

Clean Classrooms for Carolina Kids Water Section Instructions

Prepared by

Clean Classrooms for Carolina Kids Program

RTI International

3040 E. Cornwallis Road, PO Box 12194

Research Triangle Park, NC 27709

www.rti.org

January 2024

RTI International is a trade name of Research Triangle Institute.
RTI and the RTI logo are U.S. registered trademarks of Research Triangle Institute.



Introduction

This resource was developed by Clean Classrooms for Carolina Kids. This document provides helpful “how to” tips for lead in water testing and eliminating lead exposure. Click the page numbers within each box to jump to the section you want. The sections include the following:

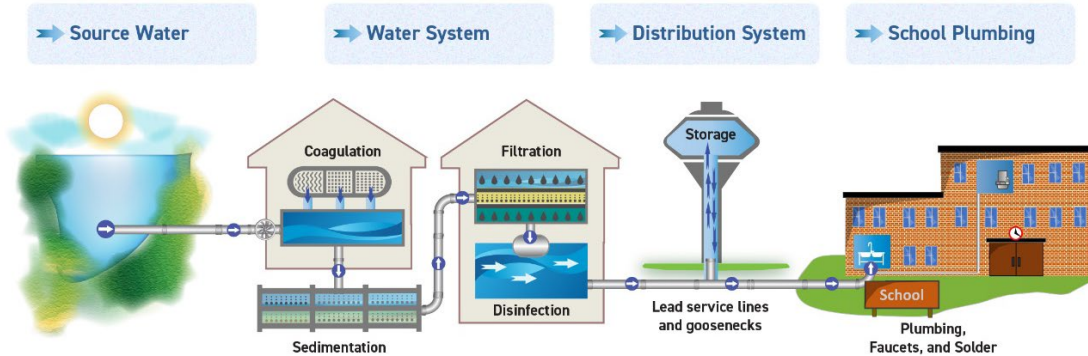
<p>WATER COLLECTION</p>  <p>HOW TO DESIGNATE WATER TAPS FOR SAMPLE COLLECTION PAGES 5-8</p>	<p>WATER COLLECTION</p>  <p>HOW TO SAMPLE FOR LEAD IN YOUR DRINKING OR COOKING WATER PAGES 9-10</p>	<p>WATER COLLECTION</p>  <p>HOW TO SAMPLE FOR LEAD FROM UNTRADITIONAL WATER TAPS PAGE 11</p>	<p>WATER COLLECTION</p>  <p>HOW TO FLUSH TAPS WHEN YOUR FACILITY WAS CLOSED PAGE 12</p>	<p>WATER COLLECTION</p>  <p>WHAT HAPPENS WHEN YOUR SAMPLES GET TO THE LAB PAGE 13</p>
<p>WATER RESULTS</p>  <p>HOW TO UNDERSTAND THE RESULTS OF YOUR WATER TEST PAGE 14-15</p>	<p>WATER COLLECTION</p>  <p>HOW TO COLLECT FOLLOW-UP SAMPLES PAGES 16-17</p>	<p>WATER RESULTS</p>  <p>HOW TO UNDERSTAND FOLLOW-UP RESULTS PAGES 18-20</p>	<p>MITIGATION AND MAINTENANCE</p>  <p>WATER MITIGATION SERVICE OPTIONS PAGES 21-22</p>	<p>MITIGATION AND MAINTENANCE</p>  <p>GUIDANCE FOR COMPLETING THE MITIGATION REQUEST FORM PAGES 23-26</p>
<p>MITIGATION AND MAINTENANCE</p>  <p>HOW TO DEVELOP A DRINKING WATER MANAGEMENT PLAN PAGES 27-30</p>	<p>MITIGATION AND MAINTENANCE</p>  <p>HOW TO CHOOSE THE RIGHT WATER FILTER PAGES 31-35</p>	<p>MITIGATION AND MAINTENANCE</p>  <p>HOW TO MAINTAIN A WATER FILTER PAGE 36</p>	<p>MITIGATION AND MAINTENANCE</p>  <p>HOW TO REPLACE YOUR FAUCET PAGES 37-39</p>	<p>MITIGATION AND MAINTENANCE</p>  <p>HOW TO CHECK FOR LEAD AND GALVANIZED STEEL SERVICE LINES PAGES 40-42</p>

We have a full video series on how to test for lead in water and eliminate exposure. **If you prefer to watch our videos, click [here](#) or search “Clean Classrooms for US Kids” on YouTube.**

PROGRAM OVERVIEW

Overview of Lead Hazards for Young Children

The Legacy of Lead in Drinking Water



Lead in drinking water is not typically found at the source, or in the water system (also known as water utility facility or public water supply plant). Lead is typically found in household plumbing or in service lines, and distribution pipes (the pipes that bring water from the utility to your home). If your building is served by a private well, the private well components could also be a source of lead.

Due to its useful chemical properties lead has been used in a variety of industries, including ammunition, batteries, ceramics, paint, gasoline, and plumbing components. Lead is possibly the most notorious toxic chemical in history, yet it is still common where kids live and play. Since the 1970s, environmental levels of lead have declined, largely due to regulations in the U.S. to control lead sources, including gasoline, paint, and plumbing.¹ However, these rules only applied to future installations and don't address lead-based paint or leaded plumbing that was already in place. Because of this, lead in drinking water from leaded-pipes, fixtures, and service lines poses an ongoing health risk, especially for infants and children.

Children may be exposed to lead by drinking water at home, schools, and child care centers.

Early Childhood Lead Exposure

Lead is toxic to the brain and the nervous system even at very low levels of exposure. Infants and young children are especially sensitive to chemicals like lead in their environments. Early childhood exposures to lead can result in harmful, lifelong health effects. These effects are often related to children's developing brains and can include IQ loss, learning disabilities, and behavioral disorders.^{2,3} It is important to make sure that



This can cause irreversible, lifelong, and cumulative effects

- Lower IQ
- Decreased ability to pay attention
- Underperformance in school

¹ Dignam, T., Kaufmann, R. B., LeStourgeon, L., & Brown, M. J. (2019). DOI: [10.1097/PHH.0000000000000889](https://doi.org/10.1097/PHH.0000000000000889).

² Canfield, R. L., Henderson, C. R., Jr., Cory-Slechta, D. A., Cox, C., Jusko, T. A., & Lanphear, B. P. (2003). DOI: [10.1056/NEJMoa022848](https://doi.org/10.1056/NEJMoa022848).

³ Lanphear, B. P., Hornung, R., Khoury, J., et al. (2005). DOI: [10.1289/ehp.7688](https://doi.org/10.1289/ehp.7688).

children’s homes, day cares, and schools are free from sources of lead. Potential sources of lead exposure include old paint, drinking and cooking water, toys, or other manufactured products. This document focuses on lead in drinking and cooking water.

An Overview of Our Steps to Identify and Eliminate Exposure to Lead in Drinking and Cooking Water



The first step to identify and eliminate exposure to lead in drinking and cooking water is to get your water tested. If you do find lead in your water, there are straightforward, cost-effective steps to reduce exposure. You can designate one “clean tap,” use water filters, and/or replace old plumbing fixtures. Taking these simple steps can help get lead out of your drinking and cooking water. Importantly, boiling water does NOT remove lead or prevent lead exposures.

In addition to testing your water, we also describe how to check your pipes to identify the material they are made of to help understand your water test results. You can report the results of your check to us. If your pipes are lead or copper and your water test showed high levels of lead, we can help prioritize your location for lead service line replacement to remove the source of lead.

GUIDANCE ON SAMPLING WATER TAPS AT FACILITIES

The following guidance will help your facility identify which water outlets should be sampled under the Clean Classrooms for Carolina Kids™ program to fulfill North Carolina rule requirements. *Note that only taps used for consumption (drinking and cooking) should be sampled.*

TAPS THAT SHOULD BE SAMPLED

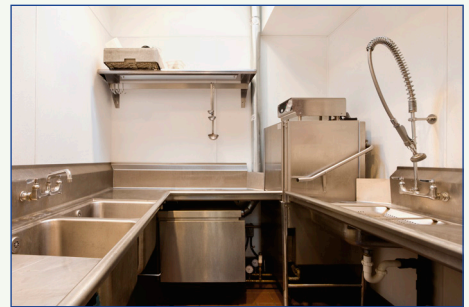
KITCHEN/CAFETERIA

Food Preparation Taps

Any taps used for preparing food or beverages for consumption such as filling pots for cooking water, making beverages, preparing infant formula, and washing fruits and vegetables. This includes:

- All faucets in multicompartiment sinks
- Pantry faucets
- Pot fillers
- Spray hoses used to fill pots for cooking

Facilities must list these taps used for food preparation or drinking for sampling.



Appliances (Plumbed-In) – Optional to Sample

Any peripheral cafeteria/kitchen appliances that are directly connected to tap water from a water hose or line. Some examples include ice makers, steam ovens, steam/tilting kettles, and soup makers.

Please note the following if you choose to sample a plumbed-in appliance:

- 1) ONLY sample in the appliance as you start turning the water on. Do not sample behind appliances or unhook/unplug appliances.
- 2) If you cannot collect a water sample inside the appliance after it is turned on, do not include it.
- 3) Facilities that choose to sample these optional taps are responsible for mitigation or restricting access.
- 4) Mitigation actions and costs are not covered by the program for these appliances.



TAPS THAT SHOULD BE SAMPLED (continued)

CLASSROOMS

Bubblers and Classroom Sinks

Only include classroom sinks if they are specifically used for drinking or cooking.

Facilities must list bubblers attached (or plumbed) to a classroom sink used for drinking water in the classroom if they are not capped.



Food Preparation or Drinking Taps

This ONLY includes classroom sinks used for consumption.

This does NOT include the “food prep handwash sink” used in licensed child care centers, which should not be sampled.

Any taps used for preparing food or beverages for consumption including filling pots for cooking water, making beverages, preparing infant formula, and washing fruits and vegetables. This includes:

- All faucets in multicompartiment sinks
- Faucets in classrooms used for cooking

List ONLY classroom taps that are specifically used for food preparation or drinking. Do not include classroom taps designated as handwash only.

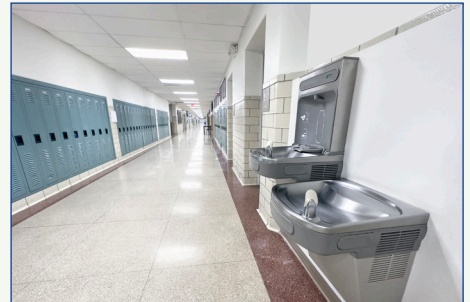


GENERAL INDOOR AND OUTDOOR AREAS

Bottle Fillers/Water Fountains

Facilities must list each water fountain bubbler and bottle filler used for consumption and clearly label each “tap” in proximity to which part of the fountain it is on.

Include any water fountains anywhere inside the building and outside the building on the facility’s campus (e.g., campus courtyards, sports fields).



Locker Room Tap

Only include locker rooms taps if they are specifically used for filling water bottles and coolers.

Bathroom sinks should typically NOT be included as they are handwash only sinks. However, if your facility fills up water coolers or bottles for sports in a locker room, include ONLY that specific tap used for drinking.

TAPS THAT SHOULD NOT BE SAMPLED

The mitigation of these taps is **not** covered by the Clean Classrooms for Carolina Kids™ program. Facilities should post permanent signage indicating that the taps should not be used for drinking or cooking use. **You may laminate the program sign templates [HERE] for use.**

No additional mitigation actions will be included from the Clean Classrooms for Carolina Kids program if these are inadvertently sampled and found to contain lead at or above the state action level as 1) they are not used, nor should they be used, for consumption; and 2) ingestion of lead in water is the main lead exposure hazard.

KITCHEN / CAFETERIA

Dishwashing (Sink) Taps



Any taps used **ONLY** for washing dishes and kitchenware, service ware, or utensils but not used for food preparation.

Child care centers should include multicompartment sinks that may also be used for dishwashing.

Handwash Taps



Any taps in a cafeteria/kitchen used **ONLY** for handwashing and not food or beverage preparation.

Appliances (Not Plumbed-In)



Any peripheral cafeteria/kitchen appliances (e.g., standalone appliances such as coffee makers and standalone kettles) that use tap water at the facility but are not connected to tap water.

CLASSROOMS

Food Preparation Handwash Sinks



These are common in licensed child care centers – e.g., handwash sinks in the food prep area. Licensed child care center classrooms may also have food prep handwash sinks (e.g., handwash sinks in the food prep area), diapering sinks, or toothbrushing sinks where water is not used for consumption.

Handwash Taps



Any taps in a classroom used for handwashing or other activities only, not for consumption or food preparation.

- This includes general handwash stations, taps used for art or lab activities, taps used for brushing teeth, and taps used for diapering.
 - Note that water from these taps should not be used for mouth rinsing per the North Carolina Oral Health Program.
-

BATHROOMS, LAVATORIES, AND LOCKER ROOMS

Handwash Taps



Any taps in bathrooms/lavatories used for handwashing only, including electronically/motion-activated taps.

Shower Heads



Any bathroom or locker room outlets used for bathing.

TAPS THAT SHOULD NOT BE SAMPLED (continued)

General Indoor and Outdoor Areas



Eyewash Sinks/Safety Showers

Station for rinsing bodies or eyes in laboratories in case of emergency.



Laundry Taps

Any taps at the facility dedicated to cleaning or sanitizing clothes, sheets, towels, uniforms, etc.



Janitorial/Mop Taps

Any taps used specifically for janitorial purposes, such as filling mop buckets.



Outdoor Hose Spigots or Hoses

Faucets or spigots used for cleaning or irrigation. Facilities should only use designated drinking or cooking taps to fill sports coolers and water bottles.



WATER SAMPLING INSTRUCTIONS

How to collect water samples to test for lead at your facility

If your facility is closed for the summer, holidays, or longer than 72 hours, you must take additional steps 2-3 days before you sample. Go to bit.ly/3CK-flushing or scan this QR code for guidance.



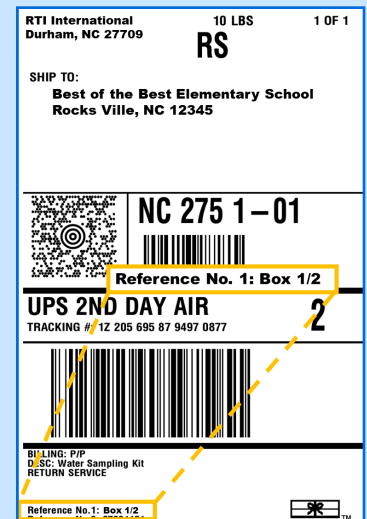
Step 1. Prepare to sample.

- **Set a date** to collect samples after not using water in your facility for 8-72 hours (over night or weekend).
- **Notify** staff, students, and cafeteria workers to not use water in the building at least 8 hours before you sample until sample completion.



Step 2. Collect sample.

- **If water was run** within 8 hours of sampling, STOP and reschedule for the following day.
- **Follow box order.** Some schools will have multiple boxes. Find Box One noted on the UPS shipping label and begin with that box.
- **Start on lowest floor.** If facility has more than one floor
- **Start with the first number on the chain of custody.** Find the bottle with the matching number. Continue sampling in the order found on the chain of custody.
- **Do not touch inside of bottle or lid,** and place lid on a clean surface with open side facing up.
- **Position bottle underneath the tap** and turn water to a normal flow.
- **Fill bottle to neck** (narrow part of bottle where bottom of cap sits).
- Close bottle tightly.



Avoid Common Mistakes

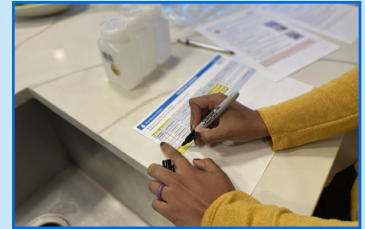
- Do NOT use water before sampling.
- Use water normally the week before.
- Do NOT remove faucet aerators.
- Do NOT close sink shutoff valves.

Tips for water fountains: At least 72 hours before sampling, identify where water typically hits so you know where to position the bottle. Mark spot with a sharpie. You may need to angle bottle to get all water inside of bottle. If you don't get it in right away, that's okay. Try to keep the bottle as full as you can. Do not pour it out and try again.



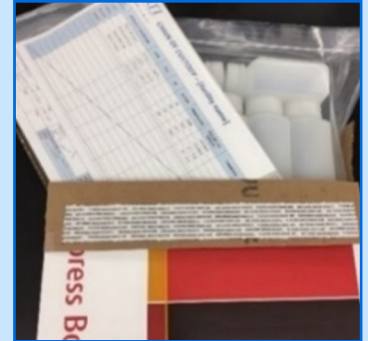
Step 3. Fill out chain of custody document.

- **Fill in date and time** on chain of custody for each sample.
- Add your name in "Collected by" section and date and time sampling is complete.



Step 4. Prepare samples for shipping.

- **Tightly close each bottle**, place them into large bag, and seal it.
- **Put chain of custody in smaller bag** and seal it so it does not get wet.
- **Put bags in box.** (If you lose it, use another box).
- **Place new shipping label** over the previous one on the box.
- **Close box and reseal** top flap using strong shipping tape.



Step 5. Schedule a UPS pickup.

- There is no charge for return shipping.
- **Schedule a pickup** with UPS.
- If you schedule before 10 a.m., UPS will come the same day.
- Give UPS your phone number and label tracking number.
- Write down the confirmation number UPS gives you.
- **Place the box outside for UPS pickup.**

Call UPS at 1-800-742-5877
OR go to [UPS.com/pickup](https://www.ups.com/pickup)
OR scan QRcode.



Samples must be shipped back within 10 days or you will have resample again.

More Resources: Visit www.cleanwaterforuskids.org/carolina

Frequently Asked Questions



**Contact us, Call or text
1-888-997-9290**



How to Collect Samples Video



WHAT'S NEXT? We will notify you by email when sample results are ready. Your results will come with mitigation recommendations or our team will work with your facility, our partners at NC DHHS, and external professionals—like plumbers—to help complete any required on-site work to get lead out of each tap.



THANK YOU FOR YOUR DEDICATION TO PROTECTING CHILDREN'S HEALTH!



SUPPLEMENTAL WATER SAMPLING INSTRUCTIONS

How to collect water samples to test for lead from untraditional taps at your facility

For full water sampling instructions for your facility, go to bit.ly/3CK-How2Sample or scan this QR code.



Ice-Making Machines

- Fill the sample bottle with ice directly from the ice machine, if possible.
- Alternatively, use a non-metal scoop or clean, new, disposable plastic gloves to place ice into the sample bottle.
- Let the ice melt, and then refill the bottle until it is filled to the neck of the bottle (i.e., the narrow part of bottle where bottom of the cap sits).

AVOID COMMON MISTAKES

- Do NOT touch the ice with bare hands.
- Fill the bottle as full as you can get it and still securely close the lid.

Kitchen Kettles and Soup Makers

- Fill the sample bottle from the spout, filling the kettle, if possible.
- If direct sampling is not available, fill the kettle with the minimum amount of water needed to collect a 250 milliliter (mL) sample.
 - Mix the water with the kettle’s mixer or stir with a non-metal utensil.
 - Use a non-metal utensil to pour the water into the sample bottle.
 - Fill the sample bottle to the neck with the mixed water sample.

IF YOUR APPLIANCE ONLY HAS HOT OR COLD WATER TAPS

- Indicate in the comments of the chain-of-custody document whether the water is hot or cold.

Other Appliances

- If a sample can be obtained from the tap or valve, then fill the sample bottle to the neck, immediately after opening the tap or valve.
- Do NOT collect samples that require the disconnection of any taps.

IF YOUR APPLIANCE HAS BOTH HOT AND COLD WATER TAPS

- Collect water at the settings you usually use and fill the sample bottle to the neck.

More Resources: Visit www.cleanwaterforuskids.org/carolina

Frequently Asked Questions



**Contact Us, Call or Text
1-855-997-2864**



FLUSH INSTRUCTIONS

How to prepare your facility for water sampling when closed longer than 3 days or follow-up sampling of taps unused after receiving your initial results

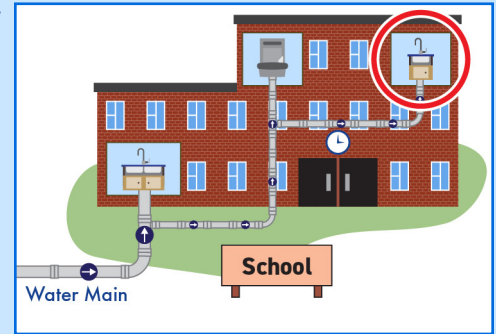
If your facility is closed for the summer, holidays, or longer than 3 days, or taps with restrict use after receiving your initial results follow these steps 2-3 days before you plan to sample. Do NOT flush taps within 2 days of sampling as you may have to repeat the sampling.

Flushing is the process of clearing out sitting water from pipes by running the water from the faucet. You will need to find where the water main enters your building to conduct flushing. If you don't know where the water main enters, identify the faucet farthest from the main road.

- If you are flushing before your initial sampling you will need to flush all drinking and cooking taps.
- If you are flushing before follow up sampling you will only need to flush the taps unused after receiving your initial results.
- If your building has more than one floor, start with the top floor of the building. Only flush one floor at a time.

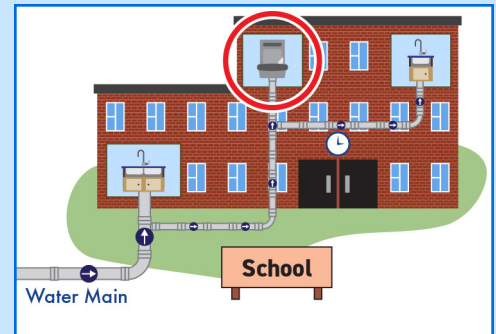
Step 1. Flush tap farthest from where the main water supply enters the building.

- Turn on the cold water and let it run for **10 minutes**.
- While that tap is running, **if your building has multiple wings**:
 - Locate the tap farthest from where the main water supply enters the building in each wing of the same floor.
 - Turn on the cold water and let those taps also run for **10 minutes** at the same time.
- After 10 minutes for each tap, turn taps off in the order they were turned on.



Step 2. Flush water fountains on the same floor.

- On the same floor, run all water fountains in your building for **1 minute** one at a time.
- **If your building has multiple wings**, run all water fountains in the wings for the same floor for **1 minute**.



Step 3. Flush additional taps on the same floor.

- After flushing the farthest tap and water fountains, on the same floor, run any additional taps for **1 minute** one at a time.
- **If your building has multiple wings**, run any additional taps in the wings for the same floor for **1 minute**.

Step 4. Repeat Steps 1-3 for remaining floors in the building.

- Work from the top floor to the bottom.
- Proceed to sample collection 2-3 days after following these instructions.

More Resources: Visit www.cleanwaterforuskids.org/carolina

**Frequently
Asked
Questions**



**Contact Us, Call or
Text
1-855-997-2864**





WHAT HAPPENS WHEN YOUR SAMPLES GET TO THE LAB

Summary of RTI Laboratory Procedures

When RTI International receives your samples at the lab, we:

- Log the samples into our system using the barcode on each bottle
- Check to make sure the samples are in good condition. That no water has leaked out and the sample IDs match what's on the chain of custody document
- Measure how much sediment is in the sample (turbidity) to see if we have to do any additional preparation before laboratory analysis
- Preserve the sample by adding high purity nitric acid in a clean environment
- Let acidified samples sit at room temperature for at least 16 hours
- Check the sample pH to confirm it is in the proper range
- Load the samples into the automated sampler for analysis. Samples are analyzed for lead using an ICPMS (Inductively Coupled Plasma Mass Spectrometer)
- Review data to make sure all quality assurance and quality control standards are met
- Report results to program portal

Once the analysis is completed, your results will be available in your online portal and we will send you a notification email. If you don't have email, we will notify you by U.S. mail. Your results report will include recommendations to reduce lead exposures from water based on your results.

Understanding Your First Draw Lead in Water Test Results

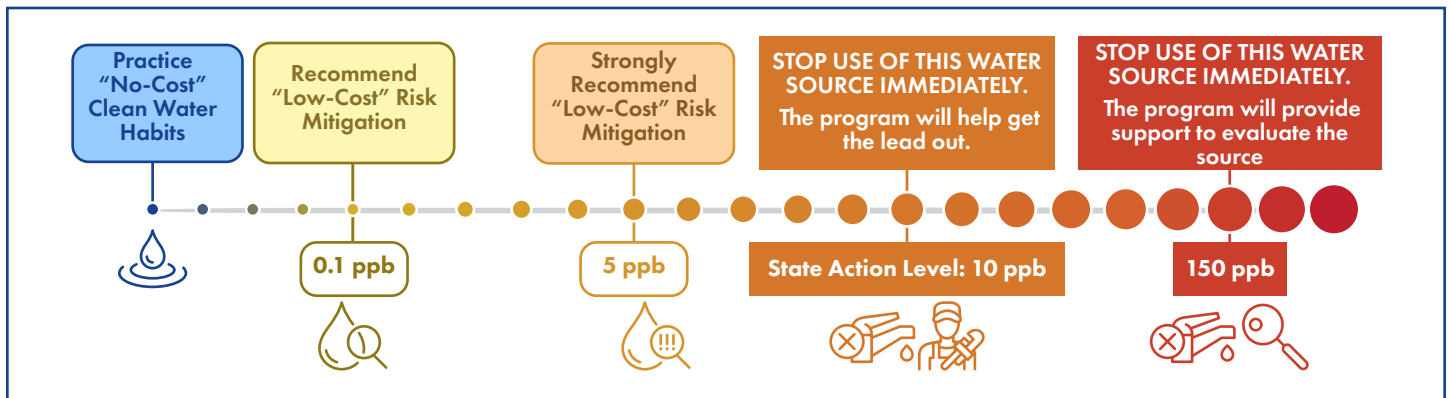
Your results show if lead is detected, and at what level, for each drinking or cooking water tap you sampled. Lead results are measured in parts per billion (ppb). One ppb is about the same as one drop of water in a backyard swimming pool.

Recommendations

We recommend different actions depending on the level of lead in your water, as shown in **Figure 1**.



Figure 1. Illustration of Recommended Risk Mitigation Based on Test Results for Each Tap.



Results below detection limit (0.1 ppb)

If any results are below our laboratory detection limit, there is either no lead in your water or the amount is so low that our instruments cannot measure it (less than 0.1 ppb). Even if no lead is detected, we recommend practicing "**Clean Water Habits**."

CLEAN WATER HABITS FOR ALL TAPS

- Use signs to designate low-lead taps for drinking and cooking
- Use only the cold water setting, even when boiling water
- Flush water after 8 hours of no use
- Clean faucets and aerators regularly
- Maintain any filters per manufacturer instructions
- Choose certified lead-free products

Any detected lead (over 0.1 ppb)

If your results are at or above our laboratory detection limit of 0.1 ppb, we recommend low-cost solutions to remove lead and reduce exposure. The American Academy of Pediatrics recommends that lead in water should not exceed 1 ppb. We recommend practicing **Clean Water Habits** and implementing “**Low-Cost Solutions.**”

LOW-COST SOLUTIONS FOR ANY DETECTED LEAD

- Install a filter certified to remove lead
- Replace faucet fixture

Results at or above 5 ppb

For samples at or above 5 ppb, **we strongly recommend the low-cost solutions** above to remove lead and reduce exposure.

Results at or above 10 ppb

If you have a sample that is at or above the state action level (10 ppb), then **immediately stop using the tap for drinking and cooking**. You must restrict use of the tap until mitigation actions have been taken and further testing confirms the tap is below the state action level. Take action to remove lead from the tap by using the low-cost solutions previously recommended plus the recommendations below. The program will be in touch to help get the lead out.

RECOMMENDATIONS FOR RESULTS AT OR ABOVE 10 PPB

- Restrict use of tap, DO NOT USE FOR DRINKING OR COOKING
- The program will be in touch for further support
- Take steps to remove lead including replacing the fixture and installing and maintaining lead-certified water filter
- After mitigation follow Clean Water Habits

Results at or above 150 ppb

There may be additional sources of lead in your piping or plumbing. Additionally, lead-certified filters are not certified for use above 150 ppb. If one of your taps is at or exceeds this level, **immediately stop using the tap for drinking and cooking** and follow the steps below.

RECOMMENDATIONS FOR RESULTS AT OR ABOVE 150 PPB

- Restrict use of tap, DO NOT USE FOR DRINKING OR COOKING
- **Collect follow-up** first draw and 30-second flush samples to evaluate the lead source(s)
- The program will be in touch for further support

More Resources

Check out additional resources from our program:

- [No-Cost and Low-Cost Solutions for Lead in Water \[bit.ly/CWUSK-solutions\]](https://bit.ly/CWUSK-solutions)
- [Checking for Lead Service Lines \[bit.ly/CWUSK-LSL\]](https://bit.ly/CWUSK-LSL)
- [How to Choose a Water Filter to Remove Lead \[bit.ly/CWUSK-Filters\]](https://bit.ly/CWUSK-Filters)

More Information

More Information

This informational flyer was developed for RTI International's Clean Classrooms for Carolina Kids™ program.

Clean Classrooms for Carolina Kids

www.cleanwaterforUSkids.org/carolina

RTI International

3040 E. Cornwallis Road, P.O. Box 12194

Research Triangle Park, NC 27709-2194 USA

FOLLOW-UP WATER SAMPLING INSTRUCTIONS

How to collect follow-up water samples for taps with prior lead results at or above 150 ppb

These taps should have restricted use with signs informing students and staff to not use for drinking or cooking until mitigation and post-mitigation testing confirms lead levels confirm lead levels below 10 ppb.

Step 1. Flush.

- You must flush these taps 2-3 days before you sample. Go to bit.ly/3CK-flushing or scan this QR code for guidance.



IMPORTANT! Save the box and bubble wrap for the return shipment! If you have more than one box, each box will have its own chain of custody. **OPEN ONE BOX AT A TIME.**

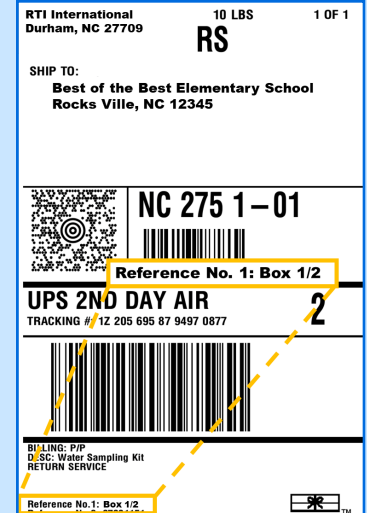
Step 2. Prepare to sample.

- Set a date to collect samples** to collect samples after not using water in your facility for 8-72 hours (over night or weekend).
- Notify** staff, students, and cafeteria workers to not use water in the building at least 8 hours before you sample until sample completion.



Step 3. Collect “first-draw” sample.

- If **water was run** within 8 hours of sampling, STOP and reschedule for the following day.
- Follow box order.** Some schools will have multiple boxes. Find Box One noted on the UPS shipping label and begin with that box.
- Start with the first number** on the chain of custody. Find the bottle with the matching number. This will be a “first-draw” sample bottle with yellow “First Draw” sticker. Continue sampling in the order found on the chain of custody.
- Do not touch inside of bottle or lid**, and place lid on a clean surface with open side facing up.
- Position bottle** underneath the tap and turn water to a normal flow.
- Fill bottle to neck** (narrow part of bottle where bottom of cap sits).
- Close bottle tightly.**



Avoid Common Mistakes

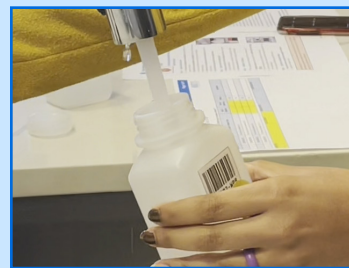
- Do NOT use water before sampling.
- Use water normally the week before.
- Do NOT remove faucet aerators.
- Do NOT close sink shutoff valves.

Tips for water fountains: At least 72 hours before sampling, identify where water typically hits so you know where to position the bottle. Mark spot with a sharpie. You may need to angle bottle to get all water inside of bottle. If you don't get it in right away, that's okay. Try to keep the bottle as full as you can. Do not pour it out and try again.



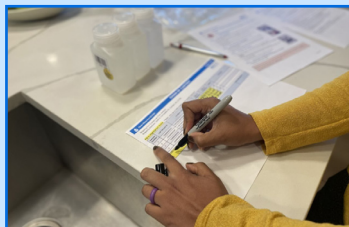
Step 4. Collect: "30-second flush" sample.

- **Open other bottle for this tap** (next sample ID on list) the same way as Step 2.
- **Using a timer**, run water at full speed from the same tap for 30 seconds.
- **After 30 seconds**, stop water and position bottle underneath tap.
- **Fill second bottle**, turn water off, and close bottle the same way as Step 2.



Step 5. Repeat Steps 2-3 for the remaining taps.

- Always match bottle sample ID to each tap.

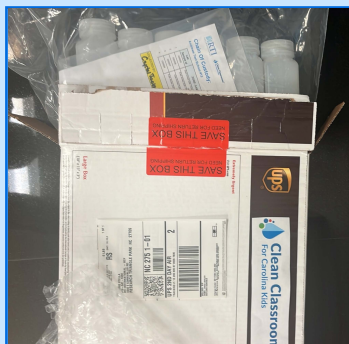


Step 6. Fill out chain of custody document.

- Fill in date and time on chain of custody for each sample.
- Add your name in "Collected by" section and date and time sampling is complete.

Step 7. Prepare samples for shipping.

- **Tightly close each bottle**, place them into large bag, and seal it.
- **Put chain of custody in smaller bag** and seal it so it does not get wet.
- **Put bags in box** (If you lose it, use another box).
- **Place new shipping label** over the previous one on the box.
- **Close box and reseal** top flap using strong shipping tape.



Step 8. Schedule a UPS pickup.

- There is no charge for return shipping.
- **Schedule a pickup** with UPS.
- If you schedule before 10 a.m., UPS will come the same day.
- Give UPS your phone number and label tracking number.
- Write down the confirmation number UPS gives you.
- **Place the box outside for UPS pickup.**

Call UPS at 1-800-742-5877
OR go to [UPS.com/pickup](https://www.ups.com/pickup)
OR scan QRcode.



Samples must be shipped back within 10 days or you will have resample again.

More Resources: Visit www.cleanwaterforuskids.org/carolina

Frequently Asked Questions



**Contact us, Call or text
1-888-997-9290**



Understanding Your 2-Step Lead in Water Test Results

Your results show if lead is detected, and at what level, for each drinking or cooking water tap you sampled. Lead results are measured in parts per billion (ppb). One ppb is about the same as one drop of water in a backyard swimming pool.

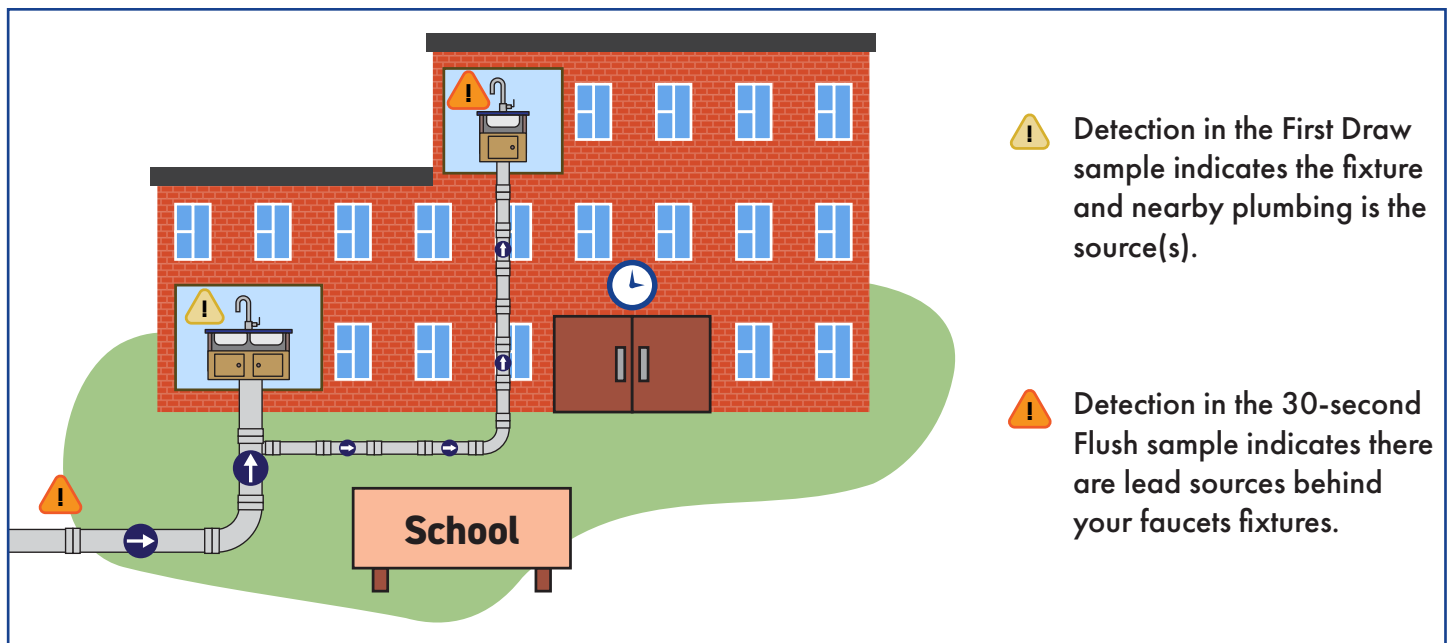
One or more taps may have two sets of results—one for the first draw sample and one for the 30-second flush sample you collected. Recommendations are based on the level of lead found in each sample and the type of collection (first draw or flush sample).

Sources of Lead in Your Water

The detection of lead in the first draw and flush samples provides insight on the location of potential sources of lead in your facility’s plumbing system. High first draw samples indicate that your faucet fixture is likely the source of lead, while high 30-second flush samples can indicate there are lead sources in plumbing behind your faucet fixtures. If both samples are high, you may have multiple sources of lead in your plumbing, as shown in **Figure 1**.



Figure 1. Illustration of Distant and Nearby Sources of Lead.



Recommendations

We recommend different actions depending on the level of lead in your water, as shown in **Figure 2**.

Figure 2. Illustration of Recommended Risk Mitigation Based on Test Results for Each Tap.



Results Below the Detection Limit (0.1 ppb)

If any results are below our laboratory detection limit, there is either no lead in your water or the amount is so low that our instruments cannot measure it (less than 0.1 ppb). Even if no lead is detected, we recommend practicing "**Clean Water Habits**."

Clean Water Habits for All Taps

- Use signs to designate low-lead taps for drinking and cooking.
- Use only the cold water setting, even when boiling water
- Flush water after 8 hours of no use
- Clean faucets and aerators regularly
- Maintain any filters per manufacturer instructions
- Choose certified lead-free products

Any Detected Lead (over 0.1 ppb)

If your results are at or above our laboratory detection limit of 0.1 ppb, we *recommend* low-cost solutions to remove lead and reduce exposure. The American Academy of Pediatrics recommends that lead in water should not exceed 1 ppb. We *recommend* practicing **Clean Water Habits** and implementing "**Low-Cost Solutions**."

Low-Cost Solutions for Detected Lead

- Install a filter certified to remove lead
- Replace faucet fixture

Results At or Above 5 ppb

For samples at or above 5 ppb, we **strongly recommend the low-cost solutions** to remove lead and reduce exposure.

Results At or Above 10 ppb

If you have a sample that is at or above the state action level (10 ppb), then **immediately stop using tap for drinking and cooking**. You must restrict use of the tap until mitigation actions have been taken and further testing confirms the tap is below the state action level. Take action to remove lead from the tap by using the low-cost solutions previously recommended plus the recommendations below. The program will be in touch to help get the lead out.

Recommendations for Results At or Above 10 ppb

- Restrict use of tap, **DO NOT USE FOR DRINKING OR COOKING**.
- The program will be in touch for further support
- Take steps to remove lead including replacing fixture and installing and maintaining a lead-certified water filter
- After mitigation follow **Clean Water Habits**

Results At or Above 150 ppb

There may be additional sources of lead in your piping or plumbing. Additionally, lead-certified filters are not certified for use above 150 ppb. If one of your taps is at or exceeds this level, **immediately stop using tap for drinking and cooking** and follow the steps below.

Recommendations for Results At or Above 150 ppb

- Restrict use of tap, **DO NOT USE FOR DRINKING OR COOKING**.
- The program will be in touch for further support.
- **If the 30-second flush sample is less than 150 ppb**, you can safely use low-cost solutions at this tap.
- **If the 30-second flush sample is greater than 150 ppb**, water filters will not be effective. There is likely another source of lead in the plumbing other than the faucet that should be removed before installing a water filter. Do not use the tap. There may be additional mitigation funding from your utility or the NC Department of Environmental Quality. We can support you with connections as needed.

More Resources

Check out additional resources from our program:

- [No-Cost and Low-Cost Solutions for Lead in Water](https://bit.ly/CWUSK-solutions) [bit.ly/CWUSK-solutions]
- [Checking for Lead Service Lines](https://bit.ly/CWUSK-LSL) [bit.ly/CWUSK-LSL]
- [How to Choose a Water Filter to Remove Lead](https://bit.ly/CWUSK-Filters) [bit.ly/CWUSK-Filters]
- [How to Install a Certified Lead-Free Faucet](https://bit.ly/CWUSK-Faucets) [bit.ly/CWUSK-Faucets]

More Information

This informational flyer was developed for RTI International's Clean Water for US Kids™ program.

Clean Water for US Kids

www.cleanwaterforUSkids.org/contact

RTI International

3040 E. Cornwallis Road, P.O. Box 12194

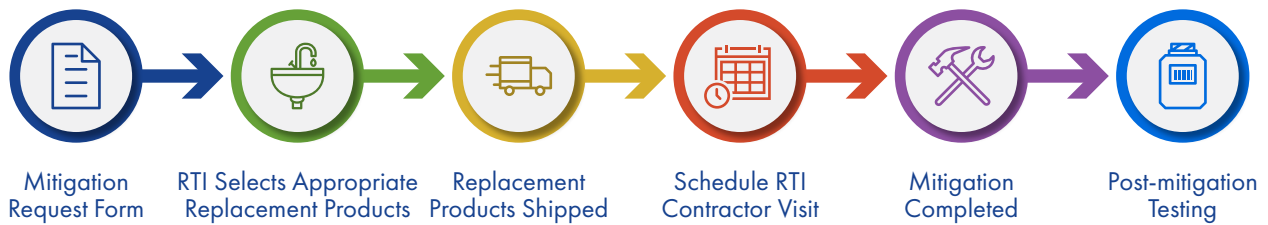
Research Triangle Park, NC 27709-2194 USA

Lead in Water Mitigation Service Options

The full costs for water mitigation, such as the replacement of fixtures and water filters, are free thanks to funding from the state and federal government. Please note that mitigation only applies to drinking and cooking taps at bottle fillers, bubblers, faucets, and water fountains. Mitigation of other appliances, such as kitchen kettles and ice makers, is not covered. With the Clean Classrooms for Carolina Kids™ program, three service options are available and summarized below.

Option A: Full Service

All products and labor are paid for and completed by our program.



- The cost of all replacement products is covered by our program. Appropriate lead-free replacement products are selected, purchased, and shipped to your facility at no cost.
- The cost of labor is completely covered by our program.
- Our program’s external plumbing contractor, EMCOR Facilities Services Inc., will schedule and perform the work.
- The assigned plumbing contractor will schedule work with the facility’s primary point of contact.
- All mitigation actions will be automatically documented on your facility’s behalf in the Clean Classrooms for Carolina Kids portal to satisfy the requirements of rule 10A NCAC 41A .1001 -.1007.

Option B: Partial Service

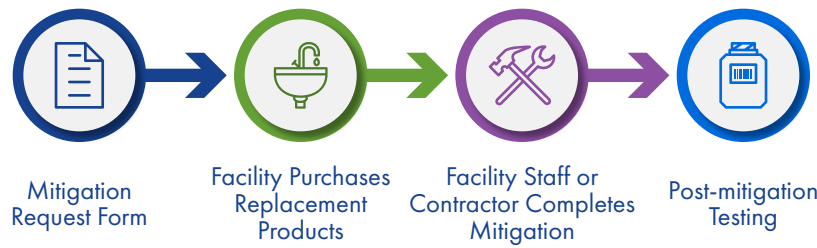
Products provided by our program, but the facility coordinates its own contractor or staff for labor.



- The cost of all replacement products is covered by our program. Appropriate lead-free replacement products are selected, purchased, and shipped to your facility at no cost.
- Work will be scheduled and performed by your facility’s maintenance staff (or the school district’s maintenance staff) or by a preferred external plumbing contractor.
- Our program will reimburse up to \$1,000 in labor charges for external plumbing contractors. Your facility is required to submit receipts for contractor labor charges incurred. **Note that labor from facility-level or district-level staff will not be reimbursed.**
- Facilities are required to inform the North Carolina Department of Health and Human Services of mitigation actions taken by uploading documentation through the Clean Classrooms for Carolina Kids portal.

Option C: No Service

Facilities purchase their own replacement plumbing products and coordinate their own contractor or staff for labor.



- Lead-free replacement products selected and purchased by your facility. Facility must verify that all replacement plumbing products are certified lead-free and will reduce water lead levels to less than the NC lead poisoning hazard level.
- Work will be scheduled and performed by your facility's maintenance staff (or the school district's maintenance staff) or by a preferred external plumbing contractor.
- Labor costs will not be reimbursed.
- Facilities are required to inform the North Carolina Department of Health and Human Services of mitigation actions taken by uploading documentation through the Clean Classrooms for Carolina Kids portal.

SUMMARY OF SERVICE OPTIONS

	Full Service Option A	Partial Service Option B	No Service Option C
Summary	All products and labor are paid for and completed by our program.	Products are provided by our program, but the facility coordinates its own contractor or staff for labor.	Facilities purchase their own replacement plumbing products and coordinate their own contractor or staff for labor.
Product Shipment	Fully covered	Fully covered	The facility is required to coordinate ordering, shipping, and delivery of products.
Product Installation	Work is scheduled and performed by RTI's external plumbing contractor.	Facilities will choose to use their own staff or hire an external contractor.	Facilities will choose to use their own staff or hire an external contractor.
Product Costs	Fully covered	Fully covered	<u>Not</u> reimbursed; a facility is required to purchase their own products.
Labor Costs	Fully covered	Potential reimbursement	<u>Not</u> reimbursed; the facility is required to cover labor costs.
Mitigation Documentation	Fully covered	Facilities are required to upload documentation to our program's portal.	Facilities are required to upload documentation to our program's portal.
Estimated Turnaround Time	<ul style="list-style-type: none"> • 1 week for product shipment • 2 to 4 weeks for installation after product delivery. 	<ul style="list-style-type: none"> • 1 week for product shipment • Installation after product delivery is dependent upon facility staff or the contractor. 	<ul style="list-style-type: none"> • The product shipment is dependent upon the facility purchasing process. • Installation after product delivery is dependent upon facility staff or the contractor.

Guidance for Completing the Lead in Water Mitigation Request Form

This guide will walk you through filling out the required information to request mitigation from the Clean Classrooms for Carolina Kids™ program for any drinking and cooking taps with lead at or above the state action level (10 parts per billion [ppb]). Different information will be collected according to the type of tap with the lead exceedance (e.g., bottle filler, bubbler, faucet, water fountain). This information is important to be able to correctly replace any faucets or fountains with certified lead-free parts.

The following questions are required for all taps:

Was this tap used for food preparation (including preparing formula) for children or students on a daily basis?

Child Care Facilities: “Food preparation” is defined as the handling of foods or utensils during the preparation of meals, including the opening and closing of baby bottles, baby food jars, and cereal boxes, as well as the opening and closing of any other food items while assembling the ingredients.

For more information about food preparation and sanitation practices at child care facilities, see the North Carolina Administrative Code (NCAC) here: [15A NCAC 18A. 2801](#).

A tap should be designated as “used for **food preparation**” if the water at that location is used for any of the following: boiling or cooking any foods, preparing infant formula, or washing raw fruits and vegetables or other foods.

*Note that taps **only** used for washing kitchenware, service ware, or utensils (e.g., dishwashers, dishwashing taps) should **not** be designated as “used for food preparation.”*

Are other taps connected to this unit?

Lead levels can vary from tap to tap, so facilities were asked to inventory and then sample all drinking and cooking taps even if they are part of the same “unit.” A single unit can include one or more drinking or cooking taps.

Example 1: A bi-level water fountain (shown to the right) is considered a single unit. Facilities should have sampled two different taps: one for the higher drinking level (Tap #1), and one for the lower drinking level (Tap #2).

Example 2: A pre-rinse sink with a faucet and a sprayer (shown to the right) that is used for food preparation is considered a single unit. Facilities should have sampled two different taps: one for the faucet (Tap #1) and one for the sprayer (Tap #2).

If one or more taps from the same unit have an exceedance above the state action level, then the entire unit must be replaced. In Examples 1 and 2, a facility would indicate “**Yes, other taps are connected to this unit.**” The facility would then click on the dropdown menu and select the other taps on the same unit according to tap type and name.



The following questions are required for all faucets:

The following information will be collected for faucets:

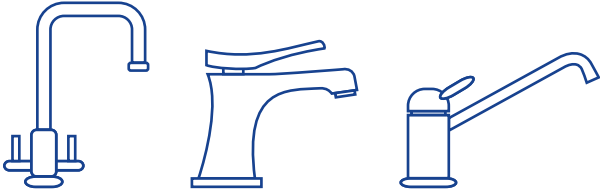
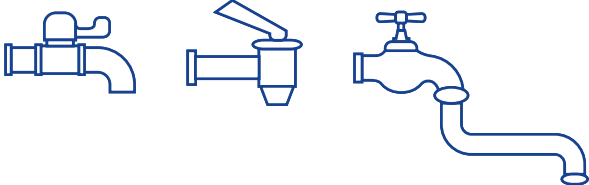
Mounting Information

Facilities will need to determine the mounting style and number of mounting holes for each tap. Styles and examples are provided in **Table 1**.

Mounting Style

There are two types of mounting styles for a faucet: deck mount or well mount, which are shown in **Table 1**.

Table 1. Two Different Mounting Styles for Faucets.

Mounting Styles	
Deck Mount Attaches to a countertop or rests on the sink.	
Wall Mount Attaches through the wall or to the back of the sink basin.	

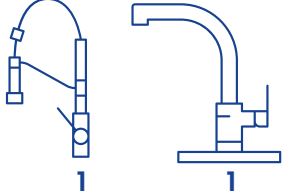
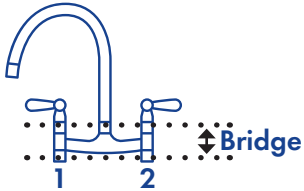
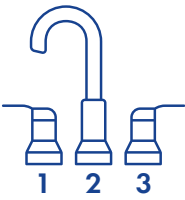
Mounting Holes

How many mounting holes are there in the mounting plate?

Mounting holes, which are also called faucet holes, are the spaces to hold faucets, handles, or other accessories, such as sprayers and soap dispensers. You can often tell how many holes there are just by looking at the sink, but you may need to check underneath to determine the number of mounting holes if there is a mounting plate.

Guidance regarding the number of mounting holes is provided in **Table 2**, along with diagrams.

Table 2. Guidance for Faucets with Different Numbers of Mounting Holes.

Mounting Holes	
One hole in the countertop or wall. Faucets with one mounting hole often have one handle or lever to control water flow and temperature.	
Two holes in the countertop or wall. Faucets with two mounting holes often have two handles connected by a horizontal pipe. The horizontal pipe, or bridge, between the two handles, may be visible at the base or may be underneath the countertop or sink.	
Three holes in the countertop or wall. Faucets with a single handle or lever and faucets with two handles can both have three mounting holes. It is important to check underneath the faucet to confirm the number of mounting holes.	

Faucet Measurements

Facilities will need a ruler or tape measure handy to measure the center distance, spout height, spout reach, and faucet height in inches. Each measurement is defined in **Table 3**, along with a diagram.

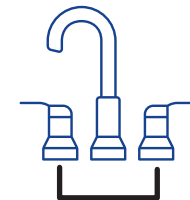
Table 3. Definitions of Faucet Measurements.

FAUCET MEASUREMENTS

Center Distance

The horizontal distance between the two furthest mounting holes.

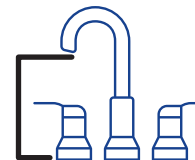
Note that the center distance is only applicable for faucets with more than one mounting hole.



Center Distance

Spout Height

The vertical distance from the countertop or mounting plate to the bottom of the spout opening where the water exits.



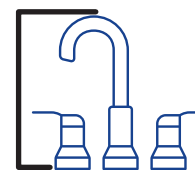
Spout Height

Faucet Height

The vertical distance from the countertop or mounting plate to the highest point of the faucet, which is usually where the faucet arches or curves, but it can sometimes be the top of the handle.

For a pre-rinse sink, go to the top of where the hose begins to arch or curve.

As a quick check of the measurements taken, be sure the faucet height is larger than the spout height.



Faucet Height

Spout Reach

The horizontal distance from the spout opening to the faucet body.



Spout Reach

Additional Tap Information

Is there space available underneath the faucet or sink where a water filter could be installed?

Yes/No—Water filters provided by our program will be approximately 13.5 inches in length and 5 inches in width and can be installed either vertically or horizontally.

Is the water shut-off valve underneath the sink/faucet accessible?

Yes/No—Technicians contracted by our program will need to shut off the water to the tap when replacing plumbing products, so we need to know whether a shut-off valve is underneath the sink/faucet and easily accessible. Some shut-off valves may be at a different location or installed behind the wall. If that is the case, then mark "No."

The following question is required for bubblers on classroom sinks:

Should the bubbler at this tap be removed and capped?

Yes/No—The decision to remove and cap the bubbler is up to the discretion of the facilities but is covered by our program.

The following questions are required for all bottle fillers and water fountains:

The Clean Classrooms for Carolina Kids program recommends removing and capping bubblers on classroom sinks that have elevated lead levels. Removing and capping bubblers help reduce the number of drinking water taps that facilities need to manage and encourage staff and students to use designated bottle fillers and water fountains.

Fountain Style

Facilities will need to indicate whether the water fountain is either single level or bi-level.

- Single level has only one height for drinking.
- Bi-level has two bubblers at two different heights for drinking.

Is electrical power available at this fountain? (Yes/No)

Facilities will need to indicate whether electrical power is available at the current water fountain. Refrigerated fountains require an electrical outlet and include a power cord with a plug but not all water fountains are refrigerated.



Single Level



Bi-level

How to Develop a Drinking Water Management Plan for Schools and Child Care Facilities

The Clean Classrooms for Carolina Kids program helps schools and child care facilities identify and eliminate lead in drinking and cooking water where children learn and play.

This flyer focuses on developing a drinking water management plan. We assume that you have already 1) received your lead in water results for every drinking and cooking tap, and 2) mitigated lead in water at taps, as needed.



STEPS TO COMPLETE AND MAINTAIN A DRINKING WATER MANAGEMENT PLAN



STEP 1: MAP ALL TAPS IN YOUR FACILITY

- **Plan and catalog:** This may be something you already did before collecting water samples for testing, but if not, make a plan to catalog and map all the taps in your building, along with their designated use (e.g., handwash only, cooking, drinking).
- **Check:** Note the location of the water meter and where water enters each building.



STEP 2: DESIGNATE TAPS FOR DRINKING AND COOKING AND COMMUNICATE WITH YOUR COMMUNITY

Let your staff and students know which taps can be used for drinking and cooking and which should only be used for handwashing with proper signage and communication. This process can be implemented after mapping all taps in your facility. To decide on which taps to designate for drinking and cooking, discuss the following considerations with your facilities staff:

- **Prioritize:** Fewer taps to maintain means less work and maintenance expenses on flushing and potentially filter maintenance.
- **Select:** We recommend selecting taps for drinking and cooking where first-draw samples have tested below 1 ppb. Follow our no-cost and low-cost solutions for lead in drinking water. Ensure there is at least one safe drinking water tap for every 100 students.
- **Post:** Place signs at all taps to indicate whether they are for drinking and cooking or for other uses.
- **Share:** Communicate relevant information with all building users including proper usage of the designated taps for drinking and cooking.
- **Empower:** Enlist all staff to help children practice using the correct taps.



STEP 3: DEVELOP A FLUSHING SCHEDULE

Regularly running water through your pipes helps keep lead levels in them low. When water sits in pipes, it allows lead to move into the water from pipes, solder, or faucets and fixtures. When used in combination with other steps to get the lead out like replacing faucets and installing filters, it can help reduce lead levels and buildup of bacteria throughout the building. Flushing water filters can also help prevent clogging.

Plan: We recommend developing and implementing a flushing plan like the one in the box on the right to use after all school holidays and summer breaks. After weekends or each morning, facilities can also communicate with staff to run the water at their classroom and hallway taps for 30 seconds to one minute prior to consumption.

Clean: Clean any faucet screens and aerators, which can collect sediment containing lead, during the flushing routine at least quarterly.

Flush: Follow the plan!

Note that flushing is not recommended as a solution to lead levels at or above 10 parts per billion without first replacing faucets and installing lead-certified filters as it does not remove the source of lead and may be ineffective.

Guidelines for flushing faucets to maintain water quality

- Use the map you created to identify the taps that are farthest away from where the water enters the building on each wing and each floor of the building.
- Let the water run at each of these taps for 10 minutes (flush one floor at a time to avoid water pressure issues).
- Let the water run at all water fountains for 1 minute.
- Let the water run at all kitchen faucets and any other drinking/cooking faucets for 1 minute.



STEP 4: MAINTAIN WATER FILTERS

It is important to maintain any water filters installed to remove lead. Under-sink and water fountain filters have disposable cartridges that must be replaced regularly to make sure the filters continue to remove lead. Remember—filters are only as good as how well they are maintained! This is because these filters work by accumulating contaminants from the water onto the filter's surface. Once the filter cartridge is full, it cannot remove any more contaminants and may release the accumulated contaminants back into the water.

- **Follow the manufacturer specifications:** Replace the filter cartridges as often as the manufacturer recommends—usually every 6 to 12 months, or after a certain volume of water has been filtered.
- **Check the light:** Some water fountains have an indicator light that turns red when the filter needs to be changed. Set a schedule to check these regularly throughout the year to know when to change the filters.
- **Put an alert on your phone:** If the device doesn't have a built-in indicator (many under-sink filters do not), develop a system to remind you when the filter needs to be replaced. This can be as simple as setting a reminder in your phone.
- **Purchase in advance:** Order at least one to two filters in advance of the next replacement for each tap so you have them on hand.
- **Consider a monitor:** The best solution is to have real-time monitoring of water use through all filtered taps to know exactly when to replace filters without having to do manual inspections. For a complete water filter monitoring system to easily keep track of all your filters and never miss a cartridge change, check out RTI Aquantix.



STEP 5: DEVELOP A TESTING SCHEDULING

Water quality changes over time so re-test water at drinking and cooking taps periodically to make sure your management practices are effective and water in your facility continues to be lead free. Consider the following:

- **Sample frequency:** The sampling frequency for your facility will depend on a variety of factors, including water quality, your building's plumbing, recent renovations, whether there has been a change in your water source or source water treatment, your initial lead results, and available resources. Especially for buildings with one or more taps with prior lead levels at or above 10 parts per billion, re-testing those taps every 3 years would be prudent.
- **Planning:** Make sure to document the chosen sampling frequency so designated staff can plan to sample according to the schedule.
- **Testing:** Schools and child care centers can complete follow up water testing through the Clean Water for US Kids program. You can also check with your local water utility or local laboratories, but make sure to follow the 3Ts sampling protocol by the US Environmental Protection Agency.

STEPS TO COMPLETE AND MAINTAIN A DRINKING WATER MANAGEMENT PLAN (cont.)



STEP 6: DESIGNATE STAFF FOR KEY ROLES

Clearly define roles and responsibilities for each of the steps above to maintain drinking water quality throughout the building. We include a chart template for identifying the key roles and assigning staff below.

- **Assign:** Choose a responsible person for educating staff and students on proper tap usage, performing regular upkeep of signage at taps, carrying out the flushing routine, checking water filters throughout the building, ordering and installing new filter cartridges, scheduling routine water testing, and communicating updates with the school or center community.



STEP 7: MAINTAIN RECORDS

Keep: Record maintenance activities scheduled or completed for accountability and to demonstrate the actions you are taking to keep drinking and cooking water safe in your building. See an example of a simple tracking template below.



ADDITIONAL RESOURCES

Check out our other Get the Lead Out flyers

- [EPA's best practices for drinking water management in schools](#)
- [EPA's Healthy Schools website](#)
- Resources from [EPA's 3Ts \(Training, Testing, and Taking Action\) for reducing lead in drinking water](#):
 - [Interactive plan builder and template](#)
 - Guidance on [Establishing Routine Practices](#)
 - Guidance on [Assigning Roles](#)
 - [Flushing best practices](#)
 - [Lead sample collection guide](#)
- Resources from the Clean Water for US Kids Program:
 - [Instructional videos](#)
 - [How to sample for lead in drinking water](#)
 - [No-cost and low-cost solutions to lead in drinking water](#)
 - [How to choose a water filter to remove lead](#)
 - [How to identify a lead service line](#)
 - [How to select a lead-free faucet](#)

CONTACT

Clean Classrooms for US Kids

<https://www.cleanwaterforuskids.org/en/carolina/cleanwater@rti.org>

1-855-997-2864

RTI International

3040 E. Cornwallis Road, P.O. Box 12194

Research Triangle Park, NC 27709-2194 USA

DEFINING KEY ROLES TEMPLATE

Task:	Lead:	Backup:
Sign upkeep to ensure signs are affixed to appropriate taps and clearly visible to staff and students.		
Flushing to ensure taps are flushed according to the designated facility flush schedule.		
Filter maintenance to check filter status and purchase and replace filter cartridges.		
Accountability champion ensures team members are following management plan activities.		

TRACKING KEY MAINTENANCE ACTIONS TEMPLATE

Task	Check signage		Flush taps		Replace filter cartridges		Testing	
Recommended frequency	At the start of every semester		After all school holidays and summer break		Follow manufacturer specifications		Every 3 years	
	Date	Responsible individual	Date	Responsible individual	Date	Responsible individual	Date	Responsible individual
Maintenance log								

QUESTIONS?



F.A.Qs

bit.ly/3CK-faq



Contact Us

bit.ly/3CK-contact



Call/Text

1-855-997-2864



Visit

bit.ly/3CK-home



About

bit.ly/3CK-about



Training Resources

bit.ly/3CK-resources

Get The Lead Out

How to Choose a Water Filter to Remove Lead

Installing and maintaining a point-of-use water filter that is certified to remove lead may be a low-cost solution to improve your drinking water. Whether water testing has shown you need to take action to remove lead or you want to choose a water filter as a precaution, this flyer will help you make the right filter choice and answer some of the most frequently asked questions about dealing with lead in drinking water.

No amount of lead in drinking water is safe. Installing a point-of-use water filter can help remove or reduce lead in your drinking water. Point-of-use water filters treat water from one tap—such as a kitchen sink—after the water has passed through most of the pipes and fixtures that could increase the water’s lead content. We recommend using water filters at taps designated for cooking or drinking water.

Where Does Lead in My Water Come From?

Lead does not generally come from the water source or water system itself. Instead, lead in drinking water usually comes from corroding pipes, plumbing, and fixtures on the way to the tap. Some plumbing components that are still in use were made partly or wholly of lead, including solder, pipes, and faucet fixtures. Even new components may have a small amount of lead. In addition, lead can be part of a build-up of minerals on the inside of the pipes.

What Are Point-of-Use Water Filters?

Point-of-use filters treat the water where you use it, typically at a sink. There are also “point-of-entry” water treatment systems that can make the water less corrosive before it continues through the rest of the plumbing in a building. These systems can reduce lead in drinking water but are much more expensive and may not fully solve a lead problem if plumbing components within the building still contain lead. Water softeners are another common type of point-of-entry system, but they are not designed to reduce or remove lead in the building. Since lead can come from so many different sources in a building’s plumbing, a point-of-use filter is often the best and most cost-effective option for removing lead in the water that you drink.

How Do I Choose Among the Different Types of Point-of-Use Water Filters?

Many types of point-of-use filters are available, including faucet-mounted filters, countertop units, plumbed-in units installed underneath the sink, pour-through pitchers, and refrigerator water dispensers. Here, we compare the types of water filters that are certified to remove lead. The examples in the table below are not particularly recommended over other certified systems. We encourage you to research the best filter that fits your needs. Products also change often, so these products in the table may no longer be available.

Activated carbon

The most common filters are made with activated carbon, a highly porous material designed specifically for water treatment. Activated carbon can also improve the taste of your water. These filters are economical and come in the different all types mentioned above. Not all activated carbon filters are certified to remove lead, however, and they don’t remove certain other contaminants like nitrate.

















Reverse osmosis

This other common type of point-of-use system removes the widest range of contaminants but is usually more expensive than activated carbon. It also has lower flow rates, creates waste that increases total water use, and requires more space underneath the sink. Most reverse osmosis systems also require a post-treatment remineralization step to add flavor back into the water and prevent the water from becoming more corrosive, which could be a concern for lead.

A note about pitcher-style water filters: We do not recommend pitcher filters because they do not have adequate capacity to meet the needs of a child care center or school, or homes that rely on filtered water for all drinking and cooking uses. They have also been shown to be less effective at removing lead in tap water and are more expensive to operate per gallon because they require frequent filter changes.

Regardless of the type of filter you choose, make sure it is certified to remove lead by an accredited third party (see How Are Water Filters Certified? below).

See examples of certified products in the table below.

Water Filter Type/Examples ¹	Purchase Price ²	Installation Difficulty	Flow	Number of cartridges	Filter Life ³	Maintenance Cost ⁴	Other Considerations
Faucet mounted filters							
PUR PLUS Faucet Mount Filtration System	\$33			1	100 gal. 3 mos.	\$0.15/gallon \$5/month	<ul style="list-style-type: none"> Requires manual switch for filtered water Need to replace filter cartridge more often than other types May not fit some faucets
BRITA Complete Water Filter Faucet System	\$20			1	100 gal. 4 mos.	\$0.18/gallon \$4.5/month	
Countertop filters							
Pentair Pelican Countertop Drinking Filter System (PDF-450)	\$135			2	450 gal. 6 mos.	\$0.18/gallon \$13/month	<ul style="list-style-type: none"> Uses existing faucet Requires manual switch for filtered water
Refrigerator filters							
Specific filter type for each refrigerator brand and model	\$30-50			1	200–300 gal. 6 months	\$0.10–0.20/ gallon \$5–10/month	<ul style="list-style-type: none"> Requires refrigerator connected to water line Also filters water for the refrigerator ice dispenser
Under-sink activated carbon filters							
A.O. Smith Main Faucet Single-Stage Carbon Block Under Sink Filtration System (AO-MF-ADV)	\$100			1	784 gal. 6 mos.	\$0.09/gallon \$12/month	<ul style="list-style-type: none"> Different designs either filter the full flow of cold water from the main faucet or filter water to a separate lead-free faucet
Culligan US-2 Two-Stage Under Sink Drinking Water Filtration System	\$105			2	500 gal. 6 mos.	\$0.11/gallon \$9/month	
Under-sink reverse osmosis (RO) filters							
Aguasana OptimH2O Reverse Osmosis + Claryum Filter	\$250			4	Pre/post filters: 6 mos. RO membrane: 12 mos.	\$20/month	<ul style="list-style-type: none"> Removes the most contaminants Filters water to a separate lead-free faucet Takes up more space underneath the sink Generates wastewater May change water's taste
GE Under Sink Reverse Osmosis Water Filtration System (GXRQ18NBN)	\$200			3	Pre/post filters: 6 mos. RO membrane: 12 mos.	\$15/month	

	Easy DIY installation, no tools required		Low flow, less than 0.5 gallons per minute
	Can be installed without professional help with basic tools		Full faucet flow, up to 1.5 gallons per minute
	May require the help of a professional plumber or additional tools		

- 1 These are examples only, not recommendations.
- 2 Purchase price is approximate and may change. Purchase price does not include installation costs. Some systems may need to be installed by a plumber at an additional cost.
- 3 Filter life is measured by volume of water filtered and time in use. Some filters have a built-in flow meter or timer with an indicator light that turns on to remind you when to replace the filter. If your filter has an indicator light, be sure to replace the cartridge promptly when the light turns on. If your filter does not have an indicator light, be sure to replace the filter promptly after the recommended amount of time.
- 4 Maintenance cost is calculated in two ways: 1) assuming the filter is changed at the time limit (price per month), and 2) assuming the filter is changed at the volume limit (price per gallon). The price per gallon estimate is only relevant for filters with a built-in device to measure water use over time. In most cases, the price per month provides a more realistic estimate. Reverse osmosis membranes usually need to be replaced every 12 months, regardless of the amount of use, so a price per gallon estimate is not available for RO filters.



How Are Water Filters Certified?

The National Sanitation Foundation (NSF) and the American National Standards Institute (ANSI) have developed standards for ensuring that point-of-use filters remove what they claim to remove. Not all filters on the market are certified. To be sure you choose a reliable product:

1. **Make sure that the device you choose lists lead as one of the removed contaminants** by reviewing the filter's "performance data sheet," which is a list of all the contaminants it is certified to remove. This can generally be found online by downloading the user guide or manual for the product.
2. Check for its **certification**. This can be found online or on product packaging.
 - For activated carbon filters, make sure it is certified for lead removal according to **NSF/ANSI 53** and for particle removal according to **NSF/ANSI 42**.
 - For reverse osmosis filters, check that it is certified for lead removal according to **NSF/ANSI 58**.
3. Make sure it was certified by an **accredited third-party organization** such as NSF, the International Association of Plumbing and Mechanical Officials (IAPMO), the Water Quality Association (WQA), or Canadian Standards Association (CSA) Group. You should see their logo on the product packaging.

For images of the certification logos, see the [Environmental Protection Agency's Consumer Tool for Water Filters to Reduce Lead](#).

Why Is Filter Replacement Important?

Regularly maintaining your filter is the only way to make sure your water continues to be lead free. Both activated carbon and reverse osmosis filters have disposable cartridges that must be replaced regularly according to manufacturer specifications, based on how much time has passed or how much water has been used since it was installed. Activated carbon filters work by accumulating contaminants from the water onto the filter's surface. Once the filter cartridge is full, it cannot remove any more contaminants and may release the accumulated contaminants back into the water. Reverse osmosis filters use specialized membranes to separate contaminants from the water, but these membranes wear out over time and need to be replaced.

Determining when the filter cartridge is full or when the membrane is worn out can be difficult. Replace the filter cartridges as often as the manufacturer recommends—usually every three to six months, or after a certain volume of water has been filtered, whichever occurs first. Some devices have an indicator light or alarm that turns on when the filter needs to be changed. If the device doesn't have a built-in indicator, add a reminder to your calendar for when the filter needs to be replaced.

Make sure to purchase the manufacturer's replacement filters because off-brand filters may not be certified. Only buy replacement filters certified to remove lead to NSF/ANSI standards.

How Much Do Water Filters Cost?

In general, the operating costs—that is, the costs of replacing the filter cartridges regularly—will quickly exceed the initial cost. Thus, we recommend that you weigh maintenance cost more heavily than initial cost in your planning. If water in your area is expensive or scarce, note that reverse osmosis systems create 1 or more gallons of wastewater for every 1 gallon of filtered water.

What About Water Fountains?

If there is lead in your water fountain, you can replace the existing fountain with one that contains a filter certified to remove lead. These fountains also often have bottle fillers, which promote water consumption and can allow for water bottle filling that follows COVID-19 precautions (e.g., [Elkay Enhanced ezH2O Bottle Filling Station](#), \$1,000).

You can also replace the water fountain with a freestanding dispenser that filters water from your building's water supply. These units can be purchased or rented from water cooler companies (e.g., [quenchWATER+ QZ series](#)). The company covers maintenance costs when renting a unit. The cost to rent a unit is typically less than the cost to purchase bottled water. However, the rental cost may be higher than the cost to maintain a water fountain. Investing in a water fountain with a certified lead filter is likely to pay off in a few years compared to renting a freestanding dispenser.

What About Having Drinking Water Outside?

It is not recommended to drink water from outdoor spigots because they may not meet the lead-free requirements of indoor plumbing. If you need drinking water available outdoors, you can use a portable water jug that can be filled inside at a lead-free or filtered tap. For water play, a certified lead-free hose can be purchased (e.g., [Camco Premium Drinking Water Hose](#), \$15–\$25). Keep in mind that lead-free hoses will not address lead in other parts of the plumbing, just lead from the hose itself.

What About Other Chemicals in My Water?

If you suspect other chemical contaminants are in your water, such as per- and polyfluoroalkyl substances (known as PFAS), make sure that the filter is certified to specifically remove them according to NSF/ANSI performance standards. For PFAS, make sure that the filter is certified according to NSF P473 or that the chemicals PFOA and PFOS are listed in the performance data sheet for filters certified under NSF/ANSI 53 or NSF/ANSI 58. Reverse osmosis filters are generally the most reliable for PFAS and other emerging contaminants, but certified activated carbon filters can also be effective for the levels of PFAS typically found in U.S. tap water. To find more information about whether there may be PFAS in your tap water, contact your water utility.



Can I Eliminate Sources of Lead in the Plumbing?

You may be able to eliminate or reduce sources of lead in your plumbing and fixtures. A plumber can help to locate and replace any lead-lined water fountains, lead service lines, or other plumbing components containing lead. Detailed water testing can also help you identify lead sources.

We recommend replacing any faucets where lead is detected with new, certified lead-free faucets. Look for faucets certified according to NSF/ANSI 372 or NSF/ANSI 61. Stainless steel is best. Avoid brass and chrome-plated faucets because they may contain small amounts of lead. The [Lead Service Line Replacement Collaborative](#) also has helpful resources for checking whether water lines in your building are made of lead and provides suggestions for coordinating with your utility. Your local or state health department, water utility, or other relevant program may be able to provide additional support.

After taking any actions to remove lead, it is important to retest the water to make sure the actions were effective.

Should I Just Use Bottled Water?

If the tap water in your home or building has less than 150 parts per billion (ppb) of lead, installing a water filter will be more cost-effective than buying bottled water. Bottled water can cost up to \$1–\$2 per gallon, while maintaining a point-of-use filter costs only a few cents per gallon. If your tap water has over 150 ppb lead, however, you should consider using bottled water because point-of-use filters are not certified to remove more than 150 ppb of lead.

If you use bottled water, check the package or the manufacturer's website to ensure the company meets Food and Drug Administration (FDA) standards. The FDA mandates that bottled water contain less than 5 ppb of lead. For long-term bottled water use, we recommend buying refillable 5-gallon jugs to lower costs and waste. Make sure to store all bottled water out of direct sunlight and away from heat to avoid microbial growth and reduce leaching of other chemicals from the plastic into the water.

What If I Get My Water from a Private Well?

If your home or building is connected to a private well, there can be other sources of lead in your plumbing, including the bore hole, pump components, and pressure tank. Many water utilities treat the water with certain chemicals to make it less corrosive, but private well water is not required to have any corrosion control so children who get their water from private wells may be at greater risk of lead exposure. Fortunately, point-of-use water filters are also effective for removing lead from private well water. However, if you are on a private well, make sure to test your water for microbial contaminants, including *E. coli* and total coliforms. If any microbial contamination is detected, consult a well water professional to make sure your well is properly sealed, protected, and disinfected before installing a filter since most point-of-use filters are not protective against bacteria and viruses. You can find a well water contractor and schedule a well water checkup at [WellOwner.org](#).

Additional Resources

This informational flyer was developed for RTI International's Clean Water for US Kids™ program. For additional resources please refer to the following links.

- www.cleanwaterforUSkids.org
- [Environmental Working Group Water Filter Buying Guide](#)
- [Environmental Protection Agency Consumer Tool for Water Filters to Reduce Lead](#)
- [Environmental Protection Agency Consumer Tool for Lead-Free Plumbing Products](#)
- [NSF Lead Filtration Guide](#)
- [FDA Bottled Water Consumer Update](#)

More Information

Clean Water for US Kids

www.cleanwaterforUSkids.org/contact

RTI International

3040 E. Cornwallis Road, PO Box 12194

Research Triangle Park, NC 27709-2194 USA



Clean Water For US Kids™



HOW TO MAINTAIN A WATER FILTER

Now that you've picked the best water filter for your tap or fountain, it's time to install and maintain it!

Step 1. Install your filter

Your filter should come with written or visual instructions for installation. Just follow those instructions. Lots of filter manufacturers also create videos that show you exactly how to install their filter on your sink. You can view our water filter guide on YouTube here:

<https://youtu.be/DIOZtd0g2rw>. This and other videos are also linked on our

<https://www.cleanwaterforUSkids.org/howto> page. You may need a plumber to install an under-counter (in-line) filter unless you are handy with plumbing.

Step 2. Maintain your filter

NSF-certified filters are a great way to keep your water as safe and clean as possible. But they only work if you maintain them properly!

- **Change the filter cartridge on time.** If you don't, contaminants can build up in an old filter cartridge, and then be released back into your water, making your water less safe. So, be sure to change your filter following your manufacturer's recommendations. Some filter devices include a light or an alarm that tells you when the filter needs to be changed. How often you need to change the filter depends on how much water you use. That means that your main kitchen faucet may need to be replaced sooner than a secondary sink. Check your filter instructions to understand exactly when it's time to replace your filter cartridge. If your filter doesn't come with a device to measure how much water you've used, just be sure to replace the cartridge on a regular schedule according to the manufacturer's recommendation, usually every 3-6 months.
- **Use only the brand-name replacement cartridges made by your manufacturer.** Off-brand filter cartridges may not be properly certified to get the lead out. Cheaper replacement cartridges may seem like a good deal, but if they don't work properly, you're wasting your money and potentially still being exposed to lead.
- **Flush some water through a newly installed filter cartridge to get it working.** Each filter is different: some filter cartridges need as much as 10 gallons of water run through them before they're ready to use. So, carefully read the instructions that come with your filter.
- **Use the filter exactly as instructed by the manufacturer.** That usually means filtering only COLD water. Hot water can damage many types of filters.
- **Flush your filter regularly.** Regularly running some water through the filter for several minutes, especially after long periods when it hasn't been used, can help reduce bacteria build-up inside the filter and help the filter continue to operate properly.

Maintain Your Filter Properly

- Change the filter on time.
- Use only brand-name replacement filters.
- Flush water through a new filter.
- Use as instructed (e.g., cold water only).

HOW TO INSTALL A CERTIFIED LEAD-FREE FAUCET

Sinks, faucets, and plumbing fixtures sometimes contain unsafe levels of lead.

If your faucet is a source of lead in your water, we recommend:

1. Replacing the faucet with a certified lead-free faucet.
2. Replacing the supply hoses underneath the sink (these are the lines that bring water to the faucet) with certified lead-free, stainless steel hoses.
3. Installing a point-of-use water filter to protect against any other potential lead sources elsewhere in the plumbing (see our flyer on [How to Choose a Water Filter to Remove Lead](#) [bit.ly/CWUSK-Filters])



Replacing a faucet is easy! If you are handy, you can replace a faucet with only basic tools. If you are unsure about doing it yourself, a plumber or handyman can quickly do the job with these steps:

Step 1. Check what kind of faucet you need.

Faucet fixtures come in many different types and sizes. You will need to check the number of holes on the faucet you are replacing. If it has two or three holes, you will need to know the distance between the holes so you can buy a new one that fits your sink. Use a measuring tape to check the distance between the faucet handles. For some types of faucets, you may need to remove the old faucet first (Step 6) to know how many holes there are and the distance between them.

Step 2. Find a certified lead free faucet and supply hose – look for NSF/ANSI 372 or 61, certification.

Lead is often added to pipes and faucet fixtures to make the metal more malleable and less brittle. However, faucets used for drinking or cooking in the U.S. must be lead free under the Safe Drinking Water Act. For a faucet to be considered “lead free” it must have less than 0.25% lead in any materials that are in contact with the water.

The **American National Standards Institute (ANSI)** is a private, nonprofit organization that administers and coordinates voluntary U.S. standards for different commercial products and services.

The **National Sanitation Foundation (NSF)** is an independent product testing, inspection, and certification organization focused on protecting human health.

To find a trustworthy lead-free faucet and supply hose:

- A. Check that the product is certified to lead-free standards** created by the National Sanitation Foundation (NSF) and the American National Standards Institute (ANSI). This could include either:
 - NSF/ANSI 372 which shows that a faucet has no more than 0.25% lead.
 - NSF/ANSI 61 which shows that a faucet meets NSF/ANSI 372 and also does not leach more than 1 microgram of lead into the water during leaching tests. This standard is even safer than NSF/ANSI 372 alone.
- B. Make sure that the product is certified by an independent laboratory accredited by ANSI.**

C. Beware of cheap products advertised as “lead free” but not certified to NSF/ANSI standards.

D. Look for “Q≤1” on the packaging or product. This mark means the product meets the 2020 edition of NSF/ANSI/CAN 61 standard which requires the product leach no more than 1 microgram of lead.

E. Look for products with certification marks from these companies listed in the table below. The laboratory’s logo should be accompanied by text showing which certification standard was tested (for example, either NSF/ANSI 372 or NSF/ANSI 61).






Certification mark images are from the U.S. Environmental Protection Agency’s factsheet: ‘How to Identify Lead Free Certification Marks for Drinking Water System & Plumbing Products’ (nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100LVYK.txt). Label images are from Safeplumbing.org (<https://www.safeplumbing.org/advocacy/health-safety/low-lead-faucet/>).


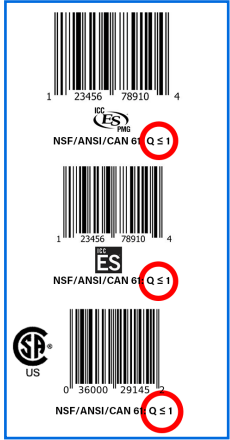








A certification mark is a trademark used to show consumers that particular goods and/or services, or their providers, have met certain standards. Check out the examples below.

Step 3. Review the manufacturer’s instructions.

After selecting your certified lead-free faucet, read through the installation instructions thoroughly. The written instructions may also direct you to manufacturer videos to review. You can also view our faucet replacement video entitled ‘Replacing a faucet’ on our ‘How to’ page (www.cleanwaterforUSkids.org/howto).

Step 4. Assemble the tools you’ll need.

-  A light for under the sink
-  An adjustable wrench
-  Plumber’s thread seal tape
-  WD-40 or another penetration oil spray
-  You may also need a wire brush and a hair dryer

Company	Certification Mark	Examples
CSA group www.csagroup.org/testing-certification/product-areas/plumbing/water-quality-and-health-effects/		
ICC-ES https://icc-es.org/mark/		
NSF International info.nsf.org/Certified/dwtu/listings_leadreduction.asp		
UL www.ul.com/services/health-effects-testing-and-certification-drinking-water-system-components		
IAPMO R&T, Inc. www.iapmo.org/rt/marks-of-conformity		
Intertek www.intertek.com/building/plumbing/		
Truesdail https://www.truesdail.com/product-certification/		
WQA https://wqa.org/grow/product-certification/		

Certification mark images are from the U.S. Environmental Protection Agency’s factsheet: ‘How to Identify Lead Free Certification Marks for Drinking Water System & Plumbing Products’ (nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100LVYK.txt). Label images are from Safeplumbing.org (<https://www.safeplumbing.org/advocacy/health-safety/low-lead-faucet/>).

Step 5. Shut off your water.

You can find the water shutoff valves in the cabinet below the sink. Use your fingers to twist both the hot water AND cold water supply lines to the "off" position. Make sure you also know where the building's main water shut-off valve is before you begin. If you are dealing with old, rusted, or brittle pipes it is a good idea to shut off the water in the whole building before attempting to remove the old faucet.

TIP: Sometimes the shutoff valves can get stuck or rusted, which can make them difficult to budge. If that happens to you, get a hair dryer and apply some heat to the valve. That should loosen the valve enough that you can close it by hand. Don't use tools like wrenches to try to close the valve: if you put too much twisting pressure on it, it could break. If you're still having trouble, shut off the building's main water valve before you go any further.



Water shut off valve in the "on" position. When valve is parallel with pipe (like in the image), water is "on." If pointing away from the pipe, water is "off."

Step 6. Remove the old faucet and supply hoses.

Removing the old faucet can be the trickiest part of the process. The space under the sink is often narrow and dark. You'll need a work light and an adjustable wrench to loosen the nuts.

TIP: The nuts can often be stuck or rusted. Try brushing away as much corrosion as possible with a wire brush. Then, spray on some WD-40. That will help dissolve the corrosion and make the nuts easier to turn. If you're still having trouble loosening the nuts, it may be time to call a professional.

Step 7. Install the new faucet and supply hoses.

Once the old faucet is out, installing the new faucet and supply hoses is the easy part. Follow the video or written instructions that come with your new faucet to learn how to install it. Use thread seal tape on the pipe fittings to prevent leaks. After you are finished installing the new faucet, turn the water back on and check for leaks. You may need to tighten the fittings underneath the sink or add more plumber's tape to the pipe threads.

Step 8. Flush the new faucet

Even certified lead-free faucets need to be broken in to make sure that any trace amounts of lead used in the manufacturing process are rinsed from the inside surface of the faucet. It is recommended that you allow for three weeks of flushing before

using the water for drinking or cooking purposes or before sampling for lead. Immediately after installing, flush the hot and cold water lines for 10 minutes. Then run the water for at least 30 seconds 4 times per day during the three week break in period.

More resources

Check out our other Get the Lead Out flyers

- [Checking for Lead Service Lines \[bit.ly/CWUSK-LSL\]](https://bit.ly/CWUSK-LSL)
- [How to Choose a Water Filter to Remove Lead \[bit.ly/CWUSK-Filters\]](https://bit.ly/CWUSK-Filters)

U.S. Environmental Protection Agency's 'How to Identify Lead Free Certification Marks for Drinking Water System & Plumbing Products'

<https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockkey=P100LVYK.txt>

More Information

This informational flyer was developed for RTI International's Clean Water for US Kids™ program.

Clean Water for US Kids

www.cleanwaterforUSkids.org/

RTI International

3040 E. Cornwallis Road, P.O. Box 12194
Research Triangle Park, NC 27709-2194 USA



**CONTACT US, CALL OR TEXT
1-888-997-9290**



This document was revised August 2023.

GET THE LEAD OUT

Lead and Galvanized Steel Service Lines



No safe level of lead in drinking water

The impact of early childhood exposure to lead lasts a lifetime. No level of lead exposure is considered safe for children—even small amounts cause reduced IQ, attention difficulties, and underperformance in school. Adults can also experience health effects from exposure to lead, including kidney problems and high blood pressure.

Why are lead and galvanized steel service lines a problem?

In the past, lead was used because of its abundance, low cost, and corrosion resistant properties. Lead was used for many years as the main component in service lines in some parts of the country. Unfortunately, records are not available for all locations where lead pipes were used in our nation's infrastructure.

Water treatment plants can add minerals to the water to form a protective layer in the pipes, which helps prevent the water from pulling lead from pipes. However, even with corrosion control, lead service lines can still contribute to lead in tap water.

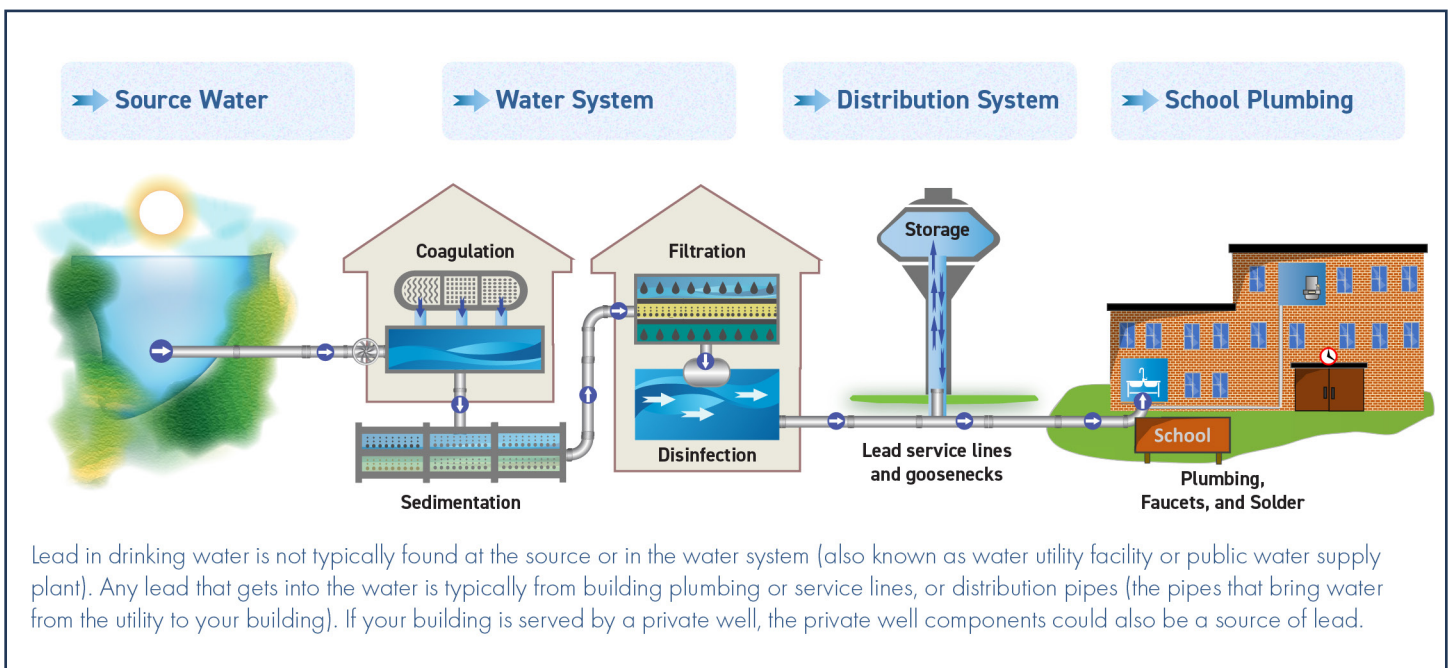
Galvanized steel pipes can also be a source of lead. The zinc coating of galvanized steel pipes can contain some lead. In fact, during the early 1900s some galvanized steel pipes were coated inside with lead instead of zinc. In addition, lead can accumulate on the interior surface of galvanized steel pipes that are or have ever been downstream of lead pipes.

How does lead get into drinking water?

Lead in drinking water generally comes from components of the pipes, plumbing, solder, and fixtures. Lead can get into water from water infrastructure that contains lead, particularly if the water is corrosive, or if the water sits for a long time in the pipe or fixture.

What is a service line?

This is the pipe that connects your home or building to the main water line coming from your water utility or your private well.



Do I have lead service lines, galvanized steel service lines, or goosenecks?

Lead service lines, galvanized steel service lines, and goosenecks were used in many parts of the country to connect water mains coming from the water treatment plant to home or building plumbing. Water system records do not always identify the locations of lead service lines. However, you can check for lead service lines on your property yourself.

Checking for lead and galvanized steel service lines

To check for lead service lines on your property, you'll need a metal tool, such as a screwdriver, and a magnet.

What is a gooseneck?

A gooseneck or pigtail is a short piece of lead pipe that was used to connect the water main to customer's service lines.

Step 1. Locate Where the Water Line Enters the Building

Depending on where you live, this can be in the basement or lowest level, near the water meter. In other locations, the water meter and valve may be in an underground box, near the street. Once you locate your inlet, you can identify the inlet valve going into the building.

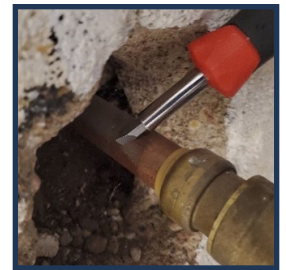


Step 2. Scratch off Rust or Corrosion on the Outside of the Pipe

Find a place to examine the pipe that goes into the building. If there is a covering around the pipe, uncover or unwrap the pipe first.

If the pipes are made of plastic, you can stop here.

If the pipe material is not easily visible because of rust or corrosion, use the metal tool to scrape off a section of that rust or corrosion large enough to see what is underneath, and to be able to touch the magnet to the pipe.



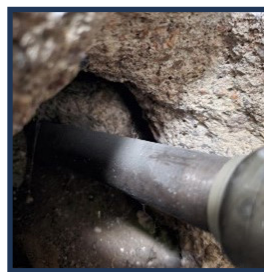
Step 3. See if the Magnet Sticks to the Pipe

If the **magnet sticks, the pipes are most likely galvanized steel**, which is typically a dull gray, or iron, which is typically a reddish, brown color when rusted. A magnet will not stick to lead or copper pipes.

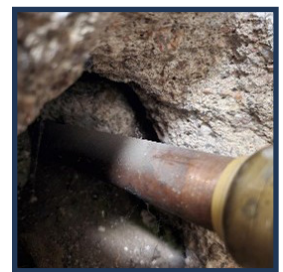


Step 4. If the Magnet Does Not Stick, Check the Color of the Pipe

If the magnet does not stick, the pipes must be lead or copper. You can distinguish between these by the color (both are typically shiny):



Lead pipe is silver or gray.



Copper pipe is the color of a penny or may be green like the Statue of Liberty.

IMPORTANT!

If the magnet sticks, this is not a lead pipe. However, galvanized steel or iron pipes could have lead lining on the inside.

If you are not comfortable completing these steps or suspect you have lead or galvanized steel pipes, we suggest you consult a plumber for verification.

If you found plastic or copper pipes at this location, you made important progress in narrowing down the possible sources of lead in water. However, this does not confirm the composition of all piping and plumbing leading to your tap. Finding the source of lead is a complicated process that can involve the building owner/resident, a plumber, public utility staff, and state or county environmental health specialist.

See <https://www.lslr-collaborative.org/identifying-service-line-material.html> for more information and sample photos.



What to do if I have lead or galvanized steel service lines

- Contact your utility to discuss the process of replacing a service line and to learn about any programs already underway. Recent changes to the U.S. Environmental Protection Agency's Lead and Copper Rule require water utilities to replace 3% of their lead service lines annually.
- Full lead service line replacement can be costly (\$2,400-\$7,100¹), check in with your local health department and utilities to see if there is any funding support.
- In the meantime, take measures to minimize the lead in water used for drinking and cooking, for example, by using a water filter certified to remove lead.

Testing recommendations

Regardless of what pipe material you find, you should test the water at all your cooking and drinking taps for lead. Lead in water can vary from tap to tap, even if you do not have lead service lines. Child care centers, schools, and households should test water for lead at least every three years, and after any changes are made to the water supply or renovations done on the building. The only way to identify whether lead is in your water is to test it at the tap.

More information

Clean Water for US Kids
www.cleanwaterforUSkids.org

RTI International
3040 E. Cornwallis Road, PO Box 12194
Research Triangle Park, NC 27709-2194 USA

More resources

This informational flyer was developed for RTI International's Clean Water for US Kids™ program. For additional resources please refer to the following links:

Check out our other Get the Lead Out flyers

- **No-cost and Low-cost solutions to eliminate lead at the tap in drinking and cooking water** (<https://www.cleanwaterforuskids.org/cms/documents/6/LeadWaterSolutions.pdf>)
- **How to Choose a Water Filter to Remove Lead** (https://www.cleanwaterforuskids.org/cms/documents/5/Get_The_Lead_Out.pdf)

- **Lead Service Line Replacement Collaborative** (<https://www.lslr-collaborative.org/>)
- **Interactive app from NPR on identifying lead service lines** (<https://apps.npr.org/find-lead-pipes-in-your-home/en/#intro>)
- **Step-by-step guide to identifying lead pipes, from the U.S. EPA** (<https://www.epa.gov/ground-water-and-drinking-water/protect-your-tap-quick-check-lead-0>)



Clean Water For US Kids™

¹ US Environmental Protection Agency. (October 2019) Economic Analysis for the Proposed Lead and Copper Rule Revisions. <https://www.regulations.gov/document/EPA-HQ-OW-2017-0300-0003>