

U.S. Environmental Protection Agency's
National Drinking Water Advisory Council
Public Meeting

November 30, 2022

Meeting Summary

Chair's Welcome and Council's Introduction

The National Drinking Water Advisory Council's (NDWAC) Designated Federal Officer **Elizabeth Corr** opened the meeting, reviewed logistics, and introduced the NDWAC's Chair, **Lisa Daniels**, Director of the Bureau of Safe Drinking Water at the Pennsylvania Department of Environmental Protection.

Ms. Daniels welcomed everyone to the meeting and said she is pleased to be here to discuss several very important and timely topics. She explained that there would be discussions around both the Lead and Copper Rule (LCR) and the most recent updates regarding the Microbial and Disinfection Byproducts (MDBP) Rule Revisions Working Group. Ms. Daniels then turned to the other NDWAC members, who introduced themselves as follows:¹

- **Yolanda Barney** from the Navajo Nation.
- **Elin Betanzo** from Safe Water Engineering.
- **Scott Borman**, General Manager for the Benton/Washington Regional Public Water Authority and a regional wholesaler in northwest Arkansas.
- **Alexandra Campbell-Ferrari**, Executive Director of the Center for Water Security and Cooperation and Adjunct Professor of Water Law at the University of Maryland and American University Washington College of Law.
- **Shellie Chard**, Water Quality Division Director for the Oklahoma Department of Environmental Quality. Ms. Chard added that she oversees the state's drinking water program, the funding programs, and the Clean Water Act programs
- **Steve Elmore**, Program Director for the Bureau of Drinking Water and Groundwater at the Wisconsin Department of Natural Resources.

¹ NDWAC member **Nancy Quirk**, Director of Green Bay Water Utility, joined the meeting at the start of the consultation on the Proposed National Primary Drinking Water Regulation: Lead and Copper Rule Improvements. All NDWAC members are also listed in Appendix A.

- **Eagle Jones**, Director of Water Operations for the Pechanga Tribal Government and an Instructor of Water Treatment at Palomar College.
- **Jana Littlewood**, Alaska Representative on the Board of Directors for the National Rural Water Association.
- **Jennifer Peters**, National Water Programs Director at Clean Water Action.
- **Alex Rodriguez**, Chief Executive Officer of Diversity Consulting Group and President of the La Cumbre Mutual Water Company Board of Directors.
- **James Proctor**, Senior Vice President and General Counsel of McWane, Inc., a manufacturer of water infrastructure products.
- **Jeffrey Szabo**, Chief Executive Officer of the Suffolk County Water Authority.
- **Mac Underwood**, a Principal Consultant at Raftelis Financial Consultants, Inc.

Ms. Daniels then asked the NDWAC’s liaisons for the Centers for Disease Control (CDC) to introduce themselves.

- **Dr. Arthur Chang** introduced himself as the Chief Medical Officer of the Division of Environmental Health Science and Practice at the National Center for Environmental Health.
- **Dr. Vincent Hill** introduced himself as the Branch Chief for the Waterborne Disease Prevention Branch within the Division of Foodborne, Waterborne, and Environmental Diseases in the National Center for Emerging and Zoonotic Infectious Diseases.

Office of Water’s Welcome

Ms. Daniels introduced **Radhika Fox**, Assistant Administrator for EPA’s Office of Water.

Ms. Fox welcomed everyone, thanked council members for their engagement, and expressed appreciation for the Council’s partnership, expertise, and input on National Primary Drinking Water Regulations (NPDWRs) including the proposed regulation of per-and polyfluoroalkyl substances (PFAS) and especially the work to remove lead in drinking water through the Lead and Copper Rule (LCR). Ms. Fox discussed the Lead and Copper Rule Improvements (LCRI) as a great example of how the Office of Water looks to combine its regulatory authority with the historic new funding under the Bipartisan Infrastructure Law (BIL) to better protect public health under the Safe Drinking Water Act (SDWA). She explained that the Office of Water has been developing the LCRI to address key issues that were identified in the review of the Lead and Copper Rule Revisions (LCRR) and that EPA intends to propose the LCRI for public comment in 2023 and finalize it in 2024. She also highlighted the Administration’s commitment to replacing 100 percent of lead service lines and the \$15 billion down payment through the Drinking Water State Revolving Fund (DWSRF) to achieve this.

Ms. Fox highlighted the Office of Water’s recognition of the unique opportunity that BIL funding presents to prioritize communities struggling with PFAS and other forever chemicals, noting that the DWSRF provides \$4 billion in funding to address PFAS and other emerging contaminants and that an additional \$5 billion in grants is available to support small and disadvantaged communities. She thanked the Office of Ground Water and Drinking Water for their work on getting critical BIL resources out during the past year and noted that as BIL funding has rolled out EPA has been working in close partnership with states and tribes to target disadvantaged communities so that they may use these investments

through grants and forgivable loans, one of the many ways in which BIL funding can be used to help communities adhere to the SDWA.

Ms. Fox also previewed upcoming work shaped by the NDWAC, sharing that EPA anticipates publishing the proposed Consumer Confidence Report (CCR) rule revision for public comment in 2023, with final rule promulgation in 2024, and thanking NDWAC members for their input as well as the seven members who participated in the CCR Rule Revisions Working Group. She also flagged that EPA will be looking for the Council's input on potential revisions to MDBP rules and provided updates on the NPDWR for PFAS as a top priority for the Office of Water, noting that EPA anticipates releasing a proposed NPDWR for public comment very soon and expects to promulgate the final rule by the end of 2024.

In closing, Ms. Fox said that the work of the NDWAC is instrumental to EPA's success and expressed that the team looks forward to hearing from the Council on the LCRI. She again thanked NDWAC members for their work and then gave the floor to **Jennifer McLain**, Director of the Office of Ground Water and Drinking Water.

Office Director's Update

Dr. McLain thanked Ms. Daniels and Ms. Corr for their support of the meeting and thanked the NDWAC members for their current and future work and support, noting that their support and expertise have been instrumental as EPA develops regulatory frameworks like the LCRI.

Dr. McLain provided an update on the Office of Ground Water and Drinking Water's reorganization, which reflects EPA's expanded portfolio provided by Congress under the SDWA including infrastructure investments under the BIL, done to keep up with this increase in responsibilities. She highlighted the new Drinking Water Capacity and Compliance Assistance Division and a new unit within the Water Infrastructure and Cyber Resilience Division focused solely on cybersecurity.

Dr. McLain discussed EPA's focus on implementing the BIL's transformative infrastructure investments, including \$35.7 billion dedicated to drinking water system infrastructure through the DWSRF and the Water Infrastructure Improvements for the Nation (WIIN) Act grant program for emerging contaminants. She discussed how in the past these funds didn't keep up with infrastructure investment needs of disproportionately affected communities and explained that there will now be more funding and outreach to underserved communities, in part through technical assistance programs and outreach to identify and overcome barriers and accelerate the improvement of water infrastructure. She highlighted the Justice40 Initiative, which sets a goal that at least 40 percent of benefits from federal programs flow into disadvantaged communities and includes the DWSRF program, the WIIN Act Reducing Lead in Drinking Water Grant program, and all other funding programs supported by BIL funding.

Dr. McLain mentioned that another BIL priority is to support the resilience and climate mitigation/adaptation of the nation's drinking water infrastructure, including projects that address drought/flooding. She noted that EPA is also looking to use BIL funding to support projects that address cybersecurity resilience. She acknowledged increasing cybersecurity concerns in the water sector and flagged EPA's continuing work with states, other federal agencies, and a variety of partners to develop tools and provide technical assistance, adding that EPA is using a combination of regulatory and nonregulatory approaches to address cybersecurity concerns.

Dr. McLain discussed work with partners and other agencies under EPA's PFAS Strategic Roadmap, noting that last year EPA released drinking water health advisories on four PFAS chemicals,² and again flagged EPA's preparations to propose a PFAS drinking water rule. Dr. McLain reemphasized that BIL funding provides a unique opportunity to bring together regulatory actions and investments in communities that are struggling with PFAS contamination. She also discussed preparations to implement the Unregulated Contaminant Monitoring Rule, which requires monitoring for 29 different PFAS chemicals and for lithium, mentioning that the rule will provide significant support to more small drinking water systems through special appropriations from Congress allowing EPA to find out more about state-wide and regional distribution of PFAS contamination in drinking water.

Dr. McLain highlighted upcoming updates from the MDBP Rule Revisions Working Group, thanking NDWAC members for their support of this work. She clarified that the primary focus of the current meeting is lead in drinking water, including the consultation regarding the LCRI and discussion of EPA's work on using BIL funding to reduce lead in drinking water under current drinking water regulations. Dr. McLain also mentioned two other rules to be released in 2023—the Water System Restructuring Assessment Rule and the CCR rule revisions proposal. Dr. McLain then gave the floor to Ms. Corr.

Public Comment to the National Drinking Water Advisory Council

Ms. Corr reviewed procedures and asked pre-registered speakers to introduce themselves and speak for no more than three minutes.³

John F. Mueller Jr. introduced himself as a concerned activist and retired public works engineer, noting that his career included more than 25 years with water utilities in the public sector, including wastewater and drinking water treatment plant operations and maintenance. He then provided the following comments. He explained that his comment today was a brief recap of the three-page statement he previously submitted, with some supplementary information. He noted that the most immediate issues surrounding water fluoridation include but are not limited to the following. Community water fluoridation since its beginning in 1945 has failed in its mission of preventing childhood tooth decay. Childhood tooth decay is recorded to be at epidemic levels among intercity minorities and other underserved populations. Additionally, he noted that the CDC's water fluoridation program, the Community Water Fluoridation (CWF), recklessly attempts to treat all communities against tooth decay, a treatable oral disease, whether this treatment is needed or not and added that this policy is regardless of the community demographics and without any follow-ups or gathering of informed consent to implement this treatment. Mr. Mueller called for a dramatic paradigm shift if the CDC hopes to achieve its objective of preventing childhood tooth decay. He said that achieving this goal efficiently and effectively will involve dismantling the CWF program. He noted that one comment that was not included in his written public comment submittal is that misinformation and outright falsification can come from pro-fluoridation dentists, which typically include false statements and fear mongering. An example of these false statements came from a recently published press release from the American

² Dr. McLain also thanked the NDWAC for recommendations provided to EPA by the Council in April 2018 for the health advisory process. The recommendations are available on EPA's NDWAC website at: [health advisory letter to administrator 180409.pdf \(epa.gov\)](#) and [health advisory response to charge 180409.pdf \(epa.gov\)](#).

³ Written comments to the NDWAC provided by pre-registered speakers and other members of the public are in Appendix D.

Fluoridation Society who made an attempt to marginalize and denigrate the integrity of the National Toxicology Program (NTP) to support their claim that fluoridation is safe and effective. Mr. Mueller also referenced the recommendations from the National Research Council's 2006 report on fluoridated drinking water. He commented that the EPA now has enough data from high-quality studies and expert testimony in the current Toxic Substances Control Act (TSCA) lawsuit to inform the rulemaking that revises the maximum contaminant level (MCL) and the maximum contaminant level goal (MCLG) of fluoride. He also commented that CDC should dismantle its fluoride program in favor of a more effective, individualized program for improving oral health where it is needed most. Mr. Mueller challenged the EPA Office of Water and EPA Administrator Regan to embrace the intent of the SDWA and reverse the Trump Administration's denial of the citizens' petition filed under Section 21 of TSCA -- the petition to ban the addition of fluoridation chemicals to public water supplies. He stated that this action should be a high priority that falls into the scope of the recently released EPA's fiscal year 2023 top management challenges, which was released by the EPA Inspector General.

Dr. David Kennedy introduced himself as a third-generation dentist and a past president of both the International Academy of World Medicine and Toxicology and the Preventative Dental Health Association. He provided the following comments. He explained that his focus for the last 50 years has been oral health. He noted that hydrofluorosilicic acid (HFSA), or sodium silica fluoride, is the only substance that is added to public drinking water that is not related to water treatment. Dr. Kennedy stated that fluoride is contaminated with lead and arsenic, which is not an argued fact. In the California v. Coshow lawsuit, the State of California stipulated that sodium silica fluoride is contaminated with arsenic at a level that increases the cancer death rate from the bladder and lungs. He stated that fluoride was still used in drinking water due to a claim that was made in 1945 that is not supported by the scientific literature, adding that there are no broad-based, blind studies of animals or humans that have shown that adding HFSA to water reduces tooth decay. Dr. Kennedy also noted that lead is chelated by HFSA. As an example, he discussed how, when San Diego began to fluoridate their water supply in 2011, they removed 160 drinking water fountains because HFSA chelates lead from brass. There is even a patent for this chelation process in the U.S. Patent office. He noted that it was in the purview of the U.S. EPA and CDC to prevent this process from continuing to occur since the funding for fluoridation is coming from the U.S. government. He noted that the argument for water fluoridation is to decrease public tooth decay, but a side effect is that some individuals who are not provided informed consent will unwillingly develop dental fluorosis. Dental fluorosis is a physical indication of a fluoride overdose and occurs in 100 percent of cases where babies are fed fluorinated tap water at the EPA's MCLG. He noted that the MCLG level is supposed to be representative of levels that are the safest for human health, but with high cases of dental fluorosis at this level, this level is not safe. He explained that dental fluorosis is also linked to mental fluorosis and bone fluorosis, meaning current fluoridation levels poison babies' brains, bones, and teeth. Dr. Kennedy asked the EPA and the CDC to take their position in human health seriously and promote oral health through safe water. He noted that even advocates for fluoridation and the American Dental Association (ADA) acknowledge that fluoridated tap water should not be given to babies to avoid harmful impacts such as dental fluorosis. He also said that the argument that fluoridation is good for the greater good is not supported since the U.S. Food and Drug Administration (FDA) has never approved any fluoride-containing substance intended to be ingested for the purposes of decreasing tooth decay. He asked the EPA and CDC to do their job and promote oral health and safety by not allowing infrastructure funding to go towards adding more HFSA to the water. He acknowledged that this task may garner pushback from the industry.

Karen Spencer introduced herself as a citizen who has been harmed by municipal water and provided the following comments. She explained that the SDWA says that no national agency can require any substance to be added to water for the purpose of treating people. However, national agencies and private partners spend hundreds of millions of dollars annually to promote fluoridation policy. She noted that the 2006 National Research Council advised EPA that its MCLG of 4 parts per million (ppm) for fluoride in drinking water was not protective of human health and stated that, since this recommendation, EPA has done nothing to address the MCLG for fluoride. Moreover, Ms. Spencer noted that the 2006 National Research Council (NRC) advised that there was significant evidence of harm to bodies, brains, and bones from fluoride in drinking water with concentrations deemed safe by the EPA and no safe concentrations for susceptible subpopulations such as pregnant women and their fetuses, bottled fed infants and young children, the elderly, and those in fragile health. Yet, the EPA has done nothing in 16 years to address this gap in science. Ms. Spencer noted that 99 percent of fluoridation chemicals added to municipal water go directly into the environment, along with arsenic, aluminum, barium, palladium, manganese, lead, and others. She said that this pollution, much of which is imported from China and Mexico, persists in our environment. However, she said that EPA has enabled easement for these contaminants and subcontracted oversight of these to a private agency in an effort to put distance between EPA and the intentional pollution of communities across the U.S., acting willfully blind to the accumulative impact on the general population from water sources. Ms. Spencer also said that EPA's maximum and secondary contaminant levels of fluoride cause misery in millions of Americans and that EPA, among other fluoride advocates, does not care about the damage this chemical additive causes. She explained that these groups will spend hundreds of thousands of dollars to protect the profit of the fluoridation policy, which is in violation of the SDWA and explicit regulations under TSCA, rather than following their mission to protect public health and the environment. Ms. Spencer discussed a study from 2021 that used benchmark dose analysis and found that 0.2 ppm of fluoride in drinking water has a similar adverse effect on babies' brains to lead. Other studies have documented that 0.5 ppm of fluoride impedes normal thyroid function. She elaborated that fluoridation schemes target 0.7 ppm concentration and diabetics and kidney patients who drink excessive amounts of water, and therefore consume higher doses of fluoride than the average person from optimally fluoridated municipal water, are trapped in a vicious cycle that damages kidneys. Furthermore, an analysis of recent National Health and Nutrition Examination Survey (NHANES) data show that adolescents living in fluoridated communities have blood markers suggesting they are at heightened risk of kidney and liver disease. Just as fluoride pollution accumulates in the environment, Ms. Spencer noted that studies have also shown the potential for fluoride to accumulate in bones where it causes inflammation and makes the bones more brittle in populations that have consumed more fluoride over time. However, she said that EPA continues to protect its fluoride policy rather than protect people. She closed her comments by saying that fluoride facilitates the absorption of lead, copper, and other metals into the body. Additionally, fluoride leaches lead and copper out of drinking water infrastructure. The Sandy City, Utah overfeed in 2019 ruined appliances and sickened people which resulted in trips to emergency rooms and in hospital visits for many, including at least one infant.

Dr. John William Hirzy said he was originally hired by EPA in 1981 as a GS-15 Senior Scientist in the Office of Pesticides and Toxic Substances. He provided the following comments. He explained that he was hired at this level based on his experience in industry working on risk assessment and management. While at EPA, he helped organize and serve as president of the labor union that represents EPA professional employees at Headquarters. He noted that the union was organized under the premise of

protecting employees' right to scientific integrity in the workplace. Dr. Hirzy's subject matter expertise is fluoride developmental neurotoxicity, scientific integrity, and the long-past need to have a health advisory issued to pregnant women by EPA to avoid fluoridated water. He noted that he got involved with fluoride issues as a union officer to represent the interests of employees. The union was approached in 1985 over the concern that EPA's proposed health-based drinking water standard at 4 ppm of fluoride violated scientific integrity and was not protective of public health. The National Academy of Sciences (NAS) also found EPA's ruling to not be representative of public health protection. He noted that other union members brought the subject of drinking water fluoride levels up to the director of the Office of Drinking Water and were rebuffed. Dr. Hirzy and the other union members began a study of this subject on their own time. By 2006, the NAS published a report titled "Fluoride in Drinking Water" which says, "it is apparent that fluorides have the ability to interfere with the functions of the brain." In 2017, a petition had just been filed with EPA to ban the addition of fluoride chemicals in drinking water based on the extant research on the impact on development and neurotoxicity. A lawsuit was then subsequently filed pursuant to that goal and is now pending. Between the time of the petition being filed and now, more research has been published on the neurotoxicity of fluoride. Dr. Hirzy's main point was that peer-reviewed U.S. and Canadian government-funded prospective epidemiology studies of urine fluoride levels in pregnant women and their offspring have shown statistically and clinically significant decrements in Intelligence Quotient (IQ) of offspring that have been exposed in utero to fluoride levels typical among women drinking fluoridated water. Based on these data, he asked EPA when a health advisory would be promulgated for pregnant women. He also cited peer-reviewed and published ecological studies which found an ecological relationship between fluoridated water and attention deficit hyperactivity disorder (ADHD). The National Toxicology Program (NTP) announced in 2019 that "fluoride is a presumed neurotoxic hazard" based on extant data. He explained that since these data have been published it has had five peer reviews on a study called "State of the Science," the latest version of which was published in May 2022. He noted that most chemicals only have one peer review from NTP that is open to the public. The peer reviews for the NTP study on fluoride have been kept secret and the director of NTP said that he is not sure if they are ever going to publish the findings from their study. Dr. Hirzy explained that this situation indicates that there is political influence on the use of fluoride and suggests that the EPA pay attention.

Brenda Staudenmaier provided the following comments. Ms. Staudenmaier asked the audience why anyone would purposefully add industry garbage to public drinking water. She explained that fluoride is fertilizer waste that is known to be contaminated with lead and arsenic. Furthermore, lead and arsenic levels in fluoride chemicals violate EPA's goal of no presence of these contaminants. Ms. Staudenmaier introduced herself as a member of the Wisconsin water industry and explained that she has been studying fluoride since her friend died of a rare bone cancer over a decade ago. While her friend was dying, a study out of Harvard was published examining boys' drinking fluoridated water during a critical window of susceptibility with a higher risk of bone cancer. She found a sufficient number of studies that found fluoride at levels relevant to fluoridated communities was harmful to human health and was met with a lot of resistance from fluoride promoters. She stated that fluoridation is not required by EPA and said that the SDWA prohibits the addition of any substance to drinking water for preventive healthcare purposes. She also stated that the CDC provides recommendations for optimal levels of fluoride in drinking water in order to prevent tooth decay; however, the CDC is neither for nor against any specific fluoride legislation. She said that fluoride is just as toxic to the brain of a fetus and developing baby as lead exposure. She added that government spends billions to eliminate lead in drinking water while

governmental agencies seem to turn a blind eye to fluoride neurotoxicity evidence and accompanying lead contamination. She noted that the NTP is currently doing a systematic review of fluoride exposure in neurodevelopmental and cognitive health effects and explained that in this study the NTP has identified over a dozen studies identifying fluoride causes permanent brain harm at or below levels of 0.7 ppm. She said that fluoride promoters distract us from low levels causing harm and instead focus on levels of 1.5 ppm and above. Ms. Staudenmaier said that it is estimated that over 4.5 million IQ points are lost per year due to fluoride neurotoxicity, costing \$100 billion per year in economic damage. She stated that these costs are much more than the commonly stated and overexaggerated dental benefits from the addition of fluoride. Furthermore, she said it is estimated that about 70 percent of today's children have some form of dental fluorosis, which is a pathology expensive to fix with veneers and not covered by dental insurance. Ms. Staudenmaier explained she and her children are plaintiffs in a lawsuit about TSCA against EPA over the neurotoxicity of fluoride chemicals added to the public drinking water supply. She thanked EPA for their time.

Natalie Perry introduced herself as a mother of four children living in the pacific northwest of Washington and provided the following comments. She explained that keeping harmful toxins away from her children is a continual challenge. She noted that lead is associated with all kinds of health challenges such as impaired brain function and development. Understanding the harm that lead does during development is permanent, she would have thought that anything that increased a child's absorption of lead should be identified and eliminated. While Ms. Perry does what she can to provide a clean and safe home for her children, she noted that fluoridation additives are chemicals that her children come in contact with daily that increases her family's absorption of lead and is brought directly into her home via her water utility service through fluoridation. She explained that health surveys from the CDC show that children living in artificially fluoridated communities have higher levels of lead in their blood compared to non-fluorinated communities. This impact is exacerbated when individuals live in older homes, which concerned Ms. Perry since she lives in a community that fluoridates artificially and in a mid-century home. She noted that research has also indicated that cities that fluoridate water experience changes in water pH levels, which contributes to the pipes leaching lead. Additionally, animal studies have shown that when there is co-exposure to both lead and fluoride the lead blood levels are three times higher than when animals are exposed to lead alone. Ms. Perry explained that these studies indicate there is a serious negative synergy between lead and fluoride. Furthermore, fluoride additives are contaminated with toxins such as lead. Ms. Perry's own city uses an additive that has lead in the raw product and all fluoridated chemicals are contaminated with some toxins. She stated that since fluoride encourages the body to retain and absorb lead, even a trace amount of fluoride in water should be cause for alarm. She explained that even if the concern for lead exposure was completely eliminated, fluoridation chemicals still have a negative effect on children's brain development. She said that National Institute of Health-funded studies have demonstrated that children living in fluoridated communities have decreased IQ compared to those living in non-fluoridated ones. Furthermore, she said that behavioral disorders and learning disabilities are more prevalent in communities with artificially fluoridated water. As a mother, Ms. Perry is disturbed that people are encouraged by EPA to drink a chemical that exacerbates the damage that lead does. She expects government agencies to safeguard human health rather than intentionally expose children to neurotoxins and subsequently add lead to our drinking water. She stated that no matter the proposed benefit of fluoridation chemicals, it could not be more important to the cognitive health of children. She said that the council would be remiss not to see how fluoridation programs undermine the efforts made to reduce lead exposure for children. Ms. Perry

asked EPA to lower the MCLG for fluoride to zero. She closed her comments by thanking the Council for listening to her concerns.

Consultation on Proposed National Primary Drinking Water Regulation: Lead and Copper Rule Improvements

Ms. Daniels introduced **Hannah Holsinger**, Supervisor for the Regulatory Assessment and Development Branch, Standards and Risk Management Division, in EPA's Office of Ground Water and Drinking Water; and **Michael Goldberg**, the LCRI Team Lead in the Regulatory Assessment and Development Branch.

Mr. Goldberg indicated that the meeting purpose was to solicit input from the NDWAC members on the proposed LCRI. He provided background on lead in drinking water and the LCR, an overview of the LCRR published in January 2021, and annualized cost estimates from the LCRR economic analysis that had been inflated to 2021 dollars. Mr. Goldberg also provided a summary of the outcome of EPA's review of the LCRR that was published in the December 2021 *Federal Register* and the agency's plans to propose and finalize the rule. Mr. Goldberg then read the questions, which are delineated below with NDWAC members' comments categorized by topic area, developed by EPA to collect input and generate discussion among NDWAC members.⁴

Topic 1: Achieving 100 Percent Lead Service Line Replacement (LSLR)

Mr. Goldberg presented the following guiding questions and **Ms. Daniels** facilitated the Council's discussion.

- How quickly can systems achieve 100 percent LSLR?
- What factors impact a system's rate of LSLR?
- What barriers exist for engaging customers about full LSLR?
- How can systems ensure equity in replacements?
- What are the most effective and equitable ways for water systems to replace LSLs?

Mr. Borman stated that achieving 100 percent LSLR will depend on each system's size and funding availability. He noted that larger systems often have crews at their disposal while smaller systems do not. He said that this broad question does not really have a good answer that he could supply from a utility standpoint.

Ms. Chard started by thanking EPA for preparing these presentations and discussion questions. She agreed with everything that Mr. Borman said and also mentioned the difficulty of supply chain issues, noting that these issues have been affecting every part of the industry and that things that used to be quick and easy to obtain now take much longer to get to utilities. Ms. Chard also described the costs of construction projects—which she suggested are rising to anywhere from 25 percent to 45 percent higher than six months ago—as outpacing the rate at which funding is happening, even when taking the funds provided by the BIL into consideration, and emphasized that this will extend the timeline for systems looking to complete 100 percent LSLR. She also said that there are states and localities that prohibit using public funds to construct on private property, plus a number of other political and legal barriers. Regarding equitable ways to provide full LSLR, Ms. Chard said that every system will have to

⁴ Mr. Goldberg's presentation is in Appendix B.

look at its situation and determine the best course of action. She added that progress on full LSLR will be very dependent on homeowners' ability to pay for their private side replacement, which could result in a focus on only the wealthiest communities to complete full LSLR.

Ms. Quirk stated that Green Bay replaced all LSLs over the course of five years. She discussed how finding an inventory of LSLs proved to be a major difficulty and noted that the city had to get into more than 2,700 homes to inspect and replace private side lines and plumbing. She added that they are still working on the private side of their galvanized lead program. Ms. Quirk also addressed the private side funding issue brought up by Ms. Chard, saying that Wisconsin also does not allow federal funds to be used on private side plumbing, adding that the state used Safe Drinking Water provided funds to pay for LSLR in Green Bay. She also suggested that states could combine BIL funding and Safe Drinking Water loans to provide to lower-income households. She emphasized that not all people want to get their lines replaced and suggested that states need to get people involved in the process; for example, Green Bay had to get ordinances to replace some LSLs. She agreed on the difficulties that current supply chain predicaments present.

Mr. Elmore stated that the rate at which full LSLR can be completed depends in large part on each system's motivation. He said that in Wisconsin they found that the systems that performed full LSLR the quickest were looking to avoid installing corrosion inhibitors (orthophosphate). Mr. Elmore said that if EPA were to require full LSLR over a certain amount of time, this would be a significant motivator to get systems working on replacement. Other factors that may impact the rate of LSLR in Wisconsin include staff resources at the system level and financial resources, local political support and community motivation, the quality of the inventory, the availability of materials and labor, and the timing coinciding with highway or road projects that may be outside the control of the water system. In terms of an equitable approach to fully replacing LSLs, Mr. Elmore listed the following steps that could be taken: Prioritizing customers with multiple pathways to lead exposure, neighborhoods with high environmental justice (EJ) scores, and communities with high-risk populations; providing funding to vulnerable communities; establishing local ordinances to require full LSL replacement; following health and safety precautions when conducting LSLR (*i.e.*, offering filters before, during, and after replacement); offering a diversity of outreach materials in all relevant languages; engaging with well-known and respected community members to deliver messaging (community organizers, health organizations, etc.); and staggering construction and replacement projects. Mr. Elmore also provided some LSLR costs for Wisconsin, averaging around \$4,600 per replacement with a range of \$2,200 to \$13,000 per replacement. He concluded by thanking EPA for the presentation and for the opportunity to comment.

Mr. Jones agreed with everything that Mr. Elmore mentioned. In response to the question on equity, he said that states treat all systems equally in regard to health, safety, and deadlines; however, ensuring equity across the board is more difficult. He noted that cost estimates and system needs are going to be very different for each system; that small systems don't have full construction crews; and that inventorying will also be difficult for many communities. He emphasized that it may be necessary for states to be a little more intrusive into these systems, asking: Do they have the manpower and the funding, and do they have the amount of time necessary to complete LSL tasks or do the timelines need to be adjusted? Mr. Jones thanked everyone for their comments.

Mr. Proctor stated that eliminating all LSLs will take substantial time and resources and noted that many disadvantaged communities where there are more LSLs will remain vulnerable over the course of this

time. He stated that lead leaching was most often caused by failing to maintain proper water chemistry, leading to corrosion of LSLs. He suggested that EPA consider engaging utilities to embrace new technologies that allow them to monitor water quality in real time instead of tap sampling every now and then, adding that if monitoring occurred continuously utilities could react before the situation becomes a crisis. He said that technology that performs continuous monitoring does exist and is relatively affordable.

Ms. Betanzo asked EPA to reconsider their definition of an LSL, which was revised to no longer consider lead goosenecks. She emphasized that lead goosenecks should be added back into the definition of an LSL since a gooseneck is a part of distribution and thus contributes to lead exposure. Ms. Betanzo also listed several barriers to participation that exist: The public/private dividing line (who is conducting the replacement, who pays for the replacement based on the ownership, etc.); overly complex paperwork when applying for grant programs; and that many residences have a lack of information and/or incomplete information on the risk of lead in drinking water and LSLs, requiring a real shift in messaging. She also emphasized that there was a need for EPA to highlight that the cost of and the work done on LSLs should be integrated into the rest of the water infrastructure work being done on a regular basis. In order to ensure that all LSLs can be replaced, Ms. Betanzo suggested that there be local ordinances and requirements within the LCR that require full replacement of LSLs. There also need to be multiple ways and funding methods to “catch” the residents that need LSLRs. She emphasized that, at the same time, states must ensure against jumping around from property to property so there are not increases in prices. She concluded by stating that where service line material records are not extensive, 100 percent verification is critical for equitable replacement of LSLs.

Ms. Peters said that a lot of what she wanted to say had been brought up already. She mentioned that if states truly want all LSLs to be replaced, they cannot expect everyone to pay for their own private side; using this approach would allow for only those who can afford it to get lines fully replaced. She said that there also needs to be prioritization of the most vulnerable communities and people, especially when considering supply chain issues. She shared an example of one way that Denver Water ensures equity with LSLR. The water system conducted a health, equity, and EJ analysis to identify communities that have multiple EJ factors that they’re facing as well as homes that are likely to have young children and are more at risk for lead exposure. They ensure that those customers are getting prioritized for replacement and make sure that the LSLR rate for homes most at risk is equal to or greater than the total replacement rate. She added that states must look at total replacement rates for these communities and make sure they are greater than or equal to that of other communities in an effort to make sure they do not get left behind.

Ms. Daniels thanked participants for their helpful comments so far. She stated that the first major challenge is locating LSLs. She pointed out that previous regulations only required inventories for sampling purposes – by no means were the inventories extensive. She further pointed out that inventorying will be most of the work that will be done between now and October 2024 and that completing an inventory is easier said than done. Even after establishing inventories, there remain questions regarding how many systems will end up with lines composed of undetermined materials and when do you start requiring systems to replace those. She observed that states may also have to get a little more realistic about the availability of construction crews, as BIL funding is being made available for many different types of infrastructure and will result in a significant increase in demand for

construction crews. She then circled back to Ms. Holsinger and Mr. Goldberg to see if they had any other questions or comments regarding complete LSLR.

Ms. Holsinger and **Mr. Goldberg** stated that they did not have anything to add and thanked council members for their involvement and feedback.

Eric Burneson, the Director of the Standards and Risk Management Division in EPA's Office of Ground Water and Drinking Water, asked whether anyone could provide greater detail on the supply chain issues that systems are facing.

Ms. Chard replied that supply chain shortages and delays were affecting everything from materials and equipment to personnel.

Mr. Borman reaffirmed this statement. He stated that they have projects on hold because of the lack of availability of construction crews. He noted that shortages and delays of pipes and other materials have also occurred rather often and added that systems could be waiting six to eight weeks for small-sized materials and 24 to 48 weeks for medium-sized materials. He further added that the 15 to 20 percent increase in prices on most materials and many different people competing for materials as they take advantage of BIL funding must also be taken into account. Mr. Borman did not envision the supply chain issues getting much better any time soon.

Mr. Burneson also asked for clarification about what Ms. Betanzo's statement on 100 percent verification would entail. He asked whether or not this would be excavation of service lines.

Ms. Betanzo confirmed that this would involve getting eyes on every service line, as this seems to be the only way to clearly identify lead. She said that in the future technology may progress further for this but as of now it is not there. She suggested potholing may be an option and referred to Denver's approach as an example of the implementation of a great method for identifying LSLs. She emphasized again that, when there is a question about a service line, having true verification and not just a records-based review is important in making sure everyone's LSLs get replaced.

Mr. Burneson asked for reactions regarding this response.

Ms. Quirk said that a lot of records that utilities have include indications of when they began and stopped buying lead pipe materials. She noted that Green Bay has kept records since 1886, and that Madison has kept records of lead pipe procurement and stopped purchasing lead pipe in 1927, which means it can be assumed that there were no new lead pipe installations after the 1940s. She noted that in Wisconsin they have meters and whenever a meter needs to be changed or replaced, records are made about the pipe materials. She also explained that at the curb stop at the terrace of private properties service crews can hydrovac down and examine either side of the stop to determine the pipe material. She explained that in Wisconsin they also use a camera to run through the service line and identify pipe material; however, her utility, as a small to medium utility, has 36,000 service lines, and other utilities may have even more service lines, which represents a daunting task to use cameras. She explained how, to further complicate matters, the pipe material could change in between the curb stop and the meter. Ms. Quirk also discussed how, when examining older homes (*e.g.*, built before 1945) where LSLs are more likely to be present, her utility prioritized them by entering and conducting LSL inventories. She added that, although her utility did not see LSLs in homes built after the 1940s, they

continued to visit private homes and continue with meter replacements. She noted that making assumptions about pipe materials is essential to completing LSL inventory work in a timely manner.

Mr. Borman agreed with Ms. Quirk's suggestion of conducting inventories when servicing meters and curb stops. He noted that his utility has used cameras in smaller systems to evaluate pipe materials. He explained that all inventories go back to relying upon existing service line records, since construction on each private property is unrealistic, and further described difficulties regarding public non-acceptance of digging up yards to verify service line material. Mr. Borman also emphasized the difficulties of entering private property, referring to the difficulties of accessing private housing at smaller systems to install and maintain point of use (POU) devices and explaining that most small systems will let utilities in to install and maintain POU devices, but there will always be a pushback on entering private property. He observed that he always had an issue with EPA's allowing POU devices because of this.

Ms. Betanzo mentioned a Water Quality Technology Conference presentation describing how the City of Denver had reviewed their potholing data and found value in not potholing at the curb stop; they were getting better information from areas where they are not traditionally potholing or hydrovac-ing. Ms. Betanzo said that she wanted to revisit these data at a later time. Ms. Betanzo agreed with earlier commenters that it is useful to know the record of a town's LSL installation so LSLR or LSL inventories can be prioritized based on the highest risk. She explained that she has seen that the programs that work at a neighborhood scale can efficiently verify the service lines of all homes and provided the example of Benton Harbor. Within this context, Ms. Betanzo said doing a 100 percent check of all service lines within homes located in a small city and older homes was logical in some situations. Ms. Betanzo also said that she has noticed that some waste line excavations in her neighborhood leave a pile of dirt on people's yards, which she noted is off-putting for residents. She explained that when residents are later approached for LSLR, they imagine a similar situation where the job is done haphazardly; however, she explained, for the majority of LSLRs, especially when there is not full excavation, one cannot tell whether work has been done unless they need to hit the pavement. She concluded that there is a huge opportunity for outreach in the form of pictures, videos, and demonstrations of private property LSLR to provide residents with more context about what the experience is like.

Ms. Quirk followed up on Ms. Betanzo's comment and emphasized the importance of public outreach. She suggested that public outreach should not just involve CCRs and direct messages. Ms. Quirk noted that her utility has used public outreach via surveys to have private property owners self-identify if they had LSLs. She explained that a large portion of the survey respondents claimed they had LSLs, but when the utility went out to physically check these locations there were significantly fewer LSLs than reported. Ms. Quirk noted that, despite public education materials, the utility still needed to check all service lines manually to determine the material. She concluded that public education will be a huge tool for utilities going forward as they pursue LSL inventories with their residents.

Ms. Campbell-Ferrari commented that the discussions indicated there is a workforce development opportunity. She noted that her organization has worked with non-profits and other advocacy organizations who frequently discuss the fact that rural, smaller, and low-income communities have fewer experts who can actually do work. She discussed matching these communities with the few experts and construction crews with low job opportunities as a huge opportunity to improve the workforce in these areas. Ms. Campbell-Ferrari also discussed the issue of equity with LSLR, explaining that with BIL funding there is a huge opportunity to support and raise up communities, including within

communities, that have been historically discriminated against and cannot bear the burden of higher rates. She noted that there needs to be prioritization of funding towards LSLR in these vulnerable communities since there are other ratepayers that can afford potential rate increases from LSLR. She concluded by restating the importance of tying BIL funding to LSLR work in disadvantaged and primarily Black, Indigenous and People of Color (BIPOC) communities going forward.

Topic 2: Tap Sampling and Compliance

Mr. Goldberg presented the following guiding questions and **Ms. Daniels** facilitated the Council's discussion.

- Should EPA require systems to collect both 1st and 5th liter samples at LSL sites and use the higher concentration in the 90th percentile concentration for lead?
 - What potential challenges may systems face when complying with an updated tap sampling protocol?

Ms. Quirk commented that her utility provides sampling bottles to homeowners at night and asks them to test in the morning after they have run the toilet or the sink for the first time. If 1st and 5th liter sampling were required, utilities would need to provide homeowners with five bottles. She explained that she has been on some workgroups that have found that the highest lead concentrations may be in the 6th or 7th liter of sampled water; however, the first sample out of a faucet may also contain lead. Either way, Ms. Quirk explained, each sampling method showed the concentrations of contaminants a resident may consume.

Mr. Jones agreed with Ms. Quirk and said that not all systems are created equal and, therefore, service lines will vary in length. The 5th liter sample may not be a good representative sample based on service line length, and a 1st liter sample may be better for shorter lines, whereas as a 6th or 7th liter sample may be more representative for longer service lines. He said that the other challenge will be training customers to conduct this new sampling. Mr. Jones explained that asking a customer to get one sample is difficult enough, let alone trying to get them to get five samples accurately. He added that small water systems will experience these issues more significantly when implementing this new sampling approach.

Ms. Chard agreed with the previous comments. She noted that this rulemaking may be an opportunity for EPA's Office of Research and Development, EPA research laboratories in general, the regional labs, and the NDWAC to work together to come up with a new method to conduct samples that is representative of line length and age of faucets. She also noted that the largest action item for the next year is to increase public education outreach in order to increase willingness to take samples. She explained that her organization has worked with water systems that have tried to get customers to allow the city to come in and take the samples. While this process comes with many different challenges, the largest challenge is getting the workforce necessary to have sampling occur in several different residential locations before water is used in a household.

Ms. Betanzo said that Michigan has been conducting 1st and 5th liter sampling since 2019 and suggested that EPA look to this example to see how implementing this sampling technique is going in real life. She noted that she published an analysis of Michigan's sampling data in the American Water Works Association (AWWA) Water Science Journal that EPA can review. She said that the sampling procedure was complicated at first but now Michigan water utilities are getting used to the sampling. She agreed

with past commenters who noted that the 5th liter is not always the highest lead sample, but, she said, there is a balance between making a clear and implementable rule and getting the perfect liter of water. One thing that some water facilities have done to facilitate sampling is to use the 1st liter bottle and then use a three-liter container to catch water in between the 1st and 5th liter. She noted that the three-liter container could be in the form of a pitcher that could be left with the resident as a gift for participating in the program. Ms. Betanzo acknowledged that in the LCRR it was a 5th liter-only sample for LSL sites. She encouraged EPA to keep the 1st liter sample along with the 5th liter because it is best to have consistent data and adding the 1st liter would provide context to previous datasets. She explained that the 1st liter also helps capture information about the household plumbing contribution to lead contamination since the LSL is not the only source of lead in the home. She added that, furthermore, plumbing also is more likely to leach copper and the 1st liter will help catch copper from plumbing structures in the sample. Ms. Betanzo concluded that there are many reasons for keeping the 1st liter sample and monitoring for both lead and copper in that sample.

Ms. Campbell-Ferrari said that in addition to the technical aspect it is also important to think about the practical aspect of sampling. She discussed, for example, that one must consider when someone typically drinks water out of the faucet and whether someone is more likely to drink water immediately when the tap is run than to let the water run for a moment before drinking the water. Based on this practical aspect, she noted that both the 1st and 5th liter sample are important because copper and lead can come out at multiple points and consumers may drink tap water immediately or let the water run.

Mr. Elmore said that requiring public water systems to complete 1st and 5th liter sampling will make sampling more challenging; however, there will also be logistical challenges with obtaining, delivering, and shipping extra bottles or even with Ms. Betanzo's idea of a sampling pitcher. He noted there will be educational challenges in explaining this new sampling routine to homeowners and there will likely be sampling errors that occur at a greater frequency. He furthermore noted that more samples will also cause logistical challenges for labs since it will double the need for lab capacity compared to the current rule. He also explained that the current LCRR requires systems to prioritize sampling at LSL sites and if more than the required number of samples are taken to only count results from LSL sites, saying that this approach will not make sense if systems are only taking the 1st liter sample because the 1st liter sample measures the lead levels of water stagnating in fixtures and premise plumbing. Mr. Elmore said that if we really want a picture of what is stagnating in the LSLs at these required LSL sampling sites, taking the 5th liter is necessary regardless of complications that may come from taking both the 1st and 5th liter samples. He noted that Wisconsin recently required all small and medium municipal community water systems with LSLs and no corrosion inhibitor to conduct sequential sampling at homes with LSLs. In these systems, peak lead levels were often found to be two to ten times higher than the 1st liter sample. Therefore, he noted, Wisconsin has certainly seen that the 5th liter or some other sequential sampling value was a lot higher than the 1st liter sample in lead. Mr. Elmore said that Wisconsin understands that the 90th percentile is intended to be a measure of corrosivity in water and not a representation of the worst-case scenario; however, measuring lead levels of water that may have been stagnating in plastic piping materials is not an accurate reflection of water corrosivity, which is what the 1st liter sample would be measuring. Finally, he noted that the "find and fix" provision in the LCRR suggests that compliance sampling is intended to serve the dual purpose of measuring corrosivity of water and identifying and addressing the worst-case scenario. He concluded by saying that the 1st liter

sampling at LSL sites does not actively protect public health and meet the previously stated two objectives.

Ms. Daniels agreed with a lot of the comments presented on sampling. She reiterated that this is one of the most complex rules there is when it comes to monitoring because systems have to rely on the homeowners to monitor; therefore, there is always a concern over the potential for increased sampling errors and homeowners removing themselves from the sampling pool when monitoring becomes even more complicated than it already is. She said that she has heard that getting volunteers to be a part of a sampling pool continues to be a problem for water systems and added that water systems have attempted to use incentives such as payments to get more volunteers to sample. For example, Ms. Daniels said that her state had a program where they provided a \$50 credit on homeowners' utility bills or an outright payment to those who volunteer to join the sampling program. She noted that she believes the science informs that both 1st and 5th liter samples are necessary, and therefore, there will be a need for trainings to make the learning process more straightforward for sampling volunteers. She suggested making YouTube tutorials to show how to sample and to explain the process of laboratory analysis. Ms. Daniels concluded with a discussion on the topic of water quality parameter (WQP) sampling. She noted that although lead and copper sampling is important, the other means that EPA has to ensure proper optimized corrosion control treatment, which in turn leads to lead control, is if WQPs are in control. She said that EPA should monitor the frequency of WQPs and the distribution of monitoring across a system to ensure effective, continuous, and consistent treatment through actions such as pH adjustment or inhibitor concentrations. This would also ensure equitable water quality when looking at these sample values across a water distribution system.

Ms. Betanzo added that a method she has seen be effective for recruiting community members for sampling and for recruiting homeowners for LSLR is to form strong community relationships through partnering with community members, community block leaders, and people who generally live in the community. She noted that there is also an opportunity to hire community ambassadors to do community outreach instead of water utility contacts. Ms. Betanzo suggested a certification program for LSLR, including information on more complicated sampling, to which new contractors can refer to indicate they have training in LSLR. She suggested that this will help these contractors build business and scale up quickly. She added that the certification program would also allow additional training from EPA to make sure LSLR and lead sampling are being completed well and would further EPA's LSLR goals.

Ms. Barney commented on school systems and their sampling protocols. She explained that her area had a school that had automatic dispensers for water due to COVID. She noted that there was no effort to conduct flushing and described how her agency had to work with the school to change infrastructure so they could conduct sampling. She said that sampling protocols are good ideas but that there needs to be oversight so they are implemented correctly.

Ms. Campbell-Ferrari built on Ms. Betanzo's earlier comment by saying that using high schools or school systems in general to build student participation in lead sampling would be a great way to get kids excited about science as well as get their parents more excited about the process. She explained that having their children involved could get parents more invested. Ms. Campbell-Ferrari acknowledged that some sampling requirements may be complicated and may require older students, such as high school or college, but this could generally engage student populations. She mentioned that a group in Michigan

had spoken about a successful student-led initiative. She asked EPA, if it is possible, to consider this idea in the rulemaking.

Topic 3: Reducing Rule Complexity

Mr. Goldberg presented the following guiding questions and Ms. Daniels facilitated the Council's discussion.

- What are the opportunities and challenges related to complying with a revised action level (AL) and trigger level (TL) construct?
 - What potential revisions to the AL/TL construct could reduce rule complexity?
 - Should EPA maintain the TL?
 - What is a feasible AL lower than 15 ppb?
 - Should additional steps be required to be taken to protect public health in systems with sustained levels of lead above the AL?

Ms. Chard commented that the TL in addition to the AL could increase rule complexity and noncompliance and recommended that EPA consider what is to be gained from including both metrics and whether the gains are worth potentially increased complexity. Ms. Chard explained that this change should also be considered in the context of practicality of application in the field when it comes to the levels chosen (*e.g.*, an MCL or an AL). She said that the State of Oklahoma would prefer not to have a TL in addition to an AL.

Ms. Betanzo commented that the complexity of this rule needs to be reduced, and that it needs to be made implementable, clear, and straightforward. She said that adding a TL to the rule would only add to the rule complexity, making it even harder to be proactive about lead issues because there will be two sets of criteria to be followed instead of one. She requested that EPA make this rule as proactive as possible because lead is a potent neurotoxin with no safe level of exposure. Ms. Betanzo suggested that responding to an AL would be a responsive action rather than a proactive action to avoid lead exposure. She said that a more straightforward and simple approach would be to switch from an AL to an MCL to reduce complexity. She suggested selecting a lower MCL, for example 5 parts per billion (ppb), as has been proposed by some groups. Ms. Betanzo also discussed how additional steps to protect human health and ensure equity would entail providing a reliable source of safe drinking water during a sustained lead AL exceedance. She elaborated that this could include providing residents with filters or bottled water as an option to make sure disadvantaged community members have easy access to these sources and emphasized that these communities should not have to ask for these services. Ms. Betanzo explained that, in communities that she has worked with that have experienced lead AL exceedances, only those individuals that go out of their way to ask for filters or bottled water actually receive those services; however, if these services are not readily available to all community members, those interventions are not reaching the people that need them the most. She explained that filters are very effective in reducing lead to 5 ppb and in most cases non-detect values and stated that these filters represent easy and cheap ways to reduce lead and must be made accessible to all communities exposed to lead.

Mr. Elmore stated that the TL and AL construct in the current LCRR provides little or no public health benefit while adding a substantial additional workload for primacy agencies and public water supply

staff. He noted that this additional time would be better spent identifying and removing lead from the public water distribution system. He said that Wisconsin recommends removing the TL and lowering the lead AL to 10 ppb. He noted that there needed to be a technical feasibility analysis and economic analysis to see if reducing the AL to 10 ppb would be manageable. He stated that substantial simplicity requirements are needed in the rule, particularly in the section outlining corrosion control studies and steps following a lead AL exceedance. He noted that these steps are complex since systems can be in and out of compliance and that there needed to be clear regulatory requirements in these situations. He stated that for corrosion control treatment the studies need to be streamlined to allow flexibility to use different types of studies (*e.g.*, desktop and coupon studies) or minimize the use of other studies.

Ms. Peters agreed that having both the AL and TL is unnecessarily complex and confusing, especially to the public. She would support lowering either the AL or MCL to 5 or 10 ppb with additional studies to determine the cost and feasibility of setting these values. She believed that lowering these values and choosing just one would simplify the rule and protect public health. Ms. Peters also supports additional actions that can be taken regarding public health in systems that have sustained levels of lead above the AL, which include the use of filters. She explained an approach that she said has been very successful in Denver's Lead Reduction Program, in which every single household that has a known or suspected LSL gets a pitcher filter and replacement filters mailed directly to their home. She explained that the program recognizes that not everyone will get their LSLs replaced in the first few years and that this addresses equity concerns of some populations in the program not receiving benefits while they wait for LSLR. Ms. Peters thinks this is a very effective model for how a system can implement additional actions. She noted that the program involved a lot of public outreach, including interaction with community groups and reaching out to residents to inform them how to use the filters properly. She suggested that EPA look at Denver's program closely.

Ms. Daniels indicated that she had helped develop the TL rule construct and said that she felt it was a good idea at the time. States, through the Association of State Drinking Water Administrators (ASDWA), thought it would serve a good purpose as the intent was to look at proactive measures and interventions that would be triggered to keep a system from reaching the AL. She explained that the TL was a way to look at these early interventions that would have some value in terms of protecting public health. She recalled that at the beginning of the rulemaking it was unclear what direction EPA might be going and people generally did not feel comfortable looking at an MCL value. They were also not interested in a treatment technique that would require corrosion control treatment for all systems through chemical addition because there are pros and cons with this process as well. She said that some systems struggle with effectively and safely operating chemical treatment. Ms. Daniels said that now that everyone has had a chance to look at the provisions within the rule construct, she acknowledged that the addition of the TL does add some complexity. However, she thinks the original reasoning was sound. She noted that states are in a position now to get rid of the TL and set the new AL at 10 ppb.

Ms. Betanzo added her thoughts on additional steps to protect public health, pointing out that a non-regulatory intervention opportunity that EPA has is to get filters included in the Women, Infants, and Children (WIC) programs, whereby vulnerable residents can get easy access to filters that are certified for lead reduction, for all families with pregnant women, children, and infants. This would remove the responsibility from the water utilities and get these filters to the most vulnerable populations.

Mr. Elmore added to the discussion on additional steps to protect public health, saying that there is a need for an EPA-led initiative to come up with clear risk communication materials with health partners such as the CDC. He envisioned that materials could be open source and be used and customized by public water systems, such as with programs in the past like “Water Sense” or “Fix a Leak Week.” These materials would help utilities communicate the risk of lead effectively and communicate how the public should protect themselves, particularly if an AL has been exceeded.

Ms. Chard noted that, as EPA considers POU filters and filter pitchers, people do not only drink water from the kitchen faucet—describing for example how a cup at the bathroom sink can be used to brush teeth or take a drink. She said that EPA must keep this in mind when talking about filters being solutions to lead problems. She explained that while POU filters help they are not an individual household-size system, and there will still be children and other targeted groups getting water from other places in the home.

Ms. Quirk said she heard several stories from Wisconsin utilities that gave people filters to use in the interim of LSLR where residents forgot to change their filters and experienced major water quality and taste issues. She acknowledged that perhaps Denver has found a way to instruct people on how to properly use filters, but said that she has been concerned about sickness from filter misuse. She commented that PFAS compounds are a concern in regard to bottled water distribution. She said when her area gave residents notices on PFAS they also told them not to drink bottled waters because they have not been tested for PFAS. Ms. Quirk concluded that EPA should be careful what they are recommending as they go forward with this rulemaking.

Ms. Betanzo commented that there are strategies to help with filters but that any filter distribution program is best when accompanied by a filter education program. She mentioned how, when discussing the agency’s filter study in Benton Harbor, EPA recommended that Benton Harbor residents receive hands-on education on how to use, install, and maintain their filters. She said that if the filter distribution program collects phone numbers they could set up an automated text message reminder to residents when they should change their filters. She concluded that an upfront investment may be needed to implement these strategies, but there are plentiful strategies available to increase filter knowledge and compliance.

Topic 4: Small System Flexibility

Mr. Goldberg presented the following guiding questions and **Ms. Daniels** facilitated the Council’s discussion.

- If the LCRI requires small systems to replace LSLs regardless of their 90th percentile lead level, should the LSLR remain a small system compliance option for small systems exceeding the lead AL?
- Should other compliance options be added for small system flexibility (as a reminder, these options include LSLR, corrosion control treatment, point of use (POU) filters, and replacement of lead-bearing plumbing)? If so, what would such compliance options be?
- Should EPA reduce the small system flexibility threshold from 10,000 (*e.g.*, to 3,300 or fewer) for all or some of the compliance options?

Mr. Jones stated that he believes that it is important for EPA to reach out to and work with small systems when it comes to their capacity to comply with these regulations, adding that this may include supply chain, staffing, and funding challenges. He indicated that getting in contact with these systems would mean determining a more feasible compliance timeline. He said that the population threshold of 10,000 still works and emphasized that many of these systems would be open to working with EPA on making sure their needs are met. He added that equity in this case would mean listening to these systems and accommodating their specific needs.

Ms. Chard reemphasized that POU filter flexibility may be very effective within the appropriate systems and locations, such as non-transient non-community water systems. With locations like publicly owned residential buildings, POU filters may not be the most appropriate response. Ms. Chard also said that, whether or not EPA decides to keep the population threshold as 10,000 or something less, the agency should stick with that population number. She emphasized that there is a significant portion of small systems in her state that serve only 100, 200, or 500 people. She said that it was important to ask about the specifics of who we are trying to protect when establishing this small system definition. Ms. Chard stated that if EPA decides to pursue the regulatory decision to have all systems, regardless of size, be required to replace all LSLs, the agency should be upfront about this as early as possible and should not be discussing small system flexibilities.

Mr. Elmore stated that replacing all LSLs should always be an option, even for small systems. He proposed that POU filters and replacement of lead-bearing plumbing should be options made available only to non-community systems and in public buildings such as hospitals and prisons and apartment complexes with water bills included in rent. These options should not be made available to individual residential units and businesses in community water systems.

Ms. Campbell-Ferrari highlighted her concerns about equity, saying that the idea behind giving smaller systems other opportunities is to help them, but at the same time this could result in a reduction in the quality of service received. Ms. Campbell-Ferrari believed that this was a great opportunity to remind these systems of the immense amount of funding now provided under the BIL. These are examples of communities (in addition to disadvantaged communities) that would benefit most from these funds and are the ones the agency should prioritize; as such, there shouldn't be as great of a need to provide small system flexibility.

Mr. Borman stated that the objective of utilities is to get the lead out of the system. He asked whether it was possible to tap into another fund to address small system residences that exceed the 90th percentile. This could trigger some action on those residences and get the process going. Mr. Borman said that he views small systems as serving a population of 3,300 or fewer people, rather than at the 10,000 threshold because those can usually handle themselves pretty well. He said that the best way to approach this is to provide equity that allows these systems to also remove LSLs. He also mentioned that he does not believe that POU filters will work within small systems. From his experience, when states attempt to put these filters into use, residents will often forget to replace filters or will not use them in the first place. Mr. Borman said he believes that there are a couple of options available to these systems: Replace LSLs at all locations where the AL is exceeded or implement corrosion control treatment, which he noted could introduce simultaneous compliance issues. He thought that there could possibly be some flexibility in terms of when and how quickly lines will be replaced, but the

ultimate goal for any system should be to get lead out of the system, especially with the available BIL funding.

Ms. Daniels thanked everyone for their input and touched on equity in water systems, saying that equity in this sense means that all customers should drink from water sources of equitable water quality. She agreed that all systems, regardless of size, should have the option to conduct full LSLR. Ms. Daniels mentioned that the BIL funding has taken away one of the major barriers for small systems and added that some of Pennsylvania's first technical assistance programs involved reaching out to small and disadvantaged communities and informing them about the funding that is available. She agreed with several other commentors that use of POU filters has its challenges and added that this would have to be the alternative to centralized treatment in order to provide equitable results from system to system. She said that if using this alternative systems must ask themselves how they can make POU filters equally protective of public health. She also discussed how, to be more realistic about this, there must be some considerations put into which systems can use this option and said that in this case considering a small system to be one that serves a population of 3,300 or fewer would be better, explaining that this way states can target these smaller systems with technical assistance. Ms. Daniels also agreed with other commenters in that using POU filters and removing lead-bearing plumbing would be viable options for locations like non-transient non-community water systems and even some community water systems that run their own internal plumbing systems.

Ms. Littlewood expressed that the small system flexibilities should be for systems serving 10,000 or fewer people, noting that these systems usually have a smaller number of service connections. She noted that many systems with populations of anywhere from 2,500 to 10,000 people seem to have the same access to funding opportunities, though they don't usually have the same infrastructure capabilities (construction crews, excavation crews, etc.) that systems serving a population over 10,000 have. She stressed there are many other reasons that this definition should keep a population of 10,000 as the threshold. Ms. Littlewood also suggested other options for small system flexibilities, saying that there could be some changes to monitoring frequency and requirements on how quickly corrosion control should be discontinued (if at all). She elaborated that often these monitoring frequency requirements will require small systems to take more samples that push them just over the 90th percentile and said that, especially if these systems have already replaced LSLs, there shouldn't be this same requirement to monitor as often. Ms. Littlewood also suggested putting some of the power back into the state's hands to allow the state to assist with what makes the most sense in terms of action for each water system. She suggested that it may be helpful to have someone from the state come and sit down with these small systems and discuss their options to address lead.

Ms. Barney said that 10,000 should remain the population threshold for small systems.

Mr. Goldberg, Ms. Holsinger, and Dr. McLain thanked everyone for their comments.

Topic 5: Additional Questions

Mr. Goldberg opened the discussion up for any other additional questions or comments/feedback about the rule and presented the following discussion questions. **Ms. Daniels** facilitated the Council's discussion.

- Is there any additional information or concerns you would like to share with EPA?

- EPA would appreciate any information and data that you are able to provide on their experiences with:
 - Inventory and LSLR?
 - Sampling programs?
 - Public education?
 - CCT (corrosion control treatment)?
 - Sampling for lead in schools and child care facilities?
 - **Other aspects of drinking water lead control programs?**

Mr. Jones reiterated that providing training and technical assistance to states and regions as well as outreach to rural and underserved communities is important. He stated that he believes that this is a very important piece of regulation, and that the more training available, the more success there will be.

Ms. Chard asked EPA to consider looking at galvanized pipes currently or previously downstream of lead lines. She also requested that EPA consider looking at lead connectors. She mentioned that, even if excellent corrosion control is implemented and all lead lines are replaced, states may still need to address the premise plumbing, adding that, oftentimes, this is usually the source of higher lead levels. Ms. Chard also emphasized that states should take time to consider the use of corrosion control. She explained that usually this entails adding orthophosphate or phosphorous to drinking water. She cautioned that systems need to be wary of how much phosphorous is being added, as adding phosphorus can incur additional costs within wastewater treatment plants as they look to avoid algal blooms or over-nutrication and could cause an infinite loop of paying to treat it and to add it. Ms. Chard also touched on some concerns she had regarding lead sampling in schools and child care facilities, noting that there seem to be some contradictions regarding sampling at these locations, as the direction given is sometimes inconsistent with EPA's 3Ts (Training, Testing, and Taking Action) sampling protocol. She suggested that these sampling processes need to be more streamlined and much clearer. Finally, she said that the Safe Drinking Water Information System (SDWIS) has to exist and function properly and that it should also be provided in a user-friendly format for both regulators and the public to establish confidence in their water systems.

Mr. Elmore emphasized the need for a clearer definition of a licensed child care facility. He asked whether this would include licensed in-home facilities and whether there should be a size threshold, saying that how EPA chooses to define these parameters could impact the number of child care facilities that are tested and treated for lead contamination. He pointed out that some states might not track the smallest child care facilities, so this is especially important to catch. He also suggested delaying the compliance date by a year for testing in schools and child care facilities because states and public water systems have not had the time to prepare or administer this program because they were directed to hold off on this portion of the LCRR. He added that this section of the rule will take time to administer. Mr. Elmore also stated that if EPA requires all LSLs be replaced there also needs to be a process to start taking out corrosion control treatment once those LSLs have been replaced—adding phosphorous introduces its own compliance problems. He emphasized that EPA would need to establish a pathway to phase out corrosion control treatment if it is not needed, as this option doesn't currently exist between states and utilities. He also recommended that EPA revise the 90th percentile calculation so that only the highest lead and copper results are included; doing this could prevent the "dilution" of samples done by some utilities in which they take more samples in order to reduce the average contaminant level

recorded. He observed that there is currently no regulation to address this and that it is important to eliminate this loophole.

Ms. Quirk stated that licensed daycares in communities are a bit fluid (many go out of business one year while another is established). She asked whether or not there should be a clean inventory done every year because of this. Ms. Quirk also asked if the 3Ts manual should be delivered to schools and child care facilities via physical copy or through an internet link. She discussed the example of how her utility gave it to their school district in 2016 after Flint, Michigan, and the school district went through their facilities and found that in some schools the water fountains were made of lead, all of which they ended up replacing. Ms. Quirk said she would like some guidance on how to deal with these instances. She also mentioned that her utility has been testing lead galvanized lines that were previously attached to full LSLs and found that these galvanized lines are not resulting in high lead levels. As such, Ms. Quirk emphasized, states should focus more on LSLs rather than on galvanized lines.

Ms. Peters reemphasized the importance of public outreach and education. She again used Denver as an example of a robust education and outreach program. She recognized that not every water system will be able to replicate that, but she suggested that EPA provide some public education and outreach resources (toolkits, best language, etc.) so that utilities can pull from them. She added that there are also things that water systems can do to educate people on how to reduce their lead exposure from all sources. Ms. Peters was pleased to hear that people are showing concern about orthophosphate treatment for corrosion control in drinking water as all lines get replaced. She mentioned that she also has huge concerns about water systems located in arid areas flushing around 80 percent of effluent from wastewater utilities in the late summer and early fall months. She is concerned about additional phosphorus loading, as this would be a huge cost to wastewater utilities. She also flagged the issue of residents who use a significant amount of water to landscape, noting for example, that a study in the Denver area showed that 40 percent of water use was for lawns and landscaping. She observed that this usage would bypass treatment and the water would still make its way back into the watershed, introducing further problems.

Ms. Betanzo shared her thoughts on the find-and-fix approach. She stated that she fully supports investigating high individual levels of lead; however, corrosion control treatment should not be the primary means by which these issues are fixed. She said that the focus should instead be on finding those localized sources of lead in interior plumbing and replacing these fixtures if they are determined to be the cause. She again asked EPA to reevaluate and revise the definition of an LSL by including lead goosenecks and said that the section of pipe within the house should also be a part of this definition, noting that Michigan defines an LSL as “the pipe into the house to the first shut-off valve or eighteen inches, whichever is shorter,” which captures that portion of the line. She said that this needs to be fixed within the rule. Ms. Betanzo also asked where states should send their information and data. **Mr. Goldberg** said that a slide with the necessary contact information will be provided.

Ms. Daniels agreed that the largest sources of lead are the LSLs and that they should remain the focus of LCRI. However, she also acknowledged that removing all LSLs would not necessarily make a system lead-free. For systems that remove LSLs, Ms. Daniels stated that corrosion control treatment may still be needed but the system will probably need to re-evaluate optimized treatment for the new condition of dealing with lead and copper within premise plumbing and fixtures. This issue may be looked at a bit differently, but that does not mean that corrosion control treatment will be taken away. She also said

that if the LCRI is looking at a certain percentage for LSLR, the preference would be for the rule to set that rather than leave it to states to determine on a case-by-case basis. Ms. Daniels also mentioned that there seems to be a discrepancy between the 3Ts monitoring approach for schools and child care facilities versus public water systems. She observed that this creates some confusion and that EPA should be able to establish a maximum stagnation time for public water systems just as they did for schools and child care facilities, which would help improve everyone's understanding of the monitoring. Ms. Daniels also recommended that the phrasing "find-and-fix" be changed to "find and assess." The current phrasing assumes that the issue can be fixed or will be fixed by the water system; however, this is not always the case, especially if the problem is with the premise plumbing of the residence. Ms. Daniels also stressed the importance of making sure schools are trained to properly use pitcher filters and POU devices. She suggested that there may also be a need to look at filtration use at the bottle-filling stations that schools have been using to provide safe drinking water in order to make sure proper instruction is provided.

Mr. Elmore mentioned the need for staggered deadlines in the LCRI when starting the new compliance monitoring, as the six-month monitoring frequency will introduce lab capacity issues. He added that this initial compliance monitoring will not result in much from a public health standpoint. Mr. Elmore stated that he believed that systems could get more out of looking at the 5th liter sample instead of increasing the monitoring frequency. He also mentioned that, in terms of data management for recording compliance, his state does not use SDWIS and instead has their own data reporting system. He concluded by saying that the state needs data entry instructions for both the LCRR and LCRI as soon as possible to update their data reporting systems accordingly.

Ms. Littlewood addressed Ms. Daniel's statement on maximum stagnation time, saying that, from her experience in 70 very small systems, it is difficult to not allow people to flush their faucets before "starting the clock" to meet the six-hour minimum stagnation time. Ms. Littlewood stated that it has been a challenge to communicate that they need at least six hours of stagnation time when customers often don't know when they last used their faucets and recommends, in order to make sure that customers are meeting the requirements of the current rule, telling them to flush their faucets for a minute, write down the time the faucet ran, and then take the sample any time after the six-hour period (though before 10 hours is recommended). Having people write down these times also helps utilities figure out if they have a corrosion issue at the system's source or in the premise plumbing. She elaborated that this method can allow water systems to identify outliers (samples that may be non-representative). Having a maximum stagnation time for the water systems would be excellent in order to quantify how all the samples are being done. Ms. Littlewood said that at the end of the day the goal is to get lead out of the system, and the means by which this is done will differ between homes and service lines.

Ms. Daniels asked EPA if they had any clarifying questions, which they did not.

Mr. Goldberg highlighted the next steps. He noted that in addition to this consultation EPA has been seeking input from other key stakeholders and entities to inform the proposed LCRI. He mentioned that this consultation was the last one, noting that other stakeholders contacted included the Science Advisory Board, the Small Business Advocacy Review Panel, Unfunded Mandates Reform Act/Federalism consultation, tribal government officials, EJ-related organizations, and others. He restated that EPA intends to publish the proposed rule for public comment in 2023 and promulgate a finalized rule by

October 16, 2024, and noted that any questions or additional data/information can be sent to Ms. Holsinger or Mr. Goldberg.

Mr. Goldberg, Ms. Holsinger, and Dr. McLain all thanked council members.

Ms. Daniels noted that **Ms. Barney** sent a second comment in the chat feature. Ms. Barney, hearing the concerns expressed during public comment with chemical reactions with fluoride additives, recommended that more research be conducted to ensure thorough knowledge of lead and fluoride reaction.

During a roll call conducted by the DFO Ms. Corr, **Ms. Betanzo** shared that she had a question and asked because of the public comment if EPA was considering updating the MCL and MCLG for fluoride since it has been 16 years since the last NAS report.⁵

Microbial & Disinfection Byproducts Rule Revisions Working Group Update

Ms. Daniels presented updates on the NDWAC Microbial & Disinfection Byproducts (MDBP) Rule Revisions Working Group purpose, the Working Group composition, information on prior public engagements and input, the content covered in Working Group meetings, and the timeline for next steps.⁶ She noted that the next three meetings will take place on December 13, 2022; January 24, 2023; and March 9, 2023. Ms. Daniels provided key takeaways from the Working Group meetings thus far that included recognition of the Working Group's need to have a foundation of understanding the problem and root causes before providing comments and suggestions about these complex and interdisciplinary issues.

Mr. Rodriguez echoed Ms. Daniels's comments on the level of complexity of the discussions and noted the high-quality technical experts translating the rule. He explained that the experience has been very rewarding personally and that he appreciated the Working Group and EPA's time during these meetings.

Ms. Quirk noted the major disinfection byproducts (DBPs) and microbial contaminants the Working Group is reviewing during these meetings, including chlorite, *Cryptosporidium*, haloacetic acid (HAA5-HAA9), heterotrophic bacteria, *Giardia lamblia*, *Legionella*, total trihalomethanes (TTHMs), viruses, nitrosamines, and bromate. She noted that the Working Group is receiving a lot of technical information, health effects and occurrence data, and compliance data to assess different compliance issues for small, large, and consecutive systems. She explained that the health experts were highlighting important data and solutions for consideration. She concluded that this topic was important to her and that she continued to learn a lot throughout the process.

Mr. Borman agreed with Ms. Quirk's comments and noted that from a utility perspective the Working Group has made a lot of progress. He explained that he helps run 17 consecutive systems that deal with TTHM issues and that he believes that, after the NDWAC provides suggestions for the new rule, the rule would become a lot easier with which to comply from a utility perspective while still providing public health protection. He noted Working Group members' success in informing what the rulemaking is intended to do, and said that he is looking forward to future meetings.

⁵ Dr. McLain circled back to public comments on fluoride in her closing remarks.

⁶ Ms. Daniels presentation is in Appendix C.

Ms. Betanzo echoed the others' comments and said that it has been great to get updates on the latest science for MDBPs. She said that as the NDWAC moves forward to revising old solutions and coming up with new solutions to these problems, she is looking forward to seeing a complete analysis of compliance data to streamline and better protect public health.

Ryan Albert (EPA OGWDW) thanked Ms. Daniels for the presentation and noted the Working Group's importance. He added that EPA is looking forward to consensus advice on potential changes they can make to the MDBP Rules. **Mr. Burneson** thanked the Working Group for their time.

Closing Remarks

Ms. Daniels thanked everyone for all the input and engagement for the LCRR and LCRI discussions. She stated that she finds value in all of the feedback provided and will consider all of what was suggested going forward. Ms. Daniels also mentioned that she was happy to provide an update on the MDBP Rule Revisions Working Group.

Dr. McLain thanked Ms. Daniels for leading the discussion. She also thanked the public commenters for providing their concerns about fluoride in drinking water, stating that it is ensured that EPA reviews drinking water standards every six years and that the agency utilizes the best available peer-reviewed science while conducting its deliberations. Dr. McLain again thanked the NDWAC members for coming to the meeting prepared to answer all of the LCRR and LCRI discussion questions. She added that EPA anticipates additional information to be sent by the members after the meeting. Finally, Dr. McLain thanked the Working Group, noting that EPA recognizes that this is very important work that has been very fruitful and informative. She thanked everyone for the very successful meeting, including Ms. Corr as DFO.