

Water Chlorination and Disinfection By-Products

Why disinfect drinking water?

A safe supply of fresh water for drinking is available in Newfoundland and Labrador. But even the best water sources may contain microbes which can make people sick. Therefore, most communities in the province disinfect their drinking water to kill possible disease-causing bacteria like *Salmonella*, *Campylobacter*, and *E. coli*, and to protect the water from contamination by other microbes as it moves through the pipes.

Why use chlorine?

There are a number of methods to disinfect drinking water to make it safe. Chlorine is the most common disinfectant used because it is safe, affordable, works well, and relatively easy to use. Our province has standards in place for the amount of chlorine needed to disinfect drinking water and protect consumers from microbial contaminants. If there is insufficient disinfection (e.g., chlorination) of the water supply, community and/or government officials may issue a “Boil Water Advisory” for the community.

How can chlorine disinfection affect my health?

The chlorine normally used in town water will not cause any serious health effects, because of the very small amounts used. However, some people who are sensitive to chlorine may have a mild rash or dry skin after bathing or showering.

The more significant health concern related to chlorination is with the formation of disinfection by-products during the addition of chlorine to the water supply. The by-products are formed when the chlorine combines with naturally occurring organic matter, like dead leaves and animal waste, found in surface water supplies such as ponds and rivers. One group of by-products is called **trihalomethanes**, or **THMs**, and includes chemicals such as chloroform. Another group is called **haloacetic acids**, or **HAAs**.

How can disinfection by-products affect my health?

In laboratory tests, lab animals exposed to very high levels of THMs have an increased risk of cancer. Several studies on humans have also found a link between long-term exposure to high levels of chlorination by-products and a higher risk of cancer. For instance, a recent study showed an increased risk of bladder and possibly colon cancer in people who drank chlorinated water for 35 years or more.

High levels of THMs may also have an effect on pregnancy. A California study found that pregnant women who drank large amounts of tap water with high THMs had an increased risk of miscarriage. These studies do not prove that there is a link between THMs and cancer or miscarriage. However, they do show the need for further research in this area to confirm potential health effects.

(from Health Canada’s It’s Your Health Fact Sheet, *Drinking Water Chlorination*)

For HAAs, there is a concern that long-term exposure to elevated levels may pose an increased risk of developing cancer. In addition, there is some evidence in animal studies that exposure may be linked to development and reproductive effects..

Remember:

Current scientific data shows that the benefits of chlorinating our drinking water (less disease) are much greater than any health risks from THMs and other by-products. Although other disinfectants are available, chlorine remains the choice of water treatment experts.

What if I can smell or taste chlorine ?

You may smell and/or taste chlorine in the water when the chlorine level is high or low, or when small amounts of chlorine touch rubber found in hoses, washers, or tap screens. These smells and tastes are only health concerns when the chlorine level is extremely high or low. If the smells and tastes are unusual, contact your town office.

What is the government doing for me?

Your local council does routine testing of chlorine levels in the your drinking water. Officials with Service NL also check chlorine levels when they collect samples for bacteriological testing. Officials with the Department of Environment and Climate Change carry out regular chemical testing (including THMs) of your water. You can get the results of the tests from your town council, or from the website: <http://maps.gov.nl.ca/water/>.

Should I stop drinking the town water?

Town water is generally safe and is tested on a regular basis. If you are concerned about the possible health risks from high levels of disinfection by-products like THMs and HAAs, you may choose to install a home water treatment unit, or you may drink approved well water, or bottled water. Do not drink untreated surface water from ponds or rivers, or water from roadside springs.

How can I remove disinfection by-products from my drinking water?

Certain home drinking water treatment units, such as activated carbon filters, can be used to remove disinfection by-products and chlorine. If you decide to buy one of these units:

- Ensure that it is designed to remove THMs (i.e., "NSF Standard 53" on the label)
- Follow the directions and change the filter often
- If using water filter jugs, store them in a refrigerator

See www.nsf.org for more information about water filters.

Where can I find out more?

If you have any questions about drinking water safety, please do not hesitate to contact the Service NL or Regional Health Authority nearest you.



**Department of Health and Community Services
Department of Environment and Climate Change
Service NL
Regional Health Authorities**

Revised September 2016