



Selenium in Drinking Water

Selenium is a metal found in natural deposits as ores containing other elements (sulphide, silver, copper, lead, and nickel) and in trace quantities in plant and animal tissues. Processed selenium is used in glass, and electronic manufacturing, pharmaceutical products, fertilizers and pesticides, and in pigments for plastic, paints, enamel, ink, and rubber. Exposure to high levels of selenium can cause adverse health effects.

People may be exposed to selenium through food (ex: meat and vegetables), water, consumer products, soil, and ambient air.

How does selenium get into my water?

A small amount of selenium naturally occurs in water from natural rock weathering and soil erosion. The main source of selenium in water is due to industrial processes, such as waste products from burning of coal and petroleum fuels, as well as metal mining, refining and processing.

How can selenium affect my health?

Selenium is a nutrient people need at low levels in their diet. Being exposed to high levels can cause health problems.

Long-term exposure to high levels of selenium can cause jaundice and intestinal disease, hair loss, weakened nails, tooth decay, fatigue, and neurological problems.

Acute exposure to high levels of selenium can cause diarrhoea, vomiting and stomach pain, changes to hair and fingernails, irritability and fatigue. This type of exposure is highly unlikely in drinking water.

There has been no evidence suggesting selenium causes cancer.

What is the Maximum Acceptable Concentration for selenium in drinking water?

The *Guidelines for Canadian Drinking Water Quality* established by Health Canada has set the maximum acceptable concentration (MAC) of selenium in drinking water at 0.05 milligrams per litre (mg/L). The drinking water guideline is based on the potential health effects of long term exposure to high concentrations of selenium.

How do I know if there is selenium in my drinking water?

As selenium is both tasteless and odourless, you won't be able to tell if it is in your drinking water. Private water supplies can be tested by an accredited laboratory to determine selenium levels. All public water supplies are regularly tested for selenium.

What if there are high levels of selenium in my drinking water?

Boiling water with elevated selenium levels will not make the water safe. An alternate safe water source, or water treated with an appropriate treatment device must be used for drinking, cooking, making juice, drinks, ice or infant formula, brushing teeth or soaking dentures, washing fruits and vegetables, and making soup, tea or coffee. Water with elevated selenium levels may still be used for handwashing, washing dishes, bathing, and laundry.

If high concentrations of selenium are found in your drinking water:

- Look for an alternate water source with low selenium concentrations. Where possible, connect to a public water distribution system.
- Install an in-home water treatment device that can reduce the level of selenium. Look for treatment devices that have been certified by an accredited certification organization as meeting the appropriate NSF International (NSF)/American National Standards Institute (ANSI) drinking water treatment unit standards for removing selenium.
 - Residential water filters approved for selenium removal (NSF/ANSI standard 53)
 - Distillation systems (NSF/ANSI standard 62)
 - Reverse osmosis drinking water treatment systems (NSF/ANSI standard 58)

After the system is installed, have the treated water tested for selenium at a private accredited lab to make sure your system is working properly. Monitor and maintain your water treatment equipment according to manufacturer instructions.

If you are concerned about health risks from the consumption of water containing selenium, please contact your doctor.

For more information about selenium in drinking water, contact your local Environmental Health Officer.

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