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Cadmium and Selenium

Cadmium

- Cadmium is a blue-white metallic element. Cadmium is used in many types of solders, batteries, television sets, pigments, ceramics, photography, insecticides, and used for electroplating. Sources of contamination in drinking water include corrosion of galvanized pipes, erosion of natural deposits, discharge from metal refineries, and runoff from waste batteries and paints.
- The US Environmental Protection Agency (USEPA) has set a drinking water standard of 0.005 mg/L for cadmium in public drinking water supplies. These regulations do not apply to private water supplies but the health implications are the same for private well owners.
- Severe toxic symptoms occur following ingestion of 10 to 300 mg of cadmium. It would take over 50 gallons of cadmium contaminated water at 10 times the USEPA standard to get a 10 mg dose. The more likely type of health effect from cadmium comes from low dosages over a long period of time or “chronic” effects. Kidney damage is the primary health effect from cadmium.
- Treatment of water for cadmium can be accomplished with reverse osmosis and distillation systems.

48	2
	8
	18
Cd	18
	2
Cadmium	
112.411	

Selenium

34	2
	8
	18
Se	6
Selenium	
78.96	

- Selenium is a gray or sometimes deep red non-metallic element found most commonly in sedimentary rocks. Selenium is used in photocopy applications, glass manufacture, pigments, chemicals, pharmaceuticals, fungicides, electrical apparatus, and in the rubber industry. Sources of contamination in drinking water include discharge from petroleum refineries, erosion of natural deposits, and discharge from mines.
- The USEPA has set a drinking water standard of 0.05 mg/L for selenium in public drinking water supplies. These regulations do not apply to private water supplies but the health implications are the same for private well owners.
- Selenium is an essential element to the human diet with a safe daily intake for adults estimated at 0.2-0.5 mg per day. If concentrations in water are above 0.05 mg/L chronic effects such as hair or fingernail loss, numbness in fingers or toes, and circulatory problems are possible.
- Treatment of water for selenium can be accomplished with reverse osmosis and distillation systems.

Additional Resources:

Handbook of Drinking Water Quality; John DeZuane; 1997

USEPA Maximum Contaminant Levels and Fact Sheets

<http://www.epa.gov/safewater/mcl.html>

NSF International Contaminant Guide (Listed Under “Drinking Water”)

<http://www.nsf.org/consumer/>

USEPA Drinking Water Contaminants

<http://www.epa.gov/safewater/contaminants/basicinformation.html#slink>

Water Quality Interpretation Tool

<http://region8water.colostate.edu/wqtool/index.cfm>