Lead Service Lines in the City of Montreal
Long term vision, execution and key takeaways

Great Lakes and St. Lawrence Cities Initiative
2016 Annual Meeting
June 16, 2016 - Niagara Falls

CHANTAL MORISSETTE
Director
City of Montreal Water Service
LEAD SERVICE LINES
City of Montreal

AGENDA

- Montreal by numbers
- Historical perspective
- Scope of the problem
- Citizen information campaign
- Research and evidence
- Current situation and beyond
- Closing remarks
CITY OF MONTREAL

CITY TERRITORY BY NUMBERS
1.8 million citizens
19 boroughs
15 cities within the Island of Montreal

MUNICIPAL STAKEHOLDERS
- Citizens
- Public Health Department

PROVINCIAL STAKEHOLDERS
- MDDELCC (sustainable development/environmental protection)
- Ministry of municipal affairs
6 WATER TREATMENT PLANTS
15 WATER INTAKES
WATER TREATMENT PROCESS
- Screening
- Chemical Treatment - Coagulation
- Sand Filtration
- Disinfection - Ozonation
- Disinfection - Ultraviolet Light
- Disinfection - Chlorination
4300 KM  WATER MAINS  (2672 Miles)
315 000  SERVICE LINES
HISTORICAL PERSPECTIVE
Timeline

2001: Lead standard: 50 µg/L - 10 µg/L (after 5 minutes of flushing)

2004: A resident (living in Wartime house in borough of Saint-Laurent) contacted the City because of lead in tap water ([Pb] = 16 µg/L)

2005: **First sampling initiative**
- Low lead concentration in water filtration plants and on several points of the water distribution system (< 2 µg/L)
- Lead concentrations below standard in schools & hospitals (< 10 µg/L)
- 69 % of Wartime houses had lead concentration above the standard (<10 µg/L, max = 38 µg/L)
HISTORICAL PERSPECTIVE
Timeline

2006: ACTION PLAN
- Determine scope of problem
- Inform citizens
- Take action
SCOPE OF THE PROBLEM
Criteria for the possible presence of a LSL

TOTAL NUMBER OF BUILDINGS
315,000

BUILT BEFORE 1970
210,000

8 DWELLINGS OR LESS
139,000

POSSIBLE PRESENCE OF LSL
69,000 BUILDINGS
SCOPE OF THE PROBLEM
Homeowner and public responsibility

- TAPs
- PREMISES PLUMBING
- SHUT OFF VALVE
- WATER MAIN PIPE
- HOMEOWNER
- UTILITIES
- SERVICE LINE
2007
Citizen information campaign

- Press conference
- Letter to citizens with prevention tips
- Information hotline launch
- Website launch
- Information leaflet distribution
2007
Citizen information campaign

After replacing the public side LSL

- Informed citizens about the private section
- Recommendations to reduce lead concentrations
  - Flushing
    - Remove and clean aerators regularly
  - Use bottled/filtered water (expectant mothers or children <6 yrs old)
  - Replace the private section of LSL
LSL REPLACEMENTS
In order of priority

Utilities LSL replacements with other work
- Main water pipe rehabilitation
- Main water pipe reconstruction
- Road reconstruction

Citizen application
- Citizens can apply to the city to have the remaining utilities section replaced once they have replaced homeowner side.
City of Montreal tests new portable device for LSL detection - 2008-2009

- On-site measurement of lead at the tap
- Results in 3 minutes
- Low cost
CWN Study evaluates the impact of drinking water on blood lead levels (BLL) of children aged 1-5 in Montreal

- 306 participants
- Drinking water flowing through LSL is not a negligible source of exposure to lead and may be a persistent significant contributor to children’s BLL
- The risk of having blood lead levels higher than 5 µg/dL is more elevated in Wartime houses (mean: 4.5 µg/dL)
2013 - RESEARCH PROJECT
Impact of partial LSL replacement

2013-2015 CWN study on the impacts of partial LSL replacements on lead release in drinking water
- Galvanic corrosion: Acute particulate lead release (pilot-scale results)
- Frequency and duration of phenomenon not validated at full-scale: study in Montreal

Recruitment & enrollment of 35 single-family homes for a 6-20 months monitoring:
- Including worst-case wartime homes with very long LSLs

Conclusions:
- Decrease of lead release over long-term after PLSLR
- Lead concentrations are still high or over regulatory levels for households with long LSLs (private side), especially wartime homes
- Short-term increase of particulate Pb in water - Importance of flushing immediately after & in the weeks following replacement work (full and partial)
Accelerate the LSL replacement program according to the following guidelines:

- Pair with capital investment program
- Replace all LSL in wartime houses in next 5 years
- Encourage citizens to replace the homeowner side of the LSL
- Replace the utilities side of LSL when homeowner side replaced by citizen

Heighten citizen awareness and reach out with timely communication pieces

- July mail campaign to occupants where LSL suspected in home
- Information leaflet with recommendations
- Website updated with information video streaming
CONCLUDING REMARKS
Summary and final words

- LSL REPLACEMENT PROGRAM BEING FAST TRACKED
- PUBLIC AWARENESS TO INCREASE HOMEOWNER REPLACEMENT
- STAY THE COURSE WITH NEW REGULATION GUIDELINES

MEASURE TWICE, CUT ONCE...
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