

Welcome to the City of Thunder Bay's Corrosion Control Plan Public Information Session

Sources of Lead

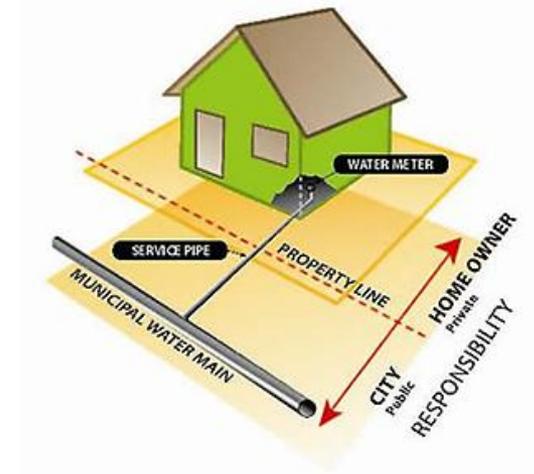
Lead leaches into drinking water through the corrosion of plumbing materials that contain lead.

It can enter tap water through the corrosion of lead service pipes, and plumbing materials like lead solder (used pre-1980s) and leaded-brass fixtures, such as faucets or valves.

Lead service pipe connections were typically used for homes and businesses that were built prior to 1955.

When water is stagnant in lead pipes for long periods of time, the lead starts to leach into the drinking water.

It is recommended to flush your pipes, by running your tap for up to five minutes or until the water is cold before consuming.



Health Effects of Lead Exposure

Lead can pose a significant risk to your health if too much enters the body. Exposure to lead targets specific areas such as the nervous system, blood system and the kidneys.

The population at the highest risk of lead exposure are infants, young children under the age of 6, and pregnant women.

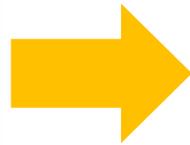
According to the Thunder Bay District Health Unit - Chronic exposure to lead even at low levels, can have health impacts. Of particular concern are the neurodevelopment effects, which impact learning and memory on developing fetuses and young children.



MOECC Lead Action Plan

The Ministry of Environment and Climate Change (MOECC) Lead Action Plan includes mandatory requirements for municipalities to test for lead in drinking water through the **Community Lead Testing Program**.

If more than 10% of homes tested are above 10 parts per billion (ppb) of lead

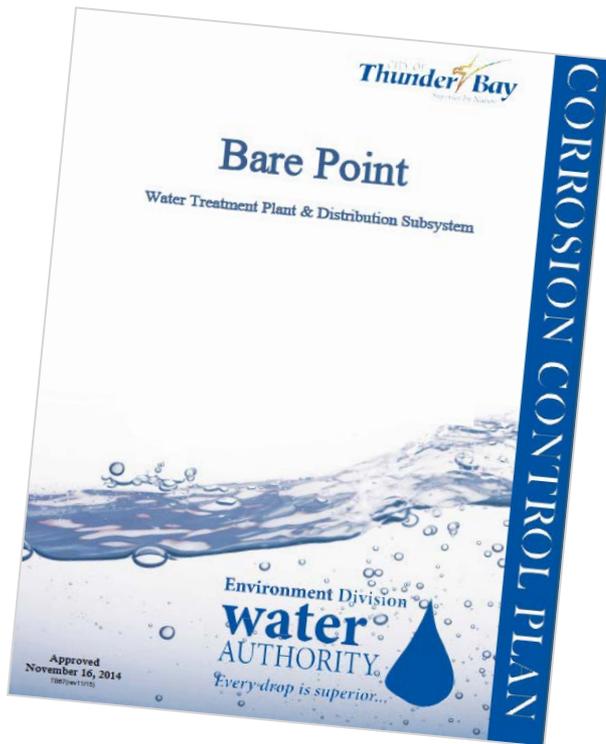


Municipalities are required to have a **Plan** approved by the MOECC to reduce lead levels at the tap

More than 25% of homes tested in the City of Thunder Bay with a suspected lead service connection are in excess of Ontario's Drinking Water Standard of 10 ppb lead.

Therefore, City of Thunder Bay requires a Corrosion Control Plan

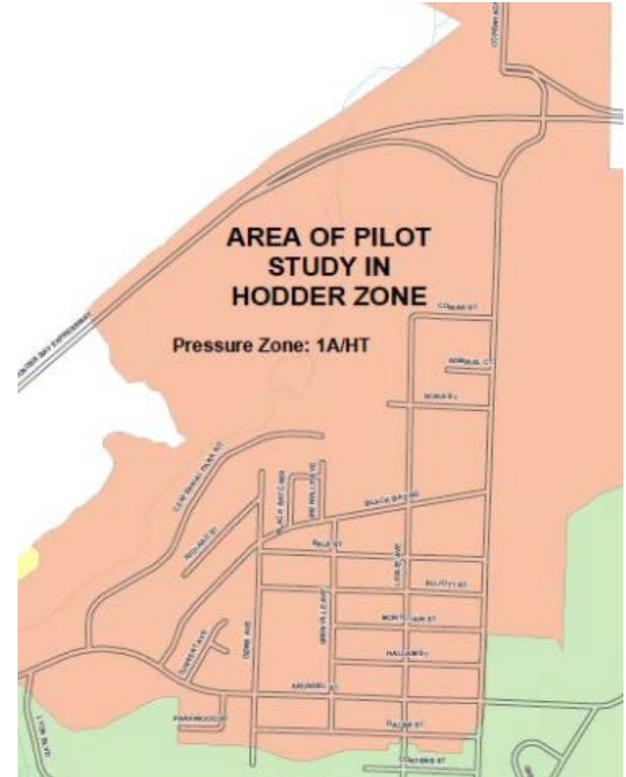
City of Thunder Bay's Corrosion Control Plan



1. **Eliminate Lead at the Source** - Lead Service Line Replacement Program
2. **Water Quality Maintenance** - Flushing, Swabbing, Cleaning and Lining watermains
3. **Public Education Campaign** - Flush, Test, Replace Lead Services
4. **Pilot Study on pH adjustment** - Addition of Sodium Hydroxide in Hodder Pressure Zone
5. **City Wide pH adjustment** - Addition of Sodium Hydroxide at Bare Point WTP for City wide distribution

Corrosion Control Pilot Study - Hodder Pressure Zone

- 2 Year Study conducted (2015 - 2017)
- pH of drinking water was increased by the addition of sodium hydroxide
- Pressure zone contains 764 residences
- Combination of old and new homes with lead and copper service connections
- Water sampled before & after addition of sodium hydroxide
- Study confirmed Corrosion Control through chemical addition is a **Safe and Effective** method to reduce lead levels at the tap



Corrosion Control Chemical - Sodium Hydroxide

Corrosion control chemicals, such as sodium hydroxide are widely used in the treatment of drinking water. Cities, not only in the province of Ontario, but across Canada are utilizing corrosion control chemicals to reduce lead levels at the tap.

A corrosion control chemical either alters the treated water chemistry or interacts with the surface of metallic materials in water pipes to inhibit corrosion and prevent the formation of soluble lead compounds.

Sodium hydroxide will raise the pH of water to 9.4 - 9.5 to minimize lead pipe corrosion.

Sodium hydroxide is approved for use as a corrosion control inhibitor in treatment of drinking water – listed in NSF/ANSI Standard 60.

It is safe and approved for use in City of Thunder Bay's Drinking Water Permit.

Addition of sodium hydroxide will not affect the taste or smell of the drinking water.



Frequently Asked Questions

Question: Will sodium levels increase with the addition of sodium hydroxide?

Answer: Yes, but will be well below the Ontario Drinking Water Standard

	Current Sodium Level in Drinking Water Distribution System	Average Sodium Level in Hodder Pressure Zone during Pilot Study with the addition of Sodium Hydroxide	Maximum Allowable Sodium Concentration in Ontario Drinking Water Standard
Sodium (mg/L)	3	7 (up to 8.4)	20

Question: Why is sodium hydroxide the best choice as a corrosion inhibitor?

Answer: It was selected due to the chemistry of the City of Thunder Bay's raw source water (Lake Superior) and conditions in the distribution system (pipes).

The pristine raw water from Lake Superior is very "soft" with little buffering capacity; the water may leach minerals and contaminants from whatever material it comes into contact with.

The addition of sodium hydroxide prior to transmission through distribution pipes will adjust the pH to a level that reduces this leaching capability of the water.

Sodium Hydroxide Injection Point

