

# State Water Resources Control Board

## Division of Drinking Water

### Lead and Copper Tap Sample Results Guidance Document



This guidance document was developed to help public water systems comply with the California Lead and Copper Rule (LCR). The LCR requires community water systems and non-transient non-community water systems to monitor lead and copper levels at the consumers' taps. If action levels are exceeded, installation of corrosion control treatment is required. If the action level for lead is exceeded, public notification is required.

Lead Action Level = 0.015 mg/L

Copper Action Level = 1.3 mg/L

Compliance with the lead and copper action levels is based on the 90<sup>th</sup> percentile lead and copper levels. This means that the concentration of lead and copper must be less than or equal to the action level in at least 90% of the samples collected.

To help explain compliance with the LCR, information on the following topics are included in this document:

- Section 1. Number of Tap Sample Sites Required
- Section 2. When to Sample
- Section 3. Tier Levels
- Section 4. How to Sample
- Section 5. How to Calculate the 90<sup>th</sup> Percentile Lead and Copper Levels
- Section 6. What to Do if You Exceed the Lead or Copper Action Level
- Section 7. How to Report Your Sample Results
- Section 8. Monitoring Waivers

## SECTION 1. Number of Tap Sample Sites Required

The number of tap sample sites required is based on the number of people served (system size) by your water system and also whether you are performing Standard or Reduced Monitoring.

**Table 1. Number of Sampling Sites**

System Size	Minimum Number of Sites	
	Standard Tap Sampling	Reduced Tap Sampling
> 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
< 101	5	5

## SECTION 2. When to Sample

Samples must be collected during the months of June, July, August, or September, unless the Division approves an alternate set of four months.

### Standard Monitoring:

Each water system must complete at least two consecutive 6-month Standard Monitoring periods with no exceedance of the lead or copper action level before the frequency of sampling can be reduced. During each 6-month Standard Monitoring period, you must collect at least one tap sample from the number of sites shown in Table 1, under Standard Tap Sampling.

Therefore, during your first year of sampling, collect a set of samples in the first six months and a set of samples in the second six months. Samples must be analyzed for both lead and copper.

If at any time your 90<sup>th</sup> percentile lead or copper level exceeds the action level, you must contact your respective District Office or County Agency for further guidance.

### Reduced Monitoring:

If you have completed two consecutive 6-month Standard Monitoring periods and the 90<sup>th</sup> percentile levels do not exceed 0.005 mg/L for lead and 0.65 mg/L for copper, you may reduce the number of tap sample sites as shown in Table 1, under Reduced Monitoring, and reduce the frequency at which you sample to once every three years.

If you have completed two consecutive 6-month Standard Monitoring periods and the 90<sup>th</sup> percentile levels are greater than 0.005 mg/L for lead and 0.65 mg/L for copper, but do not exceed the lead or copper action levels, you may reduce the number of tap sample sites as shown in Table 1, under Reduced Tap Sampling. You may also reduce the frequency at which you collect the samples to annual monitoring for two years. Samples must be analyzed for both lead and copper.

After completing the last year of annual monitoring, if there has been no exceedance of the lead or copper action level, collect one set of samples once every three years during the month of June, July, August or September. Again, samples must be analyzed for both lead and copper.

### SECTION 3. Tier Levels

Lead and copper tap samples must be collected from sampling locations that meet the following criteria:

Tier Level	Community Water Systems	Non-Transient Non-Community Water Systems
Tier 1	<p>Single-family structures that</p> <ul style="list-style-type: none"> <li>Contain copper pipes with lead solder installed after 1982; or</li> <li>Contain lead pipes; or</li> <li>Are served by a lead service line</li> </ul> <p><i>If multiple-family residences comprise at least 20 percent of the structures served by a water system, the system may include these types of structures as "tier 1" sites in its sampling pool.</i></p>	<p>Buildings that</p> <ul style="list-style-type: none"> <li>Contain copper pipes with lead solder installed after 1982; or</li> <li>Contain lead pipes; or</li> <li>Are served by a lead service line</li> </ul>
Tier 2 <i>(use this tier level only if there is an insufficient number of "tier 1" sampling sites)</i>	<p>Buildings (including multiple-family residences) that</p> <ul style="list-style-type: none"> <li>Contain copper pipes with lead solder installed after 1982; or</li> <li>Contain lead pipes; or</li> <li>Are served by a lead service line</li> </ul>	<p>Buildings that</p> <ul style="list-style-type: none"> <li>Contain copper pipes with lead solder installed before 1983</li> </ul>
Tier 3 <i>(use this tier level only if there is an insufficient number of "tier 1" and "tier 2" sampling sites)</i>	<p>Single-family structures that</p> <ul style="list-style-type: none"> <li>Contain copper pipes with lead solder installed before 1983</li> </ul>	N/A
Representative	A system with an insufficient number of tier sites shall complete its sampling pool with "representative" sites (i.e. plumbing materials commonly found at other sites) throughout the distribution system.	

- Notes:
1. If lead service lines are present in the distribution system, at least half of the samples must come from the sites served by lead service lines
  2. Do not sample from homes or buildings that have point-of-use or point-of-entry treatment devices (e.g., water softener, carbon filter system, etc.)
  3. Each round of sampling should be conducted at the same sampling sites. If an original sampling site is not available, you should collect a tap sample from another site meeting the same Tier criteria as the original site, and complete/submit the **Lead and Copper Tap Sampling Site Change** form.

## SECTION 4. How to Sample

Depending on the type of water system you operate, the following options are available for sample collection:

- You can collect the samples yourself using the procedures outlined below; or
- Residents of the water system can collect the samples for you. Letters are usually sent to find volunteers to participate in the sampling program. The attached sample collection instruction sheet must be sent to each participant. Residents collect the samples and complete the bottom portion of the instruction sheet. You collect the filled sample bottles and the completed instruction sheets from the residents. Sample bottles are then transported to the laboratory for analysis.

Sample Procedures:

- 1) Samples from residential housing are to be taken from a kitchen or bathroom cold-water faucet. Do not sample from faucets that have point-of-use treatment (e.g., water softener, carbon filter system, etc.). Samples from a non-residential building are to be collected from an interior tap from which water is typically drawn for consumption.
- 2) Each sample must be collected after the water has stood undisturbed in the pipes for at least 6 hours. It is best to collect the sample first thing in the morning.
- 3) Each sample must be one liter in volume and must contain the first water drawn from the faucet.
- 4) Remove the cap from the one-liter sample bottle, place the container directly below the faucet and gently open the cold-water tap. Fill the sample bottle to the line marked "1- liter or 1,000-ml" and turn off the water.
- 5) Tightly cap the sample bottle and complete the required information on the sample bottle label.
- 6) All samples must be analyzed by a laboratory certified by the State to perform drinking water lead and copper analyses.

## SECTION 5. How to Calculate the 90<sup>th</sup> Percentile Lead and Copper Levels

Number of Tap Samples Collected	Determination of 90 <sup>th</sup> Percentile Lead and Copper Levels
5	Average the 4 <sup>th</sup> and 5 <sup>th</sup> highest sample results to get the 90 <sup>th</sup> percentile level
More than 5	Place results in ascending order and assign each sample a number, 1 for the lowest concentration. Multiply the total number of samples by 0.9. Round down to the nearest whole number if the decimal is 0.4 or lower and round up if the decimal is 0.5 or higher. The sample result that corresponds with the nearest whole number is the 90 <sup>th</sup> percentile.

## SECTION 6. What to Do if You Exceed the Lead or Copper Action Level

If your 90<sup>th</sup> percentile lead or copper level exceeds the action level, you must contact your respective regulating agency (District office or County Agency) for further guidance.

## SECTION 7. How to Report Your Sample Results

Upon completion of each sampling period, the following items must be submitted to your respective District Office or County Agency:

- A fully completed ***Lead and Copper Tap Sample Results Reporting Form***
- A fully completed ***Lead and Copper Tap Sampling Site Change Form***, if needed
- Laboratory copies of all sample results

## SECTION 8. Monitoring Waivers

You may apply to the Division for a waiver to reduce the tap sampling frequency for lead and copper to **once every nine years**. If you meet the following materials and monitoring criteria for both lead and copper, a full waiver will be granted. If you meet the materials and monitoring criteria for only one of the chemicals, a partial waiver that covers only that chemical will be granted.

### Materials Criteria:

- You must provide certification and documentation that the distribution system and service lines and all drinking water supply plumbing, including plumbing conveying drinking water within all residences and buildings connected to the system, satisfy the following:
- For lead, the system must be free of plastic pipes that contain lead plasticizers or plastic service lines that contain lead plasticizers, lead service lines, lead pipes, lead-soldered pipe joints, and leaded brass or bronze alloy fittings and fixtures, unless you can demonstrate that such fittings and fixtures will not leach lead into the drinking water.
- For copper, the system must be free of copper pipes and copper service lines.

### Monitoring Criteria:

- You must have conducted standard tap sampling for at least one six-month period and demonstrate that the 90<sup>th</sup> percentile levels for all periods of tap sampling conducted since the water system became free of all lead-containing and/or copper-containing materials do not exceed 0.005 mg/L for lead and 0.65 mg/L for copper. You must continue monitoring at the required frequency (Standard Monitoring or Reduced Monitoring) until a waiver is granted.