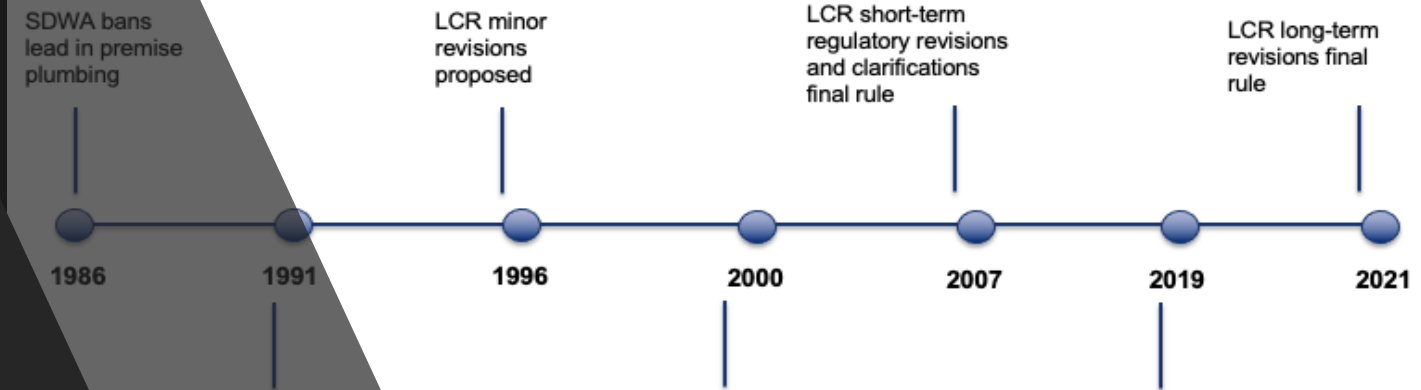




# Lead and Copper Rule Revision Highlights



# Presentation outline:



DEQ updates



What's changing with the LCRR



Reporting and sampling  
requirements with the LCR



# DEQ LCR Updates

## New Lead & Copper Rule Manager

- George Williams (406) 444-3276 [george.williams@mt.gov](mailto:george.williams@mt.gov)

## Principle Lead and Copper Rule Coordinator

- Greg Montgomery (406) 444 – 5312 [gregory.montgomery@mt.gov](mailto:gregory.montgomery@mt.gov)

## Lead & Copper Rule Revision (LCRR)

- Published 12/16/2021
- Implementation Date – 10/16/2024

## Lead & Copper Rule Improvements (LCRi)

- EPA revising rule again
- Suppose to be out prior to 10/16/2024

## Lead & Copper Rule Website

- <https://deq.mt.gov/water/Programs/dw-leadandcopper>

## Lead & Copper Rule email address

- [leadandcopper@mt.gov](mailto:leadandcopper@mt.gov)

# What's Changing with the LCRR?

- New Trigger Level for lead
- New site sampling plan requirements
- New sampling procedures
- Revised Corrosion Control Treatment requirements
- Small system flexibility
- Find-and-Fix provisions to address elevated results at individual sites
- Public notification requirements
- Lead testing at schools/childcare facilities
- Lead Service Line Inventories (LSL)
- LSL replacement plans & replacement requirements

The LCRRi may revise all of the above requirements except for LSL inventories

# Trigger Level (Lead only)

- Establishes a new Lead Trigger Level (TL) of 10 µg/L
- TL is in addition to the lead action level (AL) of 15 µg/L
- Trigger levels and action levels must be determined based on tap water samples calculated 90th percentile
- Water systems that exceed the TL but not the AL:
  - No reduced tap sampling – water systems must sample annually at the standard number of sites
  - Implement goal-based LSLR program
  - Conduct annual outreach to LSL customers
  - CCT study if CCT not installed
  - Re-optimize if CCT is installed

# Sampling Plans

## Tap sample site selection criteria (tiering)

Tier	Community Water Systems	NTNC Water Systems
Tier 1	Collect samples from SFSs with LSLs. Tier 1 samples can be collected from MFRs if they represent at least 20 percent of the structures served by the PWS. Lead status unknown sites cannot be used as Tier 1.	Collect samples from buildings serviced by LSL.
Tier 2	Collect samples from buildings and MFRs served by LSLs	N/A
Tier 3	Collect samples from SFSs with galvanized service lines downstream of an LSL, currently or in the past or known to be downstream of a lead connector	Collect from sampling locations with galvanized service lines downstream of an LSL, current or in the past or known downstream lead connector.
Tier 4	Collect samples from SFS with copper pipes and lead solder installed before 1988.	
Tier 5	Representative sample where the plumbing is similar to that used at other sites served	Sampling sites that are representative of sites throughout the distribution system.

Acronyms: LSL – lead service line; SFS – single family structure; MFR multi-family residence



# Sampling Procedures

## 90<sup>th</sup> percentile calculation for lead

- Water systems with LSLs will use 100% tap samples from LSL sites
- Water systems with insufficient numbers of LSLs collect samples from LSL and non-LSL sites will use the highest non-LSL tap samples
- Water systems without LSLs will use all tap samples collected

## Tap sample collection protocol

- Collect the 5<sup>th</sup> liter at sites with an LSL
  - 1<sup>st</sup> Liter and 5<sup>th</sup> Liter



- No removing/cleaning aerators or pre-stagnation flushing

# Corrosion Control Treatment

- Water systems with corrosion control treatment that exceed either the lead trigger level or copper action level will be required to re optimize
- Water systems without corrosion control treatment that exceed either the lead trigger level or copper action level will be required to complete corrosion control treatment steps
- water systems without corrosion control treatment that exceed the lead trigger level but do not exceed the lead or copper action levels shall complete an OCCT study and implement OCCT if it subsequently exceeds either the lead or copper action level
- Optimal corrosion control treatment options: 40 CFR 141.82(c)(1)(i)
  - Alkalinity and pH adjustment
  - The addition of an orthophosphate or silicate-based corrosion inhibitor at a concentration sufficient to maintain an effective residual concentration
    - *Awaiting guidance from EPA on use of Blended phosphates*
    - *Use of Polyphosphates will not be an approved treatment for Corrosion Control*
- Sanitary surveys to include CCT review and OWQP assessment for evaluating CCT



# Small water system compliance flexibility.

- applies to small community water systems serving 10,000 or fewer persons and all non-transient, non-community water systems
- Allows system more flexibility when a Trigger level or an ALE occurs
- Water systems must select from the following compliance options
  - Corrosion Control Treatment
  - LSL replacement (if present)
  - Use of Point of Use (POU) treatment (filters)
    - System must supply and maintain the POU's
- Replace all lead-bearing materials (NTNCs only)

# Find and Fix

- Require all systems to collect a follow-up sample for each lead tap sample site >AL within 30 days of learning of the results
- Systems with CCT: collect an additional WQP sample at/near the high site within 5 days of learning of the lead results
- Is a “fix” is needed (e.g., adjustment to CCT, flushing portions of the distribution system, or other strategies)?
- Systems that identify a fix that is out of their control, such as premise plumbing, must provide documentation to their state

# Notification and Public Education

- Make Lead Service Line Inventory with general location identifiers publicly available
- Water systems must conduct public notification to consumers within 24 hours of a 90<sup>th</sup> percentile lead level > AL
- Provide notice to customers whose individual tap sample is > 15 µg/L within 3 days
- Require water systems with LSLs that exceed the TL to conduct annual outreach to LSL customers
- Deliver Public Education (PE) to impacted consumers during water-related work that may disturb LSLs
- Revised CCR health effects language, availability of the LSL inventory and report of the range of tap sample levels
- Provide public access tap sample results



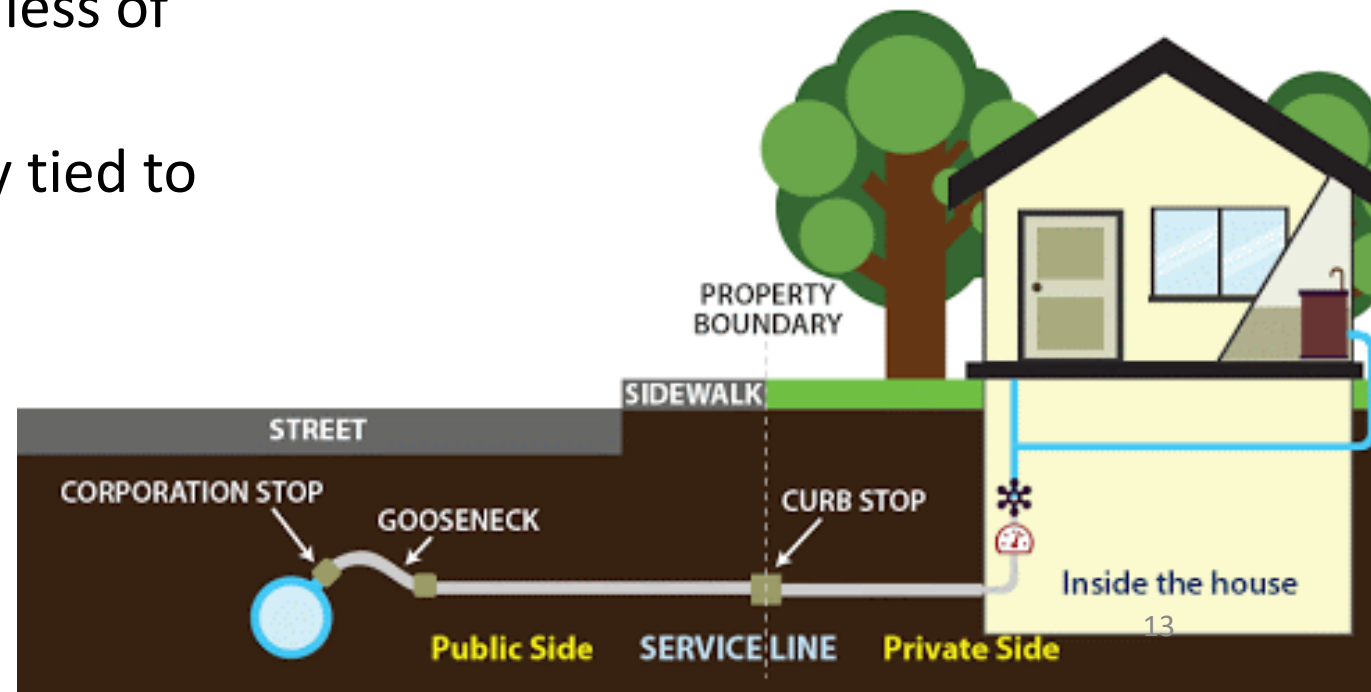
# Lead Sampling in Schools and Childcare Facilities

## Community Water Systems will:

- Develop a list of schools/childcare facilities in service area
- For the first 5 years: sample 20% of elementary & middle schools and 20% of childcare facilities each year
- After one round (5 years) of sampling, systems sample on request at elementary schools and childcare facilities
- Systems must sample secondary schools (high schools) on request
- 5 samples/school and 2 samples/childcare facility using 250 ml sample bottle.
- Since MT has a state requirement for all accredited K-12 schools to sample for Lead, Community Systems will get a waiver for the schools covered by the state program.

# LSL inventory replacement requirements

- The LCRR includes a requirement that all community and non-transient non-community water systems must complete and submit public water service line inventories by October 16<sup>th</sup>, 2024
- Must include all service lines connected to the public water distribution system regardless of ownership status.
- The following requirements are directly tied to the service line inventories:
  - New site sampling plans
  - LSL replacement plans
  - LSL replacements
  - Compliance Sampling methods



# Service Line inventory template

SITE ID	LOCATIONAL IDENTIFIER	LEAD CONNECTOR CURRENTLY PRESENT? (E.G., GOOSENECK, PIGTAIL, OTHER)	CURRENT PUBLIC SERVICE LINE MATERIAL	WAS PUBLIC SERVICE LINE MATERIAL EVER PREVIOUSLY LEAD?	Public SERVICE LINE INSTALL DATE	CURRENT CUSTOMER SERVICE LINE MATERIAL	CUSTOMER SERVICE LINE INSTALL DATE	VERIFICATION SOURCE
---------	-----------------------	---	--------------------------------------	--	----------------------------------	--	------------------------------------	---------------------

Address or other unique identifier

Geo locational information

Y = Yes  
N = No  
U = Unknown

L = Lead  
G = Galvanized Iron/Steel  
C = Copper  
P = Plastic  
O = Other

UL = Unknown but could contain lead

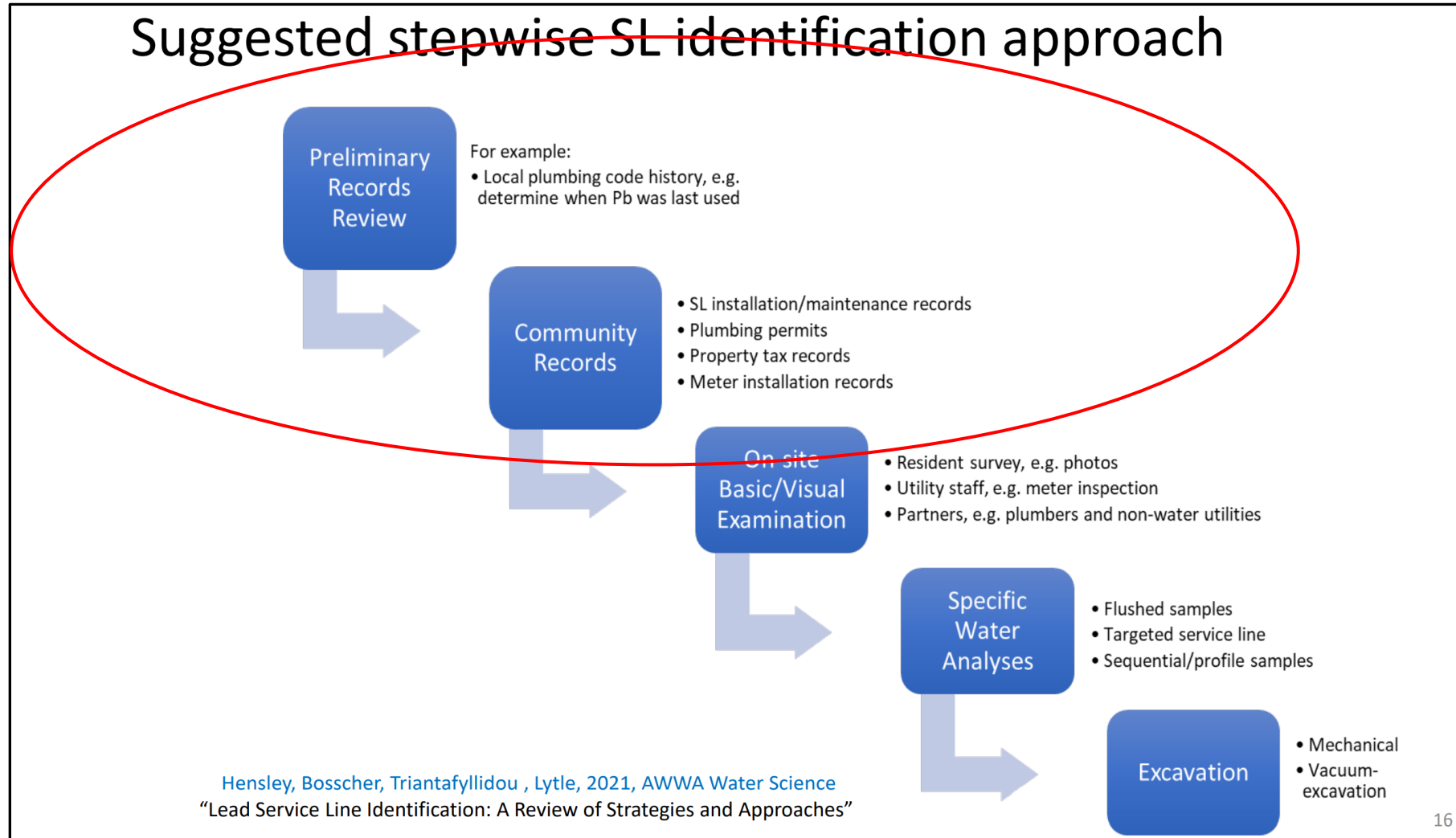
Y = Yes  
N = No

L = Lead  
G = Galvanized Iron/Steel  
C = Copper  
P = Plastic  
O = Other  
UL = Unknown but could contain lead

R = Records Only  
F = Field Inspection Only  
V = Records Validation  
I = Records Invalidation  
A = Statistical Analysis  
S = Sequential Monitoring

Public SERVICE LINE SIZE	CUSTOMER SERVICE LINE SIZE	COMMENTS	BUILDING TYPE	POINT-OF-ENTRY OR POINT-OF-USE TREATMENT PRESENT?	BUILDING PLUMBING MATERIAL 1	BUILDING PLUMBING MATERIAL INSTALL DATE	LCR SMP SITE?	LCRR SMP TIER
			SFR (Single Family Residence)	Y = Yes	L = Lead	1 = <1960	Y = Yes	1
			MFR (Multiple Family Residence)	N = No	G = Galvanized Iron/Steel	2 = 1960 - 1988	N = No	2
			School or Child care center		C = Copper	3 = 1989 - 2014		3
			Child care (In-home)		P = Plastic	4 = >2014		4
			Business		O = Other			5
						1986: first federal Lead Ban; use state ena		

# LSL Identification Process



<https://deq.mt.gov/files/Water/LeadInSchools/QuickGuideLSLInventory.pdf>

# LSL Preliminary Office and Community Review

- Tap Cards or tickets from initial service installation.
- Plans from water main installation, rehabilitation, and replacement.
- Historic water utility records.
- Tax records/Cadastral indicating when buildings were constructed.
- Plumbing permits.
- City/Town Ordinances
- Interview former employees
- Consult with other neighboring water systems to share experiences.



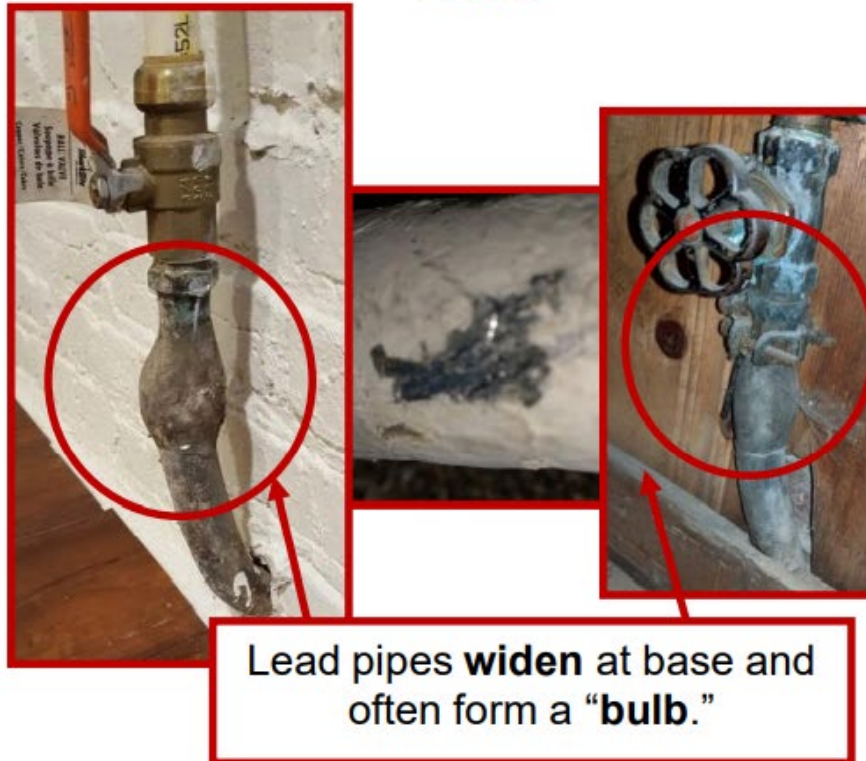
# LSL Onsite Basic/Visual Inspection

- Resident Survey – Sending out survey to customers asking to visually inspect where service line enters structure. (photos, scratch test)
- Utility Staff can perform meter inspections
- Document all SLs and connectors during water main maintenance/repair activities.
- Reach out to local plumbers to see if they have encountered LSLs

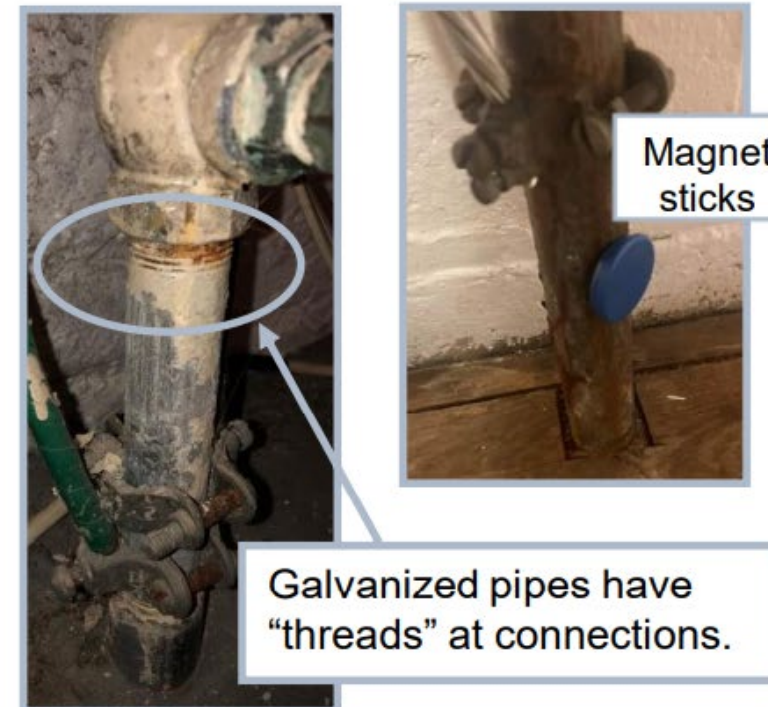


# How to Identify an LSLs

## Lead



## Galvanized Iron



Photos from Washington DC Water Material Identification guide

<https://www.dewater.com/sites/default/files/IdentifyingHouseholdPlumbing.pdf>



# Scratch and Swab Test



Amazon's Choice



3M LeadCheck Swabs, 8-Pack

by 3M

\$22.00 [Subscribe & Save](#)

Save more with monthly [Subscribe & Save](#) deliveries.

\$22.00 prime

Get it by **Thu, Oct 18**

FREE Shipping on eligible orders



Lead Check By 3M, 32 Swab, Lead Tes  
Purchase From LeadPaintEPAsupplies

by 3M-LeadCheck

\$79.00 ~~\$142.91~~

FREE Shipping on eligible orders



# How to Identify an LSLs

	<b>Lead</b>	<b>Galvanized Iron</b>	<b>Copper</b>	<b>Brass</b>
<b>Outer Appearance</b>	Dull gray, bendable; Often curves between wall/floor and valve	Dark gray or black; Straight rigid pipe	Brown; Can have green corrosion spots	Brown; Can have green corrosion spots
<b>Threads at connections</b>	None	Yes	None	Yes
<b>Scratch Test (coin or key)</b>	Shiny silver	Hard to scratch, remains gray	Copper, like a penny	Gold color
<b>Magnet Test</b>	Does not stick	Magnet WILL stick	Does not stick	Does not stick

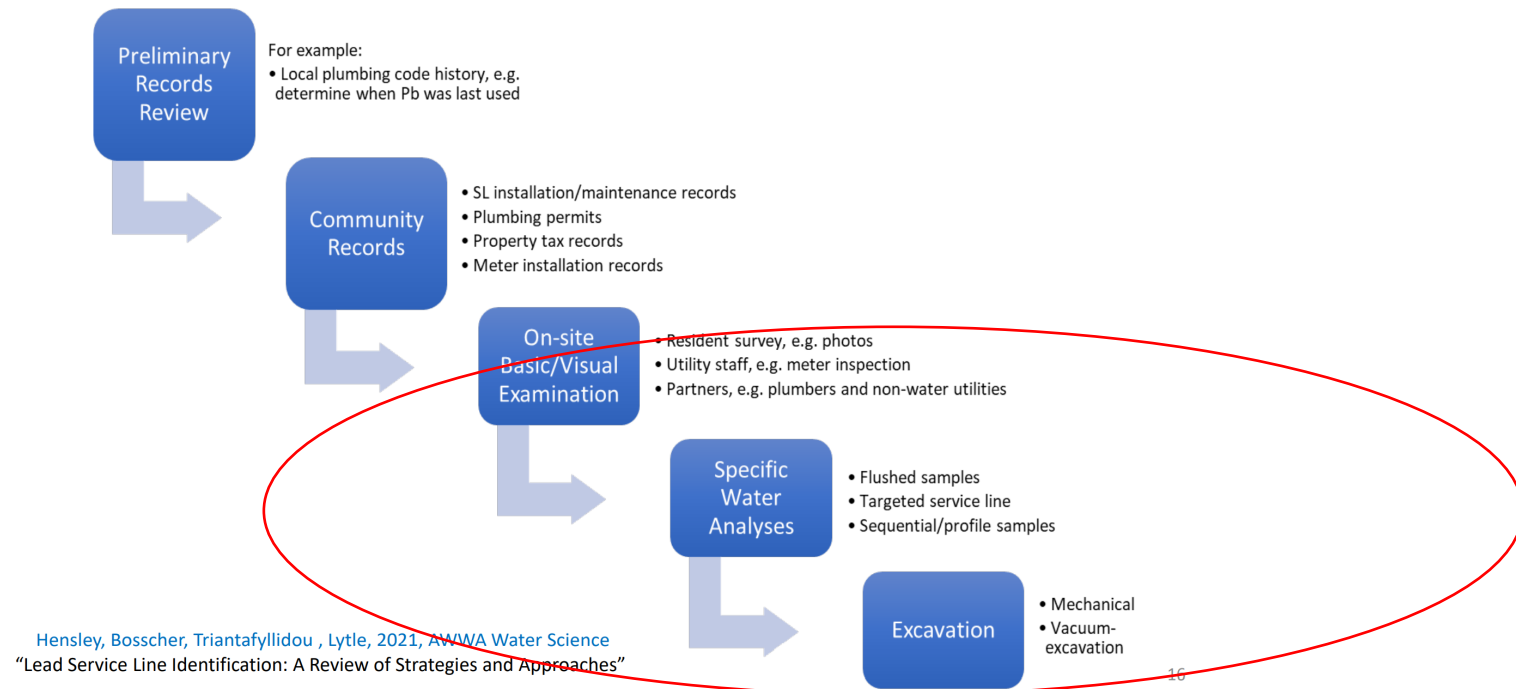
Table from Washington DC Water Material Identification guide

<https://www.dcwater.com/sites/default/files/IdentifyingHouseholdPlumbing.pdf>

# How to start with your LSL Inventory

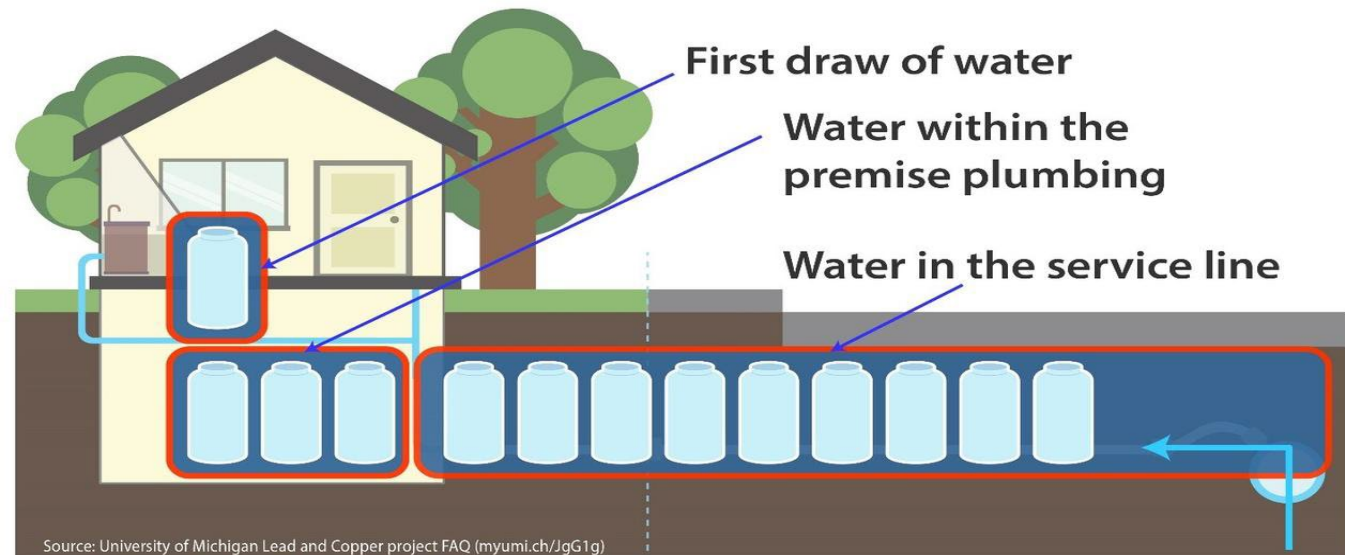
- Step 2 – Based on your initial review, determine if and to what extent field inspection, sampling or excavation will be needed.
- Funding/resources may be available to assist with more resource intensive investigations

## Suggested stepwise SL identification approach



# LSL – Water Analysis

- Water sampling can be used to help determine the presence of LSLs.
- Water sitting in the service line can be sampled and the results can indicate if the lines are lead or lead bearing
- Sample Methods
  - Flush Draw Samples – Length of flush depends on structure
  - Sequential Sampling - # of samples depends on structure
  - 1<sup>st</sup> and 5<sup>th</sup> Sampling





# LSL – Direct Methods

Uncover public and private side

- Excavation
- Potholing/vacuum excavation



# Galvanized downstream of LSL

- Galvanized service line downstream of lead service line is essentially considered a lead line.
  - Galvanized pipes can absorb lead from an upstream source and later release that lead back into the water.
- Examples
  - The public side of a service line is lead and the private side is galvanized
    - The service line would be considered a lead line
  - The public side of a service line was lead but was replaced with copper and the private side is galvanized.
    - The service line would be considered galvanized requiring replacement



# Unknown Service lines

- Nearly all systems will have unidentified SL materials
- What's the problem with having unknowns?
  - If you have an exceedance, system will have to do mandatory LSL replacement (Remove a certain % each year).
  - Since unknowns are treated as LSLs, you'll have more pipes to dig up and identify
  - If an unknown SL turns out to **not** be lead, that SL doesn't "count" towards required replacement rate
- **Summary:** More unknowns = Higher risk of unnecessary excavation (costly, disruptive)



# LCR Reporting and Sampling



A water system needs to report the results of water sampling within 10 days following the end of the specified monitoring period including the location of each sample site



Within 90 days following the end of the monitoring period, each system must send a copy of the Consumer Notification of tap results to the DEQ along with a certification form that the notification has been distributed



90<sup>th</sup> percentile Calculations

# Consumer Notices

- For **Community Systems** - Consumers Notices are to be sent to the customers where the samples were collected within 30 days upon receipt of the data.

- For **NTNC Systems** – Consumer notice must be posted in the facility where the samples were collected. And must be accessibly for consumers of the water. Must be posted within 30 days of receipt of the data.

To: \_\_\_\_\_ [customer name] \_\_\_\_\_ Date \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ [customer address]

Sample Tap Location: \_\_\_\_\_ Lead and Copper Results

From: \_\_\_\_\_ [PWS Name] \_\_\_\_\_ [PWSID] Community \_\_\_\_\_ [PWS Contact Person, Title] \_\_\_\_\_ [PWS Contact Address] \_\_\_\_\_ [PWS Contact Phone]

Dear \_\_\_\_\_ [customer],

Thank you for participating in the lead and copper tap monitoring that was recently conducted. This letter is to report the lead and copper results for the above-designated sample location. The reported results are \_\_\_\_\_ milligrams/liter (mg/L) for lead, and \_\_\_\_\_ mg/L for copper.

The 90th percentile lead and copper levels for our system are \_\_\_\_\_ mg/L for lead, and \_\_\_\_\_ mg/L for copper. The action level for lead is 0.015 mg/L with the maximum contaminant level goal (MCLG) set at zero. The action level and MCLG for copper is 1.3 mg/L. The results indicate that we \_\_\_\_\_ [have/have not] exceeded the lead action level and \_\_\_\_\_ [have/have not] exceeded the copper action level.

### What Does This Mean?

Under the authority of the Safe Drinking Water Act, EPA set the action level for lead in drinking water at 0.015 mg/L and 1.3 mg/L for copper. This means utilities must ensure that water from the customer's tap does not exceed these levels in at least 90 percent of the homes sampled (90th percentile value). The action level is the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow. If water from the tap does exceed this limit, then the utility must take certain steps to correct the problem. Because lead may pose serious health risks, the EPA set a Maximum Contaminant Level Goal (MCLG) of zero for lead. The MCLG is 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.

### What Are The Health Effects of Lead?

Lead can cause serious health problems if too much enters your body from drinking water or other sources. It can cause damage to the brain and kidneys, and can interfere with the production of red blood cells that carry oxygen to all parts of your body. The greatest risk of lead exposure is to infants, young children, and pregnant women. Scientists have linked the effects of

lead on the brain with lowered IQ in children. Adults with kidney problems and high blood pressure can be affected by low levels of lead more than healthy adults. Lead is stored in the bones, and it can be released later in life. During pregnancy, the child receives lead from the mother's bones, which may affect brain development.

### What Are the Health Effects of Copper?

Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.

### What Are The Sources of Lead and Copper?

Lead is a common metal found in the environment. The main sources of lead exposure are lead-based paint and lead-contaminated dust or soil. Drinking water is also a possible source of lead exposure. Most sources of drinking water have no lead or very low levels of lead. Most lead gets into drinking water after the water leaves the local well or treatment plant and comes into contact with plumbing materials containing lead. These include lead pipes, lead solder (commonly used until 1986), as well as faucets, valves, and other components made of brass.

Copper works its way into the water by dissolving from copper pipes in the household plumbing. The longer the water has stood idle in the pipes, the more copper it is likely to have absorbed. Newer homes with copper pipes may be more likely to have a problem. Over time, a coating forms on the inside of the pipes and can insulate the water from the copper in the pipes. In newer homes, this coating has not yet had a chance to develop.

### What Can I Do To Reduce Exposure to Lead and Copper in Drinking Water?

Run your water to flush out lead and copper. If water hasn't been used for several hours, run water for 15-30 seconds or until it becomes cold or reaches a steady temperature before using it for drinking or cooking. This flushes lead and copper-containing water from the pipes.

- Use cold water for cooking and preparing baby formula.
- Do not boil water to remove lead or copper.
- Look for alternative sources or treatment of water.
- Test your water for lead or copper.
- Identify if your plumbing fixtures contain lead or copper.

### For More Information

Call us at \_\_\_\_\_ [PWS phone number]. For more information on reducing lead exposure around your home and the health effects of lead, visit EPA's Web site at [www.epa.gov/lead](http://www.epa.gov/lead), call the National Lead Information Center at 800-424-LEAD, or contact your health care provider. You may also contact **Montana Department of Environmental Quality, 406-444-4400, Public Water Supply Program, P.O. Box 200901, Helena, MT 59620-0901. <http://www.deq.mt.gov/wqinfo/pws/leadcopper.mcpx>**

Date \_\_\_\_\_

Sample Location: \_\_\_\_\_ Lead and Copper Results

From: \_\_\_\_\_ [PWS Name] \_\_\_\_\_ [PWSID] NTNC \_\_\_\_\_ [PWS Contact Person, Title] \_\_\_\_\_ [PWS Contact Address] \_\_\_\_\_ [PWS Contact Phone]

Dear Consumers,

This letter is to report the lead and copper results for the public water supply system. The reported results are:

Sample Site Location	Lead Result (mg/L)	Copper Result (mg/L)

The 90th percentile lead and copper levels for our system are \_\_\_\_\_ mg/L for lead, and \_\_\_\_\_ mg/L for copper. The action level for lead is 0.015 mg/L with the maximum contaminant level goal (MCLG) set at zero. The action level and MCLG for copper is 1.3 mg/L. The results indicate that we \_\_\_\_\_ [have/have not] exceeded the lead action level and \_\_\_\_\_ [have/have not] exceeded the copper action level.

### What Does This Mean?

Under the authority of the Safe Drinking Water Act, EPA set the action level for lead in drinking water at 0.015 mg/L and 1.3 mg/L for copper. This means utilities must ensure that water from the customer's tap does not exceed these levels in at least 90 percent of the locations sampled (90th percentile value). The action level is the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow. If water from the tap does exceed this limit, then the utility must take certain steps to correct the problem. Because lead may pose serious health risks, the EPA set a Maximum Contaminant Level Goal (MCLG) of zero for lead. The MCLG is 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.

### What Are The Health Effects of Lead?

Lead can cause serious health problems if too much enters your body from drinking water or other sources. It can cause damage to the brain and kidneys, and can interfere with the production of red blood cells that carry oxygen to all parts of your body. The greatest risk of lead


# Consumer Notices

- A copy of the consumer notices that were sent or posted along with the completed Consumer notice certification form must be submitted to the DEQ within 90 days following the end of the monitoring period.

[leadandcopper@mt.gov](mailto:leadandcopper@mt.gov)  
[george.williams@mt.gov](mailto:george.williams@mt.gov)

All Consumer Notice Forms are posted our website:

<https://deq.mt.gov/water/Programs/dw-leadandcopper>



**Consumer Notice of Lead Tap Water Monitoring Results Certification Form**

PWS Name:  PWSID:  Monitoring Period:

**Delivery Method**  
 (A copy of the letter that you sent to the consumers must be submitted with this form.)

- Community water system (choose a or b):
  - Consumers were notified by U.S. Mail on  (date).
  - Consumers were notified by hand/direct delivery on  (date).
- Non Transient Non Community (NTNC) water system (choose a or b):
  - The lead and copper results were posted on  (date) within the facility in which the samples were collected and the results will be posted until the next lead/copper results are reported.
  - Consumers were notified by hand/direct delivery on  (date).

---

The water system named above hereby certifies that its lead and copper consumer notice has been provided to each person it serves at the specific sampling site from which the sample was tested. The water system also certifies that these results and the following information were provided to such persons within 30 days of receiving the test results from the laboratory:

Individual tap results from lead and copper tap water monitoring.

An explanation of the health effects of lead and copper with steps that consumers can take to reduce exposure to lead and copper in drinking water.

Contact information for your water utility.

The maximum contaminant level goals and action levels for lead and copper, and the definitions of these two terms from.

Signature:  Print Name:

Job Title:  Phone:  Date:

Comments:

Complete this form.  
 Within 3 months following the end of the monitoring period, mail, email, or fax this form with a sample copy of one of the consumer notifications to:

**Mail:** Montana Department of Environmental Quality, Lead and Copper Rule Manager  
 P.O. Box 200901, Helena, MT 59620-0901  
**Email:** [george.williams@mt.gov](mailto:george.williams@mt.gov)  
**Fax:** 406-444-1374

*Please be reminded to retain copies of all lead consumer notice documentation for your records.*

If you have any questions, please call 406-444-4400.

# Calculating the 90<sup>th</sup> Percentile

action level for lead is .015 mg/L or .015 ppm  
 action level for copper is 1.3 mg/L or 1.3 ppm

## How to Calculate 90<sup>th</sup> Percentile Values

Calculating 90<sup>th</sup> percentile values determines if your water system has exceeded the lead and/or copper action levels. The 90<sup>th</sup> percentile calculations for lead and copper are described in the steps below. These values are dependent on how many samples you are required to collect. Compare your calculated values to the action levels of .015 mg/L for lead and 1.3 mg/L for copper. The lead and copper action levels are exceeded when more than 10 percent of tap water samples collected during a monitoring period are greater than the allowable levels of .015 mg/L for lead and 1.3 mg/L for copper.

### If You Are Required to Collect More Than Five Samples:

- Step 1: Place lead results in ascending order (from lowest to highest value).
- Step 2: Assign each sample a number, 1 for lowest value.
- Step 3: Multiply the total number of samples by 0.9. This is your 90<sup>th</sup> percentile value.
- Step 4: Compare the 90<sup>th</sup> percentile level to the action level of 0.015 mg/L (can also be expressed as 15 parts per billion (ppb)). If your 90<sup>th</sup> percentile value is higher than 0.015 mg/L, you have an exceedance.

*Repeat this procedure for copper sample results, except compare the 90<sup>th</sup> percentile copper level against its action level of 1.3 mg/L. If your 90<sup>th</sup> percentile value is greater than 1.3 mg/L, you have an exceedance.*

### Example:

Sample Rank	Sample Value mg/L for Lead
1	0.00
2	0.00
3	0.001
4	0.001
5	0.003

Sample Rank	Sample Value mg/L for Lead
6	0.007
7	0.009
8	0.010
9 (90 <sup>th</sup> Percentile)	0.010
10	0.017

10 samples  $\times$  0.9 = 9<sup>th</sup> sample. In this example, the 9<sup>th</sup> sample is equal to the value of 0.010 mg/L which is below the lead action level of 0.015mg/L

### Example:

Sample Rank	Sample Value mg/L for Lead
1	0.00
2	0.00
3	0.00
4	0.001
5	0.001
6	0.001

Sample Rank	Sample Value mg/L for Lead
7	0.003
8	0.007
9	0.009
10	0.014
11 (90 <sup>th</sup> Percentile)	0.016
12	0.016

In this example the water system handed out 12 sample bottles to ensure they received at least 10 back. All samples taken during a compliance period will be used to calculate the 90<sup>th</sup> percentile even though your schedule may ask for less samples. Rounding is defined as follows:

1. Round down to the nearest whole number if the decimal is 0.4 or lower.
2. Round up to the nearest whole number if the decimal is 0.5 or higher.

12 samples  $\times$  0.9 = 10.8. Using rounding for this example equates to the 11<sup>th</sup> sample = 0.016 mg/L which is over the lead action level of 0.015 mg/L.

### If You Are Required to Collect Five Samples:

- Step 1: Place lead or copper results in ascending order.
- Step 2: Take the average of the 4<sup>th</sup> and 5<sup>th</sup> highest sample (the two highest values added together and divided by two). This is your 90<sup>th</sup> percentile level.
- Step 3: Compare the 90<sup>th</sup> percentile level against the lead or copper action level.

### Example:

Sample Rank	Sample Value mg/L for Lead
1	0.00
2	0.001
3	0.003
4	0.009
5	0.015

The average of the 4<sup>th</sup> and 5<sup>th</sup> highest values equal  $0.009 \text{ mg/L} + 0.015 \text{ mg/L} = 0.024 \text{ mg/L}$ .  
 $0.024 \text{ mg/L} \div 2 = 0.012 \text{ mg/L}$  which is below the lead action level of 0.015mg/L

### If You Are Allowed to Collect Fewer Than Five Samples:

- Step 1: Place lead or copper results in ascending order.
- Step 2: Compare the highest sample value (this is considered to be your 90<sup>th</sup> percentile level) against the lead or copper action level.

### Example:

Sample Rank	Sample Value mg/L for Lead
1	0.003
2 (90 <sup>th</sup> Percentile)	0.005

The highest value is 0.005 mg/L which is below the lead action level of 0.015 mg/L



# Calculating the 90<sup>th</sup> Percentile

**Not a big fan of doing math by hand?  
Let the calculator do it for you!**

<https://deq.mt.gov/water/Programs/dw-leadandcopper>

## GUIDANCE AND FORMS

### Guidance

- [How to Calculate 90th Percentile Values](#)
- [90th Percentile Calculator \(EXTERNAL LINK\)](#)
- [Sampling Instructions for NTNC](#)
- [Sampling Instructions for Communities](#)

### Forms

## Drinking water lead and copper 90th percentile calculator

Lead and Copper Rule Forms and Guidance

Question 1: How many samples do you have?

Calculate 90th Percentile

### Output

Lead 90th Percentile = 0 mg/L  
Copper 90th Percentile = 0 mg/L

### Enter Your Sample Results

Samples	Lead Result (mg/L) AL = .015 mg/L	Copper Result (mg/L) AL = 1.3 mg/L
Dual Sample Result #1		
Dual Sample Result #2		
Dual Sample Result #3		
Dual Sample Result #4		
Dual Sample Result #5		
Dual Sample Result #6		
Dual Sample Result #7		
Dual Sample Result #8		
Dual Sample Result #9		
Dual Sample Result #10		

Pb	Cu
0.0014	0.347
0.006	0.495
0.0033	0.078
0.0012	0.716
0.0008	0.918

# Sample Types

## Compliance Samples

- Always collect a 1.0-liter sample in one container
- Always collect a first draw sample from a tap where water has stood for 6 hours (no flushing, showering, etc.)
- Always collect from a tap that is used regularly (i.e., kitchen or bathroom)
- Always collect from the cold-water tap
- Collected from the distribution system

## Source Water Sample

- Flush Draw sample
- Collected from Entry Point

## Water Quality Parameters (WQPs)

- Water Quality Parameters (WQP) from the source and distribution:
  - Temperature (measured on site)
  - pH (measured on site)
  - Alkalinity (lab measured)
  - Conductivity (lab measured)
  - Calcium (lab measured)
- Take two samples from the source and distribution, preferably on different days
- pH and temp must be measure in field with meter not pH paper
- Flush Draw sample
- Collected from Entry Point and Distribution system

## Orthophosphate / Silicate

- Flush Draw sample
- Collected from Entry Point and Distribution system



# Sampling

---

- **Do not** wait until the end of the monitoring period to take your tap water samples:

- 1) water sampling results are due within 10 days after the end of the monitoring period (Labs require time)
- 2) Allow time to collect water quality parameters (WQP) should an action level exceedance (ALE) occur

- **Do not** sample outside of required monitoring period

If a system does want to collect some early samples, try to collect outside the June 1 – Sept 30 time frame or call DEQ to discuss other options.

For example: Town A is on 3 year reducing monitoring and collects 5 compliance samples. Their next sample event is between June 1-Sept 30<sup>th</sup> 2023. Town A decides to collect 2 samples between June 1 – Sept 30<sup>th</sup> 2022 for some reason. The following ramifications occur:

Town A comes up as violation candidate in our EPA database since only 2 out of 5 samples were collected

When Town A collects their normal 5 compliance samples in 2023. The EPA database will take the 5 samples from 2023 and the 2 samples from 2022 to calculate the 90<sup>th</sup> percentile. This causes inaccurate data.

Sampling outside the monitoring period also causes the Monitoring Schedule to show wrong dates for the next sampling event



# Lead and Copper Sampling – Common Mistakes

- DO NOT SAMPLE A VACANT BUILDING OR HOUSE



- DO NOT SAMPLE OUTSIDE FAUCETS

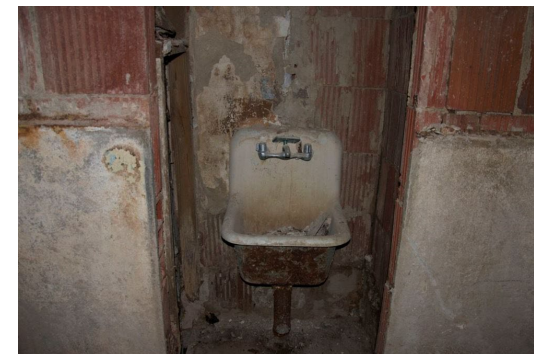


# Lead and Copper Sampling - Common Mistakes

- DO NOT SAMPLE IF BUILDING/HOUSE HAS BEEN EMPTY FOR A CERTAIN PERIOD OF TIME (vacation or school). Make sure water is been used regularly



- DO NOT SAMPLE FROM JANITOR/UTILITY SINKS OR HAND WASH SINKS





# Lead and Copper Sampling - Common Mistakes

- DO NOT SAMPLE IF THERE IS A POINT OF USE FILTER or RO



- DO NOT SAMPLE IMMEDIATELY AFTER ANY WORK ON DISTURBTION OR TREATMENT SYSTEMS.



- DO NOT SAMPLE FROM HOT WATER TAP.



Any  
Questions?

George Williams  
Lead and Copper Rule Manager  
444-3276

[George.Williams@mt.gov](mailto:George.Williams@mt.gov)

Greg Montgomery  
Principle Lead and Copper Rule Coordinator  
Lead in School Drinking Water Rule Manager  
444-5312

[Gregory.montgomery@mt.gov](mailto:Gregory.montgomery@mt.gov)

[leadandcopper@mt.gov](mailto:leadandcopper@mt.gov)

<https://deq.mt.gov/water/programs/dw>