000	0.0501	9.46E-6	0.016	388	No Data
218-01-9	Chrysene	0.0016	0.0248	6.71E-6	0.00388	398,000	0.00035
94-73-7	2,4-D	680	0.0231	7.31E-6	0.00000041	451	0.00385
72-54-8	o,p'-DDE	0.09	0.9169	4.76E-6	0.000164	1,000,000	0.000062

CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (D _A) (cm ² /s)	Diffusivity in Water (D _w) (cm ² /s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K _{ow}) (L/kg)	First Order Degradation Constant (k _d) (d ⁻¹)
72-55-9	4,4'-DDE	0.12	0.0144	5.87E-6	0.000861	4,476,000	0.000062
80-29-3	4,4'-DDE	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	0.0000026	5.8	0.005775
53-70-3	Dibenzol(h)anthracene	0.00249	0.0202	5.18E-6	0.00000663	3,800,000	0.00037
96-12-8	1,2-Dibromo-3-chloropropane	1,200	0.0212	7.42E-6	0.00615	182	0.001925
106-93-4	1,2-Dichloroethane	4,200	0.0287	8.06E-6	0.0313	93	0.005775
81-74-2	Di-n-butyl Phthalate	11.2	0.0438	7.86E-6	0.000000385	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 (D _A) (cm ² /s)	Diffusivity in Water (D _w) (cm ² /s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K _{oc}) (L/kg)	First Order Degradative Constant (k _d) (d ⁻¹)
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	2,230	0.0900	1.01E-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	0.0636	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	Dichethyl Phthalate	1,080	0.0256	6.35E-6	0.000185	288	0.00019
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	0.000182	0.01	0.00132

CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (D _A) (cm ² /s)	Diffusivity in Water (D _w) (cm ² /s)	Dimensionless Henry's Law Constant (H) (25°C)	Organic Carbon Partition Coefficient (K _{oc}) (L/kg)	First Order Degradation Constant (k _d) (d ⁻¹)
121-14-2	2,4-Dinitrochlorobenzene	270	0.203	7.06E-6	0.0000038	95.3	0.00192
606-20-2	2,6-Dinitrochlorobenzene	182	0.0327	7.26E-6	0.0000306	69.2	0.00192
88-85-7	Dioxin	52	0.0215	6.62E-6	0.0000189	1,120	0.002817
117-84-9	Di-n-octyl Phthalate	0.02	0.0151	3.58E-6	0.00274	80,200,000	0.0019
115-29-7	Endosulfan	0.51	0.0115	4.55E-6	0.000459	2,140	0.07629
145-73-3	Endosulfan	21,000	0.0291	8.07E-6	0.000000007	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	1.93	0.0363	7.88E-6	0.00261	13,800	0.000691
76-11-8	Heptachlor	0.18	0.012	5.69E-6	0.7	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 (D _A) (cm ² /s)	Diffusivity in Water (D _w) (cm ² /s)	Dimensionless Henry's Law Constant (H) (25°C)	Organic Carbon Partition Coefficient (K _{ow}) (L/kg)	First Order Degradation Constant (λ) (d ⁻¹)
118-74-1	Hexachlorobenzene	6.2	0.0342	5.91E-6	0.9541	55,009	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	Hexachlorocyclo-pentadiene	1.8	0.0161	7.21E-6	1.11	240,000	0.012
67-72-1	Hexachloroethene	50	0.3025	6.80E-6	0.159	1,780	0.00192
193-39-5	Indene(1,2,3-c,d)pyrene	0.000022	0.0190	5.66E-6	0.0000656	5,470,000	0.00047
78-59-1	Isophorone	12,400	0.0623	6.76E-6	0.000272	46.8	0.01238
7439-97-6	Mercury	—	0.0307	6.30E-6	0.467	---	No Data
77-43-5	Methoxyflor	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
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) (ug/L)	Diffusivity in Air (D _A) (cm ² /s)	Diffusivity in Water (D _w) (cm ² /s)	Dimensionless Henry's Law Constant (J') (25°C)	Organic Carbon Partition Coefficient (K _{oc}) (L/kg)	First Order Degradation Constant (k _d) (d ⁻¹)
91-20-3	Naphthalene	31.0	0.0550	7.50E-6	0.0148	2,000	0.0027
98-05-3	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	0.0619
87-86-5	Penicillotropenol	1,950	0.0360	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	0.0000000166	1.98	No Data
1336-36-3	Polychlorinated biphenyls (PCBs)	0.7	----- ^c	----- ^b	----- ^a	309,000	No Data
129-00-0	Pyrene	0.135	0.0272	7.21E-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	0.111	776	0.0033
93-72-1	2,4,5-TP (Silvex)	31	0.0194	5.83E-6	0.000000032	5,410	No Data

CAS No.	Chemical	Solubility in Water (S) (mg/l)	Diffusivity in Air (D _a) (cm ² /s)	Diffusivity in Water (D _w) (cm ² /s)	Dimensionless Henry's Law Constant (H) (25°C)	Organic Carbon Partition Coefficient (K _{oc}) (L/kg)	First Order Degradation Constant (k _d) (d ⁻¹)
127-18-4	Tetrachloroethylene	200	0.0720	8.20E-6	0.734	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	0.0360	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	0.0174	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	0.0118	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	497	0.0019

CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (D _A) (cm ² /s)	Diffusivity in Water (D _w) (cm ² /s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K _{oc}) (L/kg)	First Order Degradation Constant (λ) (d ⁻¹)
95-47-6	o-Xylene	178	0.087	1.00E-5	0.213	463	0.0019
106-42-3	p-Xylene	185	0.0769	8.44E-6	0.314	389	0.0019
1338-20-7	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.

*Soil Remediation objectives are determined pursuant to 40 CFR 761.246 as incorporated by reference at Section 7.2.H14 (the US EPA PCB Spill Cleanup Policy¹⁰); for most sites, persons remediating sites should consult with BDL if calculation of Tier 2 and remediation objectives is desired.

(Source: Amended ~~XXXXXX~~ at 24.25 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 $\text{cm}^3/\text{water}/\text{g}_{\text{solid}}/\text{cm}^3_{\text{water}}/\text{g}_{\text{solid}}$)

pH	Benzoic Acid	2-Chloro-phenol	2,4-Dichloro-phenol	Pentachloro-phenol	2,1,5-Trichloro-phenol	2,4,6-Trichloro-phenol	Dioxin	2,3,5-TP (Silvex)
4.5	1.07E+01	3.98E+02	1.59E+02	1.34E+01	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+01	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+01	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+01	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+00	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+00	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+00	2.36E+03	1.02E+03	1.35E+04	7.30E+03
5.2	3.25E+00	3.98E+02	1.59E+02	5.97E+00	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+00	2.34E+03	9.99E+02	9.64E+03	6.60E+03
5.4	2.29E+00	3.98E+02	1.58E+02	4.32E+00	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+00	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+00	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+00	2.29E+03	9.16E+02	4.73E+03	5.88E+03
5.8	1.24E+00	3.97E+02	1.58E+02	2.18E+00	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+00	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	Dicoseb	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	1.53E+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	2.19E+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	4.17E+02	7.43E+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 (Silver)
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	5.08E-01	3.19E+02	8.97E-01	4.18E+02	4.36E+02	1.44E+02	8.17E+02	5.41E+03
7.9	5.08E-01	3.04E+02	8.07E-01	4.14E+02	2.57E+02	1.37E+02	8.10E+02	5.41E+03
8.0	5.08E-01	2.86E+02	7.17E-01	4.10E+02	2.98E+02	1.31E+02	8.04E+02	5.41E+03

(Source: Amended ~~XXXXXX~~ at 24 25 Pl. Reg. . . . , effective _____)

Section 742-APPENDIX C: Tier 3 Tables and Illustrations

Section 742-TABLE J: Values to be Substituted for K_{sp} , K_a , K_b , K_{eq} , K_{eq} when Evaluating Inorganics as a Function of pH (mmole \cdot m³/g or L₀kg or cm³mmole/gmol)

pH	As	Ba	Bc	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	5.1E+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	6.5E+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	7.7E+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+01	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 ~~Table 1~~ at 24 25 III. 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 _____ day of _____ 2001 by a vote of _____.

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board