Yukon Drinking Water Quality Monitoring Program

for Youth-Occupied Facilities

Purpose and program overview

The purpose of this document is to provide a program overview and associated protocol for the monitoring of lead in drinking water at facilities occupied by youth. Ensuring safe drinking water in youth-occupied facilities is critical due to the health risks posed by lead exposure, especially to young children.

The included protocol provides comprehensive guidance for sampling, evaluating, mitigating and monitoring lead levels of the drinking water in youth-occupied facilities. It is designed to support compliance with territorial legislation and national heath-based standards.

Lead and human health

Lead is a neurotoxin harmful to multiple body systems, particularly affecting the intellectual and physical development of fetuses, infants and children. Lead can enter drinking water primarily through the corrosion of plumbing materials that contain lead, such as pipes, solder, faucets and fittings. Despite regulations reducing lead use in plumbing materials since 1990, existing lead-containing materials remain, and new materials may contain lead. Regular testing at the tap and mitigating water fixtures when needed are essential to ensure lead levels remain below the maximum acceptable concentration (MAC) of 0.005 milligrams per litre of water.

Program objectives

- Ensure safe and reliable drinking water in youth-occupied facilities.
- Detect and respond to any lead found in drinking water.
- Maintain transparency and public access to water quality data.

Program activities

- Water sampling at designated youth-occupied facilities, including:
    - schools;
    - early learning and child care programs (in Yukon government-owned buildings);
    - group homes; and
    - youth correction facilities.

- Water sampling and mitigation protocols, including:
    - sampling and ongoing parameters;
    - corrective actions (mitigation and remediation);
    - record-keeping; and
    - Public reporting and communication.

Water quality program protocols

The protocols described are based on those recommended by Health Canada and the U.S. Environmental Protection Agency. Together, they outline a two-phased approach focused on identifying sources of lead in drinking water (find), removing those sources of lead so they no longer pose a risk to users (fix), and then monitoring for any new lead occurrences. The first phase of this approach is commonly referred to as find and fix, while the second describes a monitoring phase. In addition to phases 1 and 2, the protocols below include requirements for both records management and communications.

Phase 1 – Find and fix

The goal of phase 1 is to identify outlets with elevated lead concentrations, determine the source of the lead (find), and to mitigate (fix). Below are the elements included in phase 1.

- **Investigative lead testing procedure:** This is a two-tier sampling procedure. The purpose of this testing is to identify the specific drinking water outlets that have elevated levels of lead following periods of stagnation. This is a pass/fail test for fixtures that test above the MAC of 0.005 milligrams of lead per litre of water.
- **Inventory**: Identify and document all relevant water outlets using building maps. Assign unique outlet IDs for consistent tracking. Mark inconsequential outlets as non-potable with appropriate signage.
- **Sampling planning**: Water is left to stagnate in the system for 16 to 24 hours. Before collecting samples, arrange with laboratories for sample bottles, label bottles with outlet IDs and prepare communication plans for building users.

- **Sampling**: Collect two samples per outlet.
    - *First draw sample (Tier 1)*: 250 mL collected immediately after stagnation to capture water in outlet plumbing.
    - *Flushed sample (Tier 2)*: 250 mL collected after running tap for 30 seconds to capture upstream water.
- **Results and mitigation**: Laboratory results must be recorded and shared with Environmental Health Services at Health and Social Services. Outlets exceeding the MAC require immediate action, including restricting use and implementing mitigation measures. Validation sampling confirms the success of mitigation measures.
    - Short-term solutions include flushing and decommissioning outlets.
    - Long-term solutions involve replacing lead-containing plumbing or installing certified filters.

Phase 2 – Monitoring

The goal of phase 2 is to ensure that drinking water in a building continues to meet water quality standards over time. New occurrences of lead contamination can occur because of changes in plumbing, water quality, or use patterns. For example, disruptions in water services due to renovations, lengthy periods of stagnation, or changes to water chemistry at the utility level can result in elevated levels of lead.

Below are the elements included in phase 2.

- **Random daytime (RDT) sampling**: Conducted to monitor water quality over time without stagnation requirements. Sample one-third of outlets annually on a rotating three-year cycle.
- Health Canada recommends RDT sampling to monitor the average or typical exposure to lead in drinking water in a population.
- RDT sampling results will be a pass/fail test. Outlets that test above the MAC of 0.005 milligrams of lead per litre of water are considered a “fail test”. They will

be identified for further investigative testing procedures and remediation or flushing.

- **Sampling process**: Samples should be collected randomly during the work or school day without prior flushing. No stagnation period is prescribed. Two 125 mL samples are collected at medium to high flow rates without removing aerators. The average lead concentration from these samples determines compliance. Exceedances require immediate mitigation and notification.
- **Mitigation and validation**: Follow mitigation guidance similar to phase 1 and validate effectiveness through follow-up sampling.

Communication

Effective communication is vital for transparency and trust. Notifications should include:

- reasons for sampling;
- partnerships with health authorities;
- full sampling results, including those below the MAC;
- details on mitigation strategies and progresses; and
- contact information for further inquiries.

Communication timelines include:

- issuing notices to building users and website postings one to two weeks before sampling;
- alerting health authorities, restricting outlet use and posting signage immediately upon exceedance;
- sharing results publicly and with authorities one to two weeks after results; and
- providing ongoing updates during mitigation.

Records management

Sampling and testing results are required to be stored on the corporate water quality monitoring database, hosted by Highways and Public Works. The database is to

include fields required by both the Chief Medical Officer of Health and Environmental Health Services.

The records that include the lab-certified results shall be stored with the Highways and Public Works' Facilities Management Branch. Records must also include the date and time of sampling, the location and the name of the person who took the sample.

Records must include other corrective actions taken and maintenance activities.

Sampling and testing results will be periodically shared on Government of Yukon websites.

Roles and responsibilities

The Department of Health and Social Services will:

- advise the departments of Highways and Public Works, and Education on requirements for sampling and mitigation for any lead found in youth-occupied facilities;
- monitor the Guidelines for Canadian Drinking Water Quality from Health Canada and notify the departments of Highways and Public Works, and Education of any changes; and
- review and approve the sampling and monitoring protocol.

The Department of Highways and Public Works will:

- lead the drafting and design of the water quality monitoring program and associated protocols for youth-occupied facilities;
- inventory and update all relevant water outlets;
- take the lead on issuing a contract to sample required fixtures at youth-occupied facilities for on-going monitoring;
- manage records received from laboratory results;
- input results into the water quality monitoring database;
- notify client departments so they can communicate to their clients in accordance with this protocol;
- lead any required mitigations in consultation with the Department of Health and Social Services and client department;

- publish and maintain a public-facing site to report on results and any required mitigations; and
- chair a meeting between Highways and Public Works, Environmental Health Services, Education and the Chief Medical Officer of Health to review a given year's results and ensure monitoring remains on track.

Client departments will:

- provide funding for the addition of any new water fountains or water bottle filling stations, when requested by client group; and
- communicate to clients with any results of tests that have been completed, including any associated mitigations that are required –and in accordance with this protocol.

Appendix A: Youth-occupied facilities

Facility type	Facility name	Facility location
School	Chief Zzeh Gittlit School	Old Crow
School	Christ the King Elementary School	Whitehorse
School	CSSC Mercier	Whitehorse
School	Dámbü Tän Kets'ádań Kų – Cliff Trail Elementary School	Whitehorse
School	Del Van Gorder School	Faro
School	École Émilie-Tremblay	Whitehorse
School	École Whitehorse Elementary School	Whitehorse
School	Elijah Smith Elementary School	Whitehorse
School	Eliza Van Bibber School	Pelly Crossing
School	F.H. Collins Secondary School	Whitehorse
School	Ghùch Tlâ Community School	Carcross
School	Golden Horn Elementary School	Whitehorse
School	Grey Mountain Primary School	Whitehorse
School	Hidden Valley Elementary School	Whitehorse
School	Holy Family Elementary School	Whitehorse
School	Individual Learning Centre	Whitehorse

School	J.V. Clark School	Mayo
School	Jack Hulland Elementary School	Whitehorse
School	Johnson Elementary School	Watson Lake
School	Khàtìnas.àxh School	Teslin
School	Kluane Lake School	Destruction Bay
School	Nelnah Bessie John School	Beaver Creek
School	Porter Creek Secondary School	Whitehorse
School	Robert Service School	Dawson City
School	Ross River School	Ross River
School	Selkirk Elementary School	Whitehorse
School	St. Elias Community School	Haines Junction
School	St. Francis of Assisi Catholic Secondary School	Whitehorse
School	Takhini Elementary School	Whitehorse
School	Tantalus School	Carmacks
School	Teen Parent Centre	Whitehorse
School	Watson Lake Secondary School	Watson Lake
School	Wood Street Centre	Whitehorse
Youth residence	Children's Receiving Home (Boys)	Whitehorse
Youth residence	Children's Receiving Home (Girls)	Whitehorse

Youth residence	Gadzoosdaa Student Residence	Whitehorse
Youth residence	Klondike Group Home	Whitehorse
Youth residence	Liard Group Home	Whitehorse
Youth residence	Wann Road Youth Residence	Whitehorse
Youth residence	Young Offenders Facility	Whitehorse
Youth program	Youth Achievement Centre	Whitehorse
Child care	Bubbles Daycare at Del Van Gorder School	Faro
Child care	Nakwaye Ku Daycare at Yukon University	Whitehorse
Child care	Tu Lidlini Daycare at the Ross River Community Centre	Ross River