



Lead and Copper Monitoring

Guidance for public water system operators

All Group A community and nontransient noncommunity public water systems must monitor for lead and copper in drinking water. The state Department of Health (DOH) requires this monitoring to minimize the amount of lead and copper consumers get from drinking water.

Unlike other contaminants, lead and copper do not usually occur in source water. Instead, they result when building plumbing, faucets, and water fixtures corrode. Therefore, the purpose of this monitoring is to determine whether water systems are distributing corrosive water—and sampling occurs inside a set number of residential units. Systems with corrosive water must investigate and determine the best way to control corrosion.

High levels of lead can lower birth weights, and slow the normal physical and mental development of infants and young children. For adults, it can damage kidneys, slightly increase blood pressure, and impair reproductive function. High levels of copper can cause nausea and diarrhea.

Distribution System Monitoring Requirements

Lead and copper requirements involve both initial and reduced monitoring. To ensure monitoring results represent the entire community, the Lead and Copper Rule sets a number of required residential water samples based on population served. The rule also provides specific guidance for selecting the homes or locations where sample collection occurs.

Initial monitoring: Collect one sample from each site within a set 6-month period, and then a second set of samples during the next 6 months (see center column below for required sites). If both sample sets are at or below the action levels for lead and copper, the water system is eligible for a reduced monitoring schedule (right column).

Reduced monitoring: If you qualify for reduced monitoring, you must take samples between June and September. Most systems will need two years of reduced sample sets after initial monitoring. If these samples are at or below the action levels, required monitoring reduces to once every 3 years between June and September.

Tap Samples Required for Lead and Copper Monitoring

Population Served	Initial Monitoring – Number of sample sites	Reduced Monitoring – Number of sample sites
More than 100,000	100	50
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
100 or Fewer	5	5



Selecting Sample Sites

You must establish a sampling pool of homes large enough to ensure an adequate number of samples; and you must collect water samples from homes most vulnerable to lead and copper corrosion. Generally, these are homes built between 1982 and 1986 with copper pipes. You must base your sampling pool on your system’s materials assessment, and your samples must be from the highest “Tiered” sites available.

If your system has enough homes with lead service lines (LSLs), 50 percent of your sample sites must be from homes served by LSLs, otherwise, your sample set must include all sites with LSLs¹.

This table summarizes the LCR sampling site criteria.

Site Selection Tier 40 CFR 141.86(a)(3)	Building Type(s)	Select residential sites that:
1	Single Family Residence (SFR)	<ul style="list-style-type: none"> Contain copper pipes with lead solder installed after December 31, 1982, or contain lead pipes
		<i>and/or</i>
		<ul style="list-style-type: none"> Are served by a lead service line (may include MFR if they make up more than 20% of the structures on the system)
2	Buildings including Multifamily Residence (MFR)	<ul style="list-style-type: none"> Contain copper pipes with lead solder installed after December 31, 1982, or contain lead pipes
		<i>and/or</i>
		<ul style="list-style-type: none"> Are served by a lead service line
3	SFR	<ul style="list-style-type: none"> Contain copper pipes with lead solder installed before January 1, 1983
Other	Representative sites	<ul style="list-style-type: none"> Contain plumbing materials typically found at other sites the water system serves

Note: You will need homeowners who volunteer to collect the samples or allow water system staff access to the premises to collect the samples.

Do not use sites with point-of-use or point-of-entry treatment or water softeners. It is best not to include homes with recent plumbing repairs or replacement. These activities can loosen scale build-up on the interior wall of pipes, which may contain lead and could result in abnormally high lead results. You may change locations for reduced sampling if an original sample site is no longer available.

For more information about sample site selection, see the U.S. Environmental Protection Agency (EPA) publication, ***Lead and Copper Rule: Monitoring and Reporting Guidance for Public Water Systems (816-R-10-004)***.*

¹ 40CFR141.86(a)(8)

Sample Collection Procedures

You should collect samples from regularly used kitchen or bathroom cold-water taps left undisturbed for at least 6 hours, but no more than 12 hours. Therefore, ask homeowners to take samples first thing in the morning or after coming home from work or school. This minimum 6-hour standing time helps to standardize the test results. Lead and copper levels increase as long as water stands in a home's plumbing system. Lead levels can increase significantly even after only 2 hours of nonuse. Water that stands longer than 12 hours may have high lead and copper levels that do not represent typical conditions.

Be sure to provide instructions for homeowners who will collect samples. Step-by-step sampling procedures are in DOH's *Lead and Copper Sampling Procedure (331-227)*.*

Action Levels

The "action level" is the amount of lead or copper that triggers the requirement for a water system to investigate and determine the best way to control corrosion.

**The action levels are: 0.015 milligrams per liter (mg/L) for lead
 1.3 mg/L for copper**

Your water system has an "action level exceedance" if more than 10 percent of your results exceed the action levels shown above. This is commonly called your 90th percentile level. When you receive the sampling results from your lab, send them to us. We will calculate the 90th percentile based on all the samples you collect during the monitoring period and contact you if the results exceed an action level. (Check with your lab; most labs will submit results directly to us).

Exceeding an Action Level

Water systems exceeding the action level for lead or copper must begin follow-up investigations immediately². We may require your system to make improvements or operational changes to make the water less corrosive. If an action level exceedance occurs, you should contact us immediately because there are deadlines associated with both corrective actions and public education requirements.

Water systems that exceed the lead action level must begin a public education campaign that includes specific language and targeted outreach to specific groups that serve sensitive populations (like pediatricians and WIC programs). If you need help, call our regional office (see page 4).

For more detailed information about the types of corrosion control treatment and how to select the right treatment for your system, see EPA's *Revised Guidance Manual for Selecting Lead and Copper Control Strategies (816-R-03-001)*.*

Provide sample results to each homeowner

You must give the homeowners in your sampling program the results of the tests you took in their homes within 30 days after receiving the results from the testing laboratory. While this is a requirement for you, it may be an incentive for customers, which can help you keep and recruit participants for your sampling program. You must also send us certification that you completed this notification within 3 months after delivering your notices. If you need help, call our regional office.

² 40CFR141.81(e)

The health effects of lead and copper

Two DOH fact sheets explain how lead and copper get into drinking water and the health effects related to drinking water high in lead or copper:

*Copper in Drinking Water (331-178)**

*Lead in Drinking Water (331-177)**

Resources

Department of Health Regional Lead Copper Staff

Eastern Region, Spokane	509-329-2100
Northwest Region, Kent	253-395-6750
Southwest Region, Tumwater	360-236-3030

***Publications**

The publications referenced in this document are our website at <https://fortress.wa.gov/doh/odwpubs/Publications/>



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