

Lead and Copper Rule: A Quick Reference Guide

Overview of the Rule

Title	Lead and Copper Rule (LCR) ¹ , 56 FR 26460 - 26564, June 7, 1991
Purpose	Protect public health by minimizing lead (Pb) and copper (Cu) levels in drinking water, primarily by reducing water corrosivity. Pb and Cu enter drinking water mainly from corrosion of Pb and Cu containing plumbing materials.
General Description	Establishes action level (AL) of 0.015 mg/L for Pb and 1.3 mg/L for Cu based on 90 th percentile level of tap water samples. An AL exceedance is not a violation but can trigger other requirements that include water quality parameter (WQP) monitoring, corrosion control treatment (CCT), source water monitoring/treatment, public education, and lead service line replacement (LSLR).
Utilities Covered	All community water systems (CWSs) and non-transient, non-community water systems (NTNCWSs) are subject to the LCR requirements.

Public Health Benefits

Implementation of the LCR has resulted in . . .	<ul style="list-style-type: none"> ▶ Reduction in risk of exposure to Pb that can cause damage to brain, red blood cells, and kidneys, especially for young children and pregnant women. ▶ Reduction in risk of exposure to Cu that can cause stomach and intestinal distress, liver or kidney damage, and complications of Wilson's disease in genetically predisposed people.
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Lead and Copper Tap Sampling Requirements

- ▶ First draw samples must be collected by all CWSs & NTNCWSs at cold water taps in homes/buildings that are at high risk of Pb/Cu contamination as identified in 40 CFR 141.86(a).
- ▶ Number of sample sites is based on system size (see Table 1).
- ▶ Systems must conduct monitoring every 6 months unless they qualify for reduced monitoring (see Table 2).

Table 1: Pb and Cu Tap and WQP Tap Monitoring

Size Category	System Size	Number of Pb/Cu Tap Sample Sites		Number of WQP Tap Sampling Sites	
		Standard	Reduced	Standard	Reduced
Large	> 100K	100	50	25	10
	50,001-100K	60	30	10	7
Medium	10,001 - 50K	60	30	10	7
	3,301 - 10K	40	20	3	3
Small	501 - 3,300	20	10	2	2
	101 - 500	10	5	1	1
	≤ 100	5	5	1	1

Table 2: Criteria for Reduced Pb/Cu Tap Monitoring^a

Can Monitor . . .	If the System . . .
Annually	1. Serves ≤ 50,000 and is ≤ both ALs for 2 consecutive 6-month monitoring periods; or 2. Meets Optimal Water Quality Parameter (OWQP) specifications for 2 consecutive 6-month monitoring periods.
Triennially	1. Serves ≤ 50,000 and is ≤ both ALs for 3 consecutive years of monitoring; or 2. Meets OWQP specifications for 3 consecutive years of monitoring; or 3. Has 90 th percentile Pb levels ≤ 0.005 mg/L & 90 th percentile Cu level ≤ 0.65 mg/L for 2 consecutive 6-month periods (i.e., accelerated reduced Pb/Cu tap monitoring), or 4. Meets the 40 CFR 141.81(b)(3) criteria.
Once every 9 years	Serves ≤ 3,300 and meets monitoring waiver criteria found at 40 CFR 141.86(g).

^a Samples are collected at reduced number of sites (see Table 1 above).

Treatment Technique and Sampling Requirements

CORROSION CONTROL TREATMENT INSTALLATION: All large systems (except systems that meet the requirements of 40 CFR 141.81(b)(2) or (3)) must install CCT. Medium and small systems that exceed either AL must install CCT.

WATER QUALITY PARAMETER MONITORING: All large systems are required to do WQP monitoring. Medium and small systems that exceed either AL are required to do WQP monitoring.

¹The June 1991 LCR was revised with the following Technical Amendments: 56 FR 32112, July 15, 1991; 57 FR 28785, June 29, 1992; 59 FR 33860, June 30, 1994; and the LCR Minor Revisions 65 FR 1950, January 12, 2000.

Treatment Technique and Sampling Requirements if the AL is Exceeded

1 Water Quality Parameter (WQP) Monitoring

- ▶ All systems serving > 50,000 people, and those systems serving ≤ 50,000 people if 90th percentile tap level > either AL, must take WQP samples during the same monitoring periods as Pb/Cu tap sample.
- ▶ Used to determine water corrosivity, and if needed, to help identify type of CCT to be installed and how CCT should be operated (*i.e.*, establishes OWQP levels).
- ▶ WQPs include: pH, alkalinity, calcium, conductivity (initial WQP monitoring only), orthophosphate (if phosphate-based inhibitor is used); silica (if silicate-based inhibitor is used), and temperature (initial WQP monitoring only).
- ▶ Samples are collected within distribution system (*i.e.*, WQP tap samples), with number of sites based on system size (see Table 1), and at each entry point to distribution system (EPTDS).
- ▶ Systems installing CCT, must conduct follow-up monitoring for 2 consecutive 6-month periods – WQP tap monitoring is conducted semi-annually; EPTDS monitoring increases to every two weeks.
- ▶ After follow-up monitoring, State sets ranges of values for the OWQPs.
- ▶ Reduced WQP tap monitoring is available for systems in compliance with OWQPs; *Reduced monitoring does not apply to EPTDS monitoring.*
- ▶ For systems ≤ 50,000, WQP monitoring is not required whenever 90th percentile tap levels are ≤ both ALs.

2 Public Education (PE)

- ▶ Only required if Pb AL is exceeded (*no public education is required if only Cu AL exceeded*).
- ▶ Informs Public Water System's (PWS) customers about health effects, sources, and what can be done to reduce exposure.
- ▶ Includes billing inserts sent directly to customers, pamphlets or brochures distributed to hospitals & other locations that provide services to pregnant woman & children, and for some CWSSs, newspaper notices and public service announcements (PSAs) submitted to TV/radio stations.
- ▶ System must begin delivering materials within 60 days of Pb AL exceedance and continue every 6 months for PSAs and annually for all other forms of delivery for as long as it exceeds Pb AL.
- ▶ Different delivery methods and mandatory language for CWSs & NTCWSs.
- ▶ Can discontinue delivery whenever ≤ Pb AL; but must recommence if Pb AL subsequently exceeded.
- ▶ PE requirements are in addition to the Public Notification required in 40 CFR Subpart Q.

3 Source Water Monitoring and Treatment

- ▶ All systems that exceed Pb or Cu AL must collect source water samples to determine contribution from source water to total tap water Pb/Cu levels and make a source water treatment (SOWT) recommendation within 6 months of the exceedance.
- ▶ One set of samples at each EPTDS is due within 6 months of first AL exceedance.
- ▶ If State requires SOWT; system has 24 months to install SOWT.
- ▶ After follow-up Pb/Cu tap and EPTDS monitoring, State sets maximum permissible levels for Pb & Cu in source.

4 Corrosion Control Treatment

- ▶ Required for all large systems (except systems that meet the requirements of 40 CFR 141.81(b)(2) or (b)(3)) and medium/small systems that exceed either AL. The system shall recommend optimal CCT within 6 months.
- ▶ Corrosion control study required for large systems.
- ▶ If State requires study for medium or small systems, it must be completed within 18 months.
- ▶ Once State determines type of CCT to be installed, PWS has 24 months to install CCT.
- ▶ Systems installing CCT must conduct 2 consecutive 6-months of follow-up monitoring.
- ▶ After follow-up Pb/Cu tap & WQP monitoring, State sets OWQPs.
- ▶ Small & medium systems can stop CCT steps if ≤ both ALs for 2 consecutive 6-month monitoring periods.

If the system continues to exceed the AL after installing CCT and/or SOWT...

5 Lead Service Line (LSL) Monitoring

- ▶ Two types of sampling associated with LSL replacement (LSLR):
 - *Optional* - Monitoring from LSL to determine need to replace line. If all Pb samples from line ≤ 0.015 mg/L then LSL does not need to be replaced and counts as replaced line.
 - *Required* - Monitoring if entire LSL is **not** replaced to determine impact from "partial" LSLR. Sample is collected that is representative of water in service line that is partially replaced.
- ▶ Monitoring only applies to system subject to LSLR.

6 Lead Service Line Replacement

- ▶ System must replace LSLs that contribute more than 0.015 mg/L to tap water levels.
- ▶ Must replace 7% of LSL per year; State can require accelerated schedule.
- ▶ If only a portion of a LSL is replaced, PWS must:
 - Notify customers at least 45 days prior to replacement about the potential for increased Pb levels;
 - Collect sample within 72 hours of replacement and mail/post results within 3 days of receipt of results.
- ▶ Systems can discontinue LSLR whenever ≤ Pb AL in tap water for 2 consecutive monitoring periods.

For additional information on the LCR, call the Safe Drinking Water Hotline at 1-800-426-4791; visit the EPA web site at www.epa.gov/safewater/lcrr/Implement.html; or contact your State drinking water representative.