



NRC-065

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Water: Basic Information about Regulated Drinking Water Contaminants

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Basic Information about Selenium in Drinking Water

EPA regulates selenium in drinking water to protect public health. Selenium may cause health problems if present in public or private water supplies in amounts greater than the drinking water standard set by EPA.

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What is selenium?

Selenium is a metal found in natural deposits such as ores containing other elements.

Uses for selenium.

The greatest use of selenium compounds is in electronic and photocopier components, but they are also widely used in glass, pigments, rubber, metal alloys, textiles, petroleum, medical therapeutic agents, and photographic emulsions.

If you are concerned about selenium in a private well, please visit:

- [EPA's private drinking water wells website](#)
- [Water Systems Council website](#) [EXIT Disclaimer](#)

What are selenium's health effects?

Some people who drink water containing selenium well in excess of the maximum contaminant level (MCL) for many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.

This health effects language is not intended to catalog all possible health effects for selenium. Rather, it is intended to inform consumers of some of the possible health effects associated with selenium in drinking water when the rule was finalized.

What are EPA's drinking water regulations for selenium?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine the level of contaminants in drinking water at which no adverse health effects are likely to occur. These non-enforceable health goals, based solely on possible health risks and exposure over a lifetime with an adequate margin of safety, are called maximum contaminant level goals (MCLG). Contaminants are any physical, chemical, biological or radiological substances or matter in water.

The MCLG for selenium is 0.05 mg/L or 50 ppb. EPA has set this level of protection based on the best available science to prevent potential health problems. EPA has set an enforceable regulation for selenium, called a maximum contaminant level (MCL), at 0.05 mg/L or 50 ppb. MCLs are set as close to the health goals as possible, considering cost, benefits and the ability of public water systems to detect and remove contaminants using suitable treatment technologies. In this case, the MCL equals the MCLG, because analytical methods or treatment technology do not pose any limitation.

The Phase II Rule, the regulation for selenium, became effective in 1992. The Safe Drinking Water Act requires EPA to periodically review the national primary drinking water regulation for each contaminant and revise the regulation, if appropriate. EPA reviewed selenium as part of the Six Year Review and determined that the 0.05 mg/L or 50 ppb MCLG and 0.05 mg/L or 50 ppb MCL for selenium are still protective of human health.

- [More information on the Six Year Review of Drinking Water Standards.](#)

States may set more stringent drinking water MCLGs and MCLs for selenium than EPA.

How does selenium get into my drinking water?

The major sources of selenium in drinking water are discharge from petroleum and metal refineries; erosion of natural deposits; and discharge from mines.

A federal law called the Emergency Planning and Community Right to Know Act (EPCRA) requires facilities in certain industries, which manufacture, process, or use significant amounts of toxic chemicals, to report annually on their releases of these chemicals. For more information on the uses and releases of chemicals in your state, contact the Community Right-to-Know Hotline: (800) 424-9346.

- [EPA's Toxics Release Inventory \(TRI\) website provides information about the types and amounts of toxic chemicals that are released each year to the air, water and land.](#)

How will I know if selenium is in my drinking water?

When routine monitoring indicates that selenium levels are above the MCL, your water supplier must take steps to reduce the amount of selenium so that it is below that level. Water suppliers must notify their customers as soon as practical, but no later than 30 days after the system learns of the violation. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Selenium at a Glance

Maximum Contaminant Level (MCL) = 0.05 milligrams per Liter (mg/L) or 50 parts per billion (ppb)

Maximum Contaminant Level Goal (MCLG) = 0.05 mg/L or 50 ppb

Health Effects

Some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.


[Drinking Water Health Advisories provide more information on health effects.](#)

Chemical Abstract Service Registry Number
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Sources of Contamination

Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines

[List of all Regulated Contaminants \(PDF\)](#)
(6 pp, 396 K, [About PDF](#))

United States Nuclear Regulatory Commission Official Hearing Exhibit			
In the Matter of:		CROW BUTTE RESOURCES, INC. (License Renewal for the In Situ Leach Facility, Crawford, Nebraska)	
	ASLBP #:	08-867-02-OLA-BD01	
	Docket #:	04008943	
	Exhibit #:	NRC-065-00-BD01	Identified: 8/18/2015
	Admitted:	8/18/2015	Withdrawn:
	Rejected:		Stricken:
	Other:		

- [See EPA's public notification requirements for public water systems.](#)

If your water comes from a household well, check with your health department or local water systems that use ground water for information on contaminants of concern in your area.

- [For more information on wells, go to EPA's website on private wells.](#)

How will selenium be removed from my drinking water?

The following treatment method(s) have proven to be effective for removing selenium to below 0.05 mg/L or 50 ppb: activated alumina, coagulation/filtration, lime softening, reverse osmosis, and electrodialysis.

How do I learn more about my drinking water?

EPA strongly encourages people to learn more about their drinking water, and to support local efforts to protect the supply of safe drinking water and upgrade the community water system. Your water bill or telephone book's government listings are a good starting point for local information.

Contact your water utility. EPA requires all community water systems to prepare and deliver an annual consumer confidence report (CCR) (sometimes called a water quality report) for their customers by July 1 of each year. If your water provider is not a community water system, or if you have a private water supply, request a copy from a nearby community water system.

- [The CCR summarizes information regarding sources used \(i.e., rivers, lakes, reservoirs, or aquifers\), detected contaminants, compliance and educational information.](#)
- [Some water suppliers have posted their annual reports on EPA's website.](#)

Other EPA websites

- Find an answer or ask a question about drinking water contaminants on [EPA's Question and Answer website](#) or call EPA's Safe Drinking Water Hotline at (800) 426-4791
- [EPA's Integrated Risk Information System](#)
- [EPA's Substance Registry System](#)

Other Federal Departments and Agencies

- [National Institutes of Health, "Dietary Supplement Fact Sheet, Selenium"](#)
 - [Agency for Toxic Substances and Disease Registry's TOXFAQs, Selenium](#)
 - [Agency for Toxic Substances and Disease Registry's Toxicological Profile, Selenium](#)
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Last updated on Wednesday, February 05, 2014