



Chromium in Drinking Water

Chromium is a metal element found in air, water, rocks, soil, plant and animal tissues, gases, and volcanic dust. Chromium is found in three forms (0, III, VI), with uses in textile, ceramic and glass industries, chemical production, photography, and in the metal industry (chrome alloys, chrome plating, and to inhibit corrosion). Exposure to high levels of chromium can cause adverse health effects.

People may be exposed to chromium in food (meat, fish, dairy, fruit and vegetables) and drinking water. In general, food appears to be the major source of intake. Exposure can also occur through inhalation of ambient air and cigarette smoke, as well as direct skin contact with materials containing chromium.

How does chromium get into my water?

Chromium III is the most common naturally occurring form, and can be found in most soils and rocks in small amounts which erode into water sources. Chromium 0 and VI occur infrequently in nature. Environmental presence is generally the result of contamination from industrial and domestic emissions.

What effects does chromium have on my health?

Chromium III helps the body use sugar, protein, and fat. Chromium III is considered non-toxic; however its presence during chlorination of water will cause oxidation to the more harmful chromium VI form.

Chromium 0 and VI are more harmful and there are health risks with exposure. Long-term exposure (over many years or decades) to high levels of chromium 0 and VI in drinking water can cause allergic dermatitis, liver damage, kidney problems, nerve tissue damage, lung and/or stomach cancer, and death.

What is the standard for chromium in drinking water?

The *Guidelines for Canadian Drinking Water Quality* established by Health Canada has set the maximum acceptable concentration (MAC) of chromium 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 chromium.

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

Although chromium salts impart odour and taste to water, the concentration at which this occurs, 1.5 mg/L, is considerably higher than the maximum acceptable concentration. Private water supplies can be tested by an accredited laboratory to determine chromium levels. All public water supplies are tested for chromium.

What if I find chromium in my drinking water?

Boiling water with elevated chromium 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 chromium levels may still be used for handwashing, washing dishes, bathing, and laundry

Because chromium can cause cancer, every effort should be made to keep chromium levels in drinking water as low as possible. If high concentrations of chromium are found in your drinking water:

- Look for an alternate water source with low chromium concentrations. Where possible, connect to a public water distribution system.
- Install an in-home water treatment device that can reduce the level of chromium. 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 chromium.
 - Cation exchange water softener for chromium III removal (NSF/ANSI standard 44)
 - Reverse osmosis drinking water treatment systems (NSF/ANSI standard 58)
 - Filtration drinking water treatment systems (NSF/ANSI standard 62)

After the system is installed, have the treated water tested for chromium 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 chromium, please contact your doctor.

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

Environmental Public Health Services
Regional Delivery Sector, Alberta Region
Edmonton Phone: (780) 495-2712
Calgary Phone: (403) 299-3939