



Helpful Tips for Today's Session

- **To Ask a Question** – Type your question in the Q&A panel on the right side of your screen. If the panel is hidden, click on the control panel at the top to open Q&A.
- **To Answer a Poll Question** – Choices will be in the poll panel on the right side of the screen. If the panel is hidden, click on the control panel at the top to open the poll.

Lead and Copper Rule 101

Requirements Before an Action Level Exceedance

Lead and Copper Rule 101

Requirements Before an Action Level Exceedance

First in Three-Part Webinar Series

PART 1: Requirements Before an Action Level Exceedance

May 11th, 1 pm-2:30pm EDT and May 18th, 2:30-4pm EDT

PART 2: Requirements After an Action Level Exceedance

June 15th and June 29th, 1pm-2:30pm EDT

PART 3: Compliance Determination and Reporting Requirements

August 17th, 2:30pm-4pm EDT



Disclaimer

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Poll Question 1

How many people are in the room?

- a) 1
- b) 2
- c) 3
- d) 4
- e) Greater than 5



Today's Presenters

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How the Presentation is Organized

- Lead and Copper Rule and Revisions
- Health Effects and Sources
- Overview of the Lead and Copper Rule
- Lead and Copper Tap Monitoring Requirement
- 90th Percentile Calculation
- Requirements to Inform the Public
- Water Quality Parameter Monitoring
- Requirements related to Long-Term Treatment Changes and New Source Additions



Terminology for Primacy Agency

- State means Primacy Agency
- 40 CFR § 141.2 definition for State
- Possible Primacy Agencies
 - State
 - Tribal government
 - EPA region



Acronyms

AL:	Action Level
ALE:	Action Level Exceedance
CCT:	Corrosion Control Treatment
CWS:	Community Water System
LCR:	Lead and Copper Rule
LCR MR:	Lead and Copper Minor Revisions
LCR STR:	Lead and Copper Short-Term Revisions and Clarifications
LSLR:	Lead Service Line Replacement
MCL:	Maximum Contaminant Level
MCLG:	Maximum Contaminant Level Goal
M/R	Monitoring and Reporting (Violation)
NTNCWS:	Non-transient Non-community Water System
OWQP:	Optimal Water Quality Parameters
PWS:	Public Water System
SOWT:	Source Water Treatment
WQP:	Water Quality Parameter



Regulatory Authority for Controlling Lead Levels in Drinking Water

- **The Lead Ban(1986):** A requirement that only lead-free materials be used in new plumbing and in plumbing repairs.
- **The Lead Contamination Control Act (LCCA) (1988):** The LCCA further amended the SDWA. The LCCA is aimed at the identification and reduction of lead in drinking water at schools and child care facilities. *However*, implementation and enforcement of the LCCA has been at each state's discretion. School monitoring and compliance has varied widely.
 - **There is NO federal law requiring schools or child care centers to test drinking water for lead**
- **The Lead and Copper Rule (1991):** A regulation by EPA to minimize the corrosivity and amount of lead and copper in water supplied by public water systems.
- **The Reduction of Lead in Drinking Water Act (2011):** Revising the definition of lead free by lowering the maximum lead content of the wetted surfaces of plumbing products from 8% to a weighted average of 0.25%



Lead and Copper Rule (LCR)

- National Primary Drinking Water Regulation (NPDWR) promulgated **June 7, 1991**-Minor Revisions **Jan 12, 2000** and Short Term Revisions **October 7, 2007**
 - Addresses corrosion of lead and copper in drinking water
 - primarily from service lines and household plumbing
 - Maximum Contaminant Level Goals (MCLG)
 - Lead – **0 µg/L**
 - Copper – **1.3 mg/L**
 - Requires a treatment technique (optimized corrosion control) rather than a Maximum Contaminant Level (MCL)
 - Tap sampling results (the 90th percentile) are compared to an action level
 - Lead - **15 µg/L**
 - Copper - **1.3 mg/L**



Lead and Copper Rule (LCR)

- Corrosion control is chemical treatment that is designed to reduce the corrosivity of water. The major optimal corrosion control treatment (OCCT) techniques are:
 - ✓ pH and/or Alkalinity Adjustment.
 - ✓ Inhibitor Addition (phosphate or silicate based inhibitors)
- For small/med systems, the action level for lead is a trigger for optimal corrosion control as part of the treatment technique. It is based on treatment feasibility; NOT on a health threshold
- Large systems are required to optimize corrosion control regardless of their 90th percentile lead concentration, unless the difference between the 90th percentile and the highest source water lead concentration is <0.005 mg/L (PQL).





Lead and Copper Minor Revisions (2000)

Scope of Revisions

Reduced the burdens for systems, improved implementation, and provided some clarifications to 1991 rule.

The changes fell into seven broad categories

- Monitoring Requirements
- Public Education Requirements
- Special Primacy Considerations
- Demonstration of Optimal Corrosion Control
- Lead Service Line Replacement Requirements
- Analytical Methods
- Reporting and Record Keeping Requirements



Lead and Copper Short-Term Revisions (2007)

Scope of Revisions

Addresses implementation issues with existing rule:

- Monitoring revisions (sample number, timing clarifications).
- Additional requirements for providing public information.
- Advanced notification of treatment changes and source additions.
- Reevaluation of “tested-out” lead service lines.

Targeted changes based on input from National LCR Review.

Key elements of treatment technique requirements are unchanged.



Lead and Copper Long-Term Revisions

EPA is expecting to publish the proposed rule for review and public comment in 2017 and the final rule in 2019.

EPA's primary goals in considering LCR Long-Term Revisions are to:

- Improve the effectiveness of the corrosion control treatment in reducing exposure to lead and copper, and
- Trigger additional actions that equitably reduce the public's exposure to lead and copper when corrosion control treatment alone is not effective.

To learn more about the long term revisions and the stakeholders involved. Please see EPA's Long-Term Revisions page:

<https://www.epa.gov/dwstandardsregulations/lead-and-copper-rule-long-term-revisions>



Health Effects of Lead in Children

Young children and infants tend to absorb more lead than the average adult.

The health effects of lead in children include:

- Impaired mental development
- IQ deficits
- Shorter attention spans
- Low birth weight

EPA set the MCLG at zero.





Health Effects of Copper

- Stomach and intestinal distress
- Complication of Wilson's Disease
- Chronic Exposure can cause liver disease in genetically predisposed individuals

EPA set the MCLG at 1.3 mg/L

Lead and Copper Rule Overview



Lead and Copper Rule

Overview

Three system size categories.

Large: > 50,000 people

Medium: 3,301 to 50,000 people

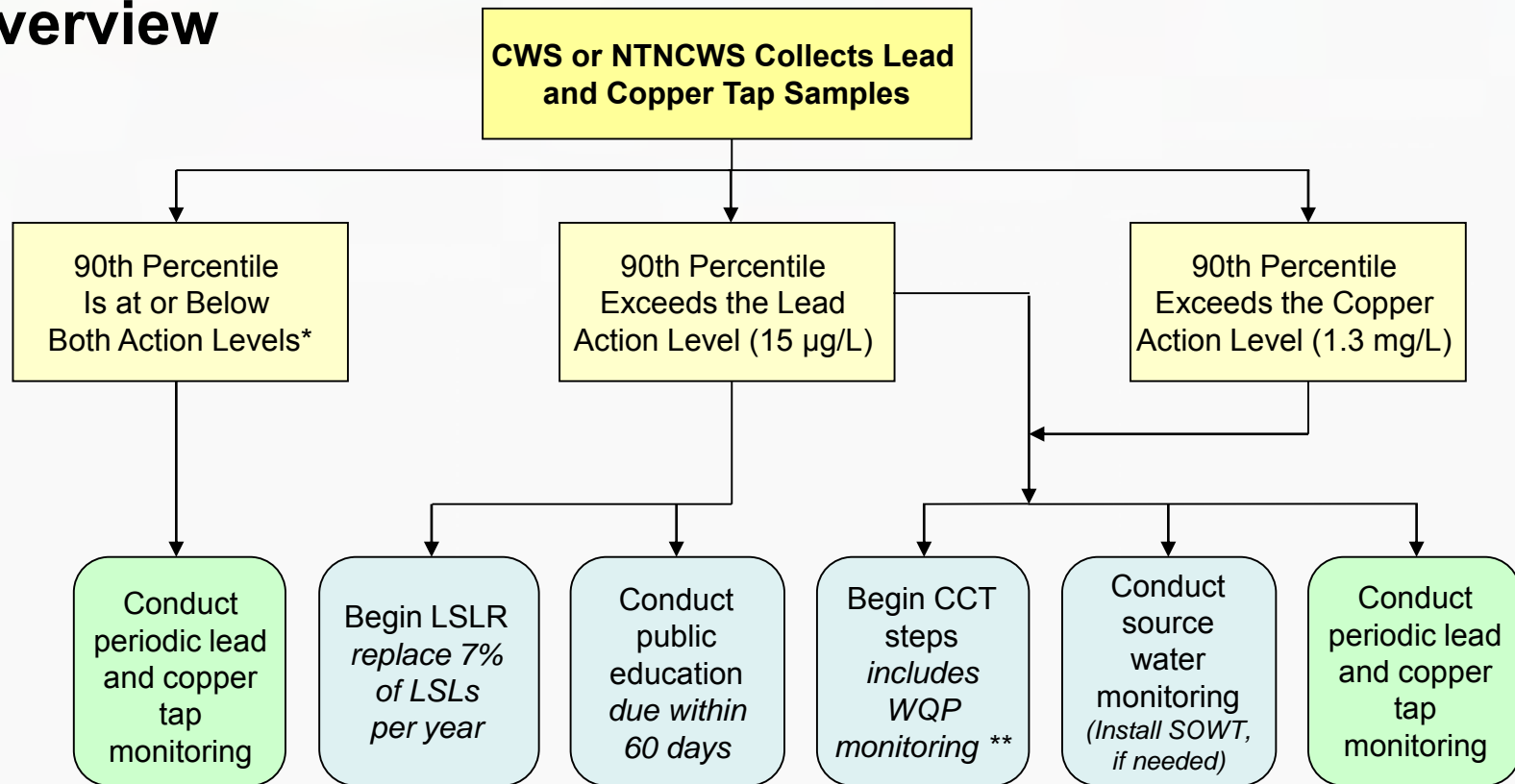
Small: 3,300 or fewer people

System size determines the sample number and applicability/timing of some requirements.



Lead and Copper Rule

Overview



* Includes systems serving $\leq 50,000$ people and (b)(3) systems

** Includes non-(b)(3) systems serving $> 50,000$ people, irrespective of their 90th percentile levels; (b)(2) systems must collect WQPs.



Review of Lead and Copper Tap Monitoring Requirements



Review of Monitoring Requirements

Site Selection - CWS

Three sampling site tiers: Tier 1, Tier 2 and Tier 3:

- Tier 1 sample sites are considered high risk sites.
- Tier 1 sampling pool consists of single* family structures that:
 - Contain copper pipes with lead solder installed after 1982 or contain lead pipes; and/or,
 - Are served by a lead service line. (collect 50% of samples from LSLs)

*** May include multiple-family residences in sampling pool when they comprise at least 20 percent of structures served.**





Review of Monitoring Requirements

Site Selection - CWS

- Tier 2 sampling pool consists of buildings including multiple family residences that:
 - Contain copper pipes with lead solder installed after 1982 or contain lead pipes; and/or,
 - Are served by a lead service line.
- Tier 3 sampling pool consists of single family structures that:
 - Contain copper pipes with lead solder installed before 1983.

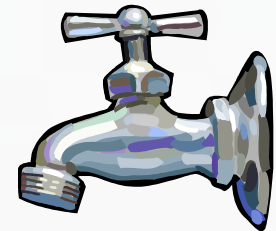


Use representative sites throughout distribution system if insufficient number of tiered sampling sites are available.



Review of Monitoring Requirements

Site Selection - NTNCWS



Two sampling site tiers: Tier 1 and Tier 2.

- Tier 1 sampling pool consists of sample sites that:
 - Contain copper pipes with lead solder installed after 1982 or contain lead pipes; and/or,
 - Are served by lead service line.
- Tier 2 sampling pool consists of sample sites that:
 - Contain copper pipes with lead solder installed before 1983.

Use representative sites throughout distribution system if insufficient number of tiered sampling sites are available.

Review of Monitoring Requirements

Sample Collection Method



- ✓ First-draw
- ✓ 6-hour standing time
- ✓ One-liter volume



- ✓ System or residents can collect
- ✓ Samples are taken from kitchen/bathroom taps

Review of Monitoring Requirements

Sample Collection Method Continued

- Water Softeners:
 - Don't collect samples from taps at homes with water softeners or other point-of-use or point-of-entry devices for inorganic removal.
 - If the only available sites have these devices, collect samples from the sites with the highest tier rating (Tier 1, followed by Tier 2 and then Tier 3).



Lead and Copper Tap Monitoring

Clarifications of Requirements for Collecting Samples and Calculating Compliance (2004 memo)

- EPA addressed 7 aspects of the requirements for collecting samples and calculating compliance:
 - ☑ All sample results from a system's sampling pool during the monitoring period must be included in the 90th percentile calculation (*even if this includes more samples than the required minimum number needed for compliance*).
 - ☑ Customer-requested samples should not be used to calculate the 90th percentile, except in cases where the system is able to determine that the site selection criteria for compliance sampling are satisfied.
 - ☑ Only samples collected during the compliance monitoring period may be included in the 90th percentile calculation.



Lead and Copper Tap Monitoring

Clarifications of Requirements for Collecting Samples and Calculating Compliance Continued (2004 memo)

- States must calculate the 90th percentile even if the minimum number of samples are not collected.
- A proper sample is defined as a first draw one liter sample that is taken from an interior tap used for consumption (i.e. kitchen or bathroom sink) after the water has been standing in plumbing for at least six hours.
- To avoid sample collection problems, the system may wish to do the sampling itself or review the sample collection information before sending it to the lab.
- A State can invalidate a sample for one of the following reasons:
 - ☑ Improper sample analysis
 - ☑ Site selection criteria not met
 - ☑ Sample container was damaged in transit
 - ☑ Sample subjected to tampering



Lead and Copper Tap Monitoring Management of Aerators during Sample Collection (2006 memo)

- EPA recommends homeowners regularly clean their aerators to remove the particulate matter.
- EPA also recommends that sampling instructions NOT direct customers to remove or clean aerators prior to or during sample collection for lead and copper.
- If customers are only encouraged to remove and clean the aerators prior to sampling for lead, then the water system could fail to identify the typical contribution of lead from that tap.
- If a homeowner's result (*with aerator*) is above the action level, the water system may want to take a second sample (*without aerator or a clean aerator*) to determine whether particulate matter is the source of lead.
- In the above example the results of both samples would be included in the set of samples used to determine the 90th percentile (*i.e., the first sample could not be invalidated based on the presence of lead-bearing matter in the aerator*).



Lead and Copper Tap Monitoring

Recommended Tap Sampling Procedures (2016 memo)

- Removal of Aerators: re-states recommendations from the 2006 memo.
- Pre-Stagnation Flushing: EPA recommends that sampling instructions not contain a pre-stagnation flushing step. Pre-stagnation flushing may potentially lower the lead levels as compared to when it is not practiced and may not be representative of normal water consumption.
- Bottle Configuration: EPA recommends that wide-mouth bottles be used to collect Lead and Copper compliance samples.
- The memo also includes an amended version of the homeowner tap sampling procedures originally provided in the 2010 Revised LCR Monitoring and Reporting Guidance for PWSs.

Lead and Copper Tap Monitoring

Sample Collection Continued



- The State can invalidate a lead or copper tap water sample if any one of the following is true:
 1. The laboratory establishes that improper analysis caused errors;
 2. The State determines that the sample site did not meet the site selection criteria;
 3. The sample container was damaged in transit; or
 4. Substantial reason exists to believe that the sample was tampered with.

Lead and Copper Tap Monitoring

Sample Collection Continued

A sample cannot be invalidated due to:

- Alleged homeowner error in sample collection
- Excessive stagnation periods



After a sample is analyzed, a system cannot challenge the results.

Lead and Copper Tap Monitoring

Sample Collection Continued

- To request sample invalidation, system must provide:
 - ✓ All sample results to the State
 - ✓ Documentation for samples to be invalidated
- State's decision to invalidate sample:
 - ✓ Must be in writing
 - ✓ Cannot be on the grounds that a follow-up sample result is higher or lower than that of the original sample
- Invalidated samples are not counted for compliance.

Lead and Copper Tap Monitoring

Sample Collection Continued

- Replacement samples must be taken:
 - ✓ If needed to meet minimum sampling requirements
 - ✓ As soon as possible but no later than 20 days after invalidation or by end of monitoring period (whichever is later)
 - ✓ From the same locations as the invalidated samples, or if that is not possible, at locations other than those already used for sampling during the monitoring period
 - ✓ The result must be included in the 90th percentile
- Replacement samples cannot be used to satisfy requirements for a subsequent monitoring period.

Lead and Copper Tap Monitoring

Minimum Number of Tap Samples

System Population	Number of Sampling Sites (on Routine Monitoring)	Number of Sampling Sites (on Reduced Monitoring)
>100,000	100	50
10,001 to 100,00	60	30
3,301 to 10,000	40	20
501 to 3,300	20	10
101 to 500	10	5
≤100	5	5



Lead and Copper Tap Monitoring

Minimum Number of Samples Required

Systems with fewer than 5 taps for human consumption can do one of two things:

1. Collect multiple samples from same location on different days to meet 5 sample minimum.

Or

2. States may allow 1 sample per tap for human consumption if < 5 such taps.

Note: If < 5 samples are taken, highest result is the 90th percentile level.

Lead and Copper Tap Monitoring Monitoring Period

Standard monitoring:

- Conducted at 6-month intervals from January-June or July-December
- Applies unless the system qualifies for reduced monitoring
- Not required during some corrosion control treatment steps

STANDARD MONITORING (Conducted at 6-month intervals)

System Population	Minimum Number of Sampling Sites
>100,000	100
10,001 to 100,00	60
3,301 to 10,000	40
501 to 3,300	20
101 to 500	10
≤100	5

Lead and Copper Tap Monitoring

Monitoring Period

Reduced Monitoring:

- Conducted at a reduced frequency and a reduced number of sample sites
- Conducted during a 4-month period from June-September, unless State approves an alternate period

REDUCED MONITORING (Conducted at a Reduced Frequency)	
System Population	Minimum Number of Sampling Sites
>100,000	50
10,001 to 100,00	30
3,301 to 10,000	20
501 to 3,300	10
101 to 500	5
≤100*	5

***Same as standard monitoring.**

Lead and Copper Tap Monitoring

Monitoring Period

Reduced Monitoring:

- Systems can go from standard monitoring to annual monitoring if:
 - System serving $\leq 50,000$ people meets or is below **both** the lead and copper action levels (ALs) for 2 consecutive 6-month monitoring periods; or
 - Any system that meets optimal WQPs (OWQPs) and is at or below the **lead** AL for 2 consecutive 6-month monitoring periods.
- Annual monitoring begins in calendar year (CY) after criteria are met

6-Month Monitoring	Annual Monitoring Period:
January – June	June 1 – Sept 30 of next CY
July - December	

Lead and Copper Tap Monitoring

Monitoring period

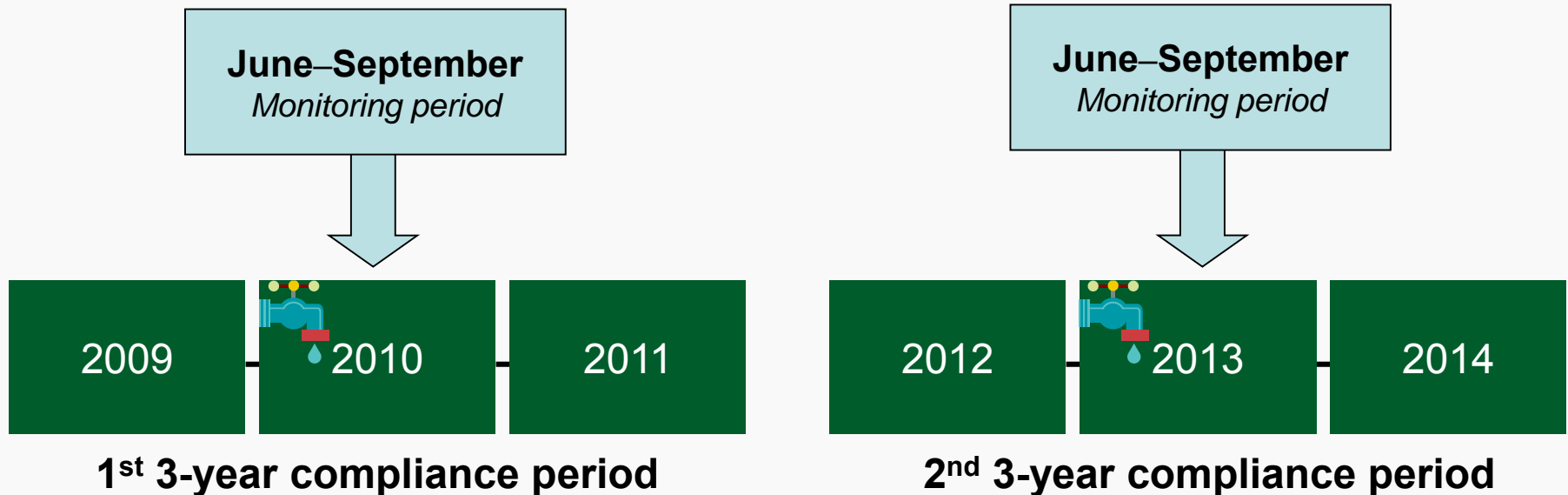
***The first 2 consecutive 6-month periods count as 1st year.**

- Systems can go from annual monitoring to triennial reduced monitoring if:
 - System serving $\leq 50,000$ people meets or is below **both** the lead and copper action levels (ALs) for 3 consecutive years of annual monitoring*; or
 - Any system that meets OWQPs and is at or below the **lead** AL for 3 consecutive years of annual monitoring; or
 - Any system with 90th percentile levels ≤ 0.005 mg/L for lead and ≤ 0.65 mg/L for copper for 2 consecutive 6-month monitoring periods
- Begins in calendar year (CY) after meeting criteria



Lead and Copper Tap Monitoring Three-Year Compliance Period

- Triennial monitoring must occur once during every 3-year compliance period
- Monitoring period is June – Sept. of same calendar year
- Cannot exceed 3 years between sampling events (see example)



Lead and Copper Tap Monitoring Monitoring Waivers

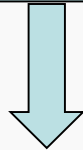
- 9-Year Monitoring Criteria (Waiver)
 - System serves $\leq 3,300$ people
 - System's distribution system, service lines, and plumbing materials meet certain criteria that indicate negligible risk from lead and/or copper exposure (i.e., are lead- or copper-free)
 - 90th percentile levels are $\leq 0.005\text{mg/L}$ for lead and $\leq 0.65\text{mg/L}$ for copper



Lead and Copper Tap Monitoring Nine-Year Compliance Period

- Nine-year monitoring must occur once every nine-year compliance period
- Monitoring period is June through September of same calendar year
- Cannot exceed nine years between sampling events (see example)

June–September
Monitoring period



2001 2002 2003 2004 2005 2006 2007 2008 2009

1st 9-year compliance period

June–September
Monitoring period



2010 2011 2012 2013 2014 2015 2016 2017 2018

2nd 9-year compliance period

Lead and Copper Tap Monitoring

How a System Returns to Standard from Reduced Monitoring

- Return to Standard Monitoring if System serves:
 - $\leq 50,000$ people and exceeds either AL during any monitoring period;
 - Any system which does not meet its state-specified OWQPs for more than 9-days in a 6-month period (i.e., excursion); or
 - Any system which meets its OWQP specifications but exceeds the lead AL
- Begins in January 1 of CY following monitoring period in which AL exceedance or excursion occurred

The background features a large, faint watermark of the United States Environmental Protection Agency (EPA) logo. The logo is circular, with the words "UNITED STATES" at the top and "ENVIRONMENTAL PROTECTION AGENCY" at the bottom. In the center is a stylized flower with three leaves and a circular head.

Review of 90th Percentile Calculations



90th Percentile Calculations

More than 5 Samples

- **Step 1:** Place lead or copper results in ascending order.
- **Step 2:** Assign each sample a number, 1 for lowest value.
- **Step 3:** Multiply the total number of samples by 0.9.

Example: 20 samples \times 0.9 = 18th sample.*

- **Step 4:** Compare 90th percentile level to AL (in above example, 18th sample).



* When more than minimum number of samples are collected, may need rounding or interpolation to determine 90th percentile sample.



90th Percentile Calculations

More than 5 Samples: Example Question

Assume 10 samples are collected with lead results as follows:

Site A: 0.005 mg/L

Site B: 0.015 mg/L

Site C: 0.005 mg/L

Site D: 0.014 mg/L

Site E: 0.014 mg/L

Site F: 0.005 mg/L

Site G: 0.040 mg/L

Site H: 0.014 mg/L

Site I: 0.014 mg/L

Site J: 0.005 mg/L

What is the 90th Percentile Value?



90th Percentile Calculations

More than 5 Samples: Example Answer

Step 1: Order results from lowest to highest:

- | | |
|------------------|--------------------|
| 1. Site A: 0.005 | 6. Site E: 0.014 |
| 2. Site C: 0.005 | 7. Site H: 0.014 |
| 3. Site F: 0.005 | 8. Site I: 0.014 |
| 4. Site J: 0.005 | 9. Site B: 0.015 ← |
| 5. Site D: 0.014 | 10. Site G: 0.040 |

Step 2: Multiply number of samples by 0.9 to determine which represents 90th percentile level

$$10 \times 0.9 = 9\text{th sample (or } 0.015 \text{ mg/L)}$$

Step 3: Compare to lead action level → No Exceedance

90th Percentile Calculations

Use of Rounding or Interpolation

- Use rounding or interpolation if:
 - You have collected more than 5 samples, and
 - The number of samples $\times 0.9$ is not a whole number
- **EXAMPLE:**
 - System has 12 LCR compliance samples
 - $12 \times 0.9 = 10.8$, which is not a whole number
 - 10th highest sample lead result = 0.014 mg/L
 - 11th highest sample lead result = 0.020 mg/L
- **QUESTION:**
 - What is the 90th percentile?

90th Percentile Calculations

Use of Rounding

Step 1: Round up to the nearest whole number

- E.g., 10.8th sample ranking would round to the 11th sample

Step 2: Use the sample result that corresponds to the rounded sample ranking from Step 1 as the 90th percentile

- E.g., 11th sample result = 0.020 mg/L

Step 3: Compare the sample result from Step 3 to the action level of 0.015 mg/L

- E.g., 0.020 mg/L is greater than 0.015 mg/L \longrightarrow Action Level Exceedance

90th Percentile Calculations

Use of Interpolation

Step 1: Subtract the two sample results between which the 90th percentile falls

- E.g., 90th percentile = 10.8. Subtract 11th and 10th results.
 $0.020 \text{ mg/L (11}^{\text{th}} \text{ sample)} - 0.014 \text{ mg/L (10}^{\text{th}} \text{ sample)} = 0.006 \text{ mg/L}$

Step 2: Subtract the 90th percentile and lower of the two numbers between which the 90th percentile falls (falls between 11 and 10)

- E.g., $10.8 \text{ (90}^{\text{th}} \text{ percentile)} - 10 = 0.8$

Step 3: Multiply the differences obtained in Steps 1 and 2

- E.g., $0.006 \text{ mg/L (from Step 1)} \times 0.8 \text{ (from Step 2)} = 0.005 \text{ mg/L (rounded)}$

Step 4: Add Step 3 result to the lower of the two sample results




- E.g., $0.005 \text{ mg/L (from Step 3)} + 0.014 \text{ mg/L (10}^{\text{th}} \text{ sample result)} = 0.019 \text{ mg/L}$

➡ Action Level Exceedance



90th Percentile Calculations

5 Samples

-  **Step 1:** Place results in ascending order
-  **Step 2:** Average 4th and 5th highest sample results
-  **Step 3:** Compare 90th percentile level to action level



90th Percentile Calculations

5 Samples: Example Question

Assume 5 samples are collected with lead results as follows:

Site A: 0.009 mg/L

Site B: 0.011 mg/L

Site C: 0.020 mg/L

Site D: 0.009 mg/L

Site E: 0.010 mg/L


What is the 90th Percentile Value?



90th Percentile Calculations

5 Samples: Example Answer

Step 1: Order results from lowest to highest:

1. Site A: 0.009 mg/L
 2. Site D: 0.009 mg/L
 3. Site E: 0.010 mg/L
 4. Site B: 0.011 mg/L
 5. Site C: 0.020 mg/L
- 
- A red arrow points to the right side of the 5th item in the list, Site C, which has a concentration of 0.020 mg/L.

Step 2: Average 4th & 5th samples highest samples to get 90th percentile value = 0.016 mg/L

$$\frac{0.011 \text{ mg/L} + 0.020 \text{ mg/L}}{2} = 0.0155 \text{ mg/L}$$

Step 3: Compare average to lead action level → Exceedance 53



90th Percentile Calculations

Fewer than 5 Samples

- Procedure has changed under STR.
- Some systems may collect < five samples.
- Sample with **highest result** is 90th percentile level.

Assume 3 lead samples: 0.020 mg/L, 0.008 mg/L, and 0.005 mg/L.

90th percentile = 0.020 mg/L

- No M/R violation.

Requirements to Inform the Public





Lead and Copper Rule

Requirements to Inform the Public before an ALE

- Consumer Notification of Lead Tap Water Results.
- Consumer Confidence Report Lead Informational Statement.





Requirements to Inform the Public

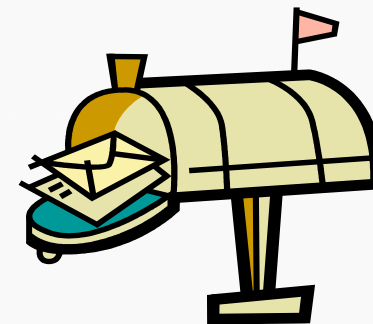
Lead Consumer Notice

Systems Affected

- All CWSs and NTNCWSs

Rule Requirements

- Provide notice of lead tap water monitoring results
- Provide irrespective of whether sample exceeds lead AL
- Provide to all served by sampling site -- not just ones with water bills
- Provide as soon as practical but within 30 days after receives results
- Provide by mail or other State-approved methods



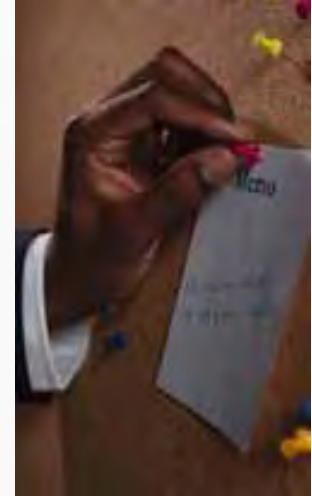


Requirements to Inform the Public

Lead Consumer Notice

Notice must include:

- ✓ Results of lead tap water monitoring
- ✓ Explanation of lead health effects
- ✓ Steps consumers can take to reduce exposure
- ✓ Facility contact information
- ✓ MCLG and AL for lead and their definitions*



** Must use CCR Rule language in § 141.13(c).*



Requirements to Inform the Public

Lead Consumer Notice

Within 3 months after the monitoring period ends, the system sends the State:

- Sample of lead consumer notice, and
- Certification that notification meets delivery requirements.
- Sample certification available in revised M/R and State implementation guidances.*



* <http://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100DP2P.txt>



Requirements to Inform the Public

Consumer Confidence Report (CCR) Requirement

Systems Affected

- All CWSs

Rule Revision

- All CCRs must include:
 - ✓ Sources of lead in drinking water.
 - ✓ Health effects from lead exposure.
 - ✓ Ways to reduce lead in drinking water.
 - ✓ Recommended flushing times.
 - ✓ Places to go for more information including lead testing.
- Required regardless of lead sample levels.



Requirements to Inform the Public

Consumer Confidence Report Requirement (CCR)

- Must include following mandatory language

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. [Name of Utility] is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

- Or write own statement in consultation with State.

A large, faint watermark of the Environmental Protection Agency (EPA) logo is centered in the background. The logo features a stylized flower with three leaves and a circular top, surrounded by the text "UNITED STATES ENVIRONMENTAL PROTECTION AGENCY".

Water Quality Parameter Monitoring



Water Quality Parameter Monitoring

- Required for all large systems (systems serving more than 50,000 persons)
- Required for small/medium systems that exceed the lead or copper action level
- Sample site locations
 - Representative locations (e.g., coliforms and disinfectant residual sites)
 - Entry point to the distribution system



Water Quality Parameter Monitoring

Purpose of WQP monitoring:

- To assist in determining water corrosivity
- To identify appropriate corrosion control treatment
- To determine whether corrosion control treatment is being properly maintained

WQP Monitoring - Parameters

Typical Water Quality Parameters	
pH ¹	Orthophosphate ²
Alkalinity	Silica ³
Calcium	Temperature ¹
Conductivity	
<p>¹ Measured on-site. ² Applies when a phosphate-containing inhibitor is used. ³ Applies when a silicate-containing inhibitor is used.</p>	

WQP Monitoring

Number of Samples

- Number of samples – two sets of samples per site and samples should be taken from taps that have been fully flushed

Standard Number of WQP “Tap” Sites and Samples		
System Size (No. of People Served)	No. of Sites (Standard)	No. of Samples (2 per site)
> 100,000	25	50
10,001 to 100,000	10	20
3,301 to 10,000	3	6
501 to 3,300	2	4
≤ 500	1	2

WQP Monitoring

- Large Systems: During the 2 consecutive 6-month monitoring periods immediately following corrosion control treatment (CCT) installation
- Medium and Small Systems: Only during monitoring periods in which either action level is exceeded
- Sample Sites
 - Entry Points: At least 1 sample every 2 weeks
 - Exception: Ground water systems may receive State approval to limit monitoring to entry point samples that are representative of water quality and treatment conditions throughout the system
 - Taps: 2 samples from each tap during monitoring period

WQP Monitoring

State Designation of OWQPs

- The State reviews WQP and lead/copper tap monitoring data collected by the system prior to and after CCT installation
- Based on this information, the State sets optimal water quality parameter (OWQP) minimums or ranges.
- OWQPs reflect optimal corrosion control conditions for the system

WQP Monitoring

After State Designates OWQPs

- Collect tap samples every 6 months (2 samples at standard number of taps)
- Collect entry point samples every 2 weeks (at each entry point or representative sites)
- Required for:
 - Systems serving $> 50,000$
 - Systems serving $\leq 50,000$ during monitoring period(s) in which either AL is exceeded, or as required by State



WQP Monitoring

Compliance Periods

- Begins after State sets OWQPs:
 - January 1 or July 1 for systems on standard monitoring.
 - June 1 for small/medium on reduced monitoring.*
- Annual monitoring begins after 6th consecutive 6-month period of meeting OWQPs.
- Triennial monitoring begins after 3rd consecutive year of meeting OWQPs.

**** 6-month OWQP compliance period will be June 1 – November 30.***

WQP Monitoring

- OWQP compliance is based on 6-month periods
- Systems cannot be outside OWQP ranges or below minimum for more than 9 days:
 - at a specific sampling point or combination of sampling points, or
 - for a specific WQP or combination of WQPs during a 6-month period
- For excursions, the 9 days do not have to be consecutive

Refer to, *How to Determine Compliance with Optimal Water Quality Parameters as Revised by the Lead and Copper Rule Minor Revisions.*

http://water.epa.gov/lawsregs/rulesregs/sdwa/lcr/upload/2001_6_7_lcrmr_guidance_lcmr_optimal_water_quality_compliance.pdf , February 2001

WQP Monitoring

Reduced Tap Monitoring

- Systems are eligible if they:
 - Serve > 10,000 AND
 - Maintain OWQPs for 2 consecutive 6-month periods
- Tap sampling is reduced per table below
- Entry point sampling remains the same (every 2 weeks)

Number of WQP Tap Sample Sites (2 samples from each site)		
<u>System Size</u>	<u>Standard</u>	<u>Reduced</u>
> 100K	25	10
10,001 – 100K	10	7
3,301 – 10K	3	3
501 – 3,300	2	2
101 – 500	1	1

WQP Monitoring

Reduced Monitoring

- Annually

- OWQP maintained for 3 consecutive years
 - Continue with entry point sampling (every 2 weeks)
 - Reduce tap sample frequency to annually

- Triennial

- Annual OWQP maintained for 3 consecutive years;
or

Any PWS with 90th percentile levels $\leq 0.005\text{mg/L}$ for Pb and $\leq 0.65\text{mg/L}$ for Cu and maintains OWQP for 2 consecutive 6-month monitoring periods

- Continue with entry point monitoring (every 2 weeks)
- Reduce tap sample frequency to once every three years

Annual samples should be spread evenly throughout the year to capture seasonal variability.

WQP Monitoring

Return to Standard Monitoring from Reduced Monitoring

- If system fails to meet OWQPs for more than 9 days in a 6-month compliance period:
 - Return to 6-month monitoring frequency
 - Systems serving > 10,000 must collect standard number of WQP taps
- Can re-qualify for reduced monitoring



***Notification of Treatment
Changes and Source Additions***



Long-Term Treatment Changes and New Source Additions

Systems Affected

- Systems on reduced lead and copper tap monitoring

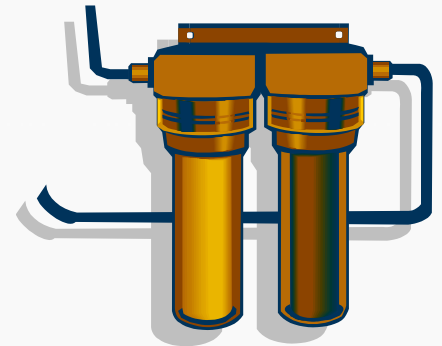
Rule Requirement

- Requires prior notification and approval of treatment change or source addition
- Limits notification of treatment changes to “long-term changes”
- Notification due as specified by State, or early as possible prior to change or addition



Long-Term Treatment Changes and New Source Additions

- Examples of long-term treatment changes:
 - ✓ Switching secondary disinfectants
 - ✓ Switching coagulants
 - ✓ Switching corrosion inhibitor products
 - ✓ Changing dosage of existing chemicals
 - ✓ Installation of membrane filters, ozonation, enhanced coagulation/softening
- Does NOT include chemical dose fluctuations associated with daily raw water quality changes





Long-Term Treatment Changes and New Source Additions

LCR Requirements for OCCT (2015 memo)

- Clarifies LCR requirements for large systems
- Before, during and after any proposed changes, systems must continuously:
 - Operating and maintaining CCT
 - Meet State-designated OWQPs
- Recommends systems not subject to a notification requirement also notify States prior to implementing changes/additions to ensure optimal corrosion control and continued public health protection



Long-Term Treatment Changes and New Source Additions

- Examples of source water additions include:
 - ✓ Switching source types
 - ✓ Adding treated surface water to ground water only system
 - ✓ Adding new well from different aquifer
- Seasonal or interannual source changes DO NOT require notification if:
 - ✓ Covered by previous OCCT studies and sampling, and
 - ✓ Covered within OCCT designation framework





Lead and Copper Rule

Resources

- EPA's lead and copper compliance help web site <https://www.epa.gov/dwreginfo/lead-and-copper-rule>
- Lead and Copper Rule: A Revised Quick Reference Guide (PDF) (2 pp, 125K) EPA816-F-08-018 June 2008 <http://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=60001N8P.txt>
- Lead and Copper Rule: A Quick Reference Guide for Schools and Child Care Facilities that Are Regulated Under the Safe Drinking Water Act (PDF) (5 pp, 546K) <http://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P10058C5.txt>
- Simultaneous Compliance Guidance Manual for Stage 2 Rules (PDF) (462 pp, 3MB) EPA 815-R-07-017 May 2007 <http://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=60000E2Q.txt>
- Memo Addressing Lead and Copper Rule Requirements for Optimal Corrosion Control Treatment for Large Drinking Water Systems (PDF) (2 pp, 522K) https://www.epa.gov/sites/production/files/2015-11/documents/occt_req_memo_signed_pg_2015-11-03-155158_508.pdf
- Memo Addressing tap sampling instructions <https://www.epa.gov/dwreginfo/memo-clarifying-recommended-tap-sampling-procedures-lead-and-copper-rule>



Lead and Copper Rule 3-Part Webinar Series

- **Part 1: Requirements Before an Action Level Exceedance**
May 11th 2016, 1pm- 2:30pm EST COMPLETED
May 18th 2016, 2:30pm- 4pm EST COMPLETED
- **Part 2: Requirements After an Action Level Exceedance**
June 15th 2016, 1pm-2:30pm EST
June 29th 2016, 1pm-2:30pm EST
- **Part 3: Compliance Determination and Reporting Requirements**
August 17th 2016, 2:30pm-4pm EST

For more information visit EPA's drinking water training page:
<https://www.epa.gov/dwreginfo/drinking-water-trainings>

Or Email OGWDWProtectionTraining
OGWDWProtectionTraining@epa.gov