



Milwaukee Water Commons  
Comments on Revision of the U.S. EPA's Lead and Copper Rule

July 14, 2021

Milwaukee Water Commons is a nonprofit organization that fosters connection, collaboration, and broad community leadership on behalf of our common waters. We promote stewardship, equitable access to, and shared decision-making for our common waters, including drinking water.

In the following comments, Milwaukee Water Commons briefly highlights the problem of lead in drinking water in Milwaukee and offers recommendations for how the U.S. Environmental Protection Agency (EPA) should revise the Lead and Copper Rule to better protect residents in Milwaukee and throughout the country from exposure to lead through drinking water.

**SUMMARY**

Milwaukee Water Commons advocates that **the Lead and Copper Rule be reframed to target the root cause of lead in drinking water by requiring drinking water utilities to replace all lead service lines in their service area.**

Until all lead service lines are replaced, the Lead and Copper Rule should also require robust protective measures in the interim. These should not be limited to **corrosion control measures** but should also include requirements for drinking water utilities to **educate communities** about the risk and dangers of lead exposure from drinking water and to provide, install, and ensure the proper use of **lead-safe water filtration at the tap.**

Furthermore, after lead service lines have been replaced, drinking water utilities should be required to test tap water to discern whether residual corrosion from lead service lines or internal plumbing still poses a risk for lead contamination.

Finally, more robust oversight and enforcement of the Lead and Copper Rule will be required to ensure compliance.

These revisions to the Lead and Copper Rule are necessary not only to protect communities against the hazard of lead exposure through drinking water, but also to restore communities' trust in their drinking water and the systems and agencies charged with providing and protecting safe drinking water.

## Problems with the Current Lead and Copper Rule

For several decades, lead has been known to be one of the most persistent and dangerous contaminants present in drinking water flowing through lead pipes to over six million buildings in the United States, including 70,000 in Milwaukee.<sup>1</sup> The Lead and Copper Rule (**LCR**) is a complex rule that has failed to protect Americans from hazardous lead contamination from drinking water and to restore trust in the safety of tap water and the public water systems that provide it.

The current LCR requires community water systems to monitor drinking water at customer taps. If lead concentrations exceed an action level of 15 parts per billion (ppb) or copper concentrations exceed an action level of 1.3 parts per million in more than 10% of customer taps sampled, the system must undertake a number of additional actions to control corrosion and inform the public about steps they should take to protect their health. In addition, a public water system may be required to replace lead service lines (**LSLs**) under their control, but only in the event that the action level of 15 ppb is exceeded under the proscribed monitoring protocol.

Essentially, the extensive and complex LCR requires water systems to treat their water with a corrosion-inhibiting chemical such as orthophosphate, or to demonstrate that this is not necessary. Further actions are only required if the action levels defined by the rule, in accordance with monitoring protocols prescribed by the rule, are exceeded.

The rule establishes an action level for lead of 15 ppb at the 90<sup>th</sup> percentile. This means that no more than 10 percent of tap water samples taken may exceed 15 ppb for lead. This standard clearly fails to protect communities served by LSLs from exposure to lead in drinking water for two reasons. First, this action level of 15 ppb is not based on health or safety determinants. It is widely established that *no* level of lead exposure is safe, and most health practitioners recommend an action level no greater than 5 ppb for lead in drinking water. Moreover, under the current rule, action is only triggered when more than 10% of the households tested exceed 15 ppb, meaning that up to 10% could be exposed to drinking water with lead present at 15 ppb or more, as measured by the prescribed monitoring protocols, without triggering any action. **Given that more than 70,000 households in Milwaukee are still served by lead laterals, under the current rule, 7,000 households could be exposed to lead in their drinking water at levels of 15 ppb or more without triggering any remediation actions.**

Even where the action level is exceeded, however, this is not considered a violation. Rather, it merely triggers additional treatment requirements. *Only* if those steps don't work to sufficiently reduce lead levels as measured by the prescribed monitoring protocol is a utility required to start removing LSLs, and then at a rate of only 7 percent per year.

## The Lead and Copper Rule must be Reframed to Directly Address the Root Cause of Lead in Drinking Water: Lead Service Lines

It is well known that the predominant source of lead contamination of drinking water is the presence of LSLs that have persisted in communities with older housing stock for over seven decades. The current LCR only requires the removal of LSLs as a last step, however, following a complex—yet insufficient—set of monitoring and remediation protocols which provide cover to the persistent threat posed by LSLs rather than conclusively removing this threat. Milwaukee Water Commons proposes that the LCR should

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<sup>1</sup> Milwaukee Water Works, *Lead and Water*, <https://city.milwaukee.gov/water/WaterQuality/LeadandWater>.

be reframed to focus on removal of LSLs once and for all. **Rather than rely on the insufficient monitoring protocol and action level described above, the Lead and Copper Rule should presume that *all* households served by LSLs remain at risk for lead exposure through drinking water. Accordingly, the rule should directly target the expeditious removal of this hazardous water infrastructure.**

In the meantime, interim protective measures including corrosion control, public education, and provision of lead-safe water filtration at the tap should be provided to *all* households served by LSLs. This means that the implementation of such measures would not be dependent on a monitoring protocol indicating that more than 10 percent of representative households tested indicate lead contamination of at least 15 ppb. Instead, the mere presence of a LSL would be sufficient to trigger implementation of the interim protective measures detailed below. Such an approach is most consistent with the widely accepted fact that *no* level of lead in drinking water is safe.

For community water systems which have not already taken stock of where LSLs exist in their community, ascertaining where LSLs are present will be an essential first step. Because Milwaukee has already undertaken a comprehensive survey of where LSLs remain in place, these comments do not dwell further on this step.

### Lead Drinking Water Infrastructure in Milwaukee

Milwaukee sits along the shores of Lake Michigan and at the confluence of three rivers. For centuries inhabitants have relied on our waters for fishing, commerce, transportation, recreation, brewing, and world-class drinking water. Water is foundational to the city and the lives of our people are rooted in water. And yet, today, water gathered from Lake Michigan, some of the best water in the country (at its source), is putting Milwaukee's most vulnerable populations at risk for lead poisoning because it flows to their homes through lead pipes. The impact of lead exposure in our drinking water is a public health risk that only our public officials and policy makers can resolve.

Milwaukee Water Works, the local drinking water utility, estimates that it will cost \$750 million to replace over 70,000 LSLs that currently remain in the city. Given available funding, LSLs have been replaced at a rate of around 1,000 per year.<sup>2</sup> At this rate, thousands of Milwaukee homes would continue to be served by LSLs well into the end of this century.

The need to protect Milwaukeeans from lead exposure through drinking water is urgent. In 2019, approximately 1745 children were identified as lead-poisoned in Milwaukee at the 5 mcg/dL blood lead level. This is likely a significant undercount of the number of poisoned children because many children under age 3 are not tested. The crisis of lead exposure through Milwaukee's drinking water has been well-documented over several decades. The severe and largely irreversible lifetime impacts of lead poisoning are also well understood.<sup>3</sup> The devastating impacts of lead poisoning severely undermine a person's chances for a happy and successful life. Many studies have also tabulated the significant detrimental economic and social impacts of lead poisoning on families, neighborhoods, and society at

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<sup>2</sup> Milwaukee Water Works, *Lead and Water*, <https://city.milwaukee.gov/water/WaterQuality/LeadandWater>.

<sup>3</sup> See, e.g., <https://www.cdc.gov/niosh/topics/lead/health.html>.

large.<sup>4</sup> And yet this problem continues to threaten the health and well-being of Milwaukee’s communities. In certain census tracts, 1 in 3 children were found to be poisoned by lead.<sup>5</sup> These neighborhoods, which were historically subject to redlining, are also highly segregated.

## The Lead and Copper Rule Must be Revised to Protect Communities from Lead Poisoning, and Restore Communities’ Trust in their Tap Water

The EPA issued what has become known as the [Lead and Copper Rule](#) in 1991 with the stated intention of protecting against the risk of lead exposure through drinking water. Although the rule has gone through various revisions over the years, it has never adequately served its intended purpose.

This persistent failure of the Lead and Copper Rule to protect against lead exposure from drinking water has contributed to what a [recent study](#) characterized as “an epidemic of distrust” in the tap water supplied by our drinking water systems.<sup>6</sup> This study, conducted by scientists at the Water, Health, and Nutrition Laboratory at Pennsylvania State University, analyzed findings suggesting that roughly 59 million people have tap water access from either municipal or private wells or cisterns, but don’t drink it because they fear it may contain lead or other contaminants. While some may have contaminated water, others may be avoiding water that is actually safe.

When people do not trust their tap water, they turn to more expensive, and often less healthy, options such as bottled water and sugary drinks. The Penn State study discerned that concerns about lead in drinking water is a primary driver of distrust in tap water. Tap water avoidance was declining before the Flint water crisis that began in 2014, but started to increase again over 2015-2016. The latest study found that in 2017-2018, the number of respondents who did not drink tap water increased at an alarming rate. Since 2013-2014 – just before the Flint water crisis began – the prevalence of adults who do not drink their tap water increased by 40%, for children tap water avoidance has increased by 63%.<sup>7</sup>

Black and Hispanic children and adults are three to four times more likely to report not drinking their tap water than members of white households.<sup>8</sup> These racial disparities are hardly surprising, for two reasons. First, within metropolitan regions served by urban water systems, Black and Hispanic households are much more likely to live in older housing served by lead service lines. Second, communities of color are more likely to have experienced various kinds of environmental injustice in the United States, experiences which lead communities to distrust the laws, agencies, and systems that are meant to protect them from environmental harm. These experiences compound to generate distrust between communities of color and the public agencies and systems meant to serve them. The fact that the most devastating and high-profile example of lead exposure from drinking water – the lead crisis in

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<sup>4</sup> See, e.g., Pew Center on the States (2010), *Cutting Lead Poisoning and Public Costs*, Partnership for America’s Economic Success, Issue Brief #14, available at

[https://www.pewtrusts.org/~media/assets/2010/02/22/063\\_10\\_paes-costs-of-lead-poisoning-brief\\_web.pdf](https://www.pewtrusts.org/~media/assets/2010/02/22/063_10_paes-costs-of-lead-poisoning-brief_web.pdf).

<sup>5</sup> <https://www.dhs.wisconsin.gov/epht/index.htm>.

<sup>6</sup> Asher Y. Rosinger, et. al., *Examining Recent Trends in the Racial Disparity Gap in Tap Water Consumption: NHANES 2011-2018*, medRxiv (May 21, 2021), at

<https://www.medrxiv.org/content/10.1101/2021.04.06.21255016v2.full-text>.

<sup>7</sup> *Id.*

<sup>8</sup> *Id.* The 2017-2018 study found that roughly 3 out of 10 Black adults and children and nearly 4 out of 10 Hispanic adults and children didn’t drink their tap water. The same was true of 2 of 10 Asian Americans, while only 1 of 10 white Americans didn’t drink their tap water.

Flint, Michigan – happened to a highly segregated, majority-black, disinvested community will resonate particularly strongly for other majority-black, disinvested communities, including in Milwaukee, and will understandably influence how they regard their own tap water.

As a result of this distrust, households in communities of color are more likely to assume the burden of purchasing water or other commercial drinks, in addition to paying their water bills. Every community deserves access to safe, affordable, convenient tap water to drink. It is essential that the LCR be revised in ways that will ensure equitable access to safe drinking water for *all* communities.

Strengthening the LCR, *and doing so in a manner that makes these protections apparent to and understood by the communities who rely on public water systems for drinking water*, is necessary not only to protect communities against lead exposure from drinking water but also to restore trust in our drinking water systems.

### Recommended Changes to the Lead and Copper Rule

A revised LCR must focus squarely on protecting communities from exposure to lead through drinking water and restoring communities' trust in their drinking water systems.

The only way to protect communities from exposure to lead through drinking water, once and for all, is to remove lead pipes and lead solder which can leach lead into drinking water. Therefore, the LCR should require water utilities to remove all LSLs in their service area within a reasonable but ambitious timeframe.

Until all LSLs and lead in internal household plumbing has been removed, however, interim protective measures should remain in place. These measures should include anti-corrosion controls, monitoring protocols, community education on the risk and dangers of exposure to lead through drinking water, and provision of lead-safe water filtration at the tap. The LCR must be strengthened to ensure adequate interim protective measures are in place, as detailed below.

[To protect communities against lead exposure through drinking water, a revised Lead and Copper Rule should require replacement of lead service lines on a reasonable but ambitious timetable](#)

The revised LCR should require community water systems to remove all LSLs at a rate of at least 1,000 per year. Where this rate would be insufficient to remove all LSLs in the utility's service area within 10 years, then the utility must establish a timetable that will result in the removal of all LSLs within 10 years. In Milwaukee, this means LSLs would need to be removed at a rate of 7,000 per year, on average, over 10 years.

Establishing such a requirement would comport with the ambition already stated by the Biden Administration to remove all LSLs in the country as part of the infrastructure investments envisioned through the proposed American JOBS Act. To ensure that this goal can be achieved without driving water rates to unaffordable levels in communities containing LSLs, the requirement to replace LSLs must be accompanied by federal funding in the form of grants, rather than loans.

Research into partial LSL replacement demonstrates increased release of lead particulate into drinking water due to disturbance of lead service lines. These particulates may enter directly into the water people drink or become trapped in the faucet aerator and release lead over time. Thus, both the public and the private side of a LSL should be removed at the same time – from the watermain to the water meter connection point inside the property. Therefore, financial support for the removal of private-side

of LSLs will also be needed, particularly for low-income homeowners and rental properties in low-income neighborhoods.

#### Requiring the replacement of lead service lines is cost-effective over the long term

While the replacement of LSLs is an expensive undertaking, it is nevertheless a cost-effective investment over the long-term. As noted above, Milwaukee Water Works has estimated that it would cost \$750 million to replace all remaining LSLs in Milwaukee. An on-line tool was recently developed to calculate the costs of childhood lead poisoning and the economic benefits of various interventions to reduce lead exposure.<sup>9</sup> The tool estimates the lifetime economic burden of childhood lead exposure (including costs of reduced lifetime productivity; increased health care, education, and social assistance spending; and premature mortality) as well as the savings that would be achieved through various lead safety interventions, such as the removal of lead service lines. This tool indicates that, in Wisconsin, the lifetime economic burden of childhood lead poisoning, just for the cohort of children born in 2019 alone, is \$1.4 billion, with the greatest burden felt in Milwaukee County.<sup>10</sup> Inserting the cost estimates for LSL replacement for Milwaukee, the tool indicates that replacing LSLs would deliver cost savings of 90 cents for every dollar spent, in relation to the lifetime economic burden of childhood lead poisoning *just for the cohort of children born in 2019*.<sup>11</sup> Considering that removing LSLs would also protect children born prior to 2019 as well as generations born in the years following, the cost effectiveness of replacing LSLs in light of the enormous lifetime economic burden of childhood lead poisoning is very clear.

In addition, replacing LSLs would result in long-term cost savings for Milwaukee's water utilities and the ratepayers who support their operational costs. LSLs have not been installed in Milwaukee since 1952 and the use of lead for LSLs and indoor plumbing has been prohibited since 1962. Thus, the LSLs in Milwaukee are at least 70 years old. These pipes are not only dangerous due to the risk of lead leaching into drinking water, they are also aged and leaky more generally, resulting in the waste of potable water and related expense. Moreover, once LSLs have been replaced, drinking water utilities will no longer need to invest in corrosion control measures and wastewater treatment utilities will no longer need to invest in treatments to remove the phosphates added to drinking water to prevent excessive phosphate loading in our natural waterways.

#### Pending the replacement of all lead service lines, the Lead and Copper Rule must maintain and strengthen interim protective measures

Until all LSLs are replaced, it is very important that the LCR includes measures to protect households against the risk of lead exposure through drinking water in the interim. Such measure should include (1) continuation of the **corrosion control measures** contained in the current rule, including monitoring to ensure that such measures are effectively reducing the risk of lead contamination in water sampled from customer taps; (2) requirements for water utilities to **provide public education** about the risk and dangers of lead exposure from drinking water, and how the use of lead-safe water filters at the tap can protect against lead exposure until the LSL replacement process for their household is complete; and

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<sup>9</sup> <https://altarum.org/news/new-online-tool-calculates-cost-and-economic-benefits-preventing-childhood-lead-exposure-united>

<sup>10</sup> <http://valueofleadprevention.org/calculations.php?state=Wisconsin>

<sup>11</sup> <http://valueofleadprevention.org/calculations.php?state=Wisconsin>

(3) requirements for water utilities to provide, install, and ensure the proper use of **lead-safe water filtration at the tap**.

#### Key strategies for effective public education on lead in drinking water

Public education about the risk and dangers of lead exposure through water, and how to protect against this risk, should be conveyed through a strategic public campaign including public messaging delivered through a range of media and forums including community meetings; engaging communities through community-based groups, local child care providers, elementary schools, pre-natal clinics and hospital maternity wards, and medical clinics; enrolling messengers trusted by targeted communities; and door-to-door educational and outreach efforts. These comprehensive efforts should be systematically monitored and assessed to ensure the effectiveness of the campaign in raising community members' awareness of the risk and dangers of lead exposure through drinking water and how to protect their families' health against these risks.

The primary rationale for this public education is, of course, because when people understand the risks and dangers of exposure to lead through drinking water, and how to protect their families against this risk, they will be much more likely to undertake and follow through with protective measures, such as consistent use of lead-safe water filters, including timely replacement of filter cartridges. Public education measures that are thoughtfully undertaken with a view of restoring community trust in public water systems, can also play an important role in fostering that trust.

Effective education on lead in water will combine the following strategies: Education about lead in water should invest in building *relationships* between the water system and the community served, rather than merely transactional in nature. This requires listening and responding to community concerns, rather than simply transmitting information. Authenticity and transparency are essential; it is important for the drinking water utility to be clear about what their agenda is. This includes acknowledging the problem of lead in drinking water, explaining the steps being taken to remedy this problem without over promising, and working in solidarity with the community to ensure that all families are protected against the risk of exposure to lead from drinking water until all LSLs have been replaced.

#### Providing, explaining, and installing—not just recommending—lead-safe water filters.

In addition to raising awareness, the LCR must require water utilities to take further steps to ensure communities are protected against exposure to lead through drinking water. Water utilities should be required to provide and install lead-safe water filters on the taps of households still served by LSLs, where these can be fitted to the taps. Where this cannot be done, lead-safe water filtration pitchers should be provided as an alternative. Replacement filter cartridges and education to residents, including follow up to ensure that water filters are being properly used, should also be provided.

Examples of how to ensure in-home measures to protect against health and safety hazards are broadly taken up have been modeled in relation to protecting against the risk of household fires. As a result of concerted campaigns by local fire departments, most households are now protected by smoke detectors. In addition to broad campaigns informing the public about the importance of smoke detectors in the home, fire departments have installed smoke detectors directly in homes and municipalities have required landlords to provide smoke detectors as a precondition for renting a

property. Similar measure could be deployed to ensure that lead-safe water filtration at the tap is in place for residences still served by LSLs. Denver Water is modelling a program to keep their communities safe from lead exposure through water, including a strategic education campaign and the provision of water filters and replacement cartridges to all residences served by lead service lines.<sup>12</sup>

**Following replacement of lead service lines, tap water should be tested to ascertain whether internal plumbing still contains lead solder or other lead plumbing, and to require the removal of this plumbing.**

Even after LSLs have been replaced, a household’s drinking water could still be contaminated by lead solder or other lead plumbing within the home. Residuals from lead plumbing that has been removed can also persist in the home, such as corroded lead trapped by faucet aerators. Therefore, a revised LCR should require that, within six months following the removal of a LSL, the utility must test to ensure that drinking water flowing from the tap does not exceed 5 ppb for lead. If lead is detected, the utility should inspect internal plumbing to detect the source of lead contamination, and advise residents to maintain the use of lead-safe measures at the tap until lead-containing internal plumbing is replaced.

**More Robust Oversight and Enforcement is Required to Ensure Compliance with a Revised Lead and Copper Rule and Restore Communities Trust in Their Drinking Water**

The current LCR is insufficient to protect communities against the risk of exposure to lead through drinking water and should be strengthened in all the ways described above. Tragedies such as the community-wide lead contamination in Flint, Michigan happened, however, because even the relatively weak LCR that existed at that time was not complied with by state and local officials or sufficiently monitored and enforced by the U.S. EPA. More robust oversight and enforcement of a revised LCR will be required to ensure that communities are protected and the horrific lead poisoning that occurred in Flint is not repeated.

**Conclusion**

The current Lead and Copper Rule is a complex rule comprised of multi-layered testing protocols and remediation measures. For all its complexity, however, the current rule fails to adequately protect communities against the devastating effects of exposure to lead through drinking water. As a consequence, households throughout the country, particularly in low-income communities and communities of color, have lost trust in their drinking water.

Only by reframing the rule as recommended– to resolve the root cause of the problem by systematically replacing lead service lines, with robust protective measures in the interim – will all communities be protected against lead in drinking water and trust in our drinking water systems restored.

Thank you for the opportunity to submit comments on the Lead and Copper Rule. We look forward to your response and hope to see our recommendations reflected a revised rule that will protect communities against lead exposure and restore communities’ trust in their drinking water systems.



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<sup>12</sup> See <https://www.denverwater.org/tap/new-lead-reduction-program-underway>



