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## Fact Sheet – Assistance Program for Lead in School Drinking Water Sampling for Lead and Copper

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**MassDEP Lead Action Level:** 0.015 milligrams per liter (mg/L) or parts per million (ppm) or 15 micrograms per liter (ug/L) or parts per billion (ppb)

**MassDEP Copper Action Level:** 1.3 milligrams per liter (mg/L)

### Steps to Create and Implement a Sampling Program

- Develop a written sampling plan that specifies the taps to be sampled (see Fact Sheet – Assistance Program for Lead in School Drinking Water – Plumbing Profile). The sampling plan should also specify the frequency of sampling.
- MassDEP recommends an initial sampling of all LCCA taps per facility to establish a baseline, and re-sampling all LCCA taps every three years, plus any new fixtures that are installed. *Facilities may spread out the cost of sampling over three years by sampling one third of all LCCA fixtures each year.*
- Assign a unique tap identification number or Location Code for each fixture by using a sequential numbering system within each school's Organization Code (some Organization Codes cover multiple buildings). Next assign the Location Type identifier for the tap (see Page 3 for the list of Location Type identifiers).
- Use the Location Name field on the Chain of Custody to describe the specific sample location, such as "Second Floor WC at Middle School."
- Prioritize sampling locations based on potential use and risk. Also, consider that actual use can change over time.
- Unless bathroom and classroom taps are clearly marked "For Hand Washing Only," these taps should be included in the sampling plan, as children may drink or brush their teeth at these taps.
- Wide-mouth, 250 milliliter (ml) bottles should be used to collect lead and copper samples.
- Do not collect samples in the morning after vacations, weekends, or holidays because the water will have remained stagnant for too long and will not be representative of the water typically used for drinking or food preparation.
- The protocols described below are for sampling fixtures under the Lead Contamination Control Act and do not replace sampling requirements under the Lead and Copper Rule (if applicable).

The protocol below is designed to identify lead and copper problems at taps and upstream plumbing within school facilities and in the water entering the facilities.

## **Faucets and Fountains**

### **A. How to Collect an Initial (First Draw) Sample**

1. Make sure you have clean hands.
2. Collect all water samples before the facility opens and before any water is used. Ideally, the water should sit in the pipes unused for at least 8 hours but not more than 18 hours before a sample is taken. Do not flush (known as pre-stagnation flushing) the tap prior to starting the minimum 8-hour stagnation time required for samples collected.
3. Do not take samples after weekends or extended periods of time without use.
4. Complete the MASSDEP DRINKING WATER Lead Contamination Control Act (LCCA) CHAIN OF CUSTODY form ("Chain of Custody form"). See Page 8 for a copy of the Chain of Custody form.
5. Only use containers (250 ml/wide mouth) supplied by your certified lab.
6. Containers should not be opened until you are ready to collect the sample.
7. Sampling containers that have been compromised in any way, e.g., by being touched on the threads or the interior surfaces, must not be used.
8. Keep food and drink away from the sample and its container.
9. If the tap has an aerator or screen at the end of the tap, do not remove it before taking samples.
10. Place the container under the faucet or drinking water fountain that is being tested and collect 250 ml of water. When turning on the water for a faucet, open the cold water tap as you would when filling a glass of water.
11. Fill the container without overflowing the bottle and cap it. Try to not allow any water to flow down the drain before you fill the bottle.
12. The container must be labeled with the same information from your Chain of Custody form including School Org Code, Location Code, First Draw or Flush Code, Location Name, and Collection Date.
13. Prepare and ship the container for shipping according to the certified lab's instructions.
14. Properly complete the Chain of Custody form by signing the Relinquished By with Date/Time and Received By with Date/Time spaces with the shipping company or deliver directly to person at the laboratory.
15. Samples must be delivered to the lab within 14 days of collection for proper testing.
16. After your first sample, let the cold water run down the drain for 30 seconds.

### **B. Collect a 30 second flushed sample**

1. After taking the first draw sample, repeat instructions above, except:
2. After flushing for 30 seconds, place a second 250 ml wide mouth bottle under the faucet and fill it up.

Please Note: If a school has an established and documented flushing program, an initial (first draw) sample is not necessary. An established and documented flushing program consists of a written operational plan and a daily log of all the fixtures and the flush time. If this is the case, the school should take flush samples only and should take them after they implement their normal flushing plan in the morning.

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## Labeling LCCA Taps

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Schools must include the School Organization Code, assigned by Massachusetts Department of Elementary and Secondary Education, in their sampling code and sample collection chain of custody form.

Code each outlet using a system that will allow you to identify each unique outlet by:

- Location Code
- Location Type
- Location Name

### Location Code

Within a School Organization Code, assigned by Massachusetts Department of Elementary and Secondary Education or the Massachusetts Department of Early Education and Care, each fixture to be sampled must be assigned a unique Location Code. These codes should be assigned sequentially (e.g. from 001 to XXX).

### Location Type

Each fixture to be sampled must be assigned a location type from the list below:

DW= drinking water bubbler

WC = water cooler (chiller unit)

CF = classroom faucet

KC = kitchen faucet, cold

KK = kitchen kettle [*designate cold or hot in Location Name*]

KI = kitchen ice maker

EC = home economics room, cold

BF = bathroom faucet [*designate cold or hot in Location Name*]

NS = nurse's office sink [*designate cold or hot in Location Name*]

SC = service connector

OT = other

### Location Name

Each fixture to be sampled must be assigned a location name.

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## Example of a coding system

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A drinking water bubbler (DW) on the 2nd floor of the Abby Kelley Foster Charter Public School is identified as the 10<sup>th</sup> sample location in the building, which happens to be the only building for this Organization Code.

First determine the Organization Code from the List of Schools located at:

<http://www.mass.gov/eea/docs/dep/water/drinking/alpha/i-thru-z/schoolsdcslst.xls>

The numbering scheme would look like this:

Org Code-Location Code- Location Type – Location Name

00450105-010-DW-Second Floor Bubbler near RM 210

If a school has multiple buildings with the same Org Code, it will be necessary to add specific building information to the label code. For example: 00450105-10-DW-Second Floor Bubbler near RM 210 - Abbott building

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## Add Code to map and fixture location

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Once the ID number has been assigned, label its location on the Map of LCCA Taps and label the actual physical fixture. Once each fixture has been labeled, school personnel should ensure that the label is not removed or damaged. A digital photograph of the location would help to maintain a record of the labeled fixture.

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## Follow up samples if initial samples are above Action Level (if needed)

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If the result of your initial first draw sample was higher than the Action Level, particulate lead and copper trapped in the aerator or screen of the outlet may be contributing to the elevated levels of lead and copper. By cleaning the aerator or screen and retesting the water following the initial first draw sampling procedures, you can identify whether or not the debris in the aerator or screen of the tap is a contributing source to elevated levels.

### How to Collect a Second First Draw Sample

After cleaning the aerator or screen, follow the procedures described listed above for fountains/faucets.

### How to Collect a Flush (Follow-Up) Sample

If after cleaning the aerator or screen for a fixture the sample results are still higher than the Action Level or if there is no aerator/screen, collect a 30 second flush sample to determine if the fixture itself is a contributing factor to elevated lead or copper concentrations, or if the source is elsewhere in the plumbing system.

- Follow instructions above for fountains/faucets.

## Appendix A: Ice Making Machines

### How to Collect Samples:

- Follow instructions for kitchen/faucets above.

### Initial Screening Sample (A)

- Fill a suitable container (250 mL [or larger with a line denoting 250 mL], wide-mouthed bottle or other container) provided by the laboratory at least three-quarters full of ice.
- Do not touch the ice with your hands
- Use a non-metal scoop or disposable plastic gloves (provided by the laboratory) to place the ice in the container

If the lead level in Sample A exceeds 0.015 mg/L or copper level in Sample A exceeds 1.3 mg/L, collect a follow-up sample to determine if the source of the lead or copper is the plumbing or the ice making machine itself.

### Follow-Up Sample (B)

- Disconnect the ice maker from the plumbing and look for a screen at the inlet. Remove the screen. If debris is present on the screen, forward a sample (Sample C) of the debris in a new/unused zip lock bag to the laboratory for analysis and clean out the remaining debris (on the screen or behind the screen in the pipe).
- Collect a sample (B) from the disconnected plumbing as close to the ice maker as possible. If a sample tap or valve is available the sample can be obtained from the sample tap. Collect the sample immediately after opening the tap or valve. Fill the sample container with 250 mL of water. After taking Sample B, flush the piping for thirty seconds and then fill a second sample container with 250 mL of water (Sample D - Instruct the lab to test Sample D only if Sample B is greater than 0.015 mg/L).
- If no tap is available, contact the ice maker manufacturer for recommendations that will minimize disruption of existing plumbing. Adding taps or valves could add new sources of lead to the plumbing, even if the new devices are "lead-free" and meet NSF Standard 61, section 8 standards.

Modified from EPA's ["3T's for Reducing Lead in Drinking Water in Schools: Revised Technical Guidance"](#)

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