



MICHIGAN DEPARTMENT OF  
ENVIRONMENT, GREAT LAKES, AND ENERGY

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# Michigan Lead and Copper Rule Webinar for Drinking Water Operators

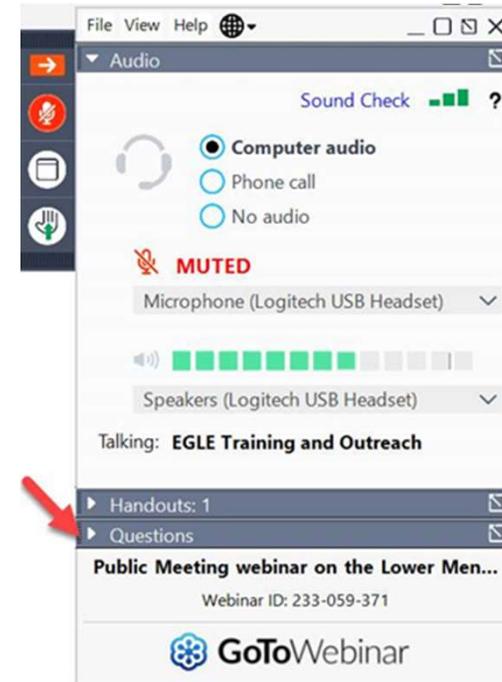
## **Session #1**



All lines are muted during the webinar.



Submit your questions using the “**Question**” box in your Go To Webinar tool bar.



## How to get CECs

- You must be logged in as yourself, if you are watching with someone else that is logged in, you will not receive credit.
- You must attend the entire presentation.
- You must answer all 3 poll questions to demonstrate your participation in this webinar.
- Your participation is documented.

# Agenda

## **Session #1 (0.1 CECs)**

- LCR Basics and Overview
- Tiering Criteria and Sampling Plans
- LCR Monitoring Basics and Pre-Sampling Preparation

## **Session #2 (0.1 CECs)**

- LCR Monitoring Tips and Tricks
- Elevated Results and Public Education
- Water Quality Parameter Monitoring
- Reporting Basics

# Lead and Copper Rule Basics and Overview

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Jeni Bolt, Environmental Quality Specialist  
Lead and Copper Unit

# Summary of LCR changes

- Lead and Copper Basics
- Federal Lead and Copper Rule
- Michigan Lead and Copper Rule
- Highlighting the major changes
- Implementation
- Q&A

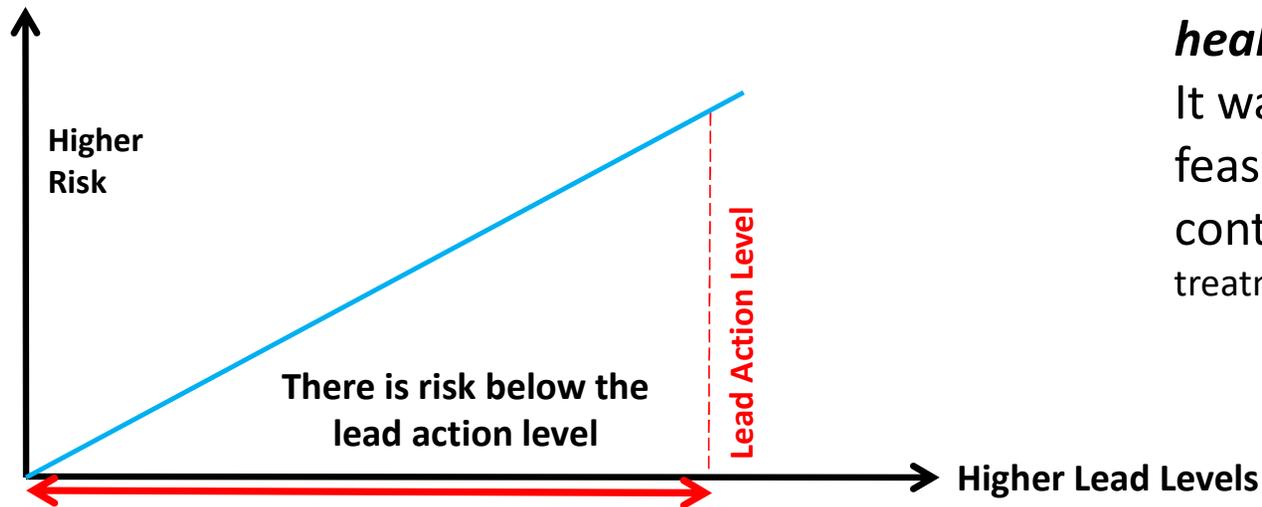
# Why do we care about lead?

- No level of lead in the blood is safe; health effects at blood lead levels below previous thresholds
- Lead is a potent irreversible neurotoxin
- Lifelong multigenerational impacts
- Health effects from acute and chronic exposures



# Lead Risk

The lead action level is ***not a health-based*** number. It was set in 1991 based on feasibility of reducing lead through controlling corrosion (knowledge of treatment capabilities and costs at the time).

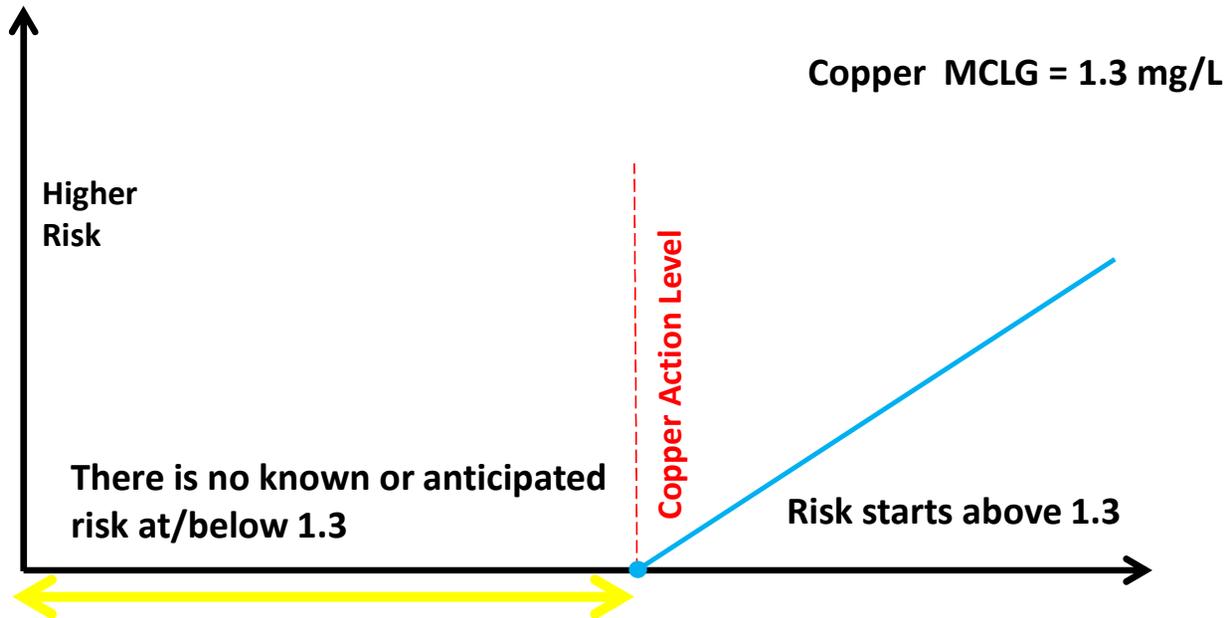


Lead MCLG = 0 = *No level* without known or anticipated adverse health effects

# Why do we care about copper?

- Small amounts of copper are essential for health
- High exposure can result in a variety of negative health effects

# Copper Risk



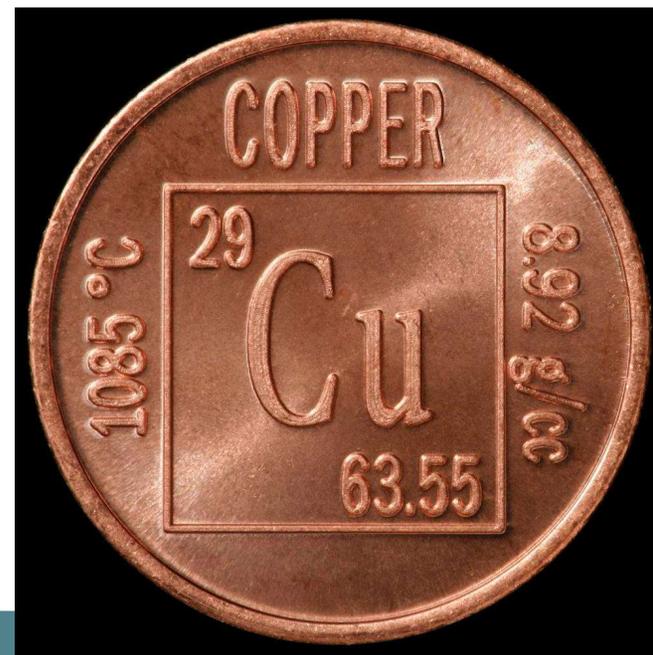
When MCLG = specified value (not zero) = no known or anticipated adverse health effects occur *below* that value.

# Health Effects

- Health Effects of Lead
  - Biggest concern is young children and infants, who absorb more lead than the average adult
  - Health effect in children include:
    - Impaired mental development
    - IQ deficits
    - Shorter attention spans
    - Low birth weight
- Health Effects of Copper
  - Formula-fed infants already get their needed copper from formula
  - Stomach and intestinal distress
  - Complication of Wilson's Disease
  - Chronic exposure can cause liver disease in predisposed individuals

# Lead & Copper Basics

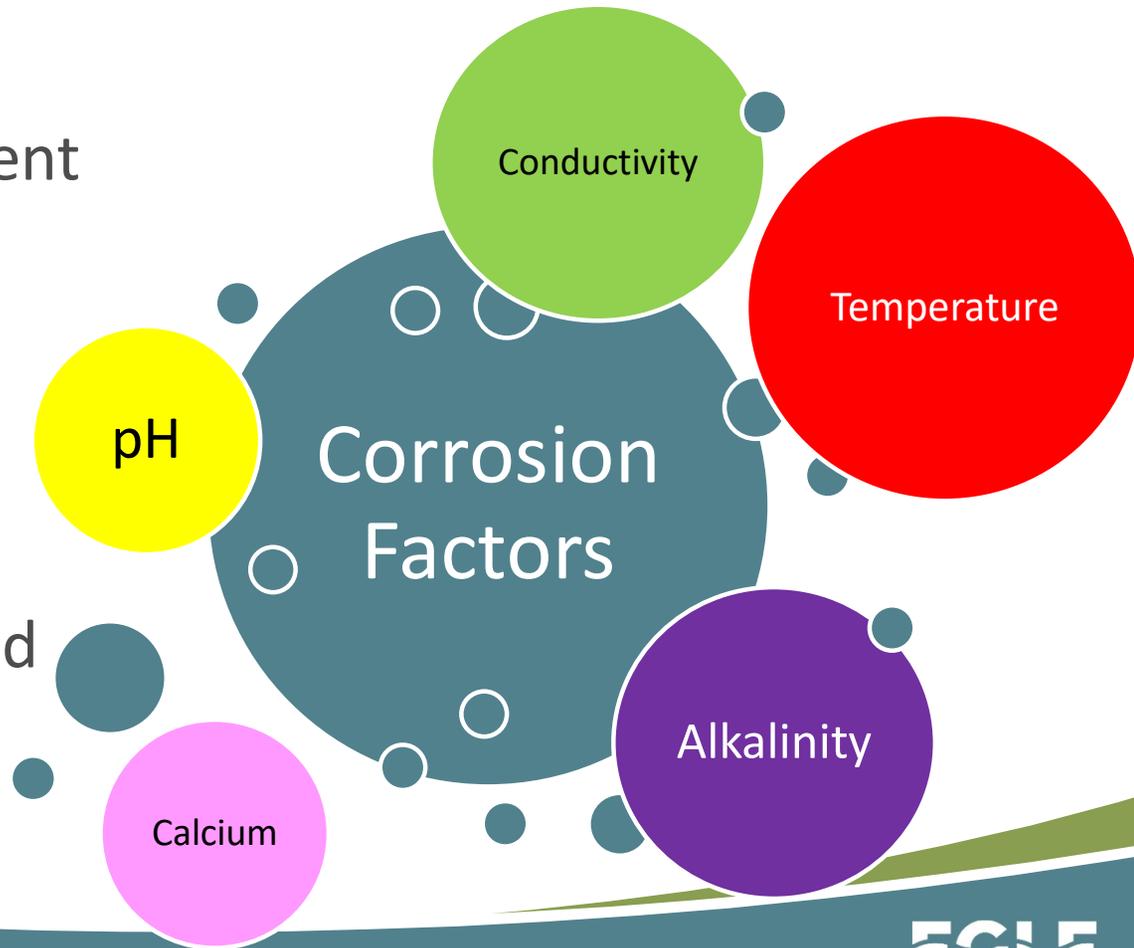
- Inorganic elements
- Naturally found in the environment



Google Images Elemental Coins. Source: Dave Hamric

# How Does Lead Get In The Water?

- Water is the universal solvent
- All water is corrosive
- Certain characteristics of water like pH, alkalinity, and temperature affect how corrosive the water is.



# Lead Variability in Drinking Water

- Many factors affect lead release
- There are two type of lead in drinking water particulate and dissolved
  - Particulate lead release is random and mostly unpredictable
  - Dissolved lead release is reasonably well characterized

# Particulate vs. Dissolved Lead

## Particulate Release

- Physical disturbances (construction, road work, etc.)
- LSL replacement (full or partial)
- Hydraulic disturbances and transport of particles
- Galvanic corrosion

## Dissolved Release

- Largely dependent on water quality
- Also on surface area of lead (pipe length, diameter);
- Stagnation time of water

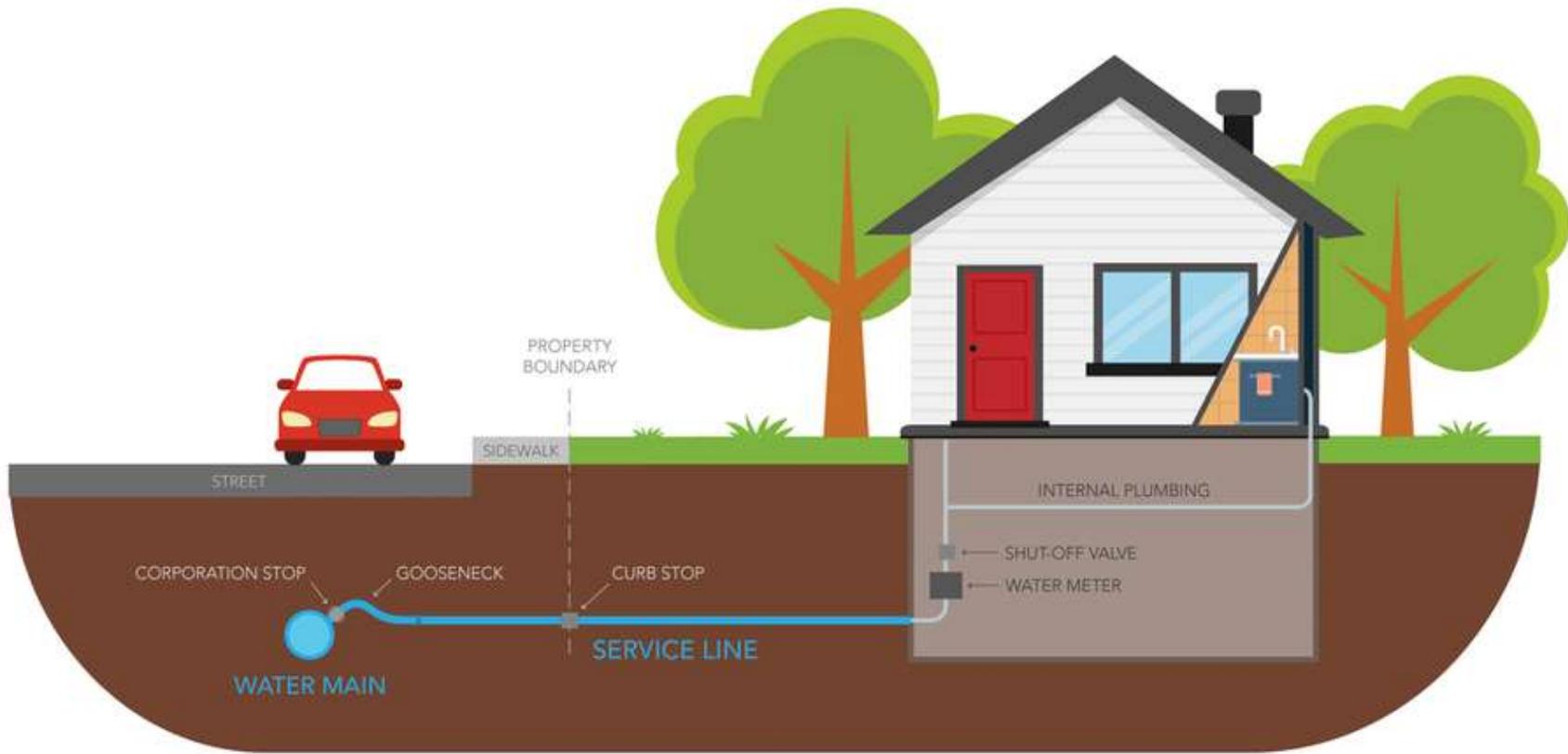


# Sources of Lead in Drinking Water

- Lead pipes
  - Service lines, customer site piping, and building plumbing
- Galvanized pipe
  - Service lines, customer site piping, and building plumbing
  - Harbors particulate lead
  - Zinc coating contains lead
- Brass fixtures and valves
  - These items are ubiquitous in water treatment plants, distribution systems, customer site piping, and building plumbing systems



# Service Lines and Goosenecks



# Service Line Materials



# Why a Gooseneck?



- Allows for expansion or contraction of service pipe without pulling away from corp stop or curb box

## Lead gooseneck



## Lead wipe joint



# Lead Service Line Attached to a Household Water Meter



# Pipe Material Determination

- Color/Apearances
  - Copper Color
  - Bright or Dull Gray
  - Rust
- Magnetic Properties
  - Copper & Lead – No Magnetic Attraction
  - Galvanized – MAY Have Magnetic Attraction
- Scratch Test
  - Scratch with Knife or File
  - May Not be Acceptable with Homeowner

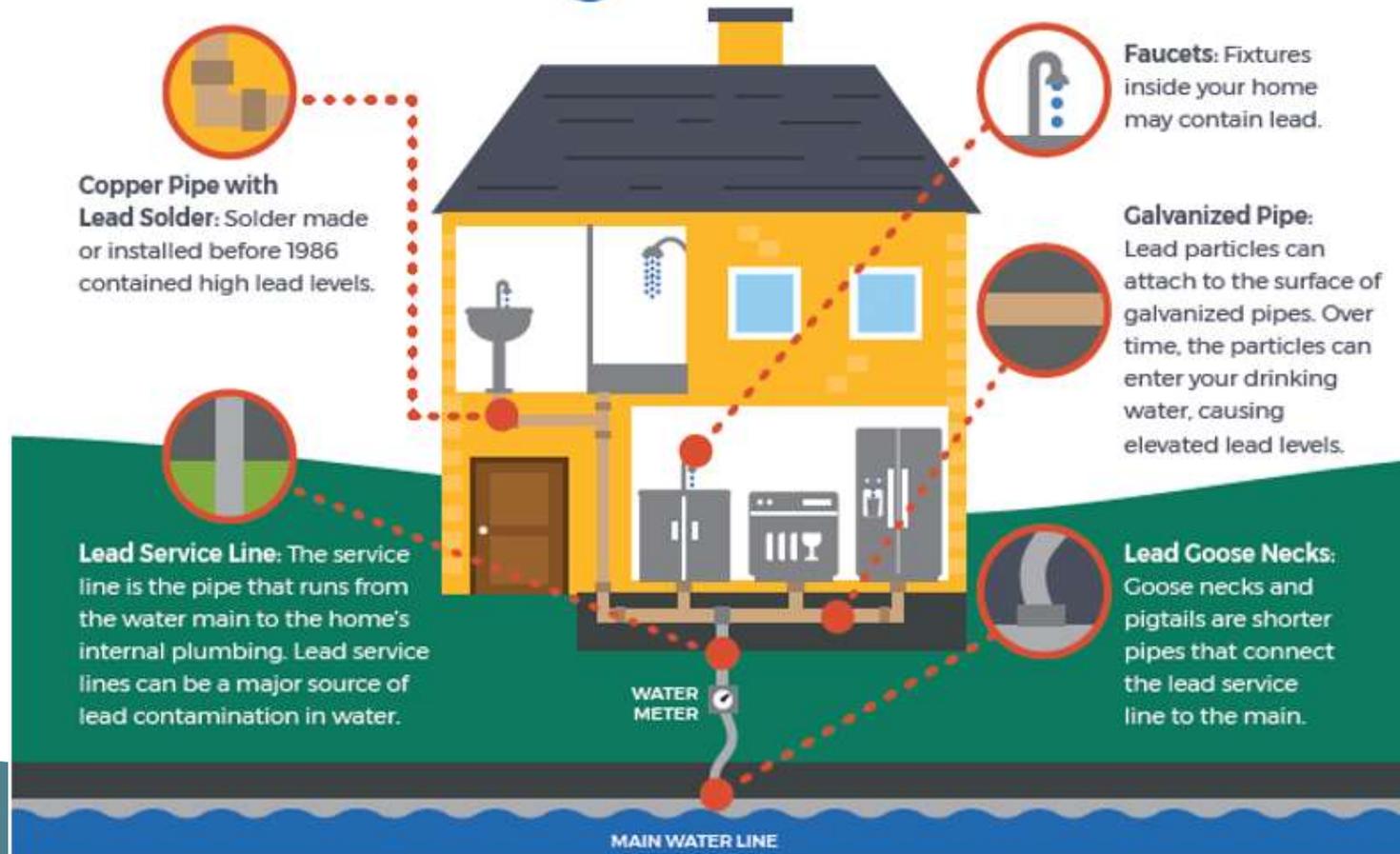


# Lead Scratch Test



# Sources of **LEAD** in Drinking Water

Sources of lead inside a home or building



# Sources of lead inside a home

- Copper with lead solder before 1988
- Older faucets, fixtures and valves
- Galvanized plumbing downstream of lead



# Regulations

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# Why do we have the LCR?

- To minimize lead and copper in drinking water
- Used to help determine if the chemistry of the water is causing excessive corrosion
- Lead and copper are indicators
- The LCR is a treatment technique rule
- The action levels are based on the practical feasibility of reducing lead through controlling corrosion (per EPA)

# Lead Regulation and Federal Lead and Copper Rule

- 1986 – Federal Lead Ban
- 1991 – Lead and Copper Rule
- 2004 – Lead and Copper Minor Revisions
- 2007 – Lead and Copper Short-term Revisions
- 2012 – Reduction of Lead in Drinking Water Act (2014)
- 2018 – Michigan adopts state specific Rule
- 2020 – Long-term Lead and Copper Rule revisions
  - Posted 11/13/2019
  - Public comment closed 2/12/2020

# Michigan's Lead and Copper Rule

June 2018 – Michigan's LCR revisions were promulgated

- Major Changes
- Definitions
- Materials Inventory
- Sampling plans
- Tiering criteria
- 90th percentile calculation
- Action Level
- Sampling – Tap sampling and WQP
- LSLR
- Transparency
- Public Education
- Water Advisory Councils
- Continuity of Source/Treatment

# Implementation

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# Implementation Update

- Partial lead service line replacement ban is in effect
- Many systems have
  - Created lead advisory councils
  - Completed preliminary inventory activities
  - Completed sampling plans
  - Started sampling using the 1<sup>st</sup>/5<sup>th</sup> methodology
  - Started collecting WQP samples

# Upcoming Implementation

- January 1, 2021 – 20-year (avg 5%) LSLR begins
- January 1, 2025 – Action Level lowered to 12 ppb
- January 1, 2025 – Submit complete DSMI (resubmit every 5yrs)

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# Tiering Criteria and Sampling Plans



# Tiering Criteria

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# Tiering Criteria

- Tiering Criteria contains both a Tier and a Category
  - Tiers - based on potential risk for lead exposure
  - Categories - distinctions between different configurations within a Tier
- Rule designates three tiers of sampling locations
  - Tier 1
  - Tier 2
  - Tier 3
  - Other



# Tiering Criteria – Rule Requirements

- Systems shall sample Tier 1, unless insufficient Tier 1
  - Tier 1 – Primarily focuses on single-family residential locations, with a caveat for multi-family residential locations, that have a source of lead
  - Lead service line, lead interior plumbing
- Revisions to the Rule help focus sampling on sites with lead service lines or lead interior plumbing.

# Tiering Criteria Changes

Site	Sample Category	
Tier 1	A	Single family residence with a lead service line*.
	<del>B</del>	<del>Single family residence with copper plumbing with lead solder installed after 1982 and before 1989.</del>
	C	Single family residence with lead interior plumbing.
	D	Multiple family residence (MFR) with either a lead service line*, <del>copper plumbing with lead solder installed after 1982 and before 1989, or lead plumbing.</del> Note: Only when MFR comprise at least 20 percent of the total service connections for the system.
Tier 2	E	Multi-family residences or other buildings with a lead service line*.
	<del>F</del>	<del>Multi-family residences or other buildings with copper plumbing with lead solder installed after 1982 and before 1989.</del>
	G	Multi-family residences or other buildings with lead interior plumbing.
Tier 3	H	Single family residence with copper plumbing with lead solder installed before <del>1983.</del> <b>before 1988.</b>
Other		If no Tier 1, 2, or 3 sites available, sample sites that use plumbing materials commonly found at other locations in the water supply.
*Priority should be placed on sites with full LSLs, followed by partial LSLs, followed by lead goosenecks.		

# Michigan Tiering Criteria

Site	Sample Category	
Tier 1	A	Single family residence with a lead service line*.
	B	Single family residence with lead interior plumbing.
	C	Multiple family residence (MFR) with either a lead service line*, or lead plumbing. Note: Only when MFR comprise at least 20 percent of the total service connections for the system.
Tier 2	D	Multi-family residences or other buildings with a lead service line*.
	E	Multi-family residences or other buildings with lead interior plumbing.
Tier 3	F	Single family residence with copper plumbing with lead solder installed before July 1988.
Other		If no Tier 1, 2, or 3 sites available, sample sites that use plumbing materials commonly found at other locations in the water supply.
*Priority should be placed on sites with full LSLs, followed by partial LSLs, followed by lead goosenecks.		

# Tier 1 Criteria Highlights

- Focuses Tier 1 on finding sites with lead
- Copper w/ lead solder removed from Tier 1
  - **Only** SFR sites with a LSL or lead interior plumbing
    - MFR can be used as Tier 1, but only when at least 20 percent of the total service connections for the system.
- Priority should be placed on full LSL, then partial LSL and finally lead goosenecks

## Acronym Legend

SFR – single family residential  
MFR – multi-family residential  
BLDG – other building  
LSL – lead service line

# Tier 2 Criteria Highlights

- Focuses Tier 2 on finding sites with lead
- Copper w/ lead solder removed from Tier 2
  - **Only** MFR or non-SFR sites with a LSL or lead interior plumbing
- Priority should be placed on full LSL, then partial LSL and finally lead goosenecks

Examples of Tier 2 sites: Apartments or businesses that have a lead service line or lead interior plumbing that are occupied and use water

## Acronym Legend

SFR – single family residential

MFR – multi-family residential

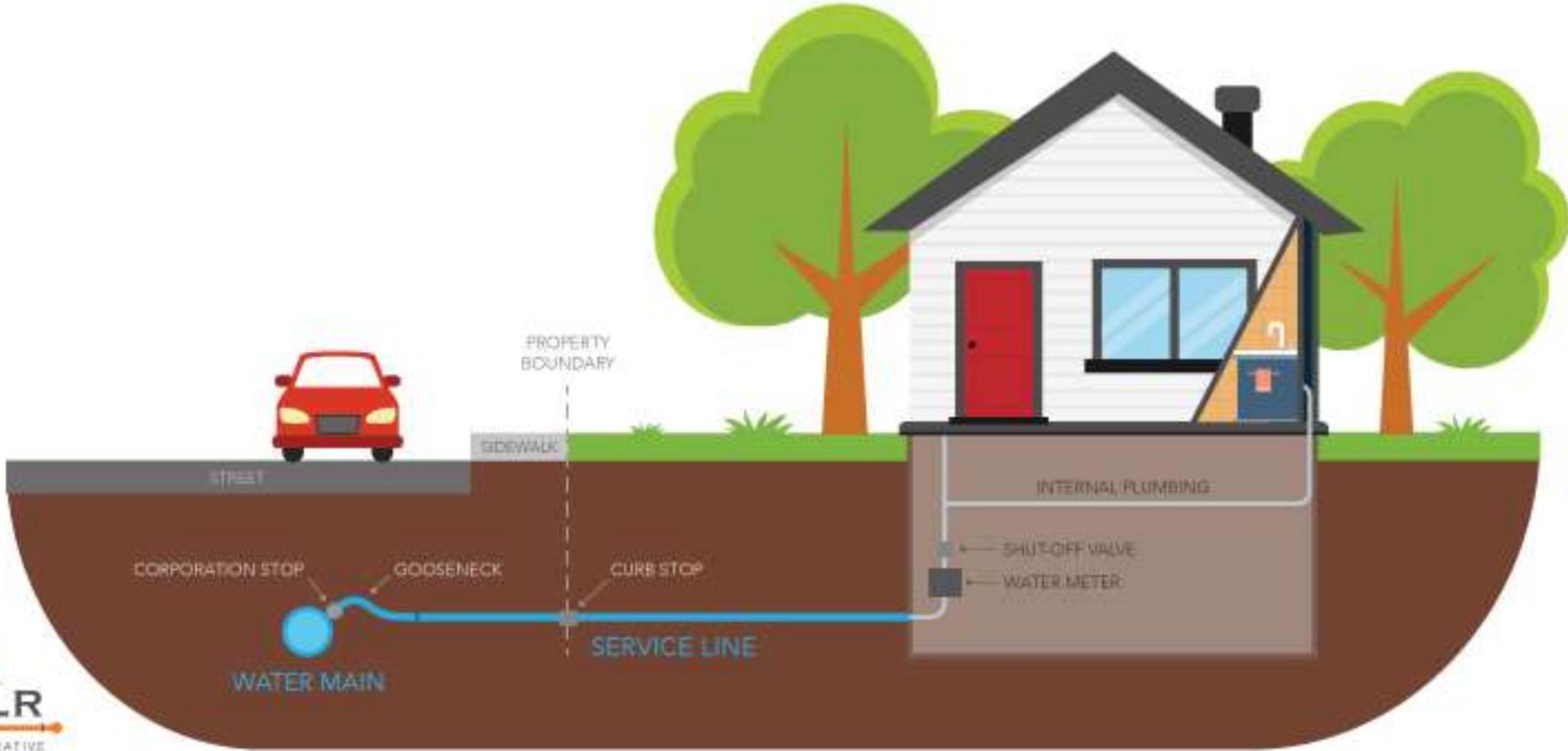
BLDG – other building

LSL – lead service line

# Lead Service Line

- **Service Line** – means the pipe from the discharge of the corporation fitting to customer site piping or to the building plumbing at the first shut-off valve inside the building, or 18 inches inside the building, whichever is shorter.
- **Lead Service Line (LSL)** – means either a service line which is made of lead or any lead pigtail, lead gooseneck, or other lead fitting that is connected to the service line, or both.

# Lead Service Line



# Examples of Lead Service Lines

Lead

Copper or Plastic



Full LSL



Partial LSL



Partial LSL



Lead gooseneck

# Galvanized Service Lines

**Lead**      **Galvanized**

Lead gooseneck connected to a galvanized service line.



Lead Service Line  
**Tier 1 or 2**

Lead gooseneck has been removed. Galvanized service line remains.



NOT a Lead Service Line  
**Tier 3 or Other**

Galvanized portion must still remain on DSMI and removed as part of 5% LSLR activities.

# Tier 3 Criteria Highlights

- Tier 3 sites are SFR locations
  - Tier 3 is now all copper with lead solder before July 1988
  - Tier 3 does not include MFR and or any non-residential location locations
- Other sites (if no Tier 1, 2, or 3)
  - Representative of plumbing materials commonly found at other locations in the water supply.

## Acronym Legend

SFR – single family residential  
MFR – multi-family residential  
LSL – lead service line  
BLDG – other building

# Tiering Criteria Highlights

- Business, municipal buildings, and other buildings should only be sampled if...
  - No Tier 1 sites are available
  - They have a LSL
  - They have lead interior plumbing

## Acronym Legend

SFR – single family residential  
MFR – multi-family residential  
LSL – lead service line  
BLDG – other building



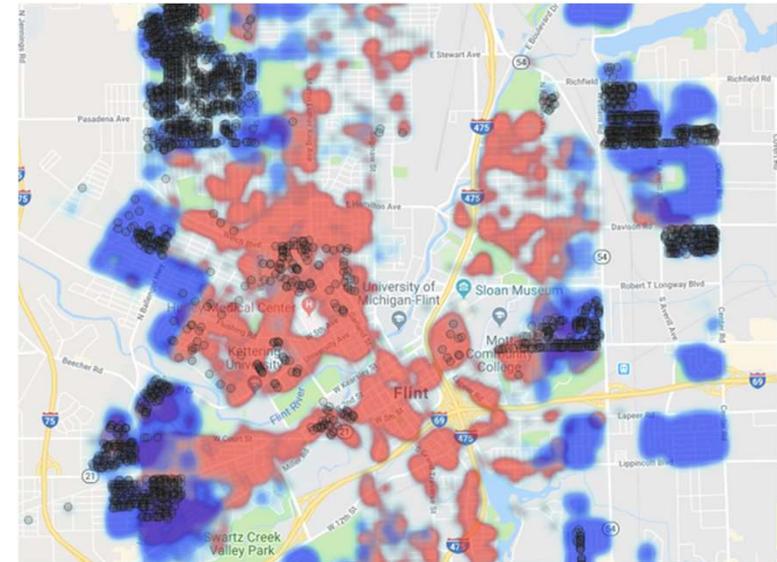
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# Sampling Plan



# Sampling Plan

- Identifies highest priority sites for sampling
- Identifies enough sites for a supply to conduct standard monitoring
- Provides alternate sampling locations
- Were due 1/1/2020
- “Living document” – update and resubmit as necessary



# Developing a Sampling Plan

- Required number of sample sites are determined by water supply system population served.

Supply Size (# of People Served)	Number of Sites (Standard Monitoring)	Number of Sites (Reduced Monitoring)
More than 100,000	100	50
10,001 - 100,000	60	30
3,301 – 10,000	40	20
501 – 3,300	20	10
101 - 500	10	5
Fewer than 101	5	5

## 2020 Monitoring Schedule

**ABC City**

**WSSN: 12345**

Collect samples early in the monitoring period. This schedule reflects expected routine monitoring and is subject to change. To receive credit for monitoring, include the **WSSN, Site Code, and County** on your request for analysis form. Collect all samples close to the shipping time and send overnight delivery. Send all sample results to your Department of Environment, Great Lakes, and Energy (EGLE) district office unless you use the EGLE laboratory. Test codes and sample units are listed to help you complete the EGLE laboratory form. The EGLE laboratory is closed on state holidays.

### Location: Arsenic Removal Plant

Collect these samples at the entry point to the distribution system (after treatment, if applicable.)

Sample Type	# Samples/ Frequency	Collect Before	Site Code	Fee	Unit Number	Test Code
Automated Partial Chemistry	This EGLE lab scan includes nitrate, nitrite, fluoride, and sodium whose monitoring frequency requirements differ from one another. Before requesting analyses from a laboratory other than the EGLE laboratory, check with your EGLE district staff for the specific monitoring requirements.					
	1/12 months	09/30/2020	TP001	\$18.00	32	R
Volatile Organic Compounds	1/36 months	09/30/2020	TP001	\$100.00	36VO	CXVO
Complete Metals	1/36 months	09/30/2022	TP001	\$102.00	36ME	CMET2
Arsenic	1/3 months	Quarterly	TP001	\$18.00	36ME	CAS
Cyanide	1/36 months	09/30/2022	TP001	\$25.00	36CNa	CCN
SOC – Pesticides	1/36 months	09/30/2022	TP001	\$125.00	36PT	CXPT
SOC – Herbicides	1/36 months	09/30/2022	TP001	\$120.00	36HB	CXHB
SOC – Carbamates	1/36 months	09/30/2022	TP001	\$120.00	36LP	CXLP
Gross Alpha (Radiological)	1/108 months	09/30/2026	TP001	Not performed at the EGLE Laboratory. A list of certified labs is available at <a href="http://Michigan.gov/CommunityWater">Michigan.gov/CommunityWater</a> , then select Certified Labs under Programs and Activities.		
Radium 226 & Radium 228	1/108 months	09/30/2026	TP001			

### Location: Distribution System

Sample Type	Collect According to your ...	# Samples/ Frequency	Collect	Site Code	Fee	Unit Number	Test Code
Bacteriological (coliforms)	RTCR Sample Siting Plan	1/Monthly	Monthly	DIST	\$16.00	30	BPTC
Chlorine Residual	DBP Monitoring Plan	If serving chlorinated water, measure the residual disinfectant level at the same point and at the same time as the bacteriological sample and report the results and average to EGLE.					
Total Trihalomethanes		1/12 months	During July 2020	See DBP Monitoring Plan	\$65.00	36VO	CXTM
Haloacetic Acids		1/12 months	During July 2020	See DBP Monitoring Plan	\$130.00	36HA	CXHA
Lead and Copper for Corrosion Control	Lead and Copper Sampling Plan	30 sites/12 months	Between 06/01 and 9/30/2020	DIST	\$26.00	36CC	CCUB

# Developing a Sampling Plan

- At least # of standard sites
- Preferably 1.5x the standard sites
- Sampling sites shall be Tier 1, unless no Tier 1 available
  - All higher tier sites must be exhausted before including a lower tier (Tier 2, 3, or Other) in your sampling plan.

# Developing a Sampling Plan

## Example: ABC City

Serves a population of 35,000

Has lead service lines

Standard = 60 sites

Reduced = 30 sites

- Plan should include 60-90 Tier 1 sites, until insufficient Tier 1 sites available

## Example: ABC Township

Serves a population of 2,000

Does not have lead service lines

Standard = 20 sites

Reduced = 10 sites

- Plan should include 20-30 Tier 3 sites, until insufficient Tier 1 sites available

# Documenting a Sampling Plan

**EGLE** MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

## SAMPLING PLAN – LEAD AND COPPER

Issued under authority of 1976 PA 300 and Administrative Rules, as amended. Administrative Rule R 325.10710a requires a water supply to monitor for lead and copper according to a pool of targeted sampling sites in accordance with designated site selection criteria. Complete and submit to:

### Water Supply Information

Supply Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 City, State, Zip \_\_\_\_\_

### Contacts – Water Supply

Name/Title \_\_\_\_\_ E-mail \_\_\_\_\_  
 Name/Title \_\_\_\_\_ E-mail \_\_\_\_\_  
 Name/Title \_\_\_\_\_ E-mail \_\_\_\_\_

Please DO NOT alter the formatting of these forms!!

### MICHIGAN COMMUNITY WATER SUPPLY LEAD AND COPPER TAP SAMPLING POOL

>>> REVIEW INSTRUCTIONS ON PAGES 4 AND 5 BEFORE COMPLETING FORM BELOW <<<

WSSN: \_\_\_\_\_ Supply Name: \_\_\_\_\_ Page \_\_\_\_\_ of \_\_\_\_\_

Standard Number of Sites Required: \_\_\_\_\_ Reduced Number of Sites Required: \_\_\_\_\_

Site No.	Address	Tier Level	Category	Structure Type	Service Line Material	Interior Plumbing Material	Site Validation Method
00	Ex: 0000 Any Street – Any Town, MI	1	A	SFR	L	C	
01							
02							
03							
04							
05							
06							
07							

# Using a Sampling Plan

- The sampling plan directs where compliance samples are collected
  - Sites must be in the Sampling Plan
  - Sites must be the same as previously sampled
  - If a supply cannot gain entry to a site, an alternate site from the Sampling Plan may be used

# What is an Alternate Site?

- Alternate sites are additional sites on your Sampling Plan, but are not part of your “same” sites that are routinely sampled
- Alternate sites have already been vetted for sampling
  - Service line material
  - Internal building plumbing
  - Tiering criteria
  - Site validation method

# Using an Alternate Site

- Acceptable reasons to use an alternate location
  - Homeowner refuses
  - Vacant
  - Change in tier criteria
    - Service line replacement
    - Major home remodel
  - Installation of softener, filter or reverse osmosis device that cannot be bypassed, removed or avoided by using an alternate kitchen or bathroom tap.

➤ **Document the use of an alternate site on the Lead and Copper Report form**

# Using an Alternate Site

- Use an alternate site, but keep original site on your Sampling Plan
  - Homeowner refuses
  - Vacant
- Use an alternate site, but remove original site from your Sampling Plan
  - Change in tier criteria
    - Service line replacement
    - Major home remodel
  - Installation of softener, filter or reverse osmosis device that cannot be bypassed, removed or avoided by using an alternate kitchen or bathroom tap.

# Updating a Sampling Plan

- Plans are “living” documents and should be routinely evaluated and updated to ensure the plan contains the highest tier sites for the water supply
- Many things will necessitate updates
  - Changes in tiering criteria
    - Service line replacement
    - Major home remodel
  - Higher risk sites found
  - No more available alternate locations

# Updating a Sampling Plan

Sampling plan updates shall

1. Identify any site removed
2. Explain why the site was removed
3. Identify a new site and
4. Describe how the site meets site selection criteria

➤ **Submit updated Sampling Plans to your local District Office email address**

# ABC Township Example

Received their 2020 Monitoring Schedule

- 20 samples due between 6/1 and 9/30/2020
- Sites must be in the Sampling Plan
  - Look at current Sampling Plan
- Sites must be the same as previously sampled
  - Look at previous Lead and Copper Report forms
- Do you have 20 sampling locations?
- Do you need to use alternate locations?

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# Lead & Copper Monitoring Process



# What is Lead & Copper Monitoring?

- Sampling & evaluation to determine system water quality
- Sampling taps from sites that are more likely to have lead service lines and plumbing materials containing lead
- Evaluating all results to see if the water is corrosive to the system
- Sampling for other water quality parameters (WQP's)

# How Do You Evaluate the Results?

- Results are reported in mg/L (ppm) or ug/L (ppb)
- The 90th percentile is calculated and compared to the Action Levels (ALs)
- ALs are based on the practical feasibility of reducing lead through controlling corrosion
- AL vs MCL (Maximum Contaminant Level)
- MCLG = Maximum Contaminant Level Goal

Lead AL = 0.015 mg/L (15 ug/L)

Copper AL = 1.3 mg/L (1300 ug/L)



The MCLG is 0 mg/L

The MCLG is 1.3 mg/L

# How Many Samples Are Required?

LCR Tap Monitoring Requirements:

Required number of sample sites determined by water supply population served

<b>Supply Size (# of People Served)</b>	<b>Number of Sites (Standard Monitoring)</b>	<b>Number of Sites (Reduced Monitoring)</b>
More than 100,000	100	50
10,001 - 100,000	60	30
3,301 – 10,000	40	20
501 – 3,300	20	10
101 - 500	10	5
Fewer than 101	5	5

# How Often Do You Sample?

- Depends on several factors
  - Sampling history
  - Water quality & treatment
  - Compliance with the rules
- Frequency Possibilities
  - Semi-Annual (6-month intervals)
  - Annual
  - Triennial (every 3 years)

## 2019 Monitoring Schedule

### ABC City

WSSN: 12345

Collect samples early in the monitoring period. This schedule reflects expected routine monitoring and is subject to change. To receive credit for monitoring, include the **WSSN**, **Site Code**, and **County** on your request for analysis form. Collect all samples close to the shipping time and send overnight delivery. Send all sample results to your Department of Environmental Quality (DEQ) district office unless you use the DEQ laboratory. Test codes, sample units, and costs are listed to help you complete the DEQ laboratory form. Prices subject to change without notice. The DEQ laboratory is closed on state holidays.

### Location: Well 1 or 2 - Point Of Entry

Collect these samples at the entry point to the distribution system (after treatment, if applicable.)

Sample Type	# Samples/ Frequency	Collect Before	Site Code	Fee	Unit Number	Test Code
Automated Partial Chemistry	This DEQ lab scan includes nitrate, nitrite, fluoride, and sodium whose monitoring frequency requirements differ from one another. Before requesting analyses from a laboratory other than the DEQ laboratory, check with your DEQ district staff for the specific monitoring requirements.					
	1/12 months	09/30/2019	CH001	\$18.00	32	R
Volatile Organic Compounds	1/12 months	09/30/2019	CH001	\$100.00	36VO	CXVO
Complete Metals	1/108 months	09/30/2019	CH001	\$102.00	36ME	CMET2
Arsenic	Included in Metals	Included in Metals	CH001	\$18.00	36ME	CAS
Cyanide	1/108 months	09/30/2023	CH001	\$25.00	36CN	CCN
SOC – Pesticides	1/36 months	09/30/2020	CH001	\$125.00	36PT	CXPT
SOC – Herbicides	1/36 months	09/30/2020	CH001	\$120.00	36HB	CXHB
SOC – Carbamates	1/36 months	09/30/2020	CH001	\$120.00	36LP	CXLP
Gross Alpha (Radiological)	1/108 months	09/30/2024	CH001	Not performed at the DEQ Laboratory. A list of certified labs is at <a href="http://www.michigan.gov/DEQ">www.michigan.gov/DEQ</a> . Select Water, Drinking Water, Community Water Supply, then Certified Labs under Programs and Activities.		
Radium 226 & Radium 228	1/108 months	09/30/2024	CH001			

### Location: Distribution System

Sample Type	Collect According to your ...	# Samples/ Frequency	Collect	Site Code	Fee	Unit Number	Test Code
Bacteriological (coliforms)	RTCR Sample Siting Plan	1/Monthly	Monthly	DIST	\$16.00	30	BPTC
Lead and Copper for Corrosion Control	Lead and Copper Sampling Pool	30/12 months	Between 06/01 and 9/30/2020	DIST	\$26.00	36CC	CCUB

\* See insert for additional information about water quality parameter analysis.

# What is a Monitoring Period?

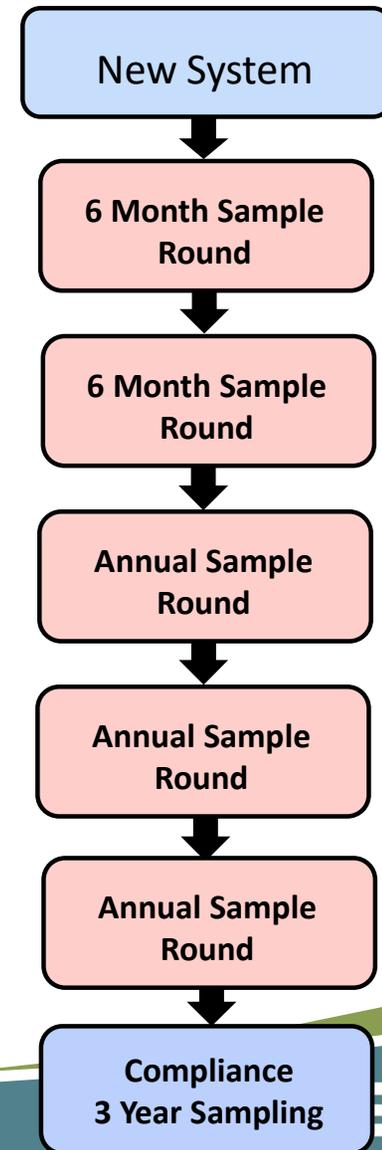
- The length or portion of time to collect samples
- Can collect at any time between these dates
- “Compliance period”

	Sampling Frequency	Monitoring Period	
Standard monitoring →	Semi-Annual	Jan-Jun	or Jul-Dec
	Annual	Jun 1 – Sept 30	
Reduced monitoring and reduced sites ←	Triennial	Jun 1 – Sept 30	



## Typical Pathway to Reduction (LCR)

- Systems are eligible for reduction after demonstrating lead and copper levels below the Action Level or WQPs within set ranges.
- Reduction is a privilege, not a right.



# Reduced Monitoring

6-Month  Annual Monitoring

- Small and medium systems ( $\leq 50,000$ )
  - Two consecutive 6-month rounds  $\leq$  ALs for both lead and copper
- Systems with Corrosion Control Treatment (CCT)
  - Meets optimal WQP AND two consecutive 6-month rounds  $\leq$  ALs
- Accelerated reduced monitoring
  - Two consecutive 6-month rounds  $\leq 5$  ppb for lead and  $\leq 650$  ppb for copper

# Reduced Monitoring

Annual  Triennial Monitoring

- Systems without Optimum Corrosion Control Treatment (OCCT)
  - Small and medium systems ( $\leq 50,000$ )
    - Three consecutive years of monitoring  $\leq$  ALs
  - Any system
    - Meets optimal WQP AND three consecutive years of monitoring  $\leq$  ALs
- Supplies with OCCT
  - new rules (next slide)

# Reduced Monitoring for Supplies with OCCT

- The water supply cannot reduce to triennial lead and copper tap monitoring unless...
  - They meet water quality parameter ranges  
AND EITHER
  - They have no lead services lines or
  - They have three annual rounds of sampling  $\leq 0.005$  mg/L for lead and  $\leq 0.65$  mg/L for copper

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# Preparing for Lead and Copper Compliance Tap Sampling



# Pre-sampling Preparation

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# Pre-Sampling Preparation

- Send customer participation requests
- Send surveys to ask about any plumbing changes
- Determine whether alternate sites need to be used

# Pre-Sampling Preparation



- **Order the correct bottle kit**
  - 1L – CCUB
  - 1<sup>st</sup>/5<sup>th</sup> - CCUBK
- **Order bottles from the same lab** you intend to use for analysis
- **Do Not Use** any small/narrow mouth bottles you may have lying around....
- **Order bottles early**
- **Order extra bottles**

# Pre-Sampling Preparation

- ALWAYS go to EGLE website for current reporting forms!

The screenshot shows the EGLE website interface. At the top, there is a navigation bar with links for EGLE, Contacts, Permits, Online Services, Programs, Locations, and MI.gov. Below this is the EGLE logo and the text "MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY". A search bar is located to the right of the logo. Below the search bar is a horizontal menu with tabs for ABOUT EGLE, AIR, LAND, WASTE, WATER, and SUSTAINABILITY. The "WATER" tab is selected. On the left side, there is a vertical navigation menu with various categories including Great Lakes, Drinking Water, Abandoned Water Wells, Community Water Supply, Contamination Investigation, Flint Water, Lead and Copper in Drinking Water, Noncommunity Water Supply, Source Water Assessment, Water Wellhead Protection, Water Well Construction, Lakes & Streams, Wetlands, MIWaters, Wastewater, Water Permits, and Water Management. The main content area displays the "Lead and Copper Rule" page. The breadcrumb trail is "EGLE / WATER / DRINKING WATER / COMMUNITY WATER SUPPLY". The page title is "Lead and Copper Rule". The text describes the purpose of the rule and lists action levels. Below the text, there is a section for "General Information" with links to Michigan Safe Drinking Water Act 399, Michigan Safe Drinking Water Rules - Supplying Water to the Public (PDF), and Types of Public Information Required Under Act 399 (PDF). There is also a section for "2018 Lead and Copper Rule Revisions" with links to Summary (PDF), General Infographic (PDF), Detailed Infographic (PDF), and Strike-bold Version of 2018 Rule Changes (PDF). The next section is "Lead and Copper Tap Sampling" followed by "Sample Site Selection" which includes a link to Sample Site Selection Criteria (PDF). The final section is "Lead and Copper Sampling Plan (Sampling Pool)".

[www.Michigan.gov/lcr](http://www.Michigan.gov/lcr)

# Who Collects the Samples?

- Water supply is ultimately responsible for results
- Rule allows customers to collect lead and copper tap samples ONLY after provided with proper instruction
  - Operator must make sure sample collection was done properly before sending sample to the lab
  - You don't have to accept the sample if you believe it was collected improperly

# Resident Sample Collection

- Provide the customer with sampling instructions
- Review paperwork with homeowner
- Provide a phone number for questions
- Lots of resources available at [www.Michigan.gov/lcr](http://www.Michigan.gov/lcr)
- When should you sample/have customers sample?
  - Sample early in the monitoring period
    - If on reduced monitoring – June!
    - If on standard monitoring – January & July!

# Sample Collection Resources Available Online

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[www.Michigan.gov/LCR](http://www.Michigan.gov/LCR)

# Sampling Instructions

[www.Michigan.gov/LCR](http://www.Michigan.gov/LCR)

## DRINKING WATER LEAD AND COPPER SAMPLING INSTRUCTIONS for Sites **WITHOUT** Lead Service Lines

Dear Resident:

Thank you for helping to monitor for lead and copper in your drinking water. This sampling is required by the federal and state Safe Drinking Water Acts and is being accomplished with the cooperation of homeowners, residents, and water system customers.

**IT IS IMPORTANT THAT YOU READ THESE INSTRUCTIONS COMPLETELY BEFORE SAMPLING. THIS WILL ALLOW US TO OBTAIN AN ACCURATE MEASUREMENT OF THE LEAD AND COPPER IN YOUR DRINKING WATER. THIS SAMPLE SHOULD REPRESENT THE WATER AND THE FAUCET WHERE YOU TYPICALLY DRINK WATER.**

1. Water must remain motionless in the pipes before sampling. Therefore, **DO NOT USE ANY WATER** in the house for at least six hours before sampling. The most convenient times to sample may be early morning, after school, or after returning from work.
2. Select an unfiltered/untreated faucet in the **KITCHEN** or **BATHROOM** that has been commonly used for drinking in the past few weeks.
  - > **DO NOT** sample from a laundry sink, bathtub, or hose spigot as these samples do not represent water typically consumed.
  - > **DO NOT** use a faucet that has a filter attached to it unless you bypass or remove the filter.
  - > **DO NOT** use a faucet that is connected to a home water treatment device, like a water softener, iron filter, or reverse osmosis.
  - > **DO NOT** remove or clean the aerator immediately before sampling.
3. Open the sample bottle and be careful not to touch the inside of the bottle or the cap. Place the open sample bottle below the faucet and then turn on the **COLD-WATER** tap. If you have a single handle faucet, turn it fully to the **COLD** side. Fill the sample bottle to the neck with the "first draw" of **COLD** water.
4. Tightly cap the sample bottle and place it in the sample kit provided. Review the sample kit label to ensure all information contained on the label is complete and correct.
5. Answer the questions on the back of this form and then sign the form.
6. Attach this form to the bottle inside the sample kit and arrange for pick-up according to the instructions provided by your water department.
7. Thank you again for your help. Your results will be sent to you within 30 days of receiving them from the laboratory. A summary of your water supply's lead and copper results will be provided in the annual water quality report that will be available by July 1 of next year. Contact your water supplier if you have questions.

If you have questions, call:

Water Supplier:

\_\_\_\_\_

Manager or Water Operator:

\_\_\_\_\_

Phone: \_\_\_\_\_

Or Contact:

Michigan Department of Environmental Quality

DEQ Contact: \_\_\_\_\_

Phone: \_\_\_\_\_

# Sampling Instructions- QA/QC

[www.Michigan.gov/LCR](http://www.Michigan.gov/LCR)

## TO BE COMPLETED BY RESIDENT/CUSTOMER

Which faucet did you use to fill the bottle?

- Kitchen       Main bathroom       Other (not an option for residential sites)

If you selected Other, please describe: \_\_\_\_\_  
\_\_\_\_\_

When was water in the house last used before sampling?

Date \_\_\_\_\_ Time \_\_\_\_\_ AM/PM

When did you fill the bottle?

Date \_\_\_\_\_ Time \_\_\_\_\_ AM/PM

Is there a faucet mounted filter?

- YES       NO

If you selected Yes, was it bypassed?

- YES       NO

Is this faucet connected to a home treatment device such as a water softener, filter, reverse osmosis unit, iron removal device **OR** any other kind of treatment?

- YES       NO

If you selected Yes, please describe: \_\_\_\_\_  
\_\_\_\_\_

Have any plumbing repairs or replacements been done since the previous sampling event?

- YES       NO

If you selected Yes, please describe: \_\_\_\_\_  
\_\_\_\_\_

I have read the Drinking Water Lead and Copper Sampling Instructions and have taken a tap sample in accordance with these directions.

Signature \_\_\_\_\_

Date \_\_\_\_\_

Sample Collection Address \_\_\_\_\_

# Infographic - Sites without lead service lines

[www.Michigan.gov/LCR](http://www.Michigan.gov/LCR)

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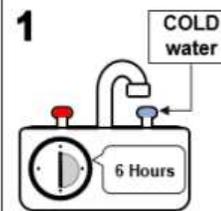
## 1ST DRAW LEAD/COPPER SAMPLING INSTRUCTIONS

For Compliance Sampling at Sites Without Lead Service Lines

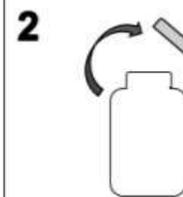
**READ ALL INSTRUCTIONS BEFORE OPENING YOUR SAMPLE BOTTLE.**

**Please note:** These sampling instructions are generic; the procedure and included materials may vary depending on which certified laboratory your water supply is using.

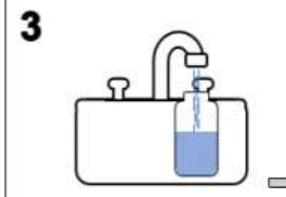
- The sample kit you will receive from your water supply may include various materials. Do not throw anything away unless otherwise instructed.
- Do not use any water in your house for at least six hours before you collect samples. The best time to sample may be first thing in the morning or after you return home from work.
- Only use a **cold-water** faucet in the **kitchen** or **bathroom** that is routinely used for drinking.
- If the faucet has a faucet-mounted filter, the device **must** be bypassed or removed before sampling.
- If your home has a water softener, iron removal filter, reverse osmosis system or other treatment device, contact your water supplier before sampling.



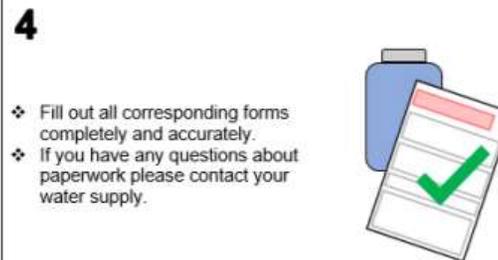
- ❖ Do not use any water in your house for at least 6 hours.
- ❖ Use the **COLD water only** at a **kitchen or bathroom** faucet for sample collection.



- ❖ Open the bottle and do not touch the inside of the bottle or cap.



- ❖ Place bottle under the faucet.
- ❖ Turn on the **COLD water**.
- ❖ Fill the bottle to the neck, turn off the water, and tightly place the cap back on the bottle.



- ❖ Fill out all corresponding forms completely and accurately.
- ❖ If you have any questions about paperwork please contact your water supply.



- ❖ Attach the form(s) to the bottle and arrange pick-up according to instructions provided by your water department.

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# Infographic - Sites with lead service lines

[www.Michigan.gov/LCR](http://www.Michigan.gov/LCR)

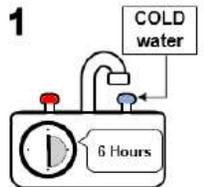
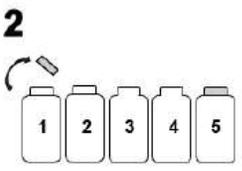
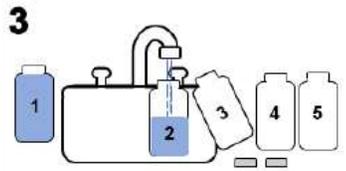
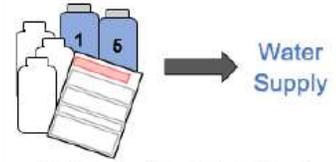
## 1<sup>ST</sup> AND 5<sup>TH</sup> LITER LEAD/COPPER SAMPLING INSTRUCTIONS

For Compliance Sampling at Sites with Lead Service Lines

READ ALL INSTRUCTIONS BEFORE OPENING YOUR SAMPLE BOTTLES.

**Please note:** These sampling instructions are generic; the procedure and included materials may vary depending on which certified laboratory your water supply is using.

- The sample kit that you will receive from your water supply may include various materials. Do not throw anything away unless otherwise instructed.
- Do not use any water in your house for at least six hours before you collect samples. The best time to sample may be first thing in the morning or after you return home from work.
- Only use a cold-water faucet in the kitchen or bathroom that is routinely used for drinking.
- If the faucet has a faucet mounted filter, the device must be bypassed or removed before sampling.
- If your home has a water softener, iron removal filter, reverse osmosis system or other treatment device, contact your water supplier before sampling.

<p><b>1</b></p>  <ul style="list-style-type: none"> <li>❖ Do not use any water in your house for at least six hours.</li> <li>❖ Use the <b>COLD water only</b> at a kitchen or bathroom faucet for sample collection.</li> </ul>	<p><b>2</b></p>  <ul style="list-style-type: none"> <li>❖ Set the bottles in order next to the kitchen or bathroom sink.</li> <li>❖ Open the bottles and do not touch the inside of the bottle or cap.</li> </ul>
<p><b>4</b></p> <ul style="list-style-type: none"> <li>❖ Tightly cap Bottles 1 and 5 and pour out the remaining bottles.</li> <li>❖ Fill out all corresponding forms completely and accurately.</li> <li>❖ If you have any questions about paperwork, please contact your water supply.</li> </ul> 	<p><b>3</b></p>  <ul style="list-style-type: none"> <li>❖ Place Bottle 1 under the faucet.</li> <li>❖ Turn on the <b>COLD water</b></li> <li>❖ While Bottle 1 is filling, hold Bottle 2 next to Bottle 1.</li> <li>❖ When Bottle 1 is <b>filled to the neck</b>, immediately move Bottle 2 under the stream of water.</li> <li>❖ Repeat until all bottles are full. <b>Do not turn off water while filling the bottles.</b></li> </ul> <p><b>5</b></p>  <ul style="list-style-type: none"> <li>❖ Attach the form(s) to the bottle(s) and arrange pick-up according to instructions provided by your water department.</li> </ul>

**NOTE:** Under the Michigan Safe Drinking Water Act, 1st and 5th liter samples are required for water supply compliance sampling at sites served by a lead service line.

# Videos – 1<sup>st</sup> Liter Sample Collection

[www.Michigan.gov/LCR](http://www.Michigan.gov/LCR)

[https://youtu.be/B\\_JXzQsONFk](https://youtu.be/B_JXzQsONFk)



# Videos – 1<sup>st</sup>/5<sup>th</sup> Liter Sample Collection

[www.Michigan.gov/LCR](http://www.Michigan.gov/LCR)

<https://youtu.be/PQ2E3ht4lqs>

YouTube

Search



# Reducing COVID-19 Exposure During Sampling

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## For all situations

- In each scenario, consider the risk to yourself and others
  - The Governor's plan says to wear a cloth face covering whenever possible
- Document the PPE that was worn at each location that samples are dropped off or picked up
- Be mindful of potentially contaminated gloves
  - Put on gloves and face covering prior to exiting the vehicle
  - Open the trunk, get the bottle from the residence
  - Place them in the trunk
  - Remove soiled gloves into a wastebasket in the trunk
  - Close the trunk

# Picking-up Bottles from the Lab

- Talk to your lab
  - Do they have contactless drop off and pick up?
  - Do they have a drop off or pick up point outside?
- Wear a cloth face covering if you must be within 6ft of someone
- Wear gloves when handling bottles
  - Be mindful of potentially contaminated gloves

# EGLE lab process

- In-person sample deliveries and pickups resumed May 11, 2020
- All deliveries and pick-ups must be
  - Scheduled ahead of time by call 517-335-8184
  - Occur within your 15-minute timeframe
  - Occur outside the main facility at a designated location
- To help protect yourself and lab staff
  - Maintain at least 6ft of separation between delivery persons and staff
  - Do not come to the lab facility if you are sick or have symptoms of COVID-19

# Dropping off Bottles to Residents

- Leave bottles at the door or at a prearranged location
- Stay 6ft away if you need to talk to the resident
- Plan for the unknown; wear your cloth face covering when getting out of the vehicle
  - You don't know if someone will get to close to you
  - There may be kids playing in the yard

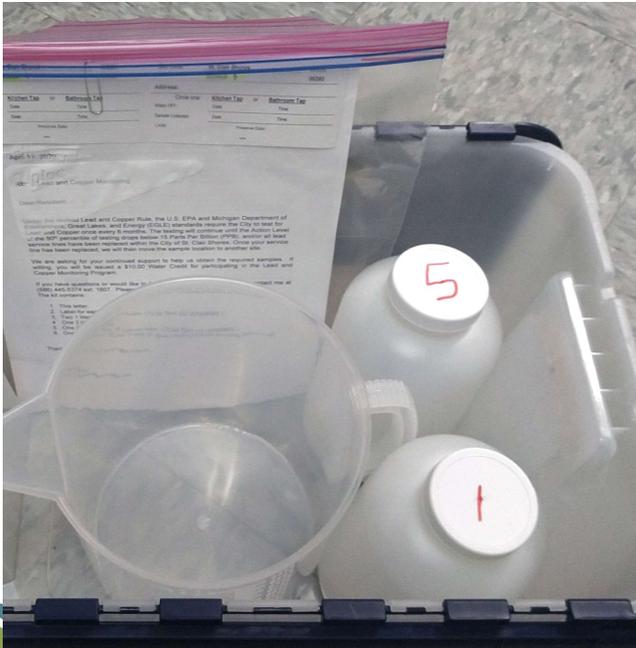
# Picking up Bottles/Bottle kits from Residents

- Have resident leave bottles outside the door or at a prearranged location
- Wear gloves when handling the bottles or bottle kits
  - Be mindful of potentially contaminated gloves
- Stay 6ft away if you need to talk to the resident
- Plan for the unknown; wear your cloth face covering when getting out of the vehicle
  - You don't know if someone will get to close to you
  - There may be kids playing in the yard

# Collecting Samples Inside Residences

- Employees should not be entering homes with symptomatic residents
- Have approval from your supervisor and written approval from the homeowner before entering a home
- Wear a cloth face covering and gloves while collecting samples within a home
  - Plan for the unknown; wear your cloth face covering when getting out of the vehicle
    - You don't know if someone will get too close to you
    - There may be kids playing in the yard or in the home
  - Be mindful of potentially contaminated gloves
- Stay 6ft away from the residents

# Example



# General Online Resources

- Bi-weekly EGLE webinar for all Community Water Supplies
- MiWarn webinars
- Online content
  - Michigan Webpage: [Michigan.gov/Coronavirus](https://Michigan.gov/Coronavirus)
  - EGLE CWS Webpage: [Michigan.gov/CommunityWater](https://Michigan.gov/CommunityWater), then "[COVID 19: Information for Water Operators](#)"
  - EPA has established a website to assist water utilities: "[Water Utility Resources for the COVID-19 Pandemic](#)"

# Resources

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# When You Need Help or Other Resources...

## Lead and Copper Unit

Supervisor	Brandon Onan, <a href="mailto:onanb@michigan.gov">onanb@michigan.gov</a> , 616-307-6736
Rule Specialist	Jeni Bolt, <a href="mailto:boltj@michigan.gov">boltj@michigan.gov</a> , 517-331-5161
School Specialist	Holly Gohlke, <a href="mailto:gohlkeh@michigan.gov">gohlkeh@michigan.gov</a> , 989-705-3422
LCR Monitoring	Heather Jackson, <a href="mailto:jacksonh@michigan.gov">jacksonh@michigan.gov</a> , 517-242-3997
WQP Monitoring	Steve Pennington, <a href="mailto:penningtons@michigan.gov">penningtons@michigan.gov</a> , 517-242-3923

# Session #2

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## Session #2

**Attend both webinars and get 0.3 CECs**

May 21<sup>st</sup> and June 4<sup>th</sup> (1:00pm-2:30pm)

- LCR Monitoring Tips and Tricks
- Elevated Results and Public Education
- Water Quality Parameter Monitoring
- Reporting Basics

# Questions?

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