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January 15, 2015

Via e-mail to: Grevatt.peter@Epa.gov
Peter Grevatt
Director, Office of Ground Water and Drinking Water
USEPA Headquarters
1200 Pennsylvania Avenue, N. W.
Mail Code: 4601M
Washington, DC 20460

Via e-mail to: schutz.michelle@epa.gov
Members of the National Drinking Water
Advisory Council (NDWAC)

RE: Comments on the Report of the Lead and Copper Rule Working Group to the National Drinking Water Advisory Council

Dear Mr. Grevatt and Members of the National Drinking Water Advisory Council:

Please accept the following comments on the Report of the Lead and Copper Rule Working Group to the National Drinking Water Advisory Council.

INTRODUCTION

The recent public health crisis in Flint, Michigan is only the latest example of the ongoing danger of lead contamination in the nation's drinking water. The upcoming revisions to the Lead and Copper Rule ("LCR") represent an opportunity for EPA to make essential improvements to the most important regulatory mechanisms for removing lead from the drinking water consumed by millions of people in the United States.

The Report of the Lead and Copper Rule Working Group to the National Drinking Water Advisory Council ("the Report") contains many important suggestions for improvement to the LCR. EPA should take special note of the Report's reassessment of the LCR based on the growing body of scientific knowledge about lead contamination of drinking water as well as documented problems with the LCR's implementation since the rule was first promulgated in 1991. In particular, the Report highlights the importance of replacing *all* known lead service lines ("LSLs") in light of the fact that there is no safe level of lead exposure, and the fact that the risk of contamination is present whenever water makes contact with lead plumbing. The Report's proposals to establish a household action level for lead and to strengthen the LCR's public education provisions would also represent important improvements to the rule.

However, the revised LCR will require significant modifications and additions beyond those proposals put forth in the Report if it is to be sufficiently protective of public health. Provisions for ensuring proactive replacement of all LSLs must be accompanied by robust accountability mechanisms to ensure that public water systems ("PWSs") fulfill their replacement obligations. The household action level and public education proposals will likewise need to be bolstered to ensure their efficacy. Furthermore, if implemented, the Report's proposals regarding customer tap sampling, corrosion control treatment, and LSL inventory would likely *diminish* the efficacy of current LCR provisions in these areas. EPA must reject these regressive proposals in order to avoid backsliding in the LCR.

The Report also omits or gives insufficient attention to some of the most important contributors to lead contamination of drinking water currently unaccounted for in the LCR: physical disturbance of lead-containing pipes and periods of disuse of such pipes when a residence is unoccupied. Both of these can lead to dangerous spikes in lead levels at the tap. Additionally, the Report fails to address one of the greatest obstacles to effective, equitable implementation of the current LCR: its "shared responsibility" approach that holds household residents largely responsible for protecting themselves from lead-contaminated drinking water, regardless of their ability to bear the significant costs of doing so. As discussed in further detail below, the current approach to this shared responsibility regime has contributed to widespread instances of partial LSL replacement, in many cases due to the residents' inability to pay for full LSL replacement—a practice that can actually increase lead levels in drinking water. For this and other reasons, the impact of lead-contaminated water is distributed disproportionately along lines of class, race, and ethnicity. The revised LCR must do more to ensure that lead-free water is available to everyone served by a PWS.

The Report is the culmination of months of hard work by the LCR Working Group, and EPA should pay close attention to the important suggestions to improve the LCR it contains. However, as EPA carries out the LCR long-term revisions process it should be aware that the LCR revisions will need to go well beyond the recommendations in the Report if they are to achieve their public health-protection objectives. The dangers of lead contamination are too great to allow for anything less.

I. Background on Lead

Lead is a dangerous neurotoxin that persists in the environment and bioaccumulates when taken into the human body. Scientific consensus shows that there is no safe level of lead exposure.[1] EPA and the Center for Disease Control ("CDC") have recognized this.[2]

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[1] *See* EPA, Basic Information about Lead in Drinking Water, last updated Mar. 6, 2012, http://water.epa.gov/drink/contaminants/basicinformation/lead.cfm ("[T]he best available science . . . shows there is no safe level of exposure to lead.").

In children, lead exposure is known to cause "[p]ermanent damage to the brain and nervous system, leading to behavior and learning problems, lower IQ, and hearing problems," slowed growth, anemia, and, "[i]n rare cases . . . seizures, coma and even death."[3] Lead is especially dangerous for children because it acts on their developing brains and nerves.[4] Lead exposure has been linked to neurological and behavioral problems, including attention-deficit/hyperactivity disorder, criminal behavior, and a need for special education.[5] There is substantial evidence that lead exposure negatively impacts children's IQ and academic performance.[6] For adults, lead exposure can cause nervous system effects, cardiovascular effects, increased blood pressure, decreased kidney function, and reproductive problems for adults of both sexes.[7] Further, lead can accumulate for decades in a person's bones.[8] Certain circumstances—including pregnancy, breaking a bone, and old age—cause accumulated lead to be released back into the bloodstream and the organs where it can cause damage years after initial exposure.[9]

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[2] *See*, *e.g.*, CDC, What do Parents Need to Know to Protect Their Children (2012), available at http://www.cdc.gov/nceh/lead/ACCLPP/blood_lead_levels.htm ("'The most important step parents, doctors, and others can take is to **prevent lead exposure before it occurs**.'"); CDC, Lead in Drinking Water and Human Blood Lead Levels in the United States (2012), available at http://www.cdc.gov/mmwr/preview/mmwrhtml/su6104a1.htm?s_cid=su6104a1_w ("Because lead accumulates in the body, all sources of lead should be controlled or eliminated to prevent childhood lead poisoning.").

[3] EPA, Learn About Lead, last updated Apr. 1, 2013, http://www2.epa.gov/lead/learn-about-lead.

[4] National Library of Medicine, MedlinePlus: Lead poisoning, last updated Feb. 1, 2013, http://www.nlm.nih.gov/medlineplus/ency/article/002473.htm

[5] CDC, CDC's Healthy Homes/Lead Poisoning Prevention Program, 2 (2012), *available at* http://www.cdc.gov/nceh/information/program_factsheets/lead_program_overview.pdf

[6] CDC, Low Level Lead Exposure Harms Children: A Renewed Call for Primary Prevention, ix (2012), *available at* http://www.cdc.gov/nceh/lead/ACCLPP/Final_Document_030712.pdf.

[7] EPA, Learn About Lead, last updated Apr. 1, 2013, http://www2.epa.gov/lead/learn-about-lead. *See also* California DTSC, Requirements for Low Lead Plumbing Products in California, (2011), *available at* http://www.dtsc.ca.gov/PollutionPrevention/upload/Lead-in-Plumbing-Fact-Sheet.pdf ("For adults, high levels of exposure to lead in drinking water can result in kidney problems, high blood pressure, nerve disorders, fertility problems, muscle and joint pain, irritability, memory and concentration problems.").

[8] ATSDR, Toxicological Profile for Lead, 7–8 (2007), *available at* http://www.atsdr.cdc.gov/toxprofiles/tp13.pdf.

[9] *Id.*

Children in the United States continue to show high levels of lead in their blood.[10] "Childhood blood lead levels in the United States differ across groups in the population, such as those defined by socioeconomic status and race/ethnicity."[11] Blood-lead levels ("BLLs") tend to be higher for children living in older housing, and children who suffer nutritional deficiencies.[12] There are also significant disparities in the way that lead contamination affects different racial and ethnic groups: "About 22% of African American children and 13% of Mexican American children living in pre-1946 housing are lead poisoned, compared with 6% of white children living in comparable types of housing."[13] The National Black Environmental Justice Network notes that "Black children are five times more likely than white children to have lead poisoning [and] 1 in 7 black children living in older housing has elevated blood lead levels."[14] The CDC has noted that, based on data from the 1999-2002 and 2007-2010 National Health and Nutrition Examination Survey, "disparities in the [geometric mean] BLL by factors such as race/ethnicity and income level, which have been important historically, persist."[15]

Additionally, because lead is absorbed into children's bones and accumulates, disparate exposure from others sources compound the dangers of lead for children in certain vulnerable communities.[16] For example, "[c]hildren living in poverty and Black non-Hispanic children tend to have higher blood lead levels and higher levels of lead-contaminated dust in the home than do other children," making them especially vulnerable to additional lead exposure coming from their water.[17] Differences in mean BLLs can be traced to differences in housing quality, which can affect water supplies, environmental conditions, nutrition, and other factors that often result

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[10] *See*, *e.g.*, CDC, Blood Lead Levels in Children Aged 1–5 Years — United States, 1999–2010 (Apr. 5, 2013), *available at* http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6213a3.htm?s_cid=mm6213a3_e ("An estimated 535,000 U.S. children aged 1–5 years had BLLs ≥5 μg/dL.").

[11] EPA, America's Children and the Environment, 119 (3d ed., 2013), *available at* http://www.epa.gov/opeedweb/children/publications/ACE3_2013.pdf. See also, e.g., America's Children and the Environment, chart on page 125.

[12] EPA, America's Children and the Environment, at 119.

[13] NBEJN, Lead Facts in Black and White and Green, 2 (2005), *available at* http://www.nbejn.org/factsheets/LeadNBEJN-05new.pdf.

[14] *Id.*

[15] CDC, Blood Lead Levels in Children Aged 1–5 Years — United States, 1999–2010 (Apr. 5, 2013), *available at* http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6213a3.htm.

[16] *See*, *e.g.*, EPA, Lead in the Air: Health, last updated Mar. 13, 2012, http://www.epa.gov/oaqps001/lead/health.html ("Once taken into the body, lead distributes throughout the body in the blood and is accumulated in the bones.").

[17] EPA, America's Children and the Environment, at 119.

in the existence of notable racial and income disparities in BLLs.[18] Maternal nutrition can also affect the lead exposure of children, both during and after pregnancy.[19]

The CDC has also recognized that even very low BLLs can cause significant harm to children.[20] It has abandoned its prior practice of defining the "blood lead level of concern" as 10 μg/dL or greater, based on a strong body of evidence that BLLs below 10 μg/dL are associated with significant health effects. In particular, at BLLs less than 10 μg/dL children are reported to suffer irreversible "cardiovascular, immunological, and endocrine effects," IQ deficits, attention deficit disorders and decreased academic performance.[21] The CDC has created a new reference value requiring action, 5 μg/dL. The CDC found that "[t]here are approximately 450,000 U.S. children with BLLs above [the CDC's suggested reference value of 5 μg/dL] that should trigger lead education, environmental investigations, and additional medical monitoring."[22]

For many years, drinking water has been, and continues to be, a significant source of lead exposure.[23] A 2010 CDC study "found that children living in houses with lead pipes were three times as likely to have elevated blood lead as children in houses without lead pipes."[24] "Adults absorb 35%-50% of the lead they drink, and the absorption rate for children may be greater than 50%."[25] The Children's Health Protection Advisory Committee has stated that "it

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[18] CDC, Low Level Lead Exposure Harms Children: A Renewed Call for Primary Prevention, x (2012), available at http://www.cdc.gov/nceh/lead/ACCLPP/Final_Document_030712.pdf.

[19] *See* EPA, Learn about Lead, last updated Apr. 1, 2013, http://www2.epa.gov/lead/learn-about-lead ("During pregnancy, lead is released from bones as maternal calcium is used to help form the bones of the fetus. This is particularly true if a woman does not have enough dietary calcium. . . . Lead can also be transmitted through breast milk.").

[20] CDC, Low Level Lead Exposure Harms Children: A Renewed Call for Primary Prevention, ix (2012), *available at* http://www.cdc.gov/nceh/lead/ACCLPP/Final_Document_030712.pdf.

[21] CDC, Low Level Lead Exposure Harms Children: A Renewed Call for Primary Prevention, ix (2012), *available at*http://www.cdc.gov/nceh/lead/ACCLPP/Final_Document_030712.pdf.

[22] *Id.* at x.

[23] *See, e.g.*, WHO, Childhood Lead Poisoning, 44 (2010) ("Lead plumbing . . . has contaminated drinking-water for centuries, and lead in water can contribute to elevated blood lead concentrations in children"); New York City, New York City Plan to Eliminate Childhood Lead Poisoning, 21 (2005) (identifying the protection of "infants and children from exposure to lead in drinking water" as a key strategy to combat childhood lead poisoning).

[24] *See* David Brown, *Study of D.C. water sharpens understanding of lead threat*, Wash. Post, Dec. 11, 2010, available at http://www.washingtonpost.com/wp-dyn/content/article/2010/12/11/AR2010121102871.html?sid=ST2010122005141.

[25] William L. Roper, et al., Preventing Lead Poisoning in Young Children, ch. 3 (1991), http://www.cdc.gov/nceh/lead/publications/books/plpyc/contents.htm.

has been estimated that 10–20% of the total lead exposure in children can be attributed to a waterborne route, through the consumption of contaminated water."[26] "Exposure to lead via drinking water may be particularly high among very young children who consume baby formula prepared with drinking water that is contaminated by leaching lead pipes."[27]

The most significant source of lead in drinking water is plumbing, particularly in cities with old water systems. "Plumbing that contains lead may be found in public drinking water systems, and in houses, apartment buildings, and public buildings that are more than 20 years old," and even newer systems may contain many components with up to 8 percent lead.[28] Lead-containing service lines, which connect residential plumbing to water mains, are an especially significant source of lead. Such LSLs were commonly used until the mid-1950s,[29]although municipalities may have continued installing them up until 1986 when they were banned. In 1991 EPA estimated that there were at that time "about 10 million lead service lines/connections in the United States and that about 20 percent of all public water systems [had] some lead service lines/connections within their distribution system."[30] EPA's current estimates indicate that there are still roughly 10.3 million full or partial LSLs in the United States.[31] Compounding these problems, "[a]ll water is corrosive to metal plumbing materials to some degree."[32]

In Washington, D.C. for instance, approximately 42,000 children may have been exposed to dangerous levels between 2001 and 2004, during which time "[t]he lead concentrations in the city's water were sometimes hundreds of times higher in individual homes than the amount the

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[26] Letter from CHPAC to EPA, at 8 (Feb. 14, 2013), *available at* http://yosemite.epa.gov/ochp/ochpweb.nsf/content/lead_letter_2013.htm/$File/lead_letter_2013.pdf.

[27] EPA, America's Children and the Environment, 118 (3d ed., 2013), *available at* http://www.epa.gov/opeedweb/children/publications/ACE3_2013.pdf.

[28] ATSDR, Toxicological Profile for Lead, *supra* note 8, at 5; EPA, Lead in Drinking Water.

[29] DC Water and Sewer Authority, Understanding Lead and Water website ("In the U.S., lead service pipes were installed until the mid-1950s. Older properties may still have lead service pipes, which connect the water main in the street to household plumbing.") http://www.dcwater.com/lead/default.cfm (last visited Nov. 06, 2015).

[30] *Maximum Contaminant Level Goals and National Primary Drinking Water Regulations for Lead and Copper*, 56 Fed. Reg. 26460, 26466 (June 7, 1991) (hereafter "1991 Lead and Copper Rule" or "1991 LCR"). EPA based its estimate on a survey by the American Water Works Association.

[31] U.S. EPA, Lead Service Line Replacement Primer for Nat'l Drinking Water Advisory Comm. Lead and Copper Rule Working Group (Oct. 22, 2014).

[32] EPA, Consumer Factsheet on Lead in Drinking Water, last updated Mar. 6, 2012, http://water.epa.gov/lawsregs/rulesregs/sdwa/lcr/fs_consumer.cfm.

federal government consider[ed] a level of concern."[33] Attempts to repair the lead problem in those homes by replacing only a portion of certain individual LSLs has actually made the problem worse.[34] EPA's 2010 analysis showed that in D.C. homes with LSLs, 26.5% percent of children had blood-lead levels of 5.0 μg/dL or higher and 6% had BLL of 10.0 μg/dL or higher.[35]

The District of Columbia is not alone. During the last decade, studies in numerous cities have revealed high levels of lead in school drinking water, including: Seattle, WA;[36] Durham, NC;[37] Philadelphia, PA;[38] Syracuse, NY;[39] Baltimore, MD;[40] Portland, OR;[41] and San Francisco,

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[33] Carol D. Leonnig, *High Lead Levels Found in D.C. Kids*, Wash. Post, Jan. 27, 2009, available at http://articles.washingtonpost.com/2009-01-27/news/36849769_1_blood-lead-harmful-levels-water-crisis.

[34] *Id.*; *see also* Brown, et al., Association between children's blood lead levels, lead service lines, and water disinfection, Washington, DC, 1998–2006, Environ. Res. (2010), doi:10.1016/j.envres.2010.10.003.

[35] Letter from Mary Jean Brown, Chief, Healthy Homes and Lead Poisoning Prevention Branch, CDC to Lead Poisoning Prevention Program Managers, Important update: Washington, D.C. Blood Lead Level Tests (May 20, 2010), http://www.cdc.gov/nceh/lead/blood_levels.htm. In D.C. homes without a lead service line (but where there was still potential lead exposure inside the home's plumbing), 13.4% had blood-lead levels of 5.0 μg/dL or higher and 2% had BLL of 10.0 μg/dL or higher.

[36] Sanjay Bhatt, *Drinking Water to be Tested at All Seattle Schools*, Seattle Times, Dec. 18, 2003, at B1.

[37] Michael Petrocelli, *School's Drinking Fountains Shut Down: 'Actionable' Lead Amounts Turn up at Y.E. Smith Magnet*, Herald-Sun, Aug. 4, 2004, at C1; see also Catherine Clabby, Expert Faults EPA on Lead: Chemical Change Cited in Durham Water Tests, News & Observer, June 30, 2006,

http://www.newsobserver.com/politics/story/456206.html.

[38] *Pennsylvania: Philly Schools Find Unsafe Lead Levels in 20 Percent of Water Outlets*, eSchool News Online, Dec. 1, 2000, http://www.eschoolnews.com/news/showstory.cfm?ArticleID=2003.

[39] Maureen Nolan, Schools to Get Drinking Faucet Filters: The Project is Intended to Reduce the Levels of Lead in City Schools' Drinking Water, Post-Standard, Aug. 17, 2003, at B3; Government Accountability Office (GAO), Drinking Water: EPA Should Strengthen Ongoing Efforts to Ensure that Consumers are Protected from Lead Contamination 50-53 (2006). Syracuse found almost two dozen schools with high lead levels in the drinking water after performing tests at the request of the EPA, which was concerned about high blood-lead levels among the city's children. D'Vera Cohn, EPA Asks for States' Plans on Lead: Widening Water Problem Spurs Action, Wash. Post, ar. 28, 2004, at C01.

[40] Tanika White, Fountains with Lead Remained in Schools: Plan to Use Bottled Water Was Never Carried Out, Despite Contamination, Baltimore Sun, Feb. 7, 2003 , at 1B.

CA.[42] Most recently, Flint, MI saw a spike in lead levels at residents' taps when the city switched its source of drinking water without taking necessary steps to control corrosion of lead pipes in its water system.[43] Testing revealed elevated levels of lead in the blood of Flint children, and some local schools were forced to turn off their water fountains when sampling revealed lead levels in excess of federal standards.[44] The lead contamination crisis in Flint can be traced in part to an apparent failure to follow water treatment procedures mandated by the current LCR. Nonetheless, it underscores the ongoing threat that lead-contaminated water poses to public health twenty-four years after the LCR was first promulgated, and the need for more stringent enforcement of the human health safeguards under the LCR.

II. Regulatory History

The Safe Drinking Water Act ("SDWA"), 42 U.S.C. 300f *et seq*., requires EPA to set standards for drinking water quality, including maximum levels for contaminants that may have an adverse effect on the health of persons. SDWA applies to every public water system ("PWS") in the United States. A PWS is defined as "a system for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least fifteen service connections or regularly serves at least twenty-five individuals."[45]

EPA published the Lead and Copper Rule in 1991 in response to Congress' 1986 amendments to the SDWA.[46] EPA had originally contemplated setting a maximum contaminant level of zero for lead in drinking source water, but in the final 1991 rule EPA agreed with commenters who "argued that setting [a maximum contaminant level] for levels in source water in addition to the treatment technique requirements for corrosion by-products would result in unnecessary confusion among the public and the regulated community."[47] Instead of setting a maximum contaminant level, EPA adopted a final rule "consisting solely of a treatment technique that seeks to remedy all sources of lead and copper contamination caused by both

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[41] Michelle Cole, *Schools Shut Off Drinking Fountains*, Oregonian, Aug. 25, 2001, at A01.

[42] Nanette Asimov, Toxic Lead Found in Schools: Paint, Drinking Water Tested in S.F. District, San Francisco Chronicle, Nov. 14, 2000, at A21.

[43] Monica Davey, Flint Will Return to Using Detroit's Water After Findings of Lead in Local Supply, New York Times, Oct. 9, 2015, at A16.

[44] *Id.*

[45] 42 U.S.C. § 300f (4)(A).

[46] 1991 Lead and Copper Rule, 56 Fed. Reg. at 26460. Before 1991, under an interim rule published by EPA in 1975, the maximum contaminant level for lead was 0.050 milligrams per liter. *Id.* at 26463.

[47] *Id*., 56 Fed. Reg. at 26472.

corrosion and contaminated source water."[48] EPA also established a maximum contaminant level *goal* of zero, and stated that "[t]he goal of [the] rule is to provide maximum human health protection by reducing the lead and copper levels at consumers' taps to as close to the [maximum contaminant level goal] as is feasible."[49]

The treatment technique requirements include corrosion control treatment, source water treatment, LSL replacement, and public education. The rule requires each PWS to monitor a specified number of sites depending on the size of the system.[50] Treatment techniques are triggered if samples show an exceedance of the "lead action level" under the rule, which is "exceeded if the level of lead in more than 10 percent of the targeted tap samples is greater than 0.015 mg/L (90th percentile)."[51]

Spurred by the aforementioned reports of lead contamination in the District of Columbia's drinking water, EPA conducted a one-year review of the nationwide implementation of the LCR beginning in 2004.[52] The review identified a number of "targeted changes" to improve the LCR's efficacy in the short term as well as several issues to be addressed over longer-term rulemakings.[53] In 2007 EPA promulgated regulations addressing the short-term revisions to the LCR.[54]

EPA has taken the first steps in crafting regulations to address the more substantial, long-term issues identified in the 2005 report, a process known as the LCR long-term revisions.[55] Before EPA publishes regulations for public comment, the SDWA provides that the agency will consult NDWAC, which is composed of representative from utilities, advocacy groups, and the general public appointed by the EPA Administrator.[56] In anticipation of the LCR long-term revisions, EPA requested that NDWAC establish the LCR Working Group, tasked with

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[48] *Id.*

[49] *Id.*, 56 Fed. Reg. at 26478.

[50] 40 C.F.R. § 141.86(d)(2).

[51] *Id.*; 40 C.F.R. § 141.80(c)(1).

[52] *See* Drinking Water Lead Reduction Plan Fact Sheet, *available* at http://water.epa.gov/lawsregs/rulesregs/sdwa/lcr/upload/2009_08_11_lcrmr_pdfs_Drinking_Water_Lead_Reduction_Plan.pdf.

[53] *Id.*

[54] 72 Fed. Reg. at 57782.

[55] Report of the Lead and Copper Rule Working Group to the National Drinking Water Advisory Council ("LCR WG Report") 9.

[56] 42 U.S.C. § 300j-1(a).

analyzing the LCR and developing recommendations to improve the regulations.[57] The Working Group released its Report to NDWAC on August 24th, 2015 after over a year of deliberations, with one member dissenting.[58]

III. The Lead and Copper Rule Working Group Report

The Report recognizes the urgent necessity of revising the LCR, highlighting "questions of disparate impact and environmental justice" in lead contamination of drinking water and noting the need to incorporate advances in scientific knowledge since the current LCR was promulgated.[59] To that end, the Report offers five broad recommendations to improve the LCR's approach to removing lead from drinking water: encouraging the removal of all LSLs, modifying tap water monitoring requirements, improving corrosion control treatment ("CCT"), expanding public education ("PE") programs, and establishing a household action level for lead.[60] Making proactive LSL removal the cornerstone of the LCR's lead remediation program is an important step forward from the current LCR, which mandates LSL removal only when a PWS exceeds the lead action level. Because full LSL removal can take years or decades to complete, minimizing public exposure to lead contamination in the interim is essential. Accordingly the Report's remaining recommendations highlight significant shortcomings and gaps in the current LCR's monitoring, education, and water treatment provisions.

Even as the Report acknowledges the severity of the threat that lead-contaminated drinking water poses to public health, its recommendations fall short of what needs to be done to effectuate the purpose of the LCR—i.e., "to provide maximum human health protection by reducing the lead and copper levels at consumers' taps."[61] Merely *encouraging* PWSs to adopt proactive LSL replacement goals does nothing to ensure accelerated LSL removal absent consequences for failing to meet LSL removal targets. The Report's recommendations regarding PE and the household action level should also be strengthened to ensure that they lead to robust action to protect public health. More troublingly, the proposals to modify the LCR's tap monitoring and CCT provisions would likely *reduce* the efficacy of these essential parts of the rule's treatment technique.

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[57] LCR WG Report at 9.

[58] Yanna Lambrinidou, Statement of Dissent from the Report of the Lead and Copper Rule Working Group to the EPA National Drinking Water Advisory Council ("Dissent").

[59] LCR WG Report at 5.

[60] LCR WG Report at 2-3. The Report also includes recommendations to improve the LCR's program for addressing copper contamination, which are not addressed in this comment.

[61] *Id*., 56 Fed. Reg. at 26478.

A. Proactive Replacement of All Lead Service Lines

The Report states, "[r]emoving the sources of lead in drinking water should be a national goal. More proactive action than has been taken to date is needed to achieve it."[62] Accordingly, the Report calls for the LCR to encourage all PWSs to establish a LSL replacement program "that effectively informs and engages customers to share appropriately in fully removing LSLs."[63] The Report gives a suggested replacement schedule, which begins with a target of 15% of the initial number of LSLs replaced every three-year increment, gradually reduces replacement targets after fifteen years, and concludes with full LSL replacement after thirty years.[64] This proposal departs from the current LCR's policy of requiring LSL replacement only for PWSs that exceed their lead action level[65] and would thus seem to embody a more proactive effort to remove the main source of lead in drinking water.

However, this apparent improvement is undermined by the Report's failure to recommend enforcement measures for the LSL replacement requirements in the revised LCR.[66] The Report recommends that LCR violations would only occur when there are inadequacies in a PWS's customer-outreach efforts, or when a PWS fails "to step up intensity of efforts" if it does not meet its three-year LSL replacement targets.[67] Conspicuously absent is a mechanism for actual enforcement of LSL replacement targets. The LCR must do more than merely *encourage* LSL replacement. The Report appears to suggest that EPA's powers under the SDWA are insufficient to require proactive full LSL replacement,[68] but such a suggestion has no legal basis.[69] Failure by a PWS to reach LSL replacement goals should constitute a violation of the LCR.

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[62] Working Group Report at 13.

[63] *Id.* at 14.

[64] *Id.* at 45.

[65] 40 C.F.R. § 141.84(a).

[66] In contrast, the current LCR institutes a strict schedule of LSL replacement (at least seven percent per year) for PWSs that exceed the lead action level. 40 C.F.R. § 141.84.

[67] LCR WG Report at 19.

[68] *Id.* at 13 ("[removing the sources of lead in drinking water] will require a concerted effort by many, and cannot be accomplished solely through the authorities provided under the Safe Drinking Water Act. . . .").

[69] It is true that the current policy of making PWSs responsible for replacing only those LSLs that they are deemed to own—leaving property owners responsible for the LSLs running under their property—has been a major obstacle to full LSL replacement, but nothing in the SDWA or any other law demands that EPA continue this misguided policy. This issue is discussed in further detail below.

Partial LSL Replacement

The Report notes that the current LCR does not create sufficient incentives to remove and replace the entire length of each LSL—the main source of lead in drinking water—and instead creates a regulatory environment that has encouraged widespread partial LSL replacement.[70] The Report also cites studies showing that partial LSL replacement is ineffective at reducing the amount of lead in drinking water and leads to elevated lead levels in the short term.[71] But the Report does not follow this line of reasoning to its logical conclusion and recommend a prohibition against partial LSL replacement. Instead, it provides a list of "justifiable exceptions" to the general policy of encouraging full LSL replacement, including: "emergency repairs where property owners have refused to participate in a full LSL replacement; during a main replacement project; or when a sufficiently high percentage of property owners participate in an area –wide LSL replacement project to justify replacing LSLs to the property lines of those who do not participate at the time."[72] This list of recommended exceptions is completely at odds with the goals for the LCR long-term revisions, and threatens to undermine the public health-protection purposes of those revisions.

The revised LCR should ban partial LSL replacement. As an initial matter, the Report does not document the need for an "emergency repair" exception that would justify replacing less than one hundred percent of an LSL. Moreover, the above list of exceptions has troubling implications for environmental justice that mirror a major inequity of the current LCR lead-control regime. In many cities, property owners unable to pay to replace the LSLs running under their property were subjected to partial LSL replacement when their PWS replaced utility-owned LSLs up to the property line. Because partial LSL replacement can increase lead levels short term and has been shown to be ineffective at remediating lead contamination long-term, the current LCR's mandatory LSL replacement measures had the perverse result of *increasing* the amount of lead flowing through the taps of many consumers. A person's ability to pay thus became a major determinant of the level of lead contamination in her and her family's water in many places.

In focusing on property owners who have "refused to participate in a full LSL replacement," the Report appears to have missed the point. While there may exist homeowners who refuse to consent to full LSL replacement out of recalcitrance, by far the more pressing obstacle arises from lack of financial resources. Allowing partial LSL replacement to proceed when a "sufficiently high percentage" of customers in an area elect to participate would expose some unfortunate people to the known dangers of partial LSLs, **simply because of their inability to pay**. To its credit, the Report does call for "risk management" measures for

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[70] LCR WG Report at 19.

[71] *Id.*

[72] *Id.* at 14.

customers left with partial LSLs, such as providing filters and plastic piping,[73] but such stopgap measures are no substitute for full LSL removal.

Service line ownership

The current approach to questions concerning the ownership and control of LCRs is directly tied to an increased likelihood of partial LSL replacement. Service lines include portions owned by utilities as well as portions deemed to be owned by individual customers. Under the current LCR, a PWS is responsible for replacing only the portion of an LSL that it owns; for any remaining portion that is deemed to be privately-owned, the PWS is only required to offer to replace that portion of the LSL at the customer's expense.[74] The LCR's apportionment of shared responsibility for LSL replacement between utility and customer is a major reason for the prevalence of partial LSL replacement, as customers are often unable to shoulder the expense of replacing their portion of a service line, which is typically estimated to range from $1,000 to $7,000.[75] Additionally, PE materials provided by PWSs may fail to adequately inform customers of the public health purpose of LSL replacement, the nature of utility and homeowner rights and responsibilities regarding service lines, and the comparative benefits and risks of full LSL replacement and partial LSL replacement.[76]

The Report states that the Working Group discussed but did not reach a consensus on the question of whether the LCR should make PWSs responsible for replacing LSLs under their "control," which could encompass LSLs deemed to be owned by customers where the PWS has the authority to repair, replace, or maintain the LSL.[77] A control-based approach would support full LSL replacement. In contrast, the Report's continued emphasis on having customers "share appropriately" in LSL replacement threatens to perpetuate the existing inequities of the LCR's shared responsibility system. Over twenty years of history have shown that when property owners are asked to pay for full LSL replacements, the vast majority decline to do so, many for no reason other than inability to pay. In Washington, D.C. for example, through the duration of the city's service line replacement program from 2003 to 2008, only 15% of property owners

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[73] *Id.*

[74] 40 C.F.R. § 141.84(d).

[75] *See* Yanna Lambrinidou and Marc Edwards, Improving Public Policy through Qualitative Research: Lessons from Homeowners about Lead Service Line Replacement under the Federal Lead and Copper Rule (presentation at 141st APHA Annual Meeting and Expo, Nov. 2-6, 2013, Boston, MA).

[76] *Id.*

[77] LCR WG Report at 18.

elected to have a full replacement—2,128 out of 14,260 service lines that were ultimately replaced.[78]

Among other failings, use of the "ownership" test presumes that (1) the property owner is knowingly assuming the risk of leaving private-owned LSLs in place, (2) the property owner is in fact the one who will be exposed to this risk, and (3) that everyone has the ability to pay for LSL replacement if they deem the risk significant. None of these assumptions is true. First, unless and until public education efforts are significantly ramped up and have had sufficient time to penetrate the public consciousness, property owners will be largely unaware of the risks they are assuming when choosing partial LSL replacement. Second, those renting their homes will likely have no say in the matter at all. Home ownership rates, which are low in general among the nation's poorest families,[79] are disproportionately low for African Americans and certain other racial/ethnic groups, as well.[80] Lastly, and most importantly, a property owner's ability to pay should not affect her risk of lead exposure. The "ownership" test prejudices poor families and families of color, and hurts families who are not adequately informed of the risks of lead exposure.

The Report attempts to resolve this last failing by suggesting research into "creative financing possibilities," such as a possible IRS tax refund to families who choose full LSL replacement, but none of its suggestions are adequately explained and none address the other failings of the "ownership" test. The problem is that by dividing responsibility, the "ownership" test requires complicated solutions. Some entity has to come up with funding, which it can give to the property owner, who can then pay the PWS. Control is much simpler to establish, greatly reduces the number of actors and decision-makers involved, and avoids the need for complex financing solutions to mitigate environmental justice concerns

The Report points to state prohibitions on spending public funds on private property and the difficulty of gaining physical access to private property as major obstacles to a control-based LSL replacement scheme,[81] but these are more easily surmounted than the difficulties of

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[78] The District of Columbia and Communities Nationwide Face Serious Challenges in Their Efforts to Safeguard Water Supplies, GAO-08-687T at 6-8 (April 15, 2008); *see also* GAO-05-344, *Agencies Have Improved Coordination, but Key Challenges Remain in Protecting the Public from Elevated Lead Levels*, Report to the Chairman, Subcommittee on Environment and Hazardous Materials, Committee on Energy and Commerce, House of Representatives (March 2005), p. 4 (raising the same concerns as in 2005).

[79] http://www.huduser.gov/Publications/pdf/HomeownershipGapsAmongLow-IncomeAndMinority.pdf at 91

[80] http://www.huduser.gov/Publications/pdf/HomeownershipGapsAmongLow-IncomeAndMinority.pdf at 85

[81] LCR WG Report at 18.

implementing the current ownership-based system. The public benefit doctrine found in many state constitutions poses no barrier to an LSL replacement program that clearly aims to promote public health. The application of this doctrine may vary from one state to another, but in general a public purpose "has for its objective the promotion of public health, safety, morals, security, prosperity, contentment, and the general welfare of the community."[82] The term "public purpose" is broad and should not be construed "in a narrow or restrictive sense."[83] A public purpose may be served even if it involves making payments to individuals.[84] Additionally, property rights can be respected by requiring the PWS to obtain a "right of entry" from property owners—a choice that will not depend on owners' ability to pay. Lastly, funding for replacement projects can be obtained in numerous ways, with the unifying characteristic that only one party, the PWS, needs to be involved in the transaction.

Nor does the history of litigation over the 1991 LCR justify retaining the ownership approach. In response to a challenge by the American Water Works Association, the D.C. Circuit struck down EPA's definition of "control" in the final 1991 rule, solely on the grounds that "EPA failed to provide adequate notice that it would adopt a novel definition of control."[85]

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[82] Slawson v. Alabama Forestry Comm'n, 631 So.2d 953, 956 (Ala. 1994); Clifford v. City of Cheyenne, 487 P.2d 1325, 1329 (Wyo. 1971); Platte Valley Public Power & Irrigation Dist. v. Lincoln County, 14 N.W.2d 202, 205 (Neb. 1944); State ex rel. McClure v. Hagerman, 98 N.E.2d 835, 838 (Ohio 1951); Greensboro-High Point Airport Authority v. Johnson, 226 N.C. 1, 15 (N.C. 1946); State ex rel. Warren v. Nusbaum, 59 Wis.2d 391, 423 (Wis. 1973); City of Pipestone v. Madsen, 287 Minn. 357, 366 (Minn. 1970).

[83] Burkhardt v. City of Enid, 771 P.2d 608, 610 (Okla. 1989); Madison Cablevision, Inc. v. City of Morganton, 325 N.C. 634, 646 (N.C. 1989); Dannheiser v. City of Henderson, 4 S.W.3d 542, 546 (Ky. 1999) (and cases cited therein).

[84] See Ullrich v. Bd. of Cnty. Comm'rs of Thomas Cnty., 234 Kan. 782, 788-89 (Kan. 1984) ("The generally recognized rule is that a state legislature may appropriate public money or property for private individuals, if thereby the public welfare is promoted."); see also Mountain Water Co. v. Montana Dept. of Public Service Regulation, 919 F.2d 593, 601 (9th Cir. 1990) (upholding a requirement applicable to privately-owned water utilities "to help assure service line maintenance [and] redistribute the cost of service line maintenance among all customers.").

[85] *Am. Water Works Ass'n v. E.P.A.*, 40 F.3d 1266, 1275 (D.C. Cir. 1994). The D.C. Circuit viewed EPA's definition of "control" as novel because "public water systems generally *own* only that part of the service line that underlies public property." *Id*. at 1274. (emphasis added). However, the proposed rule had clearly rebuttable presumption "that the water supplier owns *or controls* and therefore can replace, *the lead components up to the wall of the building served*." Drinking Water Regulations; Maximum Contaminant Level Goals and National Primary Drinking Water Regulations for Lead and Copper, 53 Fed. Reg. 31516, 318548 (Aug. 18, 1988). The court also reasoned that the only case to have interpreted the definition of "public water system" was a 1988 ruling of the Georgia Supreme Court interpreting the Georgia Safe Drinking Water Act,

Any questions regarding the scope or meaning of "control" could be addressed in a new rulemaking that provides ample public notice to affected PWSs. To the extent there is any merit to the American Water Works Association's substantive allegations against the 1991 control rule – that EPA lacked authority to adopt a control-based rule, and that the definition was impermissibly vague because EPA did not indicate whether the rule created a right of entry on private property – EPA can address those issues in a new rulemaking.

LSL inventory

An additional defect in the Report's LSL replacement proposal is its LSL accounting scheme. The Report has two related recommendations for improving PWSs knowledge of LSLs within their system:

1) A "presumption that a service line put in place prior to the date when lead service lines were prohibited has leaded materials unless the PWS has information to confirm that it [does] not."
2) "Providing credit to a PWS toward its replacement goals for demonstrating that a service line presumed to include lead does not have leaded materials."

This second suggestion serves only to undermine the stated purpose of the LSL replacement program and could lead to significant delays in implementing full LSL replacement. Giving "credit" for existing service lines that do not contain lead would allow a PWS to replace *fewer* LSLs than it would otherwise have to in a given year, a result squarely contrary to the goal of rapid LSL replacement. It would also create a perverse incentive for PWSs to characterize as lead-free service lines that are of uncertain or ambiguous composition. Because this recommendation has no apparent public health justification, EPA should reject it and instead focus on different ways to require or incentivize accelerated LSL inventories by all PWSs.

B. Monitoring

If implemented, the Report's recommendations regarding lead monitoring would likely result in a weaker monitoring regime than the current LCR's. PWSs are currently required to

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which was identical to the definition of a PWS under the SDWA, as "confining the regulatory authority to portions of the service line *not underlying private property*." *Am. Water Works Ass'n* at 1275, citing *Bass v. Ledbetter,* 257 Ga. 738, 363 (Ga. 1988) (emphasis added). But EPA's proposal clearly went beyond the Georgia court's interpretation by presuming that "lead components up to the wall of the building served" could be within a PWS's "control." Nonetheless, because EPA had given "control" a specific definition that was not articulated in the proposed rule, and had deviated from the Georgia court's interpretation of "PWS" under the state's law, the D.C. Circuit concluded that interested parties could not "reasonably have anticipated the final rulemaking." *Am. Water Works* at 1275.

measure levels of lead in their water through periodic monitoring, which includes targeted tap water sampling,[86] source water monitoring,[87] and monitoring of Water Quality Parameters ("WQPs") at various points in the system.[88] Data collected on WQPs, including , alkalinity, conductivity, temperature, and calcium, is used to assess the corrosivity of the water supply.[89] Data obtained from sampling at individual drinking water taps is used to ascertain whether a PWS exceeds the LCR's Lead Action Level, which triggers mandatory response measures such as LSL replacement.[90] The Report finds fault in the current monitoring regime, citing "numerous challenges" and focusing in particular on "difficult and costly" in-home tap water sampling.[91] The Report recommends replacing the LCR's monitoring program with the following 2-part program: "1) a more robust WQP monitoring program to improve process controls for CCT, and 2) voluntary customer initiated sampling. . . to provide direct information to consumers that they can use to reduce potential exposures to lead from drinking water. . . and to provide ongoing information to the PWS to identify and correct unanticipated problems. "[92] The Report also calls for increased customer outreach to encourage voluntary tap sampling, including a "menu" of sampling protocols for customers to choose from.[93]

This proposal is deeply misguided. As noted above, WQP monitoring was instituted under the 1991 Lead and Copper Rule as a means for assessing the corrosivity of water. The Report offers no evidence that WQPs provide a reliable indicator of lead levels at consumers' taps.[94] Surrogate measuring should only be used when direct measuring of a contaminant is prohibitively costly or otherwise impossible *and* where the surrogate measure provides the most reliable indirect measure of the presence of the targeted contaminant. This is not the case with lead, which can be readily measured in tap samples and for which WQPs cannot not provide a reliable surrogate measure. The Report fails to justify deemphasizing targeted tap sampling in favor of a method known to be a less reliable indicator of lead levels. Simply put, the most reliable way to ascertain lead levels at consumers' taps is to measure lead levels at

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[86] 40 C.F.R. § 141.86.

[87] 40 C.F.R. § 141.88.

[88] 40 C.F.R. § 141.87.

[89] 1991 Lead and Copper Rule, 56 Fed. Reg. at 26466.

[90] 40 C.F.R. § 141.84(a).

[91] LCR WG Report at 30, 32.

[92] *Id.* The Report notes, "[i]t seems appropriate to include some sort of floor to the number of customer samples. Some members of the [Working Group] suggested that systems should be required to collect no fewer samples in a three year period than they would under the current three-year reduced monitoring requirement." *Id.* at 34.

[93] *Id.*

[94] Dissent at 13.

consumers' taps. Eliminating mandatory, targeted tap water sampling and replacing it with voluntary, consumer-driven sampling would further undermine the goal of effectively monitoring lead levels. Because volunteer sampling assumes that consumers will have a sufficient understanding of the need for sampling, it is more likely to produce data from households that enjoy higher socio-economic status, education level, and English language skills. For that and other reasons, volunteer sampling according to consumer-chosen protocols would yield only sporadic data that would be of little use in ascertaining system-wide lead levels.

Effective tap water monitoring demands a systematic, targeted approach. Lead levels can vary greatly depending on location within a water system and over time,[95] so even tap sample data indicating low lead levels at a large number locations throughout a PWS can belie a situation in which some customers are being exposed to unacceptably high levels of lead. Accordingly, tap sampling should target the homes at highest risk of lead contamination, as mandated in the current LCR.[96]

There is ample room for improvement to the current LCR's tap water monitoring regime, but any changes should make tap monitoring more effective, not less so. For example, the current LCR mandates that nearly all tap samples be "first-draw" samples,[97] a technique that is now known to significantly underestimate actual lead levels.[98] Sampling protocols should be revised to reflect up-do-date scientific knowledge, including a ban on practices such as "pre-flushing" that are known to underestimate lead levels. Additionally, the LCR should mandate that uniform protocols be used throughout the system to ensure a consistent, useful pool of data on lead levels.

Sample invalidation

Under the current LCR a PWS can request that its state invalidate tap water samples for a limited number of reasons, such as damage to the sample container or error in laboratory analysis.[99] The Report asserts that this closed list of sample invalidation criteria leads to instances in which "samples that are obvious 'outliers' and don't represent the water that is normally consumed and should not be used as a basis for treatment changes or public education" must be accepted.[100] The Working Group urges EPA to "expand the invalidation

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[95] Federal Register, Vol. 56, No. 110 (1991), Maximum Contaminant Level Goals and National Primary Drinking Water Regulations for Lead and Copper, p. 26514.

[96] 40 C.F.R. § 141.86(a).

[97] 40 C.F.R. § 141.86(b).

[98] Dissent at 14.

[99] 40 C.F.R. § 141.86(f).

[100] LCR WG Report at 34.

criteria" to reflect this concern.[101] This proposal would create an unnecessary and potentially disastrous loophole. The current list of sample invalidation criteria focuses on errors in sample collection, without taking into account the testing results of a given sample. Expanding sample invalidation criteria to allow the exclusion of "outliers" could allow PWSs to disregard valid samples simply because their results show high lead levels. Such a policy would undercut the very rationale for having a sampling program, and it could become a means for a PWS to create the appearance of low overall lead levels while failing to address lead contamination in homes within the system. Under no circumstances should a PWS be allowed to invalidate an otherwise valid sample after seeing the testing results.

C. Corrosion Control Treatment

CCT is the most important aspect of the LCR's lead control treatment technique because it can dramatically reduce the amount of lead that leaches from lead pipes into drinking water if properly implemented. The current LCR CCT regime contains several flaws that prevent it from realizing this potential. Unfortunately, rather than addressing these flaws head-on, the Report's CCT proposals would likely result in a *weaker* CCT regime than the current LCR.

The goal of CCT is to minimize corrosion of lead-containing pipes, thus reducing the amount of lead leaching from those pipes into water destined for human consumption. Each PWS varies in factors such as size, source water, and age of the physical infrastructure, and each of these affects pipe corrosions. Accordingly, CCT needs to be calibrated to fit local circumstances. The LCR currently requires all large PWSs to develop optimal CCT, defined as CCT "that minimizes the lead and copper concentration at users' taps while insuring that the treatment does not cause the water system to violate any national primary drinking water regulations."[102] Small and mid-size PWSs are required to develop optimal CCT if they are unable stay below the action level for lead.[103] The LCR also requires that PWSs periodically assess their CCT through monitoring of WQPs, and PWSs able to maintain WQPs within established ranges are deemed to have effective CCT.[104]

This CCT regime has been marred by failures of implementation and flaws of design. To implement optimal CCT, the current LCR directs all large PWSs to conduct extensive studies and develop optimal CCT in cooperation with their respective states; the 1991 regulations provide a schedule of seven steps over six years (1993-1998) for them to complete this task.[105] Despite these clear instructions, few large PWSs conducted the studies necessary to develop

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[101] *Id.*

[102] 40 C.F.R. § 141.2.

[103] 40 C.F.R. § 141.82(a)(2).

[104] 40 C.F.R. § 141.82(g).

[105] 40 C.F.R. § 141.82(d).

optimal CCT.[106] Instead, most large PWSs have implemented ad hoc CCT with the goal of staying below the lead action level (15 parts per billion).[107] In effect, these PWSs have been held to a less stringent standard for CCT than the standard called for in the LCR's CCT optimization provisions, which demand that PWSs achieve *minimization* of lead levels. Regarding the current CCT assessment provisions, the LCR Working Group dissenter and others have pointed out that WQP monitoring is an imperfect indicator of actual lead levels. Indeed, only 172 PWSs have failed to maintain WQPs within established ranges since 1991, yet over 6,000 PWSs have exceeded the lead action level in that time.[108] In other words, that a PWS is able to maintain acceptable WQPs does not guarantee CCT achieving low lead levels at the tap.

The Report takes up both CCT optimization and CCT assessment. Noting that optimal CCT depends upon up-to-date science and attention to local conditions,[109] the report recommends that EPA develop a new CCT guidance manual "as soon as possible" and update the manual every six years; it also suggests that large PWSs be required to review their CCT plans in light of the updated manual and be required to do so in every six year rule review cycle.[110] To improve CCT assessment, the Report recommends that CCT be evaluated according to the "regular stream of data" from voluntary customer tap water sampling under the monitoring regime described above.[111] All customer sampling data would be compiled and reported to the state; if the most recent three years of customer sampling data shows the 90th percentile to be above the action level for lead, the PWS would be required to determine if "analysis, re-evaluation of CCT, or other actions. . . are appropriate."[112]

These recommendations do not adequately address the shortcomings of the current CCT regime, and linking assessment to voluntary customer tap sampling would further reduce CCT's efficacy. As noted above, switching from targeted tap sampling to voluntary, customer-initiated sampling would result in a much weaker pool of data about lead levels within a water system. Coupling CCT assessment to less accurate information about lead levels within a PWS can only weaken CCT. The Report's recommendations regarding CCT optimization would be a step in the right direction, but they do not go far enough in addressing the history of large PWSs failing to comply with the LCR's explicit directives on CCT optimization.

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[106] Dissent at 14.

[107] *Id.*

[108] *Id*. at 13.

[109] LCR WG Report at 29.

[110] *Id.* at 30.

[111] *Id*. at 33.

[112] *Id.* Although three years of sampling data would be used to calculate the 90th percentile, PWSs could be required to report sampling data annually "at the discretion of the primacy agency."

CCT is a science-based treatment technique that requires accurate information on actual lead levels, continual monitoring, and attention to the individual circumstances of each PWS. Although the precise contents of an effective CCT regime are beyond the scope of this comment, the dissenting Working Group member suggests that it will require at minimum: (1) robust monitoring of lead levels in water; (2) true CCT optimization in large PWSs, i.e. CCT that minimizes lead corrosion without violating other national water quality standards; (3) mandatory corrective action by a PWS if the lead action level is exceeded; and (4) a compliance mechanism that links CCT to lead levels at the tap.[113]

D. Household Action Level

The Report's proposal to establish a household action level for lead addresses an important gap in the LCR, but it needs to be bolstered if it is to adequately fill that gap. The current LCR calculates the lead action level with reference to the 90th percentile of all tap water samples in a system. Accordingly, samples from individual dwellings can contain high levels of lead without triggering the lead action level for the PWS as a whole. The Report calls for the creation of a "household action level" to address this problem: if a tap sample exceeds the household action level, the PWS would be required to notify local health departments and the state drinking water authority.[114] This proposal addresses an important gap in the current LCR, but in its current form its efficacy is limited. The proposed household action level does not mandate any action by health departments upon notification of an exceedance of the household action level, nor can it, as the SDWA does not give EPA authority to regulate local health departments. The Report acknowledges as much, incongruously stating, "while the LCR cannot guarantee actions by health departments, this recommendation provides direct health intervention in those cases where sampling indicates high lead levels.[115] Instead of merely providing that PWSs notify local health authorities of exceedances of the household action level, the LCR should require PWSs to take immediate remedial action in the affected homes and to ensure that the affected residents have adequate health safeguards until the danger is eliminated.

E. Public Education

Public Education ("PE") is an essential part of the LCR. The public remains under-informed of the dangers of lead contamination of drinking water, and of the "shared responsibility" the LCR expects them to take to protect themselves and their families. The

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[113] Dissent at 15.

[114] LCR WG Report at 36. The Working Group recommends that the household action level be set with reference to the amount of lead it would take to induce an average, healthy infant drinking formula to have blood lead levels of greater than five micrograms per deciliter. *Id.* at 37.

[115] *Id.* at 32-33.

Report calls for greater efforts to disseminate information about the risks of lead contamination in drinking water through PE materials. Specifically, it recommends establishing a "national clearinghouse" of PE materials for use by PWSs; requiring PWSs to send PE materials to all new customers; revising the language of Consumer Confidence Reports ("CCRs"); requiring PWSs to make publicly available information about LSLs and other information related to lead contamination; and expanding outreach to health care providers serving populations vulnerable to lead poisoning.[116] These proposals would do much to improve PE regarding lead contamination of drinking water, and several suggestions to further improve this facet of the LCR are included below.

However, both the current LCR and the Report leave unaddressed two of the most serious contributors to spikes in lead contamination of drinking water: physical disturbance of lead-containing pipes and period of disuse of lead-containing pipes. These pressing problems are described in further detail below.

Revisions to CCR language

SDWA regulations require PWSs to deliver annual CCRs to customers for any contaminants detected in their water.[117] The Report includes suggested revisions to the language of the CCR for lead to reflect up-to-date science, notify customers of resources available in the national clearinghouse, and emphasize that "customers play an important role in protecting themselves from exposure to lead."[118] As a "starting point," it recommends adding the following language:

> Your water utility is required to minimize the corrosivity of the water. However, because every home is different, the amount of lead in your tap water may be lower or higher than the monitoring results for your public water system as a whole. You can take responsibility for identifying and removing lead materials within your home plumbing and taking steps to reduce your family's risk. If you have lead service lines or lead-bearing materials in your home, [you may wish to have your water tested.][119]

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[116] LCR WG Report at 21-22.

[117] 40 C.F.R. § 141.151(a). The current CCR language for lead can be found at 40 CFR § 141 Appendix A to Subpart O.

[118] LCR WG Report 24.

[119] *Id*. Bracketed portion is language from the current CCR.

Improving the efficacy of CCR is an important goal, but the Report's emphasis on CCR ignores the documented inadequacies of that medium as an educational vehicle.[120] Furthermore, this suggested language does not do enough to inform water consumers of the role the LCR regime expects them to play in protecting themselves from preventable exposures to lead contamination.

Transparency

The Report recommends that the LCR require PWSs to make available to the public information regarding: 1) "the number of samples over the Household Action Level, median, 90th percentile, and highest level found in the last monitoring period" and 2) "CCT treatment, approved WQP ranges and WQP results from the last monitoring period."[121] It also recommends that EPA "encourag[e]" PWSs to provide information on PE materials, sampling protocols, individual sampling results, and inventory/maps of LSLs.[122] These proposals to increase the amount of information available to consumers would be strengthened by *requiring* that PWSs provide the information that the Working Group recommends EPA only *encourage* PWSs to provide.

IV. Issues not Addressed in the LCR Working Group Report

Beyond the discrete issues identified above, the Report omits or gives insufficient attention to two important aspects of the problem of lead contamination of drinking water that must be addressed in the LCR long-term revisions: exposure factors now known to cause spikes in lead levels at drinking water taps, and the persistence of disparities in exposure to lead-contaminated water based on income, race, and ethnicity.

Physical Disturbances and Scale Deterioration

Scientific knowledge of the problem of lead contamination has advanced in the twenty-four years since the LCR was first promulgated. We now know that two of the most significant factors contributing to elevated lead levels in drinking water are physical disturbance of lead-containing pipes and deterioration of protective scales coating the interior of such pipes during prolonged disuse. While the Report mentions both issues in passing, it does not recommend robust actions to address these factors through revisions to the LCR. The gravity of the risk to public health from these two exposure factors warrants greater attention

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[120] Dissent at 8 (citing studies that document or otherwise bear on the inadequacy of CCR alone as a medium for communicating health risks. Among other reasons, CCR is not sufficiently urgent, repetitive, or targeted to those most at-risk).

[121] LCR WG Report at 28.

[122] *Id.* at 25.

Studies by EPA scientists have shown that physical disturbances in particular can cause acute spikes in lead levels, temporarily exposing consumers to dangerously high amounts of lead in their water even in areas deemed safe by current monitoring practices.[123] Any activity that physically disrupts an area in proximity to service lines can cause a physical disturbance, from PWS maintenance to roadwork to private construction. The difficulty inherent in addressing this issue is compounded by the fact that not only PWSs, but a variety of public and private actors outside the direct regulatory reach of the SDWA and LCR undertake activities that lead to such disturbances. To its credit, the Report recommends requiring PWSs to inform other utilities whose work might affect LSLs about how to both manage potential disturbances and communicate with residents of affected homes about risks and risk mitigation measures.[124] This is an important first step in addressing one of the most important contributors to lead contamination of drinking water, but much more needs to be done. We urge EPA to begin immediately exploring mandatory preventative and remedial measures to address physical disturbance in the LCR revisions, including expedited full LSL removal.

Similarly, advances in scientific understanding since 1991 have revealed that effective CCT requires regular flows of treated water to create and maintain the scale that forms a protective barrier between lead pipes and water destined for human consumption.[125] Periods of disuse, such as when a residence is unoccupied, can lead to deterioration of that protective scale. When use resumes, such as when new occupants move in, particles of the scale itself can break off and enter the water. Not only does this leave pipes with gaps in the protective barrier, it creates an acute risk of lead contamination because particles of the deteriorated scale may contain extremely high amounts of lead. This factor is of particular concern from an environmental justice perspective because, among other reasons, foreclosure-related vacancies are concentrated in neighborhoods with large Hispanic and Black populations.[126] The Report does not address this known risk.

As noted in the PE section above, it is imperative that consumers be informed of the dangers posed by physical disturbances and scale deterioration as well as steps they can take to protect themselves and their families. However, PE alone is not sufficient to address the danger posed by these two issues, which also highlight the necessity of removing all LSLs from water systems as quickly as possible, before an event triggers a sudden release of lead into drinking water. In the interim, EPA must take further action to address the threat posed by these issues

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[123] Del Toral, M. A. et al. 2013. Detection and Evaluation of Elevated Lead Release from Service Lines: A Field Study. *ES&T* 47(16): 9300–9307.

[124] LCR WG Report at 18.

[125] Arnold, R., and M. Edwards. 2012. Electrochemical Reversal of Galvanic Pb:Cu Pipe Corrosion. *ES&T*46(20):10941-7.

[126] Matthew Hall, et al., Neighborhood Foreclosures, Racial/Ethnic Transitions, and Residential Segregation (2015), *available at* http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4479290/.

until all LSLs are removed from the nation's water systems, whether in through the revised LCR or some other regulatory mechanism. We therefore also urge EPA to explore mandatory preventative and remedial measures in the LCR revisions to address the particular risks to new occupants of long-vacant homes.

Environmental Justice

Gross disparities in the impact of lead-contaminated water along lines of income, race, and ethnicity persist nearly two and a half decades after the promulgation of the LCR. EPA acknowledged this when it made addressing environmental justice concerns an explicit goal of the LCR long-term revisions.[127] While the Report mentions "important questions of disparate impact and environmental justice," it fails to confront these questions in a manner commensurate to their gravity. In several instances its recommendations would even exacerbate these inequities. As noted above, the well-known consequences of partial LSL replacement fall heavily on those who cannot afford to pay to replace LSLs running under their property. More broadly, because lead contamination affects low-income, black, and Hispanic populations disproportionately, any weakening of LCR's treatment technique or failure to institute an effective LSL replacement program will be felt more acutely by these populations as well.

The "shared responsibility nature of the LCR"[128] is not an excuse to leave vulnerable individuals and communities to fend for themselves in the face of a weakened treatment technique and an aspirational LSL replacement regime with no mechanism for ensuring removal of all dangerous LSLs. The stakes are too high in light of the lifelong consequences of lead poisoning, especially for the young. The revised LCR must address the socioeconomic and racial inequities in lead contamination of water head-on.

CONCLUSION

The LCR Working Group Report contains many good and important suggestions to improve the LCR. It has significant shortcomings and omissions as well. A strength of the LCR long-term revisions process is the opportunity for due deliberation, and EPA should not accept the Report's recommendations without critical examination. As EPA considers the Report and NDWAC's recommendations and proceeds with revising the LCR, we urge that it keep the public health-protective purpose of the SDWA and the interests of environmental justice as the core driving factors in the LCR long-term revision process.

If you have any questions or would like to discuss this matter, please feel free to contact Jennifer C. Chavez at jchavez@earthjustice.org or 202-667-4500.

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[127] EPA, LCR Long-term Revisions White Paper, available at: http://water.epa.gov/drink/ndwac/upload/lcrwgmeetsumaxd32514.pdf (last visited 11/06/15).

[128] LCR WG Report at 19.

Sincerely,

Jennifer C. Chavez, Staff Attorney
Carter Hall, Law Fellow
Earthjustice

Lanny Roy
President
A Community Voice - Louisiana

Wade Rathke
ACORN International

Jane Williams
Executive Director
California Communities Against Toxics

Chris Weiss
Executive Director
DC Environmental Network

Chaco Rathke
Fair Grinds Coffee House

Marc Edwards
Technical Lead on Flintwaterstudy.org

Kent Katner
Hellenic American Neighborhood Action Committee
(HANAC) (for identification purposes only)

Mona Hanna-Attisha MD MPH FAAP
Hurley Children's Hospital (for identification purposes only)
Michigan State University (for identification purposes only)

Dine' Butler
Director
Local 100, United Labor Unions

Beth Butler
Director
Louisiana Roundtable for the Environment

Adrienne Katner, DEnv, MS
Assistant Professor
Louisiana State University Health Sciences Center
School of Public Health (for identification purposes only)

Kari Fitzmorris Brisolara, ScD, MSPH
Associate Professor of Environmental and Occupational Health Sciences
Louisiana State University Health Sciences Center
School of Public Health

Harold R. Katner
Former Director of the
New Orleans Sewerage and Water Board (Retired)

Yanna Lambrinidou
Parents for Nontoxic Alternatives

Marie Hurt
Executive Director
Southern United Neighborhoods

Paul Schwartz
Washington Director
Water Alliance

Melissa Mays
Lee Walters
Water You Fighting For

Cc: Gina McCarthy
Administrator, EPA

Joel Beauvais
Acting Deputy Assistant Administrator
Office of Water

Dr. Ruth A. Etzel, M.D., Ph.D
Director, EPA Office of Children's Health Protection

Matthew Tejada
Director, EPA Office of Environmental Justice

*Signatories and addressees updated on 1/18/16