

Testing Water in Schools for Lead

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Presented before the VT Senate Committee on Education

January 23, 2019

Outline

- ▶ Background on Lead
- ▶ Importance of water sampling methodology
- ▶ Comments on S.40 as introduced

Why is testing for Lead important & urgent?

Exposure to lead can seriously harm a child's health.



The infographic features four circular icons at the top, each with a corresponding label: a brain icon for 'Damage to the brain and nervous system', a child with a stunted body for 'Slowed growth and development', a child holding a book for 'Learning and behavior problems', and a child with a hearing aid for 'Hearing and speech problems'. Below these, the text 'This can cause:' is followed by a bulleted list. At the bottom, silhouettes of four children of different heights are shown on a circular platform.

Damage to the brain and nervous system

Slowed growth and development

Learning and behavior problems

Hearing and speech problems

This can cause:

- Lower IQ
- Decreased ability to pay attention
- Underperformance at school

- Lead exposure is cumulative
- Even when Lead is removed from body, damage can be irreversible
- No known safe level of exposure

Why is testing for lead in schools and childcare facilities important?

Children

- ▶ experience higher Lead exposures than adults
- ▶ absorb a greater fraction of consumed Lead than adults do
- ▶ with nutritional deficits (e.g., Calcium, Iron) absorb yet higher fractions
- ▶ are more susceptible to irreversible effects of Pb exposure

Where does Lead in school water come from?

Potential sources of lead in school drinking water:



- ▶ “Lead-free” doesn’t mean free of lead
 - ▶ 1986 SDWA
 - ▶ Pipes/fittings can contain up to 8% Pb
 - ▶ Solder can contain up to 0.2% Pb
 - ▶ 2011 SDWA (effective 2014): allowable Lead in pipes/fittings reduced to 0.25% Pb

Importance of water sampling methodology

- Representative
- Sensitive
- Actionable

The New York Times

Lead Tests on New York City Schools' Water May Have Masked Scope of Risk

By [Kate Taylor](#)

Aug. 31, 2016



Most New York City Schools Had High Lead Levels, Retests Find

By [Kate Taylor](#)

April 28, 2017



Flawed sampling
33% of schools
1% of outlets



Improved sampling
83% of schools
8% of outlets

With Lead Action Level Exceedances

The New York Times

Lead Tests on New York City Schools' Water May Have Masked Scope of Risk

By [Kate Taylor](#)

Aug. 31, 2016



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April 28, 2017



Flawed sampling

35 ppb

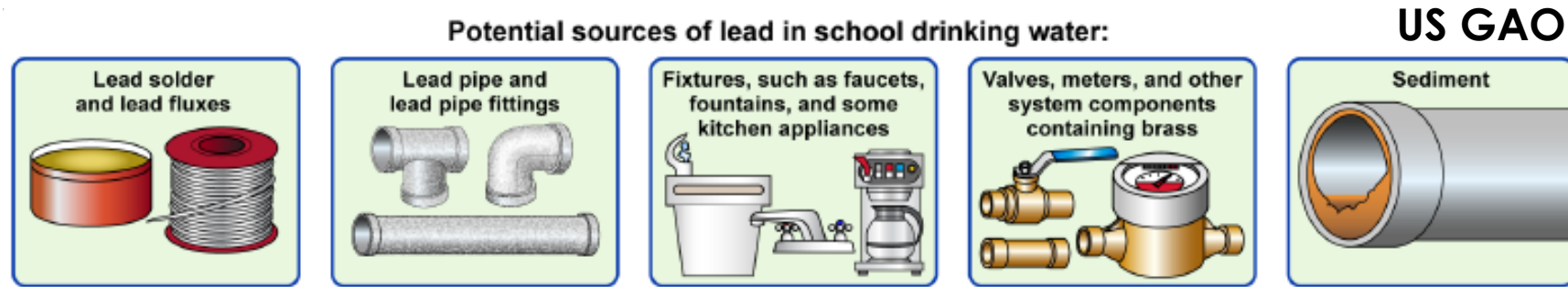


Improved sampling

3,500 ppb

Maximum Lead level in water fountains

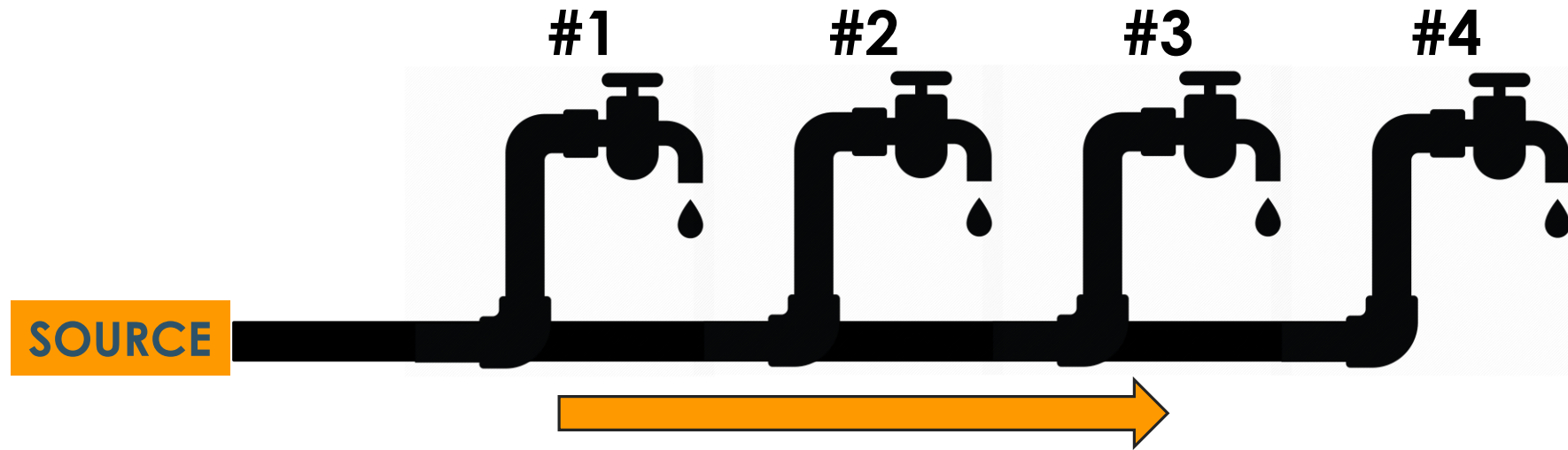
Representative of student/staff exposure stagnation time



- ▶ Avoid pre-stagnation flushing, screen cleaning or removal, or other atypical system manipulation
- ▶ Sample during school year prior to any use of water that day, typically a Saturday a.m.

Sensitive to presence of Lead

sample size & sampling sequence



- ▶ Collect smaller sample volumes (e.g., 250 mL, not 1 L)
- ▶ Sample upstream (near-source) to downstream to reduce sampling-induced flushing

Actionable information re: source of Lead first draw & flush samples



First Draw Sample
(first 250 mL water)
emphasizes Lead
from fixture

Flush Sample (water
collected after 30 sec flush)
emphasizes Lead from pipes

Comments on S.40, as introduced

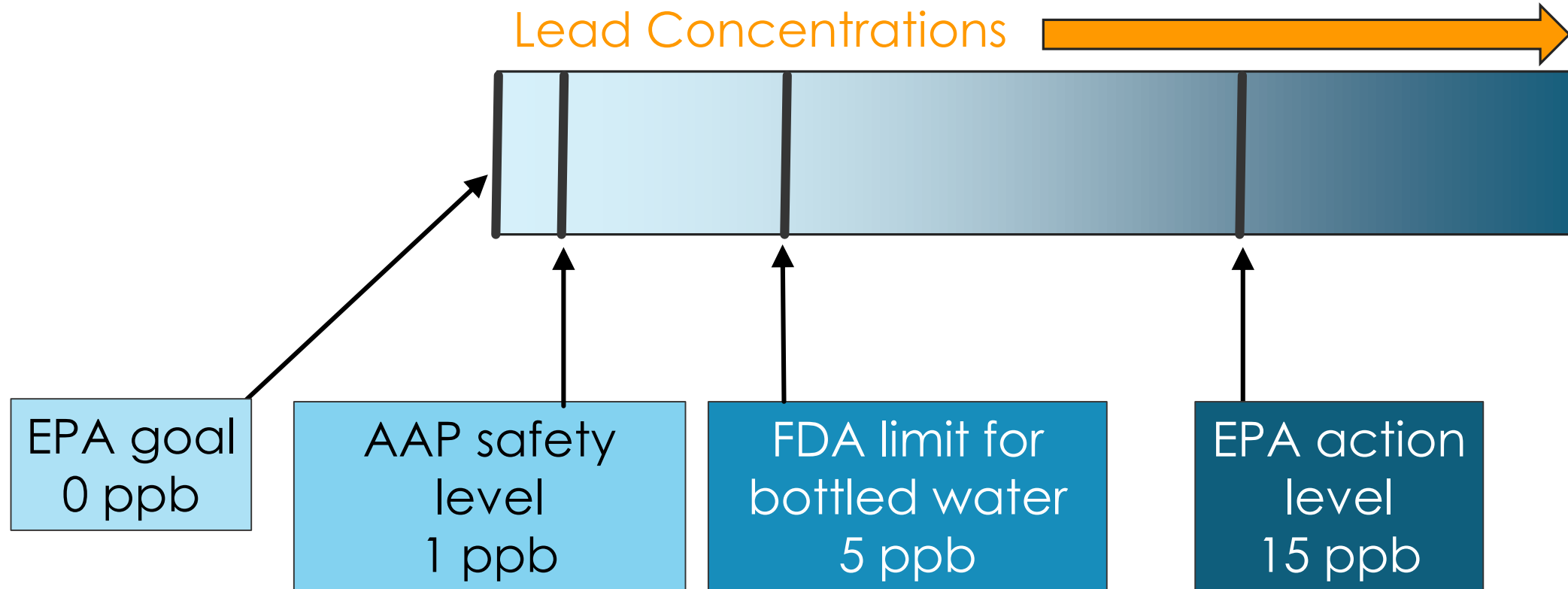
Support for existing S.40 provisions

- ▶ Testing all schools and childcare facilities
- ▶ Testing all outlets potentially used for consumption, not only water fountains
- ▶ 250 mL first draw sample (*EPA, 3Ts*)
- ▶ Recordkeeping, reporting, community notification, and Commissioner rulemaking requirements (*EPA, 3Ts*)

Specific Recommendations

- ▶ Add requirement to collect a Flush sample
 - ▶ 250 mL of water following 30 sec of flushing (*EPA, 3Ts*)
 - ▶ Flush samples guide remediation strategy (i.e., implementation of §1696 (a))
- ▶ P 3, line 5: “...standing in pipes at least ~~six~~ eight hours...” (*EPA, 3Ts*)
- ▶ P 3, line 9: “...used for ~~drinking~~ consumption or cooking purposes, including a drinking fountain, ice machine, or a faucet...”
- ▶ P 5, line 4: define “potable water” relative to Action Level

Considerations re: the 1 ppb Action Level



Additional Considerations

- “Building” definition exclusion (P 2, lines 17-19)
- Child care facilities already covered by state law (P 3, lines 20-21)
- Revisiting Action Level at some interval based on current science, technology, regulations

Important Resources

- ▶ American Academy of Pediatrics, Prevention of Childhood Lead Toxicity. *Pediatrics* **2016**, 138, 17.
- ▶ EPA, *3Ts for Reducing Lead in Drinking Water in Schools*; U.S. Environmental Protection Agency: 2006.
- ▶ Government Accountability Office, *K-12 EDUCATION: Lead Testing of School Drinking Water Would Benefit from Improved Federal Guidance*; Washington, D.C., 2018.
- ▶ Parks, J.; Pieper, K. J.; Katner, A.; Tang, M.; Edwards, M., Potential challenges meeting the American Academy of Pediatrics' lead in school drinking water goal of 1 µg/L. *Corrosion* **2018**, 74, 914.