



The drop on water

# Cadmium

Cadmium (Cd) is found in very low concentrations in most rocks, as well as in coal and petroleum.

## Sources

Cadmium can be present in groundwater through contact with dissolved rocks and minerals.

Other sources of cadmium in groundwater include

- mining and smelting operations
- industrial operations
- burning of fossil fuels
- fertilizer application
- sewage sludge disposal
- corrosion of galvanized pipes
- leaching of landfills

## Maximum Acceptable Concentration for Drinking Water = 0.005 mg/L

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

The Canadian drinking water quality guideline for cadmium is **0.005 milligrams per litre (mg/L)**.

## QUICK FACTS

- Cadmium is present in rock and soil.
- Cadmium in drinking water has no taste, smell, or colour.
- Cadmium can only be detected through chemical testing.
- The Canadian drinking water quality guideline for cadmium is **0.005 mg/L**.
- Exposure to high levels of cadmium in drinking water can cause gastrointestinal discomforts and kidney damage.
- Well water with cadmium greater than **0.005 mg/L** should not be used for drinking, cooking, or teeth brushing. It may be used for bathing, handwashing, and dishwashing.
- If cadmium is present above **0.005 mg/L** in drinking water, consider water treatment options or alternative sources of water.

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## Health Risks

Short-term exposure (over days or weeks) to high levels of cadmium in drinking water can cause nausea, vomiting, and diarrhea.

Long-term exposure (over years or decades) to cadmium in drinking water may cause kidney damage.

The risk to human health is through ingestion only – drinking, cooking, teeth brushing. Well water with cadmium levels greater than 0.005 mg/L may safely be used for bathing, handwashing, and dishwashing.

## Testing

Regularly test your well water for a standard suite of chemical parameters, including cadmium. Use an accredited water testing laboratory. Find a list of accredited water testing laboratories at [www.gov.ns.ca/nse/water/waterlabs.asp](http://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 cadmium is present above 0.005 mg/L in the first test, you must determine the source of the cadmium. Get a second test, taking a sample of water from the well before it enters the building. This will help determine whether the cadmium is present in the groundwater or the plumbing materials.

If the source of cadmium is corrosion of cadmium-containing plumbing materials, consider the following options:

- Remove the source of cadmium.
- Flush faucets until the water runs as cold as possible before using the water for drinking, cooking, or teeth brushing.
- Avoid using hot tap water for drinking, cooking, or making baby formula.
- Adjust pH so water is less corrosive (see our fact sheets on pH and corrosive water for more information).
- Use a treatment system, to reduce cadmium levels.
- Use alternative water sources, such as bottled water or another well that has been tested and found to be safe.

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## Treatment

Cadmium cannot be removed from water through boiling.

If the groundwater is found to have high levels of cadmium before entering the home, flushing the faucet will not be effective. Consider the following treatment systems to reduce cadmium levels:

- coagulation/filtration
- distillation
- ion exchange
- reverse osmosis

Buy a treatment system that has been certified to meet the current NSF standards for cadmium reduction. 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](http://www.nsf.org).

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](http://www.gov.ns.ca/nse/water/privatewells.asp).

## FOR MORE INFORMATION

### Contact

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

[www.gov.ns.ca/nse/water/](http://www.gov.ns.ca/nse/water/)

