



October 4, 2019

RE: Ann Arbor Public Schools
Drinking Water Sampling
Routine Sampling Protocol

Action Level

The Environmental Protection Agency's (EPA) Lead and Copper Rule (LCR) establishes a lead action level of 15 ug/L (ppb) for water systems and facilities that have and/or operate their water source. For Ann Arbor Public Schools drinking water sampling program, the district shall utilize greater than or equal to 5 ug/L (ppb) as the Action Level.

Sample Locations

Samples will be collected from potable drinking water locations before any water is used for at least 8 hours. Potable locations include hydration stations, hallway drinking fountains (coolers and bubblers), classroom faucets, classroom drinking fountains (bubblers), sinks used for teeth brushing, kitchen kettles, plumbed coffee machines, kitchen ice machines, and kitchen food preparation and rinse sinks. For the purpose of this sampling, AEG will not consider the following potable drinking water locations; Art Room sinks, Science Room sinks, Bathroom hand wash sinks, Kitchen sprayers, slop sinks, and other designated hand wash sinks such as those in Kitchens.

Sample Documentation

Record the unique sample identification number, date, and time on each sample bottle. The recordkeeping form shall include the following information:

- Type of sample taken (e.g., initial first draw)
- Date and time of collection
- Name of the sample collector
- Unique sample identification number
- Location of the sample site
- Water treatment already in place in the building (i.e. point-of-use (POU) devices).
- Aerator or screen on the outlet if applicable
- Any observations that may impact the samples' results should be recorded on a sampling field notes form. For example, leaking faucets or drinking water fountains, discolored water, low water pressure, etc.
- Photo of the outlet.

Sample Containers

- First draw samples shall be collected in 250-mL containers obtained by a certified laboratory.
- Follow-up 30 second flush samples shall be collected in 250-mL containers obtained by a certified laboratory.
- Detailed fixture evaluations (sequential samples) at drinking fountains shall be collected in 125-mL and 250-mL containers obtained by a certified laboratory.
- Detailed fixture evaluations (sequential samples) at drinking fountains with coolers shall be collected in 125-mL and 250-mL containers obtained by a certified laboratory.
- Detailed fixture evaluations (sequential samples) at cold water faucets shall be collected in 250-mL containers obtained by a certified laboratory.

Type of Sampling

First Draw Sampling

Collect first draw samples before the facility opens and before any water is used for at least 8 hours. Samples should be collected during periods of normal daily use should not be collected after vacations, extended weekends or holidays because the water will have remained stagnant for too long and will not represent typical daily water use.¹ If an individual tap is infrequently used but accessible for use during a typical school day, this outlet should be sampled. If the building water has been unused for more than 48 hours, it is probably not typical of school usage and the sampling event should be rescheduled.

First draw sampling is used to determine if a drinking water outlet has a lead level that is above or below the AAPS Action Level of 5 ppb.

1. First draw samples shall be collected early in the morning or on Saturdays before any water has been used. Water must not be used for at least 8 hours prior to sampling.
2. Do not flush a sample site for any length of time immediately prior to the sampling period of inactivity and do not flush a sample site at the outlet before collection of the sample.
3. Do not remove any filters, aerators, or screens at any sample outlet prior to collecting the samples.
4. Do not close the shut-off valves to prevent their use prior to sample collection. Minute amounts of scrapings from the valves can produce results showing higher-than-representative lead levels in the water.
5. Cold water must be collected for all samples. If sampling from a drinking water outlet that provides cold and hot water, the cold-water handle must be used for sample collection.
6. First draw samples shall be collected in 250-mL containers obtained by a certified laboratory.
7. Non-latex or nitrile gloves should be worn during sampling to reduce the risk of contaminating samples.
8. For samples that best represents water used for drinking, samples shall not be collected in the morning immediately after vacations, extended weekends, or holidays.
9. Begin sampling at the outlet closest to the Point of Entry.
10. Record any observations that may impact the samples' results. For example, leaking faucets or drinking water fountains, discolored water, low water pressure, warm water coming out of a cold outlet etc.
11. If sampling ice machines, fill a 250-mL bottle three-quarters full of ice. Do not touch the ice with bare hands.
12. Take a photo of the outlet sampled.

After receiving the first draw sample results, review each result to prioritize possible follow up sampling and remediation. Drinking water outlets with a test result of equal to or less than 5 ppb do not need follow up flush sampling.

Repeat First Draw – Aerator

A repeat first draw sample shall be collected at outlets where an aerator or screen is present if the first draw test result is 5 ppb or higher.

1. On the day before repeat sampling, make sure the aerator or screen was cleaned or replaced. Take a photo of the aerator.
2. When collecting a repeat first-draw sample, follow the same First Draw Sampling procedure steps listed above. Ensure that fixtures and outlets have been out of use for at least 8-hours.
3. If the results come back less than or close to the detection level (e.g., 5 ug/L). This result indicates that the debris in the aerator was likely contributing to elevated levels in the fixture.²

Continue to clean the aerator on a regular basis; continued use of the outlet should be acceptable.

Flush Samples

¹ 3Ts for Reducing Lead in Drinking Water in Schools and Child Care Facilities, Module 4: Developing a Sampling Plan, Page 35.

² 3Ts for Reducing Lead in Drinking Water in Schools and Child Care Facilities, Module 5: Developing a Sampling Plan, Page 39.

Flush sampling generally involves the collection of a sample after running the water at that outlet for 30 seconds. Flush samples can be used to determine if lead is coming from the fixture itself or from interior plumbing. (Note: water coolers require a 15-minute flush prior to sampling).

Conduct flush sampling at an outlet if any of the following occur:

- If the first draw sample result on an outlet that does not have an aerator or screen is greater than 5 ppb.
 - If the Repeat First Draw-Aerator sample result greater than 5 ppb (and the aerator/screen is clean).
1. Flush samples shall be collected early in the morning or on Saturdays before any water has been used. Water must not be used for at least 8 hours prior to sampling. For samples that best represent typical water use, do not collect samples immediately after vacations, extended weekends, or holidays.
 2. Do not flush the sample site for any length of time immediately prior to the sampling period of inactivity.
 3. Do not remove any filters, aerators, or screens at any sample outlet prior to collecting the samples.
 4. Do not close the shut-off valves to prevent their use prior to sample collection. Minute amounts of scrapings from the valves can produce results showing higher-than-representative lead levels in the water.
 5. Cold water must be collected for all samples. If sampling from a drinking water outlet that provides cold and hot water, the cold-water handle must be used for sample collection.
 6. Flush samples shall be collected in 250-mL containers obtained by a certified laboratory.
 7. Non-latex or nitrile gloves should be worn during sampling to reduce the risk of contaminating samples.
 8. Care must be taken to maintain a consistent rate of flow.
 9. For faucets and bubblers, open the tap and let the water run for 30 seconds then collect the sample. Make sure to label the paperwork as a flush sample.
 10. For water coolers, open the tap and let the water run for 15 minutes then collect a sample. Make sure to label the as a flush sample.
 11. Record any observations that may impact the samples' results. For example, leaking faucets or drinking water fountains, discolored water, low water pressure, warm water coming out of a cold outlet etc.
 12. If sampling ice machines, fill a 250-mL bottle three-quarters full of ice. Do not touch the ice with bare hands.
 13. Take a photo of the outlet sampled and the connecting piping.

Detailed Fixture Evaluations/Sequential samples

Sequential samples involve collecting a series of water samples at a single fixture, without flushing beforehand or running the water between samples. This method is used to sample multiple sections of the plumbing at an outlet previously identified with elevated lead result to determine where the lead source may be found if any of the following occur:

- With a POU filter and replacement activities, the lead result remains over 5ppb, and it was determined that the fixture is essential and permanent removal is not an option.
 - Further investigation is needed on a water cooler to pinpoint the lead source.
1. Drinking Fountain
 - Collect samples before the facility opens and before any water is used.
 - Cold water must be collected for all samples.
 - Collect water in one bottle after the other without letting the water run down the drain.
 - Sample #-SA: Sampling the Outlet, 125-mL sample.
 - Sample #-SB: Sampling the Connecting Pipe, 125-mL sample.
 - Sample #-SC: Sampling the Interior Plumbing, final 250-mL sample.
 - Take a photo of the outlet sampled.

2. Cold Water Faucet

- Collect samples before the facility opens and before any water is used.
- Cold water must be collected for all samples.
- Collect water in one bottle after the other without letting the water run down the drain.
- Sample #-SA: Sampling the Faucet, 250-mL sample.
- Sample #-SB: Sampling the Interior Plumbing, final 250-mL sample.
- Take a photo of the outlet sampled.

3. Water Coolers

- Collect samples before the facility opens and before any water is used.
- Cold water must be collected for all samples.
- Collect water in one bottle after the other without letting the water run down the drain.
- Sample #-SA: Sampling the Outlet, 125-mL sample.
- Sample #-SB: Sampling the Water Cooler (tank water), 250-mL sample
- Sample #-SC: Sampling the cooler screen and upstream plumbing, 250-mL sample (this sample taken after disconnecting cooler at the valve and sampling at the valve)
- Take a photo of the outlet sampled.

Corrective Action First Draw Check Sampling

Following the implementation of any corrective action at a drinking water outlet, first draw verification sampling should be performed to determine if the corrective action was successful in reducing the lead level to less than or equal to 5 ppb. If any verification sample has a lead result of greater than the AAPS Action Level, additional corrective actions will be performed until the check sample indicates that the drinking water outlet has a lead level of less than or equal to 5 ppb before putting that outlet back in service.

Immediate Response

Below are immediate actions following the receipt of results indicating elevated lead in drinking water.

1. Post clear signage at the outlet to notify people not to use and that sampling is in process. Signage should remain in place until the corrective action first draw check sample indicates that the corrective action was successful in reducing lead levels.

Lead Risk Reduction Options

1. Evaluate whether the tap is needed. If not remove from service.
2. Removal of Lead Sources
 - a. Remove tap/fixture from service
 - b. Replace tap/fixture & other sources of lead with certified lead-free materials
 - c. Point of entry treatment (needs permit)
3. Point-of-use device installation (NSF/ANSI Standard 53 & for Lead Reduction)
4. Routine Control Measures
 - a. Water moving/flushing
 - b. Aerator & screen cleaning/replacement

Glossary of Terms

Aerator: Also called a “screen” is typically located on the fixture valve (e.g., where the water comes out) to improve water flow out of a tap or drinking water fountain. These aerators can collect sediment and lead particulate

Drinking Water Fountain: A fixture connected to the water supply that provides water as needed. There are different types of drinking water fountains: fountains without central chillers, fountains with central chillers, water coolers, bottled water fillers, etc.

Faucet: A valved outlet device attached to a pipe that normally serves a sink or tub fixture. A faucet discharges hot and/or cold water for a variety of consumptive uses, including drinking, cooking, and washing. The term “faucet” is used interchangeably with the term “tap.”

First-Draw Samples: These are the samples taken immediately after turning on the faucet or valve, without spilling, if possible. These samples represent the lead content of water sitting in water outlets that are used for drinking or cooking within the building(s).

Flush Samples: These samples are taken after water has been running from the fixture for some pre-determined length of time. They can be used to determine if lead is coming from the fixture itself or from interior plumbing.

Lead-free: Per the Reduction in Lead Drinking Water Act of 2011: not containing more than 0.2 percent lead when used with respect to solder and flux; and not more than a weighted average of 0.25 percent lead when used with respect to the wetted surfaces of pipes, pipe fittings, plumbing fittings, and fixtures.

Sediment: Matter from piping or other water conveyance device that settles to the bottom of the water in the apparatus. If lead components are used in plumbing materials, lead sediments may form and result in elevated water lead levels.

Sequential Samples: Water samples collected at the fixture, one after another, without flushing beforehand or wasting water in between samples.

Water Cooler: A mechanical device affixed to drinking water supply plumbing that actively cools water for human consumption. The reservoir can consist of a small tank or a pipe coil.