Contaminant	Examples of uses
Aromatic hydrocarbons (芳香族炭化水素)	
Acenaphthene	Coal tar by-product
Acenaphthylene	Coal tar by-product
Acetanilide	Intermediate manufacturing, pharmaceuticals, dyestuffs
Alkyl benzene sulfonates	Detergents
Aniline	Dyestuffs, intermediate, photographic chemicals, pharmaceuticals, herbicides, fungicides, petroleum refining, explosives
Anthracene	Dyestuffs, intermediate, semiconductor research, coal tar by-product
Benzene	Detergents, intermediate, solvents, gasoline, coal tar by-product
Benzidine	Dyestuffs, reagent, stiffening agent in rubber compounding
Benzo[a]anthracene	Coal tar by-product
Benzo[a]pyrene	Coal tar by-product
Benzo[b]fluroanthene	Coal tar by-product
Benzo[g, h,i]perylene	Coal tar by-product
Benzo[k]fluoranthene	Coal tar by-product
Benzyl alcohol	Solvent, perfumes and flavors, photographic developer inks, dye-stuffs, intermediate
Butoxymethylbenzene	NA°
Chrysene	Organic synthesis, coal tar by-product
Creosote mixture	Wood preservatives, disinfectants
Dibenz[a,h]anthracene	NA
Di-butyl-p-benzoquinone	NA
Dihydrotrimethylquinoline	Rubber antioxidant
4,4-Dinitrosodiphenylamine	NA
Ethylbenzene	Intermediate, solvent, gasoline, coal tar by-product
Fluoranthene	Coal tar by-product
Fluorene	Resinous products, dyestuffs, insecticides, coal tar by-product
Fluorescein	Dyestuffs
Isopropyl benzene	Solvent, chemical manufacturing
4,4-methylene-bis-2-chloroaniline (MOCA)	Curing agent for polyurethanes and epoxy resins
Methylnapthalene	Coal tar by product, diesel fuel
Methylthiobenzothiazole	NA
Napthalene	Solvent, lubricant, explosives, preservatives, intermediate, fungicide, moth repellant, coal tar by product, gasoline
o-Nitroaniline	Dyestuffs, intermediate, interior paint pigments, chemical manufacturing
Nitrobenzene	Solvent, polishes, chemical manufacturing
4-Nitrophenol	Chemical manufacturing
n-Nitrosodiphenylamine	Pesticides, retarder of vulcanization of rubber
Phenanthrene	Dyestuffs, explosives, synthesis of drugs, biochemical research
n-Propylbenzene	Dyestuffs, solvent

BTEX

TABLE 1.2 *Cont'd*

Contaminant	Examples of uses
Aromatic hydrocarbons (cont'd)	
Pyrene	Biochemical research, coal tar by-product
Styrene (vinyl benzene)	Plastics, resins, protective coatings, intermediate, gasoline
Toluene	Adhesive solvent in plastics, solvent, aviation and high-octane blending stock, dilutent and thinner, chemicals, explosives, detergents, gasoline, coal tar by-product
1,2,4-Trimethylbenzene	Manufacture of dyestuffs, pharmaceuticals, chemical manufacturing, gasoline
Xylenes (*m, o, p*)	Aviation gasoline, protective coatings, solvent, synthesis of organic chemicals, gasoline, coal tar by-product
Oxygenated hydrocarbons	
Acetic acid	Food additives, plastics, dyestuffs, pharmaceuticals, photographic chemicals, insecticides
Acetone	Dyestuffs, solvent, chemical manufacturing, cleaning and drying of precision equipment
Benzophenone	Organic synthesis, odor fixative, flavoring, pharmaceuticals
Butyl acetate	Solvent
n-Butyl-benzylphthalate	Plastics, intermediate
Di-*n*-butyl phthalate	Plasticizer, solvent, adhesives, insecticides, safety glass, inks, paper coatings
Diethyl ether	Chemical manufacturing, solvent, analytical chemistry, anesthetic, perfumes
Diethyl phthalate	Plastics, explosives, solvent, insecticides, perfumes
Diisopropyl ether	Solvent, rubber cements, paint and varnish removers
2,4-Dimethyl-3-hexanol	Intermediate, solvent, lubricant
2,4-Dimethyl phenol	Pharmaceuticals, plastics, disinfectants, solvent, dyestuffs, insecticides, fungicides, additives to lubricants and gasolines
Di-*n*-octyl phthalate	Plasticizer for polyvinyl chloride and other vinyls
1,4-Dioxane	Solvent, lacquers, paints, varnishes, cleaning and detergent preparations, fumigants, paint and varnish removers, wetting agent, cosmetics
Ethyl acrylate	Polymers, acrylic paints, intermediate
Formic acid	Dyeing and finishing, chemicals, manufacture of fumigants, insecticides, solvents, plastics, refrigerants
Methanol (methyl alcohol)	Chemical manufacturing, solvents, automotive antifreeze, fuels
Methylcyclohexanone	Solvent, lacquers
Methyl ethyl ketone (2-Butanone)	Solvent, paint removers, cements and adhesives, cleaning fluids, printing, acrylic coatings
Methylphenyl acetamide	NA

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TABLE 1.2 *Cont'd*

Contaminant	Examples of uses
Oxygenated hydrocarbons (cont'd)	
Phenols (e.g., *p*-tert-butylphenol)	Resins, solvent, pharmaceuticals; reagent, dyestuffs and indicators, germicidal paints
Phthalic acid	Dyestuffs, medicine, perfumes, reagent
2-Propanol	Chemical manufacturing, solvent, deicing agent, pharmaceuticals, perfumes, lacquers, dehydrating agent, preservatives
2-Propyl-1 -heptanol	Solvent
Methyl tert-butyl ether (MTBE)	Gasoline additive
Tetrahydrofuran	Solvent
Varsol	Paint and varnish thinner
Hydrocarbons with specific elements (e.g., with N, P, S, Cl, Br, I, F)	
Acetyl chloride	Dyestuffs, pharmaceuticals, organic preparations
Alachlor (Lasso)	Herbicides
Aldicarb (sulfoxide and sulfone; Temik)	Insecticide, nematocide
Aldrin	Insecticides
Atrazine	Herbicides, plant growth regulator, weed-control agent
Benzoyl chloride	Medicine, intermediate
Bromacil	Herbicides
Bromobenzene	Solvent, motor oils, organic synthesis
Bromochloromethane	Fire extinguishers, organic synthesis
Bromodichloromethane	Solvent, fire extinguisher fluid, mineral and salt separations
Bromoform	Solvent, intermediate
Carbofuran	Insecticide, nematocide
Carbon tetrachloride	Degreasers, refrigerants and propellants, fumigants, chemical manufacturing
Chlordane	Insecticides, oil emulsions
Chlorobenzene	Solvent, pesticides, chemical manufacturing
Chloroform	Plastics, fumigants, insecticides, refrigerants and propellants
Chlorohexane	NA
Chloromethane (methyl chloride)	Refrigerants, medicine, propellants, herbicide, organic synthesis
Chloromethyl sulfide	NA
2-Chloronaphthalene	Plasticizer, solvent for dyestuffs, varnish gums and resins, waxes; moisture-, flame-, acid-, and insect-proofing of fibrous materials; moisture- and flame-proofing of electrical cable
Chlorpyrifos	NA
Chlorthal-methyl (DCPA, or Dacthal)	Herbicide
p-Chlorophenyl methylsulfone	Herbicide manufacture
Chlorophenylmethyl sulfide	Herbicide manufacture
Chlorophenylmethyl sulfoxide	Herbicide manufacture
o-Chlorotoluene	Solvent, intermediate

TABLE 1.2 *Cont'd*

Contaminant	Examples of uses
Hydrocarbons with specific elements (cont'd)	
p-Chlorotoluene	Solvent, intermediate
Cyclopentadiene	Insecticide manufacture
Dibromochloromethane	Organic synthesis
Dibromochloropropane (DBCP)	Fumigant, nematocide
Dibromodichloroethylene	NA
Dibromoethane (ethylene dibromide, EDB)	Fumigant, nematocide, solvent, waterproofing preparations, organic synthesis, gasoline additive
Dibromomethane	Organic synthesis, solvent
Dichlofenthion (DCFT)	Pesticides
o-Dichlorobenzene	Solvent, fumigants, dyestuffs, insecticides, degreasers, polishes, industrial odor control
p-Dichlorobenzene	Insecticides, moth repellant, germicide, space odorant, intermediate, fumigants
Dichlorobenzidine	Intermediate, curing agent for resins
Dichlorocyclooctadiene	Pesticides
Dichlorodiphenyldichloroethane (DDD, TDE)	Insecticides
Dichlorodiphenyldichloroethylene (DDE)	Degradation product of DDT, found as an impurity in DDT residues
Dichlorodiphenyltrichloroethane (DDT)	Pesticides
1,1-Dichloroethane	Solvent, fumigants, medicine
1,2-Dichloroethane	Solvent, degreasers, soaps and scouring compounds, organic synthesis, additive in antiknock gasoline, paint and finish removers
1,1-Dichloroethylene (vinylidiene chloride)	Saran (used in screens, upholstery, fabrics, carpets, etc.). adhesives, synthetic fibers
1,2-Dichloroethylene (cis and trans)	Solvent, perfumes, lacquers, thermoplastics, dye extraction organic synthesis, medicine
Dichloroethyl ether	Solvent, organic synthesis, paints, varnishes, lacquers, finish removers, drycleaning, fumigants
Dichloroiodomethane	NA
Dichloroisopropylether (bis-2-chloroisopropylether)	Solvent, paint and varnish removers, cleaning solutions
Dichloromethane (methylene chloride)	Solvent, plastics, paint removers, propellants, blowing agent in foams
Dichloropentadiene	NA
2,4-Dichlorophenol	Organic synthesis
2,4-Dichlorophenoxyacetic acid (2,4-D)	Herbicides
1, 2-Dichloropropane	Solvent, intermediate, scouring compounds, fumigant, nematocide, additive for antiknock fluids
Dicyclopentadiene (DCPD)	Insecticide manufacture
Dieldrin	Insecticides
Diiodomethane	Organic synthesis
Diisopropylmethyl phosphonate (DIMP)	Nerve gas manufacture
Dimethyl disulfide	NA
Dimethylformamide	Solvent, organic synthesis

TABLE 1.2 *Cont'd*

Contaminant	Examples of uses
Hydrocarbons with specific elements (cont'd)	
2,4-Dinotrophenol (Dinoseb, DNBP)	Herbicides
Dithiane	Mustard gas manufacture
Dioxins (e.g., TCDD)	Impurity in the herbicide 2,4,5-T
Dodecyl mercaptan (lauryl mercaptan)	Manufacture of synthetic rubber and plastics, pharmaceuticals, insecticides, fungicides
Endosulfan	Insecticides
Endrin	Insecticides
Ethyl chloride	Chemical manufacturing, anesthetic, solvent, refrigerants, insecticides
Bis-2-ethylhexylphthalate	Plastics
Di-2-ethylexylphthalate	Plasticizers
Fluorobenzene	Insecticide and larvicide intermediate
Fluoroform	Refrigerants, intermediate, blowing agent for foams
Heptachlor	Insecticides
Heptachlorepoxide	Degradation product of heptachlor, also acts as an insecticide
Hexachlorobicycloheptadiene	NA
Hexachlorobutadiene	Solvent, transformer and hydraulic fluid, heat-transfer liquid
α-Hexachlorocyclohexane (Benzenehexachloride, or α-BHC)	Insecticides
β-Hexachlorocyclohexane (β-BHC)	Insecticides
γ-Hexachlorocyclohexane (γ-BHC, or Lindane)	Insecticides
Hexachlorocyclopentadiene	Intermediate for resins, dyestuffs, pesticides, fungicides, pharmaceuticals
Hexachloroethane	Solvent, pyrotechnics and smoke devices, explosives, organic synthesis
Hexachlorononorbornadiene	NA
Isodrin	Intermediate compound in manufacture of Endrin
Kepone	Pesticides
Malathion	Insecticides
Methoxychlor	Insecticides
Methyl bromide	Fumigants, pesticides, organic synthesis
Methyl parathion	Insecticides
Oxathine	Mustard gas manufacture
Parathion	Insecticides
Pentachlorophenol (PCP)	Insecticides, fungicides, bactericides, algicides, herbicides, wood preservative
Phorate (Disulfoton)	Insecticides
Polybrominated biphenyls (PBBs)	Flame retardant for plastics, paper, and textiles
Polychlorinated biphenyls (PCBs)	Heat-exchange and insulating fluids in closed systems
Prometon	Herbicides
RDX (Cyclonite)	Explosives
Simazine	Herbicides
Tetrachlorobenzene	NA[a]

TABLE 1.2 *Cont'd*

Contaminant	Examples of uses
Hydrocarbons with specific elements (cont'd)	
Tetrachloroethanes (1,1,1,2 and 1,1,2,2)	Degreasers, paint removers, varnishes, lacquers, photographic film, organic synthesis, solvent, insecticides, fumigants, weed killer
Tetrachloroethylene (or perchloroethylene, PCE)	Degreasers, drycleaning, solvent, drying agent, chemical manufacturing, heat-transfer medium, vermifuge
Toxaphene	Insecticides
Triazine	Herbicides
1,2,4-Trichlorobenzene	Solvent, dyestuffs, insecticides, lubricants, heat-transfer medium (e.g., coolant)
Trichloroethanes (1,1,1 and 1,1,2)	Pesticides, degreasers, solvent
1,1,2-Trichloroethylene (TCE)	Degreasers, paints, drycleaning, dyestuffs, textiles, solvent, refrigerant and heat exchange liquid, fumigant, intermediate, aerospace operations
Tricholorfluoromethane (Freon)	Solvent, refrigerants, fire extinguishers, intermediate
2,4,6-Trichlorophenol	Fungicides, herbicides, defoliant
2,4,5-Tricholorophenoxyacetic acid (2,4,5-T)	Herbicides, defoliant
2,4,5-Trichlorophenoxypropionic acid (2,4,5-TP or Silvex)	Herbicides and plant growth regulator
Trichlorotrifluoroethane	Dry-cleaning, fire extinguishers, refrigerants, intermediate, drying agent
Trinitrotoluene (TNT)	Explosives, intermediate in dyestuffs and photographic chemicals
Tris-(2,3-dibromopropyl) phosphate	Flame retardant
Vinyl chloride	Organic synthesis, polyvinyl chloride and copolymers, adhesives
Other hydrocarbons	
Alkyl sulfonates	Detergents
Cyclohexane	Organic synthesis, solvent, oil extraction
1,3,5,7-Cyclooctatetraene	Organic research
Dicyclopentadiene (DCPD)	Intermediate for insecticides, paints and varnishes, flame retardants
2,3-Dimethylhexane	NA
Fuel oil	Fuel, heating
Gasoline	Fuel
Jet fuels	Fuel
Kerosene	Fuel, heating solvent, insecticides
Lignin	Newsprint, ceramic binder, dyestuffs, drilling fuel additive, plastics
Methylene blue activated substances (MBAS)	Dyestuffs, analytical chemistry
Propane	Fuel, solvent, refrigerants, propellants, organic synthesis
Tannin	Chemical manufacturing, tanning, textiles, electroplating, inks, pharmaceuticals, photography, paper
4,6,8-Trimethyl-1-nonene	NA
Undecane	Petroleum research, organic synthesis

TABLE 1.2 *Cont'd*

Contaminant	Examples of uses
Metals and cations (金属、陽イオン)	
Aluminum	Alloys, foundry, paints, protective coatings, electrical industry, packaging, building and construction, machinery and equipment
Antimony	Hardening alloys, solders, sheet and pipe, pyrotechnics
Arsenic	Alloys, dyestuffs, medicine, solders, electronic devices, insecticides, rodenticides, herbicide, preservative
Barium	Alloys, lubricant
Beryllium	Structural material in space technology, inertial guidance systems, additive to rocket fuels, moderator and reflector of neutrons in nuclear reactors
Cadmium	Alloys, coatings, batteries, electrical equipment, fire-protection systems, paints, fungicides, photography
Calcium	Alloys, fertilizers, reducing agent
Chromium	Alloys, protective coatings, paints, nuclear and high-temperature research
Cobalt	Alloys, ceramics, drugs, paints, glass, printing, catalyst, electroplating, lamp filaments
Copper	Alloys, paints, electrical wiring, machinery, construction materials, electroplating, piping, insecticides
Iron	Alloys, machinery, magnets
Lead	Alloys, batteries, gasoline additive, sheet and pipe, paints, radiation shielding
Lithium	Alloys, pharmaceuticals, coolant, batteries, solders, propellants
Magnesium	Alloys, batteries, pyrotechnics, precision instruments, optical mirrors
Manganese	Alloys, purifying agent
Mercury	Alloys, electrical apparatus, instruments, fungicides, bactericides, mildew proofing, paper, pharmaceuticals
Molybdenum	Alloys, pigments, lubricant
Nickel	Alloys, ceramics, batteries, electroplating, catalyst
Palladium	Alloys, catalyst, jewelry, protective coatings, electrical equipment
Potassium	Alloys, catalyst
Selenium	Alloys, electronics, ceramics, catalyst
Silver	Alloys, photography, chemical manufacturing, mirrors, electronic equipment, jewelry, equipment, catalyst, pharmaceuticals
Sodium	Chemical manufacturing, catalyst, coolant, non-glare lighting for highways, laboratory reagent

TABLE 1.2 *Cont'd*

Contaminant	Examples of uses
Metals and cations (cont'd)	
Thallium	Alloys, glass, pesticides, photoelectric applications
Titanium	Alloys, structural materials, abrasives, coatings
Vanadium	Alloys, catalysts, target material for x-rays
Zinc	Alloys, electroplating, electronics, automotive parts, fungicides, roofing, cable wrappings, nutrition
Nonmetals and anions (非金属、陰イオン)	
Ammonia	Fertilizers, chemical manufacturing, refrigerants, synthetic fibers, fuels, dyestuffs
Boron	Alloys, fibers and filaments, semiconductors, propellants
Chlorides	Chemical manufacturing, water purification, shrink-proofing, flame retardants, food processing
Cyanides	Polymer production (heavy duty tires), coatings, metallurgy, pesticides
Fluorides	Toothpastes and other dentrifices, additive to drinking water, aluminum smelting
Nitrates	Fertilizers, food preservatives
Nitrites	Fertilizers, food preservatives
Phosphates	Detergents, fertilizers, food additives
Sulfates	Fertilizers, pesticides
Sulfites	Pulp production and processing, food preservatives
Microorganisms (微生物)	
Bacteria (coliform)	
Giardia	
Viruses	
Radionuclides (放射性物質)	
Cesium 137	Gamma radiation source for certain foods
Chromium 51	Diagnosis of blood volume, blood cell life, cardiac output, etc.
Cobalt 60	Radiation therapy, irradiation, radiographic testing, research
Iodine 131	Medical diagnosis, therapy, leak detection, tracers (e.g., to study efficiency of mixing pulp fibers, chemical reactions, and thermal stability of additives to food products), measuring film thicknesses
Iron 59	Medicine, tracer
Lead 210	NA
Phosphorus 32	Tracer, medical treatment, industrial measurements (e.g., tire-tread wear and thickness of films and ink)
Plutonium 238, 243	Energy source, weaponry
Radium 226	Medical treatment, radiography
Radium 228	Naturally occurring
Radon 222	Medicine, leak detection, radiography, flow rate measurement

TABLE 1.2 *Cont'd*

Contaminant	Examples of uses
Radionuclides (cont'd)	
Ruthenium 106	Catalyst
Scandium 46	Tracer studies, leak detection, semiconductors
Strontium 90	Medicine, industrial applications (e.g., measuring thicknesses, density control)
Thorium 232	Naturally occurring
Tritium	Tracer, luminous instrument dials
Uranium 238	Nuclear reactors
Zinc 65	Industrial tracers (e.g., to study wear in alloys, galvanizing, body metabolism, function of oil additives in lubricating oils)
Zirconium 95	NA

Source: Office of Technology Assessment, *Protecting The Nation's Groundwater from Contamination*, 1984, pp. 23–31 with additions.

[a]NA: No information in Standard sources.

TABLE 1.3 Organic compounds detected in ground water at Seymour Recycling Corporation hazardous waste site, nour, Indiana.

Extractable Organics	
Phenol	2-Chlorophenol
2,3,6-Trimethylphenol	2,4-Dimethylphenol
2,3-Dimethylphenol	2,6-Dimethylphenol
3,4-Dimethylphenol	3,5-Dimethyl phenol
2-Ethylphenol	2-Methyl phenol
3- and/or 4-Methylphenol	Bis(2-ethylhexyl)phthalate
Di-*n*-butyl phthalate	Isophorone
Benzo(a)anthracene	Chrysene
2-Butanone	2-Hexanone
4-Methyl-2-pentanone	3,3,5-Trimethylhexanol
2-Hexanol	2-Heptanone
Cyclohexanol	Cyclohexanone
4-Methyl-2-pentanol	4-Hydroxy-4-methyl-2-pentanone
2-Hydroxy-triethylamine	Tri-*n*-propyl-amine
Alkyl amine	1,4-Dioxane
n-n'-Dimethylformamide	*n-n*-Dimethylacetamide
Benzoic acid	4-Methylbenzoic acid
3-Methylbenzoic acid	3-Methyl-butanoic acid
Benzenepropionic acid	Benzeneacetic acid
2-Ethyl-hexanoic acid	2-Ethyl butanoic acid
Octanoic acid	Heptanoic acid
Hexanoic acid	Decanoic acid
Nonanoic acid	Pentanoic acid
Cyclohexanecarboxylic acid	1-Methyl-2-pyrrolidinone
1-1'-Oxy bis (2-methoxy) ethane	1,2-Dichlorobenzene
1,1,2-Trichloroethane	Tetrachloroethene
Volatile Organics	
Benzene	Ethyl benzene
Chloroform	Chloromethane
Chloroethane	1,2-Dichloroethane
1,1-Dichloroethane	1,1,1-Trichloroethane
1,1,2-Trichloroethane	1,1-Dichloroethene
Trans-1,2-Dichloroethene	Trichloroethene
Tetrachloroethene	Methylene chloride
Vinyl chloride	Dichlorofluoromethane
Tetrahydrofuran	Acetone
2-Butanone	2-Methyl-2-propanol
2-Methyl-2-butanol	2-Propanol
2-Butanol	2-Hexone
4-methyl-2-pentanol	Ethyl ether
m-Xylene	o- and/or *p*-Xylene
Toluene	

Note: Some compounds are detected in both the extractable and the volatile fractions and thus appear twice in the list.

Source: C. W. Fetter, Final Hydrogeologic Report, Seymour Recycling Corporation Hazardous Waste Site, Report to U. S. Environmental Protection Agency, Region V, September, 1985.

TABLE 1.4 Cost of analysis of a single ground water sample (1997 List Price)

Volatile organic compounds by Method 624	$150.00
Base/Neutral organics by Method 625	390.00
Pesticides and PCBs by Method 608	275.00
Phenols by Method 604	275.00
Twenty three metals	506.00
Radiological compounds	385.00
Bacterial analysis (Fecal coliform)	40.00
Cyanide	32.00
Chloride	10.00
Fluoride	20.00
Nitrate and nitrite	32.00
Sulfate	15.00
pH	5.00
Total	$2135.00

TABLE 1.5 USEPA drinking-water standards and health goals.

Chemical	MCLG (μg/L)	MCL (μg/L)	SMCL (μg/L)
Synthetic organic chemicals			
Acrylamide (1)	0[d]	Treatment technique[d]	
Adipates (di(ethylhexyl)adipate)	400[f]	400[f]	
Alachlor	0[d]	2[d]	
Aldicarb	1[e]	3[e]	
Aldicarb sulfoxide	1[e]	4[e]	
Aldicarb sulfone	1[e]	2[e]	
Atrazine	3[d]	3[d]	
Benzene	0[a]	5[b]	
Benzo[a]pyrene	0[f]	0.2[f]	
Carbofuran	40[d]	40[d]	
Carbontetrachloride	0[a]	5[b]	
Chlorodane	0[d]	2[d]	
Dalapon	200[f]	200[f]	
Dibromochloropropane (DBCP)	0[d]	0.2[d]	
o-Dichlorobenzene (5)	600[d]	600[d]	10
p-Dichlorobenzene (5)	75[b]	75[b]	5
1,2-Dichloroethane	0[a]	5[b]	
1,i -Dichloroethylene	7[a]	7[b]	
cis-1,2-Dichloroethylene	70[a]	70[b]	
trans-1,2-Dichloroethylene	100[d]	100[d]	
1,2-Dichloropropane	0[d]	5[d]	
2,4-Dichlorophenoxyacetic acid (2,4-D)	70[d]	70[d]	
Di(ethylhexyl)phthalate	0[i]	6[i]	

TABLE 1.5 Cont'd

Chemical	MCLG (μg/L)	MCL (μg/L)	SMCL (μg/L)
Synthetic organic chemicals (cont'd)			
Diquat	20[f]	20[f]	
Dinoseb	7[f]	7[f]	
Endothall	100[f]	100[f]	
Endrin	2[f]	2[f]	
Epichlorohydrin (1)	0[d]	Treatment technique[a]	
Ethylbenzene (5)	700[d]	700[d]	30
Ethylene dibromide (EDB)	0[d]	0.05[d]	
Glyphosate	700[f]	700[f]	
Heptachlor	0[d]	0.4[d]	
Heptachlor epoxide	0[d]	0.2[d]	
Hexachlorobenzene	0[f]	1[f]	
Hexachlorocyclopentadiene (HEX) (5)	50[f]	50[f]	8[f]
Lindane	0[f]	0.4[f]	
Methoxychlor	40[d]	40[d]	
Methylene chloride	0[f]	5[f]	
Monochlorobenzene	100[d]	100[d]	
Oxamyl (vydate)	200[f]	200[f]	
PCBs as decachlorobiphenol	0[d]	0.5[d]	
Pentachlorophenol	0[d]	1[d]	
Picloram	500[f]	500[f]	
Simaze	4[f]	4[f]	
Styrene (5)	100[d]	100[d]	10
2,3,7,8-TCDD (dioxin)	0[f]	3×10^{-5}[f]	
Tetrachloroethylene	0[d]	5[d]	
1,2,4-Trichlorobenzene	70[f]	70[f]	
1,1,2-Trichloroethane	3[f]	5[f]	
Trichloroethylene (TCE)	0[a]	5[b]	
1,1,1-Trichloroethane	200[a]	200[b]	
Toluene (5)	1000[d]	1000[d]	40
Toxaphene	0[d]	3[d]	
2-(2,4,5-Trichlorophenoxy)-propionic acid (2,4,5-TP, or Silvex)	50[d]	50[d]	
Vinyl chloride	0[a]	2[b]	
Xylenes (total) (5)	10,000[d]	10,000[d]	20
Inorganic chemicals			
Antimony	6[f]	6[f]	
Arsenic (6)		50[f]	
Asbestos (fibers per liter)	7×10^{6}[d]	7×10^{6}[d]	
Barium	2000[a]	2000[a]	
Beryllium	0[f]	1[f]	
Cadmium	5[d]	5[d]	
Chromium	100[d]	100[d]	
Copper (4)	1,300[h]	1,300[h]	
Cyanide	200[f]	200[f]	
Fluoride	4,000[a]	4,000[a]	2,000[a]
Lead (4)	0[h]	15[h]	

TABLE 1.5 *Cont'd*

Chemical	MCLG (µg/L)	MCL (µg/L)	SMCL (µg/L)
Inorganic chemicals (cont'd)			
Mercury	0.2[h]	0.2[d]	
Nickel	100[f]	100[f]	
Nitrate (as N) (2)	10,000[d]	10,000[d]	
Nitrite (as N)	1,000[d]	1,000[d]	
Selenium	50[d]	50[d]	
Silver			100[=]
Sulfate	5 × 10[5f]	5 × 10[5f]	
Thallium	0.5[f]	2/1[f]	
Microbiological parameters			
Giardic lamblia	0 organisms[c]		
Legionella	0 organisms[c]		
Heterotrophic bacteria	0 organisms[c]		
Viruses	0 organisms[c]		
Radionuclides			
Radium 226 (3)	0[g]	20 pCi/L[g]	
Radium 228 (3)	0[g]	20 pCi/L[g]	
Radon 222	0[g]	300 pCi/L[g]	
Uranium	0[g]	20 µg/L (30 pCi/L) [g]	
Beta and Photon emitters (excluding radium 228)	0[g]	4 mrem ede/yr[g]	
Adjusted gross alpha emitters (excluding radium 226, uranium, and radon 222)	0[g]	15 pCi/L[g]	

TABLE 1.6 Risk of getting cancer relative to drinking chlorinated tap water.

Relative Risk	Source/Daily Human Exposure	Carcinogen
	Risk Due to Synthetic Chemicals	
	Respiratory Exposure	
1400	Mobile Home Air (14 hour/day)	Formaldehyde, 2.2 mg
400	Conventional Home air (14 hour/day)	Formaldehyde, 598 µg
8.0	Swimming pool (1 hour/day for a child)	Chloroform, 250 µg
	Water	
6.0	Well water, Silicon Valley, CA, 1 L	Trichloroethylene, 2,800 µg
1.0	Chlorinated tap water (US Average) 1 L	Chloroform, 82 µg
0.6	Well Water, Woburn, MA, 1 L	Trichloroethylene, 267 µg
0.3	Well Water, Woburn, MA, 1 L	Tetrachloroethylene, 21 µg
	Pesticide Residues on Food	
0.3	Carbaryl, daily average diet	Carbaryl, 2.6 µg
0.2	Toxaphene, daily average diet	Toxaphene, 595 ng
0.001	Lindane, daily average diet	Lindane, 32 ng
0.000006	Captan, daily average diet	Captan, 11.5 ng
	Risk Due to Natural Chemicals Found in Food and Beverages	
4700	Wine (250 mL)	Ethyl alcohol, 30 mL
2800	Beer (12 ounces)	Ethyl alcohol, 18 mL
300	Lettuce, 1/8 head	Caffeic acid, 66.3 mg
100	Apple, 1 whole	Caffeic acid, 24.4 mg
100	Mushroom, 1 whole	Hydazines
70	Mango, 1 whole	d-Limonene, 9.8 mg
40	Orange juice, 6 oz.	d-Limonene, 5.49 mg
30	Peanut butter, 1 sandwich	Aflatoxin, 64ng
30	Celery, 1 stalk	Caffeic acid, 5.4 mg
30	Carrot, 1 whole	Caffeic acid, 5.16 mg
20	Potato, 1 whole	Caffeic acid, 3.56 mg
6	Bacon, cooked (100 g)	Diethylnitrosomine, 0.1 µg
0.5	Salmon (3 oz. pan fried)	PhIP, 1.19 µg
0.5	Hamburger (3 oz. pan fried)	PhIP, 1.28 µg
0.03	Whole Wheat toast, 2 slices	Urethane, 540 ng

Source: Based on Table 2 from Lois Gold, Thomas Slone, Bonnie Stern, Neela Manley and Bruce Ames, "Rodent Carcinogens: Setting Priorities:, *Science*, Volume 258, 9 October, 1992, page 261–265.

TABLE 1.7 Effluent quality from six septic tanks.[a]

Site	Average Flow (g/da)	BOD (mg/L)	COD (mg/L) (unfiltered)	COD (mg/L) (filtered)	TSS (mg/L)	Fecal Coliforms (no./mL)	Fecal Strep (no./mL)	Total N (mg/L)	Ammonia N (mg/L)	Nitrate-Nitrogen (mg/L)	Total P (mg/L)	Ortho P (mg/L)
A	75	131	325	249	69	2907	2.7	50.5	34.1	0.68	12.3	10.8
B	125	176	361	323	44	4127	39.7	57.8	42.5	0.46	14.1	13.6
C	245	272	542	386	68	27,931	1387	76.3	45.6	0.60	31.4	14.0
D	315	127	291	217	52	11,113	184	40.2	33.2	0.35	11.0	10.1
E	860[b]	120	294	245	51	2310	20.7	31.6	20.1	0.16	11.1	10.5
F	150	122	337	281	48	3246	25.3	56.7	38.3	0.83	11.6	10.5

Source: R. J. Otis, W. C. Boyle, and D. K. Sauer, Small-Scale Waste Management Program, University of Wisconsin—Madison, 1973.

[a]All values are means.

[b]Includes 340-g/da sewer flow and 520-g/do from foundation drain.

TABLE 1.8 Overall summary from the analysis of municipal solid-waste leachates in Wisconsin.

Parameter	Overall Range[a]	Typical Range (range of site medians)[a]	Number of Analyses
TDS	584–50,430	2180–25,873	172
Specific conductance	480–72,500	2840–15,485	1167
Total suspended solids	2–140,900	28–2835	2700
BOD	ND–195,000	101–29,200	2905
COD	6.6–97,900	1120–50,450	467
TOC	ND–30,500	427–5890	52
pH	5–8.9	5.4–7.2	1900
Total alkalinity ($CaCO_3$)	ND–15,050	960–6845	328
Hardness ($CaCO_3$)	52–225,000	1050–9380	404
Chloride	2–11,375	180–2651	303
Calcium	200–2500	200–2100	9
Sodium	12–6010	12–1630	192
Total Kieldahl nitrogen	2–3320	47–1470	156
Iron	ND–1500	2.1–1400	416
Potassium	ND–2800	ND–1375	19
Magnesium	120–780	120–780	9
Ammonia-nitrogen	ND–1200	26–557	263
Sulfate	ND–1850	8.4–500	154
Aluminum	ND–85	ND–85	9
Zinc	ND–731	ND–54	158
Manganese	ND–31.1	0.03–25.9	67
Total phosphorus	ND–234	0.3–117	454
Boron	0.87–13	1.19–12.3	15
Barium	ND–12.5	ND–5	73
Nickel	ND–7.5	ND–1.65	133
Nitrate-nitrogen	ND–250	ND–1.4	88
Lead	ND–14.2	ND–1.11	142
Chromium	ND–5.6	ND–1.0	138
Antimony	ND–3.19	ND–0.56	76
Copper	ND–4.06	ND–0.32	138
Thallium	ND–0.78	ND–0.31	70
Cyanide	ND–6	ND–0.25	86
Arsenic	ND–70.2	ND–0.225	112
Molybdenum	0.01–1.43	0.034–0.193	7
Tin	ND–0.16	0.16	3
Nitrite-nitrogen	ND–1.46	ND–0.11	20
Selenium	ND–1.85	ND–0.09	121
Cadmium	ND–0.4	ND–0.07	158
Silver	ND–1.96	ND–0.024	106
Beryllium	ND–0.36	ND–0.008	76
Mercury	ND–0.01	ND–0.001	111

[a]All concentrations in milligrams per liter except pH (standard units) and specific conductance (μmhos/cm). ND indicates not detected.

Source: Wisconsin Department of Natural Resources.