

Lead and Copper Rule Revisions

Office of Ground Water and Drinking Water

Federalism Consultation Meeting
January 8, 2018



Purpose & Overview

Purpose:

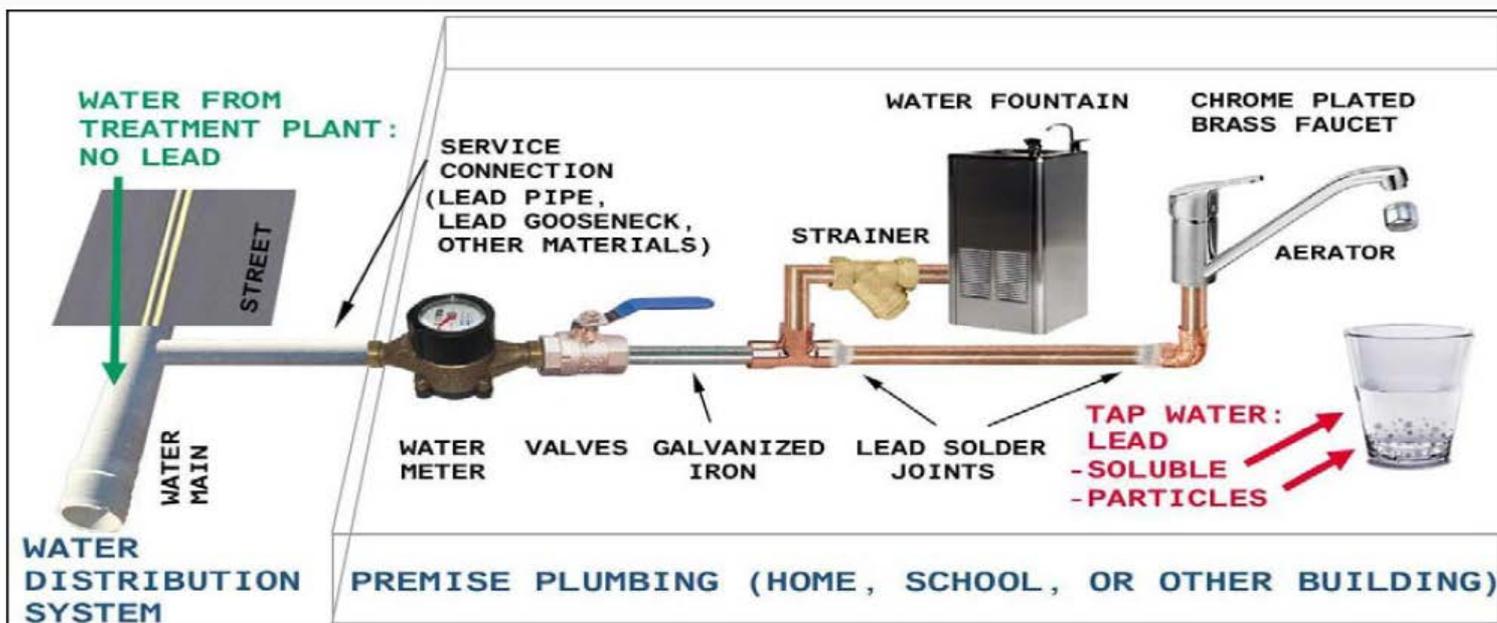
- To obtain input from State and Local Government Officials on potential revisions to key areas of the Lead and Copper Rule

Agenda:

- Background on the Lead and Copper Rule (LCR)
- Key areas for potential rule revisions
- Cost Information
- Next steps

Lead and Copper Rule (LCR)

- The National Primary Drinking Water Regulation for Lead and Copper was promulgated June 7, 1991.
- Applies to 68,000 public water systems serving ~300 million people
- Lead and copper enter drinking water mainly from corrosion of lead and copper containing plumbing materials.
- The LCR requires water systems to sample taps and to take actions including treating water to make it less corrosive to plumbing materials that contain lead and copper, educating consumers and replacing lead service lines.





LCR: Health Effects

- Lead:
 - Lead damages the brain, red blood cells and kidneys
 - Studies consistently demonstrate the harmful effects of lead exposure on children, including cognitive function, decreased academic performance and poorer performance on tests of executive function.
 - Lead exposure is also associated with decreased attention, and increased impulsivity and hyperactivity in children.
 - Lead is particularly dangerous to children because their growing bodies absorb more lead than adults and their brains and nervous systems are more sensitive to the damaging effects of lead.
- Copper:
 - Can cause stomach and intestinal distress, liver or kidney damage, and complications of Wilson's disease in genetically predisposed people



Key Challenges with the Current LCR

- The LCR is one of the most complicated drinking water regulations for states and drinking water utilities to implement.
- The LCR is the only drinking water regulation that requires sampling in homes, often by the consumers themselves, with very specific sampling procedures that are not always followed.
- The current structure of the rule compels additional protective actions by water systems only after a potential problem has been identified; under the current rule, up to 10% of samples can have highly elevated levels of lead with no additional requirement for actions.
- Many systems have not fully optimized corrosion control treatment or have not maintained optimized treatment, and small systems are not required to optimize corrosion control unless more than 10% of samples exceed the action level.
- In most communities, lead service lines are partially or entirely privately owned and a number of homeowners or renters may be unwilling or unable to replace the portion of the line at their home.



Key Areas for Rule Revisions

- Lead Service Line Replacement
- Corrosion Control Treatment
- Tap Sampling
- Public Education and Transparency
- Copper Requirements

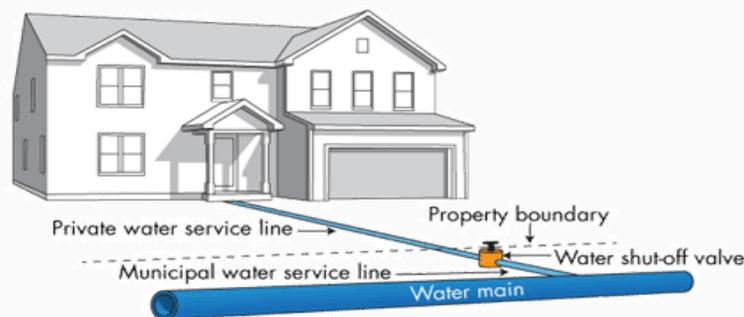
Lead Service Line Replacement

Current Requirements

- Systems that exceed the lead Action Level (AL) after installing corrosion control treatment (CCT) must replace 7% of lead service lines per year (the state can accelerate)
- Systems are only required to replace portion of the LSL owned by the PWS
- Systems may consider an LSL replaced if a sample from that line is below the AL
- Systems must offer to replace customer owned portion at customer cost
- LSLR can stop when lead \leq AL for 2 consecutive monitoring periods

Challenges

- Most homeowners have declined the opportunity to replace their portion of the lead service line.
- Partial replacements may be harmful due to the disruption of the service line dislodging lead





Lead Service Line Replacement

Key Questions

- What are the opportunities and challenges to state and local governments if EPA were to modify the LCR to:
 - Require systems to create an inventory of lead service lines
 - Require proactive full lead service line replacement on a specified schedule (e.g., 10, 15, 25, 35 years from promulgation)
 - Allow partial LSLR only for emergency repair or “unwilling or unable customers” when conducting infrastructure replacement (e.g., main replacement)
 - Require pitcher filters to be distributed and regularly maintained by the PWS for three months immediately following lead service replacement



Corrosion Control Treatment

Current Requirements

- Systems serving $>50,000$ required to perform CCT
- Systems serving $\leq 50,000$ required to perform CCT if AL exceeded
- System proposes treatment (or changes) and state approves

Challenges

- States and water systems often lack needed expertise
- Some small systems with lead service lines are not required to perform CCT





Corrosion Control Treatment

Key Questions

- What are the opportunities and challenges to state and local governments if the LCR was modified to:
 - Target systems to required install CCT differently:
 - Change the current system size threshold (50,000 people served), or
 - Require systems with lead service lines (regardless of population served) to install and maintain CCT?
 - Require plumbed in point of use treatment devices to be provided to households with lead service lines and regularly maintained
 - Change the requirements for designating optimal CCT to:
 - Prescribe a default CCT that must be maintained unless a system can demonstrate equivalent CCT to the state, or
 - Require the system to conduct a periodic re-evaluation of CCT to be reviewed by the state?
 - Require system to find and fix problems in corrosion control treatment if a tap sample exceeds an action level?



Transparency & Public Education

Current Requirements

- The annual Consumer Confidence Report sent to all consumers must include lead sampling results and an informational statement about the health effects of lead and actions to reduce exposure
- Systems that exceed lead action level must begin public education within 60 days after end of monitoring period:
 - Educational materials must include information on health effects of lead, sources of lead, and steps consumers can take to reduce exposure to lead in drinking water
- The 2016 Water Infrastructure Improvement for the Nation Act (WIIN) requires notice of exceedance of AL within 24 hours

Challenges

- Intensive public education only occurs after a problem has been identified
- Information on lead in drinking water is confusing, particularly results in comparison to the action level



Transparency & Public Education: Key Questions

- What do state and local governments think are the most effective ways for water systems to deliver educational information to consumers?
- What opportunities and challenges would state and local governments face if the LCR was revised to require:
 - Water systems to provide on-going targeted outreach with a special emphasis on all customers with lead service lines?
 - Water systems to provide notification to consumers within 24 hours of exceeding an action level (as required by the 2016 WIIN Act)?
 - Water Systems to make information accessible to consumers on results of all tap sampling, results of water quality parameter (WQP) monitoring and the number and locations of LSLs?



LCR Tap Sampling

Current Requirements

- Collect samples at residential taps that are at high risk of lead contamination
- 90th Percentile result compared to Action Levels based on treatment feasibility
 - 15 ppb ($\mu\text{g/L}$) lead
 - 1.3 ppm (mg/L) copper

Challenges

- Complicated sampling procedure
- Procedures are not always followed
- Up to 10% of samples can have highly elevated levels of lead with no additional requirement for actions





Tap Sampling: Key Questions

- What are the opportunities and challenges for states and local governments if the rule changed sampling protocols, including:
 - Changing where water systems are required to collect tap samples?
 - At sites based on customer request,
 - At schools served by the system,
 - Change the way samples are collected to be more representative of exposure?
 - Increase the number of samples required
 - Instruct consumers to sample when they are drawing water for drinking or cooking.
 - Establish a household action level that if exceeded would trigger a report to the consumer and to the applicable health agency for follow up?



Copper

Current Requirements

- Copper samples are collected at the same time and customer taps as lead samples.
- The 90th% value of results is compared to the copper AL of 1.3 mg/L.
- If the copper AL is exceeded, water systems must implement CCT.



Copper Revisions

Key Questions

- What opportunities and challenges would state and local governments face if EPA revised the LCR to:
 - Establish a screen to determine if water systems have water aggressive to copper?
 - If water is aggressive, require:
 - monitoring and/or
 - public education and/or
 - CCT.
 - Modify tap sampling to require separate sampling sites for copper?



How Does it All Fit Together?

- The LCR is a composite of multiple requirements that apply to systems differently depending on system size and water quality
- The revised LCR would similarly bring together multiple key requirements that could vary according to system specific conditions
- One important factor in considering potential changes to the LCR is cost. The following slides provide representative examples of the costs of a few key potential requirements

Example Costs for Key Potential Requirements

Lead Service Line Replacement

- Based on preliminary estimates, replacing a full LSL would cost on average \$4,700 per line replaced
- Cost can vary greatly depending on the length and the amount of pavement that must be restored. Costs may range from \$1,200 - \$12,300 per line replaced





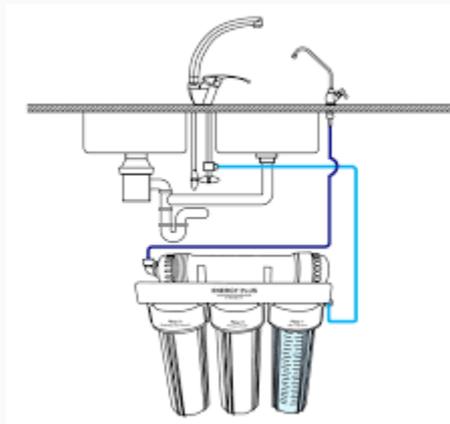
Example Costs for Key Potential Requirements

Estimated Costs for Centralized Orthophosphate Treatment (CCT) Systems				
Public Water System Size (People Served)	Total System Capital Cost (\$)	Annual System O&M Cost (\$)	Total Capital Cost per Household (\$)	Annual O&M Cost per Household (\$)
25-100	18,000	2,000	740	78
100-500	19,000	2,000	170	21
500-1000	21,000	3,000	72	12
1000-3300	22,000	6,000	31	8
3300-10000	39,000	8,000	17	3
10000-50000	48,000	25,000	5	3
50000-100000	63,000	81,000	2	3
100000-500000	92,000	265,000	1	2

In this table total system and household capital costs are one time costs and are not annualized values. Annualized capital cost would normally be calculated over the useful life of the technology.

Example Costs for Key Potential Requirements

- Plumbed in Point of Use filter devices would have an estimated total annual cost of \$120 per household





Discussion

- Do you have any other approaches that you would like EPA to consider?
- Any additional information or concerns you would like to share with EPA?
- EPA would appreciate any information, and specific data, state and local governments could provide on their experiences with:
 - lead service line replacement
 - corrosion control treatment (studies and implementation)
 - sampling programs or
 - other aspects of drinking water lead control programs.