

Lead In Drinking Water in Schools and Early Education and Care Facilities



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**Drinking Water Program
MassDEP**



Agenda

- Background on Lead and Health
- Lead in Drinking Water in Schools and Early Education and Care Facilities (EECFs)
- Monitoring Requirements for Public Water Suppliers and Schools/EECFs
- Available Assistance Programs
- Recommendations for Schools/EECFs
- Flushing
- Program Promotion

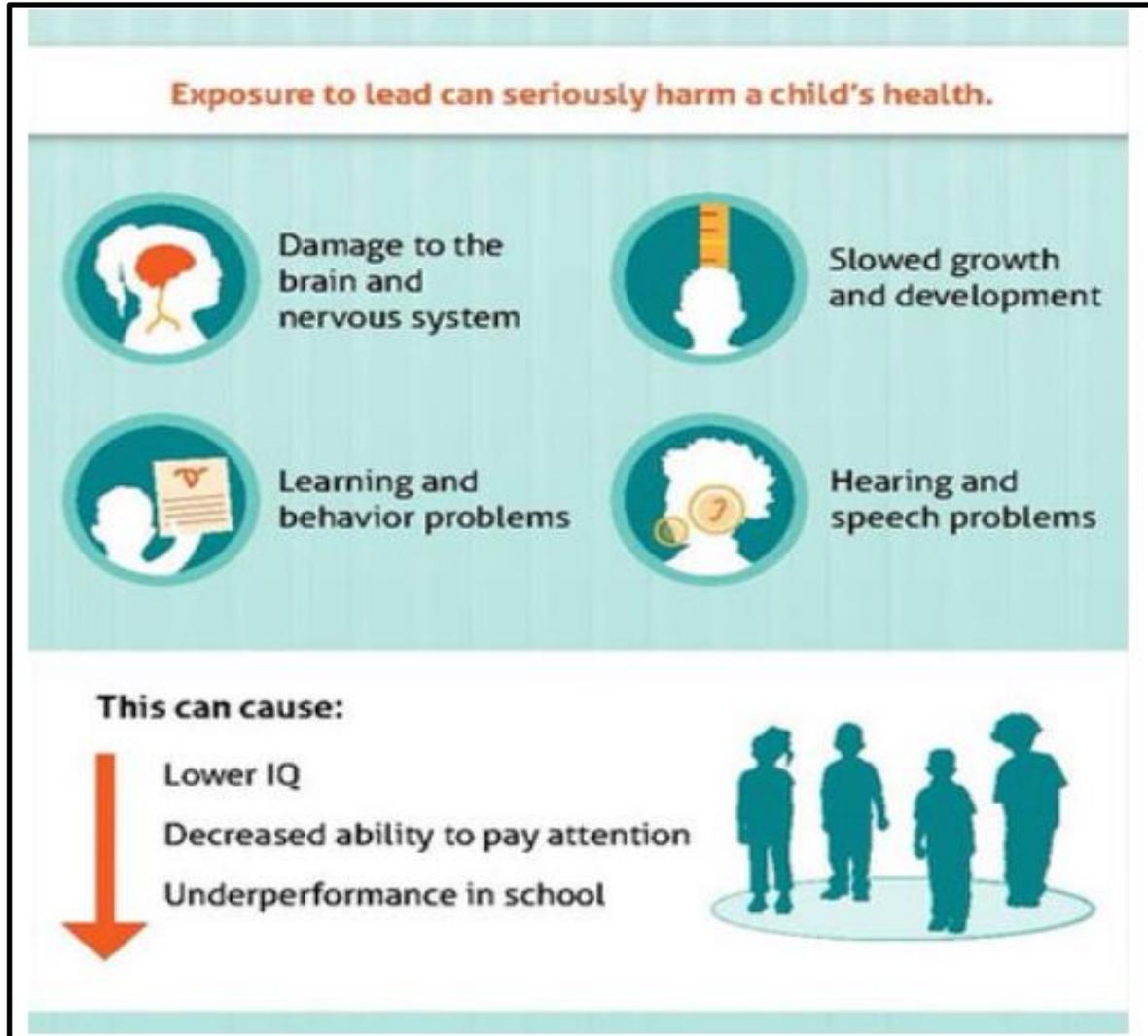


Lead: The Basics

- Lead is a dangerous and toxic metal
- Although found in nature, most lead exposure comes from human activities/use.
- Young children, infants, and pregnant women are most vulnerable to the effects of lead



How Lead Affects Children

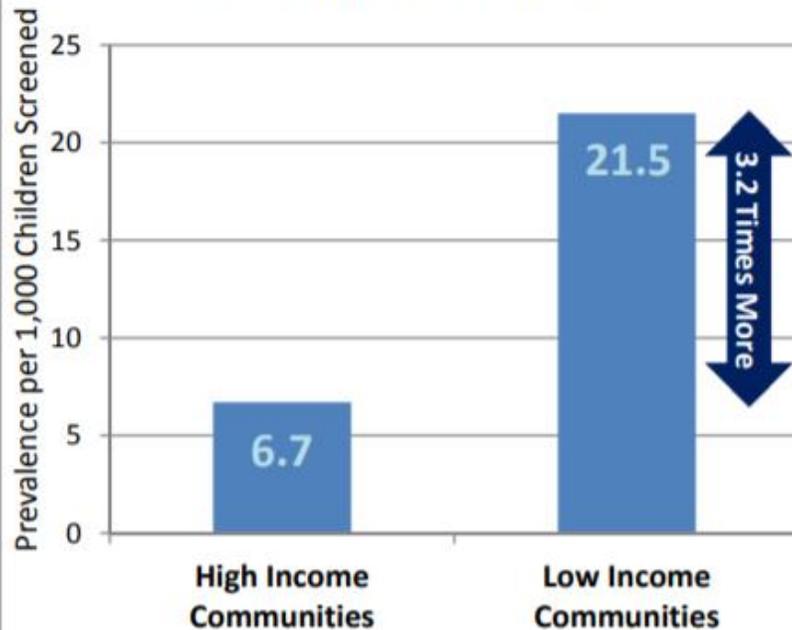


- There is no safe lead level for children
- Even low levels of lead can negatively affect a child's development
- There are often no signs or symptoms of lead exposure

Unequal Impact in Massachusetts

Health Inequity

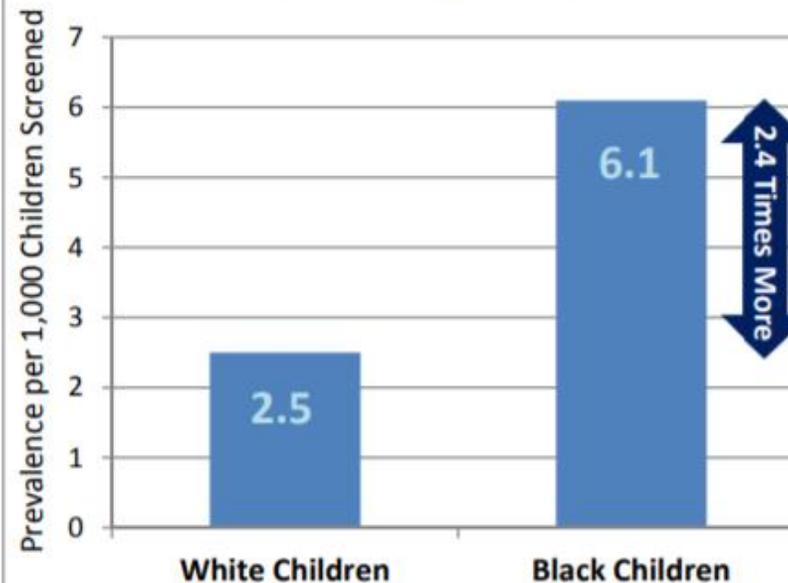
Figure 3. Prevalence Rates of Children with Elevated Blood Lead Levels¹ by Community Income² (2017)



¹Includes confirmed blood lead tests (one venous or two capillary blood samples ≥ 5 $\mu\text{g}/\text{dL}$ within 84 days) and a proportion of unconfirmed blood lead tests (single capillary tests) for children 9-47 months of age.

²Lowest quartile of families living at or below 200% of the Federal Poverty threshold compared to the highest quartile.

Figure 4. Prevalence Rates of Children with Lead Poisoning¹ by Mother's Race/Ethnicity (2015)

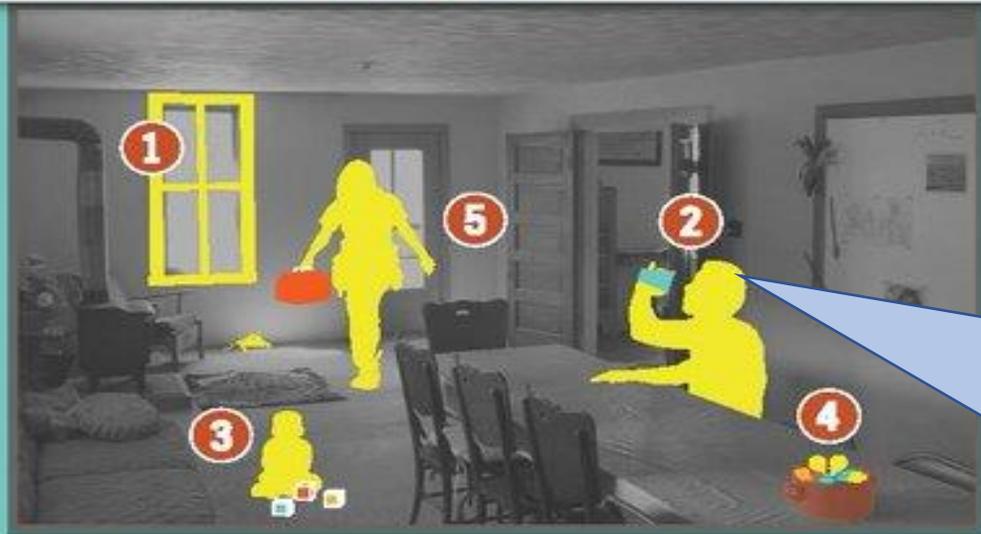


¹Blood lead levels ≥ 10 $\mu\text{g}/\text{dL}$ are considered poisoned. These data include confirmed blood lead tests (one venous or two capillary blood tests ≥ 5 $\mu\text{g}/\text{dL}$ within 84 days) for children 9-47 months of age.

*Excludes 5 cases with unknown race or ethnicity. Prevalence among "unknown" was 3.9 cases per 1,000.

- Children from low income communities are more than 3X times as likely to have elevated blood lead levels than children living in high income communities
- Black children are nearly 2.5 times more likely to have lead poisoning than white children

Lead can be found throughout a child's environment.



1 Homes built before 1978 (when lead-based paints were banned) probably contain lead-based paint.



When the paint peels and cracks, it makes lead dust. Children can be poisoned when they swallow or breathe in lead dust.



2 Certain water pipes may contain lead.



3 Lead can be found in some products such as toys and toy jewelry.



4 Lead is sometimes in candies imported from other countries or traditional home remedies.



5 Certain jobs and hobbies involve working with lead-based products, like stain glass work, and may cause parents to bring lead into the home.

Sources of Lead Exposure

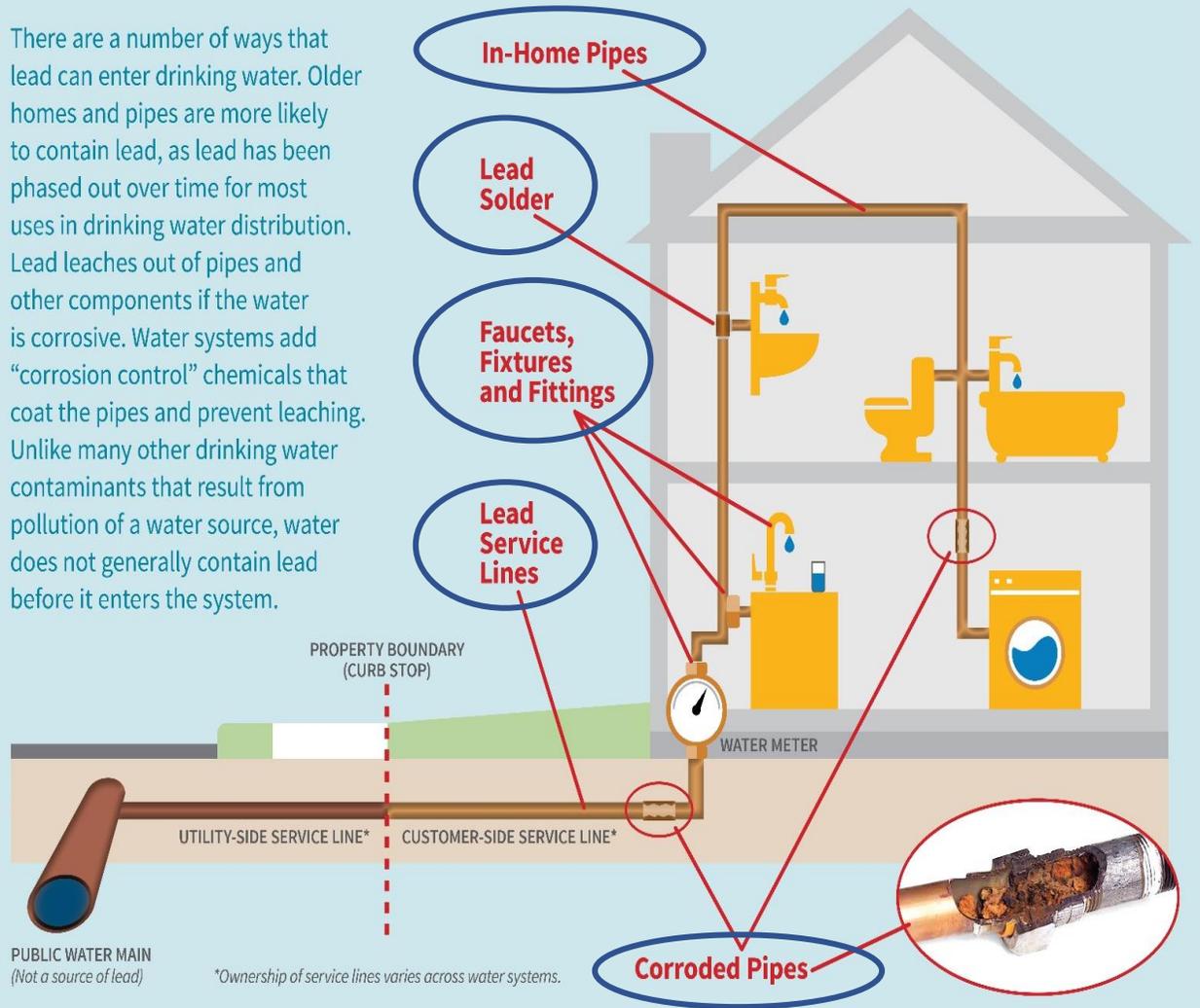
EPA estimates that drinking water can account for 20%+ of total exposure.

Infants on mixed formula can receive 40-60% of their exposure to lead from drinking water.

How Lead Gets Into Drinking Water



There are a number of ways that lead can enter drinking water. Older homes and pipes are more likely to contain lead, as lead has been phased out over time for most uses in drinking water distribution. Lead leaches out of pipes and other components if the water is corrosive. Water systems add “corrosion control” chemicals that coat the pipes and prevent leaching. Unlike many other drinking water contaminants that result from pollution of a water source, water does not generally contain lead before it enters the system.



*Ownership of service lines varies across water systems.

For Drinking Water- Plumbing Materials Containing Lead are Main Source of Lead

- Lead rarely occurs in drinking water as it leaves the treatment plant/well.
- Lead leaches out of pipes, fixtures, fittings, etc. within the distribution system- typically from the service line onward into the structure.
- Structures built before 1986 are more likely to have lead plumbing.
- Newer buildings can also have issues: “lead-free” plumbing.

Other Factors Contributing to Lead in Drinking Water

- Corrosivity of water
 - Determined by water chemistry parameters such as pH and hardness
 - More corrosive = more leaching of lead and other metals
- Scales or coatings inside plumbing materials
 - Lack of scaling/coatings within pipes allows more contact between water and lead
- Water stagnation
 - Water sitting in pipes allows more time for lead to leach out of pipes and into water
- Temperature of water
 - Warm/hot water dissolves lead faster from plumbing materials
 - Boiling water does not remove lead

Evolving Lead in Drinking Water Regulations and Guidance

- Long history dating back decades
- Original standard set in 1970s at 50 parts per billion (ppb) measured as water left water plant into the distribution system
- Lead and Copper Rule (LCR) established by EPA in 1991
 - Focuses on PWS water treatment and monitoring to minimize lead levels at taps
 - While goal is NO lead in water, established an Action Level for lead of 15 ppb
 - Not a “standard” or a “safe level of lead”
 - If PWS testing finds >10% of end user samples >15 ppb, then additional actions required
 - No requirements for testing at schools or EECFs unless they are a public water system (own source of water)

Evolving School Regulations and Guidance

- MassDEP current regulations require PWS to collect two samples at two schools as part of their monitoring schedule under LCR
- MassDEP has a voluntary testing and assistance program created after passage of the Lead Contamination Control Act of 1988 (LCCA) that used 15 ppb as a guideline
- In 2018, EPA released updated guidance for lead in schools/EECFs drinking water called 3T's: Training, Testing, and Taking Action
 - Stated that there is “no safe level of lead” in water in schools/EECFs
 - Recommended remediating to the lowest possible level of lead in water
 - MassDEP began recommending getting water to 1 ppb or lower (non detect)

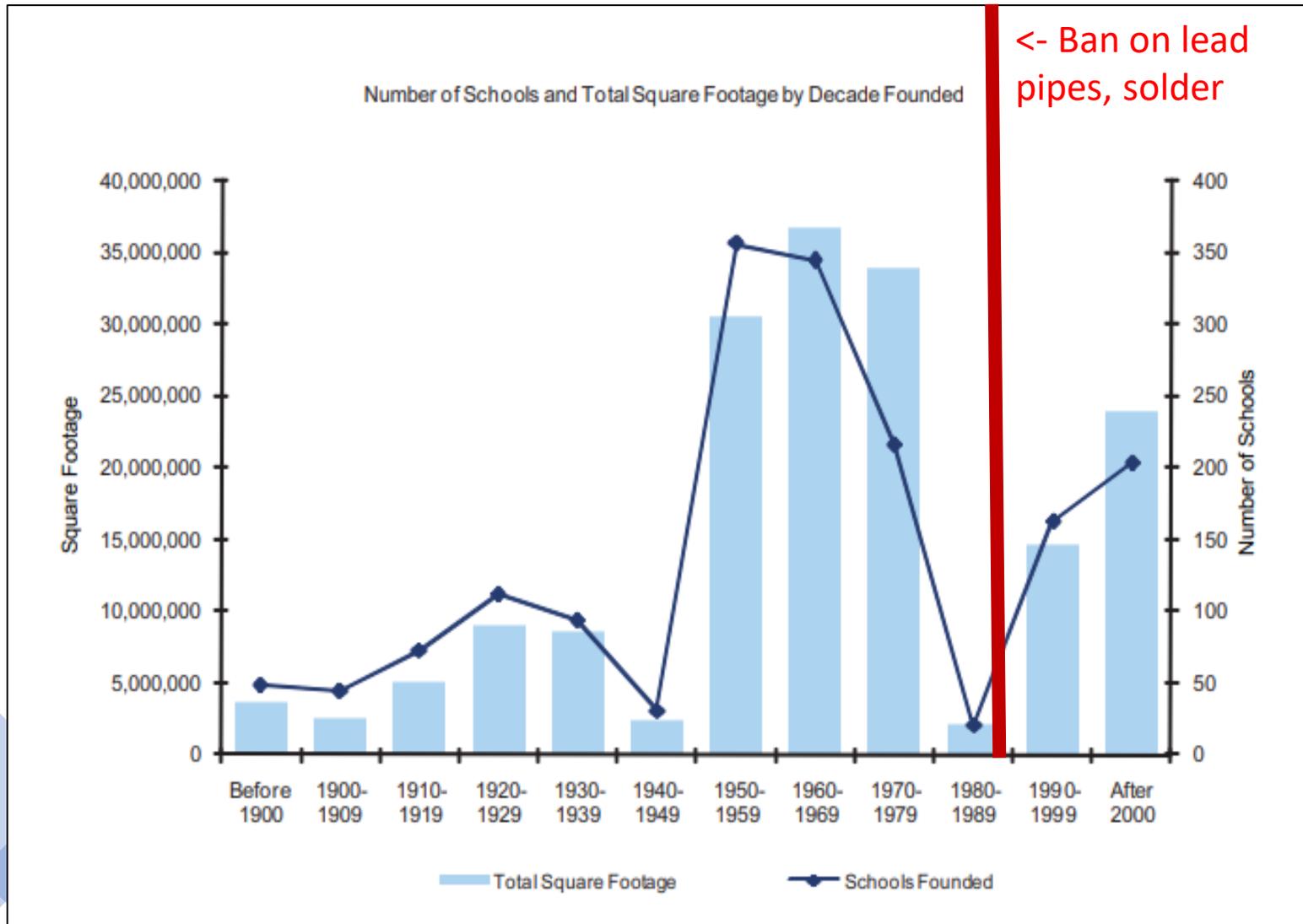
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Latest: New Lead and Copper Rule Revisions Released in December 2020

- First major update to LCR in decades
- Includes requirements for testing at schools and early education and care facilities
 - Elementary schools, group daycare, and family daycare locations
 - Secondary schools to be tested upon request
 - Requires education and outreach
- Timeline
 - Beginning in January 2024, PWS will have to test 20% of schools and daycare facilities each year for 5 years
- Biden Administration put revisions on hold for further review
 - Additional changes may be made
 - Timeline may be impacted

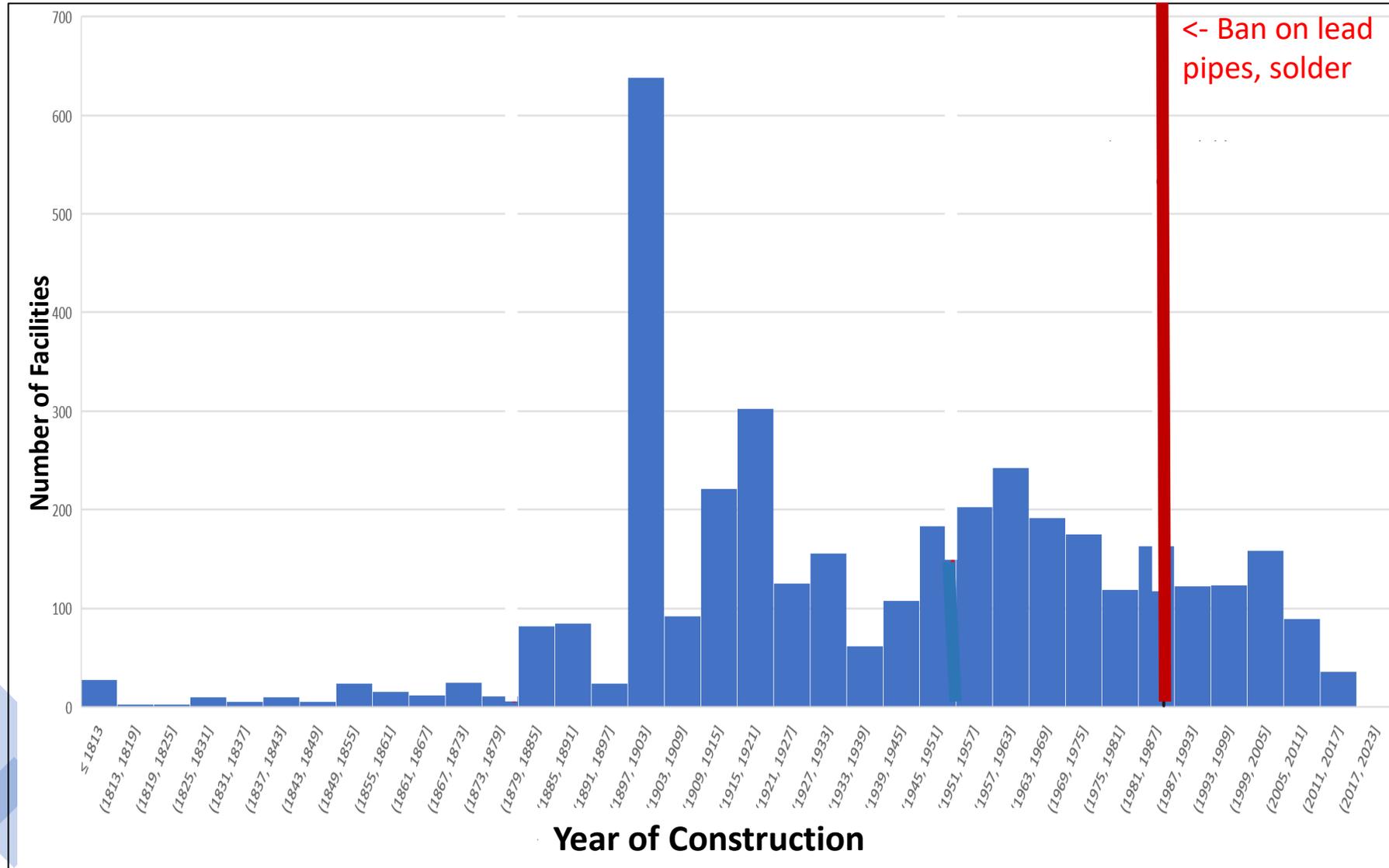
Why Focus on Schools?



- Children are the most sensitive to impacts from lead and spend significant time there.
- School buildings are old:
 - Majority of 1,900 public schools were built prior to 1990.
 - Structures built before 1986 are more likely to have lead plumbing.
 - About 100 schools are over 100 years old.

Source: Massachusetts School Building Authority Needs Survey 2010

Why Focus on Early Education and Care Facilities?

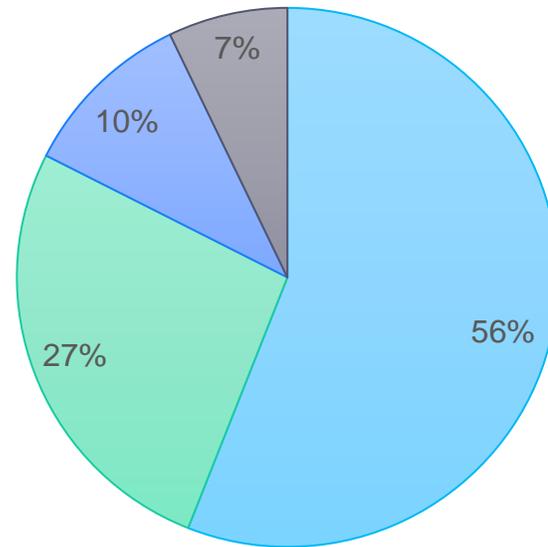


- Many of these facilities serve only younger children.
- Most of the buildings are old.

What We Have Found

2016-2018: MassDEP Assistance Program tested ~1,000 schools & ~150 EECFs

Lead Sample Exceedances per Number of Samples in Schools

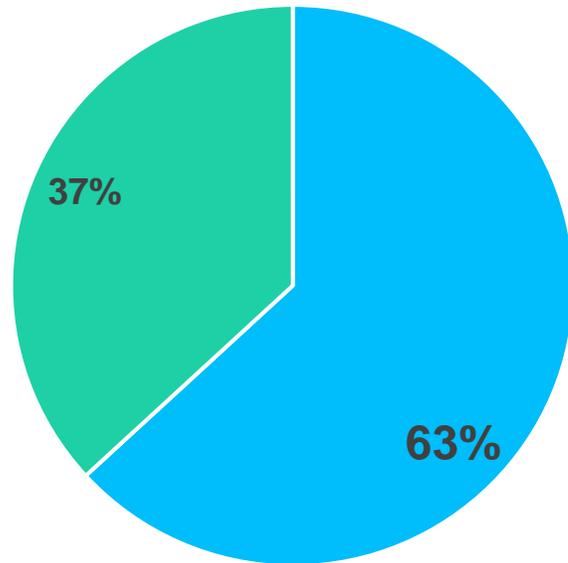


- 0 to 1 ppb
- > 1 ppb to 5 ppb
- > 5 ppb to 15 ppb
- > 15 ppb

What We Have Found

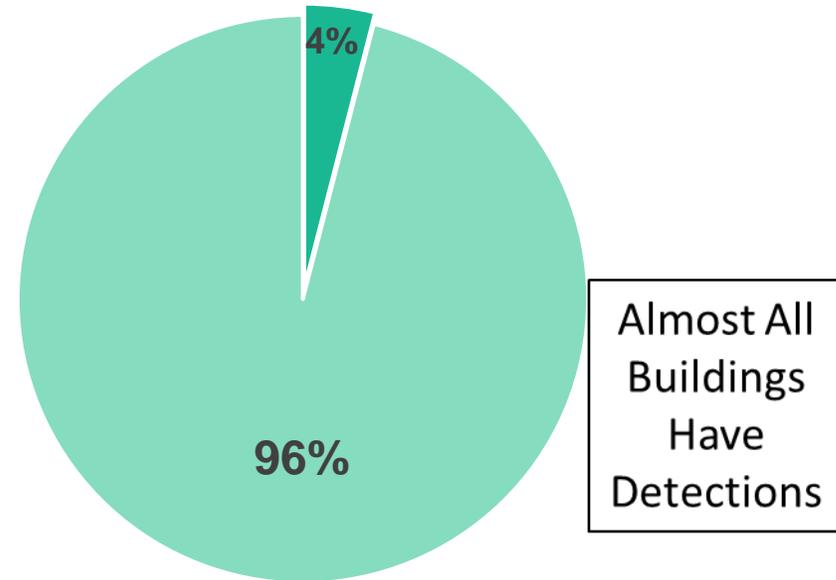
2016-2018: MassDEP Assistance Program tested ~1,000 schools & ~150 EECFs

Lead Detections per Building > 15 ppb



■ Pb > 15 ppb ■ Pb ≤ 15 ppb

Lead Detections per Building > 1 ppb



■ Pb = < 1 ppb ■ Pb > 1 ppb

Lead In School/EECF Drinking Water Assistance Programs

Expanded Assistance Program

- NEW MassDEP program for public schools and public/private childcare facilities that have not tested.
- Offers free lead sampling and technical assistance.
- Builds off original Assistance Program 2016-2019.
- Partners: UMass-Amherst, DPH, MWRA, DEEC, and DESE.

LCCA Assistance Program

- MassDEP program for assisting schools/EECFs with ongoing lead monitoring.
- Offers technical assistance for sampling, interpreting, and responding to results.

Massachusetts Water Resources Authority

- Largest PWS in Massachusetts.
- Offers free lead in water testing to all schools and childcare facilities within its service area.

School Water Improvement Grant (SWIG) Program

- NEW MA Clean Water Trust program.
- Offers funding for free water bottle filling stations for public schools/EECFs who participated in Assistance Programs or comparable sampling.
- First grant round in Spring 2020: ~\$1 million. Next round TBD.



Expanded Assistance Program

- **FREE** testing and technical assistance for public schools and all childcare facilities (group and family, public and private)
- Private online management tool and public display of results and remediation actions
- MWRA handles testing for facilities within their service area

LCCA Program Management Tool
MassDEP LCCA Assistance Program

Facilities

Add School or EEC Facility

Arlington Middle School (class)
DOE ID #: 01490017

Alexander B Bruce (School)
DOE ID #: 01490015

Francis M Leahy (School)
DOE ID #: 01490040

Add New Sample

Arlington Middle School

DELETE FACILITY

Town: LAWRENCE

Notifications

Listed below are the location's description

Commonwealth Of Massachusetts [US] | eeaonline.eea.state.ma.us/portal#/search/leadandcopper/results?FacilityType=School%20(SCH)&Town=LYNN&SchoolName=Sewell-An...

Lead and Copper Drinking Water Results in Schools/Childcare

Search Criteria Facility Type: School(SCH) City/Town: LYNN School/EEC Name: Sewell-Anderson Analyte Name: LEAD

1 - 25 of 45 items

ID	SCHOOL/EEC NA...	CITY/TO...	LOC...	LOCATION DESCRI...	LOCATION TYPE	COLLECTION...	ANALYTE N...	RESULT(MG/...	REMEDIACTION ACT...
185	SEWELL-ANDERSON	LYNN	001P	HALL BUBBLER BY...	DW-DRINKING WA...	02/04/2017	LEAD	0.0065	NO REMEDIATION ...
185	SEWELL-ANDERSON	LYNN	001F	HALL BUBBLER BY...	DW-DRINKING WA...	02/04/2017	LEAD	0.0023	NO REMEDIATION ...
185	SEWELL-ANDERSON	LYNN	002P	FACULTY LOUNGE ...	OT-OTHER LOCATI...	02/04/2017	LEAD	0.0126	2.5 MIN FLUSH RES...
185	SEWELL-ANDERSON	LYNN	002F	FACULTY LOUNGE ...	OT-OTHER LOCATI...	02/04/2017	LEAD	0.0161	NO REMEDIATION ...
185	SEWELL-ANDERSON	LYNN	003P	SINK IN ROOM OFF...	OT-OTHER LOCATI...	02/04/2017	LEAD	0.0252	NO REMEDIATION ...
185	SEWELL-ANDERSON	LYNN	003F	SINK IN ROOM OFF...	OT-OTHER LOCATI...	02/04/2017	LEAD	0.0016	NO REMEDIATION ...
185	SEWELL-ANDERSON	LYNN	004P	ROOM 4 FAUCET	CF-CLASSROOM F...	02/04/2017	LEAD	0.0109	NO REMEDIATION ...
185	SEWELL-ANDERSON	LYNN	004F	ROOM 4 FAUCET	CF-CLASSROOM F...	02/04/2017	LEAD	0.0149	NO REMEDIATION ...
185	SEWELL-ANDERSON	LYNN	006P	BUBBLER STAIRW...	WC-WATER COOLE...	02/04/2017	LEAD	0	NO REMEDIATION ...
185	SEWELL-ANDERSON	LYNN	006F	BUBBLER STAIRW...	WC-WATER COOLE...	02/04/2017	LEAD	0	NO REMEDIATION ...
185	SEWELL-ANDERSON	LYNN	007P	ROOM 104 SINK	CF-CLASSROOM F...	02/04/2017	LEAD	0.0057	NO REMEDIATION ...
185	SEWELL-ANDERSON	LYNN	007F	ROOM 104 SINK	CF-CLASSROOM F...	02/04/2017	LEAD	0	NO REMEDIATION ...

1 - 25 of 45 items

Expanded Assistance Program- Simple Online Application

1

1. PRIMARY POINT OF CONTACT FOR ASSISTANCE PROGRAM

This individual will be contacted by a technical assistance provider from the University of Massachusetts.

* indicates a required field

First Name *

Job Title *

Mailing Address Line 1 *

Mailing Address Line 2

2

2. FACILITY INFORMATION

Select your facility type and the town in which it is located. The Facility Name dropdown will populate based on what you select for Facility Type and Town. Please provide the facility information for each facility that will be participating in the Program.

Facility Type **Town** **Facility Name**

If you cannot find your facility using the dropdown menus above, you can enter the facility information manually.

FACILITY TYPE	FACILITY NAME

3

3. CERTIFICATION

The application must be signed by one of the following officials:

- School Superintendent or Principal,
- School Committee Representative,
- Child Care Facility Manager or Representative,
- Mayor,
- Town Administrator or other official authorized by the municipality or child care facility to make the required commitments to participate in this program.

* Required Field

I certify that I am authorized to submit this application and that appropriate employee identified in Section 1 will be designated to work with a technical assistance provider to complete Program activities. *

First Name * **Last Name *** **Job Title ***

4. SUBMISSION

Submit RFI Response Form

Focus on Education and Training

Informational Guide for Parents



- Held educational webinars
- Teamed with DPH and DEEC to distribute information on building flushing and water testing

Informational Magnet



School Water Improvement Grant (SWIG) Program

- MA Clean Water Trust program offers \$3k grants to public schools for the purchase and installation of filtered water bottle filling stations
- Stations replace drinking water locations in schools that have found levels of lead above 1 ppb



School Water Improvement Grant (SWIG) Program

- \$5 million in initial funds, with ~\$1 million allocated in Spring 2020 pilot round
 - 128 schools in 37 school districts received funding to install over 300 stations
- This past October, the Trust was awarded a \$3 million EPA grant to expand program to include private elementary schools and large childcare facilities in disadvantaged communities
- Next funding round expected in Spring 2021



MASSACHUSETTS
CLEAN WATER TRUST

Reducing Lead and Copper in School and Child Care Facility Drinking Water Before Re-Opening



When facilities are closed or partially closed, water sitting stagnant in pipes and fixtures can allow lead and copper to leach into it. Before re-opening any facility, it is important to follow these steps to bring fresh water into the building and reduce any levels of copper and lead in drinking water.

<https://www.mass.gov/doc/reducing-lead-and-copper-in-school-and-child-care-facility-drinking-water-before-re-opening>

Building Flushing

MassDEP recommends flushing ALL drinking water pipes and fixtures before re-opening.

FLUSHING INSTRUCTIONS

1. Locate the faucet farthest away from the service line on each wing and floor of the building, open the faucets wide, and let the cold water run for 10 minutes. This time frame is considered adequate for most buildings. For best results, calculate the volume of the plumbing and the flow rate at the tap and adjust the flushing time accordingly.
2. Run all drinking water fountains: those without refrigeration units for 30-60 seconds or until cold and those with refrigeration units for 15 minutes.
3. Open all kitchen faucets (and other faucets where water will be used for drinking and/or cooking) and let the water run for 30-60 seconds or until cold.

Remember that each drinking water fixture should be flushed individually; flushing a toilet will not flush your water fountains. All flushing should be recorded in a log that is kept in the office, or by the person in charge of it.

For more information visit:

www.mass.gov/doc/massdep-building-flushing-information/download

Use of Classroom Faucets and Water Fountains

It is likely that children who attend in-person school will spend more time in their classrooms due to concerns about COVID-19. This may increase the use of classroom faucets and water fountains for drinking. These can also be sources of lead and copper. Prior to use, MassDEP recommends the following:

1. Determine if the fixtures have been tested for lead and copper. Results may be found at: <https://eeaonline.eea.state.ma.us/portal#!/search/leadandcopper>
2. If no testing was done OR the testing results show levels of lead over 1 part per billion (ppb) and the fixture hasn't been remediated or isn't part of a flushing program, MassDEP recommends placing a "For Hand Washing Only" sign at the fixture and not using the water for drinking.
4. Whether testing was done or not, all faucets and fountains should be run for 30-60 seconds before their first use each day.
5. Between each use or at the end of each day, follow recommended cleaning requirements from health and school officials.

Building Flushing/Stagnant Water Information



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Kathleen A. Theoharides
Secretary

Martin Suuberg
Commissioner

MassDEP Building Flushing Information

This information may be useful for Public Water Systems and large and small facilities or homes on a public water system after buildings have been shut down or used less frequently

General comments:

As buildings have been shut down or used less frequently, water quality in the buildings may become degraded due to stagnation. **It is always a good practice to flush all water supply lines in a facility after a prolonged closure to ensure that fresh water is in the system.** This guidance provides a general roadmap for how to flush stale stagnant water from homes and other buildings and get the plumbing system water quality back to pre-stagnation conditions and ensure that your water system is safe to use after a prolonged shutdown. *Please note:*



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August 11, 2020

Always use fresh drinking water

During the COVID-19 pandemic some buildings and facilities have little or no water running through the pipes and fixtures for an extended period of time. These stagnant water conditions can result in discolored water, lower chlorine levels, higher concentrations of lead and copper and even the proliferation of legionella, under certain building conditions. Fresh water should be drawn into the building water systems and stagnant water flushed out before the buildings are reopened.

EPA and MassDEP recommend that building owners and managers take proactive steps to protect public health by minimizing water stagnation during closures and taking action to address building water quality prior to reopening.

<https://www.mass.gov/doc/massdep-building-flushing-information/download>

<https://www.mass.gov/doc/addressing-stagnant-water-in-buildings/download>

Recommendations for BOHs

- Start to become familiar with upcoming changes to the Lead and Copper Rule as they relate to schools and childcare facilities
- Go online and learn if schools and childcare facilities in your community have tested. Approximately 50% of public schools and nearly 100% of childcare facilities haven't participated in the free testing program.
- If they haven't tested, share information on our assistance programs with them or put us in contact with them
- Let us know of other opportunities for us to conduct outreach your community



Recommendations for BOHs

- Review and share our information on building flushing and re-openings
- There is no safe level of lead in drinking water. Please help us limit exposure to children in your community!



Online Resources

- Primary MassDEP Assistance Program website:

www.mass.gov/assistance-program-for-lead-in-school-drinking-water

- School/EECF test results and remediation action database:

<https://eeaonline.eea.state.ma.us/portal#!/search/leadandcopper>

- Clean Water Trust SWIG Program:

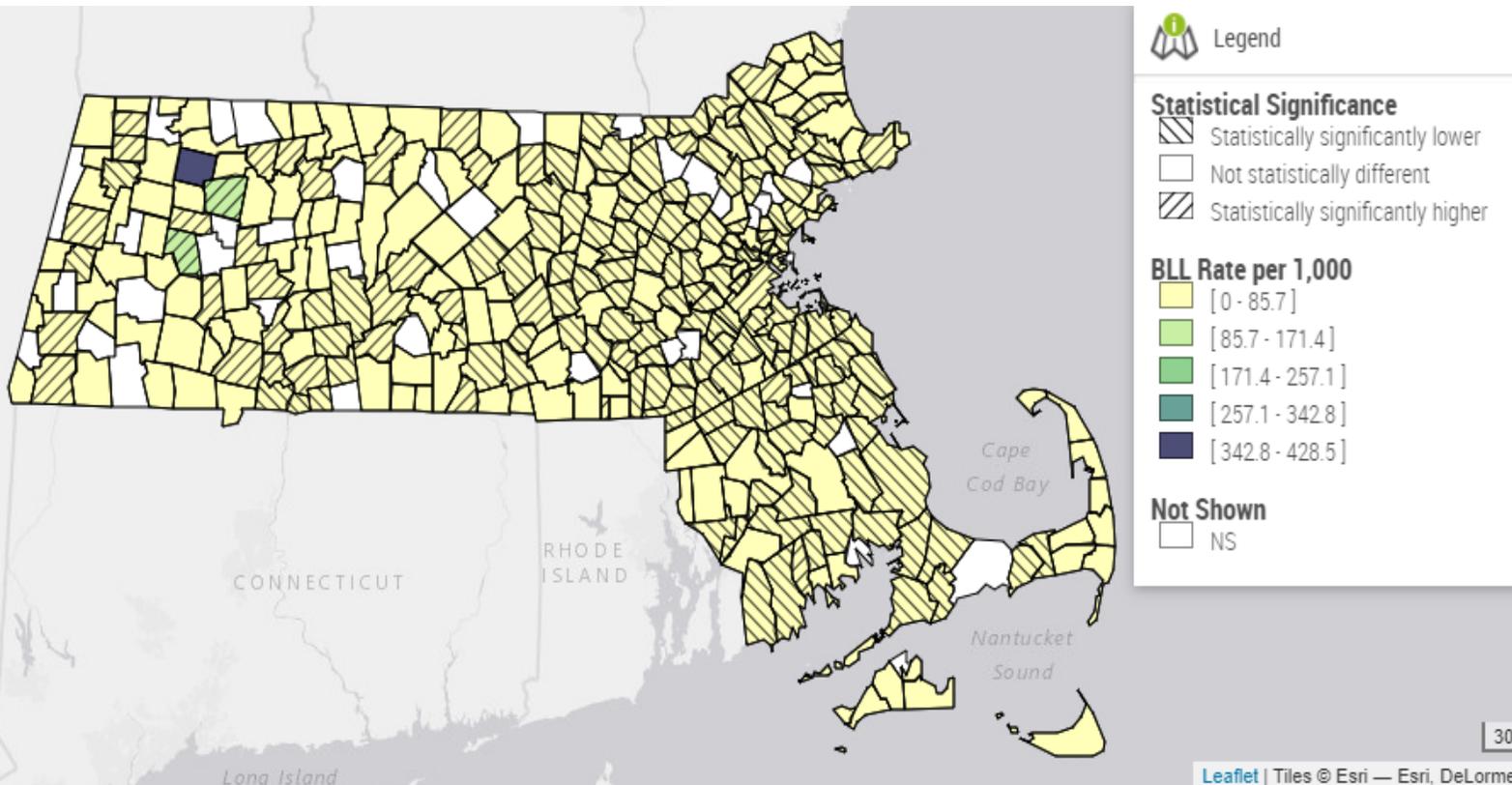
www.mass.gov/school-water-improvement-grants

- DPH's Environmental and Public Health Tracking (EPHT) portal

<https://matracking.ehs.state.ma.us/>

DPH's Environmental and Public Health Tracking (EPHT) portal

Average Annual Prevalence of Males and Females with Confirmed Elevated Blood Lead Levels $\geq 5 \mu\text{g}/\text{dL}$ in 2013 - 2017 that were between 9 - <48 Months of age



- Explore trends in environmental health data, including lead poisoning and screening
- Find more information at Massachusetts Environmental and Public Health Tracking Website:

<https://bit.ly/3rMmzd0>

Questions?

Contact info:

Michael Celona

Michael.celona@mass.gov

Jessica Sibirski

Jessica.sibirski@mass.gov

