REGIONAL DISTRICT NORTH OKANAGAN

MANGANESE FAQ's

This document was prepared with assistance of the Interior Health Authority. To connect with the appropriate official in their office, please reach out to them directly.

What is manganese, and how am I exposed to it?

Manganese is a naturally occurring mineral found in rocks, soil, groundwater, surface water, and many foods. It is an essential element that the body needs in small amounts to support normal growth and metabolism.

Manganese can dissolve into groundwater naturally as water moves through rock and soil formations.

What is the role of manganese in discoloured water?

Dirty, cloudy, or discoloured water may be caused by a variety of factors, including air bubbles, sediments or particles, natural organic matter, and minerals such as iron or manganese.

When dissolved manganese is exposed to oxygen, chlorine, or other oxidants during water treatment or distribution, it can undergo oxidation and form solid particles. These particles may cause the water to appear yellow, orange, brown, or black and can accumulate as dark-coloured sediment.

These particles, which are heavier than water, can also settle in water mains under normal operating conditions. When water flow increases or changes direction due to events such as water main breaks, firefighting, hydrant flushing, or changes in water demand, the settled particles can become resuspended and carried through the distribution system. This can result in a sudden increase in discoloured water at the tap.

Although manganese can affect the appearance, taste, and aesthetic quality of drinking water, its presence does not necessarily indicate a health risk.

What should I do if my water is discoloured?

If you observe a noticeable increase in colour or sediment, or if water has not been used in your home for more than 24 hours, flush your home by running a cold water tap for about 10 minutes. An outside tap is preferred. If the water fails to clear after 10 minutes, wait for a couple hours and try again. If the water is still discoloured, contact the RDNO at 250-550-3700.

An outside tap is preferred because it is typically the closest connection to your service line. Flushing here allows any discolored water or sediment to be flushed directly from your service line before it travels through your home's plumbing. This helps protect your internal plumbing, such as faucet aerators and toilet valves, from the buildup of particles. In addition, outside taps generally provide higher flow rates because they do not have aerators.

What is the Health Canada guideline for manganese?

There are two manganese Guidelines for Canadian Drinking Water Quality:

- Maximum Acceptable Concentration (MAC): 0.12 mg/L
- Aesthetic Objective (AO): 0.02 mg/L

The MAC is a health-based guideline and is designed to protect infants, the most sensitive population. The AO is based on aesthetic concerns such as staining, discoloration, and taste rather than health effects.

Manganese concentrations for RDNO water utilities are available at www.rdno.ca/water.

What are the potential health effects of manganese?

Exposure to elevated levels of manganese over a long period of time may affect the central nervous system. Research has shown that long-term exposure to high levels of manganese in drinking water may impact memory, attention and concentration, learning and behaviour, motor skills and coordination, and the intellectual development in infants and young children.

Infants and young children are considered the most sensitive population because their brains are still developing, they consume more water relative to their body weight, and they absorb and retain manganese more readily than adults. Infants who consume formula prepared with water containing elevated manganese may receive a greater proportion of their exposure from drinking water.

Should I be concerned if manganese is in my drinking water?

The presence of manganese in drinking water does not necessarily indicate a health concern. Many water supplies contain naturally occurring manganese. Health risk depends on the concentration of manganese, the duration of exposure, and the age and sensitivity of the individual.

When considering risk, it is important to note:

- The maximum acceptable concentration (MAC) of manganese is based on animal studies and includes safety factors to ensure the most sensitive individuals are protected. Concentrations approaching, but remaining less than, the MAC are not associated with increased health risks in any individuals.
- Health Canada calculated the MAC assuming that people would be constantly exposed to elevated levels of manganese for long periods of time. Occasionally consuming water with manganese concentrations slightly greater than the MAC is unlikely to cause any health issues.
- Health Canada has adopted a precautionary approach due to the limitations on the available information. Manganese concentrations greater than the guideline are only representative of a potential risk to health, but do not represent measurable health impacts.

Can I be exposed to manganese through skin contact?

No. Exposure through skin contact is not harmful. Exposure through hand washing, showering, or bathing from water with manganese is unlikely to be significant. Inhalation of manganese aerosols during showering has not been directly evaluated but it is not expected to pose any risk to human health.

Should I use tap water to prepare infant formula?

If manganese concentrations exceed Health Canada's guideline, Health Canada and public health authorities may recommend using an alternate water source, such as bottled water, to prepare infant formula.

Is it safe for pregnant women to drink water containing manganese?

Adults, including pregnant individuals, generally absorb and regulate manganese effectively. Health Canada notes that developing fetuses are considered less sensitive to

manganese in drinking water than formula-fed infants. Breastfeeding is not considered a significant route of manganese exposure and remains a healthy feeding choice for infants.

Can I boil the water to remove the manganese?

No. Boiling water is not an effective form of treatment for manganese reduction.

Where can I find more information on manganese?

Health Canada: Guidelines for Canadian Drinking Water Quality: Guideline Technical Document – Manganese - Canada.ca

Ministry of Health – Province of British Columbia. HealthLinkBC: https://www.healthlinkbc.ca/healthlinkbc-files/manganese-drinking-water