

CHEMICAL TOXIC EFFECTS IN DRINKING WATER

National Interim Primary Drinking Water Standards and the Toxic Effects associated with the Various Contaminants

Contaminant	Lowest Concentration Associated with Symptoms mg/L	Toxic Effects or Symptoms
Arsenic	0.05 (mg/L)	Symptoms range from fatigue and loss of energy to gastrointestinal disturbance, kidney damage, edema, polyneuritis, liver damage and bone marrow injury.
Barium	1.0	May cause nerve block, increased blood pressure due to vasoconstriction. Lung granulomas have also been reported.
Cadmium	0.010	Exposure has caused a syndrome known as "Itai Itai" that is characterized by bone decalcification, proteinuria, glycosuria, and elevated alkaline phosphatase. Other effects reportedly include possible testicular and ovarian necrosis.
Chromium	0.05	Principle effect is tubular necrosis of the kidney. Injection into test animals has reportedly caused development of sarcomas.
Lead	0.05	Effects include motor nerve paralysis, encephalopathy and anemia.
Mercury	0.002	Chronic exposure is toxic to the central nervous system. A variety of effects from ingestion have been reported with local effects of pharyngitis, gastroenteritis, vomiting, and bloody diarrhea followed by systemic effects of anuria, stomatitis, ulcerative hemorrhagic colitis, and circulatory collapse.
Nitrate	10	Severe and occasionally fatal methemoglobinemia has occurred in infants following ingestion of nitrate.

Contaminant	Lowest Concentration Associated with Symptoms mg/L	Toxic Effects or Symptoms
Selenium	0.01	Effects of chronic exposure include depression, nervousness, dermatitis, gastrointestinal disturbance while acute effects include mucosal irritation, dyspnea pulmonary edema, nausea and death.
Silver	0.05	While large doses of colloidal silver may be fatal, the results of chronic exposure are primarily cosmetic with the dominant symptom being a permanent form of argyrosis. Once deposited in tissue, it is held indefinitely without evident loss through the usual channels of elimination.
Chlorinated Hydrocarbons (Pesticides)	.002 Endrin .004 Lindane .1 Methoxychlor .005 Toxaphane	As a rule, the chlorinated hydrocarbons are neurotoxic; effects known range from headache and dizziness to convulsions and death. They also cause myocardial irritability, and hepatic, muscle, and renal necrosis.
Chlorophenoxy (Herbicides)	.01 2, 4-D	Fibrillary twitching, muscular paralysis, hyporeflexia, and loss of sexual potency.
	0.01 2, 4, 5-TP Silvex	Liver and kidney damage, growth retardation testicular damage (animal studies).
Combined radioactivity from RA-228 gross alpha particle activity.	5pCi/L	For both, it is stated that there "is no harmless level of dose" and that "detrimental effects proportional to the dose."
Beta particle and photon radioactivity from man-made nuclides.	4 mrem/year	Primary effect is carcinogenic.