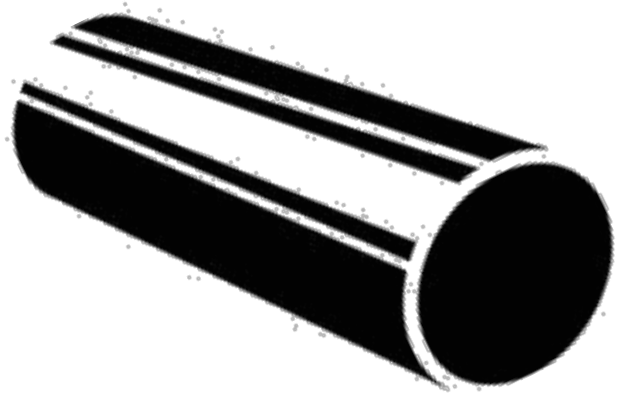


# Rule Update:
# Ch. NR 809, Wis. Adm. Code

*related to control of lead and copper in drinking water*

JANUARY 30, 2025 | RULE STAKEHOLDER COMMITTEE

DRINKING WATER & GROUNDWATER PROGRAM

# Why Undertake the Current Lead and Copper Rulemaking?

- Maintain Wisconsin's Safe Drinking Water Act Primacy
- Consistency with Federal Lead and Copper Rule updates
  - 2021 Lead and Copper Rule Revisions (LCRR),
  - 2024 Lead and Copper Rule Improvements (LCRI)
- More effectively minimize consumer exposure to lead and copper in drinking water based on lessons learned since 1991

# Why Undertake the Current Lead and Copper Rulemaking?

- **Maintain Wisconsin's Safe Drinking Water Act Primacy**
- Consistency with Federal Lead and Copper Rule updates: LCR, LCRR, and LCRI
- More effectively minimize consumer exposure to lead and copper in drinking water based on lessons learned since 1991

# Safe Drinking Water Act Primacy

## What is Primacy?

The EPA grants primary enforcement authority ("primacy") to a State to run a Public Water System Supervision (PWSS) program if the Administrator determines the State:

- Adopted regulations at least as stringent as comparable NPDWRs (40 CFR § 141); and
- Adopted and is implementing adequate procedures to enforce the State regulations. (40 CFR § 142)

40 CFR § 142(b)

# Safe Drinking Water Act Primacy

(40 CFR 142 Sub B)

## Requirements for state primacy (from 40CFR142, Subpart B)

### The state must:

- Have regulations for contaminants regulated under the National Primary Drinking Water Regulations (NPDWRs) that are no less stringent than the regulations promulgated by EPA. States have up to two years to develop regulations after EPA releases new regulations
- Have adopted and be implementing procedures for the enforcement of state regulations
- Maintain an inventory of public water systems in the state
- Have a program to conduct sanitary surveys of the systems in the state
- Have a program to certify laboratories that will analyze water samples required by the regulations
- Have a laboratory that will serve as the state's "principal" lab that is certified by EPA
- Have a program to ensure that new or modified systems will be capable of complying with state primary drinking water regulations
- Have adequate enforcement authority to compel water systems to comply with NPDWRs, including:
  - authority to sue in court
  - right to enter and inspect water system facilities
  - authority to require systems to keep records and release them to the state
  - authority to require systems to notify the public of any system violation of the state requirements
  - authority to assess civil or criminal penalties for violations of the State Primary Drinking Water Regulations and public notification requirements
- Have adequate recordkeeping and reporting requirements.
- Have adequate variance and exemption requirements as stringent as EPA's, if the state chooses to allow variances or exemptions
- Have an adequate plan to provide for safe drinking water in emergencies like a natural disaster
- Have adopted authority to assess administrative penalties for violations of its approved primacy program

https://www.epa.gov/dwreginfo/primacy-enforcement-responsibility-public-water-systems

# Safe Drinking Water Act Primacy

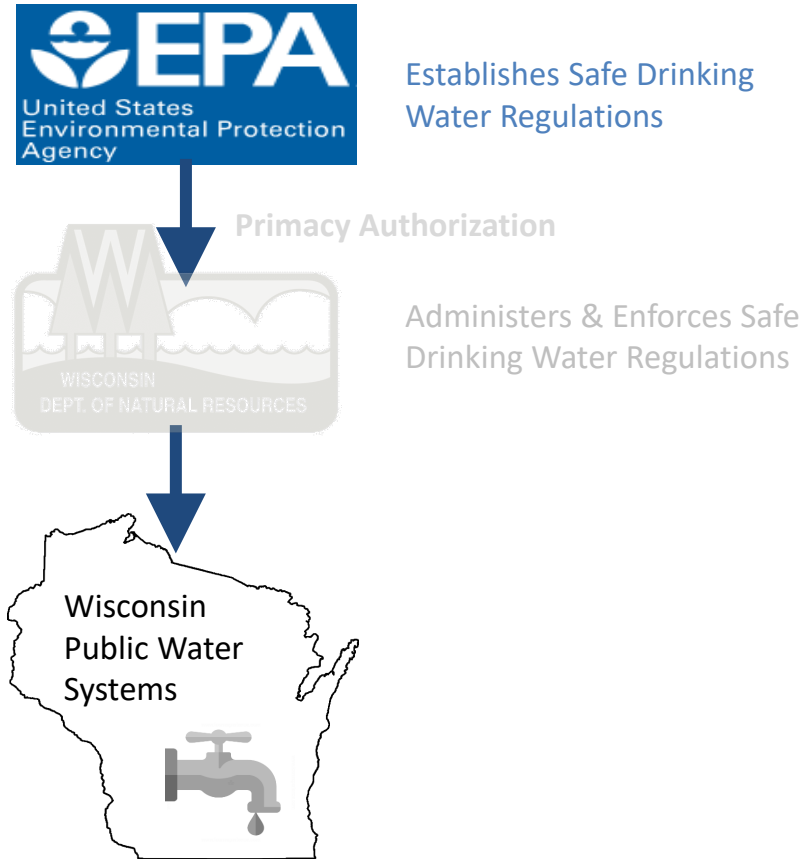
Wisconsin Safe Drinking Water Act Primacy

*In order to maintain SDWA primacy Wisconsin must adopt state regulations at least as stringent as federal rules.*


https://www.epa.gov/dwreginfo/primacy-enforcement-responsibility-public-water-systems

# Safe Drinking Water Act Primacy

*If Wisconsin does not maintain its SDWA primacy, the Federal Lead and Copper Rule will still apply in Wisconsin. However, EPA would directly regulate Wisconsin water systems.*

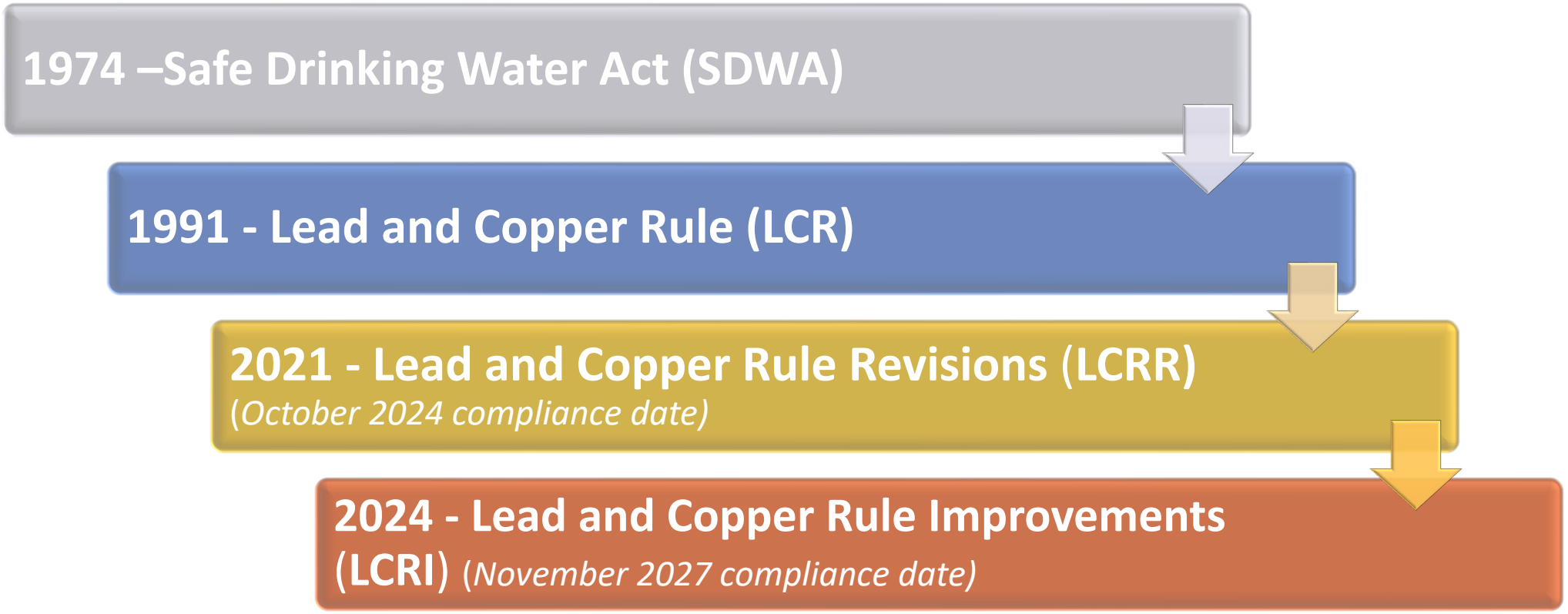



https://www.epa.gov/dwreginfo/primacy-enforcement-responsibility-public-water-systems

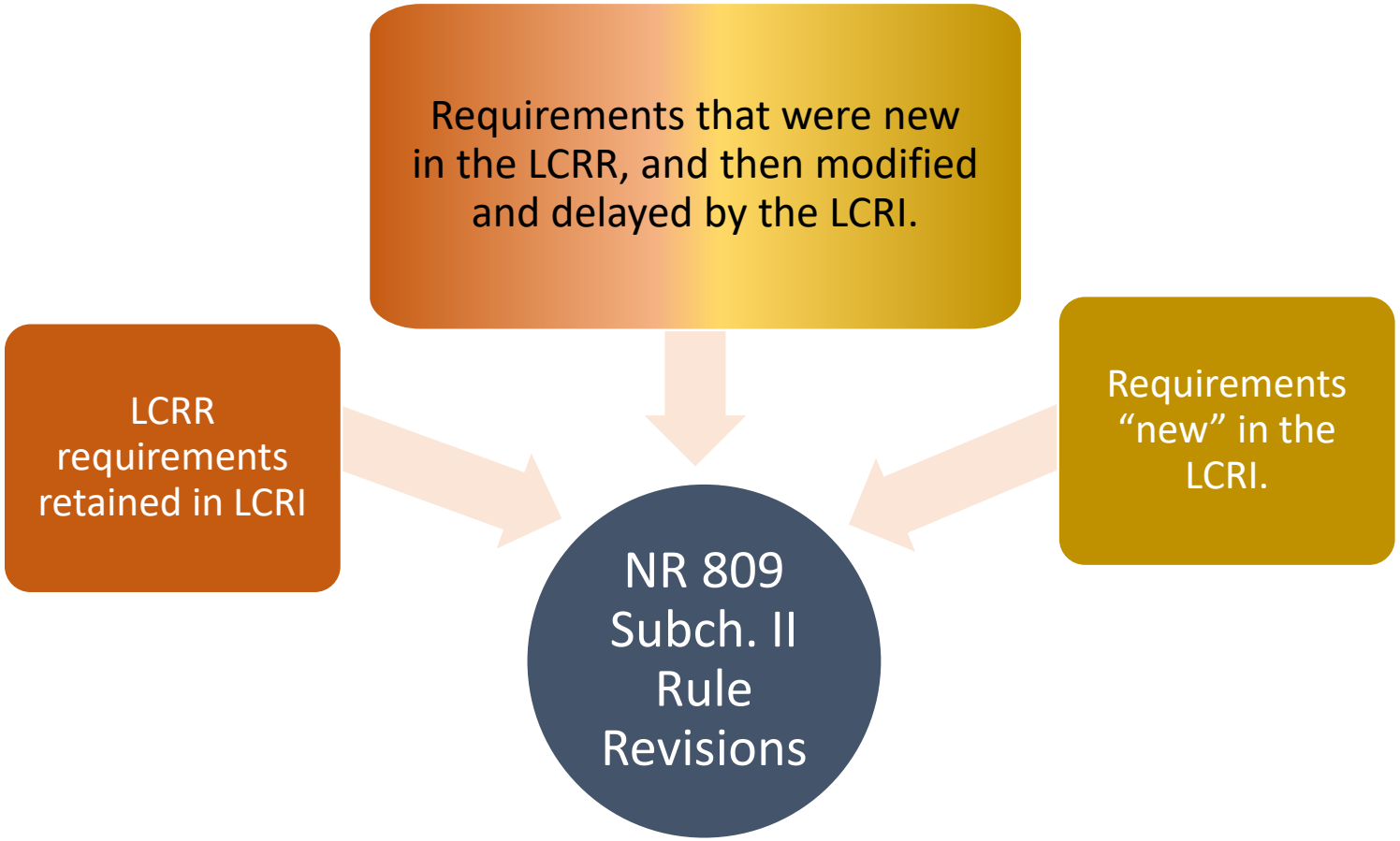
# Why Undertake the Current Lead and Copper Rulemaking?

- Maintain Wisconsin's Safe Drinking Water Act Primacy
- **Consistency with Federal Lead and Copper Rule updates: LCRR (2021) and LCRI (2024)**
- More effectively minimize consumer exposure to lead and copper in drinking water based on lessons learned since 1991

# Federal Regulations - LCR, LCRR, LCRI



# Content of Proposed NR 809 Rule Revision



# Why Undertake the Current Lead and Copper Rulemaking?

- Maintain Wisconsin's Safe Drinking Water Act Primacy
- Consistency with Federal Lead and Copper Rule updates: LCR, LCRR, and LCRI
- **More effectively minimize consumer exposure to lead and copper in drinking water based on lessons learned since 1991.**

# Lead and Copper Rule Basics

Lead and copper gets into drinking water when it travels through the pipes that carry water from the water treatment plant to your tap.

Lead enters drinking water through the *corrosion* of lead pipes and fixture materials. *Corrosion* is the dissolving or wearing away of metal caused by a chemical reaction between water and pipe material.

Lead and copper gets into drinking water when it travels through the pipes that carry water from the water treatment plant to your tap.

Lead also enters drinking water through the dissolving of lead-containing pipes scales. **Pipe scales become unstable and can dissolve or dislodge when the chemistry of the water flowing through the pipe is reactive (e.g. fluctuations or changes in pH, alkalinity, carbonate, chlorination, chloride, and/or orthophosphate) or the pipe is physically disturbed.**

# Sources of **LEAD** in Drinking Water

**Copper Pipe with Lead Solder:** Solder made or installed before 1986 contained high lead levels.

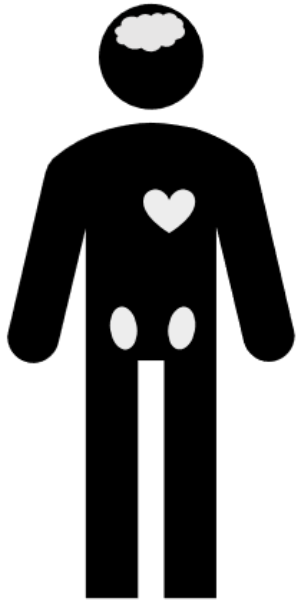
**Faucets:** Fixtures inside your home may contain lead.


**Galvanized Pipe:** Lead particles can attach to the surface of galvanized pipes. Over time, the particles can enter your drinking water, causing elevated lead levels.

**Lead Service Line:** The service line is the pipe that runs from the water main to the home's internal plumbing. Lead service lines can be a major source of lead contamination in water.

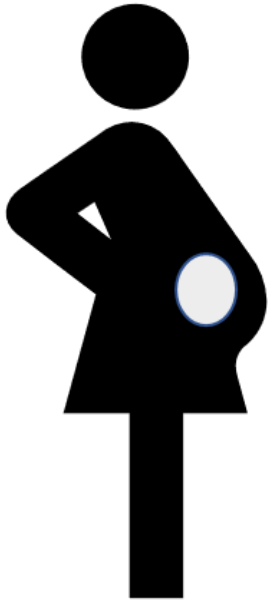
**Lead Goose Necks:** Goose necks and pigtails are shorter pipes that connect the lead service line to the main.

# Health Impacts of Lead in Drinking Water



## All Ages & Genders

- Damage to the brain and nervous system
- Increased risk of heart disease and high blood pressure
- Kidney and nervous system problems

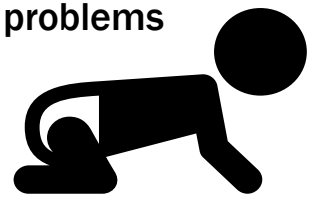


## Pregnant Women

- Increased risk for miscarriage
- Damage to the developing baby's nervous system.
- Increased risk of the baby being born too early or too small.

## Children

- Slowed growth and development
- Learning and behavior problems
- Hearing and speech problems



*There is no safe level of lead exposure. The health impacts of lead are permanent.*

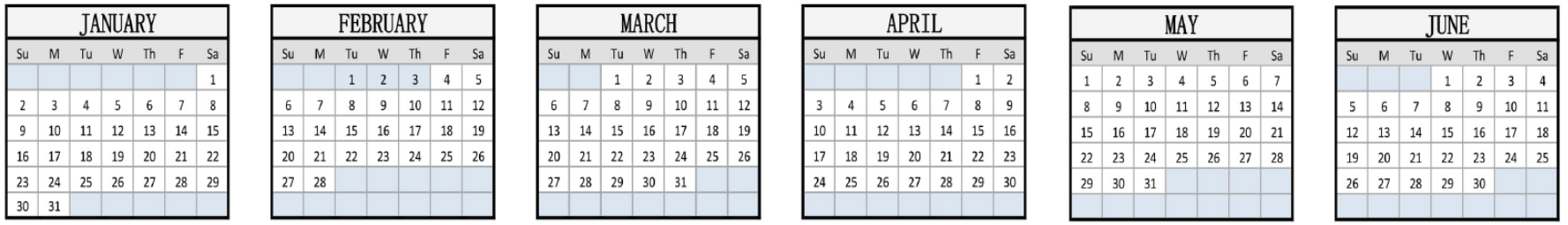
# Existing Lead and Copper Rule (1991)

## *Sampling Requirements*

Public water systems are required to “start” by tap monitoring every 6 months. This monitoring schedule is referred to in the rule as “standard monitoring”.

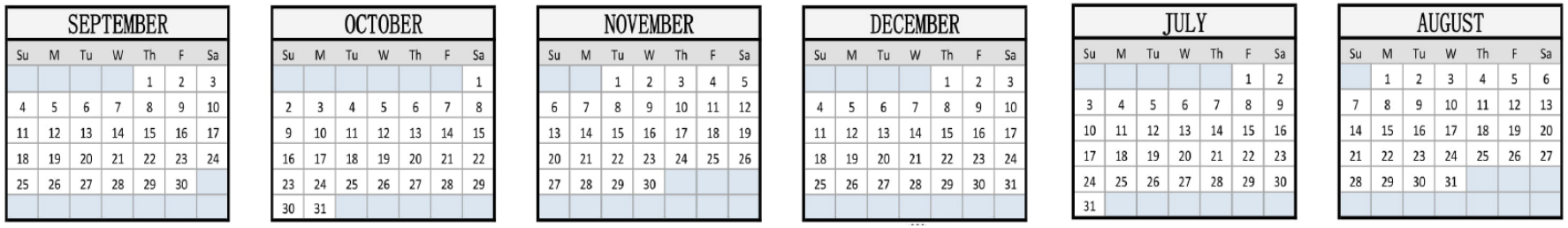
**Monitoring Period 1:**

Jan 1- June 30




**Monitoring Period 2:**

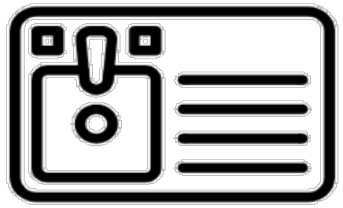
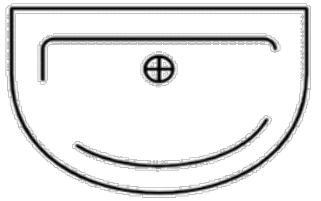
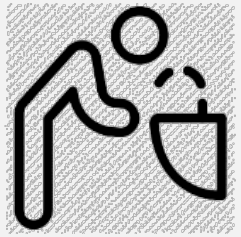
July 1- Dec 31



# Existing Lead and Copper Rule (1991)

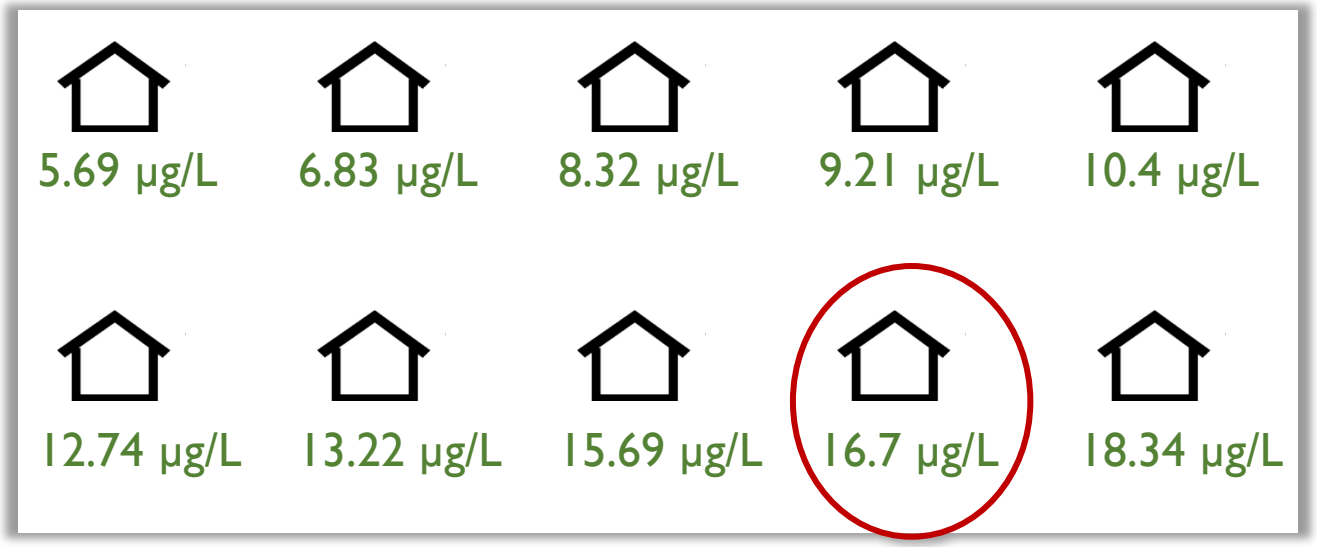
## *Sampling Requirements*

- The number of required sampling locations depends on the population served and ranges from 5-100.
- Sampling must be conducted at:
  - taps where water is typically drawn for consumption; and
  - Locations with the highest risk for lead and copper exposure (i.e. lead/copper pipe/plumbing materials)

| | | |
|---|---|---|
| RESIDENTIAL |  COLD KITCHEN TAP |  COLD BATHROOM SINK TAP |
| NON-RESIDENTIAL |  | INTERIOR TAP FROM WHICH WATER IS TYPICALLY DRAWN FOR CONSUMPTION |

# Existing Lead and Copper Rule (1991)

***90th percentile***




Public water systems' lead and copper levels are calculated based on 90th percentile level of tap water samples.

# Existing Lead and Copper Rule (1991)

*Action Levels*


LCR establishes action level (AL) of

- 15 ppb for lead
- 1300 ppb for copper

# Existing Lead and Copper Rule (1991)

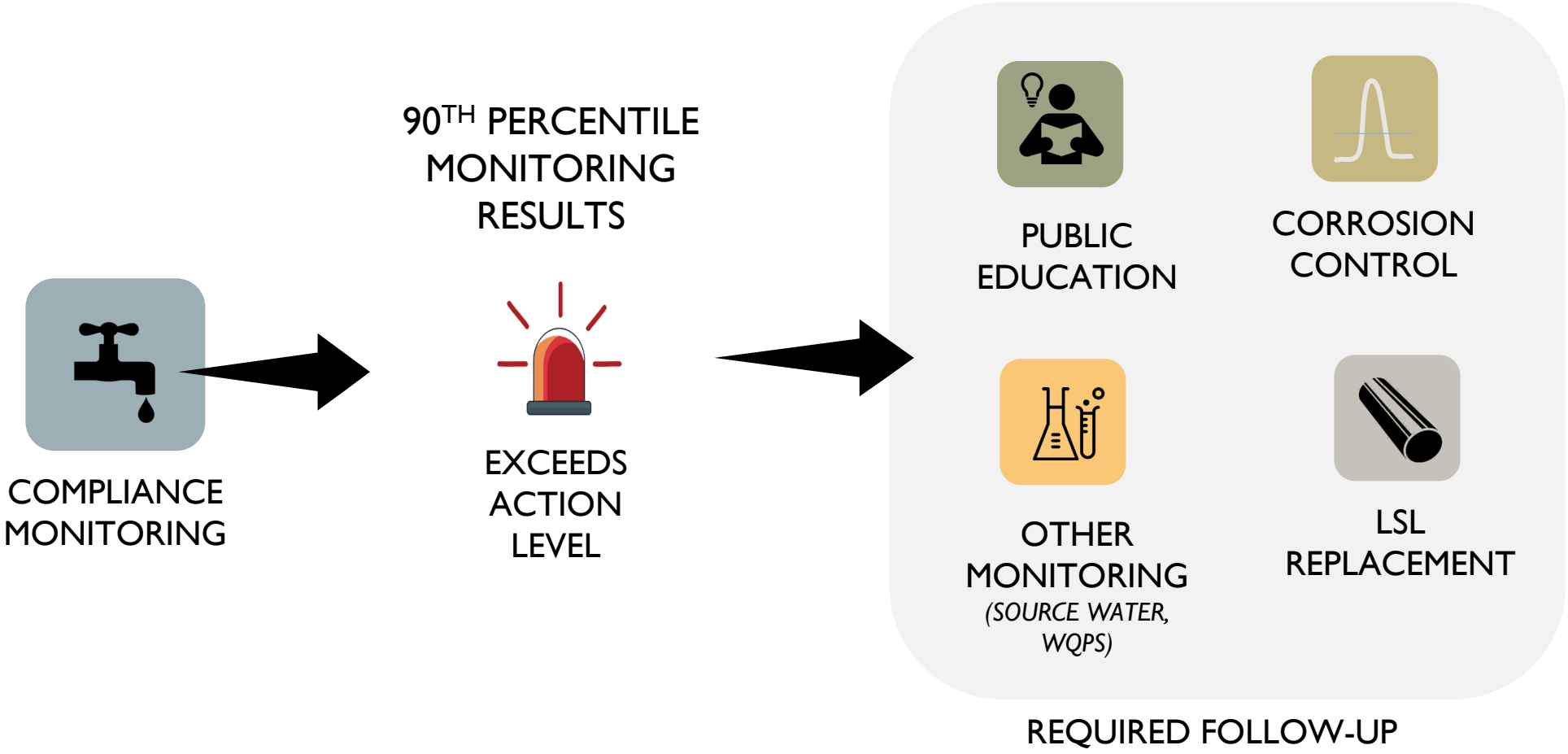
## *Sampling Requirements*

- Once a system has two consecutive rounds of standard monitoring below the lead and copper action levels they qualify for **reduced monitoring.**
- Reduced monitoring means the water system is allowed to conduct lead and copper monitoring:
  - less frequently (once every year or once every three years); and
  - at a reduced number of locations.

.

# Existing Lead and Copper Rule (1991)

*Action Level Exceedances*



# PWS with High-Profile Lead Issues Under the 1991 LCR

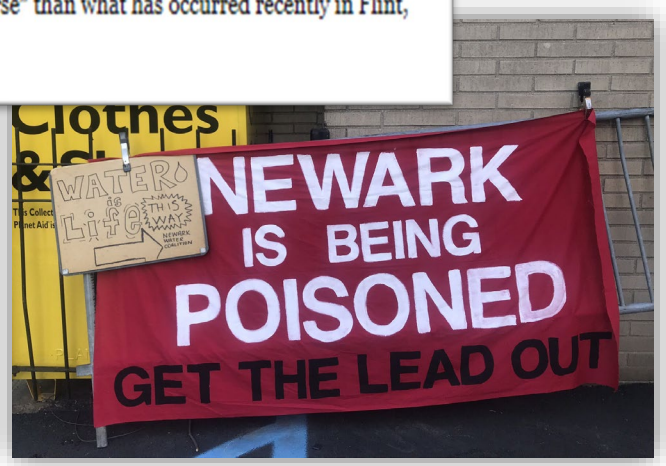
- Washington DC (2004)
- Flint (2014)
- Chicago (2016)
- Newark (2017)
- Benton Harbor (2018)

Local

## D.C.'s decade-old problem of lead in water ge attention during Flint crisis

By Katherine Shaver and Dana Hedgpeth
March 17, 2016

The District's water utility found itself on the defensive this week after a Virginia Tech professor who has crusaded against lead in drinking water told a congressional panel that the city's lead problem in the early 2000s was "20 to 30 times worse" than what has occurred recently in Flint, Mich.

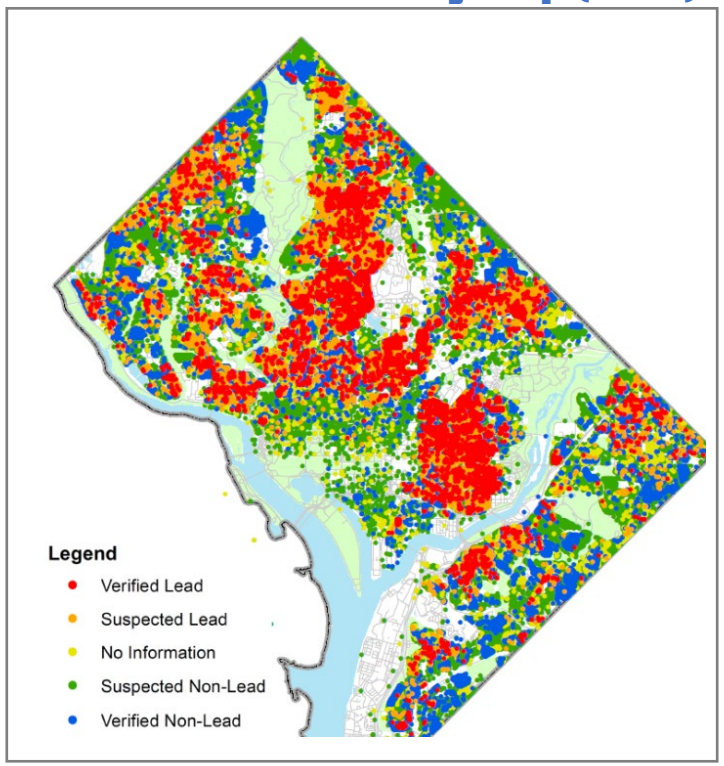


# Washington DC (2000-2004)

***"The extent of the problem in D.C. was 20 to 30 times larger than Flint."***

- In 2000 DC Water changed its disinfection treatment from chlorine to chloramine. The PWS was on reduced monitoring at the time.
- In 2004, 6,118 residences were tested for lead in drinking water:
  - Two-thirds had level levels that exceeded the lead action level of 15 ppb.
  - More than one-third had lead levels above 50 ppb.
  - 157 residences had lead levels above 300 ppb.
- It was determined that the change in disinfection treatment in 2000 caused the high lead levels. DC water consumers consumed water with high lead levels from 2000-2003 before becoming aware in 2004.
- Published research found the incidence of elevated blood lead levels was more than four times higher in D.C. children than pre- 2000 and that the number of late-term miscarriages was abnormally high between 2000-2004.
- After 2004 DC water adjusted the chemistry of their water to reduce lead release, and began LSL replacement however, **tens of thousands of LSLs still exist in the water system**.

## DC Water Lead Inventory Map (2023)



# Flint, MI (2014-2015)

- In April 2014, to save money, Flint changed its water source from purchased Detroit water to Flint River Water.
- In October 2014, General Motors stopped using Flint tap water because it was corroding its engine parts.
- In late 2014/early 2015, high lead levels were measured in Flint tap water. Samples tested by a Virginia Tech lab found lead levels ranging from 300 ppb to 13,000 ppb, with an average level of 2000 ppb. (Water with 5000 ppb lead is classified as hazardous waste.)
- In March 2015, the Flint City Council voted to reconnect to Detroit Water but the City Manager overruled the decision. City officials reassured residents that Flint water was safe to drink despite evidence to the contrary.
- Between April 2014 - Sept 2015, the incidence of elevated blood-lead levels (BLLs) in Flint's children doubled overall and nearly tripled in some neighborhoods. Nearly 9,000 children were exposed to tap water with high lead levels.
- In October of 2015 Flint switched back to Detroit water.
- Flint began LSL replacement and as of 2021, 10,059 lead pipes had been replaced, however, **several thousand still exist in the water system.**

# Gaps in the 1991 Lead and Copper Rule (LCR)

# Gaps in the 1991 Lead and Copper Rule (LCR)

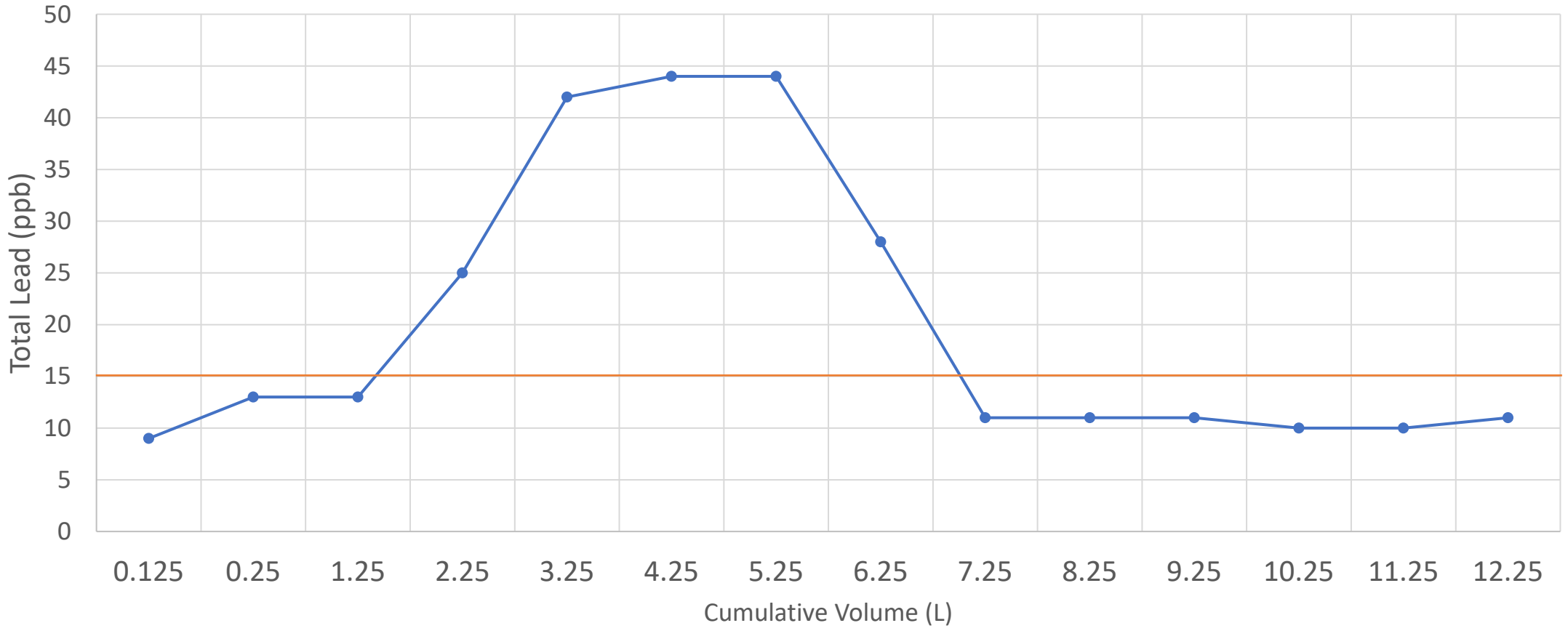
- **Sampling**
  - First liter sampling only
  - 90$^{th}$ percentile calculation methodology
  - Schools and childcare facilities
- **Corrosion Control**
  - Unregulated temporary source and/or treatment changes
  - Extended Corrosion Control Treatment (CCT) optimization timeline
- **LSL Replacement**
  - Insufficient inventory information
  - Extended timeframe
  - Partial replacements allowed
  - Ability to test out allowed
- **Public Education**
  - Limited requirements unless PWS exceeds action level

# Gaps in the 1991 Lead and Copper Rule (LCR)


First-liter sampling


Sequential sampling

# Gaps in the 1991 Lead and Copper Rule (LCR)



# Chicago, IL

## Study Estimates Nearly 70 Percent of Children Under Six in Chicago May Be Exposed to Lead-Contaminated Tap Water

*Researchers analyzed results from nearly 40,000 households participating in a voluntary tap-water test program run by the city.*

JAMA Pediatrics | Original Investigation | ARTIFICIAL INTELLIGENCE AND PEDIATRIC CARE

## Estimated Childhood Lead Exposure From Drinking Water in Chicago

Benjamin Q. Huynh, PhD; Elizabeth T. Chin, PhD; Mathew V. Kiang, ScD

Small- and large-scale childhood lead poisoning due to water consumption has been documented not only in utilities that exceed regulatory requirements but also in those that meet them.[11,12,4,13,14,15,16] The EPA acknowledges that lead exposure from water may range from 5% to more than 50% of total lead exposure for children; and more than 85% for formula-fed infants.[3] Sufficient evi-

CLIMATE

## Here's why there is still so much lead pipe in Chicago

1 of 3 | Blackhawk Sewer & Water contractor Khaild Waarith holds a lead pipe that was extracted in Chicago on April 10, 2023. Lead pipes that carry drinking water are a major source of exposure to the metal and the damage is usually permanent. (Antonio Perez/Chicago Tribune via AP)

BY MICHAEL PHILLIS AND CAMILLE FASSETT

Published 11:36 PM CST, July 8, 2023

Share

Even though lead in drinking water damages children's development, the Environmental Protection Agency has forced very few cities to replace their lead pipes.

Consider Chicago, with more water pipes made out of lead than any U.S. city, some 400,000. About 7% of homes that requested sampling last year exceeded federal limits, and in at least 73 homes, it was at least twice that much, according to an AP analysis of

# Gaps in the 1991 Lead and Copper Rule (LCR)

## Lead Levels in Water Misrepresented Across U.S.

Utilities Manipulate or Withhold Test Results to Ward Off Regulators

October 4, 2004

By Carol D. Leonnig, Jo Becker and David Nakamura

**CORRECTION**

An Oct. 5 article about lead levels in water incorrectly identified a utility that has tested its water more frequently and treated it more aggressively than the law requires. The utility is in Kansas City, Kan., not Kansas City, Mo. (Published 10/8/04)

Cities across the country are manipulating the results of tests used to detect lead in water, violating federal law and putting millions of Americans at risk of drinking more of the contaminant than their suppliers are reporting.

# Gaps in the 1991 Lead and Copper Rule (LCR)

National Climate Education Health Innovations Investigations National Security Obituaries Science

## Kids drink contaminated water at schools, but testing for lead isn't required

Despite aging pipes and vulnerable children, schools face no national requirement to test for lead

Updated August 8, 2024

14 min

METRO

## Brooklyn school has more lead in its water than Flint

By Selim Algar and Bruce Golding

Published April 17, 2017 | Updated April 19, 2017, 2:21 p.m. ET


John Roca

**EXPLORE MORE**

**Drinking water of 97M Americans contaminated with unregulated chemicals — how to limit your exposure**

Students in a Brooklyn elementary school classroom drank from a fountain whose water was more contaminated than Flint, Mich.'s — laden with 1,000 times the amount of lead permitted by federal safety regulations.

A Dec. 16 test revealed a staggering lead concentration level of 15,000 parts per billion in the water spouting from the

# Gaps in the 1991 Lead and Copper Rule (LCR)

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| **Scenario 1: No CCT Study** | PWS Submits CCT recommendation; Dept approves recommendation or designates alternative CCT | PWS prepares for CCT install | **PWS installs CCT** | PWS conducts testing to determine effectiveness of installed CCT | | |
| **Scenario 2: CCT study** | PWS Submits CCT recommendation; Dept assigns CCT study | PWS conducts CCT study | PWS conducts CCT study | PWS prepares for CCT install | **PWS installs CCT** | PWS conducts testing to determine effectiveness of installed CCT |

*PWS are not required to conduct lead and copper sampling during their CCT optimization period.*

# Gaps in the 1991 Lead and Copper Rule (LCR)

ABOUT US > LIGHTHOUSE

## The two Milwaukee suburbs with the highest percentage of lead service lines in Wisconsin

"It just blows my mind that this is something that's been a known issue and we're just sort of being notified of it now," said Janelle Smarella.

## Flint, Michigan, held in contempt by federal judge for missing deadlines to replace lead pipes at center of water crisis

By Dakin Andone and Nic F. Anderson, CNN
4 minute read · Updated 5:45 PM EDT, Thu March 14, 2024


The top of the Flint Water Plant tower is seen in 2016 in Michigan. Rebecca Cook/Reuters

# Lead and Copper Rule Implementation in Wisconsin

# Public Water System (PWS) Types Regulated by the LCR

(~2000 total in Wisconsin)

**MUNICIPAL COMMUNITY WATER SYSTEMS**

- Cities
- Villages
- Sanitary Districts
- Correctional Facilities

**OTHER-THAN-MUNICIPAL COMMUNITY WATER SYSTEMS**

- Mobile Home Communities
- Condominium complexes
- Rural Subdivisions
- Convents

**NON-TRANSIENT NON-COMMUNITY WATER SYSTEMS**

- Schools
- Truck stops
- Manufacturing
- Churches
- Daycares

# PWS Regulated by the Lead and Copper Rule in Wisconsin

| | Small (<3,300) | Medium (3,301-50,000) | Large (>50,000) |
|---|---|---|---|
| Percent of total PWS regulated by LCR, of each size range | 91% | 9% | <1% |
| Percent of Consumers Served by PWS in each size range | 29% | 33% | 38% |

**Lead Service Lines per Public Water System**

**# of Lead or Galvanized Service Lines in PWS**

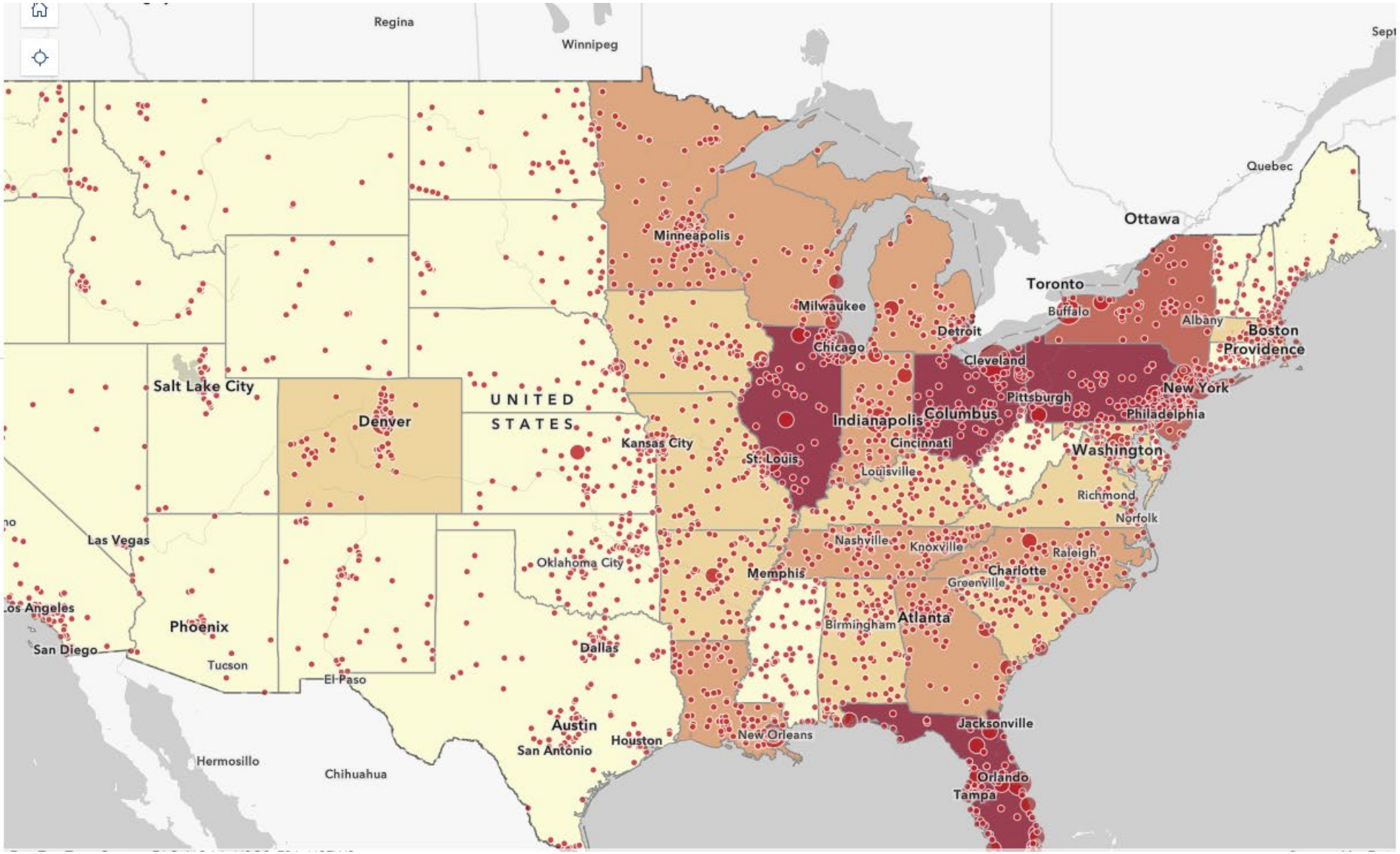
Service lines that contain any lead pipe or contain galvanized pipe and were previously downstream from a lead source

- > 112,000 - 388,000
- > 33,000 - 112,000
- > 8,000 - 33,000
- 0 - 8,000

**Lead Service Lines per State**

Total Projected Service Lines with Lead

- 660,000-1,100,000
- 360,000-660,000
- 200,000-360,000
- 70,000-200,000
- 0-70,000

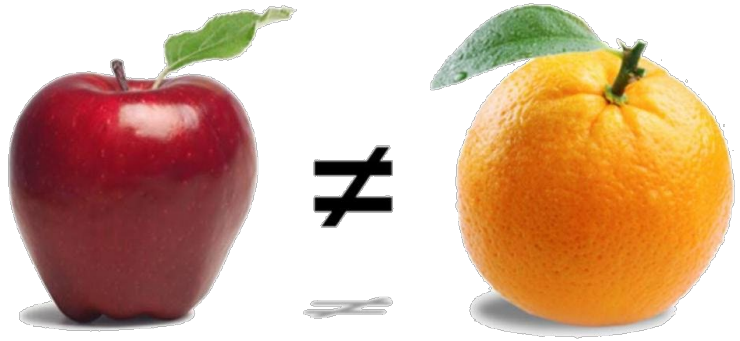



**Source: NRDC Map based on USEPA Survey Data**

# Lead Services Lines in Wisconsin PWS

Percent of total service lines

| | Lead | Possibly Lead |
|---|---|---|
| 2023 PSC Data[1] | 11% | 5% |
| 2024 LCRR Inventories approved so far[2] | 17% | 14% |



[1] 2023 PSC data only includes municipal community water systems regulated by the PSC

[2] 2024 LCRR data only includes water systems with approved LCRR inventories as 1/29/25. However, it encompasses all water system types regulated by the LCRR including data from three out of the four largest water systems in Wisconsin.

# Corrosion Control Treatment in Wisconsin PWS

| | PWS with Corrosion Control Treatment | PWS with Lead ALE in past 20 years | PWS with Copper ALE past 20 years |
|---|---|---|---|
| Community Water Systems | **34%** | 15% | 6% |
| Non-Community Water Systems | **5%** | 18% | 9% |

# Source and Treatment Changes

- 15-20 long-term CWS source changes per year
- More than a hundred long-term CWS treatment changes per year
- The number of temporary source and treatment changes per year is unknown because these are not reported to lead and copper section.
- The number of NN source and treatment changes per year is unknown because these are not reported to the department.

# Key Provisions of Federal (& proposed state) Rule Change

- Locate existing lead pipes
- Replace lead services lines within 10 years
- Lower the threshold for taking action to reduce lead in drinking water
- Strengthen tap sampling requirements
- Reduce exposure at home.
- Require transparent and frequent communication.
- Require PWS sampling at schools and childcare facilities.
- Strengthen post-ALE corrosion control steps, but provide extra flexibility in these requirements for systems serving a population of less than 10,000.

# Federal (& Proposed State) Rule Change

**According to EPA…**

- The LCRI strengthens existing requirements  to protect the public from lead in drinking water. These advancements are  commonsense, achievable, and built on actions already taken by states and cities.
- The health and economic benefits of the LCRI rule exceed the costs by more than tenfold.

# Overview Significant Changes

*that will be incorporated into State Rule*

# 2024 LCRI changes to 2021 LCRR

| LSL REPLACEMENT | COMPLIANCE MONITORING | CORROSION CONTROL | PUBLIC NOTICE & EDUCATION | 10 PPB LEAD ~~TRIGGER~~ ACTION LEVEL | SERVICE LINE INVENTORY | SCHOOLS & CHILDCARE | ~~FIND & FIX~~ DISTRIBUTION SITE ASSESSMENT | LEAD ALE TIER I PN |
|---|---|---|---|---|---|---|---|---|
| Significantly expanded & strengthened requirements | Modified & clarified some requirements | Modified & clarified some requirements | Retained inventory-related PE requirements. Modified & clarified some requirements. | Lowered AL to 10 ppb & eliminated trigger level. | Retained LCRR requirements and added new LCRI requirements. | Modified & clarified some requirements | Modified some requirements and re-named. | Retained LCRR requirements |
| Delayed compliance date to 2027 | Delayed compliance date to 2027 | Delayed compliance date to 2027 | Retained 2024 compliance date for inventory-related PE requirements. Delayed date of other requirements to 2027. | Delayed compliance date to 2027 | Retained 2024 compliance date for LCRR requirements LCRI requirements due 2027 | Delayed compliance date to 2027 | Delayed compliance date to 2027 | Retained 2024 compliance date |