The drop on water

Chloride

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Chloride (Cl^-) is a negative ion of the element chlorine (Cl) and is widely distributed in the environment. It is present in water, soil, rock, and many foods.

Sources

Chloride is found naturally in groundwater through the weathering and leaching of sedimentary rocks and soils and the dissolution of salt deposits. Chloride is often attached to sodium, in the form of sodium chloride (NaCl), which is used extensively for snow and ice removal.

Other sources of chloride in groundwater include

- saltwater intrusion and sea spray in coastal areas
- leachate from dumps or landfills
- water softener backwash
- sewage contamination
- leachate from abandoned, deep exploration holes or mines (rare)

Aesthetic Objective for Drinking Water ≤ 250 mg/L

The Canadian drinking water quality guideline for chloride is an Aesthetic Objective (AO) of less than or equal to **250 milligrams per litre (mg/L)**.

Drinking water and drinks prepared with water containing chloride may have a salty taste at concentrations as low as 100 mg/L. Most people find that water with more than 250 mg/L of chloride is unpleasant to drink.

QUICK FACTS

- Chloride is found naturally in groundwater through the weathering of rocks and soil.
- Human activities can also contribute to the presence of chloride in well water.
- In water, chloride has no smell or colour, but it can give water a salty taste.
- Chloride can be detected through chemical testing.
- The Canadian drinking water quality guideline for chloride is an Aesthetic Objective (AO) of less than or equal to **250 mg/L**.
- Chloride is often associated with sodium in drinking water, which may cause health concerns for people on sodium-restricted diets.
- To improve the aesthetic quality of drinking water, homeowners may consider water treatment options or use an alternative water source.

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Health Risks

Chloride itself in drinking water is generally not harmful to human beings.

At concentrations higher than 250 mg/L, the sodium associated with chloride may be a concern to people on sodium-restricted diets. See our fact sheet on sodium for more information.

Chloride may also contribute to the total dissolved solids (TDS) in drinking water. This may affect the rate of corrosion of steel and aluminum. Chloride may cause corrosion of some metals in pipes, pumps, fixtures, and hot water heaters. See our fact sheet on corrosive water for more information.

Testing

Regularly test your well water for a standard suite of chemical parameters, including chloride. Use an accredited water testing laboratory. Find a list of accredited water testing laboratories at **www.gov.ns.ca/nse/water/waterlabs.asp** or see the Yellow Pages under "laboratories."

Get the special sampling bottles and instructions on proper sampling from the laboratory.

The cost of analyzing water samples can range from $15 for a single parameter to $230 for a full suite of chemical parameters. The cost can vary depending on the lab and the number of parameters being tested.

REGULAR TESTING

Homeowners are responsible for monitoring the quality of their well water:

- Test for bacterial quality every 6 months.
- Test for chemical quality every 2 years.
- Test more often if you notice changes in physical qualities – taste, smell, or colour.

Regular testing alerts you to problems with your drinking water.

Solutions

If chloride is present above 250 mg/L in the first test, get a second test to confirm the original results.

Chloride is an aesthetic parameter. Aesthetic parameters may impair the taste, smell, or colour of water. Although chloride does not pose a health risk, its presence can indicate deteriorating groundwater quality and could indicate other problems with well water quality, which may cause adverse health effects.

If chloride is confirmed to be present above 250 mg/L in the well water, investigate the source of chloride in drinking water. Consider the following options:

- If the chloride is from surface sources, such as sewage discharges, it may indicate the presence of pathogens or other contaminants present in surface water, which may cause adverse health effects.
  - Test your well water for other contaminants, including bacteria.
  - Inspect the well construction.
  - Consider drilling a new well with proper site selection and construction to prevent contamination.
- If you use road salt on your property, handle, store, and use it properly to minimize groundwater contamination.
- Use water conservation measures, particularly in coastal areas, especially in summer months when groundwater recharge is lowest, to reduce the risk of saltwater intrusion.

When the source of chloride does not pose a health risk, treating your water is optional. You may choose to treat your water to improve the taste and make it more pleasing to consume.

When the source of chloride is from surface sources and other contaminants, including bacteria, are present, consider well construction improvements or water treatment options.

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Treatment

Chloride cannot be removed from water through boiling. Boiling may increase chloride concentrations.

We recommend purchasing a treatment system that has been certified to meet the current NSF standards. NSF International is a not-for-profit, non-governmental organization that sets health and safety standards for manufacturers in 80 countries. See its website at **www.nsf.org**.

Although there are currently no treatment units certified specifically for chloride reduction, effective treatment methods for reducing chloride levels in drinking water include

- anion exchange
- distillation
- reverse osmosis

Once installed, re-test your water to ensure the treatment system is working properly. Maintain the system according to the manufacturer's instructions to ensure a continued supply of safe drinking water.

For more information on water treatment, see our publications *Water Treatment Options* and *Maintaining Your Water Treatment,* part of the *Your Well Water* booklet series at **www.gov.ns.ca/nse/water/privatewells.asp**.

FOR MORE INFORMATION

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1-877-9ENVIRO
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www.gov.ns.ca/nse/water/

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