Lead in Manitoba Water Supplies

What is lead?

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

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. Significant declines in Canadian blood lead levels have occurred since the 1970s.

Drinking water is not generally the most significant source of exposure to lead and the amount of lead in natural water sources in Manitoba is very low. However, drinking water can contribute to a person's overall lead exposure. Lead can leach into the drinking water supply from a process called corrosion. Sources of lead in drinking water include older lead service lines (water pipes that link the house to the main water supply), lead solder in plumbing, or brass fittings such as faucets. The corrosion process is affected by a number of factors, including the age of the plumbing system, the chemistry of the water, and the amount of time the water sits in the pipes.

Newer homes are less likely to have problems with lead in drinking water. Lead service lines were phased out largely 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.

Drinking water guideline for lead

In Canada, the *Guidelines for Canadian Drinking Water Quality* recommend that the lead content of drinking water not exceed 0.010 milligrams per litre (mg/L). This guideline is currently under review.

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. Water levels around 0.010 mg/L would be considered a low level lead exposure and may have effects on intellectual development and behaviour of children. Other health effects, such as cardiovascular effects (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 by visiting: www.manitoba.ca/health/publichealth/environmentalhealth/lead.html

Manitoba

How lead gets into tap water

Lead typically gets into tap water as it passes through distribution systems, service connections and plumbing pipes in the home. The highest lead levels in tap water are linked to leaching from lead service connections. The levels of lead leached into tap water increase with the amount of time the water sits in contact with materials that contain lead, and are generally highest when the water has not been used for several hours, such as overnight or during working hours.

Lead levels in drinking water also depend on the chemistry of the water supply. Lead-based pipes and other plumbing materials are more likely to corrode if the water has a low pH (is very acidic) or if the alkalinity (the ability of the water to stabilize the pH) is low.

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

Homes built before 1950 may have a lead service line. Check the service line, which should be exposed 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.

In houses built before 1989, lead solder may have been used to connect pipes. Older plumbing fittings may also contain higher levels of lead than are allowed today. Lead solder and older plumbing fittings can leach lead, but the effect on water quality is usually less than lead service lines.

What if I live in an apartment or condo?

Just like houses, apartment buildings and condos built before 1989 may also have lead-based solder and other lead-containing plumbing materials. Larger buildings do not typically have lead service connections. The diameter of pipe required to supply such buildings was generally larger and pipes were made of other materials for practical reasons even before 1950.

What to do to reduce lead levels in tap water

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. The municipality is generally responsible for the water distribution system until it reaches the homeowner's property. The portion of the lead service line from the curb stop to the house is the homeowner's responsibility.

Another way to reduce lead exposure is to 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 until the water turns cold to clear the water that has been sitting in the plumbing. Fill a container with cold fresh water and keep it in the fridge for drinking or cooking.

Flush the pipes whenever water has been sitting in the plumbing system 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.

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

Make sure the aerators (or screens) on faucets used for drinking and cooking are periodically cleaned to remove any lead particles that may have accumulated. These particles may be released from lead solder or following a partial replacement of the lead service line, and could be trapped in the aerators.

Another option for reducing exposure to lead is to install a treatment device on the tap used for drinking water.

Is it safe to shower or wash clothes in tap water with higher lead levels?

Yes, it is safe to shower, bathe, wash dishes and clean clothes using tap water with higher lead levels. The primary means of lead absorption is by drinking the water or consuming food made with the water.

How do I treat the water at the tap?

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.

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' websites for listings of certified products:

- NSF International (NSF) – www.nsf.org
- Canadian Standards Association (CSA) – www.csagroup.org
- Underwriters Laboratories Incorporated (UL) – www.ul.com
- International Association of Plumbing and Mechanical Officials (IAPMO) – www.iapmo.org
- Water Quality Association (WQA) – www.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 for removal of lead 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, maintenance requirements and costs.

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

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.

How to test tap water for lead

There are two labs in Manitoba that are currently accredited to test for lead in drinking water. Contact them directly for cost estimates and to obtain sample bottles and information on sampling.

ALS Environmental
12-1329 Niakwa Road East,
Winnipeg, Manitoba R2J 3T4

Phone:
204-255-9720 (After Hours: 204-784-6677);

Fax:
204-255-9721

Website:
www.alsglobal.com/en/Our-Company/Global-Locations

Maxxam Analytics
Unit D, 675 Berry Street,
Winnipeg, Manitoba R3H 1A7

Phone:
204-772-7276 (Toll Free: 1-866-800-6208);

Fax:
204-772-2386

Website:
www.maxxam.ca/about-maxxam/contact-us/manitoba

How you collect the sample depends on the information you are trying to get. Lead levels at the tap will be different for each house and will vary depending on season and water use. The national guideline recommends running the water before collecting a sample. Running the water for two to five minutes usually allows for collection of a fresh water sample from the distribution system or water main.

Other ways to reduce lead exposure

There are other sources of lead exposure to consider, particularly if you live in an older home. Homes built before 1960 have the highest risk for lead paint exposure. For homes built between 1960 and 1990, small amounts of lead may be in some of the paint used. Renovations or peeling paint can increase lead exposure, particularly for young children. For more information on how to reduce lead exposures in older homes and other lead risks, go to: www.manitoba.ca/health/publichealth/environmentalhealth/lead.html

For more information

For additional information on lead in drinking water, see Health Canada's website at:
http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/lead-plomb-eng.php

For information on lead service lines and lead-service-line replacement 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 www.nsf.org, or the websites of other certifying bodies (www.csagroup.org; www.ul.com; www.iapmo.org; or www.wqa.org).

For health-related questions on lead or information on lead exposure reduction strategies, call Health Links Info Santé at 204-788-8200 or toll free at 1-888-315-9257, or 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 www.gov.mb.ca/waterstewardship/odw/reg-contacts/index.html for a local office near you.