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Understanding the Issues of Lead in Drinking Water

The City of Highland Park is paying close attention to what unfolded in Flint, Michigan, and our thoughts are with all those who are struggling without access to safe and reliable water in their homes. In North America, no one should have to question the safety of water at the tap.

Flint underscores that our first job is to protect the families we serve. Those of us involved in managing, cleaning and delivering water share a solemn obligation to protect public health.

We do not have first-hand information about what occurred in Flint, but this much seems clear: When Flint switched its water supply source, it did not take the required steps to manage water chemistry. The new water caused lead to leach from service lines and home plumbing – lead that ended up in water coming out of the taps.

Residents of Highland Park and the communities served by our Water Treatment Plant can rest assured that Highland Park has maintained a lead control program in place for 24 years. This incorporates an EPA recommended corrosion control treatment at the Water Treatment Plant, and periodic testing of selected homes to measure treatment effectiveness.

While the news from Flint, Michigan is alarming, it is important to understand the sources of lead contamination in drinking water, risk factors in individual homes and simple preventative measures that homeowners can take to reduce lead exposure from drinking water.

Lead does not come from the treatment plants and water mains; it comes from lead service lines running between the water main in the street and the home, and from plumbing inside the home. Some homes in Highland Park, typically those built prior to 1950, still may have lead service lines. We are not content to simply comply with regulations. We observe the letter of the law and embrace the spirit of it. Lead services lines are owned partially by the City and partially by the property owner. Replacing these lines requires a collaborative effort between the two parties. There are steps that property owners can take to address potential risks from lead in water. Lead service lines are typically only present in older homes, but older brass faucets with lead content can be in newer homes. A certified plumber can tell you for sure if you have a lead service line, check for lead solders in your internal pipes and look for fixtures containing lead.

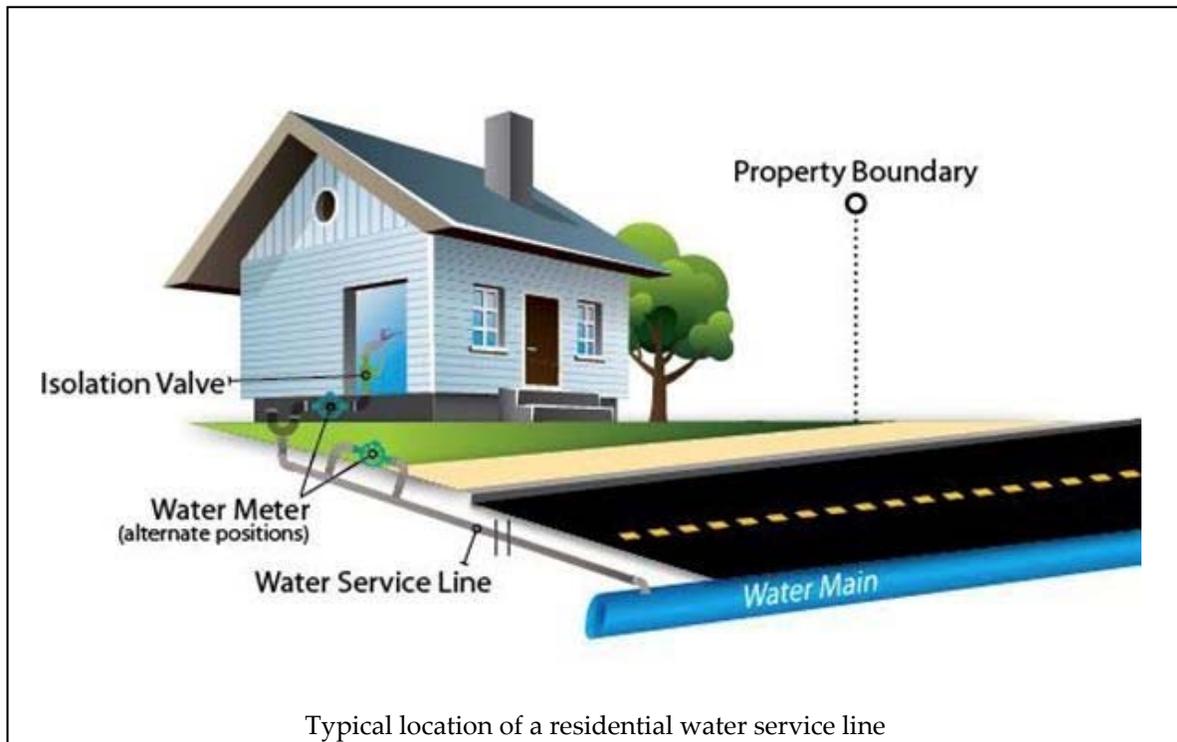
SOURCES OF LEAD

There are three potential sources of lead in drinking water. In order of importance they are:

- Lead Service Lines
- Lead-tin solder joined copper pipes
- Brass water contact surfaces of faucets

Lead Service Lines

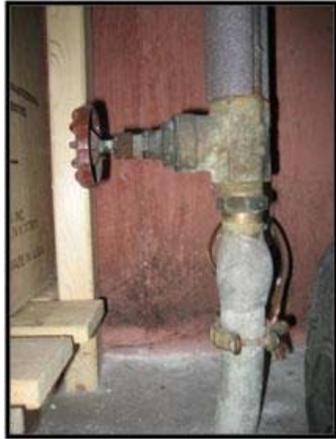
A service line is the pipe that connects your house to the water main in the street. Some service lines that run from older homes (**usually those built before 1940**) to the utility water main are made from lead. Over time, many of these older used service lines have been replaced, but your home could still have one.



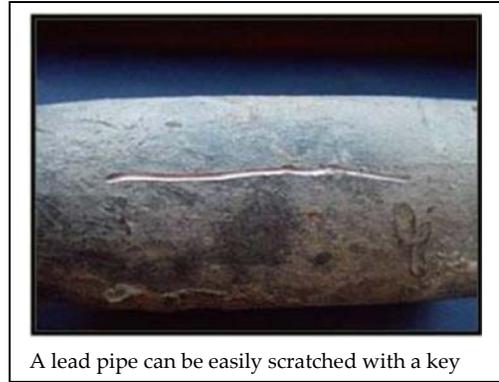
Typical location of a residential water service line

How to Tell if You Have a Lead Service Line

To determine if your home has a lead service line you (or your plumber) need to inspect the service line.



Lead service lines often have a "bulb" shaped connection



A lead pipe can be easily scratched with a key

Lead service lines are generally a dull gray color and are very soft. You can identify them easily by carefully scratching with a key. If the pipe is made of lead, the area you've scratched will turn a bright silver color. Do not use a knife or other sharp instrument and take care not to puncture a hole in the pipe.

Also, if a magnet is attracted to the grey pipe, it is galvanized iron, NOT lead.

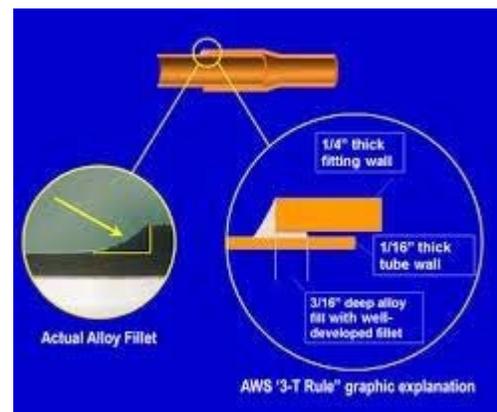
Lead-tin solder joined copper pipes



Solder made of 50% Lead & 50% Tin was used in joining copper pipes until banned by the 1986 Federal Safe Drinking Water Act. This is not a major contributor to drinking water lead for a couple of reasons.

Over time these joints become coated with tin oxides and hardness scale, a process called 'passivation' (nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=2000TRZ7.TXT).

The surface area of the solder joint which is exposed to the water is quite small because the pipes and fittings fit snugly with a gap of only 0.003 inches to be filled with solder.



Brass water contact surfaces of faucets

Until 2014 most faucets were cast from alloys which contained 8% lead. The new EPA regulations limit that to 0.2%.

As with the solder joints, the surface contact within the faucet is relatively small.



RISK FACTORS IN INDIVIDUAL HOMES

Homes built prior to 1940 MAY still have a Lead Service Line.

Those with copper piping installed before 1986 will have lead-tin solder in the joints.

Faucets installed before 2014 will have more lead content than is currently allowed.

Homes with water softeners are more likely to have higher levels of metals (lead, copper & iron) in the water because soft water is more corrosive.

SIMPLE PREVENTATIVE MEASURES

Flush the piping: Lead is dissolved ('leached') from piping quite slowly. Normal morning water use; bathing & toilet flushing will bring fresh water into the house from the watermain. By allowing the cold water to run in a sink until you feel a drop in temperature, you can purge water that may have accumulated lead overnight or while you were away. This water need not be wasted. It can be collected and used to water plants. Flushing is the simplest and lowest cost way to reduce lead exposure from these plumbing materials.

Identify your Service Line material: The Service Line enters the home below frost line (four feet underground) and connects to the home's main shut-off valve. Lead pipe was only ever used for the service lines (never interior piping or water mains). You can examine the service line entering your home to determine whether it is Lead (soft grey metal with bulbous connection), Galvanized Iron (Hard, grey, magnetic metal) or Copper (characteristic color). Test swabs are available to test for lead in pipes and paint in the home.

Test your water: If still concerned about lead exposure, you can have the water in your home tested for lead. Illinois EPA maintains a list of environmental labs certified to perform this test. <http://www.epa.illinois.gov/topics/certification-training/lab-accreditation/accredited-labs/index>

The City of Highland Park Water Treatment Plant lab is not certified for metals analysis. The cost is generally around \$50. It is important that the USEPA sampling protocol be followed to obtain meaningful results: First morning draw after at least 6 hours with no water use in the home, cold water only, from a sink

regularly used for drinking water (Kitchen or bath) which has NO filter or other treatment attached or upstream.

There are other steps you can take to protect your family, including purchasing a certified water filter (see web links below for filter information) to remove lead, making sure you flush out the lines after a period of stagnation in order to get fresh water that is coming from the main, and avoiding consuming water from the hot water tap, where lead is more likely to be present. You can find more guidance on

<http://www.cdc.gov/healthywater/drinking/private/wells/disease/lead.html>

Filter information Links:

http://www.naturalnews.com/046536_water_filters_heavy_metals_lab_results.html#

<http://www.health.state.mn.us/divs/eh/water/factsheet/com/poulead.html>

<http://www.nsf.org/consumer-resources/health-and-safety-tips/water-qualitytreatment-tips/lead-in-drinking-water/>

<http://tinyurl.com/hqhwr7d>

<http://www.epa.gov/your-drinking-water/home-drinking-water-filtration-fact-sheet>

MORE INFORMATION LINKS:

Highland Park's Lead Information web page:

<http://www.cityhpil.com/index.aspx?nid=660>

Our annual Water Quality Report:

<http://www.cityhpil.com/DocumentCenter/Home/View/88>