



Fact Sheet – Flushing: A Short-Term Solution to Reduce Lead and Copper

When flushing is selected as an interim (short-term) control measure for reducing lead and copper in schools and early education and care facilities (EECF)

Note: MassDEP and the Massachusetts Department of Public Health (MDPH) support the EPA 3Ts goal of reducing lead in school and early education and care program drinking water to the lowest possible concentration. MassDEP's LCCA program recommends that schools and early education and care programs evaluate and remediate all taps/fixtures used for drinking, food preparation or medical uses with lead results above 1 ppb until the lead levels are consistently below 1 ppb. Water testing should be conducted by a Massachusetts certified laboratory capable of measuring concentrations of 1 ppb or lower. Remediation efforts should be prioritized based on the lead sample results and the vulnerability of the impacted populations. Under this approach, remediation of taps/fixtures with the highest lead sample results that serve the youngest populations should occur first.

*The Massachusetts Action Level for copper is 1.3 milligrams per liter (1300 ppb). **All taps with lead levels over your school's lead shut down level (e.g.15 ppb) and copper levels over the action level should be removed from service until an evaluation is done to determine the appropriate corrective action, including using flushing as a short term measure.** The evaluation and flushing protocol should be supported by a plumbing profile and sampling results. **Selecting flushing as a short term measure will require knowledge of the plumbing in the facility, sampling and resampling, daily record keeping, re-evaluation and adjustment to the plan, reporting and on-going communication about the implementation, and results of the plan.***

What is Flushing?

Flushing involves opening taps every morning before the facility is open and letting the water run to remove water that has been standing in the interior pipes and/or the outlets. Taps may need to be flushed at midday as well if the plumbing profile and sampling results indicate the need. The flushing time varies by the type of outlet being cleared and the source of the contaminant in the plumbing. Knowledge of the volume of water associated with plumbing components (e.g., lengths and diameters of piping) and the rate of water flow from a tap is very useful in determining appropriate flushing times. The degree to which flushing helps reduce lead or copper levels can also vary depending upon the age and condition of the plumbing and the corrosiveness of the water.

Although flushing often works as a short term measure to reduce lead and copper in drinking water, it requires staff time, diligence, and commitment to ensure effectiveness and may not be the most cost effective long term corrective action.

Two Primary Types of Flushing Programs

- **Individual Tap Flushing**

An **individual tap flushing program** may be implemented if lead and/or copper concentrations are found to be high at **certain taps**.

This procedure is to be followed each day the school /EECF is in session. During periods of normal use:

- Flush individual taps that have been tested and found to have high lead and/or copper levels.
- Run each tap in the morning before children arrive for 2 to 3 minutes.
- Run each tap at noon for 2 to 3 minutes if the evaluation determines midday flushing is needed¹. After long weekends or breaks (vacations, etc.):
 - Run each tap for ten to fifteen minutes before children enter school/EECF².
 - Then return to normal use protocol.

- **Plumbing System Flushing**

A **plumbing system flushing program** may be implemented if lead and or copper concentrations are found to be high throughout the entire facility or confined to a certain area of the school/EECF. This procedure is to be followed each day the school/EECF is in session.

- Begin by flushing the tap(s) furthest away from the water source (building service line). The facility plumbing evaluation and sample results should be used to determine the appropriate flushing time but usually at least 10 minutes is sufficient time.
 - TIP: Flushing times vary depending on each individual building/ building layout. In addition if a facility has more than one wing, there may be more than one tap located farthest from the water service line (EPA, 2006). Contact your public water system (PWS), local plumbing inspector, or a licensed plumbing professional to help determine the recommended flushing time for your facility based on the facility's plumbing profile (layout and piping) if you are unsure how long you should flush taps.
- Next flush the tap second furthest away from the water source and continue in this manner until all taps have been flushed. Flush all taps identified by the facility for drinking, cooking, and used by school medical staff (these are called Lead Contamination Control Act - LCCA taps) in the whole building or section.

Refrigerated water fountains/chillers and bottle-less water dispensers would need to run the water for 15 minutes or more to completely flush the units. Bottle-less water dispensers may have multiple reservoirs, and each tap could require separate flushing times (depending on the reservoir).

- Because of the long flushing periods required (waste of water and man hours involved), routine flushing of these units is not considered to be generally practical. It is recommended that these

¹ To determine if a midday flush is needed the facility should both examine the plumbing profile and conduct sampling at midday, at the same locations where flushing took place in the morning. The facility should analyze a first-draw and flushed samples for lead and copper. If the mid-day first draw sample is above the AL and the midday flushed sample is below the AL, then midday flushing is needed. If the midday flushed sample is above the AL, further sampling and analysis is needed to determine the source of the lead or copper.

² Shutdowns (stagnant water) over long weekends or breaks may aid in the buildup of lead and/or copper residuals in the fixtures and throughout the plumbing and in the schools and EECFs. Build up may occur farther from the fixtures than normal and flushing of the facility may take more of an effort than under normal use. To prevent or reduce the effect of a shutdown a longer flushing time is recommended the first day back before the facility returns to its regular daily use schedule. The facility plumbing evaluation and sample results should be used to determine the appropriate flushing plan but usually a 10-15 minute flush the first day back is sufficient to flush the system after long weekends or breaks.

units should be replaced with “lead-free” units ([NSF/ANSI 61 Annex G Rated - https://www.nsf.org/newsroom_pdf/nsf61-372_lead_insert_LWD-1350-0513.pdf](https://www.nsf.org/newsroom_pdf/nsf61-372_lead_insert_LWD-1350-0513.pdf) which may be more practical than flushing units with the longer flushing times.

Flushing Program Re-Evaluation

All flushing programs (individual tap and plumbing system flushing) should be re-evaluated every six months. First draw and flushed lead and copper samples should be collected and analyzed.

Flushing Program Sample Results

- If flushing program sample results are above the MassDEP recommended laboratory detection limit of 1ppb for lead, or above the copper action level, (AL) other corrective action options should be explored.
- If the flushed sample results are below the recommended laboratory detection limit of 1ppb for lead and or below the copper AL, the flushing program can continue.
- If first draw and flushed samples drop below the applicable levels for lead and or copper for two consecutive six-month rounds of testing, the flushing program can be evaluated for discontinuation. Evaluation monitoring should be repeated, one more time, in six months to ensure the lead and or copper levels do not increase again.
- Schools and EECF are encouraged to refer to [EPA’s 3T document \(https://www.epa.gov/sites/production/files/2018-09/documents/final_revised_3ts_manual_508.pdf\)](https://www.epa.gov/sites/production/files/2018-09/documents/final_revised_3ts_manual_508.pdf) for more information on sampling results and to contact MassDEP’s LCCA program for assistance. See end of document for contact information.

Communication Efforts and Results

School/EECF should include information on their flushing program in their school water quality communication plan.

Communicating with a school/EECF co-located in the same facility

The school/EECF should also notify all other schools/EECF co-located in the same facility whenever flushing is planned as a short term measure to address lead and copper results over the recommended laboratory detection limit of 1 ppb for lead or over the copper action level. Any changes to the flushing plan should also be communicated to allow the other schools/EECF to notify their parents and staff about the flushing program being conducted.

Record Keeping and Reporting

For both an individual tap flushing program and a main pipe flushing program, clear instructions and a daily log must be provided to staff and kept up to date. For an example of a flushing log see <https://www.mass.gov/doc/manual-flushing-log-lead-and-copper-remediation> (PDF) or <https://www.mass.gov/doc/manual-flushing-log-lead-and-copper-remediation-0> (Word Doc)

Schools/EECF using flushing as a short term corrective measure should report any remedial actions taken through the MassDEP online Lead & Copper Reporting Tool located at: <https://script.google.com/macros/s/AKfycbxP99K->

[Cd5B3ioE7nsw0peOEndcGrXwV6zJcS5iHxzGO55B1k/exec](https://www.mass.gov/doc/lcca-program-management-tool-user-guide). Instructions for using the Reporting Tool can be found at <https://www.mass.gov/doc/lcca-program-management-tool-user-guide>.

For help with using the Reporting Tool please contact the Drinking Water Program at program.director-dwp@mass.gov

Assistance & Information

Local officials (PWSs, boards of health, and plumbing inspectors) can provide technical assistance in understanding lead and copper, potential health risks, treatment options, and developing communication strategies.

- **U.S. Environmental Protection Agency (EPA)**
https://www.epa.gov/sites/production/files/2015-09/documents/toolkit_leadschools_guide_3ts_leadschools.pdf
<https://www.epa.gov/dwreginfo/drinking-water-schools-and-childcare-facilities>
- **Massachusetts Department of Environmental Protection (MassDEP)**
<https://www.mass.gov/lead-in-drinking-water>
- **MassDEP, Drinking Water Program, LCCA Program**
Contact: program.director-dwp@mass.gov
- **Mass Department of Public Health (DPH)**
Webpage: www.mass.gov/dph/lead-sources

MA Department of Environmental Protection (MassDEP) Drinking Water Program thanks the EPA, AWWA, MN Dept. of Health, CA EPA, NY DOE, MI DEQ, WA DOE, NM ED, IA DMPs, City of Des Moines, LA USD, & others for contributing information used in developing this fact sheet.