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Limiting Lead in Public Water Supplies: An Overview of the U.S. Environmental Protection Agency's Regulatory Actions

Exposure to lead can be harmful to human health, particularly children's health, even at low levels. Lead's adverse health effects have resulted in continued efforts to reduce exposure to lead including through drinking water. Lead primarily enters drinking water after the treated water leaves the plant, when lead can leach into drinking water from certain plumbing materials or pipes. A 2008 study funded by the American Water Works Association (AWWA) Research Foundation and the U.S. Environmental Protection Agency (EPA) estimated the contribution of potential sources of lead in drinking water. Under laboratory conditions, lead pipes or service lines (LSL) were the major contributor to lead levels in water, contributing an average of 50%-75% of the lead measured. Thus, controlling corrosion of pipes or LSLs continues to be the primary method to keep lead from entering water.

Congress has used several approaches under the Safe Drinking Water Act (SDWA) to limit exposure to lead through drinking water. These include limiting the lead content of plumbing materials and fixtures, and authorizing EPA to regulate contaminants, such as lead, in public water supplies. Further, SDWA directed EPA to establish public notification and education requirements for lead and a number of grant programs with various objectives, such as lead reduction projects, lead testing in water at schools and childcare programs, and removing lead-lined drinking water coolers from schools. Also, the Infrastructure Investment and Jobs Act (IIJA; P.L. 117-58) provides \$3.0 billion for each of FY2022-FY2026 for the Drinking Water State Revolving Fund (DWSRF) for LSL replacement projects and related activities.

This In Focus provides a timeline of EPA's actions (including planned actions) to establish and update a drinking water regulation for lead. For a broader discussion, see CRS Report R46794, *Addressing Lead in Drinking Water: The Lead and Copper Rule Revisions (LCRR)*.

Safe Drinking Water Act

Enacted in 1974, SDWA authorizes EPA to regulate contaminants in public water supplies (42 U.S.C. §300g-1). SDWA regulations apply to public water systems, which can be owned and operated by public entities (e.g., municipalities and local governments) or private entities (e.g., homeowner associations and investor-owned utilities). SDWA requires EPA to review and revise, as appropriate, each drinking water regulation every six years, and requires that any revisions maintain or provide for increased public health protection (42 U.S.C. §300g-1(b)(9)).

SDWA authorizes states and tribes to assume primary responsibility (primacy) for oversight and enforcement of

public water system compliance with drinking water regulations (42 U.S.C. §300g-2). All states (except Wyoming and the District of Columbia) and U.S. territories, and the Navajo Nation have primacy. EPA directly oversees public water systems in nonprimacy areas and retains oversight of primacy states. Primacy states or tribes are required to adopt and enforce regulations at least as stringent as EPA rules, provide technical assistance to public water systems, conduct inspections of systems, and maintain records and compliance data, among other duties.

1991 Lead and Copper Rule

Among its actions to limit lead in drinking water, in 1991 EPA issued the Lead and Copper Rule (LCR). (Outlined here are water system requirements for lead, only.) The LCR replaced a drinking water standard for lead of 50 parts per billion (ppb) measured at the water treatment plant. As discussed above, lead primarily enters water after it leaves the plant. Accordingly, the rule required community water systems (CWSs) to perform an initial survey of the materials that comprised their distribution systems. This information enabled CWSs to target tap-water monitoring at homes and other locations expected to be at higher risk of lead contamination. The LCR established an *action level* at 15 ppb for lead. If more than 10% of tap water samples exceed the rule's action level, then a CWS has a system-wide action level exceedance, and the CWS is required to take *treatment technique* actions. These actions include optimizing corrosion control; public education; water quality parameter monitoring; source water treatment; and, in some cases, LSL replacement.

The 1991 LCR did not require full LSL replacement. It required CWSs that have optimized corrosion control and still exceeded the action level to replace at least 7% of their LSLs annually until the action level is not exceeded for two consecutive six-month monitoring periods. Under the 1991 rule, CWSs could use sample results from the next monitoring period to "test out" of the 7% requirement if the system-wide action level was not exceeded.

EPA reports that drinking water exposures to lead declined significantly following the implementation of the 1991 LCR, "resulting in major improvements to public health." Though the agency noted that "there is a compelling need to modernize and improve the rule by strengthening its public health protections and clarifying its implementation requirements to make it more effective and more readily enforceable" (86 *Federal Register (FR)* 4198-4200).

2007 Short-Term Revisions to the LCR

EPA initiated a comprehensive review of the 1991 LCR in 2004, after detection of widespread elevated lead levels in

tap water in Washington, DC, raised concerns over the LCR's effectiveness and implementation. Some widely recognized issues associated with the LCR included (1) variability of tap-water monitoring protocols; (2) clarity and effectiveness of corrosion control requirements to prevent lead from leaching into water; (3) adequacy of public notification and reporting requirements; (4) LSL replacement requirements, practices, and costs; and (5) overall complexity of the rule, which may affect its implementation and enforcement. After the detections in Washington, DC, EPA undertook a national review of the LCR, and determined that certain short-term regulatory revisions were needed. In 2007, EPA issued short-term and intermediate clarifications to address source water or treatment changes, monitoring, customer awareness, and LSL replacement (72 *FR* 57781-57820).

EPA worked with states, water utilities, and others to develop comprehensive "long-term" LCR revisions. In 2013, Congress requested that the National Drinking Water Advisory Council (NDWAC) make recommendations to EPA for LCR revisions (42 U.S.C. §300g-6 note). NDWAC is required to advise, consult, and make recommendations to EPA on SDWA activities and policies (42 U.S.C. §300j-5). Around the same time, elevated lead levels detected in tap water in Flint, MI, raised concerns about the LCR's implementation and effectiveness. In 2015, NDWAC urged EPA to revise the rule to: establish a proactive LSL replacement program and encourage CWSs to include such costs in their capital improvement programs; strengthen public education requirements; strengthen corrosion control requirements to include a requirement that water systems review updated EPA guidance; modify monitoring requirements to provide for consumer requested samples and to use samples to inform consumer actions, inform health agencies, and review corrosion control; establish a health-based household action level that triggers a report to the consumer and local health agency; increase water quality parameter monitoring; and establish additional compliance and enforcement mechanisms.

2021 LCR Revisions (LCRR)

In November 2019, EPA proposed comprehensive LCR revisions based on the NDWAC recommendations, and solicited comment (84 *FR* 61684-61774). EPA finalized the LCR revisions (LCRR) on January 15, 2021, with an effective date of March 16, 2021 (86 *FR* 4198-4312).

Also in January 2021, the Biden Administration issued a memorandum directing executive agencies and departments to consider postponing for 60 days from January 20, 2021, the effective date of rules published in the *Federal Register* that had yet to enter into effect, to allow the Administration to review such rules. On June 16, 2021, EPA announced that the agency would extend the effective date of the LCRR to December 16, 2021, and require CWSs to be in compliance by October 16, 2024 (86 *FR* 31939-31948).

In the LCRR, EPA retained the LCR's treatment technique, and revised several of the rule's requirements. The LCRR does not require full LSL replacement, but revises the LSL replacement rate and procedures for CWSs with optimized corrosion control that have a system-wide action level

exceedance. Among other changes, the LCRR includes a *trigger level* at 10 ppb that would require water systems to take treatment, monitoring, and public notification actions when the trigger level is exceeded; clarifies tap sampling procedures and adjusts prioritized monitoring sites; requires water systems to include elementary schools and child care facilities in tap monitoring plans; adds requirements for water systems to inventory LSLs, and develop plans to replace LSLs; and implements provisions added by the Water Infrastructure Improvements for the Nation (WIIN) Act (P.L. 114-322) by requiring public notification within 24 hours of a system-wide lead action level exceedance.

Upcoming Changes to the LCRR

On December 17, 2021, EPA announced its intent to propose a new rule called the Lead and Copper Rule Improvements (LCRI) to further revise the LCRR (86 *FR* 71574-71582). EPA outlines several objectives for LCRI. Citing the IJA appropriations for LSL replacement, EPA states that an objective of its proposal is the replacement of all LSLs as quickly as feasible. In addition, EPA stated that the agency intends to strengthen tap sampling procedures in the LCRI. In addition, EPA stated that it is reevaluating the action and trigger levels, and considering how to prioritize protections for "historically disadvantaged communities."

Timeframes and Other Considerations

SDWA regulations generally take effect three years after promulgation. The LCRR requires water systems to be in compliance by October 16, 2024. Regarding the LCRI, EPA stated its intent to propose and finalize these revisions before the LCRR's compliance deadline of October 16, 2024 (86 *FR* 71578). As outlined by EPA, the LCRI intends to revise specific requirements of the LCRR.

As the October 2024 compliance deadline approaches, uncertainty exists for some water systems and primacy states given EPA's intent to revise some LCRR requirements in the LCRI. In acknowledgment, EPA states that it would revise deadlines for the portions of the LCRR that would be significantly changed in the LCRI. EPA states that such requirements would include developing a LSL replacement plan and a tap sampling plan. However, the agency states that the October 16, 2024, deadline will remain for particular portions of LCRR, including the requirement to develop a LSL inventory.

Revisions to the LCRR may affect compliance costs for water systems. Under both the 1991 LCR and the 2021 LCRR, LSL replacement is required under specific circumstances. EPA notes that one LCRI objective is to replace LSLs as quickly as feasible. IJA appropriations dedicated to LSL replacement projects may help offset LSL replacement costs. EPA's timelines for the LCRI indicate that any changes to LSL replacement requirements would be finalized after the initial two fiscal years of IJA appropriations. Over this time, CWSs would likely be taking actions required to comply with the LCRR, but may have to wait to see what changes EPA finalizes in the LCRI.

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