Risk-Based Remediation Goals (RBRGs) for Soil & Soil Saturation Limit

Chemical	Risk-Based Remediation Goals (RBRGs) for Soil				Soil Saturation Limit (C_{sat}) (mg/kg)
	Urban Residential (mg/kg)	Rural Residential (mg/kg)	Industrial (mg/kg)	Public Park (mg/kg)	
VOCs					
Acetone	9,590	4,260	10,000	10,000	***
Benzene	0.704	0.279	9.21	42.2	336
Bromodichloromethane	0.317	0.129	2.85	13.40	1,030
2-Butanone	10,000	10,000	10,000	10,000	***
Chloroform	0.132	0.0529	1.54	253	1,100
Ethylbenzene	709	298	8,240	10,000	138
Methyl tert-Butyl Ether	6.88	2.80	70.1	505	2,380
Methylene Chloride	1.30	0.529	13.9	128	921
Styrene	3,220	1,540	10,000	10,000	497
Tetrachloroethene	0.101	0.0444	0.78	1.84	97.1
Toluene	1,440	705	10,000	10,000	235
Trichloroethene	0.523	0.211	5.68	69.4	488
Xylenes (Total)	95.0	36.8	1,230	10,000	150
SVOCs					
Acenaphthene	3,510	3,280	10,000	10,000	60.2
Acenaphthylene	2,340	1,510	10,000	10,000	19.8
Anthracene	10,000	10,000	10,000	10,000	2.56
Benzo(a)anthracene	12.0	11.4	91.8	38.3	
Benzo(a)pyrene	1.20	1.14	9.18	3.83	
Benzo(b)fluoranthene	9.88	10.1	17.8	20.4	
Benzo(g,h,i)perylene	1,800	1,710	10,000	5,740	
Benzo(k)fluoranthene	120	114	918	383	
Bis-(2-Ethylhexyl)phthalate	30.0	28.0	91.8	94.2	
Chrysene	871	919	1,140	1,540	
Dibenzo(a,h)anthracene	1.20	1.14	9.18	3.83	
Fluoranthene	2,400	2,270	10,000	7,620	
Fluorene	2,380	2,250	10,000	7,450	54.7
Hexachlorobenzene	0.243	0.220	0.582	0.713	
Indeno(1,2,3-cd)pyrene	12.0	11.4	91.8	38.3	
Naphthalene	182	85.6	453	914	125
Phenanthrene	10,000	10,000	10,000	10,000	28.0
Phenol	10,000	10,000	10,000	10,000	7,260
Pyrene	1,800	1,710	10,000	5,720	
Metals					
Antimony	29.5	29.1	261	97.9	
Arsenic	22.1	21.8	196	73.5	
Barium	10,000	10,000	10,000	10,000	
Cadmium	73.8	72.8	653	245	
Chromium III	10,000	10,000	10,000	10,000	
Chromium VI	221	218	1,960	735	
Cobalt	1,480	1,460	10,000	4,900	
Copper	2,950	2,910	10,000	9,790	
Lead	258	255	2,290	857	
Manganese	10,000	10,000	10,000	10,000	
Mercury	11.0	6.52	38.4	45.6	
Molybdenum	369	364	3,260	1,220	
Nickel	1,480	1,460	10,000	4,900	
Tin	10,000	10,000	10,000	10,000	
Zinc	10,000	10,000	10,000	10,000	
Dioxins / PCBs					
Dioxins (I-TEQ)	0.001	0.001	0.005	0.001	
PCBs	0.236	0.223	0.748	0.756	
Petroleum Carbon Ranges					
C6 - C8	1,410	545	10,000	10,000	1,000
C9 - C16	2,240	1,330	10,000	10,000	3,000
C17 - C35	10,000	10,000	10,000	10,000	5,000
Other Inorganic Compounds					
Cyanide, free	1,480	1,460	10,000	4,900	
Organometallics					
TBTO	22.1	21.8	196	73.5	

Notes:

(1) For Dioxins, the cleanup levels in USEPA Office of Solid Waste and Emergency Response (OSWER) Directive of 1998 have been adopted. The OSWER Directive value of 1 ppb for residential use has been applied to the scenarios of "Urban Residential", "Rural Residential", and "Public Parks", while the low end of the range of values for industrial, 5 ppb, has been applied to the scenario of "industrial".

(2) Soil saturation limits for petroleum carbon ranges taken from the Canada-Wide Standards for Petroleum Hydrocarbons in Soil, CCME 2000.

(3) * indicates a 'ceiling limit' concentration.

(4) *** indicates that the C_{sat} value exceeds the 'ceiling limit' therefore the RBRG applies.

Risk-Based Remediation Goals (RBRGs) for Groundwater and Solubility Limit

Chemical	Risk-Based Remediation Goals (RBRGs) for Groundwater			Solubility Limit (mg/L)
	Urban Residential (mg/L)	Rural Residential (mg/L)	Industrial (mg/L)	
VOCs				
Acetone	9,590	4,260	10,000	***
Benzene	0.704	0.279	9.21	336
Bromodichloromethane	0.317	0.129	2.85	1,030
2-Butanone	10,000	10,000	10,000	***
Chloroform	0.132	0.0529	1.54	1,100
Ethylbenzene	709	298	8,240	138
Methyl tert-Butyl Ether	6.88	2.80	70.1	2,380
Methylene Chloride	1.30	0.529	13.9	921
Styrene	3,220	1,540	10,000	497
Tetrachloroethene	0.101	0.0444	0.78	97.1
Toluene	1,440	705	10,000	235
Trichloroethene	0.523	0.211	5.68	488
Xylenes (Total)	95.0	36.8	1,230	150
SVOCs				
Acenaphthene	10,000	7,090	10,000	4.24
Acenaphthylene	1,410	542	10,000	3.93
Anthracene	10,000	10,000	10,000	0.0434
Benzo(a)anthracene				
Benzo(a)pyrene				
Benzo(b)fluoranthene	0.539	0.203	7.53	0.0015
Benzo(g,h,i)perylene				
Benzo(k)fluoranthene				
Bis-(2-Ethylhexyl)phthalate				
Chrysene	58.1	21.9	812	0.0016
Dibenzo(a,h)anthracene				
Fluoranthene	10,000	10,000	10,000	0.206
Fluorene	10,000	10,000	10,000	1.98
Hexachlorobenzene	0.0589	0.0234	0.695	6.20
Indeno(1,2,3-cd)pyrene				
Naphthalene	61.7	23.7	862	31.0
Phenanthrene	10,000	10,000	10,000	1.00
Phenol				
Pyrene	10,000	10,000	10,000	0.135
Metals				
Antimony				
Arsenic				
Barium				
Cadmium				
Chromium III				
Chromium VI				
Cobalt				
Copper				
Lead				
Manganese				
Mercury	0.486	0.184	6.79	
Molybdenum				
Nickel				
Tin				
Zinc				
PCBs				
Dioxins (I-TEQ)				
PCBs	0.433	0.171	5.11	0.031
Petroleum Carbon Ranges				
C6 - C8	1,410	545	10,000	1,000
C9 - C16	2,240	1,330	10,000	3,000
C17 - C35	10,000	10,000	10,000	5,000
Other Inorganic Compounds				
Cyanide, free				
Organometallics				
TBTO				

Notes:

(1) Blank indicates that RBRG could not be calculated because the toxicity or physical/chemical values were unavailable, or the condition of Henry's Law Constant>0.00005 was not met for the inhalation pathway.

(2) Where solubilities for Petroleum Carbon Range aliphatic C9-C16 and greater than C16 generally are considered to be effectively zero and therefore the aromatic solubility for C9-C16 is used.

(3) * indicates a 'ceiling limit' concentration.

(4) *** indicates that the solubility limit exceeds the 'ceiling limit' therefore the RBRG applies.