

Lead 101

An overview of lead in drinking water in the US, myths, & misconceptions

*Presenter: Shannon Evanchec,
Co-Founder & CEO, TruePani*

Objectives

Background on TruePani

Overview of lead in drinking water

Misconceptions & myths: Truth-O-Meter

Resources

Q&A

An important note

Source: Gothamist, A water fountain at
Dry Harbor Playground (Richard Yeh / WNYC)



TruePani

- Founded by Georgia Tech engineers
- Innovative company based in Atlanta, GA
- Uniquely positioned - team of engineers and pediatricians
- Education & advocacy

Source: Georgia Tech Research Magazine



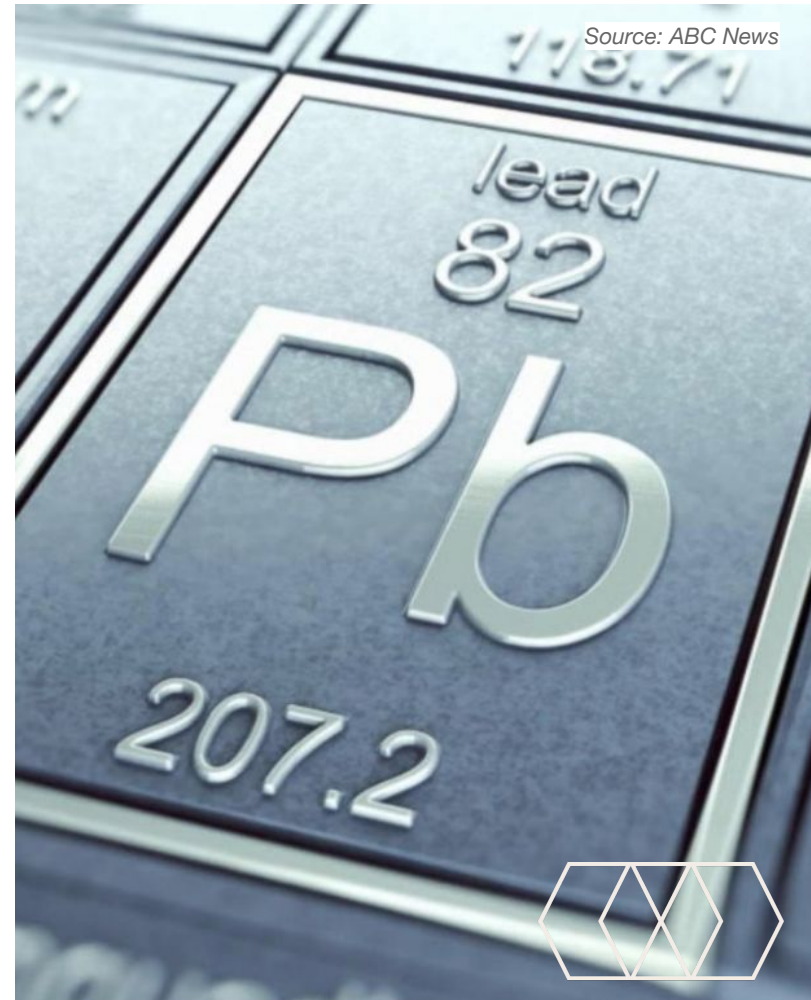
Our Mission

“To reduce lead and advocate for safe drinking water through collaboration between community members, engineers, health professionals, and industry.”



What is lead?

- Heavy, but malleable metal
- Added to consumer products, gasoline, [paint](#)
- When inhaled or ingested accumulates in body
- Exposure measured through lead in blood - no safe level of lead



Why does lead matter?

- Children
- Pregnant women
- Adults

“There is almost no function in the human body which is not affected by lead toxicity.”

Lead toxicity: a review

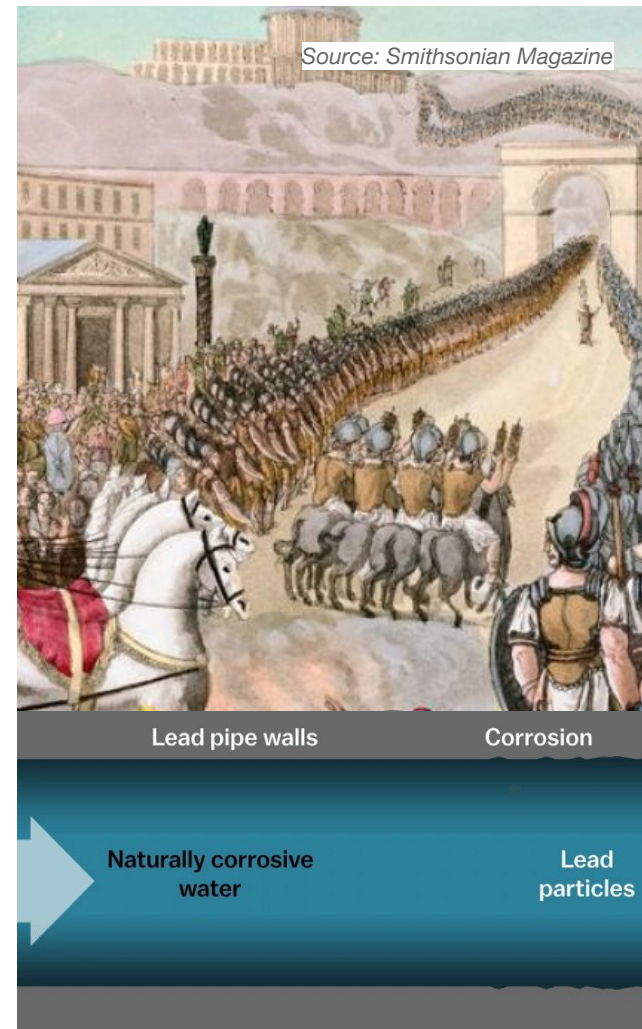
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4961898/>

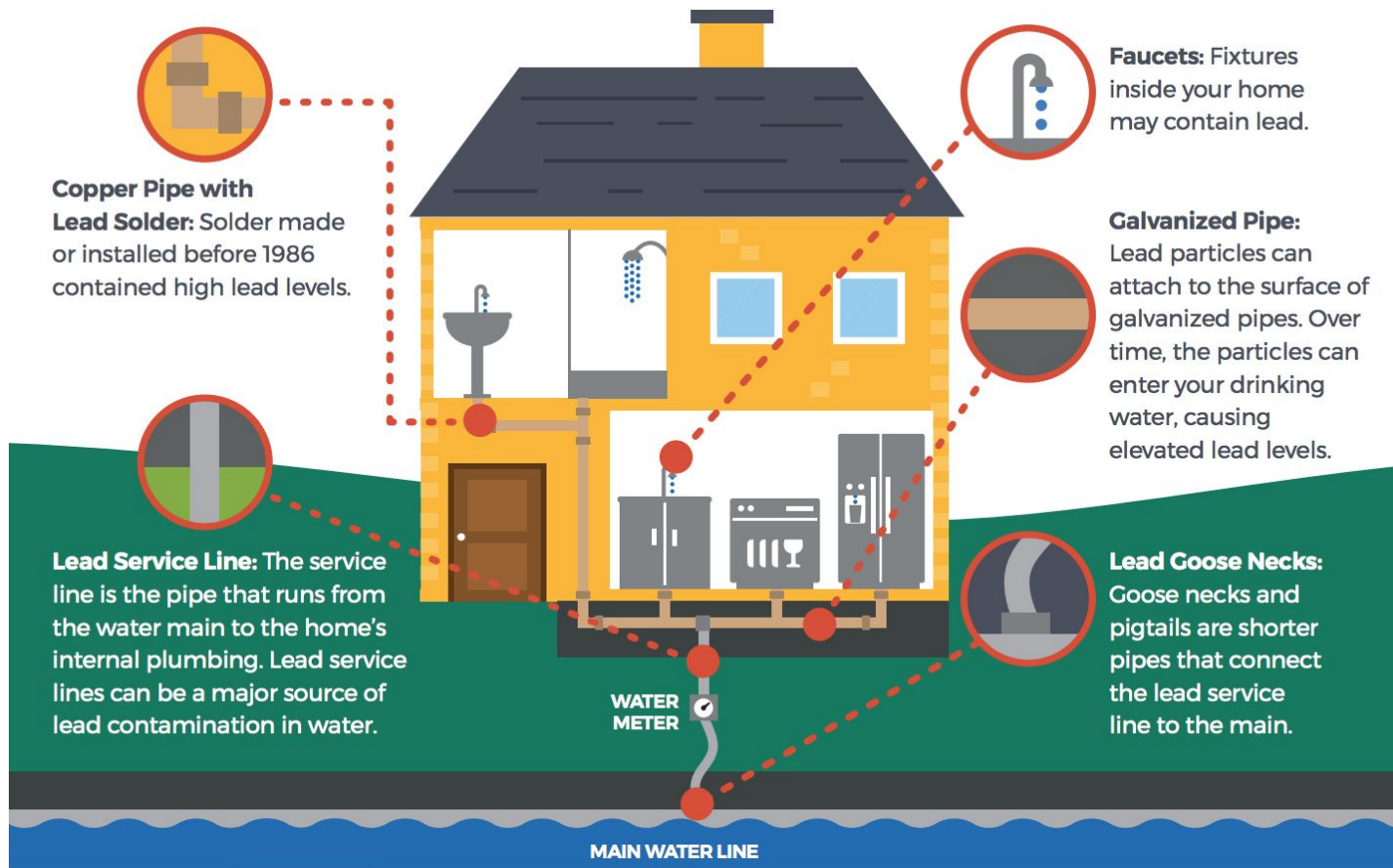
Source: Unsplash



How did lead get in our water?

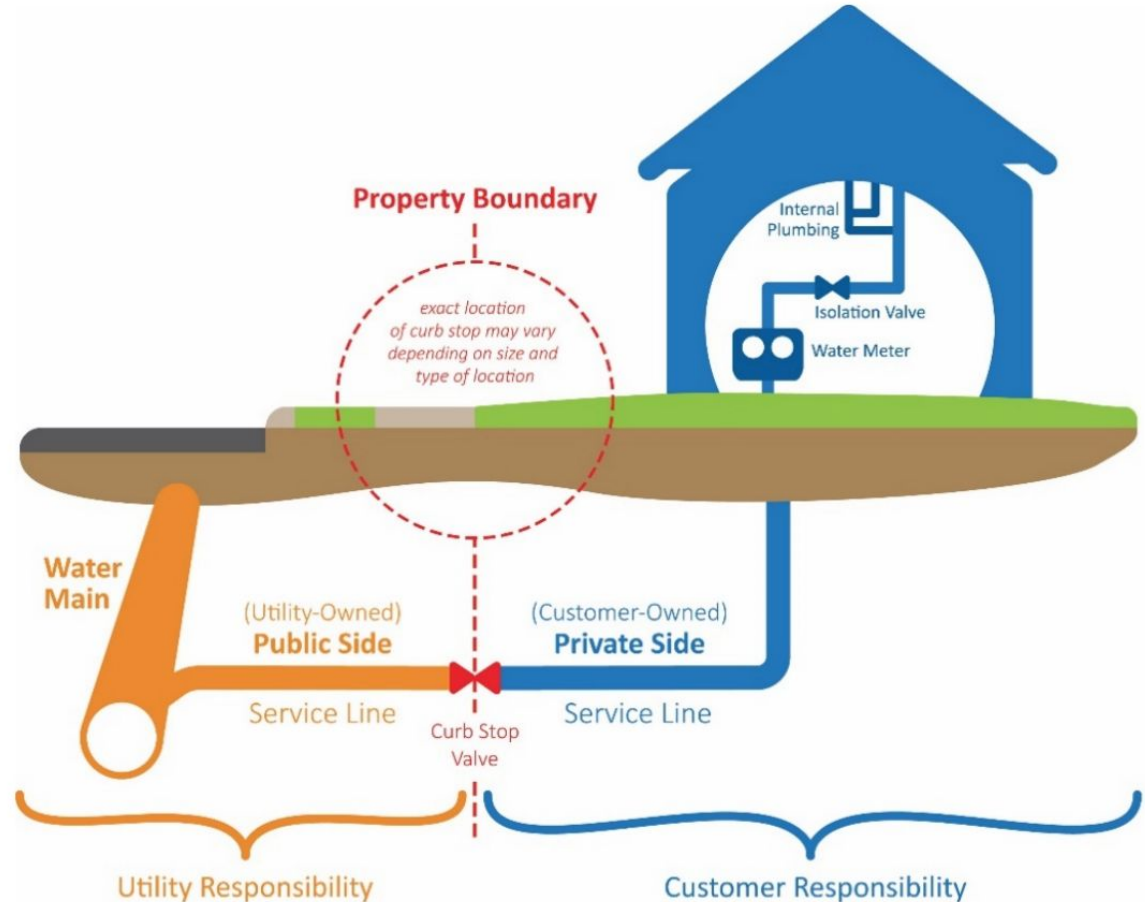
- Naturally, water does not contain (much) lead at the source or when it leaves a treatment plant
- Lead pipes and plumbing components
- Latin word for lead: “plumbum”
 - Today we have “plumbing”
- US history
- “Lead Ban” of 1986
- Corrosive water





"Partial LSL replacements are a public health hazard."

- Estimated 6.5 - 10 million US homes have lead service lines EPA 2016



Myths & Misconceptions



**“Lead in drinking water is only
a problem for older buildings.”**

Truth-O-Meter: NOT NECESSARILY



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Timeline...

- 1986 - 2013 gap
- 2014 update to the lead ban
- 81 million homes with solder containing 40-50% lead
- False reassurance & state policy
- Are “lead free” fixtures really lead free?





Coretta Scott King Young ...



name

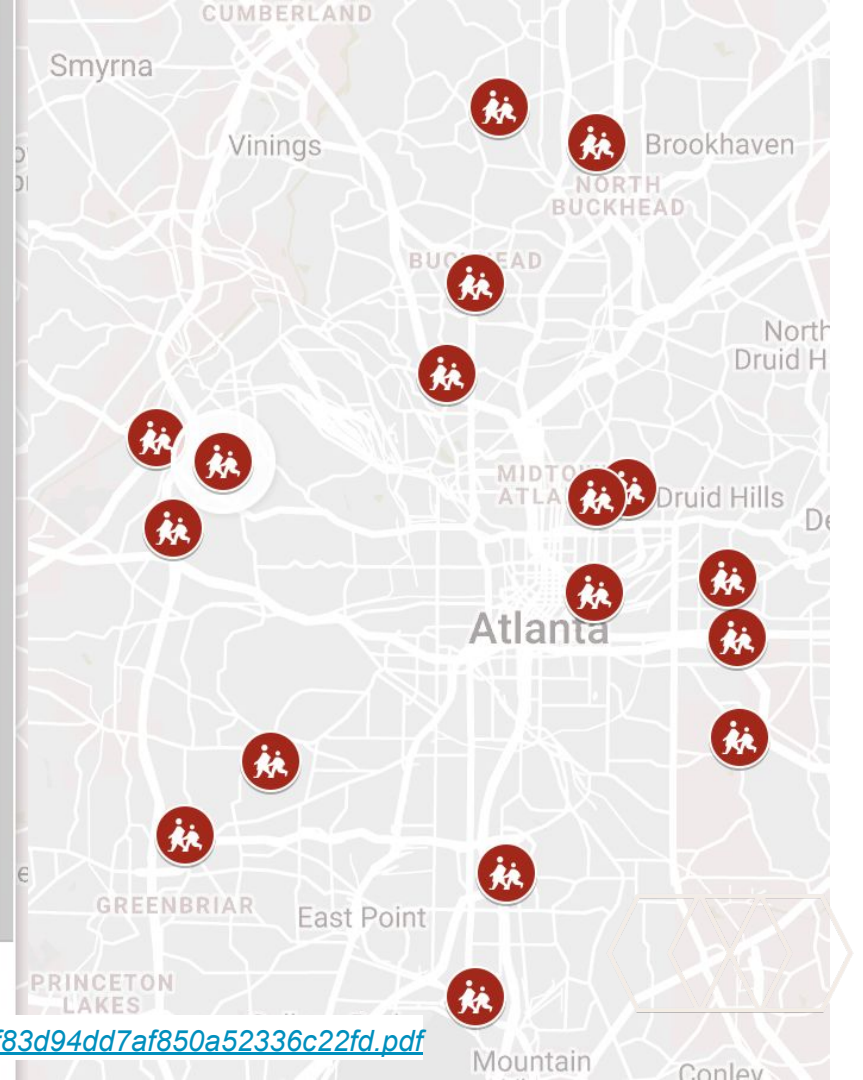
Coretta Scott King Young Women's Leadership
Academy

description

Coretta Scott King Young Women's Leadership
Academy recorded 286 parts per billion in a classroom

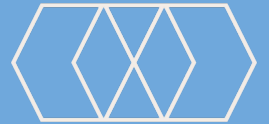
sink

Source: TruePani https://docs.wixstatic.com/ugd/1cffb1_bd431b9f83d94dd7af850a52336c22fd.pdf



**“Lead is a problem...
just not where I live.”**

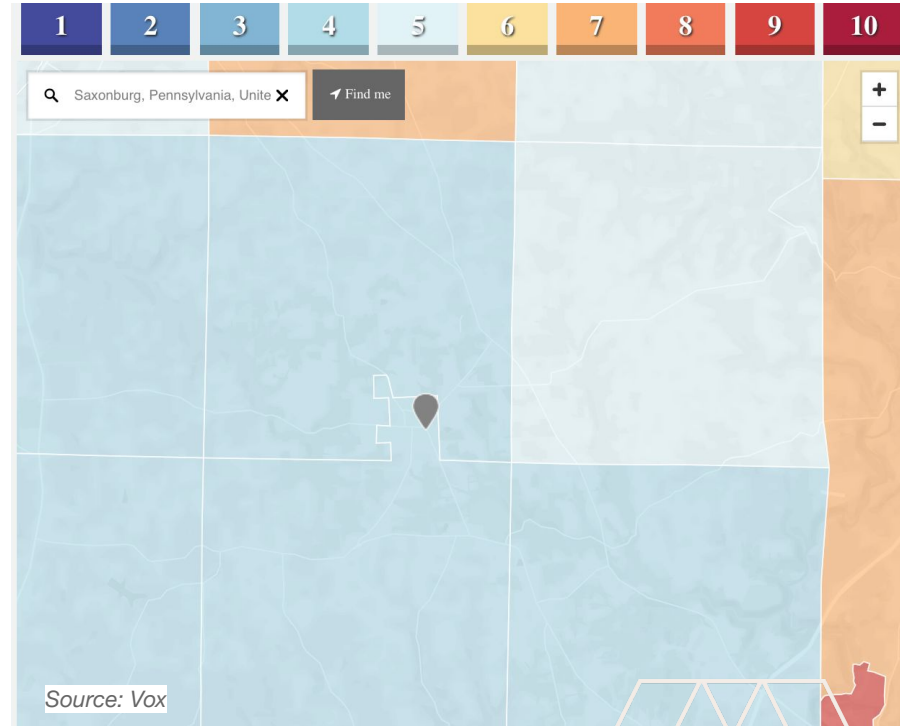
Truth-O-Meter: MAYBE... but unlikely

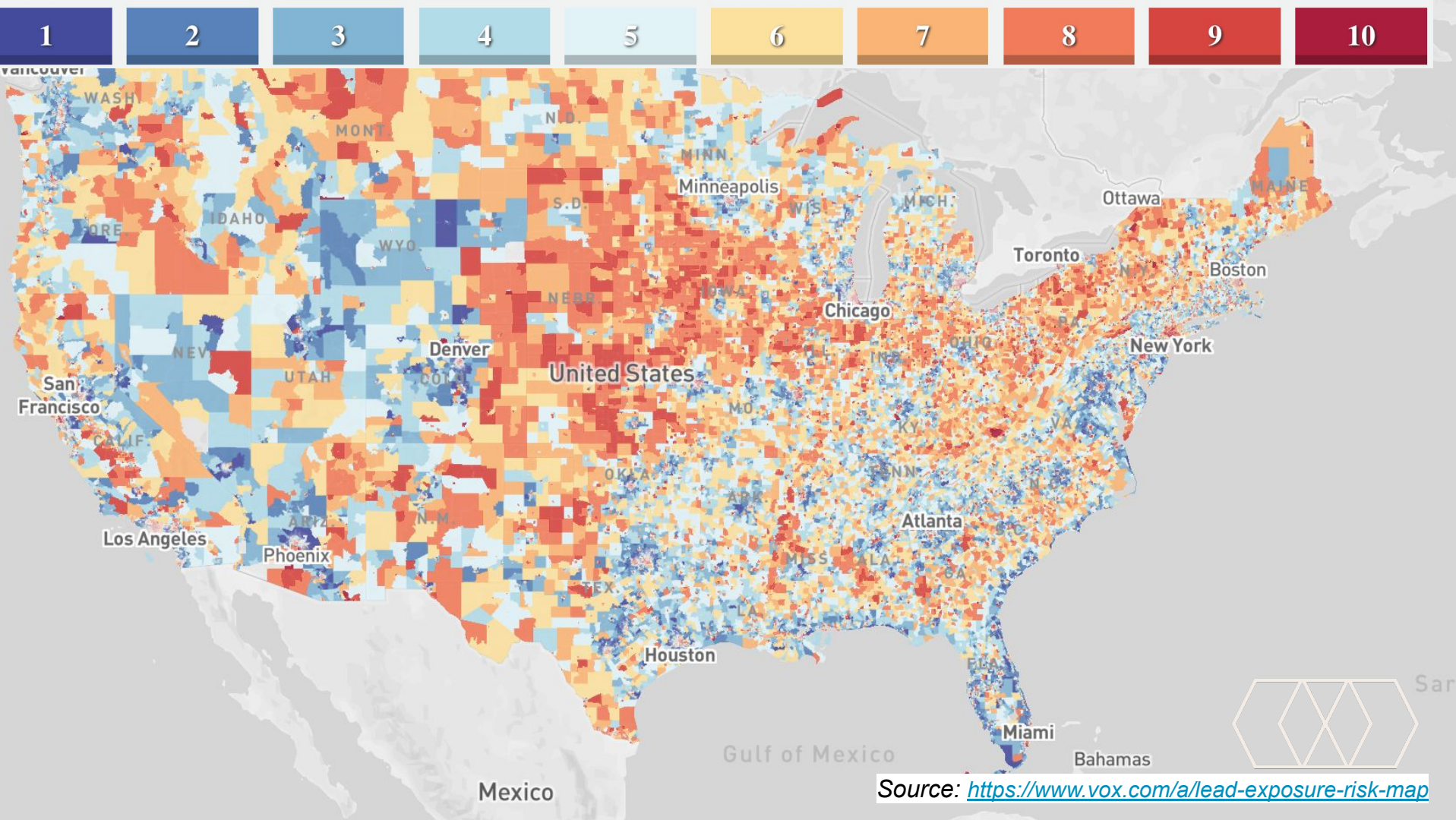


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- Flint is not an isolated case
 - Washington D.C., 2000 - 2004, 42,000 children
 - Pittsburgh, St. Joseph, New Orleans, Newark, Kansas City, Chicago, Detroit, Milwaukee, Baltimore,
- Tools for mapping risks may provide insight but building to building case
- Nationwide problem

SBPS, Built in 2002, in a "lower risk" area found 13 water sources above EPA action level of 15 ppb





“Lead makes water look rusty.”

Truth-O-Meter: FALSE



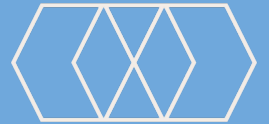
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- Lead is tasteless, odorless, and colorless in drinking water
- Informal survey of 200 parents
- One clear water sample, one rust colored water sample
- ~80% identified a brown discolored test tube of water as containing lead



“Flushing water removes lead.”

Truth-O-Meter: TRUE-ish



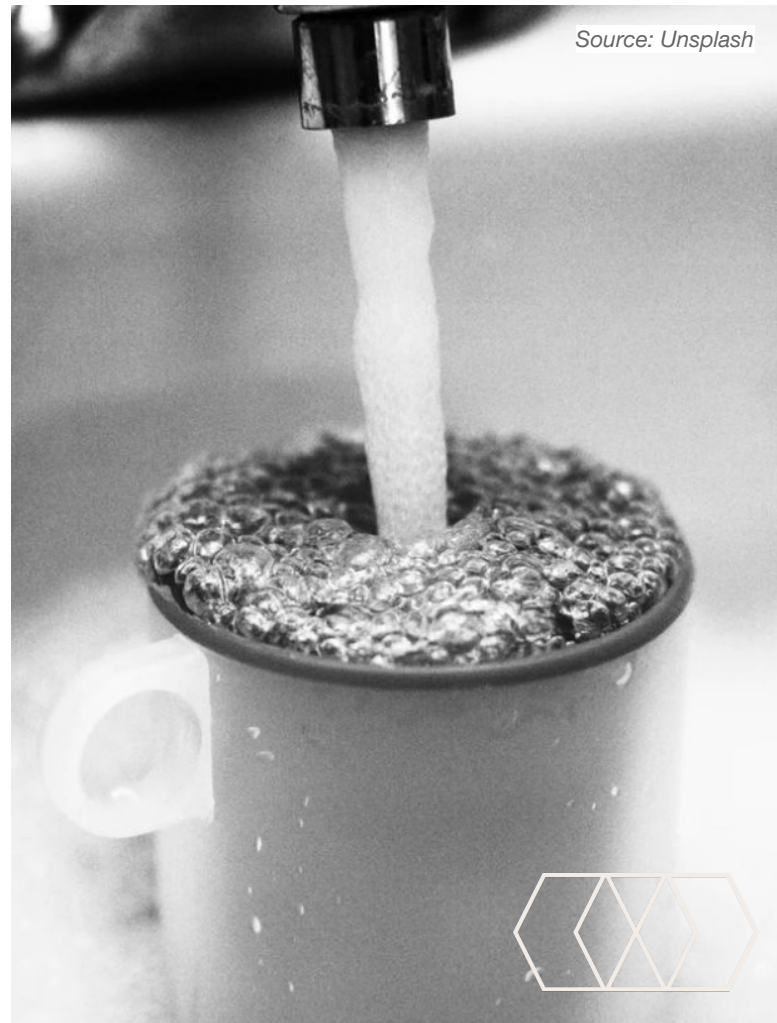
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Flushing Water

- Contact time increases lead concentration
- Disturbances can change lead levels
- Lead service line concentration peaks around 3 - 5 minutes
- New Orleans case, 30s - 6 min
- Flint case - 20 minutes, 300 ppb
- Variability... best practice to use a filter

[Effectiveness of Prevailing Flush Guidelines to Prevent Exposure to Lead in Tap Water](#)

Source: Unsplash



“Boiling water removes lead.”

Truth-O-Meter: FALSE



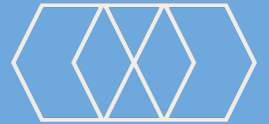
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- Boiling water does not remove lead
 - Rapid boil for 2 minutes can kill some microbes
- Hot water increases lead concentrations
- Case of pasta in North Carolina



**“Testing will let you know
if lead is in your water.”**

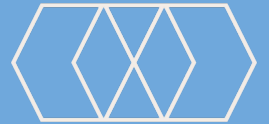
Truth-O-Meter: TRUEish



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**“Lead levels
below 15 ppb are safe.”**

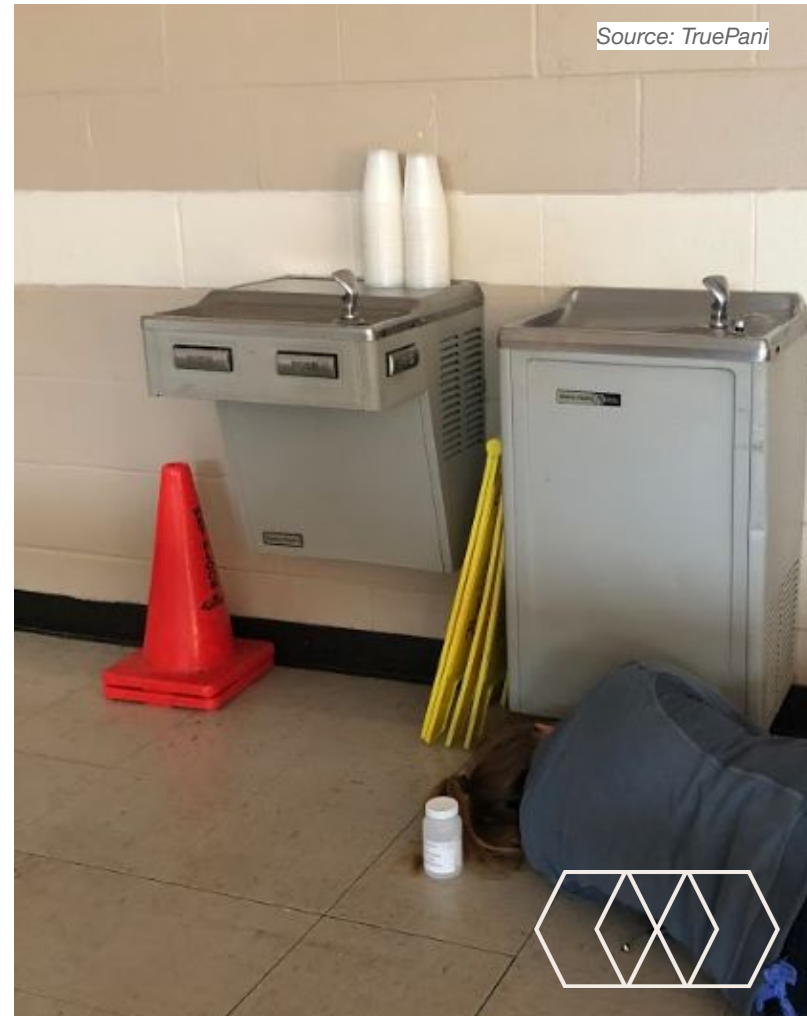
Truth-O-Meter: FALSE



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Testing

- Standard 250 mL sample size
- Samples are few and far between
- Can make the issue seem “real”
- Lead levels fluctuate
- False reassurance
- Remediation only if above action level (15 ppb).

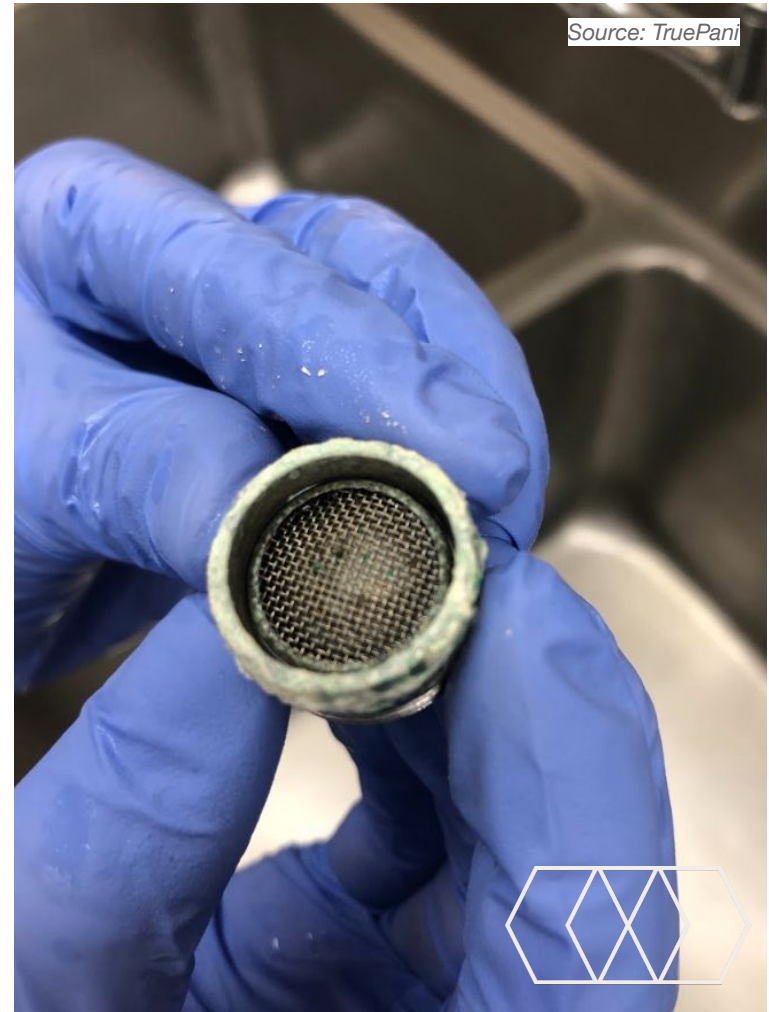


- Soluble lead vs. lead particles

Source: Mindful Balance



Source: TruePani



What can we do and why now?

- [Promote the use of certified filters](#) (NSF International, ANSI)
- Increase in education and legislation - make sure this is done correctly

“There will be no better moment to develop workable solutions for getting the heavy metal out, protecting public health, and renewing faith in this basic resource.”

[-The Path From Flint, David B. LaFrance, American Water Works Association](#)

Resources

[Lead Service Line Replacement Collaborative](#)

[Campaign for Lead Free Water](#) and Paul Schwartz

[Top 10 Myths About Lead in Drinking Water](#) By Dr. Yanna Lambrinidou

[What the Eyes Don't See](#) Dr. Mona Hanna-Attisha

[PEHSU, AAP](#)

Upcoming Webinar

Lead: The Impact on Health

Thursday June 27, 2019

3:00 PM EST

Presented by [Dr. Hansa Bhargava](#)

Pediatrician, Staff Physician at
Children's Healthcare of Atlanta

Senior Medical Director, Medscape

Director of Advisory Board, TruePani



Source: Dr. Hansa Bhargava

Thank you!

Q&A

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Source: Unsplash

