

The drop on water

Boron

Boron (B) is a naturally occurring element found in rock and soil.

Sources

Some boron found in groundwater is naturally occurring. The presence of boron in well water depends on the rock and soil type in the area.

Boron may also be present in groundwater due to

- coal combustion products
- municipal sewage
- leaching of landfill materials
- the production of fertilizers and pesticides

Some animal manure may also contain small amounts of boron.

Maximum Acceptable Concentration for Drinking Water = 5 mg/L

In water, boron has no taste, smell, or colour. It can only be detected through a chemical test.

The Canadian drinking water quality guideline for boron is **5 milligrams per litre (mg/L)**.

The guideline limit for boron is based on the level that can be achieved by treatment units. Make every effort to keep boron levels as low as possible in drinking water.

Health Risks

Some studies have shown that very high concentrations of boron in drinking water can cause reproductive malfunctions in men and developmental abnormalities. However, these occurred at much higher levels of boron than are commonly found in drinking water.

The risk to human health is through ingestion only – drinking, cooking, teeth brushing. Well water with boron levels greater than 5 mg/L may safely be used for bathing, handwashing, and dishwashing.

QUICK FACTS

- Boron is present in rock and soil.
- Boron in drinking water has no taste, smell, or colour.
- Boron can only be detected through chemical testing.
- The Canadian drinking water quality guideline for boron is **5 mg/L**.
- Exposure to very high concentrations of boron in drinking water can cause reproductive and developmental abnormalities.
- Well water with boron greater than **5 mg/L** should not be used for drinking, cooking, or teeth brushing. It may be used for bathing, handwashing, and dishwashing.
- If boron is present above **5 mg/L** in drinking water, consider water treatment options or alternative sources of water.

Testing

Regularly test your well water for a standard suite of chemical parameters, including boron. 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.

Solutions

If boron is present above 5 mg/L in the first test, get a second test to confirm the original results.

If boron is confirmed to be present above 5 mg/L in the well water,

- Find an alternate source of water for drinking, cooking, and teeth brushing, such as bottled water or another well that has been tested and found to be safe.
or
- Treat your current source of water to reduce boron levels.

Treatment

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 boron reduction, effective treatment methods for reducing boron levels in drinking water include

- adsorption
- distillation
- ion exchange
- 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.

Considerations

Drilled wells may be more vulnerable to boron contamination than dug wells.

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.

FOR MORE INFORMATION

Contact

Nova Scotia Environment at
1-877-9ENVIRO
or 1-877-936-8476

www.gov.ns.ca/nse/water/


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