

Understanding your drinking water Chemical Test Results

To understand what your drinking water chemical testing results mean, check the lab report and use the information below.

The guidelines for Canadian drinking water quality have limits for some substances in drinking water that can be harmful to your health (e.g., [nitrates](#), [nitrites](#), and fluoride). The guidelines are listed as:

- maximum acceptable concentration (MAC) - this is listed as a number, and it means how much of a certain chemical is safe to have in water that won't cause harm. For your protection, the maximum limits are set below levels which can cause health problems. Drinking water that continually contains substances at a level greater than its MAC may be harmful.
- aesthetic objectives (AO) - this means other limits set on water. If there is a problem, the water may look, smell, or taste funny.

You do not need to worry about the results for conductivity, cation/anion sum, ion balance, and percentage difference as these tests are done for lab work purposes only.

Result	Alberta Health Services Guidelines	Information
pH	6.5 to 8.5 AO	• A pH is a measure of how acidic or how basic the water is. A pH of 7 is neutral. • A pH higher than 8.5 can cause scales to form (mineral deposits) on cookware, plumbing, and appliance parts. • A pH lower than 6.5 can cause rusting or eating away (corrosion) of plumbing and appliance parts. Corrosive water may dissolve metals from pipes (lead, cadmium, zinc, copper) into water that could cause health problems.
Sodium	200 mg/L AO	• Water with more than 200 mg/L of sodium tastes salty. • Drinking water with high sodium isn't a health concern for most people. However, it can be unsafe for anyone on a sodium-free or low-sodium (500mg/day) diet. Water



		treated by a water softener may add more sodium (over 300mg/L) and may not be safe if your sodium is restricted. Talk to your doctor if you have any questions.
Potassium	No guideline	• Potassium concentrations in drinking water are usually low and aren't a problem for healthy people. • Water softeners using potassium chloride can significantly increase the levels of potassium in drinking water. If you have kidney disease or another health problem (e.g., heart disease, diabetes) ask your doctor if you can drink water treated by a water softener.
Calcium	No guideline	• All people need calcium to stay healthy. • Calcium makes water harder (see section on total hardness below). • Calcium levels higher than 200mg/L may cause scaling.
Magnesium	No guideline	• All people need magnesium to stay healthy. • Magnesium makes water harder (see section on total hardness below). Levels higher than 150mg/L may cause loose bowel movements if people are not used to drinking it. Talk to your doctor if you have questions.
Total Hardness	No guideline	• Water collects minerals (e.g., calcium, magnesium) which cause water hardness as it moves through the ground. Soft water can make corrosion worse, while hard water increases scaling on pipes, water heaters, and appliances. • You need to use more soap when washing with hard water. • Water softeners lower hardness to acceptable levels but will increase sodium or potassium levels (see sodium and potassium).
Iron	0.3 mg/L AO	• If the level of iron is above 0.3 mg/L, it can cause a red-brown stain on laundry and plumbing fixtures. It might also make water taste like metal. • High iron levels cause iron bacteria to grow on parts of a well, water system, and plumbing. Shock chlorination can control iron bacteria (may need to do this every year). In very bad cases, you might need an iron filter. • This does not test for iron bacteria, so it is possible to have signs of iron bacteria (staining, iron taste, etc) without having iron in your water.



Total Alkalinity	No guideline	- Alkalinity is a measure of the water's ability to neutralize acids and maintain a fairly stable pH. - The amount of bicarbonate, carbonate, and hydroxide in water forms the alkalinity. - Low levels (less than 80mg/L) can cause corrosion problems. High levels (more than 120mg/L) can cause more scaling.
Carbonate, Bicarbonate and Hydroxide	No guideline	Carbonates, bicarbonates, and hydroxides are related to alkalinity, salinity, and total dissolved solids.

Chloride	250 mg/L AO	- Chloride levels higher than 250 mg/L can make water taste salty. - High levels of chloride might cause corrosion depending on the alkalinity of the water. - A sudden increase in chloride (e.g., road salt, irrigation drainage, sewage) might mean your water supply is polluted.
Fluoride	1.5 mg/L MAC	- Fluoride levels higher than 1.5 mg/L may increase the risk of white spots on tooth enamel (dental fluorosis) in children with developing teeth (newborns to 8 year old). - Fluoride levels of 2.5mg/L or higher may increase the risk of bone fractures or a bone disease called skeletal fluorosis, which causes pain and damage to bones and joints in severe cases. - If you are concerned about fluoride levels in your drinking water talk to your dentist or Alberta Health Services Dental Public Health Office. - Fluoride can be removed by point-of-use devices like reverse osmosis or distillation.
Nitrate	10 mg/L MAC	Nitrate and nitrite levels above limits can cause problems with how blood carries oxygen. This can be very bad for women who are pregnant or breastfeeding and people with health problems. In children younger than 6 months, it can cause methemoglobinemia, which means the blood can't carry oxygen through the body like it should. These people



Nitrite	1.0 mg/L MAC	should not drink water or eat food prepared with water if nitrates or nitrites are above the limit. • Agricultural waste (e.g., fertilizer), decaying plant matter and on-site septic systems that don't work properly (or poorly designed) can cause nitrate and nitrite contamination. • Boiling water doesn't decrease or remove nitrates and nitrites from water. Nitrates and nitrites can be removed by point-of-use devices like reverse osmosis, distillation, or ion exchange. Make sure your devices are CSA or NSF approved.
Sulphate	500 mg/L AO	• Water naturally contains sulphates. Sulphates can also get into water when plants, animals, and organic wastes decompose. Water with sulphates might also have bacteria, which can change sulphates into a gas that smells like rotten eggs (hydrogen sulphide). These bacteria can cause corrosion problems. • To reduce hydrogen sulphide, aerate or chlorinate and then filter well water. High levels of sulphate can cause loose bowel movements if people are not used to drinking it. Regular users get used to high sulphate levels. Babies are more sensitive to sulphate than adults. Don't use water with sulphate level over 400mg/L to prepare formula for babies.
Manganese	0.02 mg/L AO 0.12 mg/L MAC	• Manganese is an element found in minerals and is typically present in groundwater-based drinking water. • Manganese in small doses can be beneficial to human health; however, in higher concentrations it can pose adverse effects in infants and children. Similar to lead. • It can also affect the taste and appearance of drinking water.
Total Dissolved Solids (TDS)	500 mg/L AO	• TDS is a measure of minerals in the water. • Low TDS can make water taste flat. • High TDS can cause scaling and affect how water tastes and smells. When the concentration of TDS is higher than 500mg/L, the water may have a bitter, salty, or medicine-like taste (depending on what salts are in the water). • Reverse osmosis and electrodialysis will remove TDS from water.

