TABLE 2-4 Properties of Representative Organic Ground Water Contaminants

	Pollutant	Aqueous Solubility (mg liter^{-1})	Henry's Law Constant (atm m^3 mol^{-1})	K_{ow}	Specific Gravity		Absolute Viscosity (cP)	Melting Point (°C)
	Chlorinated hydrocarbons							
有機	Carbon tetrachloride	7.57×10^2	2.41×10^{-2}	4.37×10^2	1.58		0.965	−23
塩化水素	Trichloroethylene	1.10×10^3	9.10×10^{-3}	2.40×10^2	1.47	>1.0	0.566	−73
	Tetrachloroethylene	1.50×10^2	2.59×10^{-2}	3.98×10^2	1.63		0.89	−23
	1,2 Dichlorobenzene	1.0×10^2	1.93×10^{-3}	3.98×10^3	1.30		1.32	−17
炭化水素	Fuel hydrocarbons							
燃料	Benzene	1.75×10^3	5.59×10^{-3}	1.32×10^2	0.873		0.603	5.5
	Toluene	5.35×10^2	6.37×10^{-3}	5.37×10^2	0.862	<1.0	0.552	−9.5
	p-Xylene	1.98×10^2	7.05×10^{-3}	1.41×10^3	0.861		0.644	13
含酸素	Oxygenated compounds							
化合物	Bis–2-ethylhexyl phthalate	2.85×10^{-1}	3.61×10^{-7}	9.50×10^3	1.21		2.14	−50
	Phenol	9.3×10^4	4.54×10^{-7}	3.0×10^1	1.0576		1.24	43
	Methyl ethyl ketone	2.56×10^5	4.66×10^{-5}	2.9×10^{-1}	0.805		0.40	−86
	PAHs							
多環芳香族	Benzo[a]pyrene	3.8×10^{-3}	2.4×10^{-6}	1.00×10^6	1.35		NA	177
炭化水素	Pyrene	1.30×10^{-1}	5.10×10^{-6}	8.00×10^4	1.27		NA	150
	Naphthalene	3.17×10^{-1}	4.60×10^{-4}	1.95×10^3	1.16		NA	80
農薬	Pesticides							
	Chlordane	5.60×10^{-2}	9.40×10^{-5}	3.00×10^5	1.6		NA	103-109
	Lindane	7.80×10^0	7.80×10^{-6}	7.80×10^3	NA		NA	113
	Mixtures							
	Crude oil	NA	NA	NA	0.70–0.98		8–87	NA
	Gasoline	NA	NA	NA	0.73		0.45	NA
	JP-l jet fuel	NA	NA	NA	0.81–0.85		2.05	NA
	Coal tar (creosote)	NA	NA	NA	1.05–1.1		1.1–20	NA
	PCBs							
	Arochlor 1248	5.40×10^{-2}	3.50×10^{-3}	5.62×10^5	1.44		212 (38°C)	−7 (approx.)
	Arochlor 1260	2.70×10^{-3}	7.10×10^{-3}	1.38×10^7	1.57			31 (approx.)

NOTE: Reported values at 20 or 25°C. NA indicates that data are not applicable or not available from the sources used to prepare this table. Viscosity is irrelevant for substances that are solids under ambient conditions, and mixtures melt over a range of temperatures. SOURCES: Lucius et al., 1992; Mercer and Cohen, 1990; Wing and Weaver, 1991; Montgomery and Welkom, 1990; EPA, 1982.

Table 1 (NRC 1994)

Some Properties of Various Chemicals

Chemical	Molecular weight (g/mol)[a]	Density (g/cm^3)[a]	Solubility (mg/liter)[b]	Vapor pressure (atm)[b]	Henry's Law constant ($atm \cdot m^3/mol$)[b]	Henry's Law constant (dimensionless)[b]	log K_{ow}[c]	Comments
Acetic acid	60.05	1.05	∞	—	—	—	—	
Aroclor 1254	325.06[d]	1.50[d]	1.2×10^{-2}	1×10^{-7}	2.7×10^{-3}	1.2×10^{-1}	6.5[e]	Polychlorinated biphenyl mixture (PCB)
Aroclor 1260	371.22[d]	1.57[d]	2.7×10^{-3}	5.3×10^{-8}	7.1×10^{-3}	3.0×10^{-1}	6.7[e]	Polychlorinated biphenyl mixture (PCB)
Atrazine	215.68[d]		33[b]	4×10^{-10}[f]	3×10^{-9}[f]	1×10^{-7}[f]	2.68[b]	Herbicide
Benzene	78.11	0.88	1780	1.25×10^{-1}	5.5×10^{-3}	2.4×10^{-1}	2.13	Gasoline constituent
Benz(a)anthracene	228.29		2.5×10^{-4}[g]	6.3×10^{-9}[g]	5.75×10^{-6}[g]	2.4×10^{-4}[g]	5.91	Polycyclic aromatic hydrocarbon (PAH)
Benzo(a)pyrene	252.32		4.9×10^{-5}[g]	2.3×10^{-10}[g]	1.20×10^{-6}[g]	4.9×10^{-5}[g]	6.50	PAH
Carbon tetrachloride	153.82	1.59	800	0.12	2.3×10^{-2}	9.7×10^{-1}	2.83[b]	
Chlorobenzene	112.56	1.11	472	1.6×10^{-2}	3.7×10^{-3}	1.65×10^{-1}	2.92	
Chloroform	119.38	1.48	8×10^{-3}	0.32	4.8×10^{-3}	2.0×10^{-1}	1.97[b]	
m-Cresol	108.14		2,780[g]				1.96	
Cyclohexane	84.16	0.78	60[g]	0.13[g]	0.18[g]	7.3[g]	3.44	
1,1-Dichloroethane	98.96	1.18	4.962[g]	3.0×10^{-1}[g]	6×10^{-3}[g]	2.4×10^{-1}[g]	1.79	
1,2-Dichloroethane	98.96	1.24	8,426[g]	9.1×10^{-2}[g]	10^{-3}[g]	4.1×10^{-2}[g]	1.47	
cis-1,2-Dichloroethene	96.94	1.28	3,500[h]	0.26[h]	3.4×10^{-3}[h]	0.25[h]	1.86[h]	
trans-1,2-Dichloroethene	96.94	1.26	6,300[h]	0.45[h]	6.7×10^{-3}[h]	0.23[h]	2.06[h]	
Ethane	30.07	—	2.4×10^{-3}[g]	39.8[g]	4.9×10^{-1}[g]	20[g]		Gas
Ethanol	46.07	0.79	∞	7.8×10^{-2}[h]	6.3×10^{-6}[h]		−0.31[h]	Booze
Ethyl benzene	106.17	0.87	152	1.25×10^{-2}	8.7×10^{-3}	3.7×10^{-1}		
Lindane	290.9		7.3	1.2×10^{-8}	4.8×10^{-7}	2.2×10^{-5}		Pesticide
Methane	16.04	—	6.7×10^{-3}[g]	275[g]	0.66[g]	27[g]	—	Natural gas
Methylene chloride	84.93	1.33	1.3×10^{4}	0.46	3×10^{-3}	1.3×10^{-1}	1.15	Also called dichloromethane
Naphthalene	128.17	1.03	33	3×10^{-4}	1.15×10^{-3}	4.9×10^{-2}	3.36	PAH
Nitrogen	28.01	—					—	Atmospheric gas
n-Octane	114.23	0.70	0.72[g]	0.019[g]	2.95[g]	121[g]	4.00[b]	Alkane
Oxygen	32.00	—					—	Atmospheric gas
Pentachlorophenol	266.34	1.98	14	1.8×10^{-7}	3.4×10^{-6}	1.5×10^{-4}		
n-Pentane	72.15	0.63	40.6[g]	0.69[g]	1.23[g]	50.3[g]	3.62	
Perchloroethene	165.83	1.62	400	2×10^{-2}	8.3×10^{-3}	3.4×10^{-1}	2.88	Commonly used in dry cleaning; tetrachloroethene
Phenanthrene	178.23	0.98	6.2[g]	8.9×10^{-7}[g]	3.5×10^{-5}[g]	1.5×10^{-3}[g]	4.57	PAH
Styrene	104.15	0.91					2.95[b]	
Toluene	92.14	0.87	515	3.7×10^{-2}	6.6×10^{-3}	2.8×10^{-1}	2.69	A common solvent
1,1,1-Trichloroethane (TCA)	133.40	1.34	950	0.13	1.8×10^{-2}	7.7×10^{-1}	2.48	A common solvent
Trichloroethene (TCE)	131.39	1.46	1×10^{3}	8×10^{-2}	1×10^{-2}	4.2×10^{-1}	2.42	A common solvent
o-Xylene	106.17	0.88	175	8.7×10^{-3}	5.1×10^{-3}	2.2×10^{-1}	3.12	1,2-dimethyl benzene
Vinyl chloride	62.50	0.91	90	3.4	2.4	99	0.60	Degradation product of TCE

[a]Values from Weast (1990), unless otherwise noted. Densities measured between 15.5 and 22°C, except for *o*-xylene at 10°C and phenanthrene at 4°C.
[b]Lyman *et al.* (1990). Solubility, vapor pressure, and Henry's Law constants are for 20°C, unless otherwise noted.
[c]Schwarzenbach *et al.* (1993). Note that K_{ow} values are for 25°C.
[d]Values from Budavari (1989). Average number of chlorines per molecule for Aroclor 1254 and Aroclor 1260 is 4.96 and 6.30, respectively.
[e]Estimated from values in Anderson and Parker (1990).
[f]Riederer (1990).
[g]Schwarzenbach *et al.* (1993). Solubility, vapor pressure, and Henry's Law constants are for 25°C.
[h]Howard (1990). Vapor pressure for *cis*-1,2-dichloroethene is for 35°C. Solubility and vapor pressure for *trans*-1,2-dichloroethene are for 25°C. Vapor pressure for ethanol is for 25°C.

Table 2 (Hemond and Fechner 1994)