Annual Report – Lead in Drinking Water Mitigation Strategy

Date: March 6, 2015
To: Public Works and Infrastructure Committee
From: General Manager, Toronto Water
Wards: All
Reference Number: P:\2015\Cluster B\TW\PWI15008

SUMMARY

At its meeting on August 26, 2014, City Council requested an update on several items relating to the City's Lead in Drinking Water Mitigation Strategy. This report responds to those requests and provides an annual update on several specific items related to the Lead in Drinking Water Mitigation Strategy.

RECOMMENDATIONS

The General Manager, Toronto Water, recommends that:

1. The Public Works and Infrastructure Committee receive this report for information.

Financial Impact
There is no financial impact resulting from receipt of this report as it is for information only.

DECISION HISTORY

At its meeting of August 26, 2014, City Council adopted item PW33.15 Lead in Drinking Water Mitigation Strategy – Update and directed the General Manager to report back on the following items:

   a) Develop a pilot project to identify, educate, encourage, and coordinate the replacement of private and public lead service pipes on streets with a significant number of homes with lead services and report the potential costs through the 2015 budget process;
b) Remove the cap on the number of priority lead service replacements;

c) Include in all future contracts for water service replacement contracts a requirement for maintaining records of private side replacements;

d) Develop a system of data collection on completion rates and outstanding lead services in the City of Toronto;

e) Examine and implement changes in planned and priority replacement process to coordinate the work to replace public and private replacements at the same time; and

f) Amend the Priority Lead Service Replacement Program Work Order Process Flow to reflect service adjustments and report on the cost of these service adjustments to the Public Works and Infrastructure Committee if they exceed an annual estimate of $30,000.

Furthermore, at its meeting of August 26, 2104, City Council adopted item HL33.4 Health Impacts of the City of Toronto's Lead in Drinking Water Mitigation Strategy directing the General Manager, in consultation with the Medical Officer of Health, to:

a) Expand the distribution of free filters to vulnerable populations living in pre-1950s homes;

b) Develop and promote a publicly accessible database and/or map of the status of lead service lines;

c) Increase the number of complete replacements as part of the planned replacement program;

d) Evaluate current public education and outreach efforts and implement enhancements as necessary to reduce exposures to lead in drinking water and report to the Board of Health with any additional resource requirements prior to the approval of the 2015 budget.

These Council directives can be viewed at:
http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2014.MM52.4
http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2014.PW33.15
http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2014.HL33.4

A copy of the Lead in Drinking Water Mitigation Strategy adopted by City Council at its meeting on February 23 and 24th, 2011 can be viewed at:

ISSUE BACKGROUND

In 2011, Toronto City Council approved the Lead in Drinking Water Mitigation Strategy a comprehensive strategy comprised of corrosion control, lead service replacement, a faucet filter program, and public education to reduce lead in drinking water. Please find below a summary of the Strategy.
Corrosion Control
Corrosion Control is a city-wide long-term solution that enhances the water treatment process through the addition of phosphate to lower the lead concentration at the tap. Phosphate works by forming a protective coating inside water pipes which reduces corrosion and the leaching of lead from surfaces in contact with drinking water. Corrosion Control was implemented in 2014 with the application of phosphate at all four water treatment plants.

Lead Service Replacement
a) Planned Water Service Replacement: The City-owned portion of the lead pipe that supplies water to residential homes is replaced in coordination with other planned construction projects.
b) Priority Lead Water Service Replacement: Replacement of the entire lead pipe that supplies water to a home – the property owner replaces the privately-owned section of the lead pipe at the same time or before the City-owned portion, the City commits to replacing the City-owned pipes.
c) Emergency Water Service Replacement: Replacement when a pipe that supplies water to a home is broken or has low flow.

Faucet Filter Program
a) One-time free NSF-053 certified faucet filter for lead removal, to all homes immediately following the replacement of the City-owned section of the lead pipe that supplies water to the home; and
b) An annual $100 rebate for the purchase of a NSF-053 certified faucet-mounted filter to low income residents; and
c) A faucet filter is provided when Water Meter Program staff have to cut into a lead water service on private property to install a new automated water meter.
d) Starting February 1, 2015, a faucet filter is mailed out to residents once their application to the Priority Lead Water Service Replacement Program is accepted into the program.

Public Education and Communications
Toronto Water and Toronto Public Health work closely together to prepare and disseminate public education materials on lead in drinking water to residents through a wide range of communications tactics.

Non-Regulated Testing
Non-regulated drinking water quality testing for lead continues to be provided at no cost to the property owner.
COMMENTS

Corrosion Control
Corrosion control treatment, or the addition of phosphate to create a barrier between the pipes and the drinking water, is the most cost-effective strategy available to water utilities to address lead concerns in drinking water. It is endorsed as a lead reduction measure by authorities such as Health Canada and the United States Environmental Protection Agency.

It is an effective long-term solution to immediately mitigate the potential health risk of lead in drinking water while the removal of lead services (both public and private) throughout the distribution system continues over several years. It provides health benefits to all Toronto residents regardless of their socioeconomic status or knowledge about lead and protects against all sources of lead in the water, not just lead service lines. Toronto Public Health supports corrosion control as a critical component to reduce lead exposure to the residents of the city.

The City's Corrosion Control Plan (CCP) was submitted to the Ministry of the Environment and Climate Change (MOECC) in October, 2010 to comply with the regulatory deadlines. The MOECC acknowledged receipt and accepted the CCP in April, 2011. Subsequently, Toronto Water proceeded with engaging the services of a consulting engineering firm and issuing a construction contract for the implementation of the CCP at all four water treatment plants.

Implementation of Corrosion Control
All necessary equipment was commissioned and dosing at all four water treatment plants (WTP) began in 2014 to target a phosphate residual of 3 mg/L within the treated water: Clark WTP on March 31; the Harris WTP on May 20; the Horgan WTP on December 3; and Island WTP on December 18.

Preliminary Findings
In order to assess the effectiveness of corrosion control to date, an analysis was undertaken by comparing non-regulated sampling results before the implementation of corrosion control (2011 to 2013) and after the partial and full implementation of corrosion control (May 2014 to January 2015). It should be noted that the non-regulated lead samples consists of samples from both lead and non-lead service lines. As a result, it is not fully representative of the regulatory lead sampling requirements.

Preliminary results indicate a reduction in lead levels in premise plumbing since the partial and complete implementation of corrosion control. It will take up to two years to see the full impact of corrosion control on lead levels across the city.

Next Steps
The MOECC provided relief from the regulated lead sampling in 2009 when it was identified that a CCP was required. The regulated lead sampling was scheduled to resume in June 2015. However, as part of the Drinking Water License and Permit
renewal process, the MOECC extended the relief period to October 2017 in order to allow for full conditioning of the lead service pipes with phosphate.

During the extended relief period, Toronto Water will conduct a sampling program mirroring the MOECC regulated lead sampling program by collecting tap water samples (100 to 200 in total annually) from residential plumbing at homes with known lead service lines. The majority of the sampling will take place during the warm water sampling period when lead levels are most elevated. This sampling program will allow Toronto Water to monitor the effectiveness of corrosion control in lowering lead levels. Once sampling data from residences with lead service lines is obtained and analyzed, adjustments to the phosphate dosage may be made over time in consultation with Toronto Public Health.

**Lead Service Replacements**

Toronto Public Health advises that it is desirable to remove as much lead from the water infrastructure as possible and that both the public and private sides should be replaced at the same time wherever possible. The City removes lead from the water infrastructure in three ways:

1) Replacement of substandard services, including lead on a street-by-street basis, are coordinated with other planned City infrastructure renewal programs, including: water main replacement; watermain structural lining; basement flooding projects; sewer reconstruction and major road reconstruction.

2) Priority lead water service replacement of the City-owned section, on an address specific demand basis and only if the City-side is lead and the property owner replaces the private side of the lead service, prior to or at the same time the City-owned section is replaced. This is considered by Toronto Public Health to be the most desirable option.

3) Emergency water service replacement of the City-owned portion, on an address specific as needed basis, where the water service is broken; or cannot deliver minimum flow.

Toronto has approximately 437,000 residential water service connections. In 2007, approximately 65,000 city-owned services were estimated to be lead. In 2015, there are approximately 34,000 remaining. An update on service replacement carried out under the program is outlined in Table 1.
Table 1: Lead Service Replacements

<table>
<thead>
<tr>
<th>Planned Water Service Replacement</th>
<th>Capital Program (watermain replacement, structural relining, sewer and road reconstruction)</th>
<th>Budget Target*</th>
<th>2014</th>
<th>2013</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Service Replacement</td>
<td>3000</td>
<td>1579‡</td>
<td>1557‡</td>
<td>1313‡</td>
<td></td>
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<tr>
<td>Un-planned Water Service Replacement</td>
<td>Priority Lead Program</td>
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<td>1431</td>
<td>1390</td>
<td>1019</td>
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<tr>
<td></td>
<td>Emergency Replacement</td>
<td>500</td>
<td>740</td>
<td>321</td>
<td>344</td>
</tr>
<tr>
<td>Total</td>
<td>5000</td>
<td>3750</td>
<td>3270</td>
<td>2676</td>
<td></td>
</tr>
</tbody>
</table>

*Financial budget targets are set for planning purposes - there is no cap. + Service cards are received in batches. The numbers reflect service cards incorporated to date.

Faucet Filter Program
Previously a one-time free NSF-053 certified faucet mounted lead removal filter was provided to the property owner along with a lead and public health information kit immediately following the replacement of the City-owned section of the water service. The Priority Lead Service Replacement Program (PLSRP) process has now been amended so that faucet filters and public health information kits are distributed to applicants once accepted into the program and they wait for the work to be completed. As directed by Council there is no cost to the eligible applicant as a result of this service adjustment and staff will report out on the costs if they exceed the annual estimate of $30,000.00.

In 2014, in response to Council direction, the Water Meter Program staff began to distribute filters to homes where a water meter was installed onto a lead pipe.

Public Education and Communications
Since 2007, information on lead in drinking water continues to be provided to residents through a wide range of communications resources and approaches from broad based communications such as the utility bill to staff attendance at public meetings in specific neighbourhoods. Toronto Water and Toronto Public Health through their public education efforts continue to advise the public that replacing both sides at the same time is still important as it minimizes the potential of lead fragments entering the pipes and eliminates the need for ongoing filtering of water for lead.
In 2014, Council directed staff to respond to a number of motions summarized as follows: increasing the number of complete replacements, evaluation of current outreach and communication efforts, data systems to help identify lead services and track where lead has been replaced, and expanding free faucet distribution to low-income and vulnerable households.

**Increasing the Number of Complete Replacements**  
*Planned Program*  
Toronto Water and Engineering & Construction Services staff work closely to ensure construction notices to homeowners are sent out in a timely manner and contain the Toronto Public Health lead prevention messaging.

The Planned Program however does not significantly increase the number of lead water service replacements as many planned watermain renewal projects are in areas where there are fewer lead services. The program is driven by infrastructure renewal rather than lead service replacement.

**Outreach and Communication**  
*Pilot Project*  
Council has directed Toronto Water to develop a targeted pilot project to identify, educate, encourage, and coordinate the replacement of private and public lead service pipes on streets with a significant number of homes with lead services. Toronto Water and Toronto Public Health have reviewed the options in relation to both cost and reach and recommend targeted town halls meetings as the preferred option. Through the use of mapping to identify neighbourhoods that fall within possible areas of concern, Toronto Water will work closely with Councillor offices to provide support to host meetings related to lead service replacement. The meetings will be attended by both Toronto Water and Toronto Public Health staff who will provide information on lead pipe replacement and information on reducing exposure to lead in drinking water. We are recommending at this time to hold two pilot town hall sessions to validate their effectiveness and, if successful, staff will identify other areas of concern and work with other Councillor offices to offer further sessions. Councillor offices would be responsible for the costs of hosting and promoting the town hall meetings and Toronto Water and Toronto Public Health will provide staff time to support these efforts.

**Evaluate Public Outreach and Education Efforts**  
In 2011, research was completed on a wide range of issues related to lead in drinking water which resulted in a number of education and outreach efforts. An update is planned in 2015 with the goal of investigating issues related to the priority lead program and to identify recommendations that inform improvements to communications and public education efforts to encourage the public to take action to reduce their exposure and to replace their side of the lead service.
**Data systems**

Toronto Water tracks water service information and replacement status via water service cards submitted by the project delivery groups to the Watermain Asset Planning Unit. Based on available information the Watermain Asset Planning group will be working to develop a digital map that will identify areas/neighbourhoods where lead water services were installed -- within the limits of privacy requirements. Toronto Water will be preparing a similar interactive map which can be accessed on the City's website so that residents can identify if they are in an area of concern and can request further information on actions they can take. This is to address the request for a publicly accessible database of water service information.

Data is currently being collected on completion rates of water service replacement and will be used to update the status of public-side lead service replacements. Toronto Water has also updated the water service card template to increase the detail of information being tracked within the City's jurisdiction.

**Identifying Lead Services**

The most accurate way to identify whether there is a lead water service would be to physically examine the service line by digging a test pit at an approximate cost of $3,000 per pit. The next best way is to complete a lead test through Toronto Water Labs. The City currently offers this service at no cost to residents. In 2014 there was considerably heightened media reporting of the lead in drinking water issue which resulted in a 299% increase in requests for lead tests from 2013 (875 requests) to 2014 (3489 requests).

Prior to 2015, under the non-regulated lead sampling program, only residents whose tests exceeded the 10 part per billion (ppb) levels received an information kit. To encourage residents to take action, beginning in 2015, information kits will be sent to all residents whose lead tests indicated any levels of lead.

**Expanding Free Faucet Distribution to Low-income and Vulnerable Households**

Currently the program provides an annual rebate, up to $100 for a NSF-053 certified faucet mounted lead removal filter, until the CCP takes effect, and where: (i) there is a child under six years old and /or a pregnant woman living in the home; (ii) the home is a single family, duplex or triplex building; and (iii) the annual household income is less than $50,000. Since 2011, 9 applications have been received of which 4 were approved.

In 2015 Toronto Public Health (TPH) will explore opportunities through TPH programs that focus on vulnerable and low-income populations living in pre-1950s homes that can be leveraged to increase uptake of this program and general awareness of the issue.

**Loan Program**

In 2014 Council directed staff to develop a self-funded loan program for eligible homeowners. A separate report is being presenting concurrently and provides details of the program including timelines for implementation.

This report has been prepared in consultation with the Medical Officer of Health.
CONTACT
Larry Korson, Director
Water Treatment and Supply
Toronto Water
Tel: 416-338-8220
E-mail: lkorson@toronto.ca

Kamal Sangha, Manager
Business and Customer Support
Toronto Water
Tel: 416-338-0635
E-mail: ksangha@toronto.ca

SIGNATURE

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Lou Di Gironimo
General Manager
Toronto Water