



Cadmium in Drinking Water

Cadmium is a heavy metal that is toxic to most living organisms. Most cadmium compounds found in drinking water have no taste or smell, making identification of contamination only possible with testing.

What are the sources of cadmium?

- Naturally occurring in groundwater due to weathering of rock and soil
- Corrosion of galvanized pipes
- Zinc mining or metal refineries
- Incinerators and coal fly ash
- Waste batteries
- Paint and pigment manufacturing
- Mined phosphate fertilizer

Cadmium from phosphate fertilizer is only bioavailable for plant uptake in low pH, acidic soils. Cadmium concentrations in water are generally expected to be low except in the vicinity of cadmium-emitting industries.

What are the health effects of cadmium?

Cadmium is generally poorly absorbed but this depends on factors such as particle size and body chemistry. Ingestion from food and/or drinking water is considered a more important route of exposure than dermal (skin) absorption for the general, non-smoking population.

Cadmium from food or water is primarily absorbed in the kidneys, with exposures above safety limits potentially leading to kidney damage. It can also be absorbed in the liver and bones. Children may be more susceptible than adults to cadmium-induced bone damage. Cadmium inhaled from dust or smoke, such as cigarette smoke, can contribute to cardiovascular disease and cancer. The health effects of cadmium typically occur after long-term (chronic) exposure. The body eliminates absorbed cadmium very slowly with the half-time of cadmium elimination more than 26 years.

What are the drinking water guidelines for cadmium?

The Safe Drinking Water Act sets protective standards, called Maximum Contaminant Levels (MCLs), for more than 90 contaminants that can potentially be found in drinking water. MCLs are practical treatment levels calculated to be protective of human health. The U.S. Environmental Protection Agency sets the MCL for cadmium at 5 parts per billion (ppb).



What actions can well owner take to reduce the risks associated with cadmium?

Residents who use a private well as a drinking water source should have the well water tested for cadmium contamination upon move in; every 5-10 years; or as needed. Testing results will help determine if well owners need to take steps to limit cadmium exposure from well water, such as installing a treatment system. Boiling water does not remove cadmium.