

Lead in Drinking Water: Information for Manitoba Schools, Child Care Centres and Large Buildings

Why worry about lead?

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

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.

Health effects of lead

Lead exposure can have many health effects. Even low levels of lead exposure have been associated with effects on intellectual development and behaviour of children. It is important to try to reduce lead exposure as much as possible.

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

How lead gets into drinking water

Lead is not usually found in well water or water from a municipally-treated water facility. However, lead can enter drinking water from various parts of a building's plumbing system, including lead solder, brass fixtures, water fountains, and lead piping. The amount of lead in drinking water depends on how corrosive the water is, the materials used in constructing the plumbing system, and how long the water is in contact with lead in the pipes or fixtures. The longer water stands in the plumbing system, the more lead the water can dissolve from lead-based plumbing fixtures and components.

In 1990, the United States Environmental Protection Agency banned the use of water fountains that contained excessive levels of lead. Some of these fountains made their way onto the Canadian market. See links provided at the end of this factsheet for more information.

Drinking water guideline for lead

In Canada, the *national guideline for lead in drinking water* recommends that the lead content of drinking water not exceed 0.005 milligrams per litre (mg/L) at the drinking water tap.

Due to the sensitivity of children to lead, the guideline also recommends testing all taps in schools and child care facilities for lead. The guideline also recommends not using tap water containing lead to make infant formula and avoiding drinking discoloured water as it may have elevated levels of lead or other contaminants.

It is recommended that schools, child care centres, and other large buildings such as apartments or condominiums assess their water for lead by following the recommendations described below. Home based child care providers should follow the testing recommendations in the *Lead in Drinking Water: Information for Manitoba Homeowners and Home-based Child Care Providers* factsheet: https://www.gov.mb.ca/sd/pubs/water/drinking_water/rld_homechildcare.pdf

Tenants and renters

If you rent an apartment or own a unit in a condominium building, speak with your property management company before doing your own testing to see if they are planning to test the buildings as a whole.

Tenants and renters who wish to do their own testing can skip directly to the *Select a laboratory, Lead sampling procedures, and Corrective actions for tenants and renters* sections.

Newer buildings are much less likely to have problems with lead in drinking water. Buildings built before 1990 may have plumbing fixtures or solder containing lead. Buildings built before 1950 may have lead service lines though they were not commonly used for large buildings.

Assessing drinking water at the tap for lead

The approach to assessing drinking water at the taps in schools, child care centres, and other large buildings includes: developing a plumbing profile and a plan for sampling, a plan for potential corrective actions and a communication plan. It is recommended that all taps and fixtures that could potentially be used for drinking water be sampled within the next two years.

Since infants and young children are the most sensitive to the effects of lead, primary schools and those with attached child care centres are priority for testing.

Plumbing profile

All large building owners should complete a plumbing inventory profile for each building and identify:

- If a lead service line exists
- Type of internal plumbing material used (copper, PEX, etc.)
- Age of the building and plumbing system

Next, a plumbing fixture inventory should be completed that includes:

- The location of each taps or fountain
- The type of fixture
- The age of the fixture and serial number (if available)

It is recommended that a floorplan for each building be used to map the locations of each fixture.

Give each fixture a unique sample identifier sample identifier that would be easily recognizable and understandable to other staff. For example: ABC Elementary School has identified four drinking water fountains. The sample identification may be ABC-1 (first fountain), ABC-2 (second fountain), etc. Keep a list of the of the fountains and identifiers with your sample plan and mark the location of each fixture and sample identifier on the floorplan.

Priority should be given to sampling fixtures that are most commonly used for drinking water or preparing food, fixtures located in kitchens, primary grade or infant care areas, and older fixtures that are more likely to contain lead components.

Taps that are used infrequently for drinking water, such as those in science labs, can be sampled in the following year. Keep notes on all taps sampled. Where samples are submitted from a tap downstream of a treatment device, (after a filter for example), this should be noted on your plan. An example of a fixture inventory form is provided here https://www.gov.mb.ca/sd/pubs/water/drinking_water/fixture_inventory_form.pdf

It is recommended that schools that have an attached child care centre discuss lead sampling with the Centre's director. When sampling at an attached child care centre, use a separate sample submission for samples from the child care centre so that the results and corrective actions taken can be shared with appropriate child care stakeholders.

Plan for follow-up samples

Additional testing may be required to confirm initial results. Where corrective actions have been implemented, follow-up sampling is important to confirm that the actions taken have successfully reduced the lead levels below the national guideline.

After all the drinking water fountains and taps have been sampled at least once and additional testing has confirmed that corrective actions were successful, sample representative fountains or taps from your inventory on a rotational basis every three years or as needed to ensure corrective actions continue to be effective.

Select a laboratory

There are three laboratories in Manitoba accredited to test for lead in drinking water in accordance with the national guideline.

Once you have your sampling plan in place and you know how many water samples you will be collecting, contact the laboratories directly for cost estimates and to obtain sample bottles, sample submission forms, and information on sampling.

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

<https://www.alsglobal.com/en/locations/americas/north-america/canada/manitoba/winnipeg-environmental>

Horizon Lab LTD

4055 Portage Avenue, Winnipeg, Manitoba R3K 2E8 Phone: 204-488-2035
Fax: 204-488-4772

<https://www.horizonlab.ca/>

Bureau Veritas

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

Phone: 204-772-7276 (Toll Free: 1-888-357-7020) Fax: 204-277-2386

<https://www.bvna.com/>

Advise the laboratory if you are sampling from a school, child care centre, or large building so they can provide appropriate bottles and sample submissions forms.

You will need two 125 millilitre (125 mL) wide-mouth sample bottles for each fountain and tap tested, and one 1-litre wide-mouth sample bottle for water entering the facility.

While there is no current guideline for copper, Health Canada is in the process of developing one. In preparation for this, consider testing for copper at the same time. Let the laboratory know if you would like to do additional testing for other parameters.

Lead sampling procedures

Samples should be collected when the building is fully occupied and functional to capture typical exposure levels. For schools, it is recommended to sample in June or October at random times throughout the day; however, avoid sampling after a long period of stagnation, for example, first thing in the morning.

Prior to sampling, repair any leaking fixtures to ensure that you are collecting representative samples. Contact your water supplier prior to sampling to let them know that you will be taking water samples for lead and that you will be making the test results available to the public.

Two samples are collected from each fixture, one immediately following the other. Samples are collected in 125-mL wide-mouth bottles. When collecting a sample, use a medium to high flow rate that reflects how the fixture is normally used. Do not flush or run the water and do not remove any screens or aerators prior to collecting the sample.

Seal and label the bottles according to your sampling plan. Each bottle should be labelled to clearly indicate:

- The fixture the samples were collected from (e.g., ABC-1) and the order of sampling (e.g., ABC-1A and ABC-1B)
- Who collected the sample
- Date and time the samples were collected

In addition to the fixture samples, a sample that is representative of the water entering the building (prior to any treatment device) should be collected at each monitoring event. Collect this sample from the closest tap to the water line entering the facility (e.g., "ABC Incoming") using a 1-litre wide-mouth bottle. The result of this sample will help you in determining whether the source of lead is in the service line, internal plumbing, or the fixture itself.

Fill out the sample submission form provided by the laboratory, being careful to complete all sections as required.

Ship or take the samples to the laboratory for analysis. The samples should be analyzed by the laboratory that provided the bottles. Sample results should be available in 1 to 4 weeks.

Interpreting sample results

The sampling plan is designed to locate lead sources and to help identify where and how to proceed with corrective actions. For example:

- Where both samples from one fixture (A and B) do not contain lead at any level, no further action would be required.
- Where both samples (A and B) contain lead at or below the lead guideline, consider a flushing program.
- Where sample A (the first draw sample) has lead but sample B does not, the source of the lead would likely be from the fixture.
- Where sample B has lead but sample A does not, the source of the lead would likely be from the plumbing behind the fixture.
- Where samples from multiple fixtures have lead, corrective actions should be targeted to the entire facility.
- Where lead concentrations are found in the 1-litre incoming sample, the source is likely a lead service line.

Corrective actions for building owners

Immediate Actions for Reducing Elevated Lead Levels

Where lead levels are above the national guideline, consider immediate action for reducing lead. This might include:

- Closing plumbing fixtures that exceed the limit (ex: removing handles, posting signs, or bagging the fixture).
- Posting "Do Not Drink" signs on taps that cannot be easily closed.
- Providing an alternate safe drinking water source (ex: bottled water coolers) particularly if the issue is widespread throughout a building.

Maintenance Solutions for Reducing Elevated Lead Levels

- Replace all lead pipes, if present.
- Replace fixtures with new "lead-free" products.
- Add point-of-use filtration devices that are NSF-certified to remove lead, changing filters as often as the manufacturer recommends. See links provided near the end of this factsheet for more information.
- Check for grounding wires attached to water pipes. An electrical current may accelerate the corrosion of lead in piping materials.
- Reconfigure building plumbing to bypass sources of lead contamination. Target the small pipe branches that may have more elbows, joints and therefore more solder.
- Add automatic flushing valves to reduce water stagnation.

Operational Solutions for Reducing Lead Levels

Consider the following steps to reduce lead if levels are below the national guideline but still detectable:

- Implement daily or weekly flushing programs as needed - running all indoor taps and water fountains until the water is clear and cold. The flushing program should be supported with standard operating procedures and initialed logs.

- Schools and child care centres should consider flushing Monday mornings before students arrive each week to remove stagnant water.
- Advise students and staff or residents to run the water until cold before drinking.
- Clean tap aerators regularly.
- Use only cold clear water for food and beverage preparation. Hot water will dissolve lead more quickly than cold water and is likely to contain increased levels of lead or other contaminants.

Corrective actions for tenants and renters

It is recommended that tenants and renters share test results and renters share test results with their building owner or maintenance committee. Where lead levels are above the national guideline, tenants and renters should consider the following options for reducing lead exposure:

- Use an alternate safe drinking water source (ex: bottled water)
- Use a pitcher-type filter, or point-of-use filter that attaches to the kitchen tap. Filters must be NSF-certified to remove lead, and must be changed as often as the manufacturer recommends. Filters are available at many hardware or grocery stores. See links provided near the end of this factsheet for more information.
- Clean tap aerators regularly.
- Using only cold clear water for food and beverage preparation.

Communication plan

In addition to testing for lead and taking corrective actions, consider developing a communication plan to advise parents or residents and make the results available to them. If increased lead levels are identified, communicate on actions taken to correct the problems found.

Manitoba Health, Seniors and Active Living and the Regional Health Authority can assist with health risk communication to the public. An example of a communication notice is found here: <https://www.gov.mb.ca/sd/water/drinking-water/lead/index.html>

For more information

For additional information, see the factsheet on Lead in Drinking Water: Information for Manitoba Homeowners and Home-based Child Care Providers factsheet: https://www.gov.mb.ca/sd/pubs/water/drinking_water/rld_homechildcare.pdf

The United States Environmental Protection Agency (U.S.EPA) document titled “Lead in Drinking Water in Schools and Child Care Facilities - Appendix E” contains a list of drinking water fountains and coolers that have lead components: [epa.gov/dwreginfo/lead-drinking-water-schools-and-childcare-facilities](https://www.epa.gov/dwreginfo/lead-drinking-water-schools-and-childcare-facilities)

To view Action on Lead in Drinking Water, the 2019 presentation to Manitoba Association of School Business Officials, go to: https://www.gov.mb.ca/sd/pubs/water/drinking_water/lead_presentation_masbo.pdf

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

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 pitcher-type filters or point-of-use water treatment devices, visit www.nsf.org, or the websites of other certifying bodies. Organizations that 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](http://www.nsf.org)
- Canadian Standards Association (CSA) - [csagroup.org](http://www.csagroup.org)
- Underwriters Laboratories Incorporated (UL) - [ul.com](http://www.ul.com)
- International Association of Plumbing and Mechanical Officials (IAPMO) - [iapmo.org](http://www.iapmo.org)
- Water Quality Association (WQA) - [wqa.org](http://www.wqa.org)

For more information on the health risks of lead and other sources of exposure to lead, see the Manitoba Health, Seniors and Active Living webpage at: manitoba.ca/health/publichealth/environmentalhealth/lead.html

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

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/drinkingwater for a local office near you.