Lead & Copper Rule

Midwest Assistance Program

US EPA R8 Drinking Water Program

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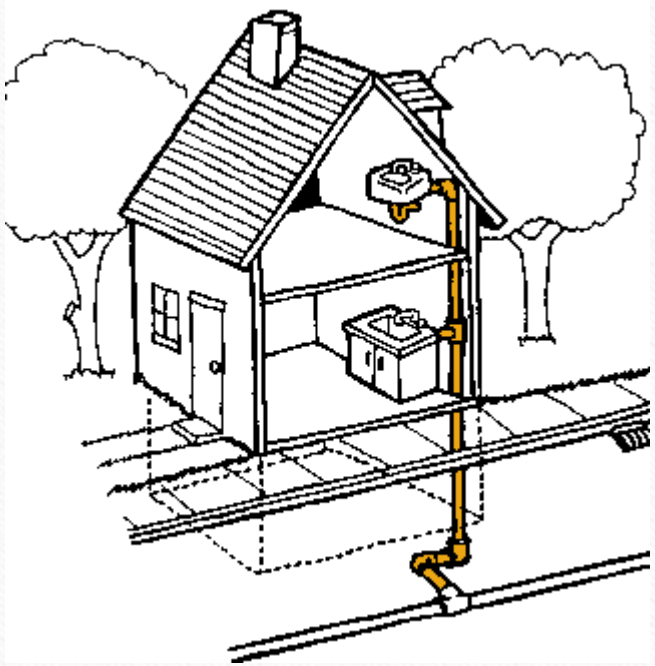
April 2019

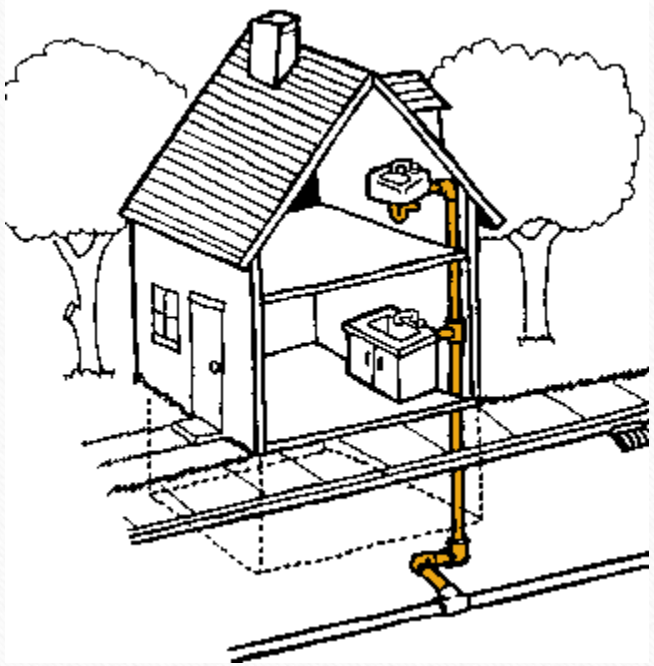
Presentation Talking Points

- Lead and Copper Rule (LCR) Overview
- Health Effects
- Monitoring & Reporting
- Tap Sampling Protocol & Sampling Plan
- Lead Consumer Notice
- 90th Percentiles
- Action Level Exceedance (ALE)
- Corrosion Control



Presentation Talking Points

- Lead in Schools
- Open Discussion



Why Lead?

Installed After the Civil War 150 Years Old in Cincinnati: Any Signs of Failure?



Compliments of Mike Schock, EPA Office of Research & Development (ORD)

Lead and Copper Rule Overview

- The Lead and Copper Rule (LCR) was originally published in 1991
- The Revised LCR is under Development
- Applies to Community (CWS) & Non-transient Non-community (NTNC) Public Water Systems (PWS)
- Transient Water Systems are Not Required to Comply with LCR

Lead and Copper Rule Overview

- The LCR is based on Treatment Techniques, not Health Limits

- The Rule sets Action Levels (AL) rather than Maximum Contaminant Levels (MCL):

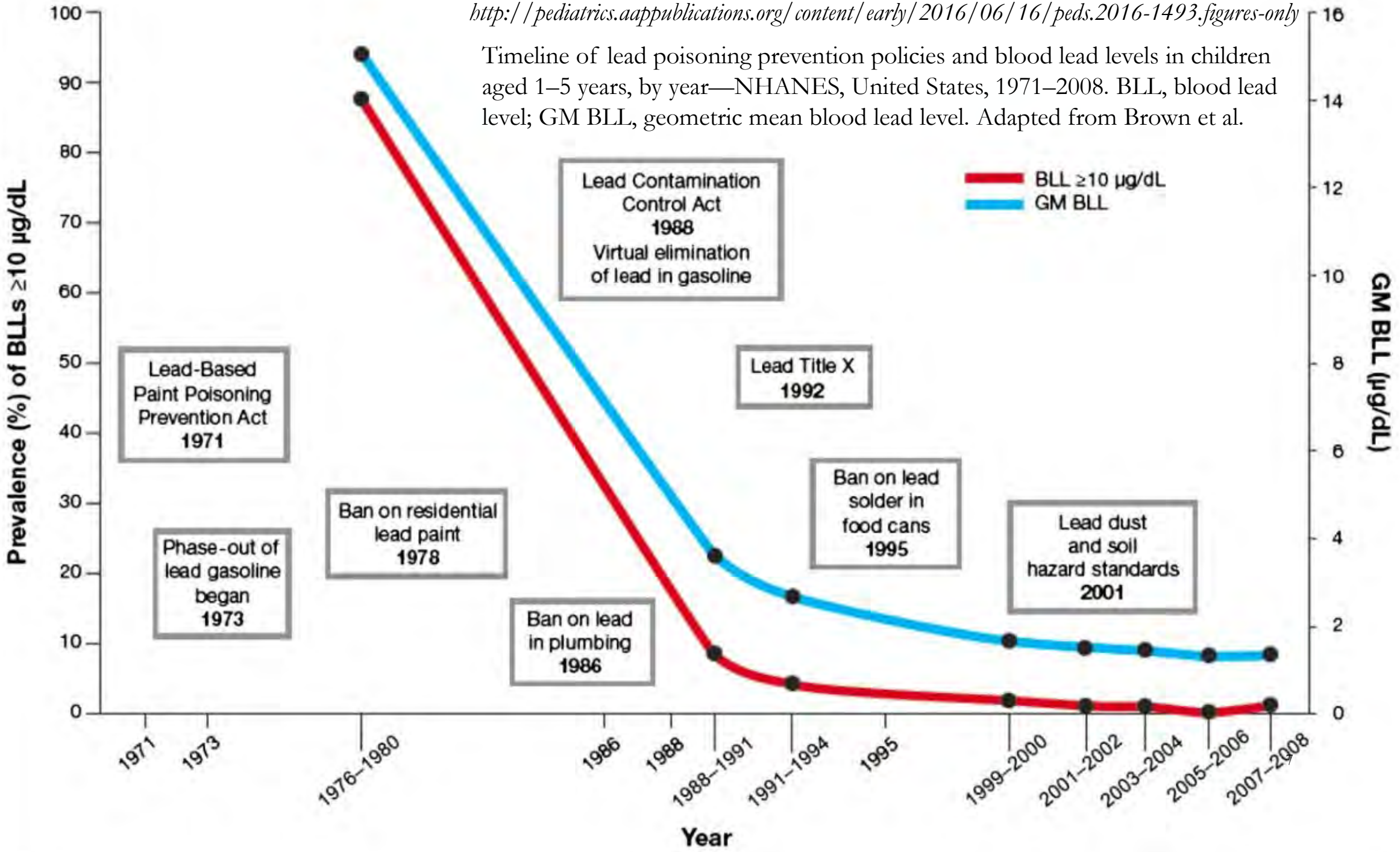
Lead (Pb) = 0.015 mg/L

Copper (Cu) = 1.3 mg/L

There is NO Safe Level for Lead

http://pediatrics.aappublications.org/content/early/2016/06/16/peds.2016-1493.figures-only

Timeline of lead poisoning prevention policies and blood lead levels in children aged 1–5 years, by year—NHANES, United States, 1971–2008. BLL, blood lead level; GM BLL, geometric mean blood lead level. Adapted from Brown et al.

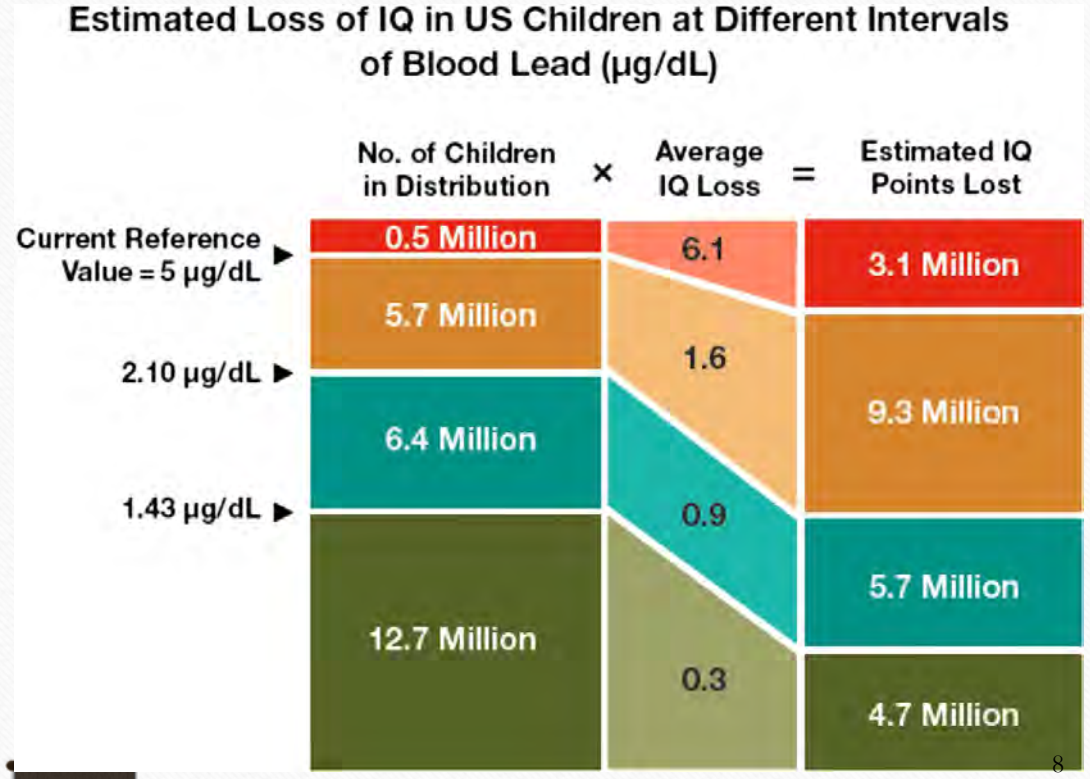


Health Effects of Lead

- Children - cause impaired mental development, behavioral disorders, lower IQ, hyperactivity
- Adults – increase blood pressure risk, mental fog

Lead is odorless and tasteless

http://pediatrics.aappublications.org/content/early/2016/06/16/peds.2016-1493.figures-only

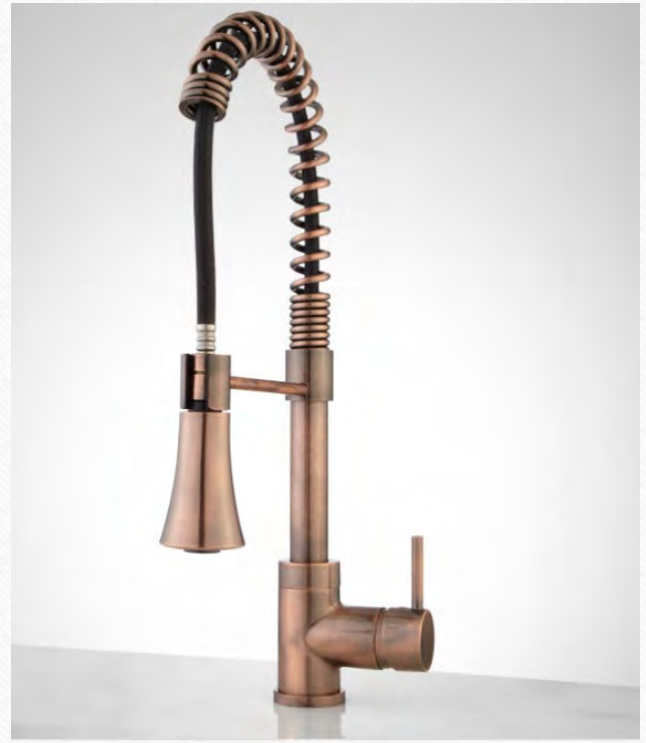


Health Effects of Copper

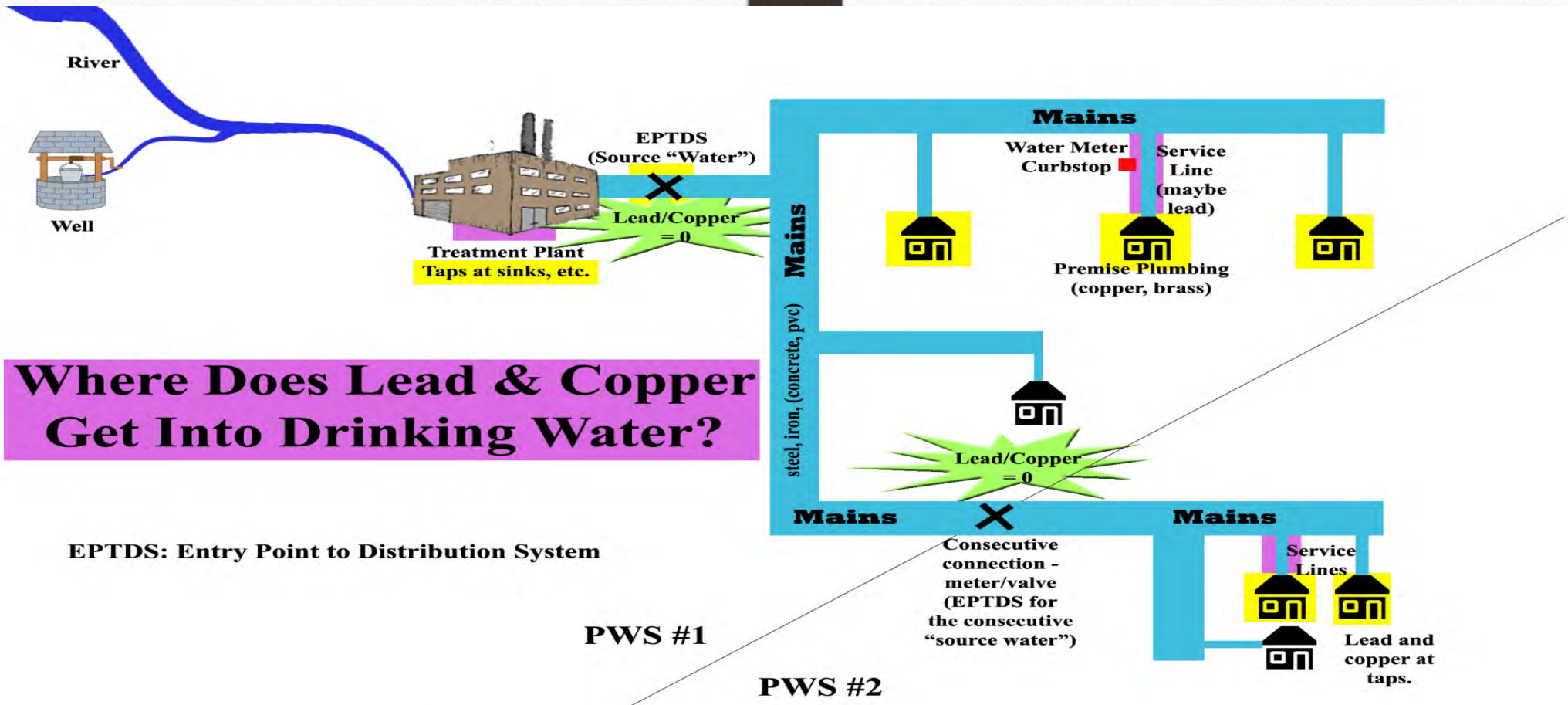
Children – Stomach Distress

Adults – Chronic Exposure can cause Liver Disease

Water systems don't typically hear complaints until the copper levels are more than double the Action Level so exposure so the chronic effects of copper can be silent.



Where Does Lead & Copper Get Into Drinking Water?



EPTDS: Entry Point to Distribution System

Lead and Copper Sampling:

- Source (flush before sample)
- Taps (do not flush before sample)

Monitoring & Reporting

- Standard (6-month) – New Systems, Systems that Exceed the AL, Systems that FTM 2x
- Reduced Monitoring – Annual or Triennial

System Population	Minimum Number of Tap Sample Sites	
	Standard Monitoring	Reduced Monitoring
10,001 to 100,000	60	30
3,301 to 10,000	40	20
501 to 3,300	20	10
101 to 500	10	5
Less than 101	5	5

Monitoring & Reporting

Standard (6-month) Monitoring Periods

- Sample between January 1 and June 30; July 1 and December 31
- Two rounds of consecutive standard monitoring with results below the Action Levels may qualify your System for reduced monitoring

Reduced Monitoring – Annual or Triennial Monitoring Periods

- Sample between June 1 and September 30

A message from EPA Headquarters

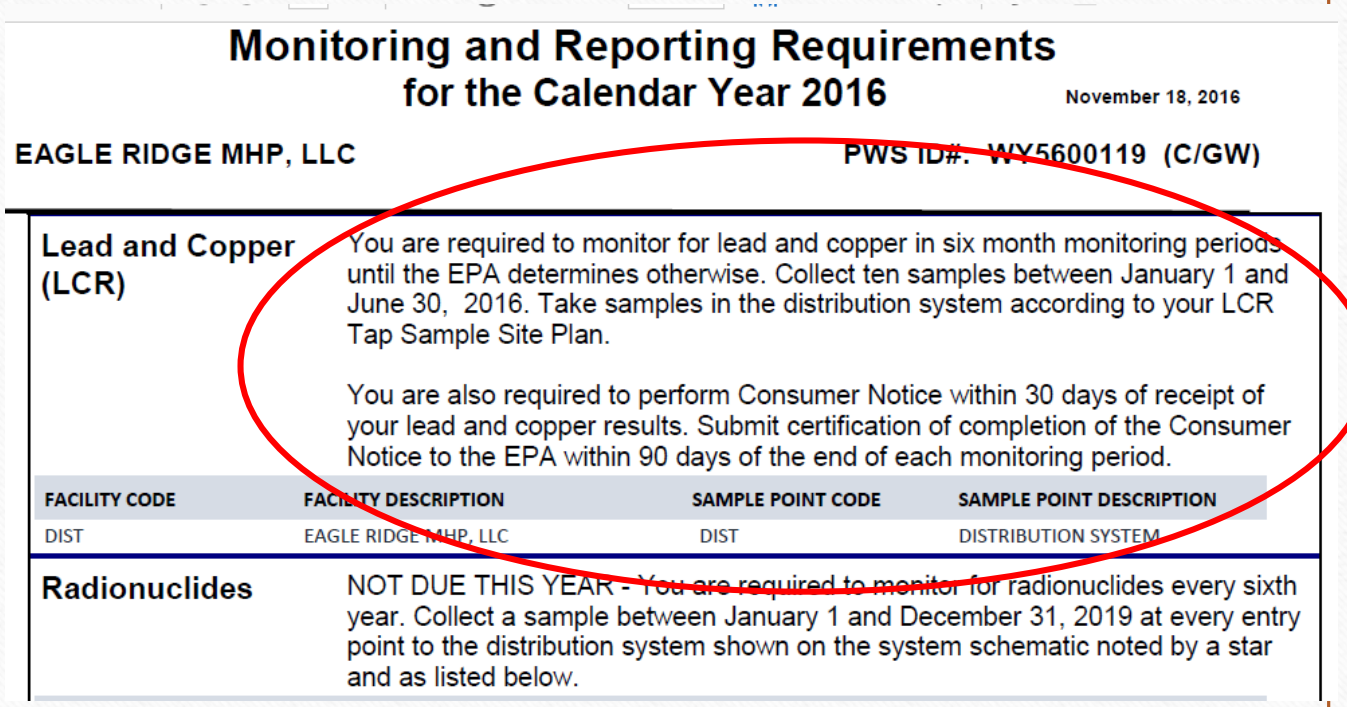
WSG 200, October 13, 2016
Signed by Peter Grevatt – Director OGWDW

EPA Regions should act in their oversight capacity, to clearly communicate the expectation that primacy agencies will critically consider relevant aspects of a water system's LCR program including corrosion control treatment and historical performance before granting triennial monitoring. In addition, where the primacy agency finds that a public water system is lacking in technical, managerial, and financial capacity, the primacy agency could decide to keep the system on an annual LCR monitoring schedule.

Reduced Monitoring is a Privilege and can be Redacted

Monitoring & Reporting Requirements Form

- Summary of Sampling Requirements Emailed to PWS in February
- Drinking Water Online
- References the LCR TSSP
- Lead Consumer Notice & Certification of Consumer Notice for each PWS



Monitoring and Reporting Requirements for the Calendar Year 2016

November 18, 2016

EAGLE RIDGE MHP, LLC PWS ID#: WY5600119 (C/GW)

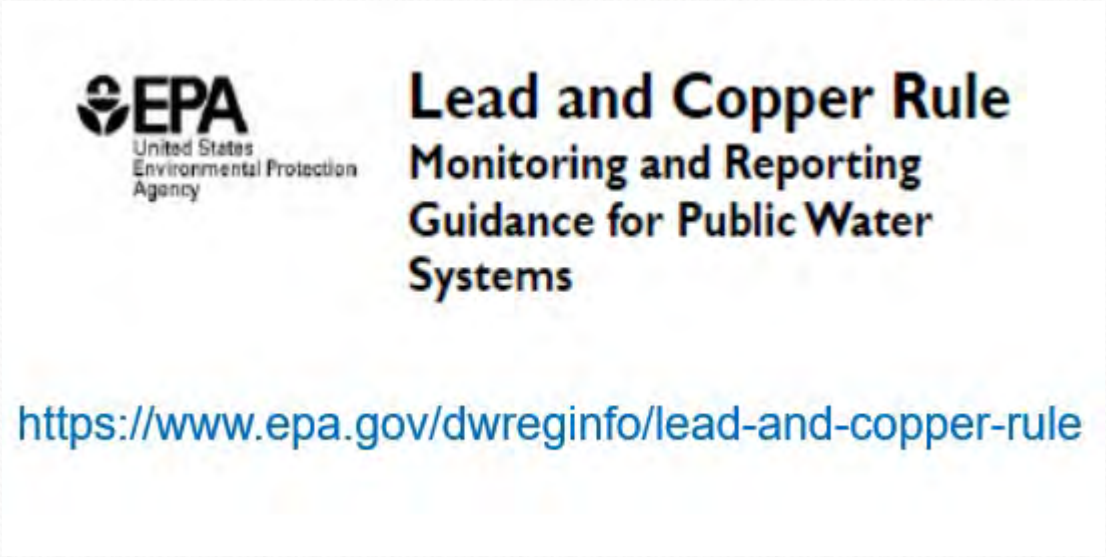
Lead and Copper (LCR)	You are required to monitor for lead and copper in six month monitoring periods until the EPA determines otherwise. Collect ten samples between January 1 and June 30, 2016. Take samples in the distribution system according to your LCR Tap Sample Site Plan. You are also required to perform Consumer Notice within 30 days of receipt of your lead and copper results. Submit certification of completion of the Consumer Notice to the EPA within 90 days of the end of each monitoring period.

FACILITY CODE	FACILITY DESCRIPTION	SAMPLE POINT CODE	SAMPLE POINT DESCRIPTION
DIST	EAGLE RIDGE MHP, LLC	DIST	DISTRIBUTION SYSTEM

Radionuclides	NOT DUE THIS YEAR - You are required to monitor for radionuclides every sixth year. Collect a sample between January 1 and December 31, 2019 at every entry point to the distribution system shown on the system schematic noted by a star and as listed below.

Monitoring & Reporting

- Beat the rush!!
- Collect samples early in the Monitoring Period
- Use an EPA Certified Lab
- Chain of Custody Forms



POP QUIZ: How long must a PWS keep physical copies of LCR data?

Monitoring & Reporting

Short Deadlines so Sample EARLY – **Do Not Wait!!**

- Avoid those pesky reminder emails from me!
- Avoid risking FTMs due to broken bottles in transit to the lab!
- Avoid rushing around to find sample locations when the homeowner forgets to put the samples bottles outside!
- Avoid getting a notice from the lab that the sample bottle was not filled to enough and the sample is invalid!

Where to Collect Samples

- Distribution System
- Cold-Water Taps that are Regularly Used for Consumption
- Kitchen Faucet or Bathroom Faucet
- Employee Break Room
- School Cafeteria

Where *NOT* to Collect Samples

https://www.google.com/search?q=picture+of+lead+hose+bib+on+a+house&rls=com.microsoft:en-US:IE-Address&tbm=isch&tbo=u&source=univ&sa=X&ved=2ahUKEwjyz9_R6_7dAhWthOAKHXRLClYQ7Al6BAgFECE&biw=1024&bih=666&dpr=1.25

When *NOT* to Collect Samples

LCR Tap Sample Site Plan (TSSP)

- Materials Evaluations 141.86 Required in 1991
- EPA Requires that all Systems Submit a LCR TSSP

Lead & Copper Rule (LCR)

Form	Description
	**Lead and Copper Tap Sample Site Plan** - This template may be used by public water systems in Wyoming and on EPA R8 Tribal Lands to identify, verify, and certify lead and copper tap sample sites to comply with the Lead and Copper Rule. This template is also available in **MS Word format**. These **Lead and Copper Tap Sample Site Plan Instructions** may be used as a guide for how to properly complete lead and copper tap sample site plans.

LCR Tap Sample Site Plan (TSSP)

Water systems must identify the highest priority (Tier) sites to sample. Community public water systems must sample at all Tier 1 sites if they have enough Tier 1 sites to choose from.

- Tier #1 sites: Single family structures that contains copper pipes with lead solder installed between 1983 and 1988, or contain lead pipes and/or served by a lead service line (LSL). If the PWS has LSLs, then it must collect 50% of the samples from the LSL. If there are not enough LSLs for 50%, the PWS must sample at all sites with LSLs.

What if the PWS does not have Tier 1 Sites?

If the PWS does not have enough Tier 1 sites to choose from, then it must collect LC samples from Tier 2 sites. If there are not enough Tier 1 and Tier 2 sites, then Tier 3 sites must be used:

For Community PWSs:

- Tier #2 sites: Buildings (i.e. apartment buildings) that contain the above materials
- Tier #3 sites: Single family structures that contain copper pipes with lead solder installed before 1983

Region 8 Tier Structure	
If you are a CWS	**If you are a NTNCWS**
Tier 1 sampling sites are single family structures**:** • With copper pipes with lead solder installed between 1983 and 1988*; or • contain lead pipes; or • are served by a lead service line. **Tier 2** sampling sites consist of buildings (i.e. apartment buildings, schools, hospitals): • with copper pipes with lead solder installed between 1983 and 1988, or • contain lead pipes; and/or • served by a lead service line. **Tier 3** sampling sites are single family structures with copper pipes having lead solder installed before 1983. Tier "**Other**": • All other structures.	**Tier 1** sampling sites consist of buildings: • with copper pipes with lead solder installed between 1983 and 1988*; or • contain lead pipes; or • are served by a lead service line. **Tier 2** sampling sites consist of buildings with copper pipes with lead solder installed before 1983. Tier "**Other**": • All other structures.

Email me or check online for a Cheat Sheet.

Identifying Plumbing

- County Assessor's Office
- Plumbing Codes
- Distribution Maps and Drawings
- Inspection and Maintenance Records
- Meter Installation Records
- Building Permits
- Engineering Records (As Builts)

44 Pika Street Public Records

Official property, sales, and tax information from county (public) records as of 06/2016:

Duplex (2 units, any combination)	1,043 sqft	Lot Size: 3,120 sqft
Built In 1907	Stories: 1 story	Heating: Forced air unit
Parking: Garage	Parking Spaces: 1	Exterior Walls: Brick veneer
	2 Units	Construction: Wood

What year was your home built or recently remodeled? _____

Your drinking water pipe should be visible when you look under your kitchen or bathroom sink, in your laundry room or if you have an unfinished basement in the walls or ceilings.

The water pipe is about 1-inch wide and is either a copper or gray colored metal pipe or white plastic (PVC) pipe.

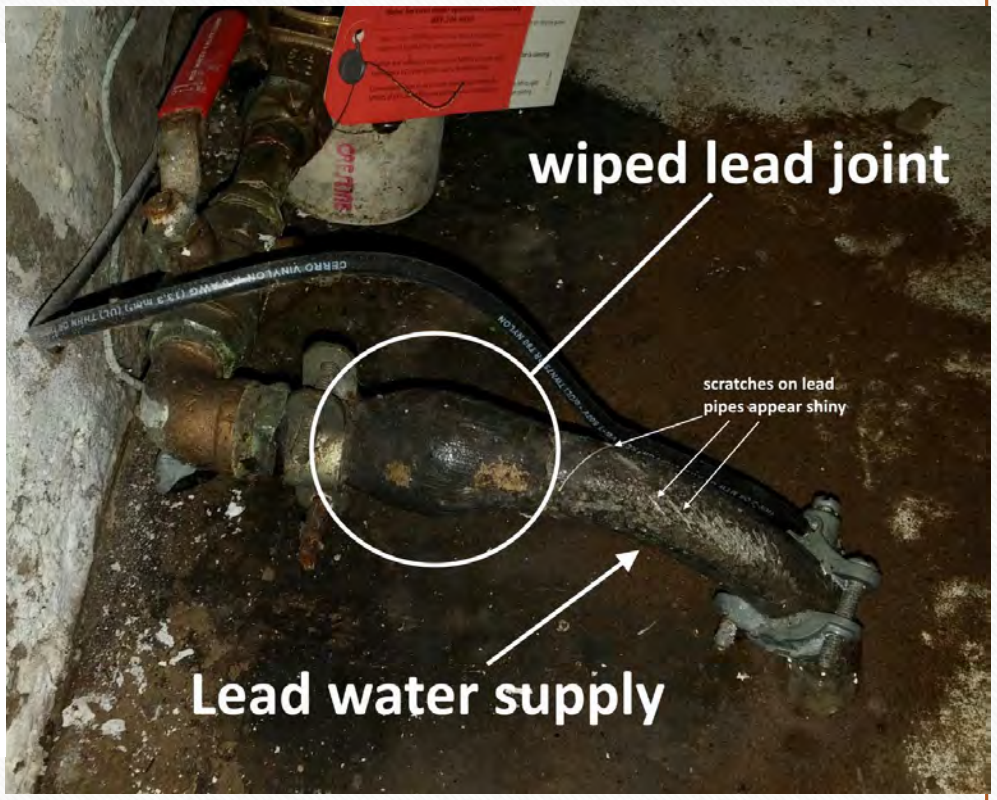
Larger white plastic (PVC) pipe would likely be a sewer pipe which is 2 to 3 inches wide.

Please check what type of pipe you have in your house below:

Gray Pipe ☐ Copper Pipe ☐ White Plastic Pipe ☐

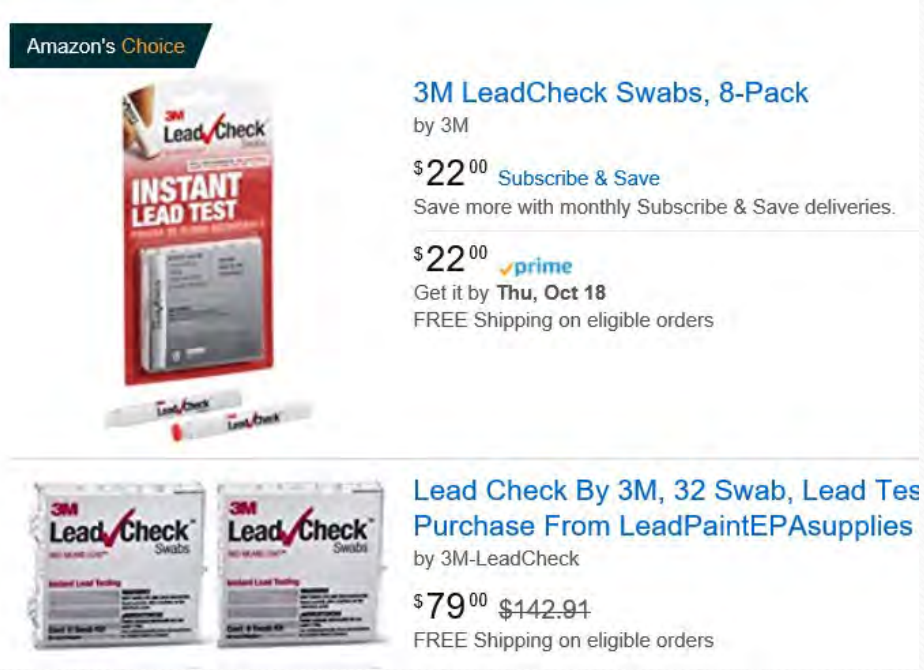
Combination of pipe materials listed above ☐

Lead Pipe ☐ If the pipe is gray, take a screw driver and try to scratch the pipe. If the pipe is soft metal and it easily scratches leaving a shiny mark it is likely lead. Please check the lead pipe box if the gray pipe is easily scratched.



Scratch and Swab Test

Courtesy of Denver Water



LEAD AND COPPER RULE
Lead and Copper Tap Sample Site Plan
Region 8 – Wyoming and R8 Tribal

THE NUMBER OF LEAD/COPPER SAMPLE SITES REQUIRED IS BASED ON THE POPULATION OF THE PWS AS SUMMARIZED BELOW:

PWS ID: _____

SYSTEM NAME: _____

ADDRESS: _____

CONTACT PERSON: _____

PHONE NUMBER: _____

EMAIL ADDRESS: _____

SYSTEM TYPE: ☐ CWS ☐ NTNC

POPULATION:

☐ >100,000

☐ 10,001 to 100,000

☐ 3,301 to 10,000

☐ 501 to 3,300

☐ 101 to 500

☐ ≤ 100

Minimum Number of Tap Sample Sites Required for the Lead and Copper Rule

System Population	Minimum Number of Tap Sample Sites	
	Standard Monitoring	Reduced Monitoring
10,001 to 100,000	60	30
3,301 to 10,000	40	20
501 to 3,300	20	10
101 to 500	10	5
Less than 101	5	5

LEAD AND COPPER SAMPLE SITE SELECTION FORM

PWS NUMBER: _____

Make sure you include all regular and backup sites and add as many pages as you need.

No	Site Name & Address	Tier 1, 2, 3, Other	(R)egular sample site or (B)ack-up site	Plumbing Material	Date of Construction/Notes
1					
2					
3					
4					

Can I Change Sample Sites?

- Great question! Yes
- Submit Revised TSSP to EPA R8
- What are some examples of why you would change your sampling locations?

  - ❑ Homeowner abandons their home
  - ❑ Homeowner decides not to participate anymore
  - ❑ You find a lead service line that you were unaware of

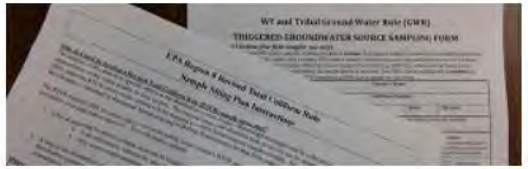
Operators Must Distribute the Correct Sample Collection Protocol

- Minimum of 6 hours of stagnant water in the pipes prior to sample collection. DO NOT intentionally flush the water line before the start of the 6 hour period.
- Collect a 1-L sample in a wide-mouth bottle from a kitchen or bathroom cold-water faucet that has been used for consumption in the past few weeks
- If the home has a POE, like a water softener, then select a different sampling site
- If the home has a POU, like an RO unit under the sink, then select a tap that is not connected to it
- DO NOT remove the aerator prior to sampling
- Note any plumbing repairs or replacements on your sample label

The Sample Collection Protocol is Online

https://www.epa.gov/region8-waterops/reporting-forms-and-instructions-reporting-forms#lcr

Reporting and Forms



Reporting, Forms and Instructions

- Reporting Forms
- Public Notification
- Consumer Confidence Reports

Lead & Copper Rule (LCR)

Form	Description
	LCR Sample Collection Form and Instructions - This template may be used as a guide instructing consumers of water provided by a public water system on how to collect samples from their home taps for the purpose of lead and copper testing. This template is also available in MS Word format.
	LCR Consumer Notification Form – Notice of Lead Tap Water Results - This template may be used for public notification to consumers of water provided by a public water system, after lead and copper testing has been conducted on water collected in a consumer's home. This template is also available in MS Word format.
	LCR Consumer Notice Certification Form - This template may be used for certification to the EPA that public notification has been sent to consumers, after lead and copper testing has been conducted on water collected in a consumer's home. This template is also available in MS Word format.

"Directions for Homeowner Tap Sample Collection Procedures"

Revised Version: February 2016

These samples are being collected to determine the lead and copper levels in your tap water. This sampling effort is required by the U.S. Environmental Protection Agency and your State under the Lead and Copper Rule, and is being accomplished through a collaboration between the public water system and their consumers (e.g. residents).

Collect samples from a tap that has not been used for at least 6 hours. To ensure the water has not been used for at least 6 hours, the best time to collect samples is either early in the morning or in the evening upon returning from work. Be sure to use a kitchen or bathroom cold water tap that has been used for drinking water consumption in the past few weeks. The collection procedure is described below.

1. Prior arrangements will be made with you, the costumer, to coordinate the sample collection. Dates will be set for sample kit delivery and pick-up by water system staff.
2. There must be a minimum of 6 hours during which there is no water used from the tap where the sample will be collected and any taps adjacent or close to that tap. Either early mornings or evenings upon returning home are the best sampling times to ensure that the necessary stagnant water conditions exist. Do not intentionally flush the water line before the start of the 6 hour period.
3. Use a kitchen or bathroom cold-water faucet for sampling. If you have water softeners on your kitchen taps, collect your sample from the bathroom tap that is not attached to a water softener, or a point of use filter, if possible. Do not remove the aerator prior to sampling. Place the opened sample bottle below the faucet and open the cold water tap as you would do to fill a glass of water. Fill the sample bottle to the line marked "1000-mL" and turn off the water.
4. Tightly cap the sample bottle and place in the sample kit provided. Please review the sample kit label at this time to ensure that all information contained on the label is correct.
5. If any plumbing repairs or replacement has been done in the home since the previous sampling event, note this information on the label as provided. Also if your sample was collected from a tap with a water softener, note this as well.
6. Place the sample kit in the same location the kit was delivered to so that water system staff may pick up the sample kit.
7. Results from this monitoring effort and information about lead will be provided to you as soon as practical but no later than 30 days after the system learns of the tap monitoring results. However, if excessive lead and/or copper levels are found, immediate notification will be provided (usually 1-2 working days after the system learns of the tap monitoring results).

Call_____at_____if you have any questions regarding these instructions.

TO BE COMPLETED BY RESIDENT

Water was last used: Time_____ Date_____
Sample was collected: Time_____ Date_____

Sample Location & faucet (e.g. Bathroom sink): _____

I have read the above directions and have taken a tap sample in accordance with these

Chain of Custody (COC)

LEAD AND COPPER RULE—CHAIN OF CUSTODY FORM

☐ COMPLIANCE SAMPLES ☐ NON-COMPLIANCE SAMPLES	LAB ID#:	LAB PHONE #:
LAB NAME:		
PWS/CONTACT PHONE:	LAB CONTACT NAME: (for questions about analysis)	
ORIGINAL LAB ACCREDITATION ID#:	ORIGINAL LAB SAMPLE ID #:	ORIGINAL COLLECTION DATE/TIME:

Sample Location (example: 123 Main Street, kitchen sink for First Draw Samples or location of entry point for non-first draw samples.)	Water Last Used Date (MM/DD/YY)	Water Last Used Time (HH:MM)	Sample Collected Date (MM/DD/YY)	Sample Collected Time (HH:MM)	Lab Preservation Date/Time	Lab Analysis Date/Time	Lab Sample ID #:

Monitoring & Reporting

No	Site Name	Tier 1, 2, 3, Other	(R)egular sample sites or (B)ack-up site	Type of Plumbing Material	Date of Construction
1	35 Chief Shavano Rd.	1	R	Copper	1984
2	49 Chief Shavano Rd.	1	R	Copper	1984
3	50 Chief Shavano Rd.	1	R	Copper	1984

49 Chief Shavano Rd

1806133-01 (Water)

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
Total Recoverable Metals by ICPMS (E200.8)									
Copper*	**0.0514**	0.0005	0.0002	mg/L	1	06/21/18	EPA200.8		JDA
Lead*	**0.0010**	0.0005	0.00008	mg/L	1	06/21/18	EPA200.8		JDA

LCR Sample Invalidation

CFR 141.86(f): *A sample invalidated under this paragraph does not count toward determining lead or copper 90th percentile levels under §141.80(c)(3) or toward meeting the minimum monitoring requirements of paragraph (c) of this section.*

1. The laboratory establishes that improper sample analysis caused erroneous results.
2. The State determines that the sample was taken from a site that did not meet the site selection criteria of this section.
3. The sample container was damaged in transit.
4. There is substantial reason to believe that the sample was subject to tampering.

LCR Sample Invalidation

The State determines that the sample was taken from a site that did not meet the site selection criteria of this section.

Step 1: Operator Calls LCR Rule Manager to Discuss Situation

Step 2: LCR RM Sends Form to Operator

Step 3: Operator Submits Form to Rule Manager

Step 4: Rule Manager Approves or Disapproves Request

Let's Review

1. LCR Sample Site Selection Completed
2. LCR TSSP Submitted to EPA
3. Sample Bottles Received from Lab
4. Sample Collection Protocol Reviewed with Homeowner
5. Samples Collected Early in the Monitoring Period
6. Samples Delivered to Lab with Proper COC
7. Lab Report Submitted to EPA at R8DWU@epa.gov

NOW WHAT? There's more?!

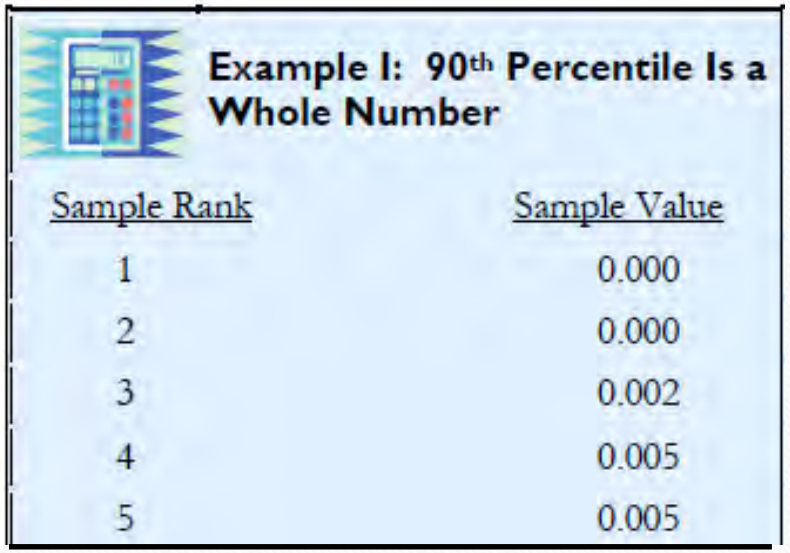
Calculate Your 90th Percentile

If you are required to collect less than five samples (i.e. 5 samples):

Step 1: Place lead or copper results in ascending order.

Step 2: Take the average of the 4th and 5th highest sample. This is your 90th percentile level.

Step 3: Compare the 90th percentile level against the lead or copper action level. If your 90th percentile value is higher than 0.015 mg/L, you have an exceedance.



Example I: 90th Percentile Is a Whole Number

Sample Rank	Sample Value
1	0.000
2	0.000
3	0.002
4	0.005
5	0.005

Calculate Your 90th Percentile

If you are required to collect more than five samples (i.e. 10 samples):

Step 1: Place results in order from lowest to highest value.

Step 2: Assign each sample a number 1 - 10.

Step 3: Multiply the total number of samples by 0.9.

Step 4: Compare the 90th percentile level to the action level. If your 90th percentile value is higher than 0.015 mg/L, you have an exceedance.

Example I: 90th Percentile Is a Whole Number

Sample Rank	Sample Value
1	0.000
2	0.000
3	0.002
4	0.005
5	0.005
6	0.006
7	0.006
8	0.010
9 (90th percentile)	*0.015*
10	0.020

Calculate Your 90th Percentile

LCR Public Education Materials for Community Systems serving less than 3300 - When the 90th percentile for Community (C) water systems (population < 3,300) exceeds the action level for lead, this template may be used to complete the required Public Education activities. This template is also available in MS Word format.

LCR 90th Percentile Calculator - This MS Excel spreadsheet can be used to calculate 90th Percentile values used to determine the action levels for both Lead (Pb) and Copper (Cu) by the linear interpolation method.

PWS Name: _____

Monitoring Period: _____

Enter your sample results here:

Sample #	Cu mg/L	Pb mg/L
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Rank	Cu mg/L	Pb mg/L
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

#Cu Obs	0
0.9 * 0	0
Cu #0	
Cu #0	
90th% Cu	
#Pb Obs	0
0.9 * 0	0
Pb #0	
Pb #0	
90th% Pb	

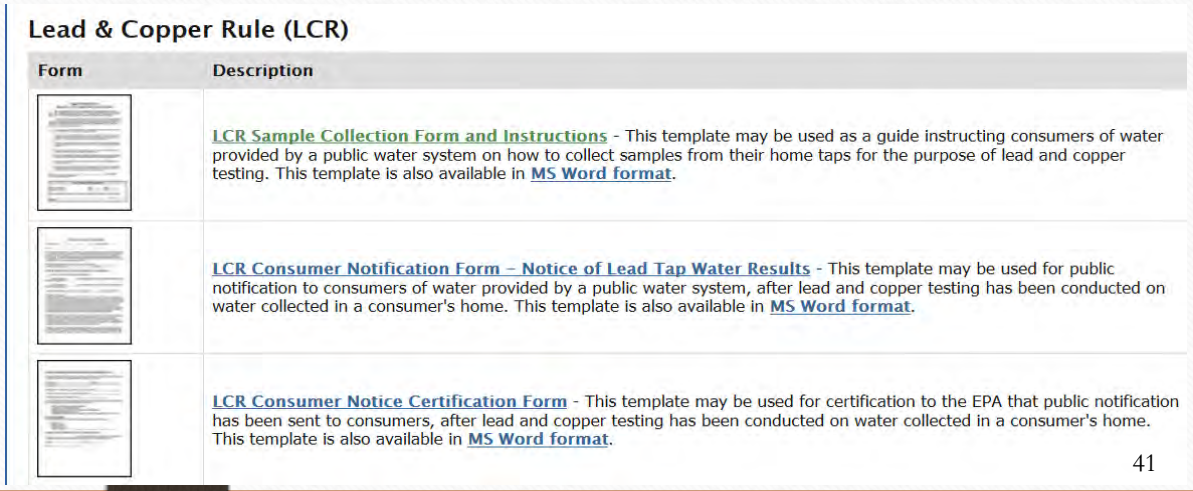
Simply enter your data and Voila!

Thank you Charles ☺

Lead Consumer Notice

https://www.epa.gov/region8-waterops/reporting-forms-and-instructions-reporting-forms#lcr

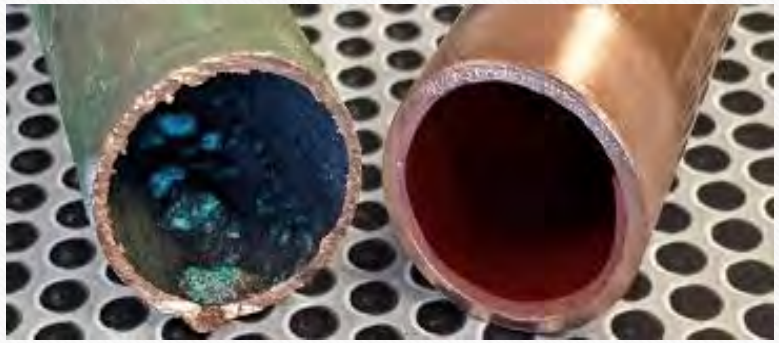
Once you receive the results from the lab, you have 30 days to notify the home owner of their lead results. Send 1 example notice along with a certification form to EPA r8dwu@epa.gov. Use the forms on Drinking Water Online!



Exceeding an Action Level for Lead and Copper

If a PWS exceeds the Action Level for Lead and/or Copper, it must perform certain actions that lead towards corrosion control:

1. Monitoring of LC increases to once every 6-months and sampling size doubles
2. Distribution of public education materials (lead only)
3. Monitoring of LC at the "source" (EPTDS)
4. Collection of water quality parameters at the source
5. Collection of water quality parameters at taps
6. Submit a recommendation for source water treatment
7. Submit a recommendation for optimal corrosion control



ALE Deadlines

- Public Education (PE) for Lead is due within 60 days of the end of the MP
- Water Quality Parameters (WQP) due within 6 months of beginning of the MP
- Source Water Monitoring due within 6 months of end of MP
- Source Water Treatment Recommendation (SWTR) due within 6 months of end of MP
- Corrosion Control Treatment (CCT) Recommendation due within 6 months of end of MP
- Source Water Treatment Recommendation due within 6 months of end of MP

Sample EARLY – **Do Not Wait!!**

- Public Education (PE) is due within 60 days of the end of the Monitoring Period.

  i.e. PWS on annual schedule exceeds AL, monitoring period is

  June 1 – September 30, PE is due November 30th.

- Water Quality Parameters (WQP) are to be collected within 6 months of the beginning of the Monitoring Period.

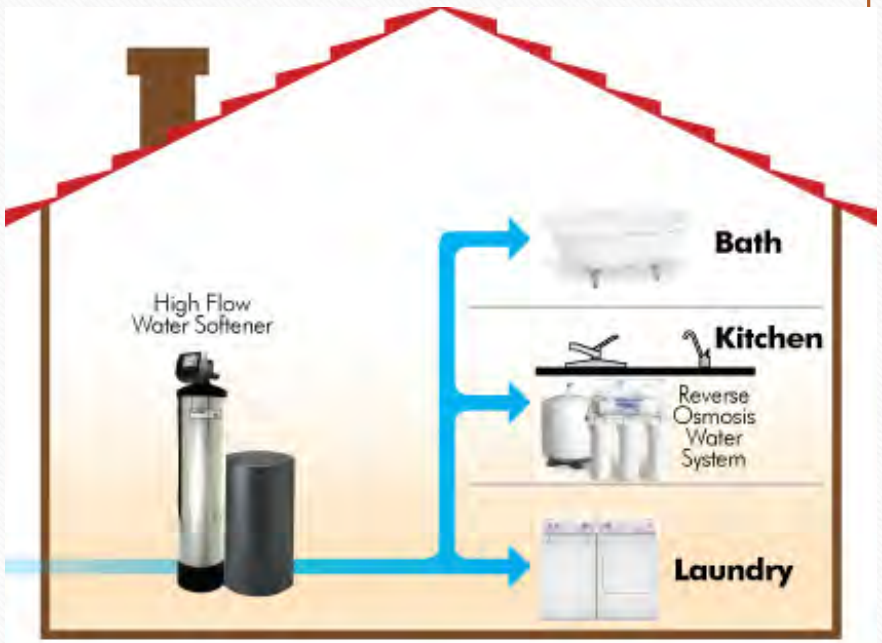
  i.e. PWS on 6-month monitoring, exceeds AL, monitoring period is

  January 1 – June 30, WQP are due June 30th.

Corrosion Control

Corrosivity of Water *MAY* be Impacted by:

- pH & Alkalinity
- Other WQPs such as Dissolved Oxygen (DO) & Calcium
- Point of Use Devices (i.e. filters)
- Point of Entry Devices (i.e. water softeners)



Corrosion Control

- pH & Alkalinity Adjustment
- Typically orthophosphate or sodium silicate
- Once installed, must be continuously operated
- CANNOT be discontinued without EPA approval
- Initial and ongoing water quality monitoring and reporting

Corrosion Control

If Lead and Copper Levels Persist:

- Optimize treatment (pilot tests)
- Replace lead service lines (7% per year)

PWS Works Closely with the LCR Rule Manager to Ensure All Requirements are Being Met

Courtesy of Denver Water

Corrosion Control

- Water is a Universal Solvent
- Not an Exact Science
- Poor Water Quality
- Poor Hygiene in the DS
- Competing Metals, i.e. Fe & Mn
- Biofilms in the DS
- Operational Controls

A view into Flint drinking water pipes, showing various types of iron corrosion and rust.
(Min Tang and Kelsey Pieper)

Corrosion Control

- New Copper Plumbing May Elevate Copper Levels
- Often with Copper, Corrosion Control will Happen on its Own

Passivation (chemistry)

From Wikipedia, the free encyclopedia

For the concept in nonlinear control, see Feedback passivation. For the concept in spacecraft, see Passivation (spacecraft).

Passivation, in physical chemistry and engineering, refers to a material becoming "passive," that is, less affected or corroded by the environment of future use. Passivation involves creation of an outer layer of shield material that is applied as a microcoating, created by chemical reaction with the base material, or allowed to build from spontaneous oxidation in the air. As a technique, passivation is the use of a light coat of a protective material, such as metal oxide, to create a shell against corrosion. Passivation can occur only in

Corrosion Control

Most Often with Lead, Corrosion Control is Orthophosphate

- i.e. Zinc Orthophosphate, Phosphoric Acid
- Lead Scales form Interior Lining of Pipe

pH & Alkalinity – Reduce Solubility of Lead

- Typically greater than 7.6

Corrosion Control

- Obtain recommendations from chemical suppliers
- Check with other water plants
- Don't experiment on the distribution system, pilot test your water first
- Consider advantages and disadvantages of storing, handling, and feeding various chemicals

Corrosion control chemicals can impact compliance with other rules and have negative downstream side effects

An ALE is NOT a Violation…

But there are plenty of ways to get hit with a LCR Violation

LCR Violations

Monitoring & Reporting Violations (14)

- Failure to Monitor (FTM)
- Failure to Perform Lead Consumer Notice (LCCN)

Re: NOTICE OF VIOLATION
Lead and Copper Rule
Failure to Monitor
PWS ID# PWS ID

Dear Mr./Mrs OOPS!

The purpose of this letter is to inform you that the Water System has failed to conduct the required monitoring of five lead and copper tap water samples. Samples were required to be collected between January 1 and June 30, 2018 according to 40 C.F.R. § 141 Subpart I of the National Primary Drinking Water Regulations (NPDWR).

This is a violation of the NPDWR. If not already done, please take the following actions:

(1) Collect a set of five lead and copper tap water samples between July 1 and December 31, 2018.

(2) Report sampling results to our office as soon as you receive them from the lab.

(3) Public notification (PN) is required within one year of the violation or by June 30, 2019. The PN must be delivered through either posting in conspicuous locations for at least 10 days, by hand delivery, or by mail. You may also create your own PN using the EPA Microsoft Word templates available at: http://water.epa.gov/lawsregs/rulesregs/sdwa/publicnotification/compliancehelp_templates.cfm. Enclosed is a copy of the PN form.

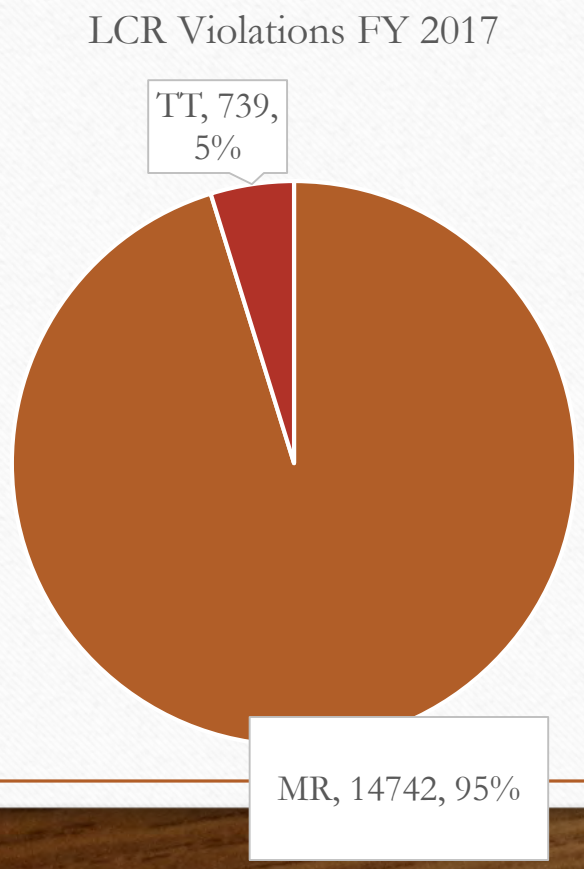
LCR Violations

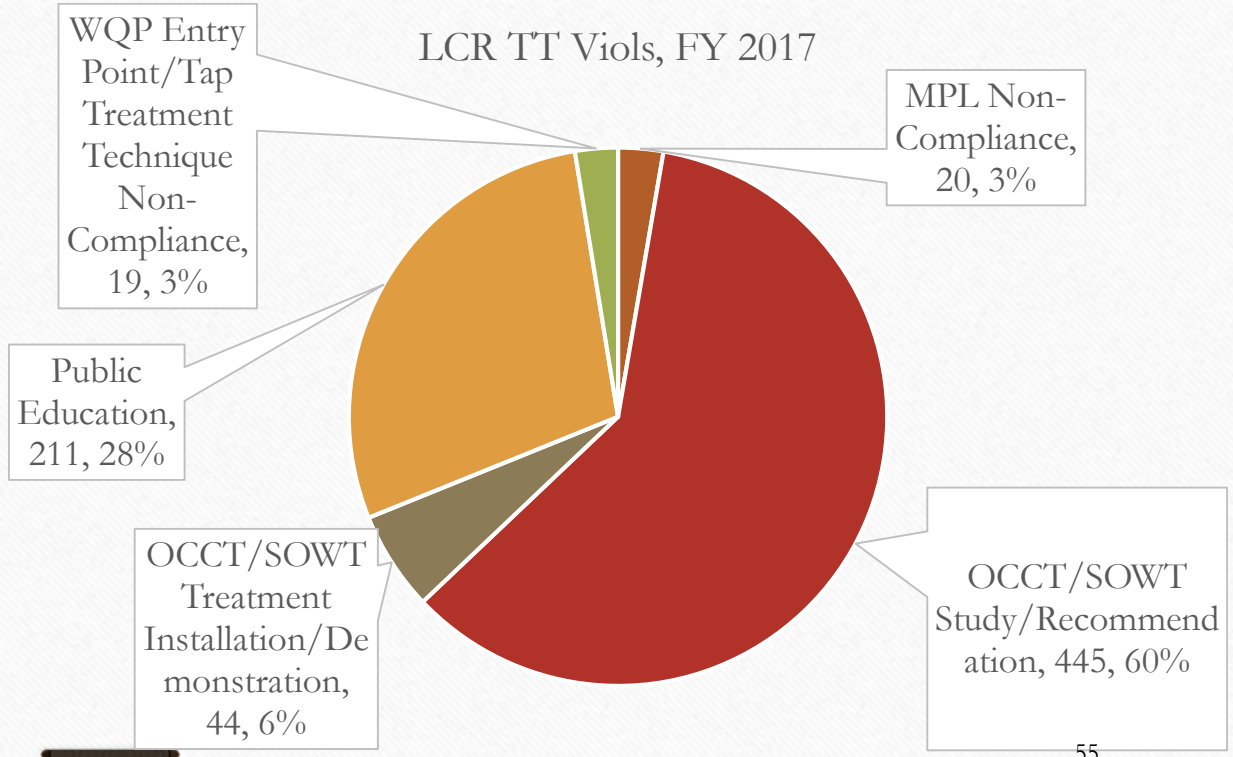
Treatment Technique Violations (10)

- Failure to Notify EPA of Changes to PWS
- Failure to Submit Documentation of Required Activities After ALE

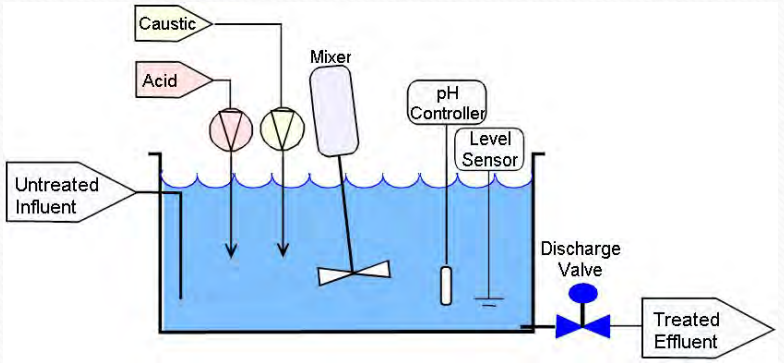
F. How Does the State Determine If I Am In Compliance With My Optimal Water Quality Parameter Values? ***(40 CFR 141.82(g))***

LCR Violations





Water System Changes



If your PWS is considering a change in treatment, source(s), or population; you **must** submit a description of the proposed changes to the EPA. The EPA must approve the addition of a new source or change in treatment before it is implemented.

- Addition of a new treatment process.
- Modification of an existing treatment process, including:

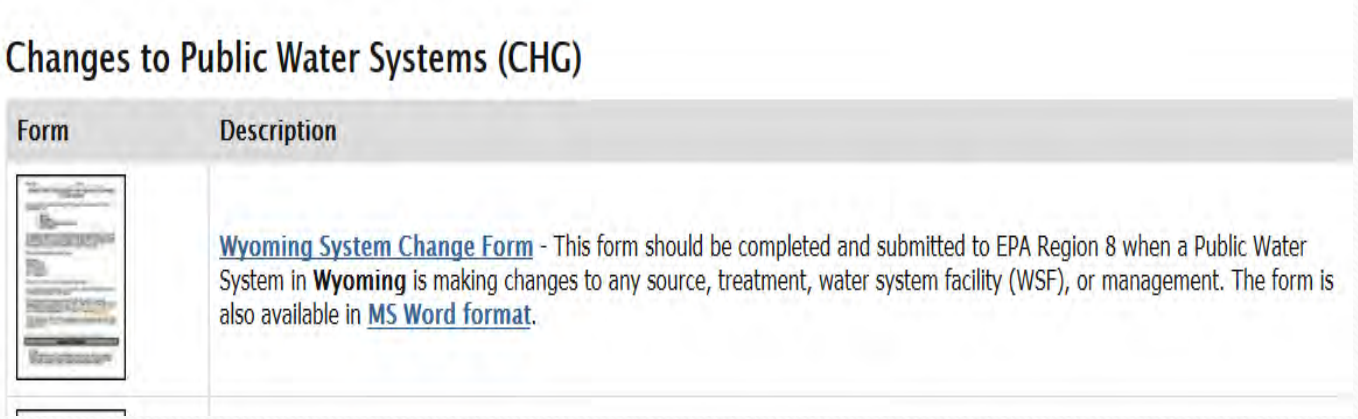
  i.e. Switching coagulants, secondary disinfectants, or corrosion inhibitors

  i.e. Changes to dose of existing chemicals or other ***long-term*** changes to finished water.

Change to PWS form

Use the form located on Drinking Water Online:

https://www.epa.gov/region8-waterops/reporting-forms-and-instructions-reporting-forms#chg



Violations Require Public Notice

The Public Notification Rule (PN) is part of the Safe Drinking Water Act. The rule ensures that consumers will know if there is a problem with their drinking water. These notices alert consumers if there is risk to public health. They also notify customers:

- if the water does not meet drinking water standards;
- if the water system fails to test its water;
- if the system has been granted a variance (use of less costly technology); or
- if the system has been granted an exemption (more time to comply with a new regulation).

- Public Notice for LCR:
  - Currently considered "Chronic" Contaminants
  - Tier 3 Notice
  - PN Template Included in Violation Letter from EPA

The 3 Tiers of Public Notification

	Required DistributionTime	Notification Delivery Method
Tier 1 (Immediate Notice)	Any time a situation occurs where there is the potential for human health to be immediately impacted, water suppliers have 24 hours to notify people who may drink the water about the situation.	Water suppliers must use media outlets such as television, radio, and newspapers, post their notice in public places, personally deliver a notice to their customers, or an alternative method approved by the primacy agency.
Tier 2 (Notice as soon as possible)	Any time a water system provides water with levels of a contaminant that exceed EPA or state standards or that hasn't been treated properly, but that doesn't pose an immediate risk to human health, the water system must notify its customers as soon as possible, but within **30 days** of the violation.	Notice may be provided via the media, posting, or through the mail.
Tier 3 (Annual Notice)	When water systems violate a drinking water standard that does not have a direct impact on human health (for example, failing to take a required sample on time) the water supplier has up to a year to provide a notice of this situation to its customers.	Tier 3 PN must be delivered the same way as Tier 2 PN. The extra time gives water suppliers the opportunity to consolidate these notices and send them with Annual Water Quality Reports (Consumer Confidence Reports).

Acute vs. Chronic

Acute is defined as "occurring over a short period of time; used to describe brief exposures and effects which appear promptly after exposure." Chronic is defined as "occurring over a long period of time, either continuously or intermittently; used to describe ongoing exposures and effects that develop only after a long exposure (*Drinking Water Glossary: A Dictionary of Technical and Legal Terms Related to Drinking Water*; EPA810-B-94-006, June 1994)."

EPA United States Environmental Protection Agency

TALKING TO YOUR CUSTOMERS ABOUT CHRONIC CONTAMINANTS IN DRINKING WATER

A BEST PRACTICES GUIDE

What Are Chronic Contaminants?

Drinking water contaminants that can cause health effects after continuous long-term exposure at levels greater than the maximum contaminant level (MCL) are considered "chronic" contaminants. Examples of chronic drinking water contaminants regulated by EPA include inorganic contaminants like arsenic, cadmium, and copper; organic contaminants such as pesticides and industrial chemicals; and radiological contaminants like radium and uranium.

Sanitary Surveys

- Where is your LCR TSSP?
- Questions for Consecutive Systems that Receive Water Treated with Corrosion Control Chemicals
- New Section on Corrosion Control

WATER TREATMENT DATA (FOR ALL SYSTEMS)
CORROSION CONTROL

Does this PWS add chemicals for corrosion control? ☐ Yes ☐ No

Comments: _____

Chemical added:	NSF 60 Certified?	Dosage at Treatment Plant	Added Continuously or Seasonally
_____	☐ Yes ☐ No	_____	☐ Continuously ☐ Seasonally
_____	☐ Yes ☐ No	_____	☐ Continuously ☐ Seasonally
_____	☐ Yes ☐ No	_____	☐ Continuously ☐ Seasonally
_____	☐ Yes ☐ No	_____	☐ Continuously ☐ Seasonally

Do you monitor corrosion control treatment chemical concentrations, pH, alkalinity, or any other water quality parametersat the entry point or at the taps to evaluate the process? ☐ Yes ☐ No

Comments: _____

More Key Points to Remember:

- Perform Lead Consumer Notice:
  - LCCN Form to Homeowners + LCCN Form & Certification to EPA
- Calculate your 90th Percentile
- If you exceed the Action Level …

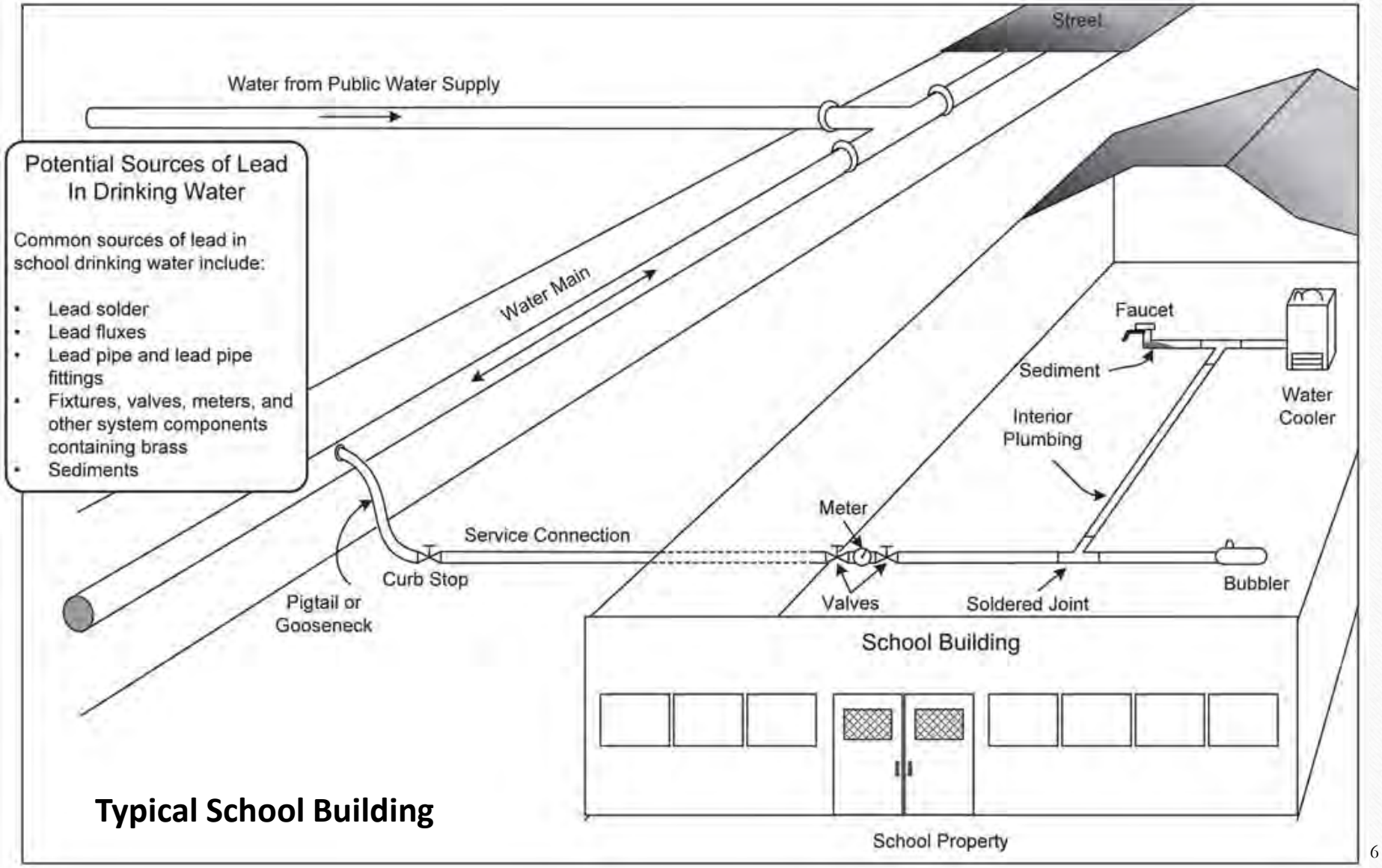
You will receive a letter from EPA

Drinking Water Online

https://www.epa.gov/region8-waterops

Lead in Schools

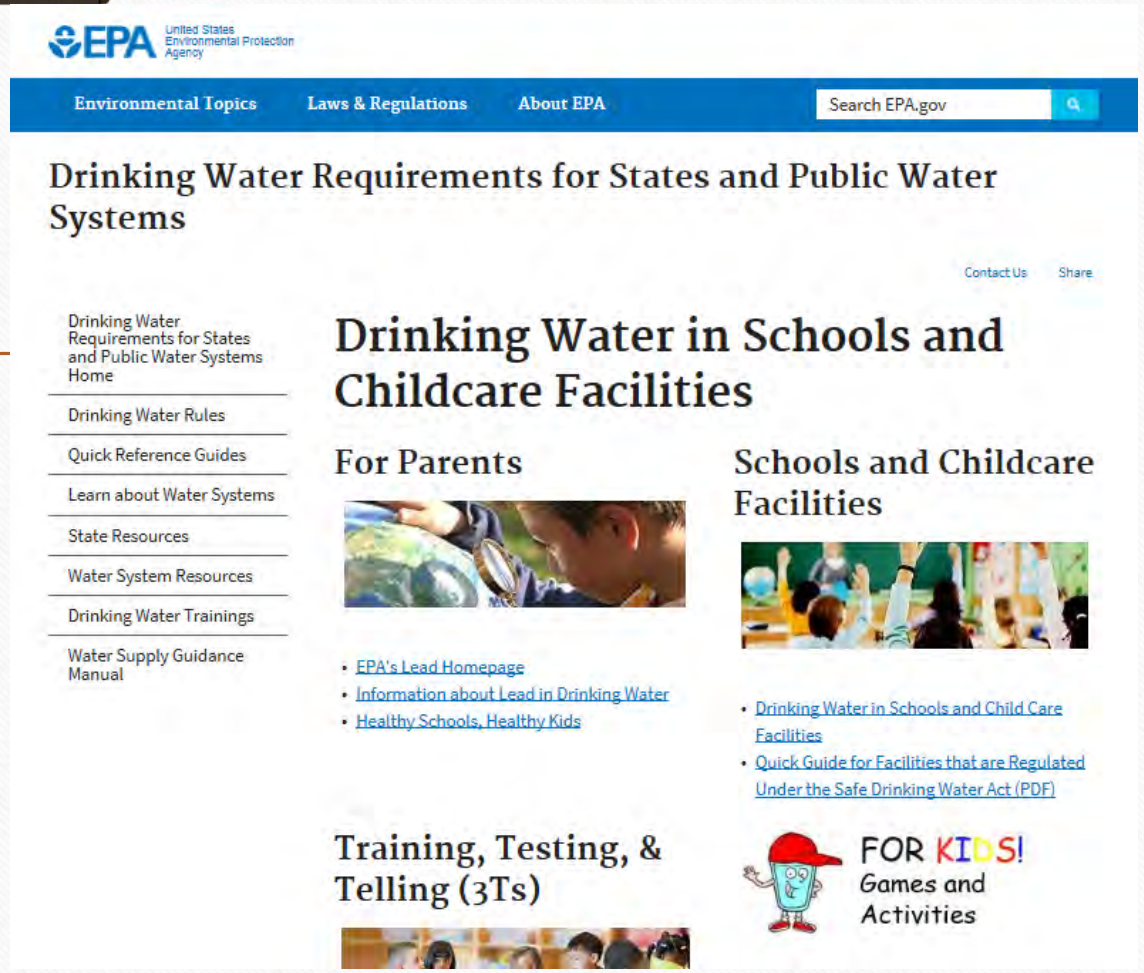
- Children in schools and child care centers may be exposed through water they drink or food that has been prepared with contaminated water.
- Formula fed infants can receive up to 60 percent of their exposure to lead from lead in drinking water.
- Lead does not penetrate the skin (i.e. bathing, hand washing).
- **Boiling water will not get rid of lead.**



Typical School Building

Lead in Schools

- 3Ts = Training, Testing, and Telling
- Voluntary Lead Sampling Program for Schools
- EPA Letter to Bureau of Indian Education
- Schools May Team up with PWSs



https://www.epa.gov/dwreginfo/drinking-water-schools-and-childcare-facilities

2017 School Webinar Series:

Denver Water and Denver Public Schools

Massachusetts Dept. of Envt. Quality

New York Department of Health

https://www.epa.gov/dwreginfo/reducing-lead-drinking-water-schools-and-child-care-facilities-case-studies-webinar-series

Reducing Lead in Drinking Water in Schools and Child Care Facilities

Case Studies Webinar Series

EPA is hosting a quarterly webinar series to highlight examples of efforts to reduce lead in drinking water in schools and child care facilities.

These webinars will include a brief overview of lead in drinking water, information regarding where to find resources and perspectives from a state, water system and/or school. Presentations will include: best practices, lessons learned, challenges, funding, procedures, and available resources.

How do I register?

Find registration links to upcoming webinars in this series here: https://www.epa.gov/dwreginfo/drinking-water-training

Who should attend?

Schools, states, primacy agencies, water systems, technical assistance providers and those seeking information about implementing a lead testing program for school drinking water.

The Revised Lead and Copper Rule will be Open for Public Comment *again*!

- 2013 Draft Rule – EPA Regions did not 'concur'.
- EPA engaged National Drinking Water Advisory Council (NDWAC)
- When EPA creates another draft Rule, you will have a chance to comment on it.
- Your comments will greatly improve the Rule and I encourage you to have your voice heard!

Quiz Time!

1. The LCR Applies to Which Water Systems?

   Community & Non-transient Non-community Public Water Systems

2. True or False: The MCL for copper is 1.6 mg/L

   False! MCLs do not apply to the LCR.

   The Action Level for copper is 1.3 mg/L …AL for Lead?

3. LCR Public Notification requires Tier X?

Questions?

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