

# **Worcester Public Schools Drinking Water Quality Program**

## **Overview and Status Report March 16, 2017**

### **Presentation Overview**

- . **What are the sources of lead and copper in drinking water?**
- . **Overview of water quality monitoring programs in schools:**
  - . Lead and Copper Rule (LCR)
  - . Lead Contamination and Control Act (LCCA)
- . **History of drinking water quality monitoring in Worcester – past and present:**
  - . Water Department
  - . Facilities Department
- . **Current initiative under MassDEP grant:**
  - . Program Goals
  - . Program Partners
  - . Scope of Program
  - . Tracking System
  - . Action Plan, Next Steps and Timeline
- . **What do the results mean?**
  - . Key points by MA DPH

## What are the sources of lead and copper in drinking water?

- Lead enters drinking water primarily by leaching from plumbing that contains lead, such as a lead service line that connects a building to the water main in the street.
  - Please note that all known lead service lines have been removed in Worcester
- Copper enters drinking water primarily by leaching from plumbing that contains copper.
- Lead and copper leaching is most likely to occur when the water is heated or is not moving, generally overnight or at other times when the water is not used for several hours.



## Comparison of Water Quality Monitoring Programs in Schools

Summary of Distinguishing Features of LCCA and LCR Requirements

Feature	Lead Contamination Control Act <b>Voluntary Guidance for Schools</b>	Lead and Copper Rule <b>Requirements for Public Water Suppliers</b>
Sampling Sites	Each cold water tap in a facility	Cold water taps in high risk buildings
“First Draw” Sample Size	250 mL	1000 mL
Stagnation Period	Morning, first-draw water sample” (e.g. sampling after an 8 to 18-hour stagnation)	“First-draw” sample (e.g. sampling after a 6 to 8-hour stagnation period)
Action Level	0.020 mg/L at each cold water tap	0.015 mg/L in 90% of taps
Action(s), if Lead Limit Exceeded	<ul style="list-style-type: none"> <li>• Additional samples recommended;</li> <li>• MassDEP requires reporting and implementation of remedial measures</li> </ul>	Mandatory corrective actions such as: <ul style="list-style-type: none"> <li>• public education,</li> <li>• lead service line replacement,</li> <li>• increased monitoring, and</li> <li>• corrosion control treatment</li> </ul>
Sampling Schedule	None specified	<ul style="list-style-type: none"> <li>• Initially, two 6-month monitoring periods</li> <li>• Reduced monitoring – June through September each year or once per 3 years</li> </ul>
Certified Lab Requirement	Yes	Yes
Public Notification Requirements	<ul style="list-style-type: none"> <li>• Make results available in school administrative offices</li> <li>• Notify parents, teachers, and employee organizations of the availability of results</li> </ul>	<ul style="list-style-type: none"> <li>• Must present data in annual Consumer Confidence Report.</li> <li>• Full notification required only if Action Level is exceeded.</li> </ul>

Modified from the AMERICAN WATER WORKS ASSOCIATION

## **Water Quality Monitoring in Worcester: *Lead and Copper Rule (LCR)***

### **Worcester Water Operations Division (WOD) - past and present:**

- **Conduct sampling of representative number of homes and schools under LCR**
- **Communicate results and recommendations for mitigation measures to WPS**
- **Implement Corrosion Control Program**
- **Replacement of all known lead service lines**

### **WPS Facilities Department**

- **Assisted with sampling**
- **Implemented mitigation measures**

## **Water Quality Monitoring in Worcester: *Lead Contamination and Control Act (LCCA)***

### **WPS Facilities Dept. – role and responsibilities:**

- **Development and coordination of the current LCCA program and program partners**
- **Complete MassDEP Drinking Water Checklists**
- **Coordinate access to buildings for MassDEP to sample**
- **Assist with mapping fixtures**
- **Verify and analyze data**
- **Develop and implement mitigation measures (e.g. replace fixtures)**
- **Develop and coordinate mitigation measures by tradesmen and custodians (e.g. flushing)**
- **Monitor compliance (e.g. signage and flushing)**

## LCCA Program Partnership with MassDEP



- **DEP funded the program**
- **Developed sampling plans**
- **Conducting sampling**
- **Maintains a web-based database of results**
- **Is available for some technical assistance addressing results**

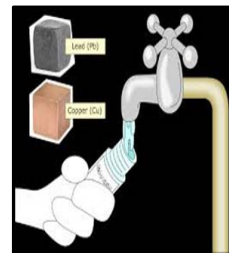
## WPS's Voluntary Participation in Program

### Scope of the MassDEP Program

- **179 of the 351 cities and towns initially participated across the Commonwealth (this number has increased since the beginning of the program)**

### Goal of WPS's voluntary participation:

- **To complement the data set generated by the Water Operations Division by sampling the majority of fixtures that could be used for drinking water, food preparation and medicine.**
- **Obtain free training, sampling and technical assistance.**



## Scope of Sampling Program

Conducted the following activities in 52 school buildings:

- Mapped all fixtures used for drinking water, food prep and medicine
  - Fixtures in bathrooms, slop sinks and science and art rooms were not sampled unless used for drinking water or food prep.
- Developed sampling plans for all buildings
- Conducted sampling of fixtures used for drinking water, food preparation and medicine

Building	Room	Fixture	Sampled	Notes
01	01	01		
02	02	02		
03	03	03		
04	04	04		
05	05	05		
06	06	06		
07	07	07		
08	08	08		
09	09	09		
10	10	10		
11	11	11		
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38	38	38		
39	39	39		
40	40	40		
41	41	41		
42	42	42		
43	43	43		
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45	45	45		
46	46	46		
47	47	47		
48	48	48		
49	49	49		
50	50	50		
51	51	51		
52	52	52		



## Scope of Sampling Program

- 52 school buildings sampled
- Types of fixtures sampled
  - Faucets
    - Classrooms
    - Staff lounge
    - Nurse's office
    - Any faucet used for drinking or food preparation
  - Drinking Fountains
    - In classrooms
    - In hallways
  - Kitchen
    - Steamer
    - Kettle
    - Ice makers
    - Faucets used for food prep



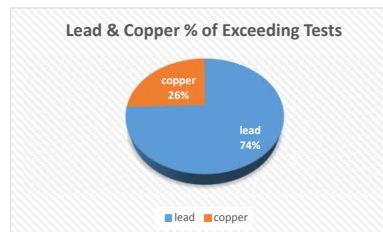
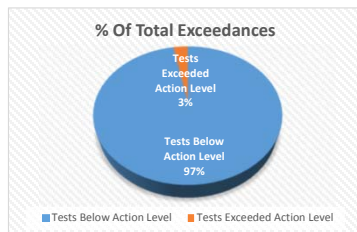
## Water Sampling and Testing Procedures

All fixtures evaluated had two separate samples taken, and from those samples, up to 4 tests were conducted:

- **Primary Sample**
  - The Primary sample consisted of turning on fixture and taking a sample
  - This sample was then tested at a MassDEP certified laboratory for both Lead and Copper
- **Flush Sample**
  - After the Primary sample was taken, the fixture was “flushed” for 30 seconds
  - Another sample was taken, and was then tested at a MassDEP certified laboratory for both Lead and Copper

## Initial Sampling Summary Results

- Total number of tests: 5096
- % of tests that had exceedances: 2.9%
- 103 total fixtures with exceedances were above the action level for lead or copper:
- Each fixture was tested up to 4 times. 149 test results had exceedances above action level:
  - 111 tests exceeded for lead
  - 38 tests exceeded for copper



## Schools with NO samples Exceeding Action Levels

<u>Head Start &amp; Alternative Programs</u>	<u>Elementary Schools</u>	<u>Secondary Schools</u>
Mill Swan Head Start	Burncoat Prep	Claremont Academy
Greendale Head Start	Canterbury Street	South High
Millbury Street Head Start	City View	Sullivan Middle
	Gates Lane	UPCS
	Grafton Street	
Harlow Street	Lake View	
	Lincoln Street	
	May Street	
	Midland Street	
	Rice Square	
	Roosevelt	
	Tatnuck Magnet	
	Union Hill	
	Vernon Hill	
	Woodland Academy	

## Schools with samples Exceeding Action Levels

and number of fixtures exceeding action levels (in parenthesis)

<u>Elementary Schools</u>	<u>Secondary Schools</u>
Belmont Street (8)	Burncoat High (1)
Chandler Elementary (3)	Burncoat Middle (2)
Chandler Magnet (9)	Doherty High (3)
Clark Street (4)	Forest Grove (1)
Columbus Park (5)	North High (1)
Elm Park (2)	Worcester East Middle (2)
Flagg Street (13)	Worcester Technical High (7)
McGrath (4)	
Goddard (3)	<u>Other School Programs</u>
Heard Street (1)	Alternative School (2)
Hiatt Magnet (1)	Fanning (3)
Nelson Place (6)	Creamer Center (1)
Norrback Ave (2)	New Citizens Center (2)
Quinsigamond (1)	
Thorndyke Road (6)	
Wawecus Road (5)	
West Tatnuck (3)	
Worcester Arts Magnet (5)	

## What Do Sampling Results Mean

### What is the risk to students and staff?

Insights from MassDEP and Massachusetts Department of Public Health:

- The water system at the school is not unlike water systems found in other buildings. Given the age of our buildings, the results are not unexpected. Older plumbing systems and fixtures, especially, can contain lead and copper pipes or solder that can enter tap water.
- DPH has explicitly stated that *“testing all children following the detection of elevated levels of lead in a school’s drinking water is not recommended. It is unlikely that lead in drinking water at schools or EEC facilities would cause staff or children to have elevated blood lead levels. The most important thing to do is to identify and remove suspected sources of lead exposure.”*
- When talking about the presence of copper in drinking water, DPH explicitly states that *“periodically drinking water that contains copper above the action level does not guarantee it will harm someone’s health”* and that *“medical screening is not generally recommended if copper is detected in drinking water at a school.”*

## Community Notification Process

Joshua Watkins, WPS Environmental Coordinator is coordinating :

### • Teachers

- Sending the notice with the attachments to principals through email.
  - The attachments to the letter are the DPH fact sheets on lead and copper.
- Instructing the principal to share the information with their staffs by email.

### • Parents

- Sending school principals a master copy of a letter specific to each school, instructing the principal to make copies and send the letter home with each student



## Mitigation Program Activities

- Analyzing and reconciling raw data – examples of activities:
  - resampling fixtures
  - on-site evaluation of fixture and interviewing custodian
  - evaluating plumbing plans and/or sampling plan and maps
- Investigation exceedances - examples:
  - Checking electrical grounding of plumbing
  - Identifying cross connections
- Developing interim action plans - examples:
  - Flushing fixtures
  - Cleaning debris from faucet screens,
  - Posting “Handwashing Only” signs
  - Taking fixtures offline
- Implementing long-term measures - examples:
  - Replacing fixtures
  - Taking off-line permanently
  - Use only cold water for cooking



## Mitigation Program

Example of an Action Plan Table inserted into WPS Notification Letter  
(Please note: only includes fixtures with exceedances)

“School” Sampling Results for Fixtures Lead and Copper Limits and Action Plan

Type of Fixture Sampled	Sample Location	Lead result in mg/L*	Lead result after 30 second Flush in mg/L*	Copper result in mg/L*	Copper result after 30 second flush in mg/L*	Action Plan
Kitchen kettle	Kitchen	0.02	0.028	N/A	N/A	The fixture is not currently being used due to low flow. This could account for the higher levels of lead. Thus, we will try to increase the flow rate and then resample.
Bubbler	Hall by room 211	0.032	0.0048	N/A	N/A	30 second flush first thing in the morning

## Next Steps

- Continue to flush daily and maintain flushing logs
- Ensure occupant access to adequate drinking water
- Determine where sample results warrant additional:
  - Sampling
  - Assessment of the fixture and/or plumbing system
  - Fixture replacement, included in FY18 budget
- Continued updates to the community

## Timeline

### Fall 2016 - completed:

- Schools mapped and sampling plans created
- Samples collected at each school
- MassDEP Drinking Water Checklists finalized

### December 2016 - January/February/March 2017:

- Raw data results received, analyzed and verified.
- Notification letters sent home.
- Short-term mitigation measures implemented.
- Resampling for data verification and follow-up to repairs.

### Next Steps:

- Second letter goes home to families and staff providing an update on action items where additional actions have been taken or data collected.
- Long-term measures explored and implemented.