

# GUIDANCE FOR SMALL WATER SYSTEMS TO COMPLY WITH THE LEAD (Pb) AND COPPER (Cu) REQUIREMENTS

## I. OVERVIEW

The Lead and Copper Rule requires:

- A. Selecting sampling sites;
- B. Collecting and analyzing samples;
- C. Determining if the 90th percentile sample exceeds the lead action level of 0.015 mg/L (15 ppb) or the copper action level of 1.3 mg/L (1.3 ppm);
- D. Reporting the results; and
- E. Taking any necessary follow-up action.

## II. NUMBER OF SAMPLES

The necessary number of samples depends on the number of people served by the system. Samples must be taken from the following number of sampling sites:

Number of People served	Number of samples (Routine)
501 to 3,300	20
101 to 500	10
Less than or equal to 100	5

## III. WHERE TO SAMPLE

- A. Sampling sites are selected based on a tier system. If possible, all samples should be taken from tier I sites. If there are not enough tier I sites, samples should be taken from tier II sites, etc.
  - 1. Tier I sites consist of single family structures that contain:
    - a. lead pipes; and/or
    - b. copper pipes with lead solder installed between 1982 through 1989; and/or
    - c. pipes served by a lead service line.

If lead service lines are present, at least half of the samples must come from the sites with lead service lines.

- 2. Tier II sites consist of buildings and multiple family residences that contain:
  - a. copper with lead solder installed between 1982 through 1989; and/or
  - b. served by a lead service line.

3. Tier III consists of single family residences that contain copper pipes with lead solder installed before 1983.
4. In the event that there are insufficient tier I, II and III sites, sites should be selected in the following priority:
  - a. copper pipe installed after 1988
  - b. galvanized piping
  - c. plastic piping

Sampling sites should be spread throughout the water system, if possible.

#### IV. HOW TO SAMPLE

Note: Each round of lead and copper sampling should be done at the same residences as the initial monitoring whenever possible. Letters are usually sent to find volunteers to participate in the sampling and then residents collect the samples themselves. Sample bottles and instruction are then retrieved by employees.

##### A. TAP/FAUCET SAMPLES

1. Samples are to be taken from kitchen or bathroom taps/faucets. Do not sample from taps that have point-of-use treatment (e.g. water softeners; carbon filter systems, etc.). While the EPA recommends that homeowners regularly clean their aerators to remove particulate matter as a general practice, do not remove any screens, filters, or aerators from faucet nozzle prior to sampling.
2. All samples must be one liter in volume, using a wide-mouth bottle.
3. The sampling tap must not be used for a ***minimum of 6 hours prior to sampling***. If it is uncertain when the tap was last used, the EPA no longer recommends a pre-stagnation flushing step. **But be sure sample sites are from taps typically used for consumption.** Recommendation: Collect samples first thing in the morning.
4. Samples must be the first water drawn from the tap.
5. Sample analysis must be conducted by a laboratory certified by the state to conduct drinking water lead and copper analyses.

## B. LEAD SERVICE LINES SAMPLES

The objective is to attempt to obtain a sample of the water that was sitting in the lead service line portion of the pipe for at least six hours.

1. Samples should be taken in one of the following two ways:
  - a. sample from the tap after flushing a volume equal to the volume of water between the tap and the service line. The volume shall be calculated based on the interior diameter and length of the pipe between the tap and the lead service line or
  - b. tap directly into the lead service line.
2. All samples must be one liter in volume, using a wide-mouth bottle.
3. The water from the system must not be used for a ***minimum of 6 hours prior to sampling.*** If it is uncertain when the tap was last used, the EPA no longer recommends a pre-stagnation flushing step. **But be sure sample sites are from taps typically used for consumption.**
4. Sample analysis must be conducted by a laboratory certified by the state to conduct drinking water lead and copper analyses.

## V. HOW TO REPORT SAMPLES

Upon receiving the sample analysis from the laboratory, calculate the 90th percentile lead and copper samples. This is done as follows:

- A. The results of all samples shall be placed in ascending order from the sample with the lowest concentration to the sample with the highest concentration. Each sampling result shall be assigned a number, ascending by integers beginning with 1 for the sample with the lowest concentration. The number assigned to the highest concentration shall therefore be the total number of samples taken.
- B. The number of samples taken (n) is multiplied by 0.9. This total will yield a number. The sample value that corresponds to this number is the 90th percentile sample and the value that should be reported.

**Example 1:** If ten samples are taken  $10 \times 0.9 = 9$ . The 9th highest sample value reported is the 90th percentile.

No. Lead (mg/l)

1	0.008	4	0.009	7	0.014	10	0.030
2	0.008	5	0.010	8	0.016		
3	0.009	6	0.011	<u>9</u>	<u>0.018</u>		<u>90th Percentile</u>

In this example the 90th Percentile exceeds the Lead Action Level of 0.015 mg/l.

**Example 2:** If five samples are required:  $5 \times 0.9 = 4.5$ . The average of the 4th and 5th highest sample value reported is the 90th percentile. It would be determined as follows:

No. Lead (mg/l)

1	0.008	3	0.010	<u>5</u>	<u>0.016</u>
2	0.009	<u>4</u>	<u>0.013</u>		

$$90th\ percentile = \frac{0.013 + 0.016}{2} = \frac{0.029}{2} = 0.0145\ mg/l$$

In this example the 90th Percentile is below the Lead Action Level of 0.015 mg/l.

Note: If the 90th percentile for lead is 0.0154 mg/l or copper is 1.34 mg/l, then the result would be rounded down to 0.015 mg/l and 1.3 mg/l, respectively, which do not exceed the action level.

## VI. WHAT TO DO NEXT

- A. At this point you should have chosen sites, conducted sampling, and calculated the 90th percentile for lead and copper. Next, complete the remaining sections of EPA Form 141-A and return it to:

Nevada Division of Environmental Protection  
Bureau of Safe Drinking Water  
901 S. Stewart Street, Suite 4001  
Carson City, NV 89701

**Attached is EPA Form 141-A. Be sure to complete the form, and sign and date before returning.**

**B. For water systems that do not exceed action levels.**

1. If the system does not exceed either the lead or copper action levels at the 90th percentile during the first round of sampling, the system must sample again for a second initial monitoring round during the subsequent 6 month period at the same locations if possible.
2. If the system does not exceed either the lead or copper action levels at the 90th percentile in both the first and second rounds of sampling, the sampling may be reduced to the following number of sites **once** a year. Samples for reduced monitoring must be taken during the months of June, July, August, or September:

Number of People Served	Number of sites (Reduced)
501 to 3.300	10
101 to 500	5
Less than or equal to 100	5

The reduced sampling continues unless the action levels at the 90th percentile are exceeded.

3. After completing three years of lead and copper monitoring without exceeding lead and/or copper action levels, the system qualifies to begin triennial monitoring.

<p><b>Example 3:</b> + The Small Water System - 300 people served.</p> <ul style="list-style-type: none"><li>+ System conducts its first sampling of 10 sites in 8/2013.</li><li>◆ 90th percentile does not exceed the action levels for either lead or copper.</li><li>+ 2nd Round sampling is done 2/2014 (between 1/1/14 and 6/30/14).</li><li>◆ 2nd Round 90th percentile does not exceed the action levels.</li><li>+ Sampling reduced to 5 sites once/year (to be done in summer months).</li><li>+ Next round of sampling must be conducted 7/14, 8/14, or 9/14.</li></ul>
---

**C. For water systems that do exceed action levels.**

If a system exceeds either the lead or copper action level at the 90th percentile in any round of sampling, the system must conduct water quality monitoring. If the lead action level at the 90th percentile is exceeded, Public Education materials must also be distributed.

## SAMPLE SITE JUSTIFICATION METHOD CERTIFICATION

**\*\* Please make copies of this form for your files to submit to Bureau of Safe Drinking Water with future rounds of sampling.**

System's Name: _____	Type:	CWS	NTNCWS
Address: _____	Size:	>100,000 50,001 to 100,000 10,001 to 50,000 3,301 to 10,000 501 to 3,300 101 to 500 ≤ 100	
Telephone Number: _____	Fax Number: _____		
System ID number: _____	Sampling Round	First	Second
Contact Person: _____		Reduced Annual	Reduced Triennial

**THE LAB RESULTS OF LEAD AND COPPER TAP WATER SAMPLES MUST BE ATTACHED TO THIS DOCUMENT**

90% Pb level \_\_\_\_\_

# of samples required \_\_\_\_\_ # of samples submitted \_\_\_\_\_

90% Cu level \_\_\_\_\_

**TARGETING CRITERIA**

# of single-family structures with copper pipes with lead solder installed between 1982-1989 or lead pipes and/or lead service lines (Tier 1)	_____
# of multi-family structures with copper pipes with lead solder installed between 1982-1989 or lead pipes and/or lead service lines (Tier 1)	_____
# of buildings with copper pipes with lead solder installed between 1982-1989 or lead pipes and/or lead service lines (Tier 2)	_____
# of sites that contain copper pipes with lead solder installed before 1983 (to be used only if other conditions are exhausted) (Tier 3)	_____
<b>TOTAL</b>	_____

Explanation of Tier 2 and Tier 3 sites (attach additional pages if necessary)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**LEAD SERVICE LINE SITES**

# of samples required to be drawn from lead service line sites	_____
# of samples actually drawn from lead service line sites	_____
Difference (explain differences other than zero)	_____

Method used to identify lead service line sites (attach additional pages if necessary):

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# SAMPLE SITE JUSTIFICATION/COLLECTION METHOD CERTIFICATION

THE RESULTS OF WATER QUALITY PARAMETER (WQP) SAMPLES MUST BE ATTACHED TO THIS DOCUMENT

# of samples required  
to be collected \_\_\_\_\_  
# of WQP entry point samples  
required to be collected \_\_\_\_\_

# of WQP tap samples actually  
collected and submitted \_\_\_\_\_  
# of WQP entry point samples actually  
collected and submitted \_\_\_\_\_

## CERTIFICATION OF COLLECTION METHODS

I certify that:

Each first draw tap sample for lead and copper is one liter in volume and has stood motionless in plumbing system of each sampling site for at least six hours.

Each first draw sample collected from a single-family residence has been collected from the cold water kitchen tap or bathroom sink tap.

Each first draw sample collected from a non-residential building has been collected at an interior tap from which water is typically drawn for consumption.

Each first draw sample collected during an annual or triennial monitoring period has been collected in months of June, July, August, or September.

Each resident who volunteered to collect tap water samples from his or her home has been properly instructed by [insert water system's name] \_\_\_\_\_ in the proper methods for collecting lead and copper samples. I do not challenge the accuracy of those sampling results. Enclosed is a copy of the material distributed to residents explaining the proper collection methods, and a list of the residents explaining the proper collection methods, and a list of the residents who performed sampling.

## CHANGE OF SAMPLING SITE

Original site address: \_\_\_\_\_  
\_\_\_\_\_

New site address: \_\_\_\_\_  
\_\_\_\_\_

Distance between sites (approximately): \_\_\_\_\_

Targeting Criteria:                      NEW:    OLD:

Reason for change (attach additional pages if necessary):  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

SIGNATURE: \_\_\_\_\_

\_\_\_\_\_  
NAME (PRINT)

\_\_\_\_\_  
TITLE

\_\_\_\_\_  
DATE

## LEAD & COPPER SAMPLE SITE SELECTION and SAMPLING TECHNIQUES

### LEAD/COPPER SAMPLE SITE LOCATIONS

- Sites for lead and copper testing must be locations generally used for drinking water consumption. This would include kitchen and bathroom sinks, breakroom sinks, drinking fountains, etc.
- **DO NOT** collect lead and copper samples from mops sinks, outside faucets, etc.
- If you are a **COMMUNITY** system, you should be collecting from **SINGLE FAMILY HOMES or MULTI-FAMILY HOMES- NOT** from post offices, public buildings, etc.
- **DO NOT** collect lead and copper samples from vacant buildings, empty apartments or trailers, etc.
- A site that is not normally used for drinking water, but can be (such as a bathroom sink in a business that has a breakroom- chances are good that the bathroom sink is seldom used for drinking, but an employee **COULD** use it) is considered a viable sample location and should be part of the sample site pool if there are not enough other sources to round out the required number of sites.
- You **must** use different sites for each lead/copper sample bottle. If you do not have enough sinks/faucets to collect the number of samples the Lead/Copper Rule requires, contact the Bureau of Safe Drinking Water for instructions on how to proceed.

### Things to Remember:

- If you believe a sample was improperly collected (not 1st draw, taken from an incorrect site or unused faucet, etc. )- **ASK QUESTIONS AND DO NOT SEND IN FOR ANALYSIS UNTIL YOU ARE SURE IT WAS COLLECTED PROPERLY-** Once it is analyzed it **COUNTS** towards compliance (with very few exceptions). *Contact the Bureau of Safe Drinking Water Program at (775-687-9521).*





### **Certification of Collection Methods**

\_\_\_\_\_ Each first draw tap sample for lead and copper is one liter in volume and has stood motionless in the plumbing system of each sampling site for **at least six hours**.

\_\_\_\_\_ Each first draw sample collected from a single-family residence has been collected from the cold water kitchen tap or bathroom sink tap.

\_\_\_\_\_ Each first draw sample collected from a non-residential building has been collected at an interior tap from which water is typically drawn for consumption.

\_\_\_\_\_ Each first draw sample collected during a reduced monitoring period has been collected in the months of **June, July, August or September**.

\_\_\_\_\_ Each resident who volunteered to collect tap water samples from his or her home has been properly instructed by [insert water system's name] — — — — — — — — — — in the proper methods for collection lead and copper samples. I do not challenge the accuracy of those sampling results. Enclosed is a copy of the material distributed to residents explaining the proper collection methods, and a list of the residents who performed sampling.

**\*\*SCHOOLS AND FACTORIES ARE NOT GIVEN TIER DESIGNATION\*\***

### **TIER DETERMINATION FOR MOBILE HOME PARKS**

Tier 1 Mobile homes with copper pipes/lead solder built between 1982 - 1989

Tier 2 Mobile homes with copper pipes/lead solder built before 1982

Tier 3 All other mobile homes in park

**(NOTE: For Tier 3 sites, note -year built and plumbing type (if not copper pipes with lead solder) Ex: Tier 3-1989, pvc)**

### **TIER DETERMINATION FOR MUNICIPAL WATER DISTRICTS**

Tier 1 Single-family homes with copper pipes and lead solder built between 1982-1989

Tier 2 Buildings, including multi-family homes, with copper pipes and lead solder built between 1982-1989 (Duplexes are multi-family)

Tier 3 All other single family homes with copper pipes and lead solder built before 1982

Tier 4 All other residences within the distribution system

**(NOTE: For Tier 3 & 4 sites, note -year built and plumbing type (if not copper pipes with lead solder) Ex: Tier 3-1989, pvc)**

### **TIER DETERMINATION FOR APARTMENTS/CONDOS/RESIDENTIAL CARE FACILITY**

Tier 1 Dwelling units built between 1982-1989

Tier 2 Dwelling units built prior to 1982

Tier 3 All other dwelling units served by the system

**(NOTE: For Tier 3 sites, note ....., year built Ex: Tier 3- 1989)**

**SITE CHANGES:** If you have changed sampling sites for any reason since the last round of lead and copper testing, please list the former location and its tier designation. Then indicate the location of the new site and its tier designation and the reason for the change. Attach additional sheets as necessary.

## Homeowner Tap Sampling Collection Procedures

These samples are being collected to determine the copper and lead levels in your tap water. This sampling effort is required by the U.S. Environmental Protection Agency and the State of Nevada, and is being accomplished through the cooperation of homeowners and residents.

A sample is to be collected after the water has been sitting in the pipes for an extended period of time (i.e., no water use during this period). Due to the requirement, either early mornings or evenings upon returning from work are the best times for collecting samples. The collection procedure is described in more detail below. Samples must be submitted to the lab within 14 days.

1. Prior arrangements will be made with the customer to coordinate the sample collection event. Dates will be set of sample kit delivery and pick-up by the water department staff.
2. **A minimum 6-hour period during which there is no water use throughout the house must be achieved prior to sampling.** The water department recommends that either early mornings or evenings upon returning home are often the best sampling times to ensure that the necessary stagnant water conditions exist.
3. **A kitchen or bathroom cold-water faucet is to be used for sampling.** Place the sample bottle (open) below the faucet and open the cold water tap. Fill the wide-mouthed sample bottle to the brim of the container.
4. Tightly cap the sample bottle and place in the sample kit provided. Please review the sample kit label at this time to ensure that all information contained on the label is correct (last name & address).
5. **IF ANY PLUMBING REPAIRS OR REPLACEMENT HAS BEEN DONE ON THE HOME SINCE THE PREVIOUS SAMPLING EVENT, NOTE THIS INFORMATION ON THE LABEL AS PROVIDED.**
6. Place the sample kit outside of the residence in the location of the kit's delivery so that department staff may pick up the sample kit. Sample must be submitted to the laboratory within 14 days.
7. Results from this monitoring effort will be provided to participating customers when reports are generated for the State unless excessive copper and/or lead levels are found. In those cases, immediate notification will be provided (usually 10 working days from the time of collection).

Call \_\_\_\_\_ a t \_\_\_\_\_ if you have any questions regarding these instructions.

### TO BE COMPLETED BY RESIDENT:

Homeowners Name (Please Print:) \_\_\_\_\_  
Address (Location being tested): \_\_\_\_\_  
Water was last used: Time: \_\_\_\_\_ Date: \_\_\_\_\_  
Sample was collected: Time: \_\_\_\_\_ Date: \_\_\_\_\_

I have read the above directions and have taken a tap sample in accordance with these directions.

Signature: \_\_\_\_\_

**Utility Letterhead**

Date

Resident's Address

Dear Resident:

Thank you for assisting (System Name) completed another round of the lead/copper tap monitoring. This letter is to report the results of the recent lead/copper tap water monitoring that was conducted at your residence. The reported individual results for your residence are \_\_\_\_\_parts per billion (ppb) for lead, and \_\_\_\_\_ppb for copper.

The 90th percentile lead and copper levels for our system are \_\_\_\_\_for lead, and \_\_\_\_\_for copper. The action level for lead is 15.0 ppb with the maximum contaminant level goal (MCLG) set at zero. The action level and MCLG for copper is 1300.0 ppb. The results indicate that we \_\_\_\_\_exceeded lead and \_\_\_\_\_exceeded copper.  
have/have not                      have/have not

The following definitions will be helpful with regard to the information provided above:

**90th Percentile Level** - This is the value obtained after disregarding 10 percent of the samples taken that had the highest levels. (For example, in a situation in which 10 samples were taken, the 90th percentile level is determined by disregarding the highest result, which represents 10 percent of the samples.) Note: In situations in which only 5 samples are taken, the average of the two with the highest levels is taken to determine the 90th percentile level.

**Action Level** - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

**Maximum Contaminant Level Goal (MCLG)** - The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

For additional information on lead and copper in your drinking water, please refer to the enclosed fact sheet or go to [www.health.state.mn.us/divs/eh/water](http://www.health.state.mn.us/divs/eh/water) or [INSERT UTILITY WEBSITE ADDRESS].

If you have any questions please contact (System Contact) at (Phone).

Sincerely

(System Info Signature Block)