Carnegie Mellon University Environmental Health & Safety	**Environmental Health and Safety** **Drinking Water Quality Program**
Date of Issuance: 04/01/2019	**Revision Date:** 12/16/2025
Revision Number: 5	**Prepared by:** EHS

1. Purpose

The EHS Drinking Water Quality Program is a comprehensive program that oversees routine sampling of drinking water sources across CMU's Pittsburgh campus. The purpose of the Drinking Water Quality Program is to identify drinking water fixtures, e.g. drinking water fountains, bottle fillers, and kitchen sinks, in CMU-owned buildings that may be contributing lead to the drinking water. Sampling for lead in drinking water sources can aid in identifying fixtures with potentially lead-containing plumbing components so that they may be appropriately remediated.

2. Scope

This program provides instruction for selection of sampling locations, notification to building occupants, water sampling protocol, interpretation of laboratory results for lead and remedial actions. Water sampling applies to CMU-owned buildings, including academic, administrative and housing buildings.

3. Background

The primary exposure of lead in drinking water is through consumption of water that contains lead. Skin does not absorb lead, so showering and handwashing should not pose a high exposure risk. While anyone can experience health effects from consuming lead, it can more significantly impact young children, infants and fetuses, even at lower concentrations that might not affect an adult. Potential health risks in adults may include cardiovascular effects, decreased kidney function and reproductive problems. Potential health risks in children include lower IQ, hyperactivity, slowed growth, hearing problems and anemia.

Lead is not found in natural water sources. Lead can enter drinking water when service pipes and other plumbing components that contain lead corrode due to the high acidity or low mineral content of the water that flows through them. Structures built prior to 1986 are more likely to have lead-containing plumbing systems; however, water may still have lead in it even if built after 1986 because of old public utility lines.

4. Drinking Water Sampling Protocol

a. Selection of Water Sampling Locations

Any outlet for potable water is a potential source of drinking water, e.g. drinking water fountains, kitchen sinks, bathroom faucets in housing facilities, bottle fillers, etc. However, certain sources are more likely to be used for consumption than others. Sampling locations will be chosen based on likelihood of water consumption and risk of the sampling location to contain lead based on building age. High priority locations will include drinking water fountains, bottle fillers, kitchen sinks, office lounge sinks and any other fixture known to be used for water consumption. Medium-priority locations include bathroom faucets and classroom sinks. Low priority locations include utility sinks and hot water outlets.

Typically, only high priority fixtures will be sampled for lead in the water. However, due to the greater likelihood of water consumption from bathroom sinks in student housing, bathroom sinks will also be sampled in those locations.

b. Notification of Drinking Water Sampling to Space Occupants

i. Academic and Administrative Buildings

Space occupants will be notified in advance when drinking water sampling will occur within their space(s). EHS will notify via email appropriate departmental representatives and leadership for their disbursement to any potentially impacted faculty, staff and students. EHS will additionally request that Facilities Management and Campus Services (FMCS) send the same drinking water sampling notice through their "FMS Announce" system. **Appendix A** illustrates an example drinking water sampling notice.

ii. Housing Buildings

Coordination with Housing Services personnel will be completed when sampling occurs in residential buildings under their purview. A sampling schedule for the summer, including personnel who require access, will be sent to and approved by Housing Services prior to commencing sampling activities. Sampling will typically only be conducted in Housing locations that are unoccupied. When sampling is necessary in occupied spaces, Housing Services will notify and seek approval from the occupants in advance.

c. Water Sampling Process

Drinking water sampling is a multi-step process that requires each drinking water fixture to sit unused for a specified period of time before collection of the water sample. This sampling process has been modeled after the US Environmental Protection Agency's (EPA) guidance for drinking water sampling, *3Ts for Reducing Lead in Drinking Water in Schools and Child Care Facilities*. The following outlines EHS's drinking water sampling process:

i. Flush each drinking water fixture to be sampled by turning on the cold water tap, if present, and allow the water to run for approximately one minute.
ii. Place signage on the water fixture, which indicates the water source should not be used by space occupants (an example sign is presented in **Appendix B**).
iii. Allow the drinking water source to sit unused for a minimum of 8 hours and a maximum of 18 hours.

iv. Return to the water fixture within 8-18 hours to remove the signage and collect a water sample. After the sample is successfully collected, space occupants can resume use of the drinking water fixture. If it appears that the water fixture has been used or if signage has been removed by someone other than EHS, the sampling process will be repeated starting at step i.
v. Send collected samples to a third-party laboratory to be analyzed for lead.

d. **Results Interpretation and Notification**

Laboratory analytical results will be compared to the US EPA's recommended action level of 15 parts per billion (ppb) lead in drinking water. Results greater-than or equal to (≥) 15 ppb lead will require remediation and follow-up sampling as described in **section 5**. An exception to the action level will be made for childcare locations, where the action level will be reduced to as low as reasonably achievable with the intention of further reducing potential lead consumption by this more-sensitive population.

A summary of laboratory analytical results will be provided to applicable personnel, as indicated in sections **4(d)(i) and 4(d)(ii)**. The summary will include the total number of drinking water samples collected and locations of any drinking water fixtures where lead, water results met or exceeded the lead action level. Lead results for specific locations will be provided upon request.

i. **Academic and Administrative Buildings**

A summary of laboratory analytical results will be provided to space occupants within approximately 2-4 weeks after sampling completion. EHS will send results to appropriate departmental representatives and leadership via email for their disbursement to any potentially impacted faculty, staff, and students.

For drinking water fixtures located within departmental space and with water results above the lead action level, EHS will additionally consult directly with the space owner as needed.

ii. **Housing Buildings**

A summary of laboratory analytical results will be provided to appropriate Housing personnel within approximately 2-4 weeks after sampling completion.

e. **Frequency of Drinking Water Sampling**

Water from drinking water fixtures identified by EHS will be routinely sampled based on building age and previous water results for lead, if available. When remediation is necessary based on lead concentrations in the water, additional sampling will be required as identified in **section 5**.

5. Remediation and Follow-up Water Sampling

The following steps outlined in **sections 5(a)-5(d)** will be performed when a lead water result meets or exceeds the action level.

a. **Remove Drinking Water Fixture from Service**

All drinking water fixtures with water results meeting or exceeding the action level will be removed from service as soon as possible after it has been determined that an exceedance has occurred. Removal from service may include posting out of service signage and, if deemed necessary, turning off the water. For water fixtures located within departmental space, EHS will consult with space occupants as needed for remediation activities.

EHS will contact FMCS Service Response to shut off water at their earliest availability, when necessary. If there will be a delay in shutting off water, EHS will coordinate the placement of signage to prevent use of the drinking water fixture.

b. **Notify Space Owner of Exceedance**

For drinking water fixtures located within departmentally owned spaces (i.e. not in hallways or common areas), EHS will consult with the space owner, as needed, of the exceedance and plans for remediation and follow-up sampling. A notification to occupants will be communicated to the appropriate CMU faculty/staff representative for disbursement. The notification will detail the reason for removing the fixture from service and description of corrective actions.

c. **Coordinate Remediation**

EHS will consult with FMCS to determine appropriate remedial action based on the type of drinking water fixture and plumbing setup. This may include one or a combination of the following:

i. Cleaning of the aerator, if present
ii. Replacement of drinking water fixture and plumbing components
iii. Installation of point-of-use filtration

As needed based on possible remedial actions, EHS will consult with the space owner for the final decision.

d. **Collect Follow-up Samples**

EHS will collect follow-up samples after remediation has been completed by FMCS using the following steps.

i. The first follow-up sample will be collected before the drinking water fixture is re-opened for use.
    1. If the lead result is below the action level, the drinking water fixture will be re-opened for use.
    2. If the lead result meets or exceeds the action level, further remediation will be conducted before the drinking water fixture is re-opened for use. Follow-up sampling will restart.
ii. Three additional samples will be collected once every three months after the date of the first follow-up sample.
    1. If all three lead results are below the action level, the drinking water fixture will remain open for use.
    2. If any of the three lead results meet or exceed the action level, the drinking water fixture will be removed from use following **section 5(a)** and the remediation process will be re-started.

After successful remediation and completion of follow-up sampling, the drinking water fixture will be returned to the periodic sampling schedule.

6. Revisions

Date	Documented Changes	Initials
3/19/2021	Updated Format and Accessibility Update	MAS
10/19/2021	Updated broken web link	MAS
8/3/2022	Minor wording edits and Updated Appendices	CG/MAS
10/25/2023	Reviewed – no revisions necessary	CG
10/22/2024	Reviewed – minor changes made	CG
12/16/2025	Reviewed – update to childcare area action level to “as low as reasonably achievable” from “less than 1ppb” and other minor formatting updates	CG

Appendix A

Sample Drinking Water Sampling Notice

Dear Colleagues at Information Networking Institute,

You are receiving this message as you have been identified as someone resides in or who has departmental space in **Information Networking Institute (INI)**.

Environmental Health and Safety (EHS) will be conducting drinking water sampling in INI starting Monday, **December 6, 2023** and ending Friday, **December 10, 2023**. The purpose of sampling is ongoing management of the EHS Drinking Water Quality Program, which is a comprehensive program that oversees routine sampling of drinking water sources across campus.

PWSA treats Allegheny River water and then distributes it through pipes to its customers, including Carnegie Mellon. Treated drinking water does not contain lead, but as it enters the service line, building plumbing, and fixtures, all of which may contain lead, this metal can leach into the water.

Potential drinking water outlets, including water fountains, bottle fillers, and kitchen sinks, will be sampled in accordance with the following process:

- EHS will remove the drinking water fixture from service in the afternoon at approximately 2-5 PM (exact time may vary), posting signage indicating that the outlet is not to be used. **Note: the water will not be shut off, but it is crucial to the sampling process that these fixtures are NOT used.** If signage is removed by someone other than EHS, or if it appears that the fixture has been used, the sampling process will be repeated and the fixture in question will be removed from usage for another day.
- The following day at approximately 7-11 AM (exact time may vary), EHS will collect a sample of the water. The signage will be removed by EHS immediately after sampling, and the fixture will be available for use.

EHS expects to have sample results approximately 2-4 weeks after sampling is completed. Any fixtures that are found to have lead concentrations in excess of the US Environmental Protection Agency's recommended action level for schools and childcare facilities of 15 parts per billion (ppb), will be turned off for usage until appropriate repairs can be made. Elevated results will be communicated to departmental leadership and space owners for distribution to their faculty, staff, and students as soon as possible after sampling result receipt. Results for specific locations may be requested by contacting safety@andrew.cmu.edu.

Please forward this notification to any of your team members who may be impacted by this drinking water sampling at INI.

Appendix B

Sample Drinking Water Sampling Signage