



Natural Resources Defense Council

Removing Lead from Drinking Water in Homes, Schools, & Child Care Centers – Opportunities in the American Rescue Plan Act of 2021 (ARPA) and the American Jobs Plan (AJP)

Background:

Lead is a poisonous heavy metal that can affect almost every organ and system in the human body, often with irreversible effects. The [Centers for Disease Control](#), [American Academy of Pediatrics](#) and the [World Health Organization](#) all state that there is no safe level of lead exposure. Even at very low levels, lead can cause **serious, irreversible damage to the developing brains and nervous systems of babies and young children**, who are most susceptible to the adverse effects of lead. Lead can decrease a child’s cognitive capacity, cause behavior problems, and limit their ability to concentrate—all of which, in turn, affect their learning potential in school. Children with serious lead-related brain impacts are less likely to graduate from high school and more prone to delinquency, teen pregnancy, violent crime, and incarceration. **Lead can cross the placental barrier of a pregnant mother into the womb and harm the fetus.**

There is no cure for the adverse effects of lead, but we can fix the problem by removing lead from drinking water in homes and schools.

Q. How do ARPA and AJP help address lead in drinking water?

A. ARPA provides state and local governments discretionary funds that can be used to tackle water infrastructure needs – including lead service line replacement. It is estimated that 6 to 10 million U.S. homes receive their water through lead pipes known as service lines that deliver water from the water main in the street to the residence. ARPA dollars could be used to replace lead service lines, and the AJP proposes to dedicate \$45 billion to replace all lead service lines in the United States.

Although some smaller, older schools may have lead service lines, schools rarely have lead service lines because the small diameter, soft lead service lines cannot provide the water flow needed in most school buildings. ARPA funding can be used to replace the few lead service lines that connect schools to the water main, and these funds can also be used to replace lead service lines that are more common at in-home child care centers. ARPA funding could also be used to implement the “Filter First” program in schools, described below.

Q. Why isn’t replacing lead service lines the remedy for schools?

A. The remedy for schools in the vast majority of cases is different than for homes because schools rarely have lead service lines (these lines are too small to serve the school population). In schools, lead almost always gets into the water when it leaches or flakes off from plumbing fixtures, fittings, pipes, solder, and flux within the school buildings. Unfortunately, currently the solution is not to replace the internal plumbing and fixtures because there are no truly lead-free products on the market. Consequently, replacing these plumbing components can reintroduce lead into school drinking water.

Q. Where does lead in school water come from?

A. Most of our plumbing materials, even brand new pipes, fittings, and fixtures, contain lead. Sources of lead in school and childcare drinking water include:

- lead solder installed prior to 1988 and improperly installed after 1988;
- plumbing materials not intended for drinking water use;
- pre-1988 drinking water coolers with lead-lined tanks;
- plumbing materials marked “lead-free” that contain up to 8% lead by weight sold through January 2014, and those that contain up to 0.25% lead by weight sold starting in January 2014; and
- in some locations, lead service lines.

Most lead in school water comes from plumbing materials that contain lead rather than lead pipes themselves. In the limited circumstances where lead service lines deliver water to schools, they should be removed as soon as possible. But replacing the pipes and plumbing inside buildings will just end up adding new lead to our school drinking water systems.

Q. There is no such a thing as truly “lead-free” plumbing products?

A: Today’s plumbing products generally contain lead. In 1986, Congress amended the federal Safe Drinking Water Act, defining “lead-free” to mean that solder and flux used for drinking water could contain no more than 0.2 percent lead, and plumbing pipes, pipe fittings, plumbing fittings, and fixtures intended for drinking water use could contain no more than 8 percent lead. In 2011, Congress lowered that content so that “lead-free” in pipes means a weighted average of 0.25 percent and 0.2 percent in solder and flux. These changes were effective in 2014, but non-compliant fixtures could be sold after the effective date until the inventory was depleted, meaning that plumbing products in new construction and retrofitted buildings could contain pre-2014 lead levels. Current manufacturer claims of lead-free plumbing products generally are false--they may meet the misleading federal definition of “lead free,” but they likely contain some lead. Materials not intended for drinking water use, such as hose bibs, laundry faucets, and handwashing sinks, have no limits on the lead content of the plumbing materials.

Q. What is the best remedy right now to remove lead from drinking water in schools?

A. Because it is impossible to replace plumbing without adding new lead to school water systems, the best remedy for schools right now is to install new “water filter stations” (water fountains where you can fill a water bottle) that have filters certified to the latest version of NSF/ANSI 53 for lead reduction and NSF/ANSI 42 for particulate reduction (Class I). Best Practices for Installation of Drinking Water Filter Stations in Schools and Child Care Centers can be found [here](#). The certification body should be accredited by the American National Standards Institute National Accreditation Board (ANAB). Certified filters are very effective for removing lead from drinking water when they are properly maintained and replaced according to the manufacturers’ specifications. Schools can also put filters on kitchen faucets, in teacher lounges, and in nurses’ offices.

Q. So the best remedy right now is to provide filtered drinking water in schools instead of repeatedly testing for lead at all taps, and replacing all of the pipes in schools?

A. Yes. Replacing the pipes in schools right now will not remove all the lead from school plumbing systems. As mentioned above, current replacement plumbing products would add new lead to the plumbing systems. It makes sense to wait for truly lead-free products before replacing school plumbing. If schools

undertake capital improvement plans that include replacing plumbing products right now, they will still need Filter First to assure lead free water. Until we get the lead out of plumbing products, it makes no sense to replace these components in a school building, particularly when there is a cost-effective interim remedy that would address the problem – the [Filter First](#) approach.

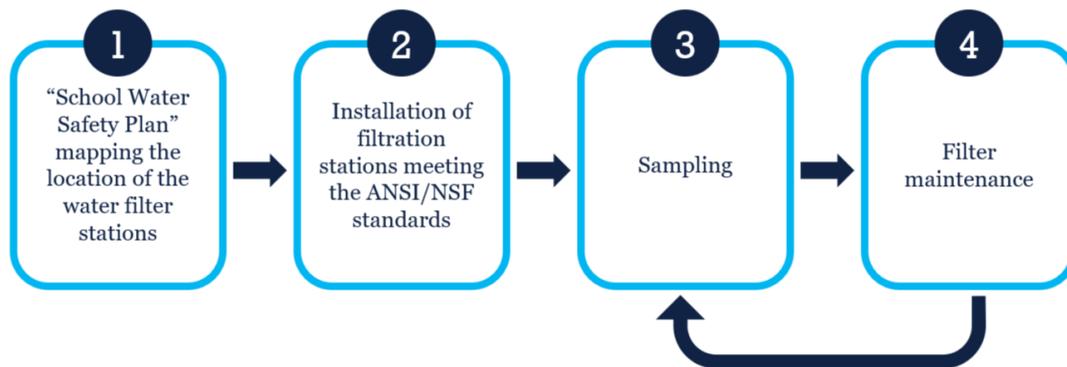
Q How does the “Filter First” approach work?

A Under the Filter First approach, schools develop a “Drinking Water Safety Plan” that maps the number and planned locations of water filter stations needed (1 station to 100 students/educators). The stations, which must be certified to the latest version of NSF/ANSI 53 for lead reduction and NSF/ANSI 42 for particulate reduction, are installed following manufacturers’ instructions. Testing is conducted post-filtration to ensure that the units are working properly. Filters are replaced according to manufacturers’ instructions. Compared to testing and plumbing replacement, Filter First provides safe water immediately. We don’t need to guess at whether or when lead is coming out of a faucet; when filters are properly installed and maintained, they provide reliable water quality.

Q. Is Filter First cost-effective?

A. Yes. Based on our [Michigan cost analysis](#), Filter First is about two-thirds the cost of sporadic sampling and limited fixture replacement programs that have been implemented in states including New York, Indiana, and Washington. Not only does the Filter First approach cost less, it provides safe drinking water for students and staff immediately. In year one, Filter First is about two-thirds the cost of the traditional approach of testing for lead, chasing it through the school, and replacing fixtures with “lead-free” products. Over ten years, Filter First is about one-third the cost of the traditional approach. And this doesn’t consider the cost of ripping out and replacing all of the plumbing in the school, which of course can be very expensive.

FILTER FIRST



Graphic by Susan Lee, NRDC