The Lead Crisis and Safe Drinking Water: Lessons From Flint and Other Drinking Water Emergencies

May 3, 2017
Speakers

• The Honorable Dan Kildee (MI-5)
• Elin Betanzo, PE, Director, Safe Drinking Water Research and Policy Program, Northeast-Midwest Institute
• William Rhoads, PhD, Virginia Tech
• Erik D. Olson, Director, Health Program, Natural Resources Defense Council
• Gary A. Brown, Director, Detroit Water and Sewerage Department
Elin Betanzo

PE, Director, Safe Drinking Water Research And Policy Program, Northeast-Midwest Institute
Safe Drinking Water Act: National Primary Drinking Water Standards

Water Treatment Plant:
Surface Water Treatment Rules
Ground Water Rule
Organics and Inorganics
Radionuclides

Distribution System:
Disinfection Byproducts Rules
Total Coliform Rule

Customer’s Home:
Lead and Copper Rule

Source: Tracey Saxby, Integration and application network, University of Maryland Center for Environmental Science

Source: www.doodoodrain.com
Lead is found in service lines and household plumbing.

Graphic Adapted from: http://www.clevelandwater.com/customer-service/protect-your-home/home-tips
Lack of Timely Violations

Corrosion Control

Partial Lead Service Line Replacement

Water Quality Parameters

MCLG: 0 ppb

Action Level: 15 ppb

1st Liter Samples
50 Samples every 3 years

Public Notice
Public Education

Overview of the Rule
Washington, DC Lead Crisis: 2000-2004

Source: DC Water
Washington, DC: More Lead, No Public Notice

Water in D.C. Exceeds EPA Lead Limit
Random Tests Last Summer Found High Levels in 4,000 Homes Throughout City

By David Nakamura
Washington Post Staff Writer
Saturday, January 31, 2004; Page A01
The Flint Water Crisis: 2014-present

Source: Mlive.com
Flint: Non-LCR data was required to show the extent of the lead contamination
Dr. William Rhoads

PhD, Virginia Tech
Opportunistic Pathogens

Biological considerations related to water quality at the tap

William Rhoads
Marc Edwards
Amy Pruden
Traditional (Fecal-related) Pathogens: Primary focus of water safety regulations

Opportunistic Pathogens: No monitoring requirements
**Legionella epidemiology**

286% increase

>$430$ M/yr spent on *Legionella*-related healthcare

https://www.cdc.gov/mmwr/volumes/65/wr/mm6522e1.htm#F1_down; http://www.waterandhealth.org/staying-step-legionnaires-disease/
Two large “clusters” of Legionnaires’ disease during Flint water crisis
Flint River water more conducive to *Legionella* growth than Detroit water

Water temperature more consistently >20 °C
Change in water source
More nutrients (bacteria food)
More *corrosive* water led to…

• More main breaks
• More iron in water
• Loss of chlorine

Rhoads et al., in prep.
Water 20XX: Meeting future demand with current infrastructure
Legionella Regulations and Standards

Nationally
• No *Legionella*-specific laws, regulations, monitoring

ASHRAE 188 – Legally enforceable standard
• Has to be locally adopted
• ID’s buildings that need a plan in place
• DOES NOT make recommendations about how to operate a building
Where to focus future regulation

• Flint demonstrates that there IS a role of the municipal water supply in triggering Legionnaire’s Disease outbreaks

• Monitoring chlorine and *Legionella* in high-risk buildings

• Multi-stakeholder responsibility = Risk communication
  
  • Water Utility, Clinical Practitioners, Building Design/Installation, Public Health Officials, Building Operators/Owners, Codes/Standards, Research
Safe Drinking Water
A Right for All Americans

Erik D. Olson
Director, NRDC Health Program
Safe Drinking Water Act
Millions drink contaminated water from public water systems. 

- **Arsenic**
- **Lead**
- **Pathogens**—Cryptosporidium; Legionella
- **Radionuclides**
Flint Lesson: We Need to Reboot

- Lead
- Legionella
Nationwide: Lead in Tap Water

- 18 million served by systems in violation of Lead & Copper Rule
- 4 million served by systems exceeding the EPA Lead Action Level
- 90% of violations not subject to formal enforcement
- 97% of violations face no penalties
EPA Lead Rule Shortcomings

- Lead Service Line replacement
- Corrosion Control
- Monitoring
- Reporting
- Action Level
- No MCL-at tap
Selected Federal Legislation on Lead in Tap Water

- Kildee, NOLEAD Act, HR 1974 (National Opportunity for Lead Exposure Accountability and Deterrence Act)
  - Reporting/Notification/Education
  - LSL Inventory
  - Lower Action Level

- Pallone, SDWA Amendments, HR 1068
  - Comprehensive overhaul of SDWA
  - Lead: Monitoring, notification, LSLs
  - Schools: fountain, pipe replacement

- Tonko, AQUA Act, HR 1071 (Assistance, Quality, and Affordability Act)
  - Comprehensive changes to SDWA
  - Additional funds for lead

- Gottheimer, Lead-Free Schools Act, HR 2094
  - Amends LCR
  - Grants for school fountain replacement

- Big Worry: Regulatory Accountability Act, etc.
State Action on Lead in School Water

- Original law & court decision
- Illinois
- New York
- California
- Other states
Drinking Water Breakdowns & Gaps

New NRDC Report:
• 27 million served by systems violating health standards
• 77 million served by systems violating testing, reporting or health requirements
• Nearly 9 out of 10 violations: no formal enforcement; 97% no penalties
Where are problems worst?

- Small water systems
- Rural areas
- Tribal lands
- Distressed cities, rust belt (GAO study)
- Colonias (TX)
- Puerto Rico
- EJ Communities
Water is an Essential Element to Life

Safe Water is a Right for All Americans, Including the Most Vulnerable, Marginalized, and Underserved Populations
Gary A. Brown
Director, Detroit Water And Sewerage Department
Hurdles to Addressing Detroit’s 125,000 Lead Service Lines
Detroit’s water utility is striving to be an anchor institution by addressing financial, legal and policy barriers to replace lead service lines within 10 years. Federal, state and city government roles are necessary to bring about a change in policy and funding.

1. Water affordability and 40% poverty level
2. Homeowners responsible for service lines
3. Change in policy and funding necessary
Detroit’s poverty rate, at nearly 40%, is among nation’s highest.

Detroiter pay some of the highest rates in the country due to legacy costs, bad debt, and bonds for combined sewer overflows.

Residents, 50% of whom rent, cannot afford exorbitant rate increases to cover the cost of lead service line replacements.

The Community Calls for Water Affordability

Water is a Human Right.
Turn on the Water! Tax Wall Street!
Detroit will be the Epicenter of Lead Service Line Replacement in the United States

- Detroit is **139 square miles** and has **more than 100 neighborhoods**
  - Primarily **single-family homes** built prior to 1950
- An estimated **125,000 lead service lines in Detroit**, more than every major city on the east coast combined
- The City of Detroit owns the service line from the water main to the stop box, while the homeowner owns the remaining portion
  - **Most Detroit residents cannot afford the $3,000 cost**, at minimum, to replace their portion of the service line
Full Service Line Replacement Program

- DWSD to begin a **full Lead Service Line Replacement Program in 2018**
  - Eliminate partial replacements
  - Using copper, complete **full lead service line replacements** for planned water main projects in neighborhoods
  - Homeowners and residents will need to **sign a waiver** to have the work completed on their property, or a new **city ordinance creates an easement**

- Once the **legal, funding, policy** and **technical** portions are final, full lead service line replacement will begin
  - **Hurdle to 10,000 replacements per year**
Public Transparency and Community Outreach on Lead Service Lines

- DWSD is improving its **tracking of service lines** which includes:
  - Upgrading technology;
  - Reviewing existing records;
  - Inputting verified data from customers and city departments;
  - Visiting customer homes

- Creating outreach materials to better educate customers on how to minimize lead in drinking water

- Offering lead sampling to residents with a confirmed lead service line

- Conducting a pilot program in northwest Detroit during water main replacement projects this year
Small water utilities, which are more in number than the large utilities, don’t possess the resources to hire lead and copper experts, to upgrade technology, etc.

Developing partnerships between large water utilities and small organizations will have a dual benefit:

- Enables small water utilities access to the expert resources
- Reduces some cost for the larger utilities, with the small utilities paying a finite percentage
- Provides the capacity for the small water utility to tackle this important project without delay
Call to Action: Supporting Water Utilities

Full lead service line replacements are the **right thing to do**, no matter the federal and state regulations; however we need your support to overcome the obstacles.

- **Infrastructure reinvestment** must have support for cities to reinvest in water and sewer infrastructure, including full lead service line replacements.
- **State revolving funds necessary** to enable water utilities to retain lead and copper experts and replace the pipes with the least cost to taxpayer.
- **Low-Income Sewer Water Assistance Program legislation** which recognizes that as water/sewer rates rise, federal/state support of low-income customers is needed for both usage and infrastructure.
- **Creating best practice for service line ownership** – is it more cost effective for the community and water utility for the municipality to own the entire service line.
- **Federal/state grant and loan programs** that better facilitate public/private partnerships in addressing the replacement and outreach efforts.
Thank You

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Questions?