Lead in Drinking Water:

Information for Manitoba Homeowners and Home-based Child Care Providers

What is lead?

Lead is a soft, bluish-grey heavy metal that has many industrial uses and can be found naturally in the environment.

Health effects of lead

Although blood levels have fallen significantly in recent decades due to the removal of lead from gasoline and paint, lead remains an important health concern. The higher and longer the exposure to lead, the greater the effect on health.

Lead exposure has been associated with effects on intellectual development and behaviour of children, even at very low levels. Other health effects, such as increases in blood pressure and reduced kidney function have also been associated with relatively low levels of lead exposure. High levels of lead exposure have additional health impacts.

Please see the Manitoba Health, Seniors and Active Living fact sheet for more information: **manitoba.ca/health/publichealth/environmentalhealth/lead.html**

Exposure to lead

Everyone is exposed to trace amounts of lead through air, soil, household dust, food, drinking water and various consumer products. The amount of lead that people are exposed to has decreased over time due to the elimination of lead from gasoline, paint, and other products.

Tap water is generally not the most significant source of exposure to lead. However, drinking water can contribute to a person's overall lead exposure.

How lead gets into tap water

The amount of lead in natural water sources in Manitoba is very low and is not a major contributor to the lead levels in tap water. Lead typically gets into tap water as it passes through services lines (the pipe that connects the house to the main water supply) and household plumbing systems.

The process by which lead can leach into the tap water is called corrosion. The corrosion process is affected by a number of factors including the type of materials used in the plumbing system, water chemistry and the amount of time the water sits in the pipes.

The levels of lead in tap water increase with the amount of time that the water sits in contact with materials that contain lead. Lead levels are generally highest when the water has not been used for several hours, such as overnight or during working hours.

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Sources of lead in tap water

Lead service lines are generally considered the highest overall contributor to lead at the tap.

Lead solder can also contribute significantly. Tiny bits of solder can break off and enter the drinking water directly or build up on the aerator screen in the tap. This can increase lead levels at the tap.

Older brass fittings or faucets may also contribute to lead at the tap, however their effect is usually less than from other sources.

Lead and other contaminants can also build up in the sediment or scale that accumulates in water distribution systems, service lines, or household plumbing and later released under changing flow or water quality conditions, sometimes associated with discoloured water.

How do I know if my tap water is affected by lead?

Newer homes are much less likely to have problems with lead in drinking water. Lead service lines were largely phased out in the 1950s though they were still allowed under the National Plumbing Code until 1975. Manitoba banned the use of leaded solders in household plumbing around 1990.

Older homes with lead service lines, lead solder and older fixtures generally have the highest levels of lead at the tap.

Check your water service line to see if it is a lead service line. The service line should be exposed (visible) where it attaches to the water meter. If it is greyish-silver, as opposed to copper-coloured, it may contain lead.

You can also contact your water supplier to see if they have information on lead service lines in your community, lead service line replacement programs or lead testing programs.

Homes that have had a partial lead service line replacement may have higher lead levels at the tap for weeks or months following the replacement.

Drinking water guideline for lead

The Guidelines for Canadian Drinking Water Quality recommend that the lead content of drinking water not exceed 0.005 milligrams per litre (mg/L) based on a water sample taken at the tap using the appropriate protocol. The national guideline also recommends keeping lead levels in drinking water as low as reasonably achievable.

Who should test their water for lead?

Everyone can benefit from reducing their exposure to lead. Testing is particularly important for homes with pregnant women or children, for places where children visit, or if children are being planned. The guideline also recommends testing for schools and child care facilities, including home-based child care facilities.

What if I live in a large building?

People who live in buildings with more than six units can test their water at the tap and take steps to reduce lead levels if the results are high. However, a different sampling procedure is recommended for these buildings. See the fact sheet: *Information for Manitoba schools, child care centres and large buildings* available at: manitoba.ca/drinkingwater/lead-in-schools-child-care-centres-and-large-buildings.

Where can I test my tap water for lead?

There are three laboratories in Manitoba accredited to test for lead in drinking water in accordance with the national guideline. Contact the laboratories directly for cost estimates and to obtain sample bottles and information on sampling.

Consider testing for other metals at the same time. Let the laboratory know if you would like to do additional testing.

ALS Environmental

12-1329 Niakwa Road East, Winnipeg, Manitoba R2J 3T4
Phone: 204-255-9720 (Toll Free: 1-800-607-7555);
Fax: 204-255-9721
Website: **alsglobal.com/en/Our-Company/Global-Locations**

Horizon Lab LTD
4055 Portage Avenue, Winnipeg, Manitoba R3K 2E8
Phone: 204-488-2035
Fax: 204-488-4772
horizonlab.ca

Maxxam Analytics
Unit D, 675 Berry Street, Winnipeg Manitoba R3H 1A7
Phone: 204-772-7276 (Toll Free: 1-866-800-6208)
Fax: 204-277-2386
maxxam.ca/about-maxxam/contact-us/manitoba

Let the laboratory know what type of building you are testing so they can provide the proper bottles and sample submission forms.

If you are sampling a house, including a home-based child care facility, the laboratory will provide you with a one-litre wide-mouth sample bottle and a sample submission form. Home-based child care providers should keep a copy of their test results for future reference.

Communities with municipal water services may offer lead testing to their residents. Contact your local water supplier to find out if testing is offered in your community or if they would like an copy of your results.

How to collect a sample for lead analysis?

For houses and home-based child care facilities, the national guideline recommends random daytime sampling. This simple protocol requires samples be collected randomly during the day from the cold water tap in the kitchen, and any other taps used for drinking and cooking. Samples should be collected at a medium to high flow rate that reflects normal use.

No additional steps are needed. The tap aerator does not have to be removed. The water does not have to sit (or stagnate) before the sample is collected. The tap does not have to be flushed or cleared before the sample is collected.

Once the one-litre bottle is filled, it should be sealed and properly labelled. The sample submission form should also be completed properly, with care taken to ensure the information matches that on the sample bottle and contact information is clear and legible.

Sharing test results your water supplier can assist them in identifying and addressing issues related to lead in drinking water. Results can be copied directly to the water supplier if you include their email address on the sample submission form

Samples can be dropped off at the laboratory during normal business hours or mailed to the laboratory by courier or Canada Post.

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What if I get an elevated lead result?

Lead levels at the tap can vary throughout the day, depending on water use. If the results from your first test are higher than 0.005 mg/L, you may want to do another test using the method described in the next section.

Homes with infants, children, or pregnant women should consider immediate action to reduce lead in drinking water while waiting for the next set of test results. Immediate actions include:

- using an alternate water source of water (ex: bottled water) for drinking and preparing food, or
- buying a low-cost filter to reduce lead. Filters are available in point-of-use models that fit on the tap or pitcher-type models (see section on How to treat the water to reduce lead levels).

Water with lead should not be used to make formula for infants. Boiling the water will not reduce lead levels.

Increased lead in drinking water is only a concern if swallowed. It is safe to shower, bathe, wash dishes, and clean clothes using tap water with higher lead levels.

Additional sampling following elevated results

If the results from your first test are higher than 0.005 mg/L, you may want to do another test using a using the 30-minute stagnation method. This method requires you to run the tap at high flow for 5 minutes and then let the water sit or stagnate for 30 minutes. During stagnation, water should not be used anywhere in the house including toilets. After the 30 minute stagnation time, two one-litre (1-L) samples should be collected – one after the other - at a medium to high flow rate. The results of both samples will be averaged.

Since lead levels can vary throughout the day, this sampling protocol gives you additional information about lead levels at your household tap.

Understanding the test results

Though lead levels can vary throughout the day, the tests are intended to represent typical lead exposure from drinking water in your home or home-based child care facility. If the test results are higher than or close to the national guideline of 0.005 mg/L, take steps to reduce lead in your drinking water.

How to reduce exposure to lead from tap water

Use only cold tap water for drinking and cooking since hot water increases the leaching of lead.

Make sure the aerators screens on faucets used for drinking and cooking are periodically cleaned to remove any lead particles that may have accumulated there.

Treat the water using a filtration device certified to meet the NSF International (NSF)/American National Standards Institute (ANSI) standard for removal of lead. (See next section for details).

Avoid drinking discoloured water, which may contain temporarily elevated levels of lead or other contaminants.

Avoid drinking tap water that has been sitting in the plumbing system for a long time (ex: overnight or during the workday). Flush the toilet, take a shower, or start a load of laundry first thing in the morning or after work to clear the water from the service line; then run the tap used for drinking until the water is cold. Fill a container with cold fresh water and keep it in the fridge for drinking or cooking.

Flush the service line and plumbing system whenever water has been sitting for several hours by running the water for two to five minutes before using it for cooking or drinking. Water drawn off initially may be used for other purposes, such as watering plants or washing dishes.

If your house has a lead service line, the best way to reduce exposure is to replace it. This can be expensive. Check with your water supplier for information on lead service line replacement programs in your community. Your water supplier is generally responsible for the water distribution system until it reaches the homeowner's property. The portion of the lead service line from the property line or curb stop to the house is the homeowner's responsibility.

Most water system owners will replace the portion of the lead service line from the water main to the curb stop when they are doing water main upgrades, repairs, or replacements. Homeowners should replace the remaining portion from the curb stop to their home at the same time to minimize costs, maximize health benefits, and to avoid short term lead increases due to partial lead service line replacements.

How to treat the water to reduce lead levels

Drinking water treatment devices can be installed at the tap (point-of-use) or where the water enters the house (point-of-entry). Point-of-use devices are preferred for removal of lead as lead levels may increase as water moves through the household plumbing system. Lead is only a concern if ingested. Showering or bathing are not a concern; so, there is no need to treat water used for other purposes.

Point-of-use filters and treatment devices are typically installed at the kitchen tap, which is the tap most commonly used for drinking water.

Pitcher-type devices are also available. These devices do not require mounting to a tap.

The treatment device should be certified to meet the NSF International (NSF)/American National Standards Institute (ANSI) standard for removal of lead. Organizations that are accredited to certify devices to the NSF standard (including NSF itself) are listed below (see the organizations' respective websites for listings of certified products):

- NSF International (NSF) – **nsf.org**
- Canadian Standards Association (CSA) – **csagroup.org**
- Underwriters Laboratories Incorporated (UL) – **ul.com**
- International Association of Plumbing and Mechanical Officials (IAPMO) – **iapmo.org**
- Water Quality Association (WQA) – **wqa.org**

Certified devices are tested to ensure the safety of materials used in the devices and to ensure they perform as claimed.

Point-of-use devices certified to reduce lead in drinking water are often available from local home-improvement or plumbing stores.

Quotes may also be obtained from reputable water treatment equipment suppliers. Suppliers should provide information on how much lead will be removed, as well as maintenance requirements and costs.

Once installed, follow the manufacturer's instructions on the use and maintenance of treatment devices and disposal of filter media.

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What steps can water system owners take to reduce lead in drinking water?

Water system owners can optimize the water treatment process to reduce the potential for corrosion in the distribution system. Changes in treatment, primarily pH and alkalinity adjustments, alone or in combination with corrosion inhibitors, can significantly reduce the leaching of lead.

Water systems owners can also develop programs to support lead service line replacements.

Some water system owners have provided programs for drinking water testing or for point-of-use filters for homes with increased lead levels.

For more information

For additional information on lead in drinking water, see Health Canada's website at: canada.ca/en/health-canada/services/publications/healthy-living/guidelines-canadian-drinking-water-quality-guideline-technical-document-lead.html

For information on other lead risks and how to reduce lead exposures in older homes, go to: manitoba.ca/health/publichealth/environmentalhealth/lead.html

For information on lead service lines, lead-service-line replacement program or lead testing programs in your community, talk to your local water supplier.

For information on certification of residential point-of-use or point-of-entry water treatment devices visit, nsf.org or the websites of other certifying bodies (csagroup.org; ul.com; iapmo.org; or wqa.org).

For information on sampling for lead in Schools, Child Care Centres and Large Buildings visit: manitoba.ca/drinkingwater/lead-in-schools-child-care-centres-and-large-buildings.

For health-related questions on lead, call Health Links – Info Santé at 204-788-8200 or toll free at 1-888-315-9257, or contact your local public health office.

For questions or concerns about lead exposure and your health, speak with your health care provider.

For other information on lead in drinking water, contact the Office of Drinking Water at 204-945-5762, or refer to the website at manitoba.ca/waterstewardship/odw/reg-contacts/index.html for a local office near you.

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