Excerpt from

**LEAD AND COPPER RULE REVISIONS WHITE PAPER**

EPA, October, 2016, page 3

“Exposure to lead is known to present serious health risks to the brain and nervous system of children. The recent crisis in Flint, Michigan, has brought increased attention to the challenge of lead in drinking water systems across the country. It is important to recognize that major reductions in been achieved in childhood exposure to lead in the United States. Data show that from 1976 – 1980 the median blood lead level of a child (1-5 years old) was 15 micrograms per deciliter. **That median level has been reduced dramatically since then, to 1 microgram per deciliter, based on the most recent data. Further, over the last twenty-five years, the percentage of children aged 1–5 years with blood lead levels less than or equal to 5 micrograms per deciliter declined more than ten-fold, and blood lead levels fell dramatically for all racial and ethnic groups.** These improvements were made by removing lead from toys and lead solder in cans, taking lead out of gasoline, reducing exposure to lead in paint and dust in homes and during renovations, greatly reducing the allowable content of lead in plumbing materials in homes and other buildings, and further reducing lead in drinking water through the federal Lead and Copper Rule (LCR). Although we have taken significant steps to protect our children from the detrimental effects of lead poisoning, there is more to do.

Lead and copper enter drinking water mainly from corrosion of lead and copper containing plumbing materials. **Lead was widely used in plumbing materials until Congress banned its use in 1986, and there are an estimated 6.5 to 10 million homes served by lead service lines (LSLs) in thousands of communities nationwide, in addition to millions of older buildings with lead solder across the U.S. Lead exposure**, whether through drinking water, soil, dust or air, can result in serious adverse health effects, particularly for young children. Infants and children exposed to lead may experience delays in physical and mental development and may show deficits in attention span and learning disabilities. In adults, lead exposure can cause kidney problems and high blood pressure. Copper exposure can cause stomach and intestinal distress, liver and kidney damage, and complications of Wilson’s disease in genetically predisposed people.

In 1991, EPA promulgated the LCR – a treatment technique regulation under the Safe Drinking Water Act (SDWA) – to protect public health by minimizing lead and copper levels in drinking water, primarily by reducing water corrosivity through corrosion control treatment. This rule applies to 68,000 public water systems nationwide. **EPA has continued to work to make the LCR more effective through interim revisions promulgated in 2000 and 2007.**

**Implementation of the LCR over the past twenty-five years has resulted in major improvements in public health;** **the number of the nation’s large drinking water systems with a 90th percentile sample value exceeding the LCR action level of 15 parts per billion has decreased by over 90 percent since the initial implementation of the LCR**. However, the regulation and its implementation are in urgent need of an overhaul. Lead crises in Washington, DC, and in Flint, Michigan, and the subsequent national attention focused on lead in drinking water in other communities, have underscored significant challenges in the implementation of the current rule, including a rule structure that for many systems only compels protective actions after public health threats have been identified. Key challenges include the rule’s complexity, the degree of discretion it affords with regard to optimization of corrosion control treatment and compliance sampling practices that in some cases, may not adequately protect from lead exposure, and limited specific focus on key areas of concern such as schools. **There is a compelling need to modernize and strengthen implementation of the rule – to strengthen its public health protections and to clarify its implementation requirements to make it more effective and more readily enforceable.**”

Excerpt from

**LEAD REDUCTION IS A NATIONAL SUCCESS STORY**

[Joseph A. Cotruvo](https://awwa.onlinelibrary.wiley.com/action/doSearch?ContribAuthorStored=Cotruvo%2C+Joseph+A), Journal AWWA (<https://doi.org/10.1002/awwa.1277>), April 2019

“The spike in lead levels in Flint, Mich., circa 2014 and the issues that plagued the city afterward wouldn’t have occurred if standard treatment practices had been applied and the state effectively enforced existing regulations. Although lead in water will remain a concern as long as lead-containing pipes and fittings and galvanized pipes are still in service, the average and peak BLLs in US children have drastically declined in the past 40 years, primarily as a result of eliminating lead in automobile gasoline, paint, food-can and water pipe solders, and millions of service lines, as well as reducing lead in brass water fixtures.

Between 1976 and 1980, average BLLs in US children aged six months to five years were about 16 μg/dL (μg per 100 cc of blood), according to the National Health and Nutrition Examination Survey (NHANES II). Further, the survey noted that 63.3% of BLLs were in the 10–19 μg/dL range, and 0.1% were in the 50–59 μg/dL range. The national mean values were down to 2.7 μg/dL by 1991 and to 1.9 μg/dL by 2002. **The mean in 2014 was 0.84 μg/dL, according to a study by Hernán Gómez and colleagues that appeared in the June 2018 issue of Pediatrics. Given this trend, it’s probably even lower today.**

As of 2012, the Centers for Disease Control and Prevention (CDC) “reference” level for BLLs is 5 μg/dL, reduced from the prior 10 μg/dL “concern” level. **The reference level is based on the 97.5th percentile of national BLLs in children being less than 5 μg/dL, at which point follow-up action is recommended to determine and eliminate the cause of any exceedance.** **Subtle, but potentially reversible, IQ losses are suspected to potentially occur at levels about 5–10 μg/dL or perhaps lower, as discussed in a Mar. 22, 2016, PBS.org article by Ellen Ruppel Shell (https://to.pbs.org/2R946o8).** CDC recommends that chelation therapy for lead poisoning be considered if BLLs exceed 45 μg/dL. Mental developmental deficits can occur at considerably lower concentrations.”

Excerpt from

**CODE OF FEDERAL REGULATIONS**

(<https://www.law.cornell.edu/cfr/text/40/141.86#a>)

**§ 141.84 Lead service line replacement requirements.**

**(b)**

**(1)** A water system shall replace annually at least 7 percent of the initial number of [lead service lines](https://www.law.cornell.edu/cfr/text/40/141.84) in its distribution system. The initial number of [lead service lines](https://www.law.cornell.edu/cfr/text/40/141.84) is the number of lead lines in place at the time the replacement program begins**. The system shall identify the initial number of**[**lead service lines**](https://www.law.cornell.edu/cfr/text/40/141.84)**in its distribution system, including an identification of the portion(s) owned by the system, based on a materials evaluation, including the evaluation required under**[**§ 141.86(a)**](https://www.law.cornell.edu/cfr/text/40/141.86#a)**and relevant legal authorities (e.g., contracts, local ordinances) regarding the portion owned by the system.** The first year of [lead service line](https://www.law.cornell.edu/cfr/text/40/141.84) replacement shall begin on the first day following the end of the monitoring period in which the [action level](https://www.law.cornell.edu/cfr/text/40/141.84) was exceeded under [paragraph (a)](https://www.law.cornell.edu/cfr/text/40/141.84#a) of this section. If monitoring is required annually or less frequently, the end of the monitoring period is September 30 of the calendar year in which the sampling occurs. If the [State](https://www.law.cornell.edu/cfr/text/40/141.84) has established an alternate monitoring period, then the end of the monitoring period will be the last day of that period.

[referenced section § 141.86(a)

§ 141.86 Monitoring requirements for lead and copper in tap water.

(a)Sample site location.

…

**(2)** A water system shall use the information on lead, copper, and galvanized steel that it is required to collect under [§ 141.42(d)](https://www.law.cornell.edu/cfr/text/40/141.42#d) of this part [special monitoring for corrosivity characteristics] when conducting a materials evaluation. When an evaluation of the information collected pursuant to § 141.42(d) is insufficient to locate the requisite number of lead and copper sampling sites that meet the targeting criteria in paragraph (a) of this section, **the water system shall review the sources of information listed below in order to identify a sufficient number of sampling sites. In addition, the system shall seek to collect such information where possible in the course of its normal operations (e.g., checking service line materials when reading water meters or performing maintenance activities):**

**(i)** **All plumbing codes, permits, and records in the files of the building department(s) which indicate the plumbing materials that are installed** within publicly and privately owned structures connected to the distribution system;

**(ii)** **All inspections and records of the distribution system that indicate the material composition of the**[**service connections**](https://www.law.cornell.edu/cfr/text/40/141.86)**that connect a structure to the distribution system**; and

**(iii)** All existing water quality information, which includes the results of all prior analyses of the system or individual structures connected to the system, indicating locations that may be particularly susceptible to high lead or copper concentrations.

Excerpt from

**UNITED STATES CODE AS AMENDED BY THE WIIN ACT OF 2018**

(<https://www.law.cornell.edu/uscode/text/42/300g-3>)

**42 USC 300G–3. Enforcement of Drinking Water Regulations**

**…**

(2) **Form, manner, and frequency of notice**

**…**

(C) **Notice of violations or exceedances with** **potential to have serious adverse effects on human health**

Regulations issued under subparagraph (A) shall specify notification procedures for each [violation](https://www.law.cornell.edu/uscode/text/42/300g-3), and each exceedance described in paragraph (1)(D), by a public water system that has the potential to have **serious adverse effects on human health as a result of short-term exposure**. Each notice of [violation](https://www.law.cornell.edu/uscode/text/42/300g-3) or exceedance provided under this subparagraph shall—

1. be distributed as soon as practicable, but not later than 24 hours, after the public water system learns of the [violation](https://www.law.cornell.edu/uscode/text/42/300g-3) or exceedance;
2. provide a clear and readily understandable explanation of—
3. **the violation or exceedance**;
4. the potential adverse effects on human health;
5. the steps that the public water system is taking to correct the violation or exceedance; and
6. the necessity of seeking alternative water supplies until the [violation](https://www.law.cornell.edu/uscode/text/42/300g-3) or exceedance is corrected;
7. be provided to the Administrator and the head of the State agency that has primary enforcement responsibility under section 300g–2 of this title, as applicable, as soon as practicable, but not later than 24 hours after the public water system learns of the[violation](https://www.law.cornell.edu/uscode/text/42/300g-3)or exceedance; and
8. as required by the [State agency](https://www.law.cornell.edu/uscode/text/42/300g-3) in general[regulations](https://www.law.cornell.edu/uscode/text/42/300g-3)of the [State agency](https://www.law.cornell.edu/uscode/text/42/300g-3), or on a case-by-case basis after the consultation referred to in clause (iii), considering the health risks involved—
9. be provided to appropriate media, including broadcast media;
10. be prominently published in a newspaper of general circulation serving the area not later than 1 day after distribution of a notice pursuant to clause (i) or the date of publication of the next issue of the newspaper; or
11. be provided by posting or door-to-door notification.

Excerpt from

**UNITED STATES CODE AS AMENDED BY THE SDWA Amendments of 1996**

(<https://www.law.cornell.edu/uscode/text/42/300g-3>)

**42 USC 300G–3. Enforcement of Drinking Water Regulations**

**…**

(4) Goals and standards.—

**(E)** Feasible technologies.—

**(i)** In general.—

Each national [primary drinking water regulation](https://www.law.cornell.edu/uscode/text/42/300g-1) which establishes a [maximum contaminant level](https://www.law.cornell.edu/uscode/text/42/300g-1)shall list the technology,[treatment](https://www.law.cornell.edu/uscode/text/42/300g-1) techniques, and other[means](https://www.law.cornell.edu/uscode/text/42/300g-1)which the[Administrator](https://www.law.cornell.edu/uscode/text/42/300g-1)finds to be[feasible](https://www.law.cornell.edu/uscode/text/42/300g-1) for purposes of meeting such[maximum contaminant level,](https://www.law.cornell.edu/uscode/text/42/300g-1) but a regulation under this subsection shall not require that any specified technology, [treatment](https://www.law.cornell.edu/uscode/text/42/300g-1)technique, or other[means](https://www.law.cornell.edu/uscode/text/42/300g-1)be used for purposes of meeting such [maximum contaminant level.](https://www.law.cornell.edu/uscode/text/42/300g-1)

**(ii)** List of technologies for small systems.—The Administrator shall include in the list any technology, treatment technique, or other means that is affordable, as determined by the Administrator in consultation with the States, for small public water systems serving—

1. a population of 10,000 or fewer but more than 3,300;
2. a population of 3,300 or fewer but more than 500; and
3. a population of 500 or fewer but more than 25;

and that achieves compliance with the maximum contaminant level or treatment technique, including packaged or modular systems and point-of-entry or point-of-use treatment units. **Point-of-entry and point-of-use treatment units shall be owned, controlled and maintained by the public water system or by a person under contract with the public water system to ensure proper operation and maintenance and compliance with the maximum contaminant level or treatment technique and equipped with mechanical warnings to ensure that customers are automatically notified of operational problems.** The Administrator shall not include in the list any point-of-use treatment technology, treatment technique, or other means to achieve compliance with a maximum contaminant level or treatment technique requirement for a microbial contaminant (or an indicator of a microbial contaminant). If the American National Standards Institute has issued product standards applicable to a specific type of point-of-entry or point-of-use treatment unit, individual units of that type shall not be accepted for compliance with a maximum contaminant level or treatment technique requirement unless they are independently certified in accordance with such standards. In listing any technology, treatment technique, or other means pursuant to this clause, the Administrator shall consider the quality of the source water to be treated.