



# MUSCLE SHOALS UTILITIES BOARD

## Lead and Copper Monitoring Plan

Updated: 2016

## Lead and Copper Rule Overview

EPA promulgated the Lead and Copper Rule (LCR) in 1991, and ADEM adopted the rule in 1992. Implementation of this rule is a critical component of ADEM's efforts to protect public health and ensure the safety of our state's drinking water. The following information outlines how the LCR is implemented and identifies ways for the public to find information about the quality of its drinking water.

- The LCR has four basic requirements:
  1. Require water systems to optimize their treatment system to control corrosion in the distribution system and the customer's plumbing;
  2. Determine tap water levels of lead and copper for customers who have lead service lines or lead-based solder in their plumbing system;
  3. Rule out the source water as a source of significant lead levels; and
  4. If lead action levels are exceeded, the water system is required to take additional actions, which may include:
    - a. Developing and implementing a plan to optimize corrosion control in the finished drinking water;
    - b. Educating their customers about lead and suggesting actions they can take to reduce their exposure to lead through public notices and public education programs;
    - c. Replacing the portions of lead service lines under the system's control; and
    - d. Offering to replace lead service lines under their customers' control at an equitable cost to the customer.
- The LCR requires water systems to monitor at least every 3 years. Some water systems monitor more frequently. The water system selects the sites based on criteria set out in the rule. The criteria for the lead and copper sampling sites are:
  1. Tier 1 sites—These sites include single family structures containing lead pipe or plumbing, are served by a lead service line, or contain copper pipes with lead solder and were constructed after 1982.
  2. Tier 2 sites—These sites include buildings and multiple family residences containing lead pipe or plumbing, are served by a lead service line, or contain copper pipes with lead solder and were constructed after 1982.
  3. Tier 3 sites—These sites include single family structures containing copper pipes with lead solder which were constructed prior to 1983.

- The LCR prescribes a specific sampling protocol for water systems to utilize for collecting lead and copper samples at a residence or business (see below).
  1. Tap monitoring (collecting a water sample from a faucet) for lead and copper shall be the first draw and one liter in volume.
  2. The water shall stand motionless in the plumbing system for at least six hours prior to collection. Pre-stagnation flushing shall not be performed.
  3. Collection shall be from the cold water kitchen tap or bathroom sink tap from tier 1 sites or from an interior tap typically used for obtaining water for consumption from tier 2 and tier 3 sites.
  4. Aerators shall not be removed from taps or cleaned prior to or during the collection of samples.
  5. Wide-mouth bottles shall be used to collect samples to allow for a higher flow rate during sample collection which is more representative of the flow that a consumer may use to fill a glass of water.
  6. Monitoring may be conducted by the resident after proper instructions and procedures have been provided by the water system.
  7. Follow up tap monitoring shall be conducted from the same sites.
  8. Should a site no longer be available, an alternate acceptable site may be selected which is in reasonable proximity of the original site.
  9. Taps used for monitoring may not include faucets that have point of use or treatment devices installed.
- EPA published a memo clarifying recommended tap sampling procedure for the LCR on February 29, 2016, to provide recommendations on how public water systems should address the removal of cleaning aerators, pre-stagnation flushing, and bottle configuration for the purpose of the LCR.
- More information on the LCR can be found on EPA's website at: <http://www.epa.gov/dwreginfo/lead-and-copper-rule>.
- EPA's LCR Quick Reference Guide can be found at: LCR Quick Reference Guide
- More information specifically about your drinking water system can be found in your water system's Annual Consumer Confidence Report (Water Quality Report) available at your water system or on its website. These reports are also submitted to ADEM, so they are available in ADEM's eFile system. You can also find information at EPAs Enforcement and Compliance History Online (ECHO) web site at: <https://echo.epa.gov/>

## MSUB Lead and Copper Plan

### History:

In 1992, upon ADEM's adoption of the EPA's Lead and Copper Rule, the Muscle Shoals Utilities Board (MSUB) instituted its Lead and Copper Sampling Plan. Management at that time began the process of identifying materials within the following areas: distribution system, customer services and home plumbing. 1992 MSUB management/staff determined, from a variety of sources, that there were no lead service lines or piping within the MSUB water distribution system. 1992 MSUB management/staff also identified 60 Tier 1 lead and copper sample sites. Being a medium size community (10,001 – 50K population), 60 sites were required. These sites were determined, from a variety of sources, to be homes plumbed with copper pipe/lead solder and built after 1982.

In 1993 the MSUB management/staff updated the lead and copper sampling sites. Alternate sites were chosen from the original 60 sites due to some of the original homeowners moving and/or the new homeowners choosing not to participate in the sampling plan. An ADEM memo to the MSUB, dated November 5, 1992, stated that only homes built between 1983 and 1988 were to be included in the updated sampling plan. An MSUB memo to ADEM dated June 25, 1993 stated that, to the best of their knowledge, the sample sites for 1993 met all necessary requirements. 39 of the 1993 Tier 1 sample sites were from the original 60 1992 site locations and 21 sites were added.

After consecutive yearly lead and copper testing in years 1992-1995, with compliant results (i.e. lead and copper results for 3 consecutive years were below the Action Level, Lead/0.015 ppm, Copper/1.3 ppm), a September 11, 1995 memo from ADEM granted the MSUB reduced lead and copper testing. This effectively allowed the MSUB to reduce its testing sites from 60 down to 30 test sites, with sampling only required triennially (every 3 years).

Subsequent to being granted reduced monitoring by ADEM, the MSUB has sampled for lead and copper (to date) in years 1998, 2001, 2004, 2007, 2010 and 2013 all with compliant results (available at MSUB office). Still a medium size community (10,001 – 50K population) on reduced monitoring, 30 sample sites are required for monitoring. MSUB has utilized the same lead and copper sample locations, except one, since the 1993 Tier 1 site determinations. The one exception, in 2001, was due to a homeowner moving and the new resident choosing not to participate in the sampling program, resulting in an alternate Tier 1 location being utilized. More recently, MSUB has had to utilize some Tier 2 sites (with ADEM's approval) to meet the required 30 LCR test sites. This was primarily due to original Tier 1 sites not meeting the correct criteria and/or the customer's refusal to participate in the LCR sampling plan.

At this time, the MSUB continuously applies a phosphate type corrosion inhibitor. ADEM Code 335-7-11-.12 states that *"a water system is considered to meet optimum corrosion control when the distribution system: 4. A phosphate or silicate corrosion inhibitor is continuously applied at the manufacturer/supplier recommended level resulting in minimum complaints and the water continuously meets the lead and copper compliance limits."* Currently, MSUB is meeting this requirement for corrosion control.

Procedures:

1. Lead and copper sampling will continue every 3 years within the months of June - September. Sample collection is performed by the resident at each of our 30 sampling sites. Written homeowner tap collection procedures are provided to each resident as well as the appropriate sample containers.
2. Each sample site is to be evaluated every three years to ensure compliance with the LCR Tier 1, 2 or 3 rating system.
3. Each sample is to be tested by a certified testing laboratory. Currently, MSUB utilizes TTL, Inc. in Tuscaloosa, AL for all lead and copper testing.
4. Each homeowner that has participated in the sampling program is to be provided with the results of the lead and copper testing within 30 days of learning the results. Also, all results of the testing are provided in the consumer confidence report (CCR) provided annually by MSUB to all customers.

**Current Lead & Copper Sample Sites**

**Tier 1 Sites**

2103 Jennifer Ave. - 1988	2213 Jennifer Ave. -1984	2210 Robbie Ave. – 1988
1704 Marietta Ave. – 1984	2211 Marietta Ave. - 1984	1505 Brookford Place – 1985
2214 Jackson Ave. - 1986	2202 Jackson Ave. – 1988	2218 Marietta Ave. – 1986
2216 Virginia Ave. – 1985	2210 Edwards Ave. - 1984	1201 Brookford Place – 1986
600 Firestone Ave. – 1987	400 Park Ave. – 1987	307 Park Ave. – 1988
1011 Dearborn Ave. – 1987	609 Clark Ave. - 1986	305 Laurel Oak Dr. - 1988
203 Lonnie Dr. - 1986	105 Lagrange Dr. – 1984	106 Lagrange Dr. – 1986
602 Hickory Ave. – 1988	2305 E. 6 <sup>th</sup> St. – 1987	

**Tier 2 Sites (Arbor Village Apts.)**

Unit #209 – 1987	Unit #104 – 1987	Unit #101 – 1987
Unit #201 – 1987	Unit #103 – 1987	Unit #213 – 1987
Unit #207 - 1987		

## **Tier Ratings for Sample Sites**

Each sample site has previously been evaluated by prior MSUB management/staff for compliance with a LCR Tier 1 or 2 rating. The following methods were utilized in making those determinations:

1. Customer Interviews
2. Utility Records, including meter set sheets and customer deposit ledgers
3. Interviews with senior personnel
4. Mailings to homeowners asking for participation in the lead and copper plan.

The following Sample Site Worksheet (on the following page) should be utilized in evaluating potential sample sites and for re-evaluating current sample sites for rating each sample site per the Tier 1, 2 or 3 classification.

Note: Completed Forms are in Appendix D

**MUSCLE SHOALS UTILITIES BOARD  
LEAD & COPPER RULE  
SAMPLING SITE WORKSHEET**

PWS ID NUMBER: \_\_\_\_\_

Customer Name & Address: \_\_\_\_\_  
\_\_\_\_\_

Year Home Was Built: \_\_\_\_\_

Plumbing Material	Type of Structure		
	Tier 1	Tier 2	Tier 3
Interior Plumbing:			
Lead Pipe			
Copper Pipe With Lead Solder >1982			
Copper Pipe With Lead Solder <1983			
Lead Service Line? <b>YES</b> <b>NO</b>			
Entire Line?			
Partial Line?			

**Tier 1 Site** – Single family structures containing lead pipe/plumbing, are served by a lead service line, or contain copper pipes with lead solder and were constructed after 1982.

**Tier 2 Site** – Multi-family residences containing lead pipe/plumbing, are served by a lead service line, or contain copper pipes with lead solder and were constructed after 1982.

**Tier 3 Site** – Single family structures containing copper pipes with lead solder constructed prior to 1983.

Sources explored to determine sampling eligibility and Tier ranking:

- |  |   |
|--|---|
| <input type="checkbox"/> Customer Interviews<br><input type="checkbox"/> County tax records<br><input type="checkbox"/> Original 1992 sampling sites | <input type="checkbox"/> Utility records<br><input type="checkbox"/> Interviews with senior personnel<br><input type="checkbox"/> 1993 Updated sampling sites |
|--|---|

Completed By: \_\_\_\_\_ Date: \_\_\_\_\_

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

Customer Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

TO: Lead and Copper Customers

The Muscle Shoals Utilities Board will once again be sampling for Lead and Copper in our drinking water in the summer of 2016. Your home is one of thirty residences that has been chosen for sampling the past several years. In order to update our records, we are asking customers to fill out the enclosed L & C Rule Sampling Site Worksheet. If the checked and/or circled information still applies to your home, please sign and date the form and return it in the self-addressed envelope as soon as possible to the water department. If your information **HAS NOT CHANGED**, we will most likely be testing at your residence again this year. You will be contacted in early June by mail or phone as to when we will collect the sample. After sampling is completed, you will be mailed results of the lead and copper tests from your home. This will let you know exactly what the lead and copper levels are in your home. Thank you so much for your cooperation with this matter.

Please provide us with an active phone number so we can contact you when it's time to deliver and pick up samples. If you have any questions, please call Brian Barton at 256-386-9263 Ext. 1 or 256-702-2766.

Thank you

Brian Barton

Chief Operator Water Operations

**Suggested Directions for Homeowner Tap Sample Collection Procedures**  
*Revised Version: February 2016*

These samples are being collected to determine the lead and copper levels in your tap water. This sampling effort is required by the U.S. Environmental Protection Agency and your State under the Lead and Copper Rule, and is being accomplished through a collaboration between the public water system and their consumers (e.g. residents).

Collect samples from a tap that has not been used for at least 6 hours. To ensure the water has not been used for at least 6 hours, the best time to collect samples is either early in the morning or in the evening upon returning from work. Be sure to use a kitchen or bathroom cold water tap that has been used for drinking water consumption in the past few weeks. The collection procedure is described below.

1. Prior arrangements will be made with you, the customer, to coordinate the sample collection. Dates will be set for sample kit delivery and pick-up by water system staff.
2. There must be a minimum of 6 hours during which there is no water used from the tap where the sample will be collected and any taps adjacent or close to that tap. Either early mornings or evenings upon returning home are the best sampling times to ensure that the necessary stagnant water conditions exist. Do not intentionally flush the water line before the start of the 6 hour period.
3. Use a kitchen or bathroom cold-water faucet for sampling. If you have water softeners on your kitchen taps, collect your sample from the bathroom tap that is not attached to a water softener, or a point of use filter, if possible. Do not remove the aerator prior to sampling. Place the opened sample bottle below the faucet and open the cold water tap as you would do to fill a glass of water. Fill the sample bottle to the line marked "1000-mL" and turn off the water.
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.
5. If any plumbing repairs or replacement has been done in the home since the previous sampling event, note this information on the label as provided. Also if your sample was collected from a tap with a water softener, note this as well.
6. Place the sample kit in the same location the kit was delivered to so that water system staff may pick up the sample kit.
7. Results from this monitoring effort and information about lead will be provided to you as soon as practical but no later than 30 days after the system learns of the tap monitoring results. However, if excessive lead and/or copper levels are found, immediate notification will be provided (usually 1-2 working days after the system learns of the tap monitoring results).

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

TO BE COMPLETED BY RESIDENT		
Water was last used:	Time _____	Date _____
Sample was collected:	Time _____	Date _____
Sample Location & faucet (e.g. Bathroom sink): _____		
I have read the above directions and have taken a tap sample in accordance with these directions.		
Signature	Date	

# *The Utilities Board*

City of Muscle Shoals

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Phone (256) 386-9260

P.O. Box 2648  
2210 East Second Street  
MUSCLE SHOALS, ALABAMA 35662

Fax (256) 386-9261

## **LEAD AND COPPER MATERIALS INVENTORY**

PWSID: AL0000321

The Utilities Board of the City of Muscle Shoals has approximately 165 miles of water lines in its distribution system serving approximately 6,981 customers. The 165 miles of water lines are comprised approximately of the following:

- 44 miles Cast Iron
- 25 miles Ductile Iron
- 80 miles PVC
- 16 miles Galvanized
- 0.45 miles Asbestos Cement
- 0.23 miles Copper

Based upon departmental records, the Utilities Board does not have any lead piping or service lines within its system. The Utilities Board does have brass components that may contain lead alloys. All brass materials installed after January 4, 2014 conform to the "Reduction of Lead in Drinking Water Act" and carries the NSF/ANSI 61-G low - lead certification. Approximately 686 of our customer's services currently meet this requirement.

A majority of our customer's service lines are copper, but some could be galvanized pipe, high-density polyethylene (HDPE) pipe or PVC pipe. In the City of Muscle Shoals plumbing within private property can contain copper piping with lead solder, home plumbing with lead and/or copper alloys/components.

<b>MSUB Distribution</b>				
<b>Line Sizes/Material</b>				
<b>3/11/2016</b>				
Line Size	Material		Length (feet)	Length (miles)
3/4"	Copper		273.11	0.05
3/4"	Galvanized		801.47	0.15
3/4"	PVC		168.82	0.03
1"	Copper		865.03	0.16
1.25"	Galvanized		221.02	0.04
1.5"	Galvanized		450.94	0.09
2"	Galvanized		81,482.82	15.43
2"	PVC		117,040.29	22.17
2"	Cast Iron		2,180.79	0.41
2"	Copper		71.73	0.01
2"	Stainless Steel		11.55	0.002
3"	PVC		28,708.09	5.44
4"	Asbestos Cement		2,362.46	0.45
4"	Cast Iron		20,701.79	3.92
6"	C-900		216.33	0.04
6"	Cast Iron		126,361.14	23.93
6"	Ductile Iron		10,791.55	2.04
6"	PVC		131,165.34	24.84
8"	Cast Iron		42,716.65	8.09
8"	Ductile Iron		22,764.87	4.31
8"	PVC		121,584.57	23.03
10"	C-900		1,592.89	0.30
10"	Cast Iron		10,154.63	1.92
10"	Ductile Iron		4,248.63	0.80
10"	PVC		9,913.31	1.88
12"	Cast Iron		29,494.21	5.59
12"	Ductile Iron		55,935.46	10.59
12"	PVC		10,679.06	2.02
16"	Ductile Iron		27,570.97	5.22
24"	Ductile Iron		9,171.72	1.74
			869,701.23	164.72
Material		Length (feet)	Length (miles)	
Cast Iron		231,609.21	43.87	
Ductile Iron		130,483.19	24.71	
PVC		419,259.48	79.41	
Asbestos Cement		2,362.46	0.45	
Copper		1,209.87	0.23	
Galvanized		82,956.26	15.71	
Stainless Steel		11.55	0.002	
C-900		1,809.22	0.34	
		869,701.23	164.72	
Customer service lines can be comprised of the following:				
			Copper, galvanized or plastic material	
Customer metering/appurtenances can be comprised of the following:				
			Brass, bronze, steel or plastic material	
To the best of management/staff knowledge, MSUB has no lead service lines.				



