

Fact Sheet on LEAD (Pb)

On March 8, 2019, Health Canada released revised guidelines, significantly reducing the maximum allowable concentration of lead in drinking water. While our municipal water sector fully supports these new targets, we need to identify the challenges inherent in moving to these new targets while maintain full public confidence in the safety of their drinking water.

<i>lead</i>	<p>What is Lead?</p> <p>Lead is a toxic heavy metal. Before the toxic nature of lead was fully understood, it was seen as an incredibly useful metal because of its excellent malleability and corrosion resistance. For many years, lead was widely used in a variety of products, including cosmetics, paint, solder, pipes and plumbing.</p>
<i>risks</i>	<p>What is the concern about Lead?</p> <p>Lead is toxic and can be harmful to human health, even in very small amounts. Lead can pose a significant public health risk if ingested – as a dust from old lead paints or dissolved in drinking water. Lead can accumulate in the body and is very difficult to get rid of. While acute cases of lead poisoning can occur, most cases are due to chronic, low-dose exposure accumulating in the body over time.</p> <p>While all ages can be affected, lead is of greatest concern for pregnant women and young children because infants and children absorb lead more easily than adults and are more susceptible to its harmful effects, such as effects on neurodevelopment, behavior and intelligence. In adults, slow accumulation of lead can result in kidney and nervous system damage, anemia, stroke or cancer.</p> <p>For more information on the health risks of lead, one should contact their local Medical Officer of Health or Public Health Unit.</p>

<p><i>why lead?</i></p>	<p>The Use of Lead in Water Services</p> <p>The ductility of lead, its resistance to corrosion, and low electrical conductivity, made it a particularly good material for constructing water pipes. In fact, the chemical symbol for lead is Pb, which comes from the Latin word <i>plumbum</i>, meaning "waterworks."</p>
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<p><i>where is the lead?</i></p>	<p>In general, water that is treated and distributed in municipal systems is lead-free. Water leaves the municipal treatment plants and travels through the 'water mains' (the large water pipes down each street) lead-free. However, drinking water can come into contact with lead in the 'service lines' (the pipes that connect each property to the water main). Lead can also be found in the plumbing materials in the home, such as lead pipes, brass fixtures, and lead soldering.</p>
<p><i>phasing out</i></p>	<p>While Canadian municipalities began phasing out the use of lead in 'service lines' to properties in the 1960's, the National Plumbing Code permitted the use of lead until 1975 and lead solder until 1986. Restrictions on lead content in brass fittings are much more recent, with the newest definitions set in 2013.</p>

<p><i>service line replacement</i></p> <p><i>alternatives</i></p> <p><i>private property</i></p> <p><i>municipal incentives</i></p> <p><i>partial replacement</i></p> <p><i>corrosion control</i></p>	<p>How Do We Eliminate or Control Lead?</p> <p>Of course our first goal is to eliminate lead from our systems by removing and replacing lead service lines. Communities across Canada have endeavoured to strategically replace lead service lines at appropriate opportunities such as during road reconstruction. While this replacement process can be expensive and take many years, communities are making great progress through these efforts and continue to identify and remove any remaining lead service lines from their municipal systems.</p> <p>Alternatives to replacement are being considered, such as lining the existing service lines and plumbing pipes, in an effort to find a less-expensive, yet effective way of addressing existing lead lines.</p> <p>The greatest challenge is that much, if not most, of a service line lies on private property, not within the municipal road allowance. Complete replacement of the service line to a home or building requires the cooperation and participation of the property owners.</p> <p>As yet, property owners are not required to cooperate, nor to address the plumbing within their premises. Municipal utilities try to work with the property owners and many offer financial incentives to participate in replacement programs. But this requires extensive public education, public finances, and authority to work on private property.</p> <p>If unable to attain the property owners' participation, municipalities have often conducted partial replacements - replacing the service line only from the water main to the property line. However, recent studies have suggested such partial replacements can temporarily cause greater potential risk by cutting into pipes and disturbing the lead.</p> <p>Meanwhile, we adjust the chemistry of the water leaving the treatment plant to minimize its reaction with any lead remaining in service lines or plumbing fixtures. This is known as 'corrosion control'. The exact approach to corrosion control is unique in each community and is highly dependent on the chemistry of the original source water (river, lake, well).</p>
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<p><i>run the tap</i></p> <p><i>filters</i></p>	<p>Short Term Mitigation</p> <p>There are steps a home owner can take in the short term to reduce the risks of lead. Older homes that have been identified as having lead service lines or that suspect lead in their plumbing and fixtures can:</p> <ul style="list-style-type: none">- Run their taps for 10 minutes each morning or when they have not used water for a few hours as this will flush through any water that has been sitting in pipes and potentially exposed to lead.- Filter their drinking water with a home point-of-use system that is CSA or NSF certified to remove lead. These vary from simple jug filters to installing a filter system under your sink or in your refrigerator system. It is very important that these filters are maintained and/or replaced in accordance with the product's recommended guidelines.
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<p><i>national committee</i></p>	<p>What are the Guidelines and Regulations for Lead?</p> <p>While the regulation of drinking water and the enforcement of such regulations falls under provincial/territorial jurisdiction, regulators from each province and territory come together with the federal government to form the Federal-Provincial-Territorial Committee on Drinking Water. This committee then works with Health Canada to establish the <i>Guidelines for Canadian Drinking Water Quality</i> and the <i>Guideline Technical Documents</i>. These ‘guidelines’ are then adapted and implemented to varying degrees as regulations in each province and territory.</p>
<p><i>old guidelines</i></p>	<p>Since 1992, these national Guidelines have suggested the Maximum Allowable Concentration (MAC) of lead in drinking water be no more than 0.01 mg/L. Communities with identified lead issues have taken significant action to reduce lead exposure in their communities through service line replacement and corrosion control.</p>
<p><i>new guidelines</i></p>	<p>More recent research has indicated that lead can have harmful effects at extremely low levels, which has prompted the federal government to lower the recommended Maximum Allowable Concentration (MAC) of lead in drinking water from 0.01 mg/L to just 0.005 mg/L. This places Canada with one of the lowest targets in the world for lead in drinking water.</p>
<p><i>implementation</i></p>	<p>It will then be up to each province and territory to determine how they might implement this new guideline. Each province and territory must determine if and when it will adopt the reduced MAC, how much time they will allow utilities to transition to this new target, how testing and reporting will be conducted and what additional supports they can provide in terms of public education, financial assistance and perhaps pressure for property owners to undertake lead service line replacement.</p>

<p><i>water testing</i></p> <p><i>where we test</i></p>	<p>Testing for Lead</p> <p>Drinking water is tested regularly as it leaves the treatment plant and is regularly tested at various points throughout the water distribution system to ensure safety. The testing protocols and reporting requirements can vary from province to province. Testing is generally performed by the water utilities, but is also undertaken by the local health authority. Provincial and territorial regulations, based on the national Guidelines, require water utilities to regularly test for lead and report the results. The Guidelines state that every effort should be made to maintain lead levels in drinking water “as low as reasonably achievable” (referred to as ALARA).</p> <p>Testing for lead, however, is required to be done from the tap within private residences and buildings. So the results of lead testing are not necessarily indicative of the municipal water supply, but rather of that particular home or building’s supply pipe, plumbing and fixtures.</p>
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<p><i>challenges</i></p> <p><i>costs</i></p> <p><i>time</i></p> <p><i>municipal authority</i></p> <p><i>homeowner obligations</i></p>	<p>What are the challenges we face to address Lead?</p> <p>While Canadian municipalities and water utilities recognize the health risks of lead, and fully support these new science-based guidelines, we <u>all</u> need to recognize the significant challenges we <u>all</u> face to achieve these new targets:</p> <ul style="list-style-type: none"> - Tearing up streets and front yards to remove and replace lead service lines is very expensive and very disruptive to communities. <ul style="list-style-type: none"> o For many communities, this will require financial assistance from the federal and/or provincial governments as well as increased water rates or specific levies. - Even if funding is made available, such an endeavour will take many, many years to complete. <ul style="list-style-type: none"> o Alternative approaches and intermediate solutions need to be considered - The greatest challenge is that most of the presence of lead is on private property and within private homes and buildings <ul style="list-style-type: none"> o Most of the costs would be to work on private property o This is outside of the authority of the municipal utility being held responsible for attaining these targets. <ul style="list-style-type: none"> o While municipalities work to incentivize property owners, there is no obligation to cooperate with any lead replacement/reduction plan o Municipal utilities will be held responsible for the quality of the water tested from a consumer’s tap within their premises as opposed to testing the water that is delivered to their property line.
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<p><i>education</i></p>	<p>What else can be done or should be done?</p> <p>Educating the Public on:</p> <ul style="list-style-type: none"> ○ The health risks of lead, the potential for lead in their homes and their own responsibility to address lead in their home ○ The responsibility of property owners to cooperate with municipalities on projects to replace lead service lines
<p><i>identification</i></p>	<p>Public Identification of Lead:</p> <ul style="list-style-type: none"> ○ All municipalities must complete an assessment of the risk of lead in their communities, complete adequate inventories of where lead exists (or is likely to exist) and this should be shared with the public ○ It could be mandatory for the presence of Lead to be identified in home inspections so the potential home buyer can be made aware as this is a greater concern to those who are pregnant or with young children (similar to identifying asbestos, or UFFI insulation)
<p><i>authority</i></p>	<p>Permissive Legislation:</p> <ul style="list-style-type: none"> ○ Each province and territory may need to reconsider any legislation that currently restricts municipal utilities from expending funds on private property or conducting work upon private property ○ They may also wish to consider legislation forcing property owners to cooperate with and participate in service line replacement programs
<p><i>cooperation</i></p>	<p>Financial Supports</p> <ul style="list-style-type: none"> ○ The federal and provincial governments need to identify specific funds to support municipal costs in such removal/replacement or alternative solutions, or identify lead reduction as a higher priority in existing infrastructure funding programs ○ The federal and provincial governments need to consider financial incentives to property owners to take action, either through grants or tax rebates
<p><i>grants</i></p> <p><i>rebates</i></p>	

<p><i>professionalism</i></p> <p><i>new targets</i></p> <p><i>commitment</i></p>	<p>So is my tap water safe to drink?</p> <p>Canadian municipalities have prided themselves in consistently providing some of the safest drinking water in the world. We have the greatest confidence in our national guidelines, the provincial regulations and oversight, and, most-importantly, in the professionalism of our water operators.</p> <p>Nothing has changed overnight about Canadians’ drinking water. We have just set new targets to be even better.</p> <p>Our Canadian municipal utilities provided their communities with the safest water yesterday, the safest water today and will continue to provide the safest water tomorrow.</p>
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Further Reference Materials

From Health Canada:

Health Canada Guideline document on lead:

<https://www.canada.ca/en/health-canada/programs/consultation-lead-drinking-water/document.html#appb>

Health Canada information on lead: <https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/waterquality/what-about-lead.html>

Health Canada document on minimizing exposure: <https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/waterquality/water-talk-minimizing-exposure-lead-drinking-water-distribution-systems.html>

Health Canada Guidance on Controlling Corrosion: <https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidance-controlling-corrosion-drinking-water-distribution-systems.html>

From the American Water Works Association (AWWA):

- CWWA is a member of AWWA as are many Canadian municipalities and individual water operators

AWWA's *Managing Lead in Drinking Water*:

<https://www.awwa.org/Policy-Advocacy/Advocacy-Priorities/Managing-Lead-in-Drinking-Water>

AWWA's *Communications Toolkit "Lead and Drinking Water – Talking with Your Community"*:

<https://www.awwa.org/Portals/0/AWWA/Communications/LeadOverviewHR.pdf>

The Lead Service Line Collaborative (US) website:

<https://www.lslr-collaborative.org/>