Lead in school drinking water: Opportunities for improving public health in Iowa's schools

David Cwiertny
Director, Center for Health Effects of Environmental Contamination (CHEEC)

CHEEC: Who we are

Established through the 1987 Iowa Groundwater Protection Act, CHEEC is a multidisciplinary environmental health research center that supports and conducts research to identify, measure and study adverse health outcomes related to exposure to environmental toxins.

CHEEC: What we do

- Data Visualization & Dissemination
- Student Training & Professional Development
- Community-engaged Research Projects

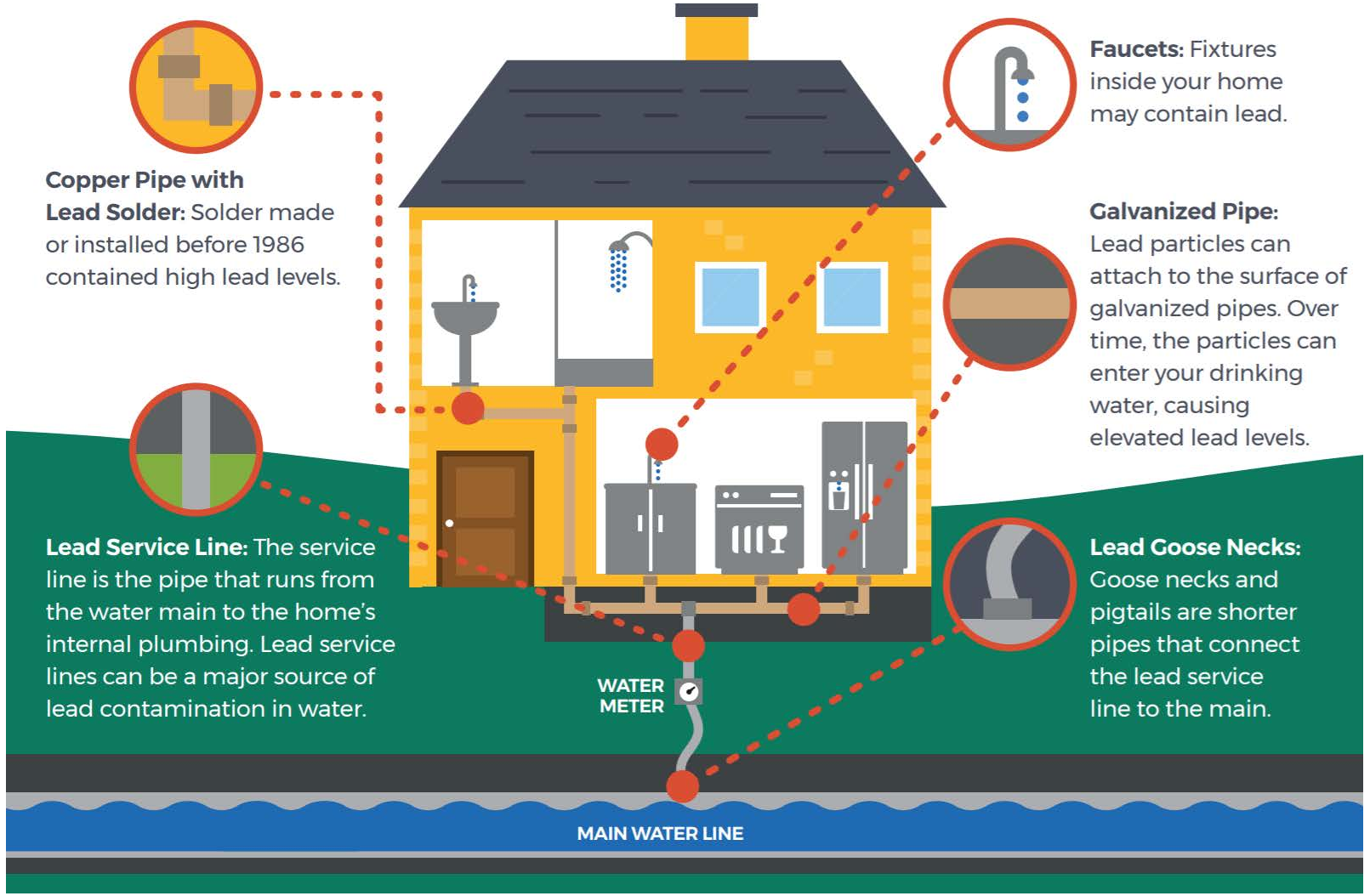
Drinking water is an important, but often overlooked, source of lead exposure

- Lead is a potent neurotoxin that is harmful to human health
- Children are particularly vulnerable
- There is **no safe blood lead level** for children
- EPA estimates that drinking water can make up 20% or more of a person's total exposure to lead
- Infants who consume mostly mixed formula can receive 40-60% of their exposure from drinking water

Lead in Drinking Water Guidelines & Regulations

*"For every $1 invested to reduce lead hazards in housing units, society would benefit by an estimated $17-$221, a cost-benefit ratio that is comparable with the **cost-benefit ratio for childhood vaccines."** – AAP 2016*

Unlike other contaminants, lead is derived from the distribution system and premise plumbing



Water from Treatment Plant (compliance point under SDWA)

Why would Iowa be immune to this nationwide problem?

2 KUTV NEWS WEATHER SPORTS CONTESTS CHIME IN WATCH

Lead found in water at 90% of Utah schools sampled, now DEQ wants to test it all

by Ginna Roe | Tuesday, January 21st 2020

Sports Connect

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LACKAWANNA-COUNTY

Parents in Scranton School District Concerned Over Lead, Asbestos Found in Schools

SCRANTON, Pa. — Parents in the Scranton School District are voicing their anger and concerns after learning asbestos and unsafe levels of lead have turned...

LOCAL NEWS

FEBRUARY 5, 2020

Schools take action after finding lead in water

By Katy Savage

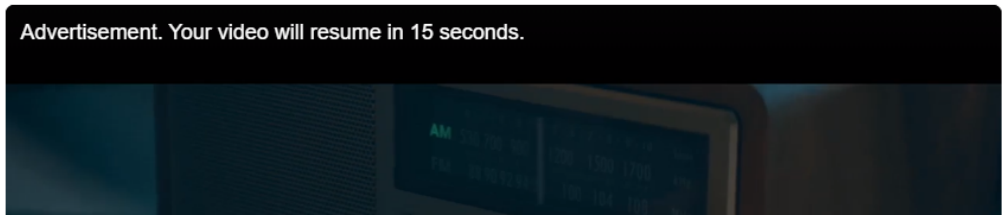
Multiple schools are replacing drinking water fountains and sinks after elevated lead was found in the water.

So far, 79% of the schools tested for lead in the state have had at least one tap test positive.

Tests are required on every tap at all schools and childcare centers under Act 66, which passed in 2019. Those with test results at or above 4 parts per billion are required to remove or replace the fixture until the level drops below 4 ppb.

FOX 13 Weather News Sports Seen on 13 Fox13 Investigates Live Stream Level Up

New information revealed about lead in water within SCS schools



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Map: 100 Pa. schools found lead in their drinking water. Here's how they responded.

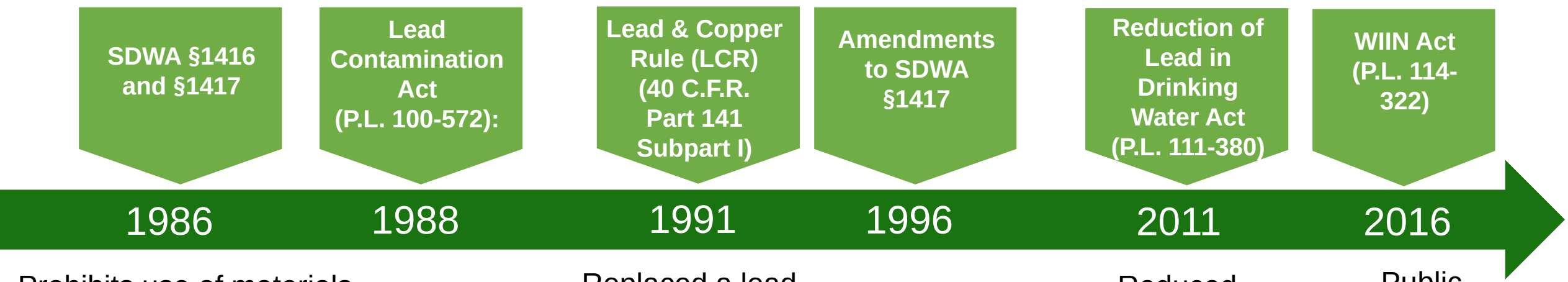
By Elizabeth Hardison - January 12, 2020

A Twitter List by Pennsylvania Capital-Star

Morning Coffee

Get the latest news and commentary from the Capital-Star, hot and fresh in your inbox M-F morning.

How did we get here?
A crash course in lead in water policy



Prohibits use of materials not “lead free”

“Lead free”:
< 0.2% solders
<8% for pipes & fittings

Replaced a lead standard of 50 µg/L measured at the water utility

Non-health based “action level” of 15 µg/L (or ppb)

Reduced **allowable lead level** in products in contact with drinking water to **0.25%**

Public information, grants for repairs & testing (including schools)

Lead & Copper Rule

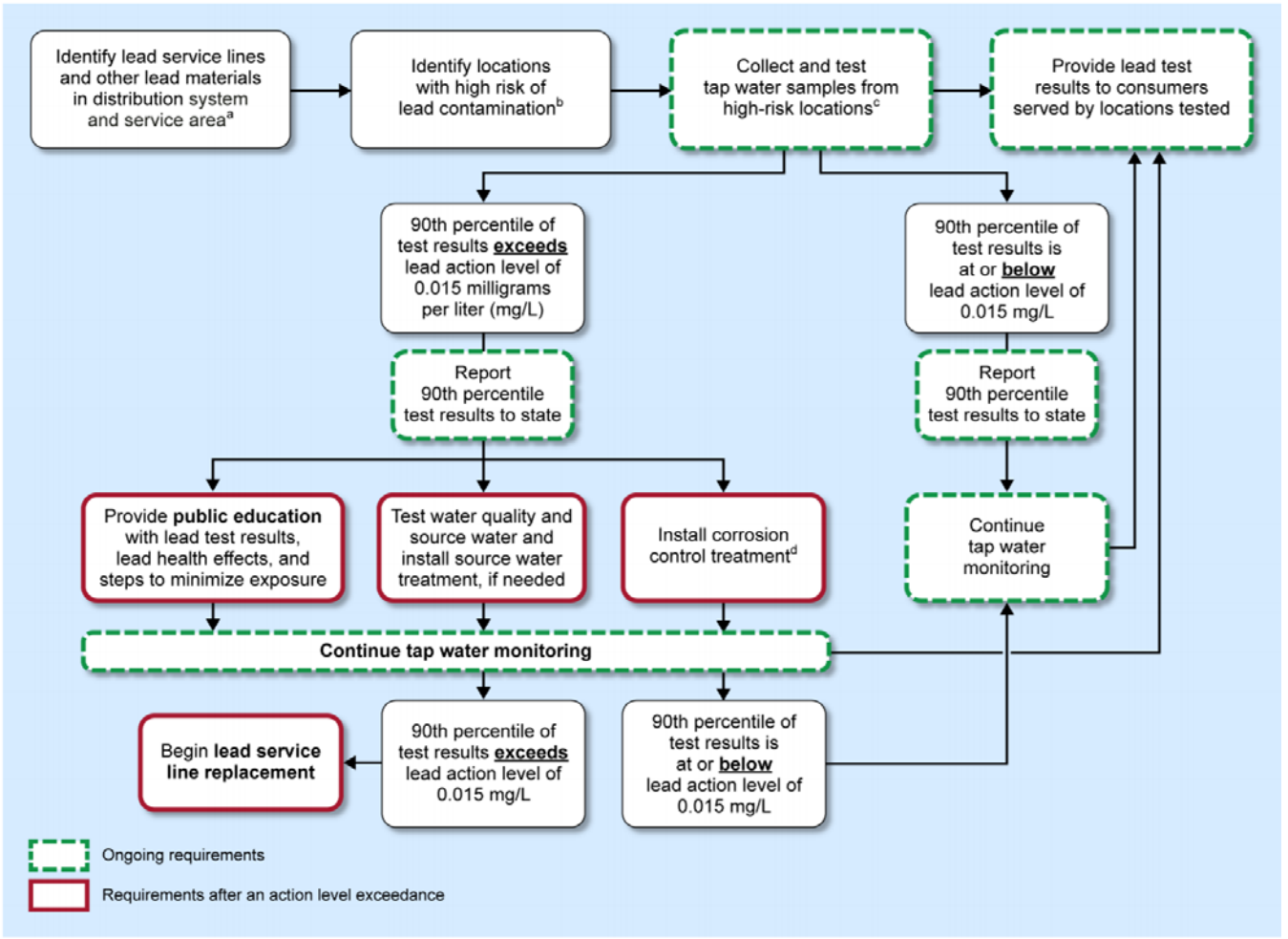
(40 C.F.R. Part 141 Subpart I)

US GAO : *"…one of the most complex drinking water regulations under the SDWA"*

What about schools?

Unless schools are their own public water system, they are not tested under the current LCR

Figure 2: Lead and Copper Rule Requirements for Water Systems, Including Schools and Day Care Centers with Their Own Water Supplies



WIIN provided separate grants for testing and repair of lead in school drinking water

- EPA grants to states in 2020 for lead testing
- Administered by the Iowa Department of Education
- $460,000 grant covers participation of up to **40% of public schools and child-care sites** in Iowa
- Testing at **3 outlets per school** or child-care sites
- Subsequent grant application for repair funds

EPA's proposed revisions to the LCR would require testing in schools and child cares

- Community Water Systems (CWSs) must test at **20% of K-12 schools and licensed child cares every year**
- Samples from **5 outlets at each school and 2 outlets at each child care facility**
- Complete sampling at all schools and child care facilities in CWS distribution system every five years.
- Excludes facilities built after Jan 1, 2014

“Every school has lead in it, but not every water sample will.”

Dr. John Tobiason, Director, Massachusetts DEP 2016 School Testing Program

3Ts for Reducing Lead in Drinking Water in Schools and Child Care Facilities

A Training, Testing, and Taking Action Approach

Revised Manual

*"**There is no safe level of lead for children.** EPA encourages schools to prioritize remediation efforts based on lead sample results and to use the steps in the toolkit to pinpoint potential lead sources to **reduce their lead levels to the lowest possible concentrations**". (3Ts page 36)*

*"...**schools and child care facilities should not use sample results from one outlet to characterize potential lead exposure from all other outlets in their facility.** This approach could miss localized lead problems that would not be identified." (3Ts page 31)*

At least 27 states* are using 15 ppb (or higher) as “action level” for schools

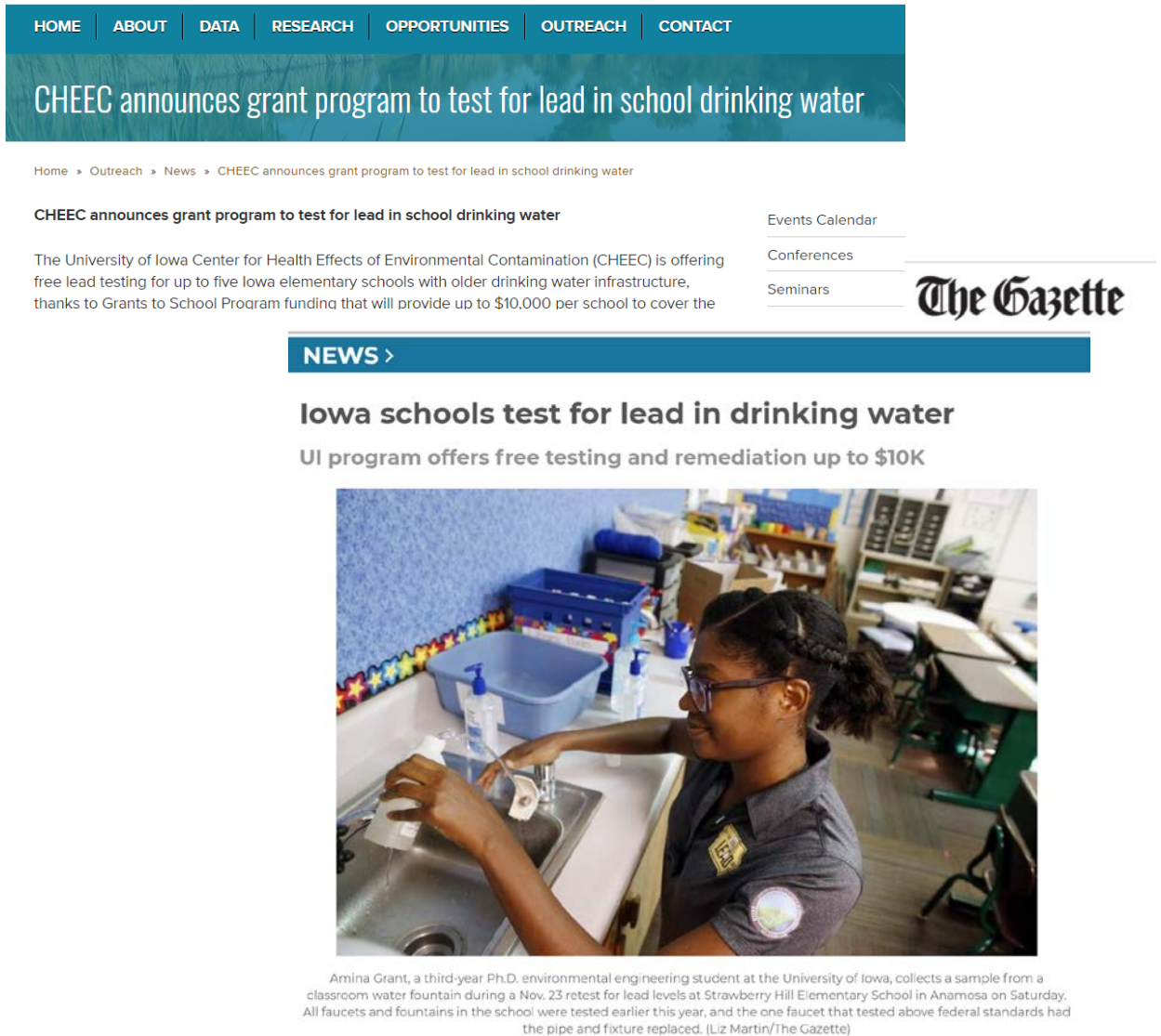
- Alabama
- Arizona
- California
- Colorado
- Connecticut
- Hawaii
- Idaho
- Indiana
- Louisiana
- Maine
- Maryland
- Nebraska
- New Hampshire
- New Jersey
- New Mexico
- New York
- North Dakota
- Ohio
- Oklahoma
- Oregon
- Pennsylvania
- Rhode Island
- South Dakota
- Tennessee
- Utah
- Washington
- Wisconsin

**Review of State websites ongoing; likely more as information is not readily available for many States*

Assistance from Prof. Andrew Whelton, Purdue

CHEEC Grants to Schools Program

- Initiated Spring FY2019
- Free lead and copper testing Iowa elementary schools with older drinking water infrastructure
- **Up to $10k/school** for testing and to remove/replacement high priority drinking water outlets with unsafe levels of lead or copper.
- Comprehensive **sampling of every outlet** in each school.



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CHEEC announces grant program to test for lead in school drinking water

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CHEEC announces grant program to test for lead in school drinking water

The University of Iowa Center for Health Effects of Environmental Contamination (CHEEC) is offering free lead testing for up to five Iowa elementary schools with older drinking water infrastructure, thanks to Grants to School Program funding that will provide up to $10,000 per school to cover the

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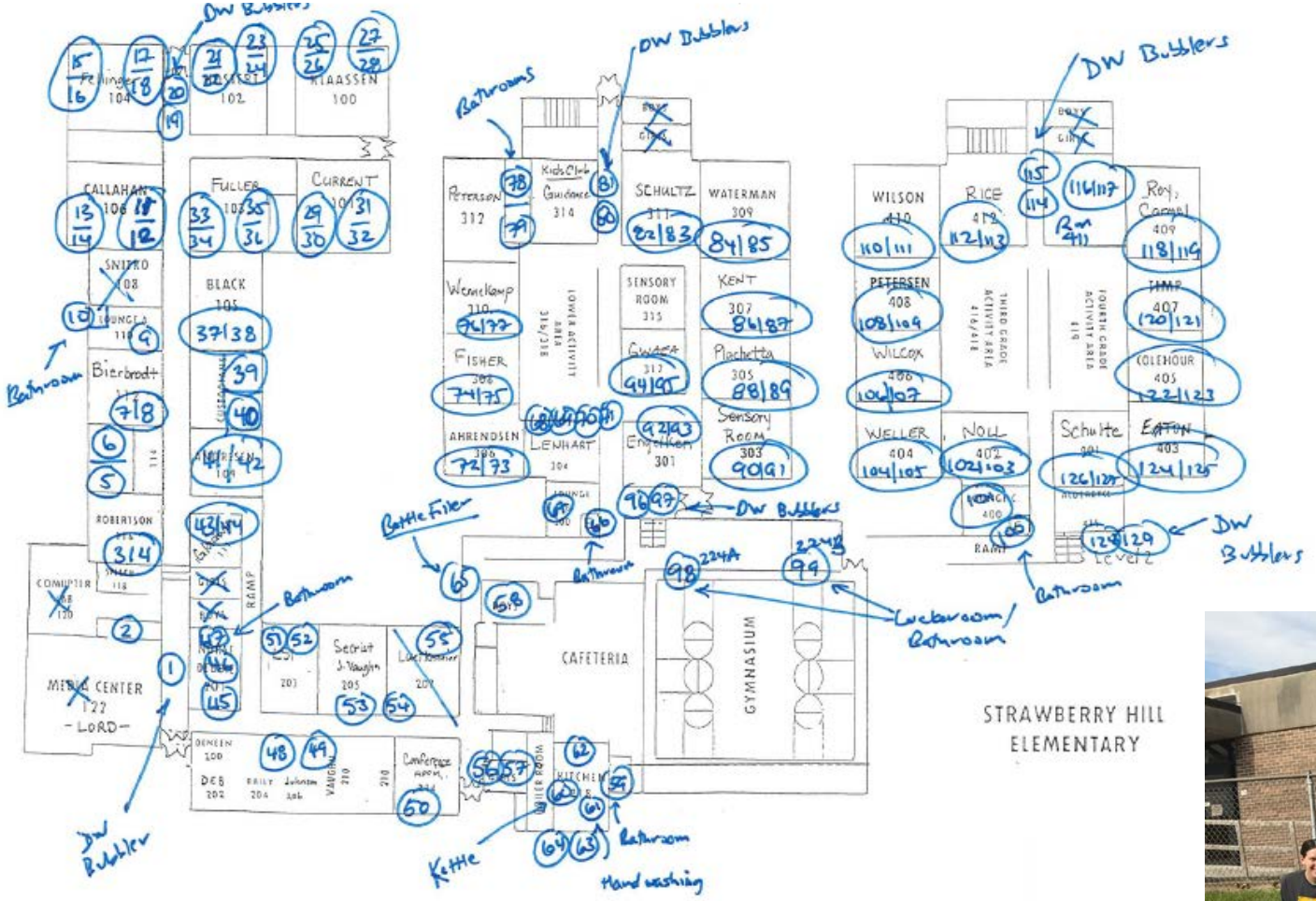
NEWS ›

Iowa schools test for lead in drinking water

UI program offers free testing and remediation up to $10K

Amina Grant, a third-year Ph.D. environmental engineering student at the University of Iowa, collects a sample from a classroom water fountain during a Nov. 23 retest for lead levels at Strawberry Hill Elementary School in Anamosa on Saturday. All faucets and fountains in the school were tested earlier this year, and the one faucet that tested above federal standards had the pipe and fixture replaced. (Liz Martin/The Gazette)


DW Bubblers
Bathrooms
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DW Bubblers
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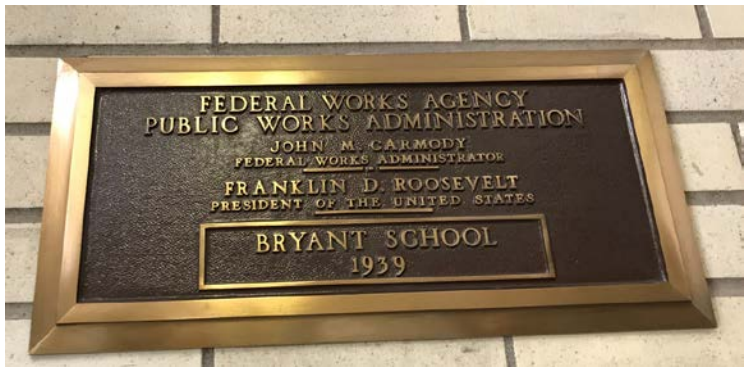
DW Bubbler
Kettle
Bathroom
Hand washing
CAFETERIA
GYMNASIUM
STRAWBERRY HILL
ELEMENTARY


UNDER ARMOUR
DE COLLEGE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What are we finding in Iowa schools?

- Oxford Junction
  - Sampled 41 water outlets on Saturday, April 27
  - Lead: 0 samples above EPA Action Level of 15 ppb, 2 above 5 ppb
  - **Copper: 8 equal to or above EPA Action Level of 1.3 mg/L**
  - Remediation: Signage & 3 new bottle fillers
- Anamosa
  - 129 water outlets for sampling on Saturday, May 18
  - **Lead: 1 sample above EPA Action level of 15 ppb**, 3 other locations between 3-8 ppb
  - Copper: 0 samples above EPA Action Level
  - Remediation: 1 new bottle filler & replacement of fixtures at 3 locations

What are we finding in Iowa schools?

- Keokuk
  - Sampled 137 water outlets on Saturday, October 19
  - **Lead: 5 samples above EPA Action level of 15 ppb**, 47 other locations between 1-14 ppb
  - Copper: 0 samples above EPA Action Level
  - Remediation: Fixture replacement, filters, no drinking at some outlets

- Dubuque
  - Sampled 105 water outlets on Saturday, December 21
  - **Lead: 5 samples above EPA Action level of 15 ppb**, 12 other locations between 1-8 ppb
  - Copper: 0 samples above EPA Action Level
  - Remediation: Fixture replacement

Average of $2,800 per school for testing and remediation

Opportunities exist to improve public health through school drinking water improvements

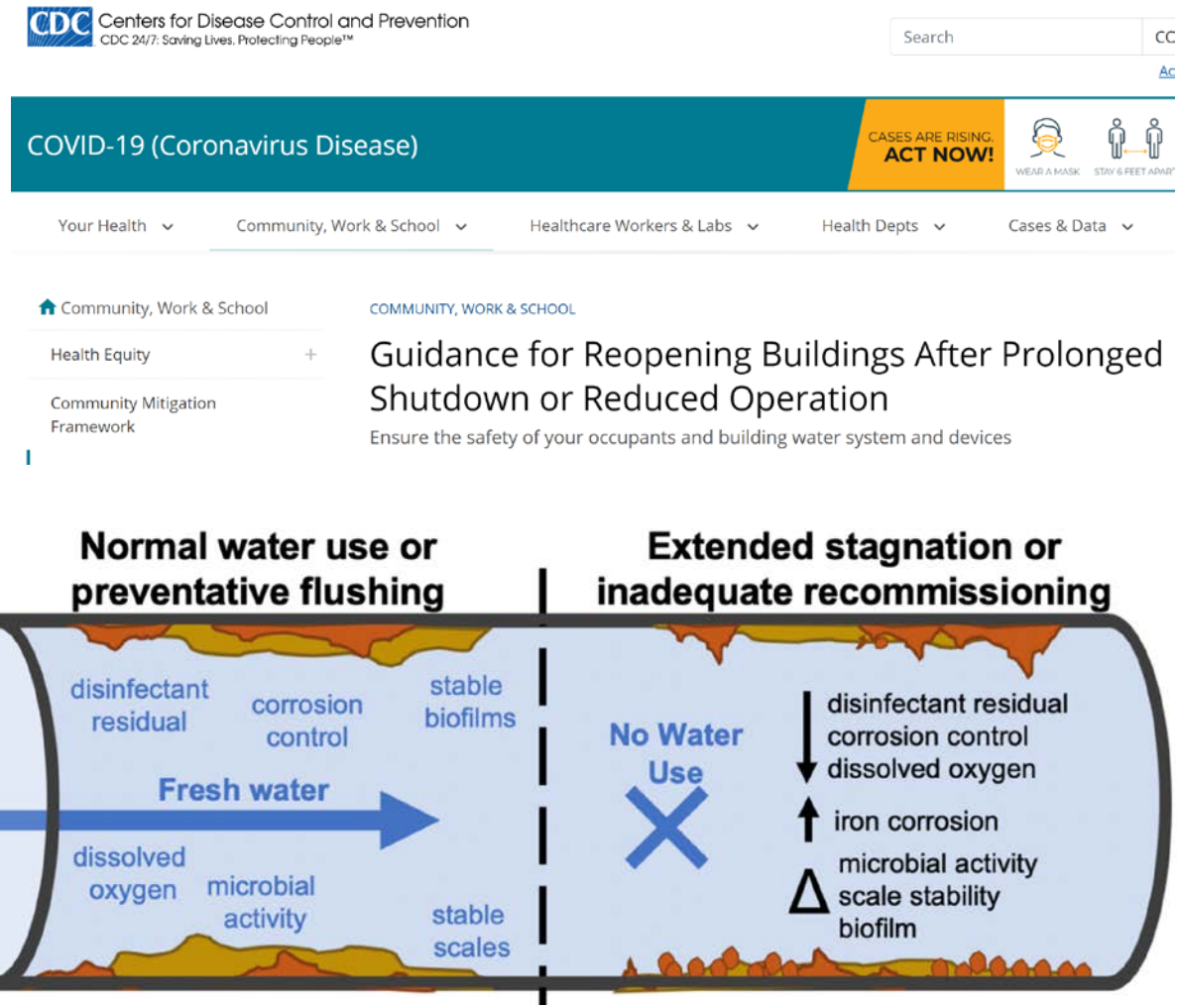
- Lower action level for lead in schools from 20 ppb to be more in line with EPA's 3Ts guidance
- Financial assistance for expanded testing at *all* outlets in schools
- Technical and financial assistance to allow schools to respond effectively to testing results
- Ensure long-term safety of school drinking water (e.g., "Filter First" programs in Michigan)
- Leverage COVID funding to install bottle fillers with filtration

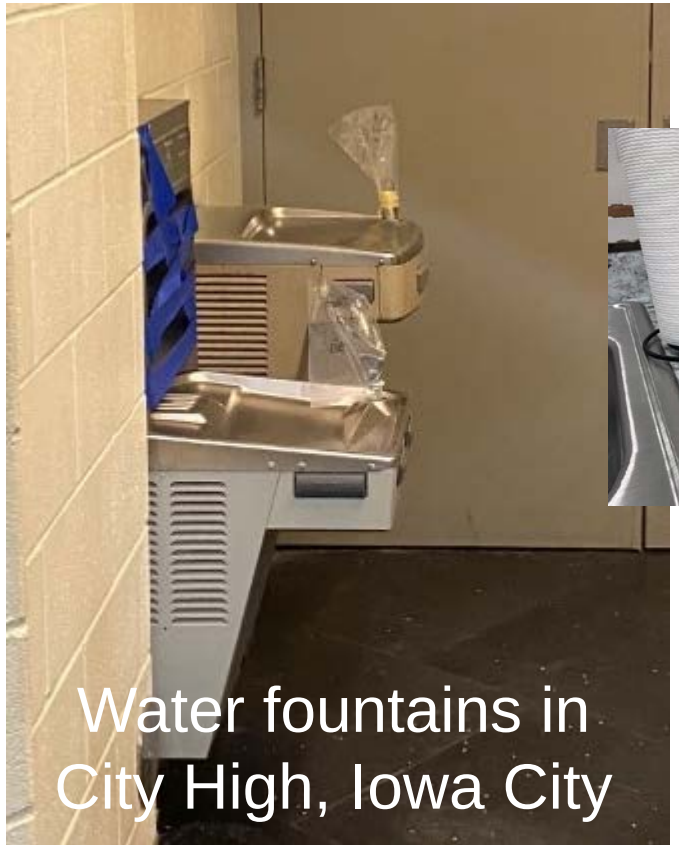
Community

Fairview Park targets CARES Act funding toward new doors, water bottle fillers and employee overtime

Updated Oct 02, 2020; Posted Oct 02, 2020

One final point on COVID: Stagnation increases lead and copper





Thanks and questions

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