Lead Monitoring in Drinking Water Systems for Site Specific Locations

Lead in Drinking Water Systems

❑ Lead is usually found in drinking water as a result of leaching from distribution and plumbing system components. Historically, lead has been used extensively in service line, solders and fittings, making its presence in drinking water more likely in older homes and neighbourhoods.

❑The strongest association observed to date is between increased blood lead levels in children and reductions in IQ scores. Inorganic lead compounds have also been classified as probably carcinogenic.

Guidelines for Canadian Drinking Water Quality - Lead

❑ A maximum acceptable concentration (MAC) for lead is 0.005 mg/L.

❑ Every effort should be made to maintain lead levels in drinking water as low as reasonably achievable.

Non-Residential (Schools, Multi-Dwelling Residences & Large Buildings) Sampling Protocol

❑ School and daycare facilities should be prioritized for monitoring to ensure that the most sensitive population (i.e., young children) is captured. Due to the unique and complex plumbing configurations in schools, daycare facilities and larger buildings or dwellings, a different sampling procedure is recommended.

❑ In schools and daycares, it is recommended that total lead be monitored at least once per year, at each of the drinking water fountains or cold water taps where water is used for drinking or food preparation. Samples should be conducted in June or October when lead levels are likely the highest.

❑ In multi-dwelling buildings (more than 6 residences) or large buildings, it is recommended that total lead be monitored, at least once per year, at each of the drinking water fountains and a proportion of cold water taps where water is used for drinking or food preparation. Priority should be given to sites suspected or known to have full or partial lead service lines.

❑ Random daytime (RDT) sampling protocols are recommended for non-residential buildings:

- ❑ Two – 125 mL samples should be collected, preferably in wide-mouth sample bottles, at a medium to high flow rate without removing the aerator. Samples should be collected without prior flushing; no stagnation period is prescribed, to better reflect consumer use. The samples need to be acidified using a 2% nitric acid solution at the time of sampling. The lead concentration is determined by averaging the results of the two samples.

Information taken from: Lead in Drinking Water published by Health Canada

Newfoundland Labrador

Environment, Climate Change and Municipalities
Water Resources Management Division
Drinking Water Monitoring and Reporting

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Residential Sampling Protocol

❑Monitoring should be conducted at the consumer's tap, with priority given to identifying areas with known or likely to have lead service lines or that have older buildings, as these are likely to have the highest lead concentrations.

❑ Random daytime and 30 minute stagnation sampling protocols can both be used for residential sites, as they capture typical exposures, including potential exposure to particulate lead.

❑ Random daytime (RDT) sampling protocols: system wide

- ❑ One – 1 L sample should be collected randomly during the day from a drinking water tap in each of the residences. Samples should be collected without prior flushing; no stagnation period is prescribed, to better reflect consumer use. The samples need to be acidified using a 2% nitric acid solution at the time of sampling

❑ 30 minute stagnation (30MS) sampling protocols: sentinel sites

- ❑ The tap should be flushed for 5 minutes, allowed to stand for 30 minute stagnation period, during which time no water should be drawn from any outlet within the residence (including flushing of toilets). Two – 1 L samples should be collected at a medium to high flow rate (greater than 5 L/minute). The samples need to be acidified using a 2% nitric acid solution at the time of sampling. The lead concentration is determined by averaging the results from the two samples.

Exceedances of Lead

❑ An exceedance of the lead MAC should be investigated and followed up by appropriate corrective actions. These actions should be based on an assessment of the cause of the exceedance using appropriate protocols such as those found in Health Canada's *Guidance on Controlling Corrosion in Drinking Water Distribution Systems* available online at: https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidance-controlling-corrosion-drinking-water-distribution-systems.html

❑Municipal treatment is not generally an effective strategy for lead control as the source of lead is not from the source water itself. The source of lead is typically from the material used in the distribution and plumbing systems, such as service lines, solder and fittings, which may leach into the water and be found at the tap as a results of corrosion in these systems.

❑The best approach to minimize exposure to lead from drinking water at the municipal level is to remove the service line and fittings that may contain lead and to control corrosion in the distribution and treatment systems.

❑There are a number of certified residential treatment devices available that can remove lead from drinking water, but their use should not be considered as a permanent solution.

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