APPENDIX J

CHEMICAL CONTAMINANTS LISTED BY INDUSTRY TYPE

(Informative)

Table J1 lists chemicals used in various industries. The exact nature of the contaminant associated with the particular industry is site specific, depending on the standard of management and the practice and safety procedures employed at each site.

This is not an all inclusive list of industries using chemicals and some of the chemicals mentioned are no longer used (e.g. carbon tetrachloride in the dry cleaning industry).

TABLE J1

LIST OF INDUSTRIES

Industry	Type of chemical	Associated chemicals
Agricultural/horticultural activities		See fertilizer, insecticides, fungicides, herbicides under chemicals manufacture and use
Airports	Hydrocarbons Metals	Aviation fuels Particularly aluminium, magnesium, chromium
Asbestos production and disposal		Asbestos
Battery manufacture and recycling	Metals Acids	Lead, manganese, zinc, cadmium, nickel, cobalt, mercury, silver, antimony Sulfuric acid
Breweries/distilleries	Alcohol	Ethanol, methanol, esters
Chemicals manufacture and use	Acid alkali	Mercury (chlor/alkali), sulfuric, hydrochloric and nitric acids, sodium and calcium hydroxides
	Adhesives/resins	Polyvinyl acetate, phenols, formaldehyde, acrylates, phthalates
	Dyes	Chromium, titanium, cobalt, sulfur and nitrogen organic compounds, sulfates, solvents
	Explosives	Acetone, nitric acid, ammonium nitrate, pentachlorophenol, ammonia, sulfuric acid, nitroglycerine, calcium cyanamide, lead, ethylene glycol, methanol, copper, aluminium, bis(2-ethylhexyl) adipate, dibutyl phthalate, sodium hydroxide, mercury, silver
	Fertilizer	Calcium phosphte, calcium sulfate, nitrates, ammonium sulfate, carbonates, potassium, copper, magnesium, molybdenum, boron, cadmium
	Flocculant Foam production Fungicides	Aluminium Urethane, formaldehyde, styrene Carbamates, copper sulfate, copper chloride, sulfur chromium , zinc
	Herbicides	Ammonium thiocyanate, carbamates, organochlorines, organophosphates, arsenic, mercury, triazines

(*continued*)

TABLE J1 *(continued)*

Industry	Type of chemical	Associated chemicals
Chemicals manufacture and use (continued)	Paints Heavy metals	Arsenic, Barium, Cadmium, Chromium, Cobalt, Lead, Manganese, Mercury, Selenium, Titanium, Zinc
	Solvents	Toluene, oils natural (e.g. pine oil) or synthetic
	Pesticides Active ingredients	Arsenic, lead, organochlorines, organophosphates, sodium tetraborate, carbamates, sulfur, synthetic pyrethroids
	Solvent	Xylene, kerosene, methyl isobutyl ketone, amyl acetate, chlorinated solvents
	Pharmaceutical Solvents	Acetone, cyclohexane, methylene chloride, ethyl acetate, butyl acetate, methanol, ethanol, isopropanol, butanol, pyridine, methyl ethyl ketone, methyl isobutyl ketone, tetrahydrofuran
	Photography	Hydroquinone, sodium carbonate, sodium sulfite, potassium bromide, monomethyl para-aminophenol sulfate, ferricyanide, chromium, silver, thiocyanate, ammonium compounds, sulfur compounds, phosphate, phenylene diamine, ehtyl alcohol, thiosulfates, formaldehyde
	Plastics	Sulfates, carbonates, cadmium, solvents, acrylates, phthalates, styrene
	Rubber	Carbon black
	Soap/detergent General	Potassium compounds, phosphates, ammonia, alcohols, esters, sodium hydroxide, surfactants, (sodium lauryl sulfate), silicate compounds
	Acids Oils	Sulfuric acid and stearic acid Palm, coconut, pine, teatree
	Solvents General Hydrocarbons Chlorinated organics	 Ammonia e.g. BTEX (benzene, toluene, ethylbenzene, xylene) e.g. trichloroethane, carbon tetrachloride, methylene chloride
Defence works		See explosives under chemicals manufacture and use, foundries, engine works, service stations
Drum reconditioning		See chemicals manufacture and use
Dry cleaning		Trichlorethylene and 1, 1, 1 - trichloroethane Carbon tetrachloride Perchlorethylene
Electrical		PCB (transformers and capacitors), solvents, tin, lead, copper, mercury

(continued)

TABLE J1 *(continued)*

Industry	Type of chemical	Associated chemicals
Engine works	Hydrocarbons	
	Metals	
	Solvents	
	Acids/alkalis	
	Refrigerant	Chlorofluorocarbons hydrochlorofluorocarbons hydrofluorocarbons
	Antifreeze	Ethylene glycol, nitrates phosphate, silicates
Foundries	Metals	Particularly aluminium, manganese, iron, copper, nickel, chromium, zinc, cadmium and lead and oxides, chlorides, fluorides and sulfates of these metals
	Acids	Sulfuric and phosphoric Phenolics and amines Coke/graphite dust
Gas works	Inorganics	Ammonia, cyanide, nitrate, sulfide, thiocyanate
	Organics	Aluminium, antimony, arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, selenium, silver, vanadium, zinc
		BTEX, phenolics, PAH and coke
Iron and steel works		BTEX, phenolics, PAH, Metals and oxides of iron, nickel, copper, chromium, magnesium, manganese and graphite
Landfill sites		Alkanes and ammonia, sulfides, heavy metals, organic acids
Marinas		See engine works, electroplating metals under metal treatments
	Antifouling paints	Copper, tributyltin (TBT)
Metal treatment	Electroplating Metals	Nickel, chromium, zinc, aluminium, copper lead, cadmium, tin
	Acids	Sulfuric, hydrochloric, nitric, phosphoric
	General	Sodium hydroxide, 1,1,1-trichloroethane, tetrachloroethylene, toluene, ethylene glycol, cyanide compounds
	Liquid carburizing baths	Sodium, cyanide, barium, chloride, potassium chloride, sodium chloride, sodium carbonate, sodium cyanate
Mining and extractive industries		Arsenic, mercury and cyanides and also refer to explosives. Aluminium, arsenic, copper, chromium, cobalt, lead, manganese, nickel, selenium, zinc and radio-radionuclides. The list of heavy metals should be decided according to the composition of the deposit and known impurities
Power stations		Asbestos, PCB, fly ash metals, water treatment chemicals
Printing shop		Acids, alkalis, solvents, chromium (see photography)

(continued)

TABLE J1(*continued*)

Industry	Type of chemical	Associated chemicals
Railway yards		Hydrocarbons, arsenic, phenolics (creosote), heavy metals, nitrates and ammonia
Scrap yards		Hydrocarbons, metals, solvents
Service stations and fuel storage facilities		Aliphatic hydrocarbons BTEX (i.e., benzene, toluene, ethylbenzene, xylene) PAH Phenols Lead
Sheep and cattle dips		Arsenic, organochlorines and organophosphates, carbamates, and synthetic pyrethroids
Smelting and refining		Metals and the fluorides, chlorides and oxides of copper, tin, silver, gold, selenium, lead, aluminium
Tanning and associated trades	Metals General	Chromium, manganese, aluminium Ammonium sulfate, ammonia, ammonium nitrate, arsenic phenolics, formaldehyde, sulfide, tannic acid
Water and sewerage treatment plant	Metals	Aluminium, arsenic, cadmium, chromium, cobalt, lead, nickel, fluoride, lime and zinc
Wood preservation	Metals General	Chromium, copper, arsenic Naphthalene, ammonia, pentachlorophenol, dibenzofuran, anthracene, biphenyl, ammonium sulfate, quinoline, boron, creosote, organochlorine pesticides