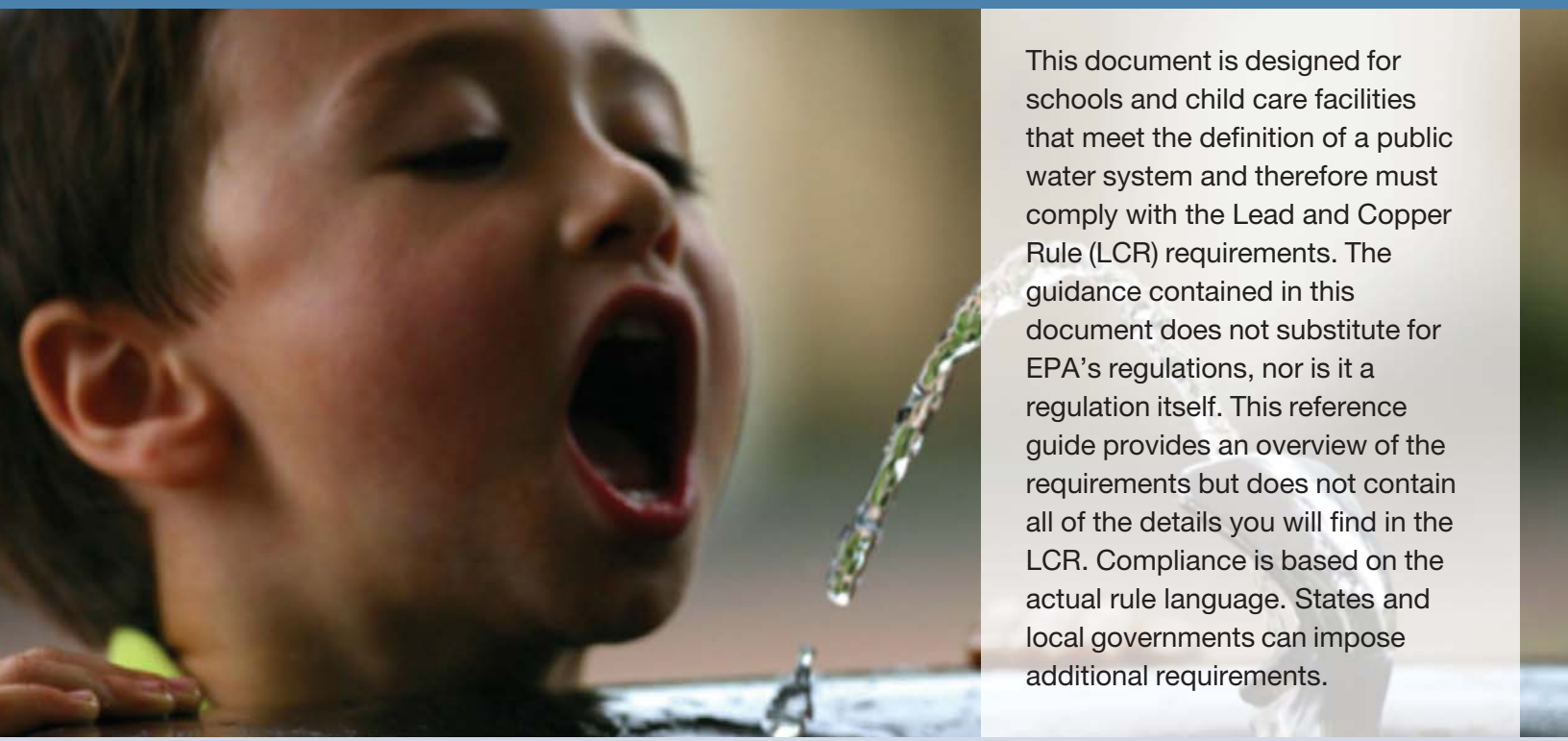
Lead and Copper Rule:

A Quick Reference Guide for Schools and Child Care Facilities that are Regulated Under the Safe Drinking Water Act



This document is designed for schools and child care facilities that meet the definition of a public water system and therefore must comply with the Lead and Copper Rule (LCR) requirements. The guidance contained in this document does not substitute for EPA's regulations, nor is it a regulation itself. This reference guide provides an overview of the requirements but does not contain all of the details you will find in the LCR. Compliance is based on the actual rule language. States and local governments can impose additional requirements.

OVERVIEW OF THE RULE

Schools and child care facilities that have their own water supply and are considered non-transient, non-community water systems (NTNCWSs) are subject to the Lead and Copper Rule (LCR) requirements.

The LCR was developed to protect public health by minimizing lead and copper levels in drinking water. The most common source of lead and copper in drinking water is corrosion of plumbing materials. Plumbing materials that can be made with lead and copper include pipes, solder, fixtures, and faucets.

The LCR established an action level of 0.015 mg/L (15 ppb) for lead and 1.3 mg/L (1300 ppb) for copper based on the 90th percentile level of tap water samples. This means no more than 10 percent of your samples can be above either action level. If lead or copper levels are found above the action levels, it does not signal a violation but can trigger other requirements that include water quality parameter (WQP) monitoring, corrosion control treatment (CCT), source water monitoring/treatment, public education, and lead service line replacement. An explanation of how to calculate the 90th percentile level is provided on page 3 of this guide.

HEALTH RISKS OF LEAD AND COPPER

CHILDREN

Children are especially susceptible to lead and copper exposure because their bodies absorb these metals at higher rates than the average adult. Children younger than six are most at risk due to their rapid rate of growth. Exposure to high levels of lead can cause damage to the brain, red blood cells, and kidneys. Exposure to even low levels of lead can cause low IQ, hearing impairment, reduced attention span, and poor classroom performance. Exposure to high levels of copper can cause stomach and intestinal distress, liver or kidney damage, and complications of Wilson's disease in genetically predisposed people.

Because children spend so much time in school and child care facilities and their bodies are developing rapidly, it is important to provide safe drinking water to avoid health problems linked to lead or copper exposure.

ADULTS

High lead levels in adults have been linked to increased blood-pressure. Pregnant women and their fetuses are especially vulnerable to lead exposure since lead can significantly harm the fetus, causing lower birth weight and slowing down normal mental and physical development.

SOURCES OF LEAD AND COPPER IN DRINKING WATER

When lead and copper are found in tap water it is typically due to leaching from internal plumbing materials. If the water is too corrosive, it can cause lead or copper to leach out of the plumbing materials and enter the drinking water.

The potential for leaching increases the longer the water is in contact with the plumbing components. School water supplies tend to have extended periods of no water use (e.g., overnight, weekends, holidays, summer) that increase the likelihood of elevated lead levels at the tap.

LEAD AND COPPER TAP SAMPLING REQUIREMENTS

KEY POINTS

- "First draw" samples must be collected.
- Samples must be collected after the water has had time to sit in the pipes for at least 6 hours.
- If either action level is exceeded, water quality parameter (WQP) and source water sampling may be required.
- The number of lead and copper or WQP samples collected depends on the daily population served by the school or child care facility (see Table 1).
- Lead and copper samples must be collected every 6 months, unless the system qualifies for reduced monitoring (see Table 2).
- Samples for subsequent rounds of monitoring must be collected from the same sites used in the initial round.

Table 1: Lead and Copper Tap and WQP Tap Monitoring

School or Child Care Facility Daily Population Served	Number of Lead and Copper Tap Sample Sites		Number of WQP Tap Sample Sites	
	Standard	Reduced	Standard	Reduced
10,001 - 50,000	60	30	10	7
3,301 - 10,000	40	20	3	3
501 - 3,300	20	10	2	2
101 - 500	10	5	1	1
≤ 100	5	5	1	1

Table 2: Criteria for Reduced Lead and Copper Tap Monitoring

Can monitor...	***If...***
Annually	The 90th percentile is less than both action levels (ALs) for 2 consecutive 6-month monitoring periods; or
	Optimal water quality parameter specifications are met for 2 consecutive 6-month monitoring periods and the primacy agency approves.
Triennially (every 3 years)	The 90th percentile is less than both ALs for 3 consecutive years of monitoring; or optimal water quality parameter specifications are met for 3 consecutive years of monitoring and the primacy agency approves; or
	The 90th percentile lead levels are ≤ 0.005 mg/L and 90th percentile copper levels are ≤ 0.65 mg/L; or
	The system is deemed to have optimized corrosion control by meeting the copper action level and showing: • for 2 consecutive 6-month periods that the difference between the lead 90th percentile tap water level and the highest lead source water sample is less than the Practical Quantitation Limit for lead; or • the highest source water lead level is below the Method Detection Level and the 90th percentile tap water lead level is ≤ the Practical Quantitation Limit for lead for 2 consecutive 6-month periods.
Once every 9 years	The school or child care facility population is ≤ 3,300, the system meets monitoring waiver criteria, and a waiver is approved by the primacy agency.

CALCULATING THE 90TH PERCENTILE FOR LEAD AND COPPER

If you collect 5 samples...	rank the results from the lowest to the highest value, and then average the two highest results. This value is the 90th percentile.
If you collect 10 samples...	rank the results from the lowest to the highest value, numbering each from 1 to 10. The 9th value is the 90th percentile.
If you collect 20 or more samples...	rank the results from the lowest to the highest value, numbering each from 1 up to the number of samples taken. Multiply the number of samples taken by 0.9. The resulting number is the value that is the 90th percentile. *Example calculation*: 20 samples x 0.9 = 18. The 18th value in a ranked set of sample values is the 90th percentile.

COMPLIANCE REQUIREMENTS IF ACTION LEVEL IS EXCEEDED

KEY POINTS

Four compliance areas must be addressed within certain time frames following an action level exceedance:

- Public education
- Water quality parameter (WQP) monitoring
- Source water monitoring and source water treatment
- Corrosion control treatment (CCT)

Contact your primacy agency in the event of an action level exceedance to ensure you follow the required steps. Failure to do so may result in a compliance violation.

Public Education within 60 Days

When the AL for lead is exceeded, a water system must issue public education print materials (no public education is required if only the copper AL is exceeded). (See Appendix A for an example public education poster.)

- Display informational posters on lead in drinking water in a public place or common area in each of the buildings served by the system; and
- Distribute informational pamphlets and/or brochures on lead in drinking water to each person served by the system.

You have the option of using the alternative mandatory language provided in §141.85(a)(2) or using the original language now contained in §141.85(a)(1). You do not need State approval before using this alternative language.

Public Education Requirement	Poster	Pamphlet	Compliance Letter to State
Within 60 days of exceedence[1]	✓	✓	
Every 12 months for as long as exceedence occurs	✓	✓	
Within 10 days after the end of each period in which public education was required			✓

[1]Applies first time action level is exceeded, and applies any subsequent time that a system exceeds the lead action level when it is not already providing public education.

Water Quality Parameter Sampling within same Lead and Copper monitoring period

Collect water quality parameter (WQP) tap samples.

- See Table 1 for number of samples required.
- WQP samples are collected at taps and at each entry point to the distribution system.
- WQPs include: pH, alkalinity, calcium, and in the initial sample, conductivity and temperature as well. If treatment is currently installed, other parameters may also be included depending on the treatment type.
- After follow-up monitoring, the primacy agency will set a range of optimal WQPs.

Entry Point to Distribution System Monitoring within 6 months

System must:

- Collect samples at each entry point to the distribution system. (You may want to use the same sampling points designated for chemical sampling – check with your primacy agency.)
- Make a recommendation for source water treatment.

Corrosion Control Treatment

within 6 months:	Recommend optimal corrosion control treatment.
within 18 months:	Complete corrosion control treatment study if required by primacy agency.
within 24 months:	Install corrosion control treatment after primacy agencies has determined appropriate treatment.
within 36 months:	Monitor WQP at entry points for 2 consecutive 6-month periods.

COMPLIANCE REQUIREMENTS IF ACTION LEVEL EXCEEDANCE CONTINUES

KEY POINTS

If the system continues to exceed the AL after installation of corrosion control treatment or source water treatment there are two additional compliance areas:

- Lead service line monitoring
- Lead service line replacement

Contact your primacy agency for further assistance if installation of corrosion control treatment or source water treatment does not end AL exceedances.

DEFINITIONS

90th Percentile	The highest concentration of lead or copper in tap water that is exceeded by 10 percent of the sites sampled during a monitoring period. This value is compared to the lead action level (AL) to determine whether an AL has been exceeded. (See "Calculating the 90th Percentile" above for instructions.)
Action Level (AL)	The concentration of lead or copper in tap water which determines whether a system may be required to install corrosion control treatment, collect water quality parameter samples, collect source water samples, replace lead service lines, and/or deliver public education about lead. The action level for lead is 0.015 mg/L or 15 ppb. The action level for copper is 1.3 mg/L or 1300 ppb.
Corrosion Control Treatment (CCT)	Water treatment generally in the form of chemical addition meant to reduce the corrosivity of the water.
Entry Point to the Distribution System	An entry point to the distribution system is a point after any treatment is applied, but before water reaches the first consumer. Because this location is often used for sampling, it is ideal to have a dedicated sampling tap which is inaccessible for drinking purposes.
First Draw Sample	A tap water sample taken after water has been standing motionless in plumbing pipes for a period of time and is collected without flushing the tap. Approximately 8 hours is an ideal amount of time to let the water sit before collecting a first draw sample, a minimum of 6 hours is required.
Method Detection Limit (MDL)	The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero.
Optimal Water Quality Parameters	Ranges or minimums set by the primacy agency that indicate a system's CCT is operating at a level to most effectively minimize lead and copper concentrations at user's taps.
Practical Quantitation Limit (PQL)	The concentration that can be reliably measured within specified limits during routine laboratory operating conditions using approved methods. The PQL for lead is 0.005 mg/L. The PQL for copper is 0.050 mg/L.
Water Quality Parameters (WQPs)	A set of water qualities or characteristics used to help systems and states determine what levels of CCT would work best for the system and whether this treatment is being properly operated and maintained over time. WQPs include: pH, alkalinity, calcium, conductivity, and temperature. If treatment is currently installed, other parameters such as orthophosphate and silica may also be included depending on the treatment type.

LEAD in Drinking Water

HEALTH EFFECTS OF LEAD

Lead is found throughout the environment in lead-based paint, air, soil, household dust, food, certain types of pottery porcelain and pewter, and water. Lead can pose a significant risk to your health if too much of it enters your body.

Lead builds up in the body over many years and can cause damage to the brain, red blood cells and kidneys. The greatest risk is to young children and pregnant women. Amounts of lead that won't hurt adults can slow down normal mental and physical development of growing bodies. In addition, a child at play often comes into contact with sources of lead contamination - like dirt and dust - that rarely affect an adult. It is important to wash children's hands and toys often, and to try to make sure they only put food in their mouths.

LEAD IN DRINKING WATER

Lead in drinking water, although rarely the sole cause of lead poisoning, can significantly increase a person's total lead exposure, particularly the exposure of infants who drink baby formulas and concentrated juices that are mixed with water. EPA estimates that drinking water can make up 20 percent or more of a person's total exposure to lead.

THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA) and *(a)* are concerned about lead in your drinking water. Some drinking water samples taken from this facility have lead levels above the EPA action level of 15 parts per billion (ppb), or 0.015 milligrams of lead per liter of water (mg/L). Under Federal law we are required to have a program in place to minimize lead in your drinking water by *(b)* .

This program includes:

1) Corrosion control treatment (treating the water to make it less likely that lead will dissolve into the water);
2) Source water treatment (removing any lead that is in the water at the time it leaves our treatment facility); and
3) A public education program.

If you have any questions about how we are carrying out the requirements of the lead regulation please call us at *(c)* .

This poster also explains the simple steps you can take to protect yourself by reducing your exposure to lead in drinking water.

HOW LEAD ENTERS OUR WATER

Lead is unusual among drinking water contaminants in that it seldom occurs naturally in water supplies like rivers and lakes. Lead enters drinking water primarily as a result of the corrosion, or wearing away, of materials containing lead in the water distribution system and household plumbing. These materials include lead-based solder used to join copper pipe, brass and chrome-plated brass faucets, and in some cases,pipes made of lead that connect houses and buildings to water mains (service lines). In 1986, Congress banned the use of lead solder containing greater than 0.2% lead, and restricted the lead content of faucets, pipes and other plumbing materials to 8.0%.

When water stands in lead pipes or plumbing systems containing lead for several hours or more, the lead may dissolve into your drinking water. This means the first water drawn from the tap in the morning, or later in the afternoon if the water has not been used all day, can contain fairly high levels of lead.

FOR MORE INFORMATION

YOU CAN CONSULT a variety of sources for additional information:
Your family doctor or pediatrician can perform a blood test for lead and provide you with information about the health effects of lead. State and local government agencies that can be contacted include:

- *(d)* at *(e)* can provide you with information about your facility's water supply; and
- *(f)* at *(g)* or the
- *(h)* at *(i)* can provide you with information about the health effects of lead.

STEPS YOU CAN TAKE to Reduce Exposure to Lead in Drinking Water

1. FLUSH YOUR SYSTEM. Let the water run from the tap before using it for drinking or cooking any time the water in a faucet has gone unused for more than six hours. The longer water resides in plumbing the more lead it may contain. Flushing the tap means running the cold water faucet for about 15-30 seconds. Although toilet flushing or showering flushes water through a portion of the plumbing system, you still need to flush the water in each faucet before using it for drinking or cooking. Flushing tap water is a simple and inexpensive measure you can take to protect your health. It usually uses less than one to two gallons of water.

2. USE ONLY COLD WATER FOR COOKING AND DRINKING. Do not cook with, or drink water from the hot water tap. Hot water can dissolve more lead more quickly than cold water. If you need hot water, draw water from the cold tap and then heat it.

3. USE BOTTLED WATER. The steps described above will reduce the lead concentrations in your drinking water. However, if you are still concerned, you may wish to use bottled water for drinking and cooking.