



## Best Management Practices for the Removal of Lead and Copper in School Drinking Water

### Installation of Point-of-Use Devices at Schools or Early Education and Care Facilities that Are Not Registered Public Water Systems<sup>i</sup>

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#### Introduction

This guidance is intended for schools and early education and care facilities (EECFs) that are not registered public water systems (PWS) and are interested in providing treatment for removal/reduction of lead and copper in drinking water. Many schools and EECFs have taken mitigation measures to address elevated lead and copper in drinking water. **Common and effective mitigation practices include replacement of fixtures and plumbing and daily pipe flushing programs.** In some cases, schools and EECFs may choose to consider installing additional treatment. One form of treatment is a Point-of-Use (POU) device. For the purposes of this guide a POU device is any treatment unit installed on a single water fixture, such as a bubbler, end of tap or water fountain, that physically removes contaminants to achieve a desired water quality. POU devices can be an effective option to reduce lead and copper.

Choosing the appropriate POU device, and performing regular maintenance of the device, is extremely important. POU devices that are not properly maintained will eventually fail to remove contaminants and may release more of the targeted contaminants back into the drinking water. Replacing POU device filters as recommended by the manufacturer to ensure performance against the specified contaminant(s) and routinely testing the water in order to confirm that the devices are working properly are important considerations when deciding whether or not to install any POU devices.

This document includes a list of recommended Best Management Practices (BMPs) that schools and EECFs should implement when installing and maintaining POU devices. Schools are also encouraged to follow the U.S. Environmental Protection Agency's (EPA's) "3Ts - Training, Testing, and Telling - for Reducing Lead in Drinking Water in Schools." For a link to the EPA document see the Resource section at the end of this document.

Drinking water, plumbing and water treatment devices are complex issues. It may be necessary to consult with plumbing and building maintenance professionals to explain the information included in this document. For a list of local entities that may provide technical assistance, see the 'Questions and Assistance' section below.

#### Best Management Practices:

Please remember that immediately after receiving sampling results in exceedance of the lead or copper action level, the fixture should be removed from service while determining follow-up steps. For more information on lead and copper follow-up steps, see to the "*Follow-up Steps*" document at <http://www.mass.gov/guides/follow-up-steps-for-schools-and-ecf-with-lead-and-copper-sampling-results-above-the-action>.

- 1) **Use POU devices and filter replacements that are certified to NSF International /ANSI standards** for the removal of lead and copper. Current organizations certifying to these standards include NSF International, Water Quality Association (WQA), Underwriters Laboratory (UL), and the International Association of Plumbers and Mechanical Officials (IAPMO). Be prepared to research and follow manufacturer's specifications. For a list of NSF International /ANSI certified devices see the "Resources" section at the end of this document.
- 2) **Install POU devices with a built-in mechanical filter replacement indicator** (i.e., a red light warning). The indicator should be visible to maintenance staff. MassDEP recommends the use of POU devices that automatically **shut off the flow of water** when the filter is exhausted.
- 3) **Develop a written lead and copper sampling plan** for all fixtures used for drinking, cooking and in offices where nurses and other medical staff provide services. If a school or EECF intends to add POU devices to an already developed and implemented program, the school should update the program to include POU devices installation, operations and maintenance practices. Routine sampling should also incorporate the device manufacturer's specifications. For information on how to create a sampling plan see: <https://youtu.be/0sjah9qQsj8> and <https://www.mass.gov/media/1728036>.
  - In addition to lead and copper testing, to ensure that the installation or repair of a POU device is sanitary, *E.coli* bacteria testing is also recommended. If a school receives its water from a MassDEP registered public water supplier, the bacterial water quality across the entire public water system is demonstrated by the public water supplier during routine bacteria testing. *E.coli* testing, after installation and repair of a POU device, is intended solely to confirm that the installation or repair is sanitary. For more information on *E.coli* testing please see the document "*Tips on O&M for POU Devices*" (See the Resource section).
  - Additional information about sampling for, and reducing, lead in drinking water at schools see EPA's toolkit: "3Ts for Reducing Lead in Drinking Water in Schools." (See the Resource section).
- 4) **Develop an Operation and Maintenance Plan** for all POU devices. This plan should clarify operation and maintenance procedures for POU devices. In addition to information provided by the device manufacturer, please see the document "*Tips on O&M for POU Devices*".
- 5) **School and EECF personnel responsible for sampling and operation and maintenance of POU devices should be adequately trained** to collect samples, monitor operations, record or evaluate operational data or signals, inspect, clean and maintain equipment, respond to emergencies, etc. To ensure adequately trained personnel manage these drinking water treatment devices MassDEP recommends that the operation and maintenance of POU devices be overseen by someone with some training in drinking water system operations. For information on basic drinking water training please see the document "*Tips on O&M for POU Devices*".
- 6) **Licensed Plumber:** Installation of POU devices should be done by a licensed plumber in accordance with the Massachusetts Board of State Examiners of Plumbers and Gas Fitters - 248 CMR 1.00 -11.00. Contact your local plumbing inspector for more information. For information on plumbing regulations see <http://www.mass.gov/ocabr/licensee/dpl-boards/pl/regulations/rules-and-regs/248-cmr-300.html>
- 7) **Before installing a POU device**, MassDEP strongly recommends that the facility informs its local Public Water Supplier (PWS) of the planned installation, provide the PWS with a copy of the plan and inform the

PWS when the installation is complete. In accordance with Massachusetts Drinking Water Regulations 310 CMR 22.22 (3) (c), PWS are responsible for “inspecting and surveying all industrial, commercial and institutional premises served by the public water system to determine if cross connections exist and that all cross connections are properly protected by an appropriate device or eliminated”. A school is considered an institutional premise. If after the installation of the treatment units the PWS determines that there are significant changes in the plumbing that make it necessary to inspect or survey the facility to determine current adequate cross connection control, the PWS may conduct an inspection or survey to determine if additional protection is required. A cross connection is a permanent or temporary piping between your potable water line and an unapproved source of water or piece of equipment which can allow your drinking water to be contaminated if a backflow<sup>ii</sup> condition occurs. For more information on cross connection control contact your local Public Water Supplier and see page 6 of the EPA document “*Are you providing safe drinking water in your school*” available at <https://www3.epa.gov/region1/eco/drinkwater/pdfs/Drinking-Water-Booklet.pdf><sup>iii</sup>. Schools and EECFs are urged to maintain copies of any PWS cross connection control inspections. To locate your local PWS see link in ‘Questions and Assistance’ section below.

- 8) **After installing POU devices**, the school or EECF should conduct initial water quality sampling before serving water from these fixtures. Initial sampling should include testing of the devices for lead and copper to verify the effectiveness of the devices.
  - If initial testing indicates no lead above 0.015mg/L and no copper above 1.3 mg/L, the devices can be placed in use and a routine sampling plan implemented. MassDEP recommends routine sampling based on the device manufacturer’s specifications, if provided. If manufacturer specifications are not provided, then follow the sample collection guidance outlined in MassDEP “*Tips on O&M for POU Devices*”.
  - Additional testing should coincide with routine replacement or repairs of the POU device filter(s).
- 9) **Use a Massachusetts certified laboratory**, certified to test potable water for the parameters of concern, for all samples. For a list of Massachusetts certified laboratories see <http://public.dep.state.ma.us/Labcert/Labcert.aspx>. MassDEP strongly recommends that the school or EECF ask their laboratory to report all lead and copper results to MassDEP via MassDEP’s electronic reporting system, eDEP. For more information on eDEP see “*Water Quality Monitoring Reports: Frequently Asked Questions*” at <http://www.mass.gov/eea/agencies/massdep/service/online/water-quality-monitoring-reports-edep-faqs.html>.
- 10) **Take action if a sample from a POU device exceeds the Action Level for lead or copper**. Immediately shut off the fixture until the problem has been resolved and test results show that the water from the fixture is below the lead and copper Action Level. For results over an Action Level, MassDEP strongly recommends that the school or EECF follow the MassDEP recommended steps described at: <http://www.mass.gov/guides/follow-up-steps-for-schools-and-eeef-with-lead-and-copper-sampling-results-above-the-action>. These steps include notifying parents/guardians, staff and students of all sampling results **and** reporting all corrective actions to MassDEP using the MassDEP School and EECF **LCCA Program Management Tool**. Note that information reported to MassDEP via e-DEP and/or via the **LCCA Program Management Tool** will be made public at: <https://eeaonline.eea.state.ma.us/portal#!/search/leadandcopper>
- 11) **Share water quality information at least annually with all students, teachers and parents/guardians**. In addition to notifying parents/guardians, staff and students when a sample result is above an Action

Level, MassDEP also recommends that the school or EECF prepare and share information on their program annually or on some regular frequency. The information should include test results for all water quality monitoring during the year and corrective actions taken or planned.

- 12) **Dispose of all waste (water or materials) in accordance with state and local requirements.** For example, reverse osmosis water treatment produces waste water that must be disposed of in accordance with state and local requirements. Contact your city or town for information on how to dispose of replacement filters.
- 14) **All Schools and EECFs that have already installed POU devices at their facility should take the following actions:**
- Revise their lead and copper sampling and remediation programs to incorporate all items noted in this guide.
  - Notify their local PWS of installed POU devices as soon as possible (if they have not already done so).
  - Notify MassDEP Drinking Water program (if they have not already done so) by doing the following:
    - Updating the MassDEP School and EECF **LCCA Program Management Tool** or by completing the MassDEP “**LCCA Lead and Copper in Schools Maintenance Checklist**” located at <https://www.mass.gov/media/1530626>. If you need assistance with the **Maintenance Checklist** or **LCCA Program Management Tool** contact the Drinking Water Program at [program.director-dwp@state.ma.us](mailto:program.director-dwp@state.ma.us) .

#### **Available Resources:**

##### **“Tips on O&M for POU Devices”**

<https://www.mass.gov/media/1744306>

##### **MassDEP School and EECF LCCA Program Management Tool**

MassDEP created the **LCCA Program Management Tool** to help schools maintain their lead and copper drinking water information and have it ready for reporting Lead Contamination Control Act (LCCA) activity. MassDEP recommends using the Lead and Copper Reporting Tool to maintain lead and copper test results, corrective actions taken, and any related program documents. This **LCCA Program Management Tool** is located at <https://script.google.com/macros/s/AKfycbxP99K-Cd5B3ioE7nswN0peOEndcGrXwVk6zJcS5iHxzGO55B1k/exec> .

##### **MassDEP “LCCA Lead and Copper in Schools Maintenance Checklist”**

Schools and EECFs may also update the MassDEP “LCCA Lead and Copper in Schools Maintenance Checklist” located at <https://www.mass.gov/media/1530626>.

**MassDEP Website:** <http://www.mass.gov/lead-and-copper-in-schools-lcca>.

Contact: [program.director-dwp@state.ma.us](mailto:program.director-dwp@state.ma.us) or 617-292-5770.

**USEPA Website:** <https://www.epa.gov/dwreginfo/lead-drinking-water-schools-and-child-care-facilities>

3T's guidance:

[https://www.epa.gov/sites/production/files/201509/documents/toolkit\\_leadschools\\_guide\\_3ts\\_leadschools.pdf](https://www.epa.gov/sites/production/files/201509/documents/toolkit_leadschools_guide_3ts_leadschools.pdf)

#### **Massachusetts Department of Public Health:**

FAQs on lead and copper in drinking water at schools and EECFs

<http://www.mass.gov/eohhs/docs/dph/environmental/lead/lead-drinking-water-faq.pdf>

#### **National Sanitation Foundation (NSF) International**

NSF/ANSI 53 – Lead:

<http://www.nsf.org/consumer-resources/what-is-nsf-certification/faucets-plumbing-certification/lead-schools?panel=water-school-lead>

<http://info.nsf.org/Certified/DWTU/Listings.asp?ProductFunction=053%7CLead+Reduction&ProductType=&submit2=SEARCH>

NSF/ANSI 53 – Copper:

<http://info.nsf.org/Certified/DWTU/Listings.asp?ProductFunction=053%7CCopper+Reduction&ProductType=&submit2=SEARCH>

NSF/ANSI58:- Reverse Osmosis drinking water treatment systems

<http://www.nsf.org/certified-products-systems>

#### **For Questions and Assistance:**

**MassDEP Drinking Water Program:** For assistance with all lead and copper evaluation and reduction, please contact MassDEP Drinking Water Program: 617-292-5770, [program.director-dwp@state.ma.us](mailto:program.director-dwp@state.ma.us).

**Local entities** may be able to provide technical assistance to local schools and EECF, such as public water suppliers, plumbing inspectors and Board of Health/local health officials. For a list of public water suppliers see <https://www.mass.gov/media/831461> (xls) or <https://www.mass.gov/media/1314801> (pdf).

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<sup>i</sup> This BMP may be used with water fountains, water coolers, water chillers, and bottle-less water dispensers, sinks/faucets, and other fixtures used for drinking water or to prepare food or beverages or medical purposes.

This POU treatment device best management practice (BMP) is intended for all schools. However, if a school is a MassDEP registered PWS it is subject to Massachusetts Drinking Water Regulations 310 CMR 22.00 and the school must notify MassDEP prior to installation. MassDEP Drinking Water Program may be contacted at 617-292-5770, [program.director-dwp@state.ma.us](mailto:program.director-dwp@state.ma.us). For a list of registered PWSs see <https://www.mass.gov/media/831461> (xls) or <https://www.mass.gov/media/1314801> (pdf).

Point of Entry (POE) devices are not covered by this BMP. All schools that are themselves a MassDEP registered PWS, or serve water to 25 or more people, 60 or more days a year, that install a POE treatment device, are subject to Massachusetts Drinking Water Regulations 310 CMR 22.00 and must seek MassDEP's approval prior to installation of a POE treatment device.

<sup>ii</sup> Backflow into a public water system can pollute or contaminate the water in that system (i.e., backflow into a public water system can make the water in that system unusable or unsafe to drink), and each water supplier has a responsibility to provide water that is usable and safe to drink under all foreseeable circumstances. Furthermore, consumers generally have absolute faith that water delivered to them through a public water system is always safe to drink. For these reasons, each water supplier must take reasonable precautions to protect its public water system against backflow. Water suppliers usually do not have the authority or capability to repeatedly inspect every consumer's premises for cross-connections and backflow protection. Alternatively, each water supplier should ensure that a proper backflow preventer is installed and maintained at the water service connection to each system or premises that poses a significant hazard to the public water system. In accordance with 310 CMR (3) (c) public water systems are responsible for "inspecting and surveying all industrial, commercial and institutional premises served by the public water system to determine if cross connections exist and that all cross connections are properly protected by an appropriate device or eliminated". A school is considered an institutional premise. After installation of water treatment devices at schools a PWS may determine that the changes are significant and further inspection is warranted.

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<sup>iii</sup> Whenever a plumbing fixture is connected to the drinking water supply, a potential cross connection exists. Most of the time these cross connections are controlled by the installation of a backflow prevention device. These backflow prevention devices may be internal to equipment or are usually installed by a plumber when the building is constructed and many of them need to be tested and maintained annually.