

TABLE 8.4

Potential Water Quality Problems That May Be Caused by a Few Selected Chemicals

Chemical	Potential Problems
Arsenic	Toxicity to humans Toxicity to aquatic life
Chlorine	Organic reactions form trihalomethanes Toxicity to fish and other aquatic life <i>THM's - Early addition to water can increase production since reaction is with organics</i>
Calcium Magnesium	Causes "hardness" in water May result in scale formation in pipes
Iron	Causes stains in laundry and on fixtures May kill fish by clogging their gills
Nitrogen: ammonia	May accelerate eutrophication in lakes May improve productivity of the water May be toxic to aquatic life <i>addition of nutrients and organics to lakes increases organic content</i>
Nitrogen: nitrates	May be toxic to babies May accelerate eutrophication in lakes May improve productivity of the water <i>Blue babies - also phosphates</i>
Oxygen, dissolved	Low concentrations harmful to fish <i>DO < 3 to 5 mg/liter</i> Low concentrations may cause odor production High concentrations accelerate metal corrosion Low or zero concentration may allow sulfide formation and concrete corrosion
Phenolics <i>Carbolic acid not a free acid</i>	Tastes and odors in drinking water Can cause tainting of fish flesh May be toxic to aquatic life
Sulfur: sulfides	Objectionable odors in and near water May be toxic to aquatic life May corrode concrete through acid formation Oxidation of sulfide to sulfate exerts an oxygen demand <i>C₆H₅OH Hydrocarbon dyes, medicinal products, flavors, perfumes, insecticides, explosives, disinfectant</i> <i>- dissolved oxygen</i>
Sulfur: sulfites	React with DO and exert oxygen demand
Sulfur: sulfates	Increase water corrosiveness to metals Decompose anaerobically to form sulfides Salty taste and laxative effects