Pace Analytical Services, LLC
8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

ANALYTICAL RESULTS

Project: GH01780
Pace Project No.: 35831277

Sample: GH01780-02 **Lab ID: 35831277002** Collected: 08/04/23 10:31 Received: 10/02/23 10:35 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8 Pace Analytical Services - Ormond Beach							
Lead	**2.0**	ug/L	1.0	1		10/04/23 19:13	7439-92-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

ANALYTICAL RESULTS

Project: GH01780
Pace Project No.: 35831277

Sample: GH01780-03 **Lab ID: 35831277003** Collected: 08/04/23 10:34 Received: 10/02/23 10:35 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8 Pace Analytical Services - Ormond Beach							
Lead	**3.6**	ug/L	1.0	1		10/04/23 19:15	7439-92-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

QUALITY CONTROL DATA

Project: GH01780
Pace Project No.: 35831277

QC Batch: 954810
QC Batch Method: EPA 200.8
Analysis Method: EPA 200.8
Analysis Description: 200.8 MET No Prep Drinking Water
Laboratory: Pace Analytical Services - Ormond Beach
Associated Lab Samples: 35831277001, 35831277002, 35831277003

METHOD BLANK: 5250243 Matrix: Water
Associated Lab Samples: 35831277001, 35831277002, 35831277003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lead	ug/L	ND	1.0	10/04/23 19:40	

LABORATORY CONTROL SAMPLE: 5250244

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	50	52.8	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 5250239 5250240

Parameter	Units	35831276039 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Lead	ug/L	ND	50	50	54.3	54.8	108	109	70-130	1	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 5250241 5250242

Parameter	Units	35831281013 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Lead	ug/L	3.6	50	50	57.0	56.5	107	106	70-130	1	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

QUALIFIERS

Project: GH01780
Pace Project No.: 35831277

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

Pace Analytical Services, LLC
8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: GH01780
Pace Project No.: 35831277

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
35831277001	**GH01780-01**	EPA 200.8	954810		
35831277002	**GH01780-02**	EPA 200.8	954810		
35831277003	**GH01780-03**	EPA 200.8	954810		

WO# : 35831277

35831277

SUBCONTRACT ORDER
Transfer Chain of Custody

Pace Analytical Services, LLC

GH01780

SENDING LABORATORY

PDC Laboratories, Inc.
2231 W Altorfer Dr
Peoria, IL 61615
(800) 752-6651

RECEIVING LABORATORY

Pace Analytical - Ormond Beach
8 East Tower Circle
Ormond Beach, FL 32174
(386) 676-4842

Sample: GH01780-01
Name: EHS-AR-S-036

Sampled: 08/04/23 10:32
Matrix: Drinking Water
Preservative: HNO3, pH <2

Analysis	Due	Expires	Comments
01-Pb 200.8 DW Schools	08/21/23 16:00	01/31/24 10:32	
01-Turb check	08/21/23 16:00	01/31/24 10:32	

Sample: GH01780-02
Name: EHS-MR-S-037

Sampled: 08/04/23 10:31
Matrix: Drinking Water
Preservative: HNO3, pH <2

Analysis	Due	Expires	Comments
01-Pb 200.8 DW Schools	08/21/23 16:00	01/31/24 10:31	
01-Turb check	08/21/23 16:00	01/31/24 10:31	

Sample: GH01780-03
Name: EPS-R-S-046

Sampled: 08/04/23 10:34
Matrix: Drinking Water
Preservative: HNO3, pH <2

Analysis	Due	Expires	Comments
01-Pb 200.8 DW Schools	08/21/23 16:00	01/31/24 10:34	
01-Turb check	08/21/23 16:00	01/31/24 10:34	

SUBCONTRACT ORDER
Transfer Chain of Custody

Pace Analytical Services, LLC

GH01780

Please email results to Chenise Lambert-Sykes at Chenise.Lambert-Sykes@pacelabs.com

Date Shipped: 9/30/23 Total # of Containers: 3 Sample Origin (State): MO PO #: _____

Turn-Around Time Requested ☐ NORMAL ☒ RUSH Date Results Needed: ASAP

Relinquished By	Date/Time	Received By	Date/Time
[signature]	9/30/23 8:00	JRS/PACE	10-2-23 1035

Sample Temperature Upon Receipt	____ °C
Sample(s) Received on Ice	Y or N
Proper Bottles Received in Good Condition	Y or N
Bottles Filled with Adequate Volume	Y or N
Samples Received Within Hold Time	Y or N
Date/Time Taken From Sample Bottle	Y or N

Pace

Sample Condition Upon Receipt Form (SCUR)

Date and Initials of person:

Project # 1035

Project Manager:

Client:

Examining contents: _____

Label: _____

Deliver: Npl

pH: _____

Thermometer Used: T-409 Date: 10/2/23 Time: 1040 Initials: EAS1

State of Origin: _____ ☐ For WV projects, all containers verified to ≤6 °C

Cooler #1 Temp.°C	23.4 (Visual)	+0.1 (Correction Factor)	23.5 (Actual)	☐Samples on ice, cooling process has begun.
Cooler #2 Temp.°C	24.2 (Visual)	_____ (Correction Factor)	24.3 (Actual)	☐Samples on ice, cooling process has begun.
Cooler #3 Temp.°C	23.8 (Visual)	_____ (Correction Factor)	23.9 (Actual)	☐Samples on ice, cooling process has begun.
Cooler #4 Temp.°C	23.5 (Visual)	_____ (Correction Factor)	23.6 (Actual)	☐Samples on ice, cooling process has begun.
Cooler #5 Temp.°C	24.0 (Visual)	_____ (Correction Factor)	24.1 (Actual)	☐Samples on ice, cooling process has begun.
Cooler #6 Temp.°C	23.5 (Visual)	_____ (Correction Factor)	23.6 (Actual)	☐Samples on ice, cooling process has begun.
Recheck for OOT °C	_____ (Visual)	_____ (Correction Factor)	_____ (Actual)	Time: _____ Initials: _____

Courier: ☑Fed Ex ☐UPS ☐USPS ☐Client ☐Commercial ☐Pace ☐Other: _____

Shipping Method: ☐Standard Overnight ☐First Overnight ☐Priority Overnight ☐Ground ☐International Priority ☐Other: _____

Billing: ☐Recipient ☐Sender ☐Third Party ☐Credit Card ☐Unknown

Tracking # 7003 7806 2608

Custody Seal Present: ☐Yes ☑No Seal properly placed and intact: ☐Yes ☐No Ice: ☐Wet ☐Blue ☐Dry ☑None ☐Melted

Packing Material: ☑Bubble Wrap ☐Bubble Bags ☐None ☐Other: _____

Samples shorted to lab: ☐Yes ☐No (If yes, complete the following)

Shorted Date: _____ Shorted Time: _____

Bottle Quantity / Type:

Chain of Custody:	**Present:** ☐Yes ☐No | **Filled Out:** ☐Yes ☐No ☐N/A | **Relinquished From Pace:** ☐Yes ☐No ☐N/A | **Sampler Name:** ☐Yes ☐No ☐N/A			
	Relinquished To Pace: ☐Yes ☐No ☐N/A | **Sampling Date(s):** ☐Yes ☐No ☐N/A | **Sampling Time(s):** ☐Yes ☐No ☐N/A			
Samples Arrived within Hold Time.	☐Yes	☐No	☐N/A	Comments:
Rush Turnaround Requested on COC.	☐Yes	☐No	☐N/A	Comments:
Sufficient Volume.	☐Yes	☐No	☐N/A	Comments:
Correct Containers Used.	☐Yes	☐No	☐N/A	Comments:
Containers Intact.	☐Yes	☐No	☐N/A	Comments:
Sample Labels Match COC (Sample ID, Date/Time of Collection)	☐Yes	☐No	☐N/A	Comments:
All containers needing acid / base preservation have been checked	☐Yes	☐No	☐N/A	**Preservation Information** Preservative: _____ Date: _____
All containers needing preservation are found to be in compliance with EPA recommendation. Exceptions: Vials, Microbiology, O&G, PFAS	☐Yes	☐No	☐N/A	Lot / Trace: _____ Time: _____ Amount added (mL): _____ Initials: _____
Headspace in Volatile Vials? (>6mm).	☐Yes	☐No	☐N/A	
Trip Blank Present:	☐Yes	☐No	☐N/A	

Comments / Resolutions (use back for additional comments): _____

Qualtrax Document ID: 33786

Pace

Sample Condition Upon Receipt Form (SCUR)

Project # 1035
Project Manager:
Client:

Date and Initials of person:
Examining contents: _____
Label: _____
Deliver: NP1
pH: _____

Thermometer Used: T-409 Date: 10/2/23 Time: 1040 Initials: EAS1

State of Origin: _____ ☐ For WV projects, all containers verified to ≤6 °C

Cooler #1 Temp.°C	23.4 (Visual)	+0.1 (Correction Factor)	23.5 (Actual)	☐Samples on ice, cooling process has begun.
Cooler #2 Temp.°C	24.2 (Visual)		24.3 (Actual)	☐Samples on ice, cooling process has begun.
Cooler #3 Temp.°C	23.8 (Visual)		23.9 (Actual)	☐Samples on ice, cooling process has begun.
Cooler #4 Temp.°C	23.5 (Visual)		23.6 (Actual)	☐Samples on ice, cooling process has begun.
Cooler #5 Temp.°C	24.0 (Visual)		24.1 (Actual)	☐Samples on ice, cooling process has begun.
Cooler #6 Temp.°C	23.5 (Visual)		23.6 (Actual)	☐Samples on ice, cooling process has begun.
Rechock for OOT °C	_____ (Visual)	_____ (Correction Factor)	_____ (Actual)	Time: _____ Initials: _____

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☐Commercial ☐Pace ☐Other: _____

Shipping Method: ☐Standard Overnight ☐First Overnight ☐Priority Overnight ☐Ground ☐International Priority ☐Other: _____

Billing: ☐Recipient ☐Sender ☐Third Party ☐Credit Card ☐Unknown

Tracking # 7003 7806 2600

Custody Seal Present: ☐Yes ☒No Seal properly placed and intact: ☐Yes ☐No Ice: ☐Wet ☐Blue ☐Dry ☒None ☐Melted

Packing Material: ☒Bubble Wrap ☐Bubble Bags ☐None ☐Other:

Samples shorted to lab: ☐Yes ☐No (If yes, complete the following)
Shorted Date: _____ Shorted Time: _____
Bottle Quantity / Type:

Chain of Custody:	**Present:** ☐Yes ☐No | **Filled Out:** ☐Yes ☐No ☐N/A | **Relinquished From Pace:** ☐Yes ☐No ☐N/A | **Sampler Name:** ☐Yes ☐No ☐N/A			
	Relinquished To Pace: ☐Yes ☐No ☐N/A | **Sampling Date(s):** ☐Yes ☐No ☐N/A | **Sampling Time(s):** ☐Yes ☐No ☐N/A			
Samples Arrived within Hold Time.	☐Yes	☐No	☐N/A	Comments:
Rush Turnaround Requested on COC.	☐Yes	☐No	☐N/A	Comments:
Sufficient Volume.	☐Yes	☐No	☐N/A	Comments:
Correct Containers Used.	☐Yes	☐No	☐N/A	Comments:
Containers Intact.	☐Yes	☐No	☐N/A	Comments:
Sample Labels Match COC (Sample ID, Date/Time of Collection)	☐Yes	☐No	☐N/A	Comments:
All containers needing acid / base preservation have been checked.	☐Yes	☐No	☐N/A	**Preservation Information**
All containers needing preservation are found to be in compliance with EPA recommendation: Exceptions: Vials, Microbiology, O&G, PFAS	☐Yes	☐No	☐N/A	Preservative: _____ Date: _____ Lot / Trace: _____ Time: _____ Amount added (mL): _____ Initials: _____
Headspace in Volatile Vials? (>6mm):	☐Yes	☐No	☐N/A	
Trip Blank Present:	☐Yes	☐No	☐N/A	

Comments / Resolutions (use back for additional comments):

Pace

Sample Condition Upon Receipt Form (SCUR)

Project #
Project Manager:
Client:

WO#: 35831277

PM: BTS Due Date: 10/06/23
CLIENT: PACHAZ

Date and Initials of person:
Examining contents:
Label:
Deliver: NA
pH:

Thermometer Used: T-409 Date: 10/2/23 Time: 1040 Initials: EAS

State of Origin:

☐ For WV projects, all containers verified to ≤6 °C

cooler #1 Cooler #1 Temp.°C 23.3 (Visual) +0.1 (Correction Factor) 23.4 (Actual) ☐Samples on ice, cooling process has begun.

Cooler #2 Temp.°C_____(Visual) _____(Correction Factor) _____(Actual) ☐Samples on ice, cooling process has begun.

Cooler #3 Temp.°C_____(Visual) _____(Correction Factor) _____(Actual) ☐Samples on ice, cooling process has begun.

Cooler #4 Temp.°C_____(Visual) _____(Correction Factor) _____(Actual) ☐Samples on ice, cooling process has begun.

Cooler #5 Temp.°C_____(Visual) _____(Correction Factor) _____(Actual) ☐Samples on ice, cooling process has begun.

Cooler #6 Temp.°C_____(Visual) _____(Correction Factor) _____(Actual) ☐Samples on ice, cooling process has begun.

Recheck for OOT °C _____(Visual) _____(Correction Factor) _____(Actual) Time: _____ Initials: _____

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☐Commercial ☐Pace ☐Other:

Shipping Method: ☐Standard Overnight ☐First Overnight ☐Priority Overnight ☐Ground ☐International Priority ☐Other:

Billing: ☐Recipient ☐Sender ☐Third Party ☐Credit Card ☐Unknown

Tracking # 7003 7806 2600

Custody Seal Present: ☐Yes ☑No Seal properly placed and intact: ☐Yes ☐No Ice: ☐Wet ☐Blue ☐Dry ☑None ☐Melted

Packing Material: ☑Bubble Wrap ☐Bubble Bags ☐None ☐Other:

Samples shorted to lab: ☐Yes ☐No (If yes, complete the following)
Shorted Date: _____ Shorted Time: _____
Bottle Quantity / Type:

Chain of Custody:	Present: ☑Yes ☐No | Filled Out: ☑Yes ☐No ☐N/A | Relinquished From Pace: ☐Yes ☐No ☑N/A | Sampler Name: ☐Yes ☐No ☑N/A			
	Relinquished To Pace: ☑Yes ☐No ☐N/A | Sampling Date(s): ☑Yes ☐No ☐N/A | Sampling Time(s): ☑Yes ☐No ☐N/A			
Samples Arrived within Hold Time.		☑Yes	☐No	☐N/A
Rush Turnaround Requested on COC.		☐Yes	☑No	☐N/A
Sufficient Volume		☑Yes	☐No	☐N/A
Correct Containers Used.		☑Yes	☐No	☐N/A
Containers Intact.		☑Yes	☐No	☐N/A
Sample Labels Match COC (Sample ID, Date/Time of Collection)		☑Yes	☐No	☐N/A
All containers needing acid / base preservation have been checked.		☑Yes	☐No	☐N/A
All containers needing preservation are found to be in compliance with EPA recommendation: Exceptions: Vials, Microbiology, O&G, PFAS		☑Yes	☐No	☐N/A
Headspace in Volatile Vials? (>6mm):		☐Yes	☐No	☐N/A
Trip Blank Present:		☐Yes	☐No	☐N/A

Comments: (all rows) Preservation Information — Preservative: _____ Date: _____ Lot / Trace: _____ Time: _____ Amount added (mL): _____ Initials: _____

Comments / Resolutions (use back for additional comments):

PACE ANALYTICAL SERVICES
WWW.PACELABS.COM

REGULATORY PROGRAM (CIRCLE):	NPDES
MORBCA	RCRA
CCDD	TACO: RES OR IND/COMM

CHAIN OF CUSTODY RECORD

SAMPLE COLLECTED IN THE STATE OF MO

Everton B5237060 - 3 resample

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

1 CLIENT	PROJECT NUMBER	PROJECT LOCATION	PURCHASE ORDER #
Terracon Consultants	B5237062	Everton	
ADDRESS	**PHONE NUMBER**	**E-MAIL**	**DATE SHIPPED**
4765 W Junction	417 864-5100	Mandy.Carlson@terracon.com	
CITY / STATE / ZIP	**SAMPLER (PLEASE PRINT)**	**MATRIX TYPES:**	
Springfield, MO 65202	Mandy Carlson	WW- WASTEWATER DW- DRINKING WATER GW- GROUND WATER WWSL- SLUDGE NAS- NON AQUEOUS SOLID LCHT-LEACHATE OIL-OIL SO-SOIL SOL-SOLID	
CONTACT PERSON	**SAMPLER'S SIGNATURE**		
Mandy Carlson			

3 ANALYSIS REQUESTED

4 (FOR LAB USE ONLY)
LOGIN # GH01780
LOGGED BY: SMB
CLIENT:
PROJECT:
PROJ. MGR.:
CUSTODY SEAL #:

2 SAMPLE DESCRIPTION (UNIQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE GRAB	SAMPLE TYPE COMP	MATRIX TYPE	BOTTLE COUNT	PRES CODE (CLIENT PROVIDED)	Method 200.8	Dig Pb	Turb Check	REMARKS
EHS-AR-S-036	8/4/23	1032cm	X		DW	1	6	X			
EHS-MR-S-037	↓	1031cm	X		DW	1	6	X			
EPS-B-S-016		1034cm	X		DW	1	6	X			

CHEMICAL PRESERVATION CODES: 1 – HCL | 2 – H2SO4 | 3 – HNO3 | 4 – NAOH | 5 – NA2S2O3 | 6 – UNPRESERVED | 7 – OTHER

5 TURNAROUND TIME REQUESTED (PLEASE CIRCLE) NORMAL RUSH
(RUSH TAT IS SUBJECT TO PACE LABS APPROVAL AND SURCHARGE)
RUSH RESULTS VIA (PLEASE CIRCLE) EMAIL PHONE
EMAIL IF DIFFERENT FROM ABOVE: PHONE # IF DIFFERENT FROM ABOVE:
DATE RESULTS NEEDED

6 *I understand that by initialing this box I give the lab permission to proceed with analysis, even though it may not meet all sample conformance requirements as defined in the receiving facility's Sample Acceptance Policy and the data will be qualified. Qualified data may NOT be acceptable to report to all regulatory authorities.*
PROCEED WITH ANALYSIS AND QUALIFY RESULTS: (INITIALS)

7		DATE	TIME
RELINQUISHED BY: (SIGNATURE)		8/4/23	231pm
RELINQUISHED BY: (SIGNATURE)			
RELINQUISHED BY: (SIGNATURE)			
RECEIVED BY: (SIGNATURE)			
RECEIVED BY: (SIGNATURE)			
RECEIVED BY: (SIGNATURE)		8.9.23	1530

8 COMMENTS: (FOR LAB USE ONLY)

SAMPLE TEMPERATURE UPON RECEIPT 19.4 °C
TEMPERATURE GUN ID
CHILL PROCESS STARTED PRIOR TO RECEIPT Y OR N
SAMPLE(S) RECEIVED ON ICE Y OR N
SAMPLE ACCEPTANCE NONCONFORMANT REPORT IS NEEDED Y OR N
DATE AND TIME TAKEN FROM SAMPLE

1 **CLIENT**: Client's company name
ADDRESS: Client's mailing address
CITY, STATE, ZIP: Client's city, state and zip code for mailing
CONTACT PERSON: Person to receive results
PROJECT NUMBER: Client's reference to the project or work involved with thesesamples.
PROJECT LOCATION: Client's location of project
PURCHASE ORDER NUMBER: Client's invoicing information
PHONE NUMBER: Client's contact phone number
E-MAIL: Client's e-mail for correspondence and final report
DATE SHIPPED: Month, date and year samples were shipped or delivered to the lab
SAMPLER: Printed name of sample collector
SAMPLER'S SIGNATURE: Signature of sample collector
REGULATORY PROGRAM: Circle regulatory program if applicable.
STATE WHERE SAMPLES COLLECTED: Enter the state if different from client address

2 **SAMPLE DESCRIPTION**: The unique sample description you want to appear on the analytical report
DATE COLLECTED: Date sample was collected. For composite samples, this is typically the date when the last aliquot was added.
TIME COLLECTED: Time sample was collected. For composite samples, this is typically the time when the last aliquot was added.
SAMPLE TYPE: Place a check mark in the box marked "GRAB" if the sample was collected at one time from one specific location. Place a check mark in the box marked "COMP" if the sample is a composite of samples collected at one or more times or locations and combined to make one sample.
MATRIX TYPE: From field above. If "OTHER" please identify
BOTLE COUNT: Total number of containers submitted for the samples
PRESERVATION CODE: Indicate bottle preservative using the codes on the front of the COC for non-PACE bottles, provided by the client.

3 **ANALYSIS REQUESTED**: Write the analysis name (or an abbreviation), the name of a group of tests, or the method number you would like us to perform. Examples are BOD, TCLP Metals, PCBs, Method 624, etc. Place a check mark in the small boxes that correspond to the sample(s) on which you want these tests performed.

REMARKS: List special instructions about the sample here. This space can also be used for listing additional analyses, or to request an extra copy of the report to be sent to an alternate person/address.

4 To be completed by laboratory personnel.

5 **TURNAROUND TIME REQUESTED**: Circle "NORMAL" if you want routine 10 working day TAT. If faster results are needed circle "RUSH", indicated the due date requested, and, if possible, call the lab in advance to schedule this work. Surcharges may apply for non-routine turnaround times.
RUSH RESULTS VIA: Choose method by which you would like to receive the RUSH results by circling either "PHONE" or E-MAIL". List the appropriate number/e-mail if different from that listed in section 1.

6 Place your initials on the line to give the lab permission to proceed with analysis <u>without</u> calling you regarding a sample nonconformance. If the sample does not meet the Sample Acceptance Policy requirements then the appropriate case narrative and/or data qualifiers will be added to the corresponding analysis and may <u>not</u> be acceptable to use for regulatory purposes. Contact your project manager for further information or to obtain a copy of the Sample Acceptance Policy.

Summarized Sample Acceptance Policy Requirements:

- Proper, full and completed chain-of-custody documentation
- Readable unique sample container identification written in indelible ink
- Appropriate sample container
- Sufficient sample volume to perform requested tests
- Received within required holding time
- Received within temperature preservation requirements
- Sample containers received in good condition (not leaking or broken)
- Any custody seal intact
- Properly preserved, and
- No headspace in volatile water samples

A data qualifier and/or case narrative will be added to the final test report when the above sample acceptance requirements are not met.
BOX 6 CANNOT BE USED FOR DRINKING WATER COMPLIANCE SAMPLES.

7 **RELINQUISHED BY/RECEIVED BY:** This form **<u>must be signed</u>** each time the sample(s) changes hands. Chain-of-Custody seals are available upon request if needed.

8 To be completed by laboratory personnel.

Sample Acceptance Policy – Receiving facility's specific policy available from your project manager.

SERVING YOU IN THE FOLLOWING LOCATIONS

2231 W Altorfer Dr
Peoria, IL 61615
309-692-9688

944 Anglum Road
Hazelwood, MO 63042
314-432-0550

1805 W Sunset St.
Springfield, MO 65807
417-964-8924

4314-A Crystal Lake Rd
McHenry, IL 60050
815-344-4044

Thank you for using Pace Analytical Services, LLC
Please call 800-752-6651 if you have any questions about completing this form.

Terracon

APPENDIX D

Missouri Revised Statues – 160.077

Mo. Rev. Stat. § 160.077

Section 160.077 - v

1. This section shall be known and may be cited as the "Get the Lead Out of School Drinking Water Act".

2. As used in this section, the following terms mean:

(1) "Department", the Missouri department of health and senior services;

(2) "Disadvantaged school district", any school district that serves students from a county in which at least twenty-five percent of the households in such county are below the federal poverty guidelines updated periodically in the Federal Register by the U.S. Department of Health and Human Services under the authority of 42 U.S.C. Section 9902 (2), as amended, or any school district in which more than seventy percent of students in the district qualify for a free or reduced price lunch under the federal Richard B. Russell National School Lunch Act, 42 U.S.C. Section 1751 et seq.;

(3) "Drinking water outlet", a potable water fixture that is used for drinking or food preparation. "Drinking water outlet" includes, but is not limited to:

(a) A water fountain, faucet, or tap that is used or potentially used for drinking or food preparation; and

(b) Ice-making and hot drink machines;

(4) "First draw", a two-hundred-fifty-milliliter sample immediately collected from a drinking water outlet that has been turned on after a stagnation period of at least eight hours;

(5) "Parent", a parent, guardian, or other person having control or custody of a child;

(6) "Private school", the same definition as in section 166.700;

(7) "Public school", the same definition as in section 160.011;

(8) "Remediation", decreasing the lead concentration in water from a drinking water outlet to less than five parts per billion without relying solely on flushing practices, or using methods such as the replacement of lead-containing pipes, solder, fittings, or fixtures with lead-free components. Flushing as a stand alone action shall not be considered remediation;

(9) "School", any public school, private school, or provider of an early childhood education program that receives state funding.

3. Beginning in the 2023-24 school year and for each subsequent school year, each school shall provide drinking water with a lead concentration level below five parts per billion in sufficient amounts to meet the drinking water needs of all students and staff as provided in this section.

4.

(1) On or before January 1, 2024, each school shall:

(a) Conduct an inventory of all drinking water outlets and all outlets that are used for dispensing water for cooking or for cleaning cooking and eating utensils in each of the school's buildings;

(b) Develop a plan for testing each outlet inventoried under paragraph (a) of this subdivision and make such plan available to the public; and

(c) Upon request, provide general information on the health effects of lead contamination and additional informational resources for employees and parents of children at each school.

(2) Each school shall make buildings housing early childhood education programs, kindergartens, and elementary schools the priority when complying with paragraphs (a) and (b) of subdivision (1) of this subsection.

(3) Before August 1, 2024, or the first day on which students will be present in the building, whichever is later, each school shall:

(a) Perform all testing as required by subsection 5 of this section and within two weeks after receiving test results, make all testing results and any lead remediation plans available on the school's website;

(b) Remove and replace any drinking water coolers or drinking water outlets that the United States Environmental Protection Agency has determined are not lead-free under the federal Lead Contamination Control Act of 1988, as amended; except the school shall not be required to replace those drinking water outlets or water coolers that tested under the requirements of this section and have been determined to be dispensing drinking water with a lead concentration less than five part per billion; however, such drinking water outlet or water cooler shall be subject to all testing requirements and shall not be excluded from testing under subsection 10 of this section.

(4) If testing indicates that the water source is causing the contamination and until such time that the source of the contamination has been remediated, the school shall:

(a) Install a filter at each point at which the water supply enters the building;

(b) Install a filter that reduces lead in drinking water on each water outlet inventoried under paragraph (a) of subdivision (1) of this subsection to ensure lead concentrations are below five parts per billion; or

(c) Provide purified water at each water outlet inventoried under paragraph (a) of subdivision (1) of this subsection.

(5) If testing indicates that the internal building piping is causing the contamination and until such time that the source of the contamination has been remediated, the school shall:

(a) Install a filter that reduces lead in drinking water on each water outlet inventoried under paragraph (a) of subdivision (1) of this subsection to ensure lead concentrations are below five parts per billion; or

(b) Provide purified water at each water outlet inventoried under paragraph (a) of subdivision (1) of this subsection.

(6) If a pipe, solder, fitting, or fixture is replaced as part of remediation, the replacement shall be lead-free, as such term is defined in 40 CFR 143.12, as amended.

(7) If a test result exceeds five parts per billion, the affected school shall:

(a) Contact parents and staff via written notification within seven business days after receiving the test result. The notification shall include at least:

a. The test results and a summary that explains such results;

b. A description of any remedial steps taken; and

c. A description of general health effects of lead contamination and community specific resources; and

(b) Provide bottled water if there is not enough water to meet the drinking water needs of the students, teachers, and staff.

(8) School districts shall submit such annual testing results to the department.

(9) This subsection shall not be construed to prevent a school from conducting more frequent testing than required under this section.

5.

(1) Before August 1, 2024, or the first day on which students will be present in the building, whichever is later, and annually thereafter, each school shall conduct testing for lead by first-draw and follow-up flush samples of a random sampling of at least twenty-five percent of remediated drinking water outlets until all remediated sources have been tested as recommended by the 2018 version of the United States Environmental Protection Agency's "Training, Testing, and Taking Action" program. The testing shall be conducted and the results analyzed for both types of tests by an entity or entities approved by the department.

(2) If, in the ten years prior to the 2023-24 school year, a fixture tested above five parts per billion for lead, such fixture does not need to be repeat tested for lead, but instead remediation shall begin on such fixture.

6.

(1) In addition to the apportionments payable to a school district under chapter 163, the department of natural resources, with support from the department of elementary and secondary education and the department of health and senior services, is hereby authorized to apportion to any school additional funding for the filtration, testing, and other remediation of drinking water systems required under this section, subject to appropriation.

(2) To the extent permitted by federal law, a school district may seek reimbursement or other funds for compliance incurred under this section under any applicable federal law

including, but not limited to, the America's Water Infrastructure Act of 2018 and the Water Infrastructure Finance and Innovation Act of 2014, 33 U.S.C. Section 3901 et seq.

(3) Disadvantaged school districts shall receive funding priority under this subsection.

7. The department, in conjunction with the department of elementary and secondary education, shall publish a report biennially based on the findings from the water testing conducted under this section. Such report shall be published on the department of natural resources website.

8. For public schools, the department shall ensure compliance with this section. Each school district shall be responsible for ensuring compliance within each school within the school district's jurisdiction.

9. No school building constructed after January 4, 2014, as provided in the federal Reduction of Lead in Drinking Water Act (42 U.S.C. Section 300g-6), as amended, shall be required to install, maintain, or replace filters under paragraph (c) of subdivision (1) of subsection 4 of this section.

10. A school that tests and does not find a drinking water source with a lead concentration above the acceptable level as described in subsection 3 of this section shall be required to test only every five years.

11. The department may promulgate all necessary rules and regulations for the administration of this section. Any rule or portion of a rule, as that term is defined in section 536.010, that is created under the authority delegated in this section shall become effective only if it complies with and is subject to all of the provisions of chapter 536 and, if applicable, section 536.028. This section and chapter 536 are nonseverable and if any of the powers vested with the general assembly pursuant to chapter 536 to review, to delay the effective date, or to disapprove and annul a rule are subsequently held unconstitutional, then the grant of rulemaking authority and any rule proposed or adopted after August 28, 2022, shall be invalid and void.

§ 160.077, RSMo

Added by 2022 Mo. Laws, SB 681,s A, eff. 8/28/2022.

Terracon

APPENDIX E

3T's for Reducing Lead in Drinking Water in Schools and Child Care Facilities

Explore with us

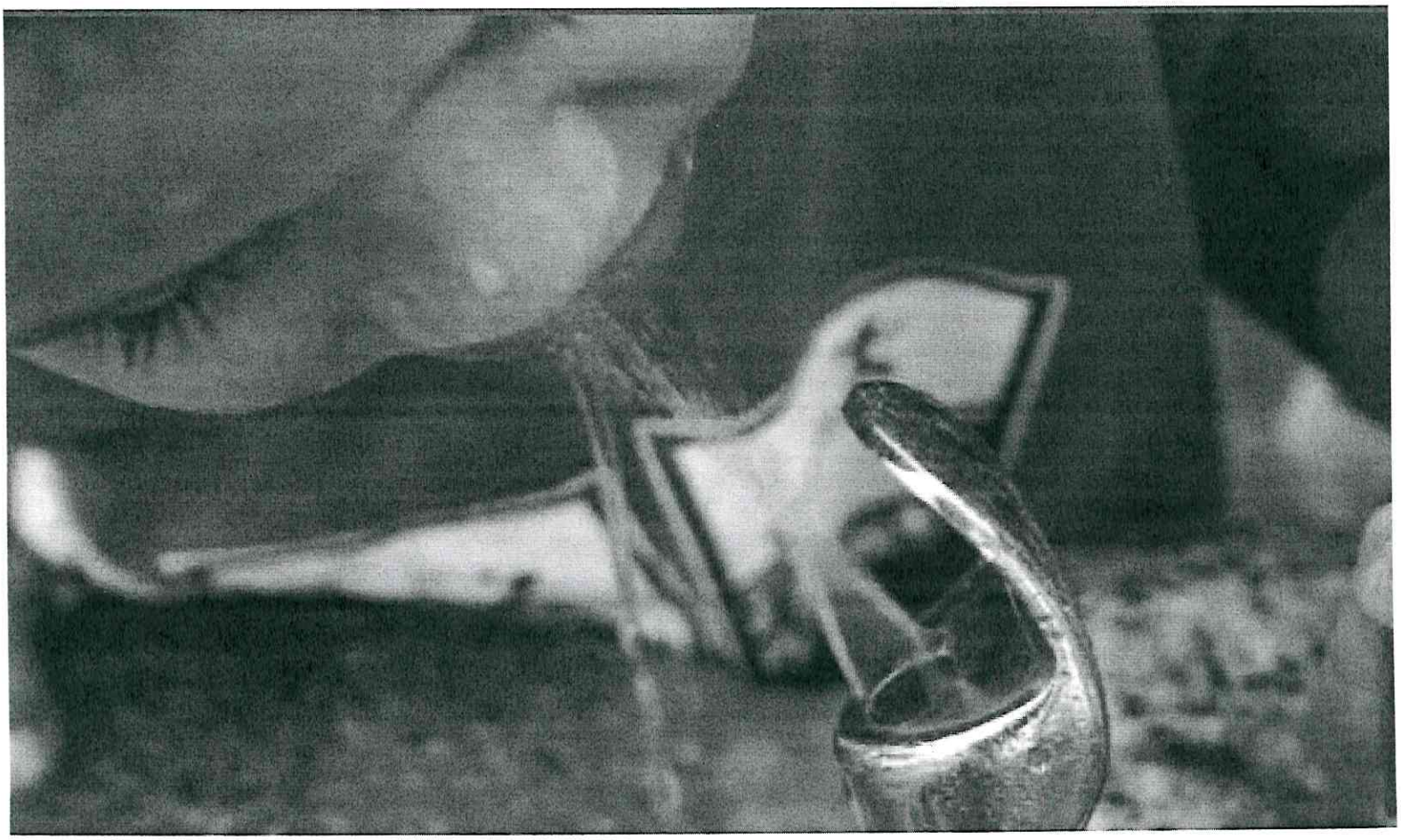
EPA

OFFICE OF GROUND WATER AND DRINKING WATER

3Ts for Reducing Lead in Drinking Water in Schools and Child Care Facilities

A Training, Testing, and Taking Action Approach

Revised Manual



This 2018 version of *3Ts for Reducing Lead in Drinking Water in Schools and Child Care Facilities* is a revision of the October 2006 version. The U.S. Environmental Protection Agency (EPA) is in the process of revising the Lead and Copper Rule (LCR). The requirements discussed in this document are based on the current LCR.

Please visit **https://epa.gov/safewater/3Ts** for additional information.

Disclaimer

This manual contains recommendations on how to address lead drinking water in schools and child care facilities; these recommendations are suggestions only and are not requirements. This manual does, however, also contain an overview of federal regulatory requirements concerning lead in drinking water that apply to public water systems. Some schools and child care facilities are regulated as "public water systems" but many schools and child care facilities receive water from a public water system and are not regulated under the Safe Drinking Water Act. The statutory provisions and regulations described in this document contain binding requirements that may apply to the school or child care facility if they are a public water system. In addition, this document describes federal statutory requirements that apply to all repairs and new installations of pipes, fittings, and fixtures in facilities providing water for human consumption. The general description here does not substitute for those laws or regulations; nor is this document a regulation itself. Also, many states (or tribes) and localities have different, more stringent requirements than EPA's, some of which may apply to schools and child care facilities even if they are not a public water system. Therefore, schools and child care facilities should not rely solely on this guidance for compliance information.

Office of Water (4606M)
EPA 815-B-18-007
October 2018

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Introduction

This document is intended to serve as a resource to help schools and child care facilities implement a voluntary program for reducing lead in drinking water. The approach is focused on three key steps:

- **TRAINING** school and child care officials to raise awareness of the 3Ts program and summarize the potential causes and health effects of lead in drinking water.
- **TESTING** drinking water in schools and child care facilities to identify potential lead problems.
- **TAKING ACTION** to reduce lead in drinking water.

Children are most susceptible to the effects of lead because their bodies are still undergoing development and they tend to absorb more lead from the environment. The adverse health effects of lead exposure include reduced IQ and attention span, learning disabilities, poor classroom performance, hyperactivity, behavioral problems, impaired growth, and hearing loss. **The only way to know if there is lead in drinking water is to test.**

There is no federal law requiring testing of drinking water in schools and child care facilities, except for schools and child care facilities that own and/or operate their own public water supply and are thus regulated under the Safe Drinking Water Act (SDWA). Some states, tribes, and local jurisdictions have established their own laws, regulations, or guidance for testing drinking water lead levels in schools and/or child care facilities. School and child care facilities should reach out to their state to find out what laws or regulations may apply to them. EPA suggests that school and child care facilities implement programs for reducing lead in drinking water as part of their overall plans for maintaining healthy learning environments. Safe and healthy environments foster healthy children and may improve student performance.

WHAT IS YOUR WATER SOURCE?

It is important to be familiar with the source of your drinking water. Some schools and child care facilities are served by nearby public or private water systems, while others operate their own water systems and are regulated under the Safe Drinking Water Act.

Facilities that operate their own drinking water systems are required to comply with of regulations under the Safe Drinking Water Act, including regulations pertaining to lead in drinking water.

Whether or not your facility is classified as a public water system, it is important to establish a program that includes routine testing and evaluations to limit lead contamination, as well as routine practices to ensure the you are providing safe drinking water to students and staff.

Even when water entering a facility meets all federal and state public health standards for lead, older plumbing materials in schools and child care facilities may contribute to elevated levels lead in their drinking water. The potential for lead to leach into water increases the longer the water remains in contact with leaded plumbing materials. As a result, facilities with intermittent water use patterns, such as schools, are more likely to have elevated lead concentrations in

drinking water. Implementing the 3Ts will help schools and child care facilities to identify potential problems with plumbing systems and materials so that targeted remediation efforts can be taken. This document will also assist you in communicating with parents, teachers, and the public. Transparency and communication are key to developing a successful program for reducing lead in drinking water.

In addition to this document, there are a number of supplemental resources included as appendices, which contain information and tools to support 3Ts programs.

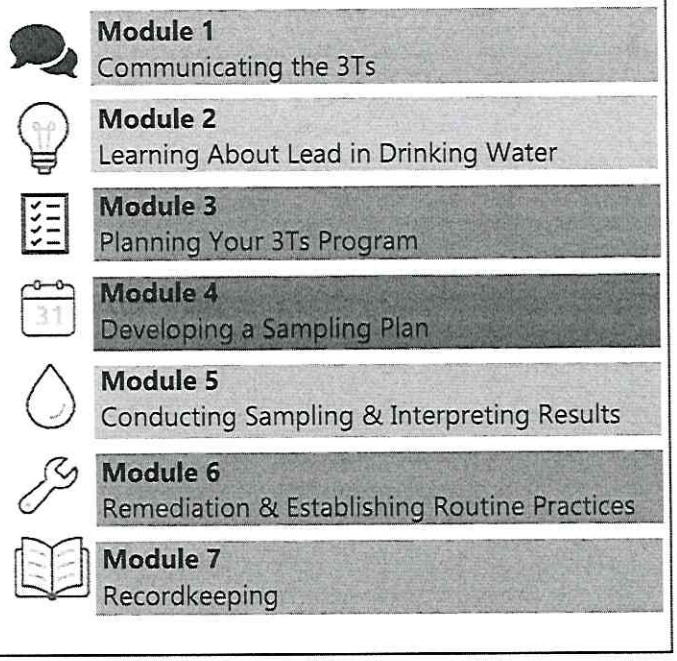
Access the full toolkit here: **https://epa.gov/safewater/3Ts**

- **Appendix A**: Glossary of Terms
- **Appendix B**: Lead Water Coolers Banned in 1988
- **Appendix C**: Develop a Code System for Samples
- **Appendix D**: Detailed Fixture Evaluation
- **Appendix E**: Preservation of Samples
- **Appendix F**: Example Sampling Field Form
- **Appendix G**: Plumbing Profile

3Ts Toolkit

https://epa.gov/safewater/3Ts

Build a team and make a plan! Protecting school and child care facility drinking water is a group effort and you will need to have a plan for who you will work with, how you will test, and how you will address elevated lead that may be found. Make sure you are transparent in your communications with your community. The 3Ts toolkit includes modules and helpful resources you can use to implement a successful program!



Establishing a Lead Testing Program – 3Ts Checklist

The 3Ts toolkit assists you with the steps needed to create a program to reduce children's exposure to lead in drinking water. Utilizing the 3Ts toolkit along with clear communication will help ensure a successful 3Ts Program.

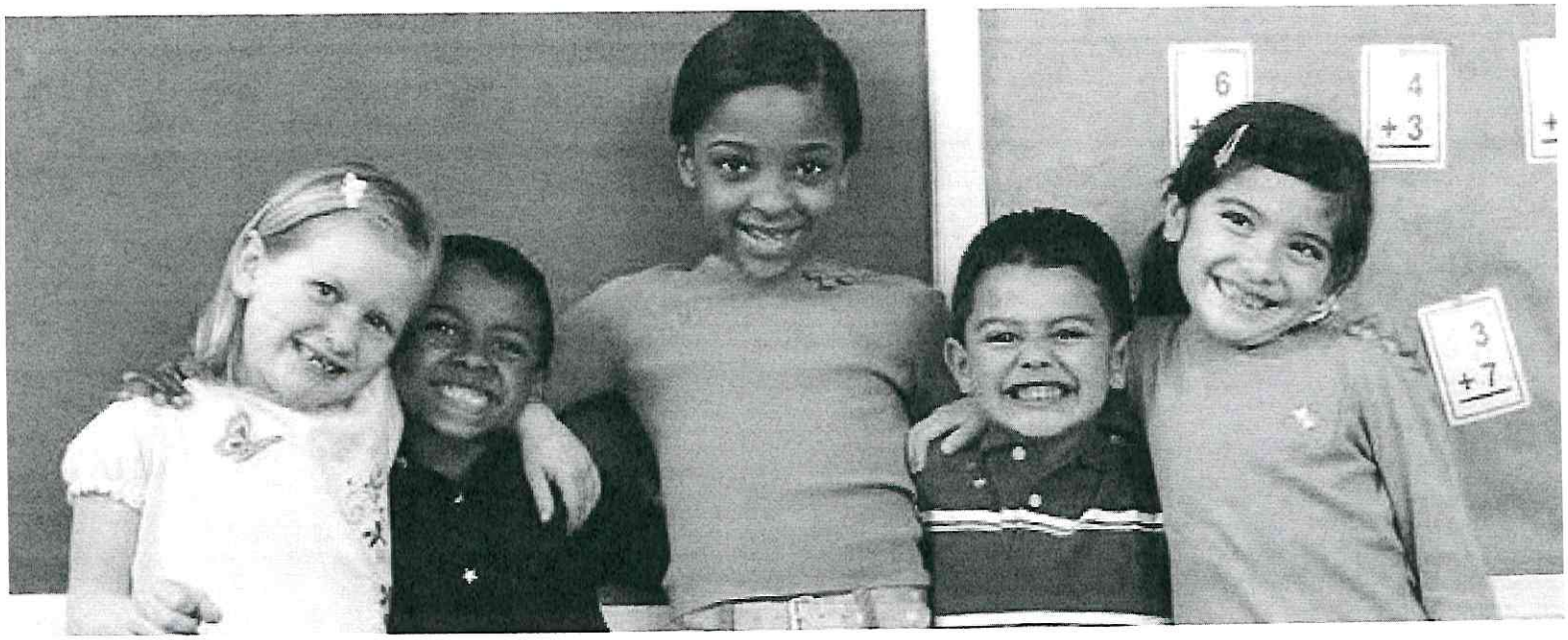
Before sampling, facilities should establish a plan on how they will respond to their sample results to protect the school or child care facility population from lead in drinking water. You should consider potential partners, funding options, and how frequent testing will occur.

Communication Plan: Telling parents and staff about your lead monitoring program will demonstrate your commitment to protecting children and staff health.

Communicating early and often about your testing plans, results, and next steps will build confidence in your facility's ability to provide a safe environment for students and staff.

The steps in the checklist are intended to help you learn about lead in drinking water, develop a program, test for lead, communicate the results, and take remediation actions where needed. The checklist includes things to consider in the TRAINING, TESTING, and TAKING ACTION sections of the 3Ts, as well as important COMMUNICATION and RECORDKEEPING items. This checklist is designed to provide easy-to-follow steps. You may not have to complete all the steps or follow the steps in the exact order presented to have an effective program. Your 3Ts program should be tailored for your school or child care facility.

Find the 3Ts Checklist here:
https://epa.gov/safewater/3Ts



Module 1: Communicating the 3Ts

Developing a Communication Plan

At the heart of an effective communication plan is preparation and coordination to deliver information swiftly, professionally and consistently. Telling parents and staff about your 3Ts Program will demonstrate your commitment to protecting children and staff health. Communicating early and often about your testing plans, results, and next steps will build confidence in your ability to provide a safe environment.

When developing your communication plan:

- Take the initiative to communicate with your community
- Make sure your information is honest, accurate, and comprehensive
- Speak with one consistent voice
- Anticipate questions and concerns and address them proactively
- Be positive and forthcoming
- Keep your audiences up-to-date as new information becomes available

Helpful Tip...

To support engagement with the community and build trust, it is important to begin communication *before testing starts* and be open and transparent throughout the process.

Follow these recommended steps and utilize the templates in *3Ts Toolkit* to develop a successful and proactive communication plan.

STEP 1: Get Your Team Together

Assemble a team with technical and communications expertise. Draw from internal resources as well as professionals and leaders in your community. Designate a spokesperson to make announcements, respond to questions, and conduct interviews in order to ensure the accuracy and consistency of public information.

You can learn more about other roles in your lead testing program in the Assigning Roles Section.

Fill out the chart below to get started building your team. Note, some people may have more than one role.

Description	Lead	Back-Up
3Ts Program Communication Contact: This person will act as the point of contact for your 3Ts Program and help coordinate the communication efforts.		
Partner Liaison Contact: This person will communicate with partners as the 3Ts Program progresses to ensure everyone is kept in the loop.		
Website and Social Media Contact: This person will make sure websites and social media stay up to date with the latest information.		
Public Hotline: Will you have a website or hotline for people to use to get more information? This person can monitor this to ensure questions and concerns are being responded to.		
Communication of Lead Health Risks: You should work with your health department to communicate lead health risks and information about blood lead testing for children.		

STEP 2: Create a Contact List

Having names, phone numbers, and email addresses at your fingertips is vital, especially when a quick response is necessary. Create a contact list and update it regularly. It should include task force members as well as fact-finding and communications contacts, including:

- School Superintendent
- School Board Members
- Civic Leaders
- Local Public Health Officials
- Head of Building Maintenance/Custodial Services
- State Department of Education
- State Department of Health
- State Drinking Water Program
- EPA Regional Office
- Utility/Water Supplier
- Media (Newspaper, TV, Radio, Web, and Newswire Outlets)

STEP 3: Identify Your Target Audiences

Generally, there are six primary audiences or interested parties involved in the control of lead in drinking water.

1. **School or Child Care Facility Community:** Employees, students, and parents should be informed and involved from the beginning of the process.
2. **Building Community:** The building community includes people other than those included in the school or child care facility community who may use the building for other functions (e.g., local community groups, school board members). Members of the building community probably do not utilize the building as frequently as the members of the school or child care facilities community, but they should still be kept informed and up-to-date regarding lead in the drinking water.
3. **Larger Community:** The larger community may consist of local residents and businesses in the school or child care facility's district or town. The local and regional media can serve as a conduit for information for the larger local community. It is important that you be prepared to generate accurate news releases. The spokesperson or task force should be prepared to respond to interview requests with accurate and consistent information.
4. **Local Community Organizations:** Local health officials, such as health officers, environmental health specialists, doctors, and nurses, can help you and your community understand health risks associated with elevated lead levels in drinking water. Local environmental community organizations may have an interest and potential assistance or resources for schools and child care facilities. The same may apply for the Lead Poisoning Prevention Program.
5. **State Drinking Water Programs:** State drinking water programs are responsible for ensuring that public water systems comply with the state and federal regulations regarding lead in drinking water. States may be able to provide guidance on or technical assistance with communication plan, health risks, and identifying other lead sources.
6. **Drinking Water Community:** Public water systems comprise the regulated drinking water community, and they are responsible for complying with all national and state drinking water standards. The public water system that serves your facility can provide technical information to support your program and can provide information to the community about what the system is doing to minimize lead in drinking water.

STEP 4: Know Your Methods of Communication

The public notification methods described below can be applied independently or in combination to communicate about drinking water issues and the meaning of sampling program results.

Important note: You should also plan how you will provide information in other languages, as appropriate, or provide a contact name for non-English speakers to get more information.

Methods of Communication
Press Release: A press release in the local newspaper or on local TV and radio stations can potentially reach a broad range of people. It is important that the release inform readers of how to obtain the sampling results and other lead information (as it pertains to drinking water) and include the phone number of the point(s) of contact.
Letters/Fliers: Letters or fliers represent a direct and effective method of communicating 3Ts Program activities to parents/guardians and other members of a school, child care facility, or building community.
Mailbox or Paycheck Stuffers: Mailbox and paycheck stuffers represent a direct and effective method of communicating 3Ts Program activities to your employees. Stuffers would contain information similar to that contained in a press release or letter/flier.
Staff Newsletter: A notice contained in a staff newsletter is another option for directly and effectively communicating information about the 3Ts Program to employees.
Presentations: Providing presentations at facility-related meetings can also serve as an effective means of communication. Relevant events include meetings of PTAs, faculty, and the school board.
Email and Websites: Electronic communications are convenient for many parents. Websites can be updated frequently to quickly convey new information. Consider creating a separate email address for the 3Ts Program and providing it on the website and outreach materials. Email provides a quick, easy method for parents to ask questions, but responses must be timely to be effective.
Social Media: Updates on the status of the 3Ts Program and information on regular activities can be provided to the public with ease via official social media accounts (e.g., Facebook, Twitter).

STEP 5: Identify Times for Communicating

Timely dissemination of communication materials is of the utmost importance. Public communication efforts are less complicated and generate less conflict if those potentially affected are notified in advance of important issues and events.

At a minimum, EPA recommends that schools and child care facilities provide information to members of the local community, building community, and the larger community (if appropriate) at the following times:

- Before the lead in drinking water sampling program begins
- After obtaining the results of testing:
  - As soon as the results are available
  - When/if corrective measures are decided upon
  - If no corrective measures are appropriate because the lead levels are low
- In response to periodic interest in the program

STEP 6: Start Communicating!

Remember to communicate throughout your 3Ts Program, and work with partners and your communication team to be proactive and transparent. Recommended steps to help make your program a success:

- Launch an ongoing campaign of education and awareness, capitalizing on a variety of communication vehicles
- Prepare a fact sheet so that your spokesperson has accurate, up-to-date information about the status of your plumbing system and program.
- Post information on your website in a central location
- Make sure your communication materials include:
  - Details about the nature of the 3Ts Program
  - The results of the sampling program and plans for correcting any identified problems
  - Information on the public health effects and risks posed by lead in drinking water and the significance of lead other sources of lead such as food, air, dust, and soil
  - How and where individuals may seek blood-lead level testing if they are concerned
  - How families can increase their awareness of potential lead exposure in their homes and elsewhere

- Information about state-certified laboratories that can test home water for lead and other contaminants

Don't forget to maintain a record!

It is important to keep an ongoing record of public outreach and communication activities. By documenting outreach and the public's response, you can learn how to improve upon your public communication plan. For example, it might be helpful to keep a running log of questions received from the community that could be addressed in future communications.

Keep copies of past communication materials and dates they were sent out. Strong recordkeeping can prove to be helpful in illustrating what steps you have taken to notify the public of testing efforts and results.

Additional Resources

View the 3Ts toolkit page for more resource to help you:

- Get your team together
- Create a contact list
- Identify your target area
- Know your methods of communication
- Identify timing for communication
- Start communicating!

All materials can be found here: **https://www.epa.gov/safewater/3Ts**

Module 2: Learning About Lead in Drinking Water

Health Effects of Lead

Lead is a toxic metal that is harmful to human health. There is no safe blood lead level for children. In the human body, toxic lead can substitute for healthy calcium, which is a mineral that strengthens the bones. Lead is carried in the bloodstream and can harm the nervous system and brain. What is not excreted is absorbed into the bones, where it can collect for a lifetime.

> The only way to determine a child's lead level is to have the child's blood tested. Contact a health provider to learn more about blood lead testing.

Young children are especially susceptible to lead exposure, because of their frequent hand-to-mouth activity, and their metabolism—their bodies absorb metals at a higher rate than the average adult does. Children's nervous systems are still undergoing development and thus are more vulnerable to the effects of toxic agents.

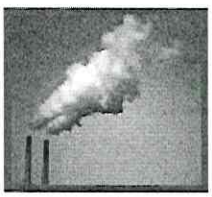
Pregnant and nursing staff should also be aware of the harmful risks of lead exposure to nursing infants and the developing fetuses of pregnant women. Mothers who have had exposure to lead in the past may store lead in their bones. Lead may be released from bones during pregnancy and lactation. Lead in drinking water can be a significant contributor to overall exposure to lead, particularly for infants whose diet consists of liquids made with water, such as baby food, juice, or formula.

Lead can affect almost every organ and system in the body. The central nervous system is particularly sensitive to lead, especially in children. Lead also damages the kidneys and the reproductive system. Even low blood levels of lead (those below 5 micrograms per deciliter (µg/dL)) have been associated with reduced IQ and attention span, learning disabilities, poor classroom performance, hyperactivity, behavioral problems, impaired growth, and hearing loss. Because childhood lead exposure often occurs with no immediate symptoms, it frequently goes unrecognized. The degree of harm from lead exposure depends on a number of factors including the frequency, duration and level of the exposure(s) and individual susceptibility factors (e.g., age, previous exposure history, nutrition, and health). In addition, the degree of harm depends on one's total exposure to lead from all sources in the environment—air, soil, dust, food, paint, consumer products, and water.

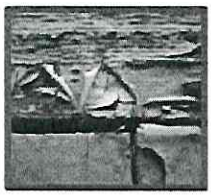
Sources of Lead

Lead is distributed in the environment through both natural and man-made means. Sources of lead exposure include the following:

- **Lead-based paint**. The most common sources of lead exposure for children are chips and particles of deteriorated lead paint. Although children may be exposed to lead from paint directly by swallowing paint chips, they are more often exposed to lead in house dust or soil contaminated by leaded paint. Lead paint chips can be ground into tiny pieces that become part of the dust and soil in and around homes. This usually occurs when leaded paint deteriorates or is subject to friction or abrasion (as on doors, windowsills, and window wells). In addition, lead can be dispersed when paint is disturbed during demolition, remodeling, paint removal or preparation of painted surfaces for repainting.
- **Lead in water**. Typically, lead in water occurs through corrosion of plumbing products containing lead.
- **Lead in the air** typically comes from industrial activities.
- **Lead in soil.** In most cases, lead deposits in soils around roadways and streets and homes come from past emissions from automobiles using leaded gas, together with lead paint chips and dust.
- **Lead from industrial activities.** Industrial workers can bring lead home on their clothes and shoes.
- **Lead in consumer products and food.** Lead may be found in some imported candies, medicines, dishes, toys, jewelry, and plastics.

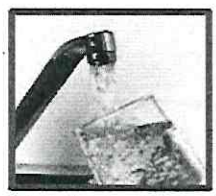

Air


Consumer Products


Paint


Soil


Industry


Drinking Water

The U.S. government has taken important steps over the past several decades to dramatically reduce new sources of lead in the environment:

- Banning the manufacture and sale of leaded paint.
- Phasing out lead additives in gasoline.
- Encouraging the phase-out of lead seams in food cans.
- Banning the sale of plumbing for drinking water that are not "lead-free."
- Limiting lead content in children's products.
- Banning lead-lined water coolers.
- Regulating lead in the nation's drinking water systems

How Lead Gets in Drinking Water

Source Water

Lead is rarely present in the source water for the nation's drinking water supplies (i.e., untreated water from streams, rivers, lakes, or underground aquifers that is used to supply private wells and public drinking water). While lead can enter source water from contaminated runoff or water pollution, treatment plant technologies can remove lead from these sources.

Through Corrosion

Corrosion can release lead from pipes, solder, fixtures, and other plumbing materials that the water comes in contact with on its way from the water treatment system to the tap. The extent to which corrosion of plumbing materials occurs can affect the amount of lead that is present in the drinking water. Most lead in school and child care facility drinking water results from corrosion of older plumbing materials containing lead. Interior lead solder (commonly used until 1988) and lead pipe and lead solder, leaded brass fittings, valves, and various drinking water outlets (e.g., water fountains and faucets) that contain lead materials are the primary contributors. It is also important to note that brass plumbing components can contain lead.

The occurrence and rate of corrosion depend on the nature of the source water, the corrosion control practices at the water system, and the age of the plumbing materials in the building. For information on how chemical and physical conditions can be controlled to reduce lead in drinking water, contact the state drinking water program, which is typically housed in the state department of health or the department of environmental protection.

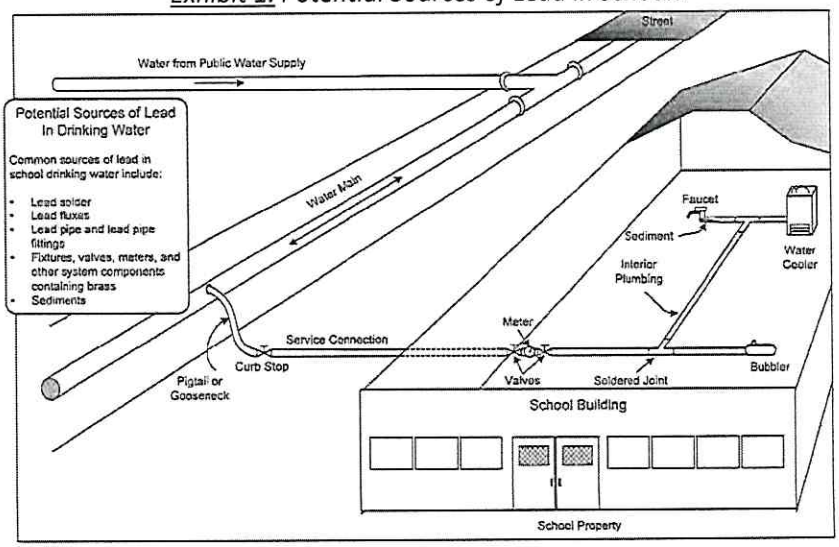
Particulate Lead

Particles of lead in drinking water, may result from physical corrosion of lead distribution system and interior plumbing components. Physical disturbances (e.g., construction), pipe replacement, and connection of new fixtures can cause the release of lead particles from system and plumbing components. This release can result in temporary, but significant, increases of lead levels in the water. Lead particles may also collect in the low-lying sections of pipe or behind faucet and fixture screens, increasing risk of exposure. Not all analysis methods account for particulate lead. For example, some field analyzer methods are not designed to account for particulate lead. See Selecting a Laboratory for Sample Analysis for more information on laboratory analysis of lead in water.

Your Facility and the Public Water System Relationship

As illustrated in Exhibit 1 below, once the water enters the distribution system – the network of pipes that carry water to homes, businesses, schools, and child care facilities in the community – the water may come into contact with lead. Some communities have lead components in their distribution systems, such as lead joints in cast iron mains, service connections (or service lines), and goosenecks or pigtails, which connect the water main to service lines. These components may be owned by the water supplier, or they may be owned by the school or child care facility. In addition, the drinking water may come into contact with plumbing materials that contain lead once the water enters the building.

Exhibit 1. Potential Sources of Lead in Schools



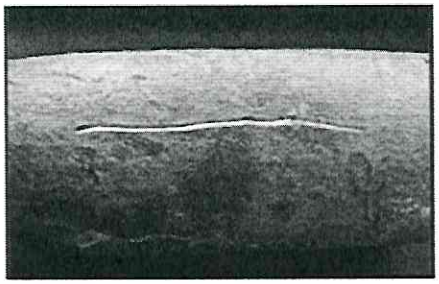
If the public water system finds unacceptable levels of lead during sampling under the Lead and Copper Rule (LCR), the public water system may have to provide centralized treatment or take other actions to minimize the corrosion of lead into the water (see How Lead in Drinking Water is Regulated below). However, centralized treatment by a public water system does not guarantee that corrosion of lead from plumbing will not occur within buildings served by the public water system, such as schools. It is important to note that the lead testing protocol used by public water systems is aimed at identifying system-wide problems rather than problems at outlets in individual buildings.

How Lead in Drinking Water is Regulated

Lead is regulated in public drinking water systems under a federal regulation known as the Lead and Copper Rule. This regulation was initially issued in 1991 and, in part, requires water systems to test for lead and copper and to take actions that reduce corrosivity and protect public health.

Nearly all states have a drinking water office that implements the Safe Drinking Water Act (SDWA). Questions regarding the regulation of drinking water may be directed to the appropriate state drinking water program office or state licensing agency.

Picture of a Scratch on a Lead Service Line



Requirements addressing lead in water include specific provisions in:

- **THE SDWA LEAD BAN (1986):** A requirement that only "lead-free" materials be used in new plumbing and in plumbing repairs. In the 1986 ban, "lead-free" meant that solders and flux may not contain more than 0.2 percent lead, and pipes and pipe fittings may not contain more than 8.0 percent lead. It is likely that lead pipes and high-lead solder and fluxes continued to be used until 1988 in several states and territories, and until 1989 or 1990 in a few states, but other state or local governments may have imposed related lead-ban standards prior to 1988.
- **THE LEAD CONTAMINATION CONTROL ACT (LCCA) (1988):** The LCCA is aimed at the identification and reduction of lead in drinking water at schools and child care facilities, including the recall of drinking water coolers with lead lined tanks and the publication of a list of drinking water coolers that were not "lead

free" as defined by the LCCA (no more than 8% lead for components that come into contact with water and no more than 0.2% percent lead for solder, flux, or storage tank interior that comes into contact with water).

- **THE LEAD AND COPPER RULE (1991):** A regulation by EPA to control the amount of lead and copper in water supplied by public water systems through corrosion control treatment, and other measures. Modifications were made to the Lead and Copper Rule in 2000 and 2007 to include revised requirements on demonstrating optimal corrosion control, monitoring, and reporting, treatment processes, public education, customer awareness, and lead service line replacement.
- **THE REDUCTION OF LEAD IN DRINKING WATER ACT (2011):** This act further reduced lead in pipes, pipe fittings, plumbing fittings, and fixtures to a weighted average of 0.25 percent. The act also redefined "lead-free" under the SDWA as not containing more than 0.2 percent lead when used with respect to solder and flux and not more than a weighted average of 0.25 percent lead when used with respect to the wetted surfaces of pipes, pipe fittings, plumbing fittings, and fixtures.

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Module 3: Planning Your 3Ts Program

When planning your 3Ts Program, it is important to reach out to the public water system, state and local offices, parents, teaching staff, and other impacted stakeholders to establish partnerships. These partnerships will:

- Provide a better understanding of current lead control resources in the area.
- Offer partners who may be able to provide guidance to a new program.
- Create a platform for communicating any program updates to local and state offices and the community.

After you have a better understanding of how the program will operate in relation to current state and local efforts and what resources are available from internal and external stakeholders, it will be easier to identify individuals who can fill particular roles and make the program a success.

Use the 3Ts Checklist to understand the recommended steps to implement a testing program for lead in school or child care drinking water.

Review Your Records

Identify and review records to determine if monitoring has previously been conducted at the school or child care facility. Some schools and child care facilities conducted voluntary monitoring in cooperation with state or local officials in response to the 1988 LCCA. Other schools and child care facilities may have sampled for lead in response to state requirements or local concerns. This information will be useful in filling out the plumbing profile questionnaire (provided in Appendix G), a tool that may be used to help determine whether lead is likely to be a problem in a school or child care facility. Records should also be reviewed to determine whether remediation actions have already been taken. For example, have water fountains with lead-lined coolers been replaced? See Appendix B for a listing of banned water coolers. While these records may not make additional testing or remediation unnecessary, they will help to prioritize efforts and make them more efficient.

If testing or remediation was conducted in response to the 1988 LCCA, it may have taken place 30 years ago or more. If current staff are not familiar with what activities may have taken place at the school or child care facility and records are incomplete or absent, consider contacting individuals who may have been involved in the past. Personnel that were involved may remember activities that were not well documented. They may also remember whether other agencies or the local public water system were involved, which may mean that additional records are available.

Throughout this manual, recommendations are provided on when and how to set up a robust recordkeeping process for current and future efforts.

Communication Plan: Include your partners in your communication with the parents, staff, and the school or child care community. Also remember to communicate to partners as new information becomes available.

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Establishing Partnerships

Entities like the public water system, local health offices, state drinking water programs, certified laboratories, and local community organizations may be able to provide assistance in testing the drinking water for lead. The information below can be used to:

- Initiate communications with potential partners
- Identify ways these organizations could help the program
- Develop the right questions to ask each type of partner

In addition to contacting the public water system, schools and child care facilities may consider exploring partnership opportunities with private foundations, private businesses, and corporations, who may be able to provide funding, and local construction professionals, who may be able to provide technical expertise.

Assistance from Local Health Offices

Many local governments have established programs that are responsible for a wide variety of public health protection activities, such as Lead Poisoning Prevention Programs. Consider contacting the local health office to discuss particular needs or questions. Although resources may be limited, the health office may be able to provide assistance in a variety of ways. For example, a representative may be able to attend parent and teacher association (PTA) meetings to discuss potential health effects, as well as to act as a liaison with state programs to obtain information and assistance.

Assistance from the State Drinking Water, Health and Education Programs

Contact state program managers to determine whether training and/or technical assistance is available and whether any other requirements may apply. The state drinking water program may be housed in the department of health or the department of the environment. When discussing issues with the state program, consider requesting assistance and referring to the Lead Contamination Control Act (LCCA) or this 3Ts toolkit to help to clarify the request. A representative may even be able to assist in working through the plumbing profile, conducting sampling, or taking follow-up action.

Many states have programs related to reducing lead in drinking water in schools and/or child care facilities. These programs may be in the state's environment, education and/or health departments. The state health and education departments may also be able to provide expertise and other information to support you in developing and maintaining their programs.

The Association of State Drinking Water Administrators website contains links to many state drinking water programs: https://www.asdwa.org/about-asdwa/.

Why Contact State Drinking Water Programs?

- For more information about lead in drinking water and drinking water regulations pertaining to lead.
- To inquire about training or available technical assistance on lead sampling.
- For advice in identifying a qualified consultant to assist with developing the 3Ts Program.
- For a list of certified laboratories in the area where samples can be analyzed for lead.

Assistance from Certified Laboratories

The state drinking water office should be able to provide a list of certified laboratories that you can use when testing for lead in drinking water. You should only use a laboratory that is certified by the state or EPA for testing lead in drinking water for public water systems.

Some laboratories will provide assistance in addressing the activities described in this manual. For example, some laboratories will collect samples for clients to ensure proper sampling technique and sample preservation. However, costs for services will vary and you may wish to contact several certified labs.

Assistance from Local Community Organizations

There are a variety of local organizations within communities that can help; for example, community volunteer groups, senior citizens' groups, the PTAs, and local environmental groups. Another useful resource is the region's pediatric environmental health specialty unit (PEHSU). The region's PEHSU may be able to provide risk communication support to districts; for more information, please visit **http://www.pehsu.net/**.

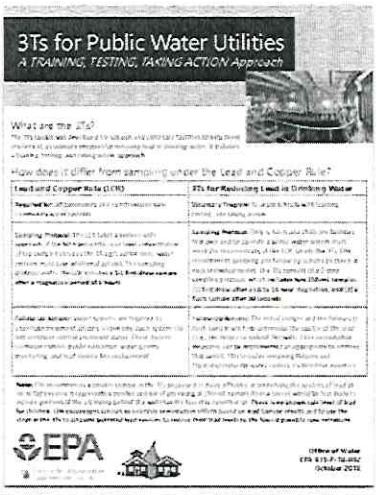
Contacting these groups is another way for you to foster support. These groups might be willing to volunteer time to collect samples and train others to collect samples. Local nonprofit and community-based organizations may also have monetary or in-kind resources available to support testing and/or remediation.

Working with Your Water System

A critical partner in any program to reduce lead in drinking water is the local water system. Before contacting community-based organizations and certified laboratories, EPA recommends contacting public water systems or local government offices for assistance. Water systems can help:

- Provide information that may be helpful
- Assist with determining if lead is present
- Support the you in developing your sampling plan
- Collect and analyze samples
- Help interpret results and determine potential lead sources
- Communicate with the school and child care facility, and the public

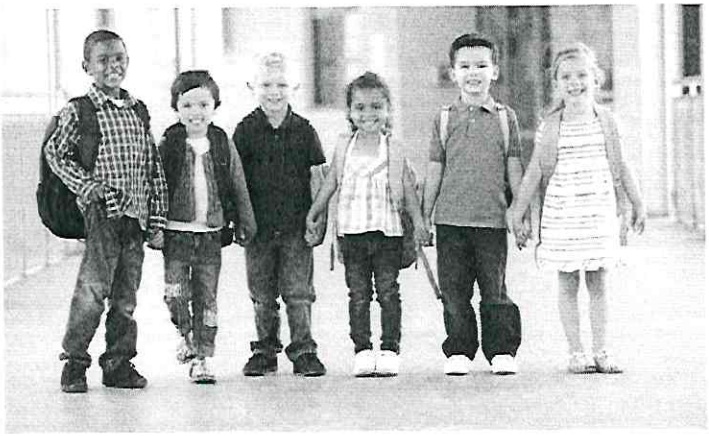
View the 3Ts for Public Water Systems to see how they can help.



Contact the public water system to determine whether assistance or information on previous efforts is available. Some public water systems have devoted resources to helping you conduct testing for lead. Although utilities may not be under a legal obligation to do so, assistance may be available through technical guidance, sampling or sharing in sampling or laboratory costs. Some utilities may be willing to help develop sampling plans and plumbing profiles (see Testing Section).

You can obtain the results of the water supplier's required monitoring under the Lead and Copper Rule to determine whether the supplier is in compliance with the requirements of the Rule. Public water systems should be able to tell you whether lead monitoring is current, whether the monitoring results are below the lead action level, and whether corrosion control treatment is provided. Your water supplier should also be able to tell you whether the supplier has conducted lead monitoring at the school or child care facility and may be able to provide some indication of whether lead could be a problem within your building(s).

In addition, EPA maintains a data warehouse of drinking water information. Also, many states make comprehensive drinking water system data available in online databases. Data can be searched by state (i.e., primacy agency), city, and/or county to find public water system information. Some public water systems are required to produce and distribute an annual report about the public water system including system-wide monitoring results. These reports are often called consumer confidence reports or annual water quality reports. Contact your public water system to obtain a copy of the latest consumer confidence reports or water quality report or visit EPA's Where You Live: Your Drinking Water Quality Reports Online website to check if it is available online.



Questions to Ask Drinking Water Systems

It is important to know who supplies your drinking water, and how the water is treated. The following are some questions to consider asking the public water system providing your drinking water:

- What information can the water system provide regarding its compliance with federal and state standards for lead monitoring and treatment?
- What steps have been taken to maintain compliance with the Lead and Copper Rule and reduce lead levels?
- Has the water system had a lead action level exceedance in its most recent compliance period?
- Does the water system have sample results for the school or child care facility?
- Does (or could) the water system take any LCR samples at schools or child care centers?
- Is the water corrosive? If so, what is the system doing to minimize corrosion?
- Does the water system add a corrosion control chemical to the water?
- Is there construction or water main maintenance planned in the area?
- Does the water distribution system have any lead piping (for example, lead service lines or lead gooseneck at service connections), and does the system plan to remove these sources of lead?

Don't forget to maintain a record!

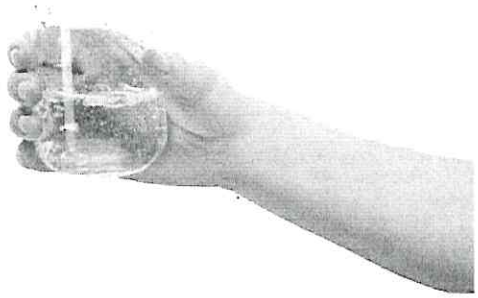
Ensure that communications with partners are documented and kept in a centrally accessible repository, either online or at the facility. Documenting who you are working with and how partners are supporting the program will provide staff with additional points of contact if additional information is needed.

Assigning Roles

You should assign responsibility to a key individual(s) to ensure that testing and follow-up actions are completed. Identify individuals who will likely implement and document the 3Ts Program and who will build a new program at the school or child care facility. A person should also be appointed to serve as the contact person for communication with interested parties (civic groups, the media, etc.). One person or more may be involved in these activities, but it is important to clearly define responsibilities and to support those people in their roles. An effective 3Ts Program will require a team effort. Identifying specific roles and responsibilities before initiating a program will give the program accountability.

Furthermore, by developing team dynamics that include internal communications, you can ensure that the program is successful and that staff turnover will not leave the program without direction or documentation. Whenever possible, get the school and child care administration involved. The superintendent, principal or school or child care facility director can give the 3Ts Program validity and support the individuals involved, improving the likelihood that their role in the 3Ts Program is integrated with their other job functions.

If you decide to use consultants or certified lab personnel, their roles should be defined and documented with respect to the responsible person(s) at your facility. Contact the state drinking water program or local health department if additional advice is needed on how to identify a qualified consultant.



Identify Key Individuals

The most important people to involve in the planning process for the school's 3Ts Program are those who will be required to approve, support or fund aspects of the program and those who have current job roles and responsibilities that align with protecting the health of the school or child care facility population. Key stakeholders both within and outside of the school and child care facility system include:

- **Principal/Director.** Include the superintendent if this is a multifacility initiative.
- **Custodial and facilities staff.** These individuals will have in-depth knowledge about plumbing and history and assist in implementing the program (e.g., take water samples).
- **School board.** Those responsible for developing budgets and recommending district-wide initiatives.
- **School nurse.** This individual will have knowledge of overall student health, as well as an awareness of the dangers of lead poisoning and the importance of safe drinking water. This individual may already work with the local health department, be able to identify local laboratories for testing samples and can also advise parents on how to get their children's blood lead levels tested.
- **Cafeteria staff.** These individuals are aware of water use in food preparation. They can identify the faucets that are regularly used in food or drink preparation, as well as any unused faucets.
- **Athletics staff.** These individuals will know the sources of water used to fill water jugs or those used when teams are practicing or playing games.
- **Students.** Should feel informed and educated on drinking water and know who to go to if they notice an issue.
- **Teachers.** Those affected by lead in drinking water and able to assist with the program. Teachers also might be sources of information on water use (e.g., knowing which fountains are most used). Math and science faculty will have knowledge of volume equations and water quality and could provide assistance during the testing process.
- **Parents.** Advocates for the children in schools and child care facilities.

- **School district wellness committees.** Congressional legislation mandated that schools participating in the National School Lunch Program or other child nutrition programs create school wellness policies (USDA Team Nutrition).
- **Parent Teacher Associations (PTAs).** Student advocacy groups made up of parents and teachers.
- **Local plumbing and construction contractors/suppliers**. Those working on facilities; they should use "lead free" materials and plumbing products certified to be lead free.

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Programmatic Questions

Who should create the sampling plan?

It is important to designate a person(s) to serve as a project lead of the sampling program and follow-up activities, even if someone else is hired to conduct testing. You may want to involve consultants, laboratories, or other knowledgeable partners to help develop the plan. You can contact the state, local health department or drinking water program, or water system, to get advice on how to identify a qualified consultant.

Who should collect the samples?

Deciding who will collect samples may be based, in part, on whether the certified laboratory chosen to analyze samples also provides specialists to assist with sample collection. Choosing an individual who is adequately trained (e.g., a consultant or someone from the laboratory) to collect samples may help avoid sampling errors. Ask for references to confirm that individuals are qualified to test for lead in drinking water in schools and child care facilities. Some state drinking water programs or public water systems may provide both services, although there is no federal requirement that they do so.

Will the laboratory take samples or will it provide training and sample containers for collectors designated by the school or child care facility?

If certified laboratory representatives or consultants are used to conduct testing, ensure that they have experience in conducting lead testing for drinking water at schools and child care facilities. You may wish to ask the laboratory or consultant for references for work they have completed at other schools and child care facilities. Regardless of who is collecting samples, you should ensure the sampler is familiar with the procedures outlined in the Testing Section. You should send the sampler a copy of this document, and any specific testing procedure documents, before sampling is

conducted. Testing activities can be misrepresentative if sample collectors do not follow proper sampling procedures. Also, make sure that laboratories or consultants do not confuse the sampling protocol with the lead testing protocol used by public water systems. The two protocols are different.

Who should ensure proper remediation?

If testing results show elevated levels of lead in drinking water, then you should implement remediation measures. Some State programs have additional requirements, such as notification and remediation, if testing results show lead in drinking water above specified levels. If remediation is needed, you should assign a project manager to lead the development of a remediation plan by a qualified professional and to ensure that remediation is properly completed. The Taking Action Section, has more information on solutions that you can implement.

Who is in charge of recordkeeping?

Selecting a team member to ensure methods and results are documented is key to building a sustainable program that is not impacted by staff resignation, retirement, or transfer. The person responsible for recordkeeping should work with all other team members to gather information and store it in a centrally accessible place.

Don't forget to maintain a record!

Document your 3Ts Program contacts and the steps your team will take to accomplish the goals set out in your 3Ts Program.

Use the 3Ts Toolkit to identify and record contact information for partners from various organizations and groups described in this section.

Module 4: Developing a Sampling Plan

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This section includes recommended steps for developing and implementing a plan for testing drinking water in schools and child care facilities[1]. Each section includes recommendations and explanations to help you understand your plumbing materials and sampling plan, evaluate your service connection (service lines), take samples, and interpret the results. The Taking Action Section provides short-term and longer-term control measures, examples of remedies for plumbing fixtures, and appropriate follow-up procedures that you should perform. **Throughout the testing process, remember to document the methodology, any implemented procedures or protocols, and testing results.**

Conduct a Walkthrough

Conduct a walkthrough of the facility and create an inventory. Take note of all sinks and fountains used for human consumption. If a floor plan is available, mark each tap and water filler on the floor plan and assign a unique identification. It may be helpful to take pictures when conducting this walkthrough. A plumbing profile can be created by answering a series of questions about the building's plumbing. The plumbing profile questionnaire in Appendix G can be used as a worksheet and recordkeeping tool. It may also be helpful to interview custodial staff and the teachers about water use.

Take note of the visible plumbing for these outlets. Staff creating the inventory may need to look under sinks or behind cabinets. Document whether faucets have aerators or filters in place to understand all possible sources of lead and any current remediation efforts at each fixture. Aerators should not be removed while conducting sampling for lead. If your facility has additions, wings or multiple buildings built during different years, a separate plumbing profile is recommended for each. Examples of plumbing configurations for a single-level building and a multilevel building are illustrated in Exhibit 2 and Exhibit 3, respectively.

Make sure to note any lead-lined storage tanks or lead parts such as those noted in Appendix B. Water coolers identified by EPA as having lead-lined storage tanks or lead parts should be removed.

[1] For schools that are public water systems, there are regulatory requirements for sampling that must be followed to comply with the Lead and Copper Rule (LCR). The recommendations in this module could still be useful for those schools in addition to the monitoring required by the LCR.

Conducting this survey of the building's plumbing will enable you to:

- ❑ Understand how water enters and flows through building(s).
- ❑ Identify and prioritize samples.
- ❑ Identify additional sites staff or students may be using for drinking water, such as bathroom faucets, locker room showerheads, and non-traditional drinking water outlets that might be used to fill water jugs.

Exhibit 2. Plumbing Configuration for a Single-Level Building

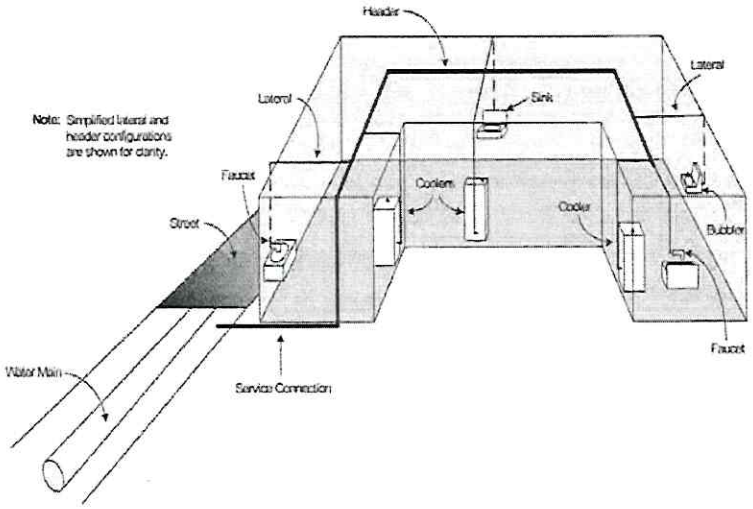
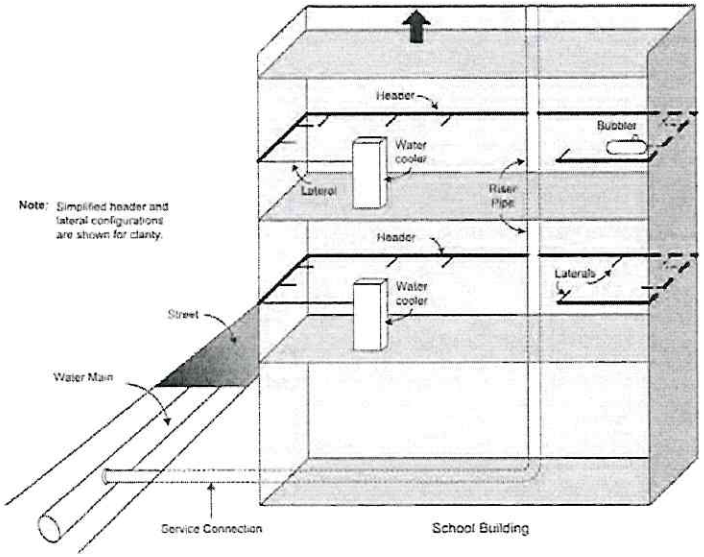


Exhibit 3. Plumbing Configuration for a Multilevel Building



Header: The main pipe in the internal plumbing system of a building. The header supplies water to lateral pipes.

Lateral: A plumbing branch between a header or riser pipe and a fixture or group of fixtures. A lateral may or may not be looped. Where more than one fixture is served by a lateral, connecting pipes are provided between the fixtures and the lateral.

See Appendix A for additional definitions.

As shown in Exhibit 2, in single-story buildings, the water comes from the service connection via main plumbing branches, often called headers. These, in turn, supply water to laterals. Smaller plumbing connections from the laterals and loops supply water to the faucets, drinking water fountains and other outlets. In multilevel buildings (Exhibit 3), water is carried to the different floors by one or more riser pipes. In addition, in some buildings, water may be stored in a tank prior to being distributed to the drinking water outlets and fixtures. Remember, for sampling purposes, that water within a plumbing system moves from the water main in the street through the service connection and through the building. Sample collection should typically start on the bottom floor then continue up. However, the water main can enter the building from the first floor and splits to the riser running up to the second, third floors, etc., and the riser can lead to the basement. This configuration may also be different if the water tank is on the roof. Try to learn more about how water flows in your facility to better inform your sampling plan.

Determine Sampling Locations

Decide where to take samples and how to prioritize the sample sites based on responses to the plumbing profile questionnaire and knowledge of the building(s). This should include drinking fountains, kitchen sinks, kitchen kettle filler outlets, classroom combination sinks and drinking fountains, home economics room sinks, teachers' lounge sinks, nurse's office sinks, and any other sink known to be or visibly used for consumption (e.g., coffeemaker or cups are nearby). Faucets that are not used for human consumption, such as sinks in janitor's closets or outdoor hoses, should not be sampled. If there is potential that these may be used (e.g., janitor closet is close to kitchen and is used for cleaning appliances or the outdoor hoses are used to fill water jugs for sports activities), use clear signage to notify people that the faucet should not be used for drinking or cooking, or include the fixture in your sampling plan.

> Helpful Tip...
>
> Don't forget to include kitchen kettles in your sampling plan. Kitchen kettles are large containers of water that are then heated to steam or cook things like vegetables, sauces, pastas, rice, etc. They are used in larger kitchens, like some school kitchens, and sample results taken from these have found to contain elevated lead.

Important: schools and child care facilities should not use sample results from one outlet to characterize potential lead exposure from all other outlets in their facility. This approach could miss localized lead problems that would not be identified.

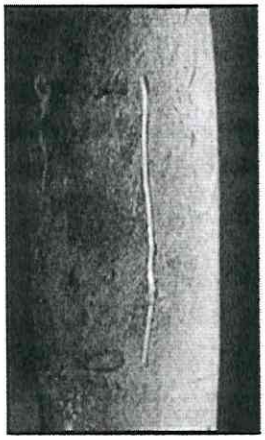
Make sure to prioritize outlets that are used by children under the age of 6 years or pregnant women (e.g., drinking fountains, nurses' office sinks, classrooms used for early childhood education, kitchen sinks, teachers' lounges).

During the process of determining sample locations, it will be helpful to code each outlet using a system that will allow each unique outlet to be identified by location, type and other relevant characteristics. Appendix C provides examples.

Do You Have a Lead Service Line?

Lead pipes were used for service connections, or service lines, in some locations. Other materials used for service lines include copper, galvanized steel, plastic, and iron. In larger schools, the service line is probably not lead because lead is impractical for the larger service lines typically used in these facilities; however, many child care facilities reside in small buildings and are at a higher likelihood of being served by lead lines.

Picture of a Scratch on a Lead Service Line



Regardless of building size, make sure to check the service line. The water system may be able to provide information about whether there is a lead service line or can help identify the service line for your facility.

Lead service lines may be visible and are generally a dull gray color and very soft. They can be identified easily by carefully scratching with a key. If the pipe is made of lead, the scratched area will turn a bright silver color. Do not use a knife or other sharp instruments and take care not to puncture the pipe.

Selecting a Laboratory for Sample Analysis

Regardless of who collects the samples, you should employ a certified laboratory approved by the state or EPA for testing lead in drinking water. Contact the state drinking water program or the public water system, or visit EPA's website: Contact Information for Certification Programs and Certified Laboratories for Drinking Water for a list of certified laboratories in the area. Consider the following issues prior to making a selection:

Considerations When Choosing a Laboratory

- Will the laboratory conduct sampling as well as analyses? Be sure to let the laboratory know that samples will most likely be taken between 5:30 a.m. and 7:30 a.m. Sampling outside of business hours may influence the cost.
- What is the cost of the laboratory's services, and what is included in that cost? Costs will vary, depending upon the extent of the services to be provided (e.g., if only analyses are conducted or if other services such as sample collection are provided), and some laboratories may have bulk analysis rates for a large number of samples.
- You may want to contact several laboratories to compare prices and services, and they may wish to combine sampling with another school or child care facility to reduce the cost per sample.
- What other testing could the laboratory conduct for your facility? See Appendix D for more information.
- What is the laboratory's time frame for providing sample results?
- Establish a written agreement or contract with the laboratory for all of the services to be provided.

Determine Your Sampling Frequency

How frequently your facility can and should test for lead in drinking water is dependent on a variety of factors (e.g., plumbing, water quality, lead results, budget, and competing priorities). Regardless of the frequency set by your facility, EPA recommends that the sampling frequency be documented so that it does not go overlooked for extended periods of time.

EPA suggests schools and child care facilities make testing drinking water a part of their regular building operations. Annual monitoring provides information on changes in the lead levels and the effectiveness of remediation or treatment efforts as well timely notice of lead levels that need to be addressed.

Communication Plan: Before you begin sampling, it is important to engage with the community and develop a plan for how to communicate throughout the sampling process.

Understanding the Sampling Procedures

Who should collect 3Ts Samples?

It is important that water samples be collected properly. Certified laboratories chosen to analyze samples may provide specialists to assist with sample collection. If the laboratory is not supplying someone to sample, be sure to identify an individual who is adequately trained to collect lead samples to help avoid sampling errors. It is useful to ask for references to confirm that individuals are qualified to test for lead in schools and child care facilities. Some state drinking water programs or public water systems may provide both services, although there is no federal requirement that they do so.

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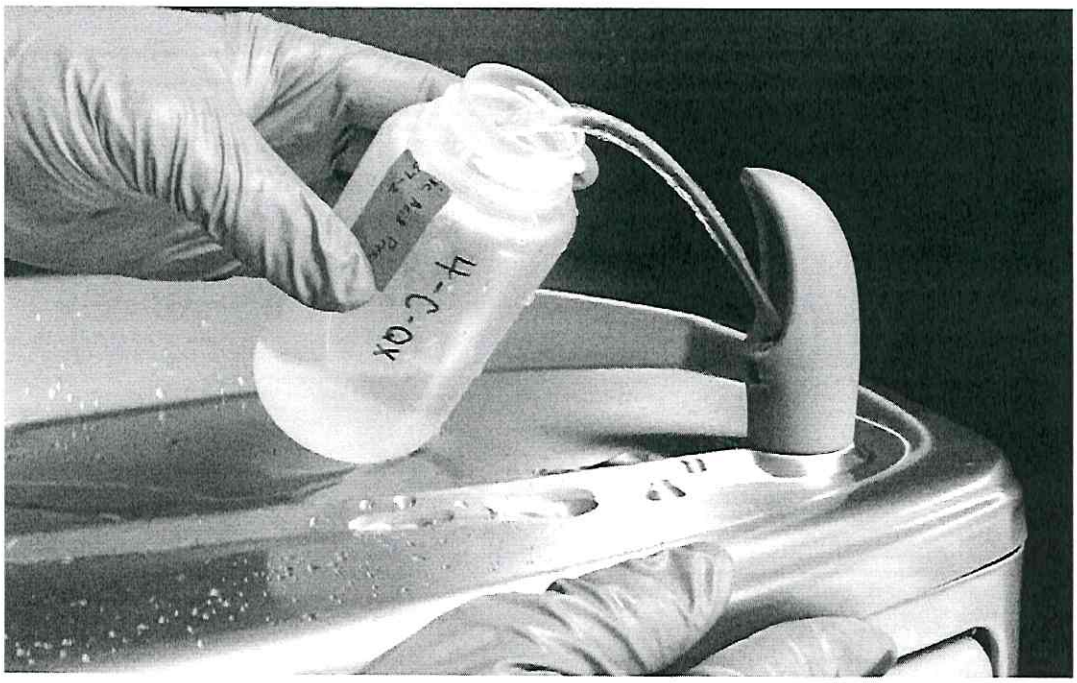
What is the recommended sample volume?

EPA recommends the use of small samples (e.g., 250-mL) because a smaller sample represents a smaller section of plumbing, which can help you to identify the sources of lead at an outlet (e.g., fixture, interior plumbing, or water entering the school). A smaller sample is also more representative of the amount of water consumed per serving.



What are the recommended types of samples?

First-draw samples

First-draw samples are typically collected in the morning at outlets that are used for drinking or cooking, after the water has been sitting still the night before. Begin collecting the sample immediately after turning on the faucet or valve, not allowing any water to spill. EPA strongly recommends that schools collect first-draw samples from all fixtures used for consumption and prioritize sampling from high-risk fixtures.

Flush samples

Flush samples are taken after water has been running from the fixture for a pre-determined length of time. These types of samples are used in Step 2 (described in the 2-Step Sampling Section of the 3Ts). Flush samples can be used to determine if lead is coming from the fixture itself or from interior plumbing.

Sequential samples

Sequential samples involve collecting a series of water samples at a single fixture, without flushing beforehand or running the water between samples. This sampling procedure is another method used in a Detailed Fixture Evaluation described in Appendix D, to sample multiple sections of plumbing.

When should samples be collected?

Collect all water samples *before* the facility opens and *before* any water is used. Ideally, the water should sit in the pipes unused for at least 8 hours but not more than 18 hours before a sample is taken. However, water may be more than 18 hours old at some outlets that are infrequently used. If this is typical of normal use patterns, then these outlets should still be sampled. Make sure that no water is withdrawn from the outlets prior to their sampling. Remember not to use the facilities' restrooms or sinks that morning prior to sampling.

Unless specifically directed to do so, do not collect samples in the morning after vacations, weekends or holidays because the water will have remained stagnant for too long and will not represent the water used for drinking during most of the days of the week. See Establishing Routine Practices to learn ways to improve water quality throughout the year and after long breaks.

When should I take action?

There is no safe level of lead for children. EPA encourages schools to prioritize remediation efforts based on lead sample results and to use the steps in the toolkit to pinpoint potential lead sources to reduce their lead levels to the lowest possible concentrations.

Before sampling, facilities should establish a plan on how they will respond to their sample results to protect the school and child care facility population from lead in drinking water. This may be dependent on a variety of factors (e.g., age of plumbing, population, water corrosivity, available resources, and other school and child care program priorities). EPA recommends that you prioritize remediation of drinking water outlets with the highest lead levels.

Make sure to also check with your state and local health department. They may have guidance or even requirements that include a lead remediation trigger.

Note: EPA's Lead and Copper Rule (LCR) establishes a lead action level of 15 parts per billion (ppb) for water systems and facilities that have and/or operate their water source (e.g., own their own well). If the 90th percentile lead level concentration of tap samples exceeds the 15 ppb action level, water systems must take additional actions, such as optimizing corrosion control, public education, and lead service line replacement. The action level for lead is not a health-based standard and is based upon EPA's evaluation of available data on the ability of corrosion control to reduce lead levels at the tap. The action level is a screening tool for determining when certain treatment technique actions are needed.

Module 5: Conducting Sampling and Interpreting Results

Communication Plan: Don't forget to communicate your plans to test your facility, and to prepare for communicating results. Results should be shared regardless of the lead level detected.

2-Step Sampling at the Tap

EPA recommends that schools and child care facilities conduct a 2-step sampling procedure to identify if there is lead in the outlet (e.g., faucet, fixture, or water fountain) or behind the wall (e.g., in the interior plumbing). These samples should be taken after an 8 to 18-hour stagnation period.

Please note that this section contains recommendations that are generalized for typical plumbing configurations. Appendix D contains details on types of fixtures and targeted sampling.

STEP 1
250-mL First-Draw Sample
Take a 250-mL first-draw sample at all taps used for consumption to identify potential lead in the fixture.

STEP 2
250-mL Flush Sample
If the result of Step 1 is high, take a 30-second flush sample to identify lead in the plumbing behind the fixture.

These samples can be taken in the same sampling event, which can reduce cost, and provide you with more information on lead levels. If not taking these samples at the same time, and elevated lead levels have been found in Step 1, the water should not be consumed while preparing to take the follow-up flush sample. More information on immediate steps is in the Taking Action Section.

Helpful Tip...

For further potential cost savings, you or lab can collect, preserve, and hold (but not analyze) the second sample at the same time the first sample is collected, then analyze only selected Step 2 samples based on review of the Step 1 results. Most commercial labs will "Hold" samples until the client advises to dispose (at nominal cost) or analyze those samples.

Step 1: Initial First-Draw Samples

Take first-draw samples from fixtures throughout the building that are used for human consumption. EPA strongly recommends that you collect these samples from all outlets used for drinking or cooking, prioritizing the high-risk outlets (i.e., fixtures that are known to or potentially contain lead and fixtures that are used most frequently). The plumbing profile will help pinpoint those high-risk fixtures and to prioritize sample collection.

Important: schools and child care facilities should not use sample results from one outlet to characterize potential lead exposure from all other outlets in their facility. This approach could miss localized lead problems that would not be identified.

The first-draw sample identified in Step 1 is representative of the water that may be consumed at the beginning of the day or after infrequent use. This protocol maximizes the likelihood that the highest concentrations of lead will be found because the first 250-mL sample is collected after overnight stagnation (the water sat in the pipes for at least 8 hours).

Procedures for initial outlet samples are shown below:

- All samples should be collected before the facility opens and before the fixtures have been used (EPA recommends an 8-18 hour stagnation period).
- One 250-mL sample should be taken at each fixture. Note this is a first-draw sample. Therefore, collect the sample immediately after opening the faucet or valve.
- Compare all sample results to prioritize follow-up sampling and remediation. Outlets with elevated lead levels should not be made available for consumption.

STEP 1

250-mL First-Draw Sample

Take a 250-mL first-draw sample at all taps used for consumption to identify potential lead in the fixture.