

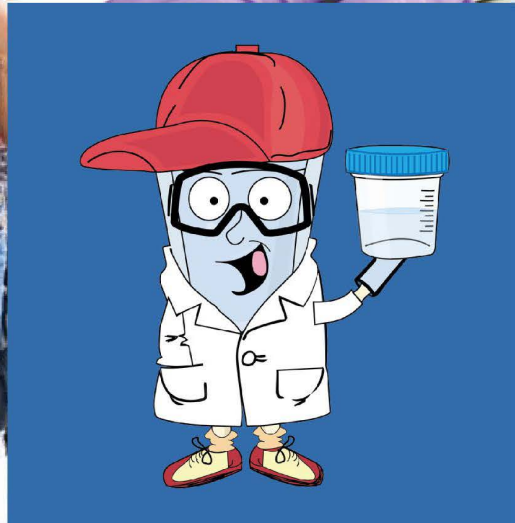


# U.S. EPA 3Ts Program

## Training, Testing & Taking Action

### Lead Sample Collection Field Guide

For Schools and Child  
Care Facilities





## *Disclaimer*

This guide is a product of the voluntary program of the U.S. Environmental Protection Agency (EPA) 3Ts for Reducing Lead in Drinking Water in Schools and Child Care Facilities - Training, Testing, and Taking Action Approach.

EPA's 3Ts program is not a federal requirement under the National Primary Drinking Water Regulations. Therefore, this guide is not intended for use by public water systems that are subject to compliance under the Lead and Copper Rule Revisions or other National Primary Drinking Water Regulations under the Safe Drinking Water Act (SDWA).

The 3Ts program approach is voluntary and provides tools and informational materials for schools, child care facilities, states, territories, and Native American Tribes to implement lead testing programs in drinking water, at their discretion.

This document does contain overviews of federal regulatory requirements concerning lead in drinking water that apply to public water systems. EPA has made every effort to ensure the accuracy of the discussion in this guidance. In the event of a conflict between the discussion in this document and any statute or regulation, this document would not be controlling.

The general description in this document does not substitute for any law or regulation. 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 that compliance information.

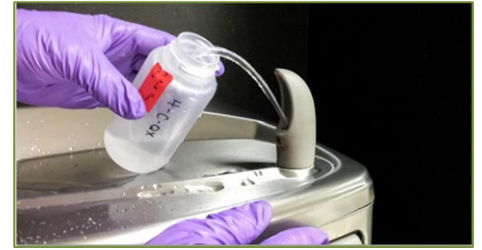
This document does not impose legally binding requirements on EPA, states, or the regulated community.

This document does not confer legal rights or impose legal obligations upon any member of the public.

## Purpose

The purpose of this Lead Sample Collection Field Guide is to provide clear instructions to designated personnel on how to effectively and accurately collect samples to test for lead in drinking water in schools and child care facilities.

This Guide is a product of the voluntary program of the U.S. Environmental Protection Agency (EPA) [3Ts for Reducing Lead in Drinking Water in Schools and Child Care Facilities - Training, Testing, and Taking Action Approach](#) (referred to as “3Ts program” hereafter).



**Before collecting samples**, go to [Module 3: Planning your 3Ts Program](#) to establish a plan for:

- (1) Communicating (e.g., methods and frequency to communicate results and actions to parents and staff);
- (2) Training (e.g., who and how personnel will be trained);
- (3) Testing (e.g., prioritize outlets for sampling and identify the type of lead samples to collect); and
- (4) Taking Action (e.g., identify the type of short-term and/or long-term measures to take if lead is detected).

**Transparency and communication are key to developing a successful program for reducing lead in drinking water in schools and child care facilities.** Use the [3Ts program resources](#), including step-by-step instructions and interactive tools, to create your plan.

### Funding for Reducing Lead in Schools and Child Care

Schools and child care facilities may be eligible for funds to conduct lead testing and remediation through the Water Infrastructure Improvements for the Nation (WIIN) Act grant program. Contact your state program listed here: [WIIN 2107: Lead Testing in School and Child Care Program Drinking Water State Grant Program Contacts](#).

### Connection to US EPA Drinking Water Regulation -- Lead and Copper Rule Revisions

The Lead and Copper Rule Revisions (LCRR) includes provisions for public water utilities to conduct sampling in schools and child care facilities. However, as part of President Biden’s E.O. 13990 regulatory review of the LCRR, the agency received stakeholder input suggesting improvements to these and other provisions. EPA will be considering these suggestions as part of a planned immediate rulemaking and non regulatory actions to equitably improve public health protection and improve implementation of the rule to ensure that it prevents adverse health effects of lead to the extent feasible. For more information, visit [EPA’s Review of the National Primary Drinking Water Regulation: Lead and Copper Rule Revisions](#).



## Why is this important?

**There is no safe blood lead level in children.** Children are most susceptible to the effects of lead because their bodies are still developing; therefore, they tend to absorb more lead from any source, including drinking water, than adults. Lead exposure in children can cause adverse health effects both physical (e.g., impaired growth and hearing loss) and behavioral (e.g., reduced IQ and attention span, hyperactivity, and learning disabilities).

**The only way to know if there is lead in your drinking water is to test** each fixture used for human consumption (i.e., drinking, food preparation, brushing teeth, dishwashing, and hand washing). EPA suggests that schools and child care facilities implement lead testing programs for reducing lead in drinking water as part of their overall plans for maintaining healthy learning environments.

- It is important to establish a program that includes routine testing and evaluations to limit lead contamination, as well as routine practices to ensure that you are providing safe drinking water to students and staff.
- It is important to identify lead fixtures and plumbing materials and 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 (SDWA). 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 and child care facilities, are more likely to have elevated lead concentrations in their drinking water.
- Lead can enter your drinking water through the corrosion of lead-containing plumbing materials within your facility or through the water service line connected to your school or child care facility.
- Building age and plumbing installations/repairs may increase the risk of elevated lead levels in your drinking water if corrosion occurred in the plumbing materials. Factors to consider may include:
  - Buildings older than 1930: Likely to contain lead pipes that can contaminate water quality.
  - 1930 - 1986: Likely to contain lead solders used to join copper pipes together. Lead pipes are possible.
  - 1986 - 2014: “Lead-free” solders used on plumbing joints, brass fixtures or plumbing components may have lead. Lead pipes are very unlikely.
  - 2014 - Present: Even if “lead-free materials” were used in new construction and/or plumbing repairs, lead leaching may occur. Lead pipes are very unlikely.

## Is this Lead Sample Collection Field Guide for me?

This Guide is designed to support any school or child care personnel (e.g., maintenance staff, child care support staff, on-site water system staff) who is asked to collect lead samples in drinking water at their facility.

- The information and resources included in this guide will help the designated personnel understand the procedures and process to follow to collect lead samples and provides actions to consider based on laboratory results. For more details on remediation, refer to [Module 6 in the 3Ts Toolkit](#) or [3Ts Manual](#) (published October 2018; EPA 815-B-18-007).
- The sampling collection procedures outlined in this guide also meet the minimum requirements for schools and child care facilities that are recipients of funding from their state grant program as part of the Water Infrastructure Improvements for the Nation (WIIN) Act. States may have additional procedures or processes to follow.
- If you have questions about the WIIN grant program, you can find your state program at: [EPA's WIIN 2107: Lead Testing in School and Child Care Program Drinking Water State Grant Program Contacts](#).
- This guide assumes that each school and child care facility will run its testing program independently. However, as you read through this guide, check with your state drinking water/environmental program, certified laboratory, plumbing professional, or public water system to see if they can help you with the sample collection.

### How do I use this Lead Sample Collection Field Guide?

- [Blue](#) text indicates a hyperlink to a resource. Click the text to navigate to the link.
- Text in brackets [ ] contain a hyperlink to applicable sections (i.e., Prepare, Collect, Results) within the guide. Click the text to navigate to that section.
- Section icons (below) are hyperlinked. Click the icon to navigate to a section of interest.



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## Prepare

**Before collecting samples**, facilities should develop a plan for (1) Communicating; (2) Training; (3) Testing; and (4) Taking Action. Preparation is key for testing lead in drinking water. Use the “3Ts Plan eBuilder” to create your plan at [3Ts program website](#).

Remember the importance of due diligence and the role you, as the collector, are serving to help protect the children at your facilities. It is important for personnel collecting the lead samples to follow the steps as outlined in this Lead Sample Collection Field Guide and use the sampling instructions provided by your selected certified laboratory.

**Use these steps** to ensure proper preparation and effective testing:

- ✓ **Prioritize** sample sites based on the plumbing profile questionnaire ([Module 4 in the 3Ts Toolkit](#)) and your existing knowledge of the building.
- ✓ **Decide** which certified laboratory will analyze your samples for lead and ask if they can help you collect the samples. To find approved, certified labs, visit [EPA Certified Labs](#).
- ✓ **Develop** a coding and labeling system that clearly identifies each sample before collection.
- ✓ **Collect** all the materials listed in the [\[Prepare the Sample Site\]](#) subsection below, before conducting sampling on-site.

### How Can Water Systems Help?

Your public water system are critical partners in helping schools and child care facilities test for lead. They may be able to:

- Offer technical guidance.
- Help you develop sampling plans or plumbing profiles.
- Assist with sample collection and laboratory analysis.
- Support you in communicating lead sample results to the community.
- Help interpret results and determine potential lead sources.

For more information, see the [3Ts for Public Water Utilities factsheet](#) or visit [EPA's Final Revisions to the Lead and Copper Rule](#) to learn more about the role of the system in sampling.

### Lead Sampling Considerations

- **There is no safe blood lead level in children.** Children are most susceptible to the effects of lead because their bodies are still developing; therefore, they tend to absorb more lead from any source, including drinking water, than adults.
- **A sample test is a snapshot of the lead level taken at the time it was collected.** Prior low or non-detected lead levels should not be used to assume that an outlet or facility is lead-free. Lead levels at an outlet or within a building have been shown to vary over time.
- **Regularly scheduled testing and routine maintenance are essential to reducing lead in drinking water.** Consult with your public water system for guidance.
- **Results from one outlet should not be used to generalize the lead levels at other outlets in the facility.** Lead contamination can occur both in fixtures and in building plumbing, so a sample taken at any given outlet is not representative of the entire facility.
- **Buildings and fixtures built before 1986 are most likely to have lead solder and/or plumbing components that contain lead.** The 1986 Safe Drinking Water Act (SDWA) Amendments included a “lead ban” requirement stating that only “lead-free” materials could be used in new plumbing and plumbing repairs. However, it is likely that lead pipes, high-lead solder, and fluxes were used until 1990. The Reduction of Lead in Drinking Water Act of 2011 made the definition of “lead free” more stringent by lowering the lead maximum lead content permitted. Up until 2014, even those plumbing materials labeled as “lead-free” could contain up to 8% lead.

## □ Determine Which Fixtures to Sample

Many factors can contribute to selecting and prioritizing sampling locations. Some considerations:

- Oldest known fixtures because these are more likely to contain lead (especially those installed prior to the Lead Ban Act of 1986);
- Sampling sites should be those used for human consumption;
- Outlets that are used by children under the age of six or pregnant women (e.g., drinking fountains, nurse’s office, early childhood education classroom, kitchen, teachers’ lounges);
- Areas with known service lines or lead pipes;
- Areas with corroded plumbing; and
- Frequency of use. The longer the water remains in contact with the lead plumbing material, the potential increases for lead to leach into the water.

**Testing each fixture used for human consumption is important.** During the first sampling round, if you are not able to sample all fixtures in the building, the above factors can be used to prioritize the sampling order. For example, first round samples may include drinking water fountains, water bottle refill stations, sinks and kettles in kitchens, and nurse’s office sinks. If faucets are rarely used, consider taking them out of service or designating them “not for human consumption,” if they cannot be sampled. For more information on prioritizing sampling site locations, refer to [Module 4 in the 3Ts Toolkit](#) and answer the Plumbing Profile Questionnaire.

## □ Select a Certified Laboratory

**Your school or child care facility should identify a certified laboratory to analyze the water samples.**

- Use a laboratory certified by the state or EPA for testing lead in drinking water. Certified laboratories have been validated by EPA or the state to use appropriate analytical techniques that guarantee accuracy and precision.
- Visit [EPA’s Website](#) or [your state WIIN grant program](#) to find a list of certified drinking water labs and refer to [Module 4 in the 3Ts Manual](#) for a list of considerations when choosing a laboratory. Your selected certified laboratory will be able to provide sampling bottles, labels, relevant paperwork, and specific instructions. Some may also offer to send qualified individuals to collect the samples for you (Be sure to check with the laboratory to determine if there will be an extra cost for their sampling services).

### Questions to Ask Certified Laboratories

- ✓ **What is the cost of the laboratory’s services and what is included?**

Costs will vary, depending upon the extent of the services provided (e.g., if only analyses are conducted or if sample collection is provided as well), and some laboratories may have bulk analysis rates for many samples.

- ✓ **How quickly do I need to send back the sample(s)?**

Each laboratory has a different way of storing and preserving your sample from the minute you collect it, so ask how long you have to send it back.

- ✓ **What analytical techniques do you use?**

Ask, do you use EPA approved methods that can meet low enough reporting limits (e.g., at or below 1 µg/L)? This way, you can confirm the accuracy of the results reported.



**The laboratory will send a report back to you after their analysis is complete.**

- This report will show the numerical level of lead detected in the water samples. If a report is difficult to understand, refer to [Module 5 in the 3Ts Toolkit](#), call the laboratory with questions, or contact your local water system.

Note: EPA strongly discourages the use of do-it-yourself (DIY) testing kits. These kits can be inaccurate and many only indicate if lead is detected (i.e., no numerical values are provided). A numerical number is needed for you to take the appropriate short-term or long-term action to reduce lead exposure.

## □ **Develop a Coding and Labeling System**

**The next step is to create a coding and labeling system that will allow each unique outlet to be identified by location, type, and other relevant characteristics (e.g., room number, floor, etc.).**

- Use the 3Ts factsheet [Develop a Code System for Samples](#) (see [Module 4 of the 3Ts Toolkit](#)) to create a labeling system. Additionally, create a document to record your sampling data and actions taken based on the results; for example, use the [3Ts Sampling Data eTrackers](#).

### **How Do I Label My Sample Locations?**

Code each outlet using a system that will allow each unique outlet to be identified by location, type, and other relevant characteristics. Following is an example from [Module 4 in the 3Ts Toolkit](#):

Floor Room Number Outlet Type Sample Type Sample Number

**003-312-DW-P-015**

Example: 3<sup>rd</sup> floor (003), room 312, drinking water (DW) fountain, first draw sample (P), 15<sup>th</sup> outlet collected (015).

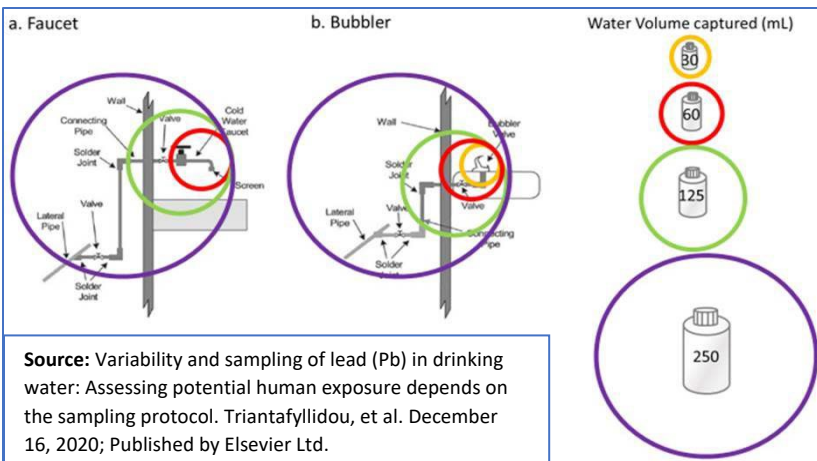
## □ **Prepare the Sample Site**

**Schools or child care facilities should request, from the certified laboratory, the appropriate number of bottles and paperwork prior to sample collection.**

Certified laboratories should send sampling bottles, labels, instructions, paperwork, and return shipping box. Determine how many sample containers you will use for each fixture, and make sure the laboratory has sent the appropriate number of containers. Leave the containers sealed until it is time to collect the samples. For more details – view the [2-Step Sampling at the Tap](#) in [Module 5 in the 3Ts Toolkit](#).



Note: Container size may vary. EPA's 3Ts program recommends 250 mL plastic bottles that have wide openings. However, you may need a smaller container depending on the purpose of the sample. A smaller amount of water sample may be necessary for detailed fixture evaluations to pinpoint where lead is getting into the drinking water, so appropriate corrective measures




can be taken. Due to the different compositions and dimensions of fixtures (e.g., water fountain, cold water faucet, ice-making machine, central chiller unit) there are different sample collection procedures for each fixture, refer to the [\[Collect\]](#) section for more details. Consult with your laboratory to confirm they will be able to analyze the smaller sample volume. For more details see [Module 5 in the 3Ts Toolkit -- Detailed Fixture Evaluation](#).

**Prepare the site location(s) and get ready to begin the sampling process.**

Below is a list of items you will need to gather before collecting your sample. Place a checkmark by each item as you collect it.

<input checked="" type="checkbox"/> <b>Materials Needed Before Conducting Sampling Procedure</b>	
<input type="checkbox"/>	Hand wipes or bottled water for washing hands. Avoid using water from the fixtures you are sampling.
<input type="checkbox"/>	A permanent marker to keep careful track of which locations you have sampled on your sampling plan ( <i>Pens may bleed or smear</i> ).
<input type="checkbox"/>	A notepad to record observations at the fixtures and any other relevant information.
<input type="checkbox"/>	A stopwatch to keep track of flush times (refer to the <a href="#">[Collect]</a> section for more details on when this would apply to you).
<input type="checkbox"/>	Labeled sample containers (from the laboratory) to collect the water.
<input type="checkbox"/>	Sampling form to document additional details about the sampling environment. Use the <a href="#">3Ts Sampling Data eTrackers</a> <sup>1</sup> . The chain-of-custody form from the laboratory may also ask for these details.
<input type="checkbox"/>	A small table to place materials on while collecting samples. Do not place materials on the floor as they are easily contaminated there and more susceptible to being accidentally knocked over.

<sup>1</sup> For more information about the 3Ts Sampling eTrackers, visit the [\[Receiving Results\]](#) subsection below.

 <b>Materials Needed Before Conducting Sampling Procedure</b>	
<input type="checkbox"/>	Disposable plastic gloves (non-latex or nitrile) may be used to collect samples and avoid direct contact with the sampling containers. Some laboratories may send sample containers preserved with acid.
<input type="checkbox"/>	Labeled reference map of the building's floorplan or plumbing system to use while sampling.
<input type="checkbox"/>	Signs alerting building users not to use the fixtures until after you have collected your samples. These should be posted prior to the sampling date.

**At the moment of taking the sample, the water should have sat in the pipes for at least eight (8) hours, but for no more than eighteen (18) hours, prior to collection.**

- These samples are typically collected in the morning before the facility opens and before the fixtures have been used.

#### Example Sign

**ATTENTION!!!**

**Do not use any water** (including flushing toilets) in the building. We are collecting lead samples and this is a procedural requirement.

**Sampling Date:** Friday, October 1, 2021


**Time:** Do not use water from 8:00 PM Thursday September 30th to 8:00 AM Friday October 1st

**We appreciate your cooperation!**

**There should be no water usage at the school or childcare facility before sampling.**

- Plan accordingly to wash your hands, fill up any water bottles for personal consumption, and use bathroom facilities before arriving on-site.
- Prior to the sampling date, post signs with the date and time period of non-use to alert building users that they should not turn on any water (including flushing toilets) in the building. With teachers, maintenance, sports teams, and clubs potentially using facilities after hours, be sure to communicate about sampling beforehand so there is no confusion or accidental usage.
- Take the following assurances before sampling:
  - ✓ Make sure the area is free of potential contaminants, your materials are ready, and you are fully prepared to begin sampling. It is better to focus on being thorough while sampling, rather than collecting samples quickly.
  - ✓ Place a checkmark by each task as you complete it. After reviewing and completing the tables in this section, you can move onto the next section: [\[Collect\]](#).



 <b>Assurances to Take Before Conducting Sampling</b>	
<input type="checkbox"/>	The night before, post signs alerting people not to use the fixture (EPA recommends the water should sit in the pipes for at least 8-hours, but no more than 18-hours, prior to sampling). These samples are typically collected in the morning before the facility opens and before any fixtures have been used.
<input type="checkbox"/>	Do not close the shut-off valves to prevent their use prior to sample collection, as this may result in nonrepresentative results. It is important for the system to run normally to receive results that represent typical use.
<input type="checkbox"/>	Do not use the facilities' restrooms or sinks that morning prior to sampling.
<input type="checkbox"/>	Wear gloves to avoid contaminating the samples and for your own safety, as some laboratories may send sample containers preserved with acid.
<input type="checkbox"/>	Make sure there is no food, drink, or other substance around the sampling location that could contaminate the sample.
<input type="checkbox"/>	Double check that all containers have been labeled and have no visible indication of contamination (such as an ajar lid or hole in the container).
<input type="checkbox"/>	Verify with your map and sampling plan that you are at the correct fixture with the correctly labeled sampling containers.
<input type="checkbox"/>	Set up your table next to the fixture with the sampling containers unopened and labeled, in addition to any other necessary materials. Keep containers closed until you are ready to collect the sample.
<input type="checkbox"/>	When you open the container, set the lid on the table facing up to avoid contamination from contact. Keep the threads also facing up. If the threads or container interior are touched, do not use the container.
<input type="checkbox"/>	Do not remove aerators prior to sampling. See <a href="#">Module 5 in the 3Ts Toolkit</a> for details on "Determining aerator/screen debris contribution".
<input type="checkbox"/>	If there are multiple floors, it is typically recommended to sample from the bottom floor and continue up. Start sampling closest to where the water pipe comes into the building and work away. Refer to <a href="#">Module 4 in the 3Ts Toolkit</a> for more details.



## Collect

In this section, you will learn about the appropriate sampling techniques and best practices to obtain accurate results, as well as how to properly ship your sample to the laboratory for analysis. There are three potential sampling types that this guide covers (Refer to [Modules 4 and 5 in the 3Ts Toolkit](#) for more details on sample types):

- ◆ First-draw Samples
- ◆ Flush Samples
- ◆ Sequential Samples

### Important Notes:

- **Collect all samples from cold water taps.** Although EPA encourages routine maintenance of hot water heaters, this guidance does not include sampling hot water outlets or hot water heaters, because hot water is not recommended for consumption (drinking/cooking). Refer to [Module 6 under “Temperature Control”](#) in Remediation and Establishing Routine Practices in the 3Ts Toolkit.
- **After collecting the samples, you will need to ship them to the laboratory in a timely manner** (typically within 2 weeks). Carefully follow any packing and shipping instructions the laboratory has sent. If no instructions were provided, please review the [\[Shipping Your Samples\]](#) section in this guide for additional directions.



## □ First-draw Samples

**First-draw samples are typically collected in the morning before the facility opens and before the fixtures have been used. Collect samples from the cold water tap.**

- First draw samples represent the water that may be consumed at the beginning of the day or after infrequent use. These results will indicate if the fixture and its parts are a source of lead in your water.
- First draw samples are collected before a facility opens and before any water is used (including flushing toilets) after an 8- to 18-hour stagnation period. EPA recommends the water should sit in the pipes for at least 8 hours, but no more than 18 hours, prior to sampling. Using this approach maximizes the likelihood that the highest concentrations of lead will be found because the first 250-mL sample is collected after the water has sat in the pipes for at least 8-hours.
- The flow rate when collecting the sample should be consistent and as high as feasible, without splashing or overfilling.
- Below is a checklist of steps you can use to complete a first-draw sample. Please refer to instructions sent by the certified laboratory or your state program and use those if they differ from the steps below.



✓ Instructions for First draw Sampling	
<input type="checkbox"/>	1. Double check you have the correct sampling bottles for the sampling site.
<input type="checkbox"/>	2. Label containers with your coding identification (ID) (use the permanent marker), if not already done.
<input type="checkbox"/>	3. Take out your recordkeeping document (e.g., chain-of custody-form, 3Ts Data eTracker) for immediate access.
<input type="checkbox"/>	4. Put on gloves.
<input type="checkbox"/>	5. Place the opened container under the fixture ready for water collection.
<input type="checkbox"/>	6. Turn on the fixture and immediately fill the 250 mL container to the top (or appropriately sized container based on the sample purpose), but do not overflow.
<input type="checkbox"/>	7. Turn off the fixture.
<input type="checkbox"/>	8. Close the container according to the laboratory's instructions. Tightly cap the container and set it aside.
<input type="checkbox"/>	9. Record any observations that may impact the lead sample results, such as a leaking faucet, water discoloration, or variable water pressure. You may also take photos that will be useful when interpreting results. Reminder: Record the date, time, and sample type.
<input type="checkbox"/>	10. Repeat steps 1-9 at each sampling site until you have the appropriate number of samples requested.
<input type="checkbox"/>	11. Prepare the shipping container and send samples to the laboratory according to the laboratory's instructions.

## Flush Samples

**Flush samples are taken after the water from the fixture has been running for a specific amount of time, commonly 30 seconds. Collect samples from the cold water tap.**

- A flush sample is typically needed if the results of the initial first-draw sample detect lead.
- Flush samples are used to further determine if lead is coming from the fixture itself or from interior plumbing. Your state program or certified laboratory may instruct you to collect a flush sample, or you may do so on your own based on an elevated lead level that was previously detected.

- The purpose of the flushing is to rid the pipes of stagnant water so that you can better identify the source of lead. These results will indicate if the pipes behind the fixtures and its parts are a source of lead in the water.
- Flush samples are collected before a facility opens and before any water is used (including flushing toilets) after an 8- to 18-hour stagnation period.
  - ✓ For a more accurate result, samples taken from different fixtures that are near each other should be collected on different days.
  - ✓ For drinking fountains or other fixtures that are close together, a single flush sample may be representative of their shared interior plumbing.
- The flow rate when collecting the sample should be consistent and as high as feasible, without splashing or overflowing.
- EPA's 3Ts program recommends conducting a 2-step sampling procedure to identify if there is lead in the outlet or behind the wall.
  - ✓ Step 1 is collecting the *first-draw* sample and step 2 is collecting the *flush sample*.
  - ✓ You may collect flush samples in the same sample event or on a different day. Collecting the samples in the same sampling event may reduce cost and provide you with more information on lead levels sooner. In this case, the flush sample is collected immediately after the first-draw sample.
  - ✓ If the first-draw sample and the flush sample are not taken in the same sample event, and your elevated lead level of concern is found in step 1, do not consume the water while preparing to take the flush sample.
- Below is a checklist of steps you can use to collect a flush sample. Please refer to instructions sent by the certified laboratory or your state program and use those if they differ from the steps below.

<span style="font-size: 1.5em; vertical-align: middle;">✓</span> Instructions for Flush Sampling	
<input type="checkbox"/>	1. If you did not collect the first-draw sample first, follow steps 1-4 in <i>First Draw Sampling</i> checklist and then proceed to Step 2.
<input type="checkbox"/>	2. Turn on the fixture and start your stopwatch. Time the water so it runs for a fixed amount of time, usually 30 seconds. Maintain a consistent rate of flow during that time.
<input type="checkbox"/>	3. After 30 seconds, fill the 250 mL container (or appropriately sized container based on the sample purpose) to the top, but do not overflow.
<input type="checkbox"/>	4. Turn off the fixture.
<input type="checkbox"/>	5. Close the container according to the laboratory's instructions. Tightly cap the container and set it aside.
<input type="checkbox"/>	6. Record any observations that may impact the lead sample results, such as a leaking faucet, water discoloration, or variable water pressure. You may also take photos that will be useful when interpreting results. Reminder: record the date, time, and sample type.



✓ Instructions for Flush Sampling	
<input type="checkbox"/>	7. Repeat steps 1-6 at each sampling site until you have the appropriate number of samples requested.
<input type="checkbox"/>	8. Prepare the shipping container and send samples to the laboratory according to the laboratory's instructions.

## □ Sequential Samples

**Sequential samples involve collecting a series of water samples at a single fixture, without flushing beforehand or running the water between samples. Collect samples from the cold water tap.**

- The purpose of a sequential sample is to pinpoint if your source of lead is from the fixture itself. The samples you collect will represent water that was in contact with the fixture and any piping or plumbing behind the wall.
- How you collect the sample will depend on what fixture you are collecting the sample from. See the [Detailed Fixture Evaluation in Module 5 of the 3Ts Toolkit](#) for specific instructions on how to conduct sampling for each of these fixtures:
  - ◆ Drinking Water Fountains
  - ◆ Drinking Water Fountains with Coolers
  - ◆ Cold Water Faucets
  - ◆ Icemaking Machines
  - ◆ Central Chiller Unit

## □ Shipping Your Samples

**Most certified laboratories will provide shipping containers, so take advantage of this and closely follow their instructions for packaging and shipping.**

- **Bring the shipping kit** with you to the sampling sites so that you can place finished containers directly into it after confirming they are appropriately labeled.
- **Use the labeling system** you created in [\[Develop a Coding and Labeling System\]](#). Document your sample event information (e.g., date and time of sample collection, sample type, fixture location, etc.) for each sample collected [Use the [3Ts Sampling Data eTrackers](#).]

- The lab typically will ask that you complete a chain-of-custody (COC) form to ensure the contents of your sample are safely received by the appropriate entity [Figure 1]. Use the information from your Data eTracker or other recordkeeping to fill out the COC form.

Figure 1. Example of a Chain of Custody Record.

CHAIN OF CUSTODY												
CLIENT NAME: John Doe Johnson			PROJECT: ABC High School Lead in Water Sampling				ANALYSES REQUESTED				TURN AROUND TIME	
ADDRESS: 123 School Street, Made Up, State			PHONE: FAX: EMAIL:				<input type="checkbox"/> Standard <input type="checkbox"/> 5 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> 2 Day <input type="checkbox"/> 24 Hours <input type="checkbox"/> Other:				<input type="checkbox"/> Standard <input type="checkbox"/> 5 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> 2 Day <input type="checkbox"/> 24 Hours <input type="checkbox"/> Other:	
PROJECT MANAGER:			SAMPLER: John Doe Johnson								Charges will apply for weekends/holidays Method of Shipment: COMMENTS:	
SAMPLE ID	DATE SAMPLED	TIME SAMPLED	SAMPLE TYPE CODE:	NOTES (Temp, Sample Description, etc.)	TYPE CONT.	PRESER-VATIVE	# OF CONT.	Lead (EPA 200.8)				
003-312-DW-P-015	1/1/2021	9:00	DW	Clear Sample Water	Plastic	None	1	X				
RELINQUISHED BY <i>John Doe Johnson</i>			DATE / TIME 1/1/2021 12:00	RECEIVED BY				DATE / TIME		SAMPLE CONDITION:		SAMPLE TYPE CODE:
RELINQUISHED BY			DATE / TIME	RECEIVED BY				DATE / TIME		Actual Temperature:		AD = Aqueous
RELINQUISHED BY			DATE / TIME	RECEIVED BY				DATE / TIME		Received On Ice		NA = Non Aqueous
										Preserved		SL = Sludge
										Evidence Seals Present		Y / N DW = Drinking Water
										Container Attacked		Y / N WW = Waste Water
										Preserved at Lab		Y / N RW = Rain Water
												Y / N GW = Ground Water
												Y / N SW = Solid Waste
												OL = Oil
												OT = Other Matrix
PRESCHEDULED RUSH ANALYSES WILL TAKE PRIORITY OVER UNSCHEDULED RUSH REQUESTS				SPECIAL REQUIREMENTS / BILLING INFORMATION								

- ✓ [Figure 1] shows an example COC form that your laboratory should send you with the shipping instructions. Once completed, make a copy of the COC for your records and place the original in the shipping container. The last step is to pack your samples and get ready to ship them.
- **Coordinate with your laboratory** regarding a return date for your samples, typically within the next two weeks.
  - ✓ *It is very important to ship your samples in a timely manner.* Upon receipt, the laboratory will acidify the sample to preserve it (unless they have already provided you with preserved sample containers). If the laboratory fails to receive or analyze your samples in time (as instructed), you may need to re-collect the sample and pay for the additional sampling bottles the laboratory will send you.
  - ✓ Follow any directions provided by the laboratory and consider the following best practices for shipping:
    - Ship your sample as soon as possible, preferably the same day after sampling is conducted. Prepare ahead of time and avoid shipping on Fridays, around holidays and long weekends, or during other times when shipping services may be delayed.





## Results

This section will cover the steps you can take after you receive the lead sample results from your selected laboratory. The steps include receiving and interpreting your results, taking action to address problem fixtures, and sharing the results with your school or child care community.

### □ Receiving Results

The laboratory will provide you with an estimated time frame that you will receive the results.

- Use the [3Ts Sampling eTrackers](#) to record your lead sample results for each fixture.

#### Interactive Tool: EPA 3Ts Sampling eTrackers

The 3Ts Sampling eTrackers were developed to assist schools and child care facilities to track and document sampling event information (i.e., inventory, results, actions). For WIIN grant recipients it also includes the date elements needed to report to your state. You can access the eTrackers here: [3Ts Sampling eTrackers](#).

#### Common Lead Concentration Units

- Use this table to convert units of measurement. Different units of measurements are often used between programs or documents.


Unit	Conversion
Parts per billion (ppb)	1 ppb = 1 µg/L = .001 ppm = .001 mg/L
Parts per million (ppm)	1 ppm = 1 mg/L = 1000 ppb = 1000 µg/L
Microgram per liter (µg/L)	1 µg/L = 1 ppb = .001 mg/L = .001 ppm
Milligram per liter (mg/L)	1 mg/L = 1 ppm = 1000 µg/L = 1000 ppb

### □ Interpreting Results

Once you receive your lead sample results, you will need to determine which fixtures or plumbing material need immediate, short term and/or permanent actions.

Results from one outlet should not be used to generalize the lead levels at other outlets in the facility nor to determine the overall quality of your drinking water throughout the building.

- Lead contamination can occur from fixtures, building plumbing, and/or lead service lines (i.e., the pipe that connects a water main to a user's premises). Refer to [Module 4 in 3Ts Toolkit](#) for more details on "Do You Have a Lead Service Line?"
- A sample result is a snapshot of the lead level taken at the time it was collected.
  - ✓ Prior low or non-detected lead levels should not be used to assume that an outlet or facility is lead-free.
- Lead levels at an outlet or within a building have been shown to vary over time whether it be from usage frequency, seasonal variations, new or aging fixtures, or changes made by your 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 that you are providing safe drinking water to students and staff.

**Make sure you know your 3Ts Program Remediation Trigger (PRT) or level of concern before you receive the lead sample results.**

- Contact your appropriate state agency and discuss your state’s requirements.
  - ✓ If you are a recipient of funding from your state’s Water Infrastructure Improvements for the Nation (WIIN) Act, the state will provide the PRT, unless you choose a lower level.
    - Visit EPA’s [WIIN 2107: Lead Testing in School and Child Care Program Drinking Water State Grant Program Contacts](#) to find your state program.
  - ✓ The numeric value for taking action is determined by you or your state. If that lead level of concern or PRT is detected in your sample results, you should take immediate action to reduce the lead exposure for that source.


**Review your plan (which you prepared before sampling) to determine the action(s) you will take when lead is detected.**

- The 3Ts program recommends taking immediate action (e.g., within 24 hours) for sample results with “elevated lead levels” based on the 3Ts PRT or level of concern you selected.

## □ Taking Action

**Remember, there is no safe blood lead level in children.** The 3Ts program recommends that you take appropriate action on each drinking water outlet with a detected lead level; starting with the results that exceed your level of concern or PRT.

- Solutions to lead problems typically should be addressed on both a short-term and a long-term basis.
  - ✓ When selecting a remediation solution, you should engage the local health department, public water system, and other available resources to ensure the organization performing remediation is qualified and reputable.
  - ✓ Ask vendors for information on the schedule, health precautions that must be taken during and following remediation and request regular status updates on their progress prior to agreeing to work with any particular organization. Refer to [Module 6 in the 3Ts Toolkit](#) for more details.
- It’s important to remember that each result is intended to identify a specific source of lead. It’s not an indication of the lead levels throughout the entire building or the water system.
- **[Figure 2]** shows some steps you can take to address fixtures that you have been tested for lead.
  - ✓ There are immediate, short term (i.e., temporary), and permanent actions you can take to prevent lead exposure. Refer to [Module 6 in the 3Ts Toolkit](#), which includes information on follow-up sampling, best practices for flushing, and remediation options and considerations.
- Ask your state program or local water system for tangible recommendations regarding your specific lead sampling results.

- 
- An elevated result that exceeds your PRT or state action level will require follow-up sampling, which could include flush samples, service line flush samples (further discussed in the [\[Collect\]](#) section), or a detailed fixture evaluation to pinpoint which part of the outlet or plumbing is adding lead to your drinking water (discussed in more detail in the [Detailed Fixture Evaluation in Module 5 of the 3Ts Toolkit](#)).
  - Note: Use the [3Ts Sampling eTrackers](#) to track whether follow-up, remediation, and/or replacement actions have been taken for each of the outlets sampled.

**If your lead sample results detected lead levels that exceed your PRT or state action level**, the 3Ts program recommends taking immediate action (for example, within 24 hours) and use the remediation options (i.e., short or long-term control measures) that you put in-place to reduce exposure.

- See recommendations in [\[Figure 2\]](#) and refer to [Module 6 in the 3Ts Toolkit](#) for more details.

**If your lead sample results detected lead levels below your PRT or state action level**, the 3Ts program recommends taking action to further minimize potential exposure.

- Actions may include posting a sign at the fixture to inform that lead was found, installing filters, implementing routine flushing, removing the fixtures from service, or replacing drinking water fountains. See recommendations in [\[Figure 2\]](#).
- Next, start preparing for the next round of testing. Lead testing is an iterative process that requires continuous efforts to help provide safer drinking water for your community and to contribute to a healthy school or child care environment for all.
  - At a minimum, **EPA encourages annual sampling** even when a sample result is non-detect or low. Lead in drinking water can vary widely in space and in time (i.e., between buildings, within buildings and even at the same fixture over time), as the combined result of water chemistry, hydraulics, lead plumbing sources and water consumption patterns. Refer to [Module 6 in the 3Ts Toolkit](#), which includes remediation options and routine practices.

## □ Sharing Results and Actions

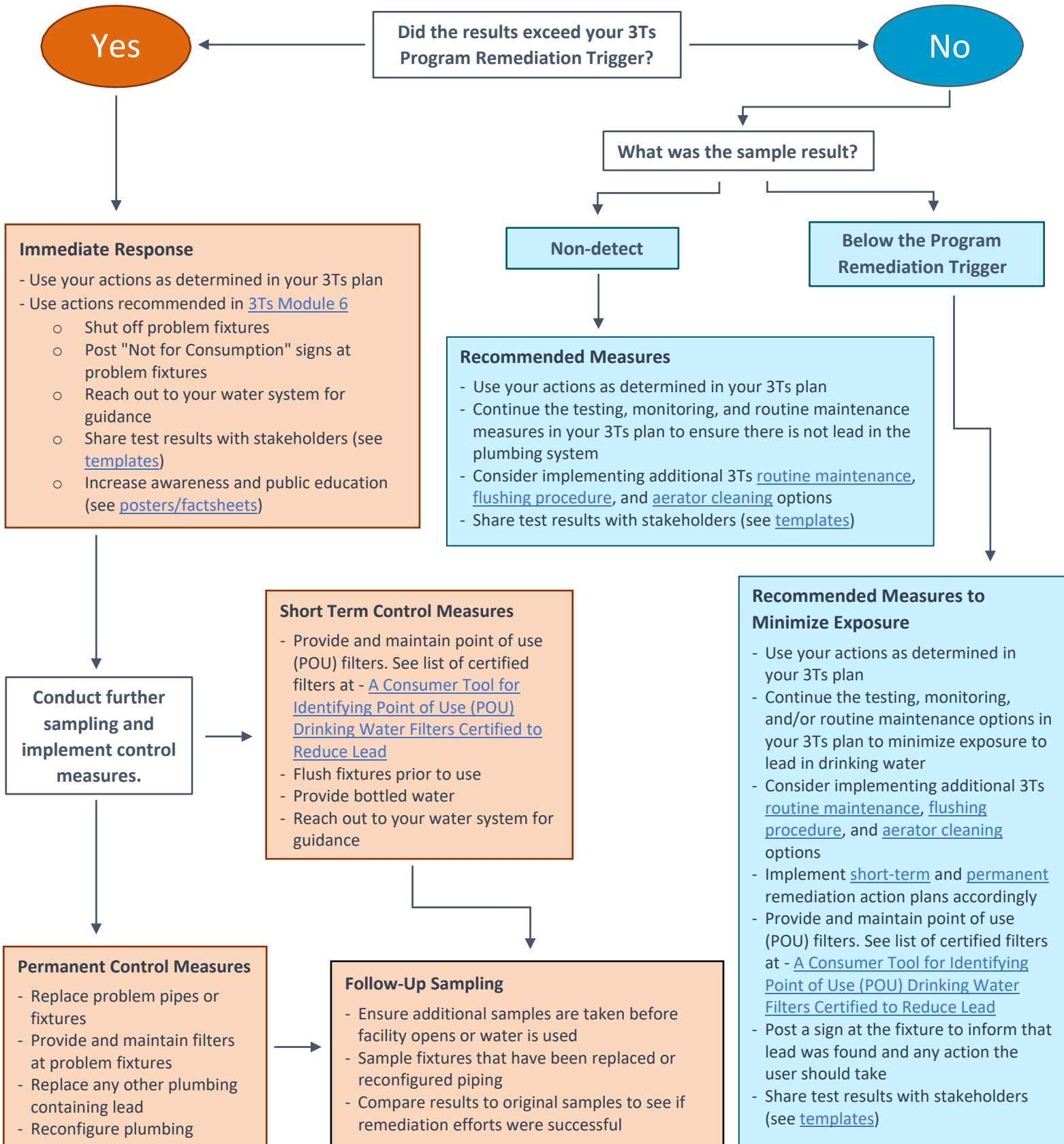
Regardless of the sample results, maintaining records is important for future sampling and remediation efforts, schedules for upkeep and maintenance, and communicating with your school community and partners and contacts that assisted you.

**It is *critical* that you share your results and actions you took to reduce lead exposure with your community members, including students, parents, staff, and anyone else who uses the building.**

- You can use resources from the 3Ts Toolkit to prepare your communication plan. [Module 1 of the 3Ts Toolkit](#) includes newsletter templates, a parent letter template, a postcard template, a customizable poster, and other guidance to help you communicate your testing program along with the lead sample results and actions taken. It is important to be transparent in your communications and to keep your community updated about past, ongoing, and upcoming efforts.

Figure 2. Steps to Consider After Receiving Your Sampling Results.

## Taking Action After Receiving Your Sampling Results





## Helpful Resources

*This Lead Sampling Collection Field Guide builds on EPA's continued efforts to provide proactive steps to protect children's health. Specific to lead testing and water quality, EPA develops tools and materials for schools and child care facilities to use.*

Visit the accompanying Lead Sample Collection Video: <https://www.epa.gov/ground-water-and-drinking-water/3ts-reducing-lead-drinking-water>

- 3Ts Revised Manual for Reducing Lead in Drinking Water in Schools and Child Care Facilities: <https://nepis.epa.gov/Exe/ZyPDF.cgi/P100VLI2.PDF?Dockey=P100VLI2.PDF>
- 3Ts Toolkit: <https://www.epa.gov/ground-water-and-drinking-water/3ts-reducing-lead-drinking-water>
- 3Ts Sampling eTrackers: <https://www.epa.gov/ground-water-and-drinking-water/3ts-reducing-lead-drinking-water#mod7>
- List of EPA Certified Labs: <https://www.epa.gov/dwlabcert/contact-information-certification-programs-and-certified-laboratories-drinking-water>
- Lead Testing in School and Child Care Program Drinking Water Grant Contact Information: <https://www.epa.gov/dwcapacity/wiin-2107-lead-testing-school-and-child-care-program-drinking-water-state-grant-program>
- EPA's Website on Certification of Laboratories: <https://www.epa.gov/dwlabcert>
- EPA's National Accredited Laboratory List: <https://www.epa.gov/lead/national-lead-laboratory-accreditation-program-list>
- EPA's Website on Lead in Drinking Water in Schools and Childcare Facilities: <https://www.epa.gov/dwreginfo/lead-drinking-water-schools-and-childcare-facilities>
- EPA's Information on Maintaining or Restoring Water Quality in Buildings with Low or No Use: <https://www.epa.gov/coronavirus/information-maintaining-or-restoring-water-quality-buildings-low-or-no-use>
- EPA's Consumer Tool for Identifying POU Drinking Water Filters Certified to Reduce Lead: <https://www.epa.gov/water-research/consumer-tool-identifying-pou-drinking-water-filters-certified-reduce-lead>
- EPA's Water Infrastructure Improvements for the Nation Act Lead Testing in School and Child Care Program Grant: <http://www.epa.gov/safewater/grants>
- 3Ts Child Care Poster: <https://www.epa.gov/ground-water-and-drinking-water/3ts-child-care>
- EPA's Extended Closure Factsheets for Child Care Facilities and Schools: <https://www.epa.gov/ground-water-and-drinking-water/audience-factsheets>
- EPA's Sample Collection Guide for Child Care Facilities Comic Strip: <https://www.epa.gov/ground-water-and-drinking-water/3ts-reducing-lead-drinking-water#mod5>