



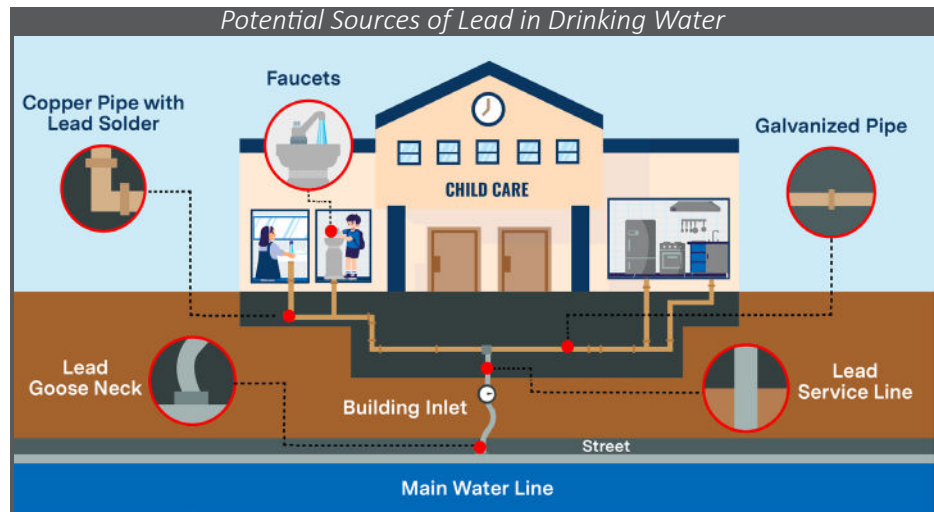
## Know Your Plumbing!

*Remediate lead in drinking water in child care facilities*

### Why is this important?

This factsheet is intended for child care facilities specializing in early care and education programs, including center-based and family child care homes, pre-kindergarten programs, as well as Head Start and Early Head Start Programs. The EPA estimates that drinking water can make up 20 percent or more of a person's total exposure to lead. Infants who consume mostly mixed formula can receive 40 percent to 60 percent of their exposure to lead from drinking water.

**There is no safe level of lead in drinking water, especially for children. Among other effects, in children, even low levels of lead exposure can cause cognitive health effects like lower intelligence quotient (IQ) as well as learning and behavioral problems.** This document presents examples of common drinking water lead sources, potential lead sources, and non-lead source piping, along with actions to take to reduce exposure to lead.



### Lead Source Pipe



#### Lead Pipe

Lead is a dull, gray, soft metal. Lead pipes are easily scratchable with a coin or butter knife and show a silver color as a result of the scratch. A magnet will not cling to a lead pipe. In some buildings the service lines, which connect interior plumbing to the main water line, can be made of lead. A lead service line (LSL) can be connected to other pipe materials using solder and have a bulb-like shape at the connection. The **bulb** is one marker of a lead pipe. Additionally, lead connectors, often called goose necks and pigtails, are shorter lead pipes that connect the LSL to the main and are a source of lead.

### Potential Lead Source Pipe



#### Galvanized Steel (Iron) Pipe

While new galvanized steel (iron) pipes are gray and silver colored, *old* galvanized steel (iron) pipes can be dark brown, gray, or even black colored on the surface. A magnet *will* easily cling to galvanized steel (iron) and pipes *will not* scratch easily. Another identifier may be the **threading** at the end of the pipe, which can be seen on the left in the silver pipe photo.

#### Brass Pipe

With a golden color, brass pipes are an alloy mainly made of copper and zinc. Brass plumbing installed before 2014 are likely to contain lead in solder and/or plumbing components may have lead in the alloy. An identifier of brass piping is the **threading** at the end of the pipe, seen in the photo.



**Note:** Galvanized steel (iron) pipes will corrode easily and galvanized zinc layers may have traces of lead. In addition, corrosion inside these pipes can collect metals (including lead if a lead source is upstream) on the wall scales overtime. These scales with metal particles could be released into drinking water spontaneously. Households and commercial buildings built before 2014 are likely to contain lead in solder and/or plumbing components.

## Other Potential Sources of Lead

Lead in water can come from many other sources besides piping, such as solder, brass fixtures/fittings, faucets, and water fountains:



### Lead Solder

Silver in color, lead solder was commonly used to connect copper piping and plumbing together. Before 1987, lead solder may have had lead content up to 50% or more by weight.



### Brass Faucets, Fittings, and Valves

Similar to a brass pipe, with a golden color, brass components are an alloy mostly made with copper and zinc. Brass components made before 2014 are likely to contain lead in solder and/or plumbing components.



### Older Drinking Water Fountains

Older drinking water fountains/coolers, faucets, and plumbing installed prior to 2014 are likely to contain lead. Solder and/or plumbing components may have lead linings, lead solder, or brass components that can be a source of lead. Older brass faucets, fittings, and valves are a potential source of lead.

If you have older water fountains in your building, review the list of banned water fountains to ensure you don't have any in your facility: [3Ts Module 4: Developing a Sampling Plan -- Lead Water Coolers Banned in 1988](#)

## Non-Lead Source Pipe



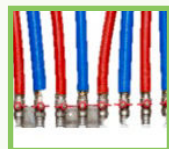
### Copper

New copper piping has the color of a U.S. penny. Older copper can look duller, or have green tints. Copper can be easily scratched and will show a shiny copper color as a result of the scratch. A magnet *will not* cling to copper pipes. It is a common choice for water lines and has high corrosion resistance. Copper pipes do not have threading at the ends of the pipe, but older copper piping can have lead solder.



### PVC (Polyvinylchloride)

Generally white or gray in color, PVC pipes are in the plastic category and commonly used for water and wastewater plumbing in residential buildings. This type of pipe is not a source of lead in drinking water.



### PEX (Crosslink Polyethylene)

In the plastic category, PEX piping can be red, blue, white, or black in color. This type of pipe is not a source of lead in drinking water.

**To know if there is lead in your drinking water, the EPA recommends the best practice of testing the water from each fixture used for human consumption.** In some inventories, the service line material may be unknown. Smaller child care facilities operated out of single family residences could be more likely to be served by an LSL based on the diameter of the service line. Focus identification activities on locations where service lines are less than two inches in diameter.

There is no safe level of lead in drinking water. Children are most susceptible to the effects of lead because their bodies are still developing; therefore, they tend to absorb more lead from any source, including drinking water, than adults.

A water sample is a snapshot of the lead level taken at the time it was collected. Prior water samples of low or non-detected lead levels should not be used to assume that an outlet or facility is lead free. Lead levels at an outlet or within a building have been shown to vary over time.

Regularly scheduled testing and routine maintenance are essential to reducing lead in drinking water. Consult with your public water system (PWS) for guidance.

Results from one outlet should not be used to generalize the lead levels at other outlets in the facility. Lead contamination can occur both in fixtures and in building plumbing, so a sample taken at any given outlet is not representative of the entire facility.

Buildings and fixtures built before 1990 are most likely to have lead solder and/or plumbing components that contain lead. The 1986 Safe Drinking Water Act (SDWA) Amendments included a "lead ban" requirement stating that only "lead free" materials could be used in new plumbing and plumbing repairs. However, it is likely that lead pipes, high-lead solder, and fluxes were used until 1990. The Reduction of Lead in Drinking Water Act of 2011, effective in 2014, made the definition of "lead free" more stringent by lowering the maximum lead content permitted.

## Glossary

Alloy	A mixture of two or more metals. Examples of common alloys are stainless steel, brass, and bronze.
Building Inlet	The point at which the service line connects to premise plumbing. The location of the building inlet may vary and may be located inside or at the building structure.
Corrosion	The gradual break down or destruction of a material by chemical action.
Lead Service Line (LSL)	A service line is the pipe that connects the water main to the plumbing in a home or building. When any part of that pipe is made of lead, it is called a lead service line (LSL).
Plumbing	Plumbing is any system that carries drinking water for a wide range of applications. Plumbing uses pipes, valves, fixtures, tanks, and other equipment to carry water.
Program Remediation Trigger (PRT)	States are required to establish a PRT lead level in parts per billion under the <i>Voluntary School and Child Care Lead Testing and Reduction</i> grant program. The PRT level is used to prioritize remediation activities in schools, child care facilities, and PWSs under the jurisdiction of the local educational agencies that serve these facilities.
Shut-off Valve	A small local valve used to control the flow of water to a plumbing fixture such as a faucet, tub, toilet, or other fixture.
Upstream	Any point in the plumbing system that water has traveled through before getting to the plumbing, pipes, valves, or fixtures being tested.
Zinc	Zinc is a common element in nature and is the main component of galvanized coatings used to protect iron surfaces.

## Related Resources

- 1 **The 3Ts Toolkit**
  - a [3Ts Homepage \(epa.gov\)](https://www.epa.gov/3ts/3ts-homepage)
  - b [Child Care Sample Collection Poster](#)
- 2 [Important Steps You Can Take to Reduce Lead in Drinking Water](#)
- 3 [How to Identify Lead Free Certification Marks for Pipes, Fittings, Fixtures, Solder, and Flux Used for Drinking Water](#)
- 4 [How Lead gets into Drinking Water](#)

In addition, you can contact your PWS to request information about your service line.
- 5 [Protect Your Tap: A Quick Check for Lead](#)

Contact your state's *Voluntary School and Child Care Lead Testing and Reduction* Grant Program. For state agency and EPA regional contact information go [here](#).

Many states have regulations that require taking action at specific levels of lead detected in drinking water in schools and child care facilities. It is important that you contact your state and determine the appropriate level of concern.

If you are a recipient of funding from your state under the *Voluntary School and Child Care Lead Testing and Reduction* Grant, the state will provide the PRT level at which you must take action to reduce lead exposure. Find your state lead program [here](#).

The U.S. EPA *3Ts for Reducing Lead in Drinking Water in Schools and Child Care Facilities - Training, Testing, and Taking Action* approach recommends taking appropriate action for each drinking water fixture with a detected lead level. Samples that exceed your PRT/level of concern should be prioritized for immediate action.

Result

Non-detect

Below the PRT\*

Above the PRT\*

Meaning

There is no detectable amount of lead in the sample tested.

Lead was detected in the sample tested and actions should be taken to reduce lead levels.

Lead was detected in the sample tested and may require immediate action to reduce lead levels.

### Immediate Response

- Follow actions as determined in your 3Ts plan
- Share the test results with your stakeholders ([see templates](#))

### Permanent Actions

- Continue testing, monitoring, and other [routine maintenance measures](#) in your 3Ts plan to ensure there is not lead in the plumbing system
- Consider implementing additional 3Ts routine practices like maintenance [flushing](#) and [aerator cleaning](#)

### Immediate Actions

- Use your actions as determined in your 3Ts plan
- Share test results with your stakeholders ([see templates](#))
- Post a sign at the fixture to inform that lead was found and any action the user should take

### Short-Term Actions

- Provide and maintain [point of use \(POU\)](#) filters at problem taps
- [Flush](#) problem taps prior to use
- Provide bottled water

### Permanent Actions

- After performing further sampling to pinpoint the source of lead, consider the following long-term remediation solutions:
  - Providing and maintaining [POU filters](#) at problem taps
  - Replacing problem outlets
  - Replacing lead pipes
  - Reconfiguring plumbing
- Continue testing, monitoring, and other [routine maintenance measures](#) in your 3Ts plan to ensure there is not lead in the plumbing system
- Consider implementing additional 3Ts routine practices like maintenance [flushing](#) and [aerator cleaning](#)

### Use actions as recommended in [3Ts Module 6](#):

#### Immediate Actions

- Use your actions as determined in your 3Ts plan
- Shut off problem fixtures
- Post “Not for Consumption” signs at problem fixtures
- Share test results with your stakeholders ([see templates](#))
- Reach out to your water system for guidance
- Increase awareness and public education ([see posters and factsheets](#))

#### Short-Term Actions

- Provide and maintain [POU filters](#) at problem taps
- [Flush](#) problem taps prior to use
- Provide bottled water
- Reach out to your water system for guidance

#### Permanent Actions

- After performing further sampling to pinpoint the source of lead, consider the following long-term remediation solutions:
  - Providing and maintaining [POU filters](#) at problem taps
  - Replacing problem outlets
  - Replacing lead pipes
  - Reconfiguring plumbing

#### Follow-Up Sampling

- Ensure additional samples are taken before your facility opens or water is used
- Take samples from fixtures that have been remediated via fixture or pipe replacement, or plumbing reconfiguration
- Compare results to original samples to determine if remediation efforts were successful

Example Actions to Take

\*If you are a recipient of funding from your state *Voluntary School and Child Care Lead Testing and Reduction Grant* Program through the WIIN Act, the state will provide you with a PRT. The PRT is the lead level at which you may be required to take remediation action. Contact your state program for your PRT.