



RISK-BASED CONCENTRATIONS ABRIDGED FOR **LEAKING UNDERGROUND STORAGE TANKS (LUST) AND HEATING OIL TANKS (HOT)**

Contaminated Medium	SOIL mg/Kg (ppm)										SOIL mg/Kg (ppm)			SOIL mg/Kg (ppm)			SOIL mg/Kg (ppm)			GROUNDWATER (µg/L (ppb))												
	Soil Ingestion, Dermal Contact, and Inhalation (RBC _{SS})										Volatilization to Outdoor Air (RBC _{SO})			Vapor Intrusion into Buildings (RBC _{SI}) No longer applicable Ø			Leaching to Groundwater (RBC _{SW})			Ingestion & Inhalation from Tapwater (RBC _{TW})												
	Residential		Urban Residential		Occupational		Construction Worker		Excavation Worker		Residential	Urban Residential	Occupational	Residential	Urban Residential	Occupational	Residential	Urban Residential	Occupational	Residential	Urban Residential	Occupational										
Exposure Pathway	DC										IVS			IVS			IS			DS												
Receptor Scenario	Note	Note	Note	Note	Note	Note	Note	Note	Note	Note	Note	Note	Note	Note	Note	Note	Note	Note	Note	Note	Note	Note										
Direct or Indirect Pathway (see notes)	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC										
Benzene	c, v	8.2	>Csat	24	>Csat	37	>Csat	380	>Csat	11,000	>Csat	11	>Csat	27	>Csat	50	>Csat				0.023	>Csat	0.10	>Csat	0.10	>Csat	0.46	>Csat	2.0	>Csat	2.1	>Csat
Toluene	nc, v	5,800	>Csat	12,000	>Csat	88,000	>Csat	28,000	>Csat	770,000	>Csat	-	>Csat	-	>Csat	-	>Csat				84	>Csat	340	>Csat	490	>Csat	1,100	>Csat	4,400	>Csat	6,300	>Csat
Ethylbenzene	c, v	34	>Csat	110	>Csat	150	>Csat	1,700	>Csat	49,000	>Csat	36	>Csat	85	>Csat	160	>Csat				0.22	>Csat	0.94	>Csat	0.90	>Csat	1.5	>Csat	6.7	>Csat	6.4	>Csat
Xylenes	nc, v	1,400	>Csat	2,900	>Csat	25,000	>Csat	20,000	>Csat	560,000	>Csat	-	>Csat	-	>Csat	-	>Csat				23	>Csat	87	>Csat	100	>Csat	190	>Csat	710	>Csat	830	>Csat
iso-Propylbenzene (cumene)	nc, v	3,500	>Csat	7,000	>Csat	57,000	>Csat	27,000	>Csat	750,000	>Csat	-	>Csat	-	>Csat	-	>Csat				96	>Csat	-	>Csat	-	>Csat	440	>Csat	1,800	>Csat	2,000	>Csat
Trimethylbenzene, 1,2,4-	nc, v	430	>Csat	860	>Csat	6,900	>Csat	2,900	>Csat	81,000	>Csat	-	>Csat	-	>Csat	-	>Csat				10	>Csat	43	>Csat	48	>Csat	54	>Csat	230	>Csat	250	>Csat
Trimethylbenzene, 1,3,5-	nc, v	430	>Csat	860	>Csat	6,900	>Csat	2,900	>Csat	81,000	>Csat	-	>Csat	-	>Csat	-	>Csat				11	>Csat	45	>Csat	53	>Csat	59	>Csat	240	>Csat	280	>Csat
Acenaphthene	nc, v	4,700	>Csat	9,400	>Csat	70,000	>Csat	21,000	>Csat	590,000	>Csat	-	>Max	-	>Max	-	>Max				-	>Csat	-	>Csat	-	>Csat	510	>Csat	2,400	>Csat	2,500	>Csat
Anthracene	nc, v	23,000	>Csat	47,000	>Csat	350,000	>Csat	110,000	>Csat	-	>Max	-	>Max	-	>Max	-	>Max				-	>Csat	-	>Csat	-	>Csat	-	>S	-	>S	-	>S
Benzo[a]anthracene	c, v	1.1	>Csat	2.5	>Csat	21	>Csat	170	>Csat	4,800	>Csat	-	>Csat	-	>Csat	-	>Csat				1.6	>Csat	6.0	>Csat	-	>Csat	0.030	>Csat	0.11	>Csat	0.38	>Csat
Benzo[b]fluoranthene	c, nv	1.1	>Csat	2.5	>Csat	21	>Csat	170	>Csat	4,900	>Csat	-	NV	-	NV	-	NV				-	>Csat	-	>Csat	-	>Csat	0.25	>Csat	0.80	>Csat	-	>S
Benzo[k]fluoranthene	c, nv	11	>Csat	25	>Csat	210	>Csat	1,700	>Csat	49,000	>Csat	-	NV	-	NV	-	NV				-	>Csat	-	>Csat	-	>Csat	-	>S	-	>S	-	>S
Benzo[a]pyrene (BaP equivalents)**	c, nv	0.11	>Csat	0.25	>Csat	2.1	>Csat	17	>Csat	490	>Csat	-	NV	-	NV	-	NV				4.4	>Csat	-	>Csat	-	>Csat	0.025	>Csat	0.080	>Csat	0.47	>Csat
Chrysene	c, nv	110	>Csat	250	>Csat	2,100	>Csat	17,000	>Csat	490,000	>Csat	-	NV	-	NV	-	NV				-	>Csat	-	>Csat	-	>Csat	-	>S	-	>S	-	>S
Dibenz[a,h]anthracene	c, nv	0.11	>Csat	0.25	>Csat	2.1	>Csat	17	>Csat	490	>Csat	-	NV	-	NV	-	NV				-	>Csat	-	>Csat	-	>Csat	0.025	>Csat	0.080	>Csat	0.47	>Csat
Fluoranthene	nc, nv	2,400	>Csat	4,800	>Csat	30,000	>Csat	10,000	>Csat	280,000	>Csat	-	NV	-	NV	-	NV				-	>Csat	-	>Csat	-	>Csat	-	>S	-	>S	-	>S
Fluorene	nc, v	3,100	>Csat	6,300	>Csat	47,000	>Csat	14,000	>Csat	390,000	>Csat	-	>Max	-	>Max	-	>Max				-	>Csat	-	>Csat	-	>Csat	280	>Csat	1,400	>Csat	1,300	>Csat
Indeno[1,2,3-cd]pyrene	c, nv	1.1	>Csat	2.5	>Csat	21	>Csat	170	>Csat	4,800	>Csat	-	NV	-	NV	-	NV				-	>Csat	-	>Csat	-	>Csat	-	>S	-	>S	-	>S
Naphthalene	c, v	5.3	>Csat	25	>Csat	23	>Csat	580	>Csat	16,000	>Csat	6.4	>Csat	15	>Csat	83	>Csat				0.077	>Csat	0.37	>Csat	0.34	>Csat	0.17	>Csat	0.78	>Csat	0.72	>Csat
Pyrene	nc, v	1,800	>Csat	3,600	>Csat	23,000	>Csat	7,500	>Csat	210,000	>Csat	-	>Csat	-	>Csat	-	>Csat				-	>Csat	-	>Csat	-	>Csat	110	>Csat	-	>S	-	>S
MTBE (methyl t-butyl ether)	c, v	250	>Csat	730	>Csat	1,100	>Csat	12,000	>Csat	320,000	>Csat	340	>Csat	810	>Csat	1,500	>Csat				0.11	>Csat	0.50	>Csat	0.54	>Csat	14	>Csat	64	>Csat	68	>Csat
EDB (1,2-dibromoethane)	c, v	0.16	>Csat	0.53	>Csat	0.73	>Csat	9.0	>Csat	250	>Csat	0.15	>Csat	0.35	>Csat	0.65	>Csat				0.00012	>Csat	0.00056	>Csat	0.00056	>Csat	0.0075	>Csat	0.034	>Csat	0.034	>Csat
EDC (1,2-dichloroethane)	c, v	3.6	>Csat	12	>Csat	16	>Csat	200	>Csat	5,600	>Csat	3.4	>Csat	8.1	>Csat	15	>Csat				0.0028	>Csat	0.013	>Csat	0.013	>Csat	0.17	>Csat	0.78	>Csat	0.78	>Csat
Lead	nc, nv	400	L	400	L	800	L	800	L	800	L	-	NV	-	NV	-	NV				30	L	30	L	30	L	15	L	15	L	15	L
Generic Gasoline	nc, v	1,200	>Csat	2,500	>Csat	20,000	>Csat	9,700	>Csat	>Max	>Csat	5,900	>Csat	5,900	>Csat	69,000	>Csat				31	>Csat	31	>Csat	130	>Csat	110	>Csat	110	>Csat	450	>Csat
Generic Diesel/Heating Oil	nc, v	1,100	>Csat	2,200	>Csat	14,000	>Csat	4,600	>Csat	>Max	>Csat	>Max	>Csat	>Max	>Csat	>Max	>Csat				9,500	>Csat	9,500	>Csat	>Max	>Csat	100	>Csat	100	>Csat	430	>Csat
Generic Mineral/Insulating Oil	nc, nv	2,800	>Csat	5,700	>Csat	36,000	>Csat	11,000	>Csat	>Max	>Csat	>Max	>Csat	>Max	>Csat	>Max	>Csat				>Max	>Csat	>Max	>Csat	>Max	>Csat	300	>Csat	300	>Csat	1,300	>Csat

Contaminated Medium		GROUNDWATER (µg/L (ppb))						GROUNDWATER (µg/L (ppb))			GROUNDWATER (µg/L (ppb))			Soil Vapor (µg/m³)			AIR (µg/m³)										
Exposure Pathway		Volatilization to Outdoor Air (RBC _{wo})						Vapor Intrusion into Buildings (RBC _{wi}) Use Separate DEQ VI RBCs δ			GW in Excavation (RBC _{we})			Inhalation (RBC _{sv}) Use Separate DEQ VI RBCs δ			Inhalation (RBC _{air})										
Receptor Scenario		Residential		Urban Residential		Occupational		Residential		Urban Residential		Occupational		Construction & Excavation Worker		Residential		Urban Residential		Occupational		Residential		Urban Residential		Occupational	
Direct or Indirect Pathway (see notes)		IVW		IVW		IVW		IVW		IVW		IVW		DS		ICA		ICA		ICA		DCA		DCA		DCA	
Contaminant	Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note
Benzene	c, v	3,100		7,400		14,000								1,800								0.36		0.85		1.6	
Toluene	nc, v	-	>S	-	>S	-	>S							220,000								5200		5200		22000	
Ethylbenzene	c, v	9,900	>S	23,000	>S	43,000	>S							4,500								1.1		2.7		4.9	
Xylenes	nc, v	-	>S	-	>S	-	>S							23,000								100		100		440	
iso-Propylbenzene (cumene)	nc, v	-	>S	-	>S	-	>S							51,000								420		420		1800	
Trimethylbenzene, 1,2,4-	nc, v	-	>S	-	>S	-	>S							6,300								63		63		260	
Trimethylbenzene, 1,3,5-	nc, v	-	>S	-	>S	-	>S							7,500								63		63		260	
Acenaphthene	nc, v	-	>S	-	>S	-	>S							-	>S							-	>Pv	-	>Pv	-	>Pv
Anthracene	nc, v	-	>S	-	>S	-	>S							-	>S							-	>Pv	-	>Pv	-	>Pv
Benz[a]anthracene	c, v	-	>S	-	>S	-	>S							-	>S							0.017		0.033		0.20	
Benzo[b]fluoranthene	c, nv	-	NV	-	NV	-	NV							-	>S							0.017		0.033		0.20	
Benzo[k]fluoranthene	c, nv	-	NV	-	NV	-	NV							-	>S							-	>Pv	-	>Pv	-	>Pv
Benzo[a]pyrene (BaP equivalents)**	c*, nv	-	NV	-	NV	-	NV							-	>S							0.0017		0.0021		0.0088	
Chrysene	c, nv	-	NV	-	NV	-	NV							-	>S							1.7		3.3		-	>Pv
Dibenz[a,h]anthracene	c, nv	-	NV	-	NV	-	NV							-	>S							-	>Pv	-	>Pv	-	>Pv
Fluoranthene	nc, nv	-	NV	-	NV	-	NV							-	>S							-	>Pv	-	>Pv	-	>Pv
Fluorene	nc, v	-	>S	-	>S	-	>S							-	>S							-	>Pv	-	>Pv	-	>Pv
Indeno[1,2,3-cd]pyrene	c, nv	-	NV	-	NV	-	NV							-	>S							-	>Pv	-	>Pv	-	>Pv
Naphthalene	c, v	3,600		8,500		16,000	>S							500								0.083		0.20		0.36	
Pyrene	nc, v	-	>S	-	>S	-	>S							-	>S							-	>Pv	-	>Pv	-	>Pv
MTBE (methyl t-butyl ether)	c, v	350,000		830,000		1,500,000								63,000								11		26		47	
EDB (1,2-dibromoethane)	c, v	180		430		790								27								0.0047		0.011		0.02	
EDC (1,2-dichloroethane)	c, v	2,100		4,900		9,000								630								0.11		0.26		0.47	
Lead	nc, nv	-	NV	-	NV	-	NV							-	>S							-	>Pv	-	>Pv	-	>Pv
Generic Gasoline	nc, v	>S		>S		>S								14,000								390		390		1,700	
Generic Diesel/Heating Oil	nc, v	>S		>S		>S								>S								100		100		440	
Generic Mineral/Insulating Oil	nc, nv	>S		>S		>S								>S								150		150		620	

NOTES:

Direct or Indirect Pathway Codes have the following meanings: DC means it is a direct contact pathway with a limiting value of Csat. IVS means it is an indirect pathway with a limiting value of Csat. DS means it is a direct contact pathway with a limiting value equal to the solubility, S. IVW means it is an indirect pathway with a limiting value equal to the solubility, S. DPA or ICA means it has a limiting value equal to the vapor pressure, Pv.

The symbols in the "Note" columns are explained below. The references can be found in *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites* (DEQ, 2003)

- c This chemical is a known or suspected carcinogen. The RBCs in this row were calculated using equations for carcinogens. To calculate the appropriate RBCs for non-carcinogenic effects, you need to first change the toxicity basis in the spreadsheet from "c" to "nc", and then re-calculate the RBCs. You should use the lower of the calculated RBCs for each exposure scenario. This summary table (but not the associated spreadsheet) includes the lower of the carcinogenic and non-carcinogenic RBCs.
- >Csat This soil RBC exceeds the limit of three-phase equilibrium partitioning. Refer to "ChemData" page for the corresponding value of Csat. Soil concentrations in excess of Csat indicate that free product might be present. See Section B.2.1.4 for additional information.
- L The values for lead reported in this table are not derived from the equations developed in Appendix B. See Section B.3.4 for the source of the lead numbers and information on applying them. Note that the lead values for RBC_{sw} are reported as mg/L rather than mg/kg since they are the results of leaching tests, not soil measurements.
- >Max The constituent RBC for this pathway is greater than 1,000,000 mg/kg or 1,000,000 mg/L. Therefore, these substances are not expected to pose risks in the scenario shown.
- NA Not Available.
- nc This chemical is a noncarcinogen. The RBCs in this row were calculated using equations for noncarcinogens described in Appendix B.
- nv This chemical is considered "nonvolatile" for purposes of the exposure calculations.
- >Pv The air concentration reported for the RBC exceeds the vapor pressure of the pure chemical. It can be assumed that this constituent cannot create an unacceptable risk by this pathway. See Section B.2.1.4 for additional information.
- >S This groundwater RBC exceeds the solubility limit. Refer to Appendix D for the corresponding value of S. Groundwater concentrations in excess of S indicate that free product may be present. See Section B.2.1.4 for additional information.
- v This chemical is classified as "volatile" for purposes of the exposure calculations in this document.
- ** Carcinogenic PAHs are considered in aggregate as a chemical class. RBCs for individual carcinogenic PAHs are provided for convenience.
- When "Show All Values" is not selected on the Main Menu, all RBC values for indirect pathways that exceed a limit (Csat, S, or Pv) are removed from the table and replaced with "-". If you suspect that a chemical may be present at high concentrations on airborne dust rather than vapor, the vapor pressure limit does not apply, so use the RBC_{air} value.
- c* The values shown are based primarily on a cancer endpoint, but there are one or more scenarios where they are based on a noncancer endpoint.

- ∅ DEQ no longer screens vapor intrusion risks based on soil data.
- δ Vapor intrusion RBCs are now in a separate DEQ RBC table for screening vapor intrusion risk from groundwater and soil vapor.