LEAD SERVICE LINE REPLACEMENT IN OHIO

A roadmap for a comprehensive, statewide lead service line replacement program in Ohio published in collaboration with the Alliance for the Great Lakes, Freshwater Future, and the Ohio Environmental Council.

For more information, please visit: theoec.org/leadservicelinereplacement

Every Ohioan deserves clean, safe and affordable drinking water.

Yet, we know lead pipes continue to threaten the safety of Ohioans' drinking water despite advances in water treatment technologies. This white paper provides context for why lead pipes were introduced into Ohio's drinking water delivery system as well as the scale of the problem. The paper details how lead can get into the water and provides an overview of the health impacts of lead. It summarizes the challenges of lead service line replacement for local water systems and governments and highlights three water systems leading the way in lead service line replacement. Finally, the paper provides a roadmap for a comprehensive, statewide lead service line replacement program in Ohio and shares resources for communities wishing to begin replacement programs.

History of Lead in Society

For decades, lead has been used in products, most notably in paint, gasoline and plumbing. Although lead was known to be poisonous, its convenience in products took precedence over public health concerns for many decades. Lead made paint brighter, more durable, and washable. We used lead in gasoline to stop "knocking" in car engines, and we used lead in plumbing for its malleability. The US only began phasing out the use of lead in paint in the 1950s, with a ban going into effect in 1978. The US Congress set a timeline for phasing out leaded gasoline in the Clean Air Act of 1970.

History of Lead in Drinking Water in America

The United States used lead pipes as service lines for more than a century. While some communities, such as Cincinnati, phased out their use as early as the 1920s, most stopped their use in the 1950s, similar to lead paint.

In 1986, Congress prohibited the use of lead in pipes, solder, and flux in public water systems. Congress also prohibited the use of lead in plumbing in buildings providing water for human consumption. Yet lead was not completely outlawed in plumbing. The definition "lead free" still allowed up to 8% lead content in pipes and up to 0.2% lead content in solder and flux.

In 1996, Congress further strengthened lead in plumbing restrictions by banning any pipe or plumbing fitting or fixture from entering into commerce. And in 2011, Congress updated the "lead free" definition from 8% lead content to 0.25% lead content. There is also a national consensus standard for lead leaching from new plumbing devices, known as NSF/ANSI/CAN 61, which was strengthened by fivefold in June 2020.

Despite these updates, the legacy of lead plagues many communities across America, both in home plumbing and in service lines running from the water main to the home.

Scale of the Lead Service Line Problem

Across the country, over 9 million homes still get their drinking water through a lead pipe. Ohio is second in the nation for the number of lead service lines, with an estimated 650,000. Unfortunately, the exact number is unknown due to a lack of communities throughout Ohio having undertaken a full service line materials inventory.

While most of us know about the lead contamination in the tap water of Flint, Michigan, few people realize lead-contaminated drinking water is a nationwide problem, affecting every state. As many as 22 million people across the country receive their water through lead service lines. These pipes can cause lead in tap water, a known risk to people's health, especially to children under 6.

How Lead Gets into the Water from the Pipes

Most water utilities use orthophosphates as an anti-corrosive agent. The addition of these chemicals reduces lead that leaches into the water from the pipes. However, they are not 100% fail-safe, and they may exacerbate other water pollution issues, like phosphorus in water. As long as lead remains in the pipes or plumbing, there is risk of it leaching from the pipes when water is not treated properly or when water source or water treatment system significantly change. Even with treatment, lead pipes can unpredictably release particulates of lead into the drinking water.

In fact, the United States has a long history of lead-tainted water, ranging from one of the most infamous instances in Lowell, Massachusetts in the 1890s to Washington, DC in the early 2000's to Flint, Michigan in 2014. In 2016, lead contaminated the water in Sebring, Ohio for 5 months without its residents knowing. The tragedy in Sebring led to the passage of HB 512, requiring faster public notification of elevated lead in water and stricter regulation around corrosion control treatment.

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The Impact of Lead

EPA, CDC and health experts agree: no amount of lead is safe. Exposure to lead, even at low levels, can cause serious health effects in all age groups. These include:

- Impaired brain development in infants and children
- Decreases in IQ and attention span
- Increases in learning and behavior problems in children
- Increased risk of cardiovascular disease and high blood pressure and kidney and nervous system problems in adults

Lead also disproportionately harms children in low-income communities and Black and other communities of color. Tragically, approximately 3,500 children in Ohio had elevated levels of lead in their blood in 2019.

Lead-based paint and lead in water are the primary sources of lead exposure among infants and young children—driven largely by consumption of lead dust and infant formula mixed with contaminated water. For children not living in a home with lead-based paint or lead pipes, lead-contaminated food is a major source. While we need to reduce all sources of lead, there is a clear need and consensus to address lead pipes in our drinking water systems.

Getting the Lead Out: Replacing Lead Service Lines

Due to the public health threat posed by lead service lines, many institutions recommend utilities work with their customers to replace all lead service lines throughout their systems, including the US EPA's National Drinking Water Advisory Council, the American Academy of Pediatrics, the American Water Works Association and the Lead Service Line Replacement Collaborative. Yet, replacement rates vary from community to community across Ohio. Lead service line replacement programs range from completed programs to aggressive replacement programs in progress to systems not even knowing where lead pipes are in their water systems.

The best way to protect public health is to prevent lead exposure in the first place before it causes damage. In the words of nationally-renowned pediatrician and

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child advocate Dr. Mona Hanna-Attisha, "Primary prevention means preventing harm from occurring before a child moves into a house, before a mom gets pregnant. A truly visionary program would be methodically identifying and eliminating the lead from our environment completely before a child is exposed."

We can no longer afford to wait to take action. A recent analysis demonstrates that the societal benefits of replacements far outweigh the cost: each full lead service line replaced yields an average $22,000 payback in reduced deaths from heart disease alone.

Challenges in Lead Service Line Replacement

Lead service line replacement is challenging for communities due to several factors. In many communities in Ohio, the lead service line is owned in part by the local government or water system, typically called the "public side," and in part by the private property owner, typically called the "private side." This dynamic complicates the financing of replacement.

In some communities, the drinking water utility maintains they are limited in their ability to use public funds to pay for replacements on private property. Yet, removing only part of the lead service line—referred to as "partial lead service line replacement"—increases lead levels in drinking water in the short term. Therefore, full replacement of the entire service line—including portions on both public and private property—is essential.

Secondly, lead service line replacement is often a substantial expense, ranging from a few thousand dollars to upwards of $10,000. If property owners are expected to pay for the replacement of lead service lines on their property, people without access to funds will go without replacements, raising serious equity concerns. Providing economical and equitable financing options will protect everyone from this public health threat.

In addition to the challenges of ownership and funding, most utilities do not have adequate data regarding the locations of their lead service lines due to inconsistent historical recordkeeping. To fully understand the scope of the problem, we need proactive efforts to locate and document lead service lines through public inventories.

A New National Rule Falls Short

In December 2020, the U.S. Environmental Protection Agency (EPA) released its long awaited revision of the 1991 Lead and Copper Rule (LCR) – the nation's main rule addressing lead in drinking water. While the final rule makes several improvements, including requirements for inventorying lead service lines and providing customers notification of their presence, overall the rule continues to treat lead service line replacement as a last resort and places the financial burden of lead service line replacement on homeowners, leaving low-income residents behind. The rule also continues to allow for "partial" replacements – which can significantly increase short-term lead in water levels and fails to provide the long-term lead exposure reductions provided by full replacement.

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Three Public Water Utilities Leading the Way in Lead Service Line Replacement

Greater Cincinnati Water Works

In October 2016, the Cincinnati City Council passed an ordinance directing the Greater Cincinnati Water Works (GCWW) to develop a program to replace the remaining 16,500 lead service lines on public property and 43,500 lead service lines on private property in the City within 15 years. In June 2017, the City Council passed three ordinances to implement the replacement program. The ordinances prohibited existing lead service lines (with an automatic grace period for residents). It also required residents to choose whether to replace an lead service line at their own cost or contract with GCWW to do so once the utility notifies the resident of the need to replace an lead service line. Additionally, landlords must notify prospective tenants if a unit is serviced by the line.

Through GCWW's Enhanced Lead Program, the utility offers cost-sharing for residents and additional assistance to qualified residents through the "Help Eliminate Lead Pipes" program (HELP). It creates a one-time cost benefit applied as a credit on the customer's bill for the lead service line replacement. GCWW also offers 10-year, interest-free payback on the balance of private side replacements for residents inside of the city of Cincinnati and some surrounding areas. The utility is working with other political jurisdictions in its service area to expand this repayment option. GCWW provides extensive resources and educational materials about lead in water on its website, including a detailed interactive map for the public to search an address and learn if the service line material is lead.

Denver Water

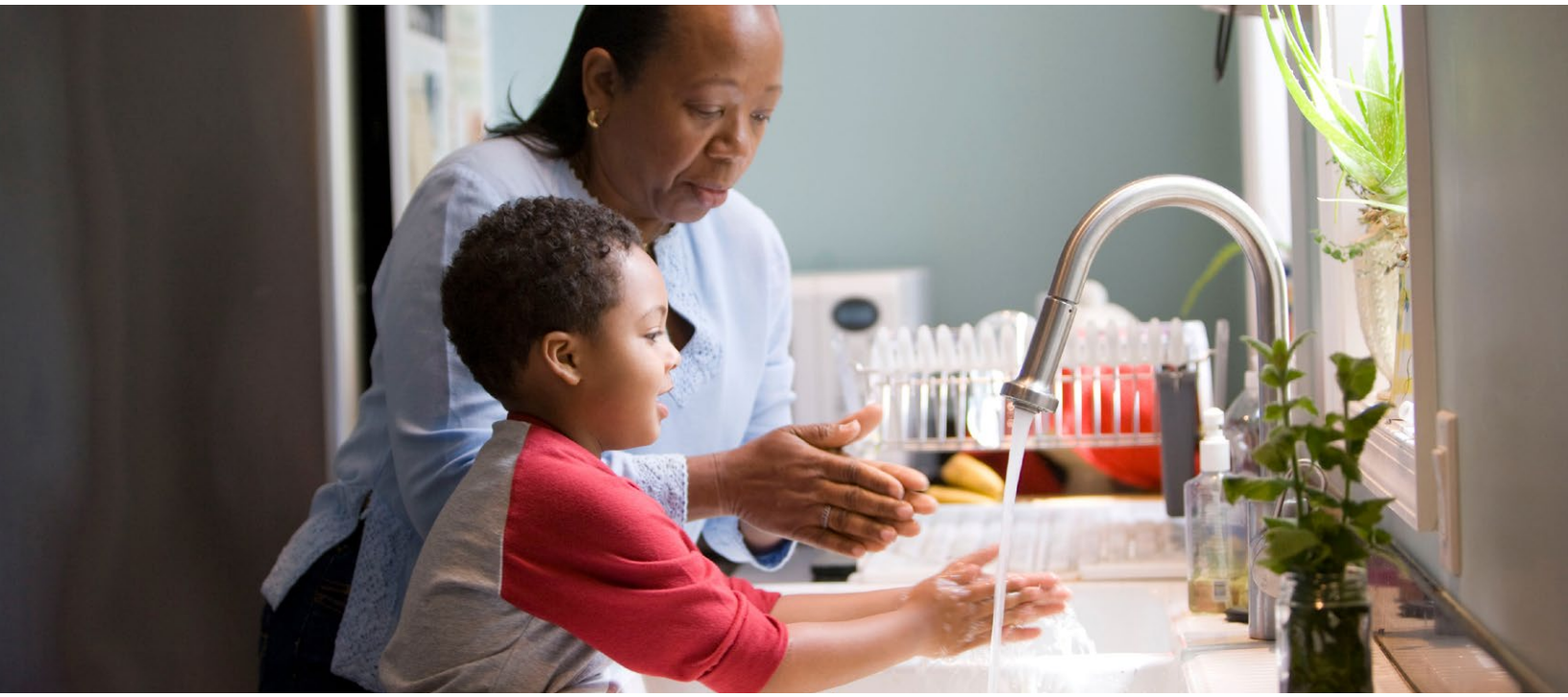
In December 2019, Denver Water received approval for its Lead Reduction Program to fully replace the estimated 64,000-84,000 lead service lines in its system within 15 years. The plan involves accelerating the utility's already-existing lead service line replacement while increasing pH adjustment corrosion control and providing filters to protect residents before their lead service lines are replaced. The utility is funding the program through water rates, bonds, sales of new connections to the system, hydropower production, and other sources.

To educate residents and coordinate with relevant stakeholders about the process, Denver Water conducts robust outreach efforts and disseminates a wide range of educational materials. The utility is building and maintaining an inventory of lead service lines, accessible through an interactive map that displays whether an address has "confirmed," "likely," "unlikely," or "no" lead service line. Confirmed and likely lead service lines are included in the replacement program. Learn more about the initial announcement of the plan from the EDF Health blog.

Indiana American Water

Pursuant to a state law enacted in 2017, Indiana American Water voluntarily submitted a plan on January 29, 2018 to the Indiana Utility Regulatory Commission to fully replace 50,000 lead service lines for over 305,000 customers in 27 community water systems across the state. The plan calls for the private utility to use rates paid by customers to fund the replacement of lead service lines on customers' property. Customers would have to agree to the improvements and pay for unusual costs—typically those above $7,000 per line. In May 2018, Indiana American Water received approval for its lead service line replacement plan.

Policy Recommendations for a Statewide Lead Service Line Replacement Program



In addition to ramping up efforts on lead-based paint, Alliance for the Great Lakes, Freshwater Future and the Ohio Environmental Council propose a cooperative state program, empowering public water systems to coordinate replacement of all lead service lines. To that end, we recommend the following policies for the state of Ohio:

- Require full lead service line replacement in Ohio within a 20 year timeframe.
- Create an Office of Lead Service Line Replacement within the Ohio EPA.
- Take a one-touch approach to removing lead in residential units by creating a program that combines multiple funding streams from the Department of Housing and Urban Development, State Revolving Loan Fund, and other sources to remove all lead from a residential unit, including both paint and the lead service line, prioritizing high risk customers first.
- Enable public water systems to create programs that allow the systems to use rate revenue generated to undertake full lead service line replacements.
- Direct the Ohio EPA to collaborate with public water systems to identify funding for lead service line replacement programs via grants, prioritizing low-income communities and communities lacking economies of scale to fully replace lead service lines.

Resources

Lead Service Line Replacement Collaborative which recommends a cooperative, community-based approach to develop a replacement program, identify lead service lines, and finance full lead service line removal in an equitable manner.

Recognizing efforts to replace lead service lines by the Environmental Defense Fund

New Poll: Replacing Lead Pipes Is Highest Priority for Recovery Investments in Key Swing Districts by Environmental Defense Fund Action

A Deeper Look: Water Infrastructure Trends & Lead Service Line Replacement Programs webinar hosted by the Ohio Environmental Council

*Health effects language from the US EPA's updated 1991 Lead and Copper Rule:
Exposure to lead in drinking water can cause serious health effects in all age groups. Infants and children can have decreases in IQ and attention span. Lead exposure can lead to new learning and behavior problems or exacerbate existing learning and behavior problems. The children of women who are exposed to lead before or during pregnancy can have increased risk of these adverse health effects. Adults can have increased risks of heart disease, high blood pressure, kidney or nervous system problems.

To learn more, please contact:

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For more information, please visit:

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