



Lead and Copper Monitoring

331-111 • Revised 6/10/2019

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. This is determined by sampling the regularly used fixtures in homes most susceptible to corrosion of lead and copper. 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 standard and reduced monitoring. To ensure monitoring results represent the entire community, the Lead and Copper Rule sets a minimum 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.

Standard monitoring: Collect one sample from each site within a set six-month period, and then a second set of samples during the next six 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 standard monitoring. If these samples are at or below the action levels, required monitoring reduces to once every three years between June and September.

Tap Samples Required for Lead and Copper Monitoring		
Population Served	Standard 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 and maintain a sampling pool of homes large enough to satisfy the number of sample sites required for standard monitoring (see table above). Furthermore, you must identify sample sites that are most vulnerable to lead and copper corrosion. Generally, these are homes with lead service lines or homes built between 1982 and 1986 with copper pipes joined by lead/tin solder. In order to select homes at highest risk for lead and copper corrosion, you should survey records documenting the materials used to construct and repair your distribution system and buildings connected to your distribution system. Sources of information includes historical plumbing codes and permit records, meter installation records, community surveys, county assessor websites and distribution system records.

If your system has enough homes with lead service lines (LSL), 50 percent of your sample sites must be from homes served by LSL, otherwise, you must collect a sample from each available site that is served by a LSL.

When a sufficient number of Tier 1 sites do not exist or are inaccessible (e.g., homeowner denies permission for you to collect a sample), complete your sampling pool with Tier 2 sites. When a sufficient number of Tier 1 and 2 sites do not exist or are inaccessible, complete your sampling pool with Tier 3 sites. Any water system without enough available sample sites that meet the tiering criteria may complete sampling at representative sites throughout the distribution system.

Other considerations in maintaining your sampling pool of lead and copper sample sites.

- ◆ As homeowners opt out of the sampling pool, replace these sites with new sites so that you always maintain a sample pool large enough to accommodate the full number of samples required under standard monitoring.
- ◆ If your water system expands to serve existing nearby homes, or expands through consolidation with another public water system, review the construction and materials records of these newly serviced homes to determine if their "tier" warrants including them in your sampling pool. You may need to add Tier 1 sites from newly expanded areas so that monitoring occurs throughout the distribution system from the highest tier sample site available.
- ◆ Keep a written record of your sampling pool, as required by WAC 246-290-415. DOH may ask to review it during a sanitary survey, or to affirm compliance with 40 CFR 141.86.

When collecting a reduced monitoring set of lead and copper samples, select from the highest tier sites available in your sampling pool.

This table summarizes the Lead and Copper Rule sample 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 <p style="text-align: center;"><i>and/or</i></p> <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 <p style="text-align: center;"><i>and/or</i></p> <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 \(816-R-10-004\)](#).

Sample Collection Procedures

You must collect samples from regularly used kitchen or bathroom cold-water taps left undisturbed for at least six hours. We recommend no more than 12 hours of stagnation. Ask homeowners to take samples first thing in the morning or after coming home from work or school. This minimum six-hour standing time represents how many people receive some of their drinking water. Lead and copper levels increase as long as water stands in a home's plumbing

system. Lead levels can increase significantly even after only two 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 sampling 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 sample 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 immediately. 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). 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: [Lead in Drinking Water \(331-177\)](#) and [Copper in Drinking Water \(331-178\)](#). If you need help, call our regional office.

For more detailed information about the types of corrosion control treatment and how to select the right treatment for your system, see EPA's [Optimal Corrosion Control Treatment Evaluation Technical Recommendations for Primacy Agencies and Public Water Systems \(EPA 816-B-16-003\)](#).

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. Your consumer notice must also include information on health effects of lead and what consumers can do to reduce their exposure to lead. To help you meet these and other requirements, we developed a

consumer notification form for your use. [DOH 331-462-F](#) includes a link to the notification form. You must inform each consumer who participates in lead and copper sampling of their sampling results. Doing so can also serve as an incentive to keep and recruit participants in your sampling program. You must also send us verification that you completed this notification. Complete and return [DOH 331-462-F](#) within three months after delivering your notices. If you need help, call our regional office.

For Technical Assistance

[Eastern Region](#), Spokane 509-329-2100

[Northwest Region](#), Kent 253-395-6750

[Southwest Region](#), Tumwater 360-236-3030

Publications referenced in this document are available on our website at fortress.wa.gov/doh/odwpubs/Publications/.



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