



# Changes to the Canadian Guideline for Manganese in Drinking Water

## What are the drinking water guidelines?

Health Canada works with the provincial and territorial governments to develop the *Guidelines for Canadian Drinking Water Quality* (the guidelines). The guidelines are designed to protect the health of the most vulnerable group and set out the basic parameters that every water system should strive to achieve in order to provide the cleanest, safest and most reliable drinking water possible, including health-based maximum acceptable concentrations (MACs) for certain parameters.

## What is manganese and how are people exposed?

Manganese is an essential nutrient for human health that is found in air, food, consumer products, soil and drinking water. Food is the main source of exposure to manganese; however, manganese is more readily absorbed from drinking water than from food.

## Why is the guideline changing?

Manganese has long been dealt with as an aesthetic concern that causes discoloured water and/or staining of laundry or plumbing fixtures. However, new scientific studies suggest that too much manganese can cause negative health effects in humans, especially infants. This information was used as the basis to establish the new guideline for manganese in drinking water. The guideline is intended to protect the general population by setting a MAC that is based on infants as they are the most at risk and sensitive population. Drinking water used to prepare infant formula should not contain manganese at levels that exceed the maximum acceptable concentration.

## What is changing?

The previous guideline for manganese was last updated in 1987 and established an Aesthetic Objective (AO, which deals with the taste, colour and smell of drinking water) of 0.05 mg/L. The new guideline lowers the AO to 0.02 mg/L and introduces a new Maximum Acceptable Concentration (MAC, which deals with health risks associated with chemical and bacterial parameters in drinking water) of 0.12 mg/L.

Monitoring for manganese is recommended to be conducted at the entry to the distribution system and from locations within the distribution system including those located in close proximity to the treatment plant (e.g., hydrants, valves) and at consumer's taps (i.e representative sampling based on the size of the distribution system). The guideline recommends quarterly monitoring of public and semi-public systems. In addition, event based monitoring should be conducted if discoloured water has been reported. The guideline suggests that reduced monitoring could be considered when it has been demonstrated that manganese is present at concentrations equal to or below 0.02 mg/L in the source water and/or appropriate treatment is in place.

Where communities receive drinking water from nearby municipalities, Environmental Public Health Officers (EPHOs) will work with individual First Nations and the municipalities to share drinking water quality data and information.

### **How does Canada compare internationally?**

The United States, Australia and World Health Organization currently have health-based limits that allow higher levels of manganese in drinking water than the new Canadian guideline.

### **How will Indigenous Services Canada support these changes?**

EPHOs routinely monitor public and semi-public drinking water systems in First Nation communities for the presence of chemicals. EPHOs and Water System Operators (WSOs) will monitor drinking water for manganese in accordance with the new guideline and will advise Chief and Council when issues are identified. The Public Health Engineering (PHE) Team will be available to analyze monitoring results over time and make recommendations where appropriate.

Indigenous Services Canada supports monitoring of individual wells for bacteriological parameters upon request. If there are concerns regarding manganese (or other chemical parameters) in well water, EPHOs can recommend a reliable laboratory.

### **What happens if elevated levels of manganese are found?**

Health Canada has acknowledged that changes to drinking water processes may take years to implement, and can vary across jurisdictions based on competing priorities. EPHOs will provide recommendations to the Chief and Council based on the water test results and work with the Chief and Council and other partners to address any environmental public health concerns. Where appropriate, Indigenous Services Canada will implement a sampling strategy in accordance with the new Guideline and work with the Band and other partners to implement measures to reduce levels to below the Guideline. Until such measures are in place, an alternate source of drinking water should be used for infants and newborns, including reconstituting formula.

Although breastfed infants and foetuses are generally at low risk, new and expecting mothers who have concerns may wish to use an alternate source of drinking water or consult with a health professional. Water that exceeds the guideline for manganese is still safe for bathing and showering.

An exceedance of the MAC should be investigated and followed up with the appropriate corrective actions. Depending on the location and extent of the exceedance(s), community leaders can work with EPHOs, WSOs, Circuit Rider Trainers, and the PHE team to:

- verify treatment plant operations and treated water concentrations and adjust operations as required;
- continue monitoring at appropriate locations and adjusting operations until levels are below the MAC;



- review distribution system operation and maintenance activities to determine if sediment collecting in community water lines is a source of manganese;
- verify distribution system water quality (e.g., pH, oxidation/reduction potential, chlorine residual, turbidity) to determine if chemical release occurred.
- characterize source water and confirm concentrations; and
- conduct targeted and tailored distribution system maintenance activities according to best practices, which may include unidirectional flushing, ice or foam pigging and swabbing.

If elevated levels of manganese persist, community leaders can consult their Regional Medical Officer to discuss health concerns and work with their EPHO, the Circuit Rider Trainer, the community's capital manager and the PHE team to determine the appropriate action. There are several options depending on source water chemistry and severity that could include targeted and tailored system maintenance activities, the use of residential treatment devices certified by NSF International or ANSI for the removal of heavy metals. Any capital projects would need to be discussed with the community's Capital Manager and be part of the First Nation's Infrastructure Investment Plan.

#### **For more information**

Visit the websites below.

***Guidelines for Canadian Drinking Water Quality: Manganese in Drinking Water:***  
<https://www.canada.ca/en/health-canada/programs/consultation-manganese-drinking-water/manganese-drinking-water.html>

***Questions and Answers on Drinking Water Treatment Devices***  
<https://www.canada.ca/en/health-canada/services/environmental-workplace-health/water-quality/questions-answers-drinking-water-treatment-devices.html>

