Testimony of Brent Alspach
Vice President and Director of Applied Research, Arcadis

United States Senate
Committee on Environment and Public Works
Subcommittee on Fisheries, Water, and Wildlife
And
Subcommittee on Chemical Safety, Waste Management,
Environmental Justice, and Regulatory Oversight

Microplastics in Water

February 27, 2024

Good afternoon, Chairman Padilla, Chairman Merkley, Ranking Member Lummis, Ranking Member Mullin, and members of the Subcommittees. Thank you for the opportunity to testify before you today on this important topic. My name is Brent Alspach, and I am a Vice President and Director of Applied Research at Arcadis, where I oversee a program that has conducted approximately $30 million in drinking water, potable reuse, wastewater, and stormwater research. I also serve on the Board of Trustees for the American Water Works Association's Water Quality & Technology Division, as well as on the AWWA Technical and Education Council, which works to advance practices and technologies that produce the best quality drinking water for the public. It is in this capacity that I offer my testimony, as a representative of the AWWA community and a subject matter expert on microplastics in drinking water. Accordingly, I am currently the Principal Investigator on two related projects funded by The Water Research Foundation: Developing Strategic Consumer Messaging for Microplastics in Drinking Water Supplies (Project #5155) and Fate of Microplastics in Drinking Water Treatment Plants (Project #5185).

Microplastics is a category of emerging contaminant that includes a wide variety of particulates with different physical characteristics, which may originate from either primary or secondary sources. Primary microplastics are produced as small particles, microbeads, or nurdles, which serve as the raw material for manufacturing a wide variey of plastic products, whereas secondary microplastics are a product of the fragmentation of larger plastics, like plastic bags or bottles. While generally characterized as measuring less than 5 millimeters in size, there is no formal scientific concensus on the definition of microplastics.

Studies have shown that microplastics are nearly ubiquitous in the environment, having been detected everywhere from the upper atmosphere to the deepest ocean trenches, including potable water sources and treated drinking water supplies. However, the science of characterizing occurrence in these supplies and understanding their impact, while advancing quickly, is still in its relative infancy, with many important questions remaining to be answered.

The most important step toward advancing this understanding is the development and refinement of standardized analytical methods. Along these lines, the California Water Resources Control Board has approved two analytical methods which select water systems throughout the state will soon apply to

evaluate real-world samples. Although these methods represent an important step in understanding occurrence, further research is needed to develop analytical techniques that are increasingly reliable, efficient, economical, and able to detect plastic particulates at the nanometer scale. Such advancements will facilitate the implementation of broader and more reliable occurrence, toxicity, and treatability studies.

The limitations of contemporary methods of microplastics analysis notwithstanding, it is still essential to understand occurrence and treatability to the extent possible with the best science currently available. Using these practices, a wide range of studies have demonstrated the ability of many drinking water treatment processes in common use across the country to achieve significant reduction of microplastics, commensurate with other types of regulated particulates. However, if toxicity studies ultimately demonstrate that some subset of microplastics poses a health risk via a drinking water vector, it will be important for water systems to adapt and optimize treatment, as appropriate.

The extent to which microplastics may contribute to adverse health outcomes is likewise the subject of ongoing research and likely varies with microplastic attributes. Considerations may include the size, shape, and material composition of the ingested microplastics, as well as the ingested quantity and the residence time in the human body. Relevant human health effects studies are difficult to conduct, and such research has not yet established a clear indication that microplastics are toxic – a necessary precursor to any regulatory action under the Safe Drinking Water Act, which requires clear occurrence and health effects data. These statutory requirements help to ensure that water systems can maintain high quality, affordable service in the context of their mandate to safeguard public health.

Notably, AWWA's 2019 Water and Wastewater Rate Survey found that, even before the onset of the COVID-19 pandemic and the ensuing rise in costs, water rates were significantly outpacing inflation. Consequently, water systems are struggling to balance the need for infrastructure upgrades and new treatment technologies with a growing affordability crisis. It is important to underscore the importance of affordability as it pertains to regulatory oversight. EPA's most recent Drinking Water Needs Survey and Assessment estimates that drinking water systems alone will need to invest $625 billion over the next twenty years just to maintain current levels of service. AWWA's "Buried No Longer" report, released in 2012, estimated this investment to be $1 trillion over 25 years. These totals are in addition to the investments that systems will need to make in order to comply with pending regulatory actions like the Lead and Copper Rule Improvements and National Primary Drinking Water Regulations for six per- and polyfluoroalkyl substances (PFAS). According to cost estimates commissioned by AWWA, replacing every lead service line in the country – as outlined in the Lead and Copper Rule Improvements – could cost in excess of $100 billion, while installing the treatment technology to remove PFAS could necessitate between $50 and $60 billion. Although some of this funding may come from federal programs, the majority will likely be paid through rate increases, the impact of which will be felt most acutely by economically disadvantaged communities.

With this in mind, it is essential to emphasize that much more information on occurrence, toxicity, and treatability is necessary before obligating water systems to divert their limited resources to address microplastics. Accordingly, Congressional support for research in these areas would be welcomed by the drinking water sector. In parallel with this research, exploring and enahcing opportunities to divert the

sources of microplastics from entering the nation's water supplies could be valuable preventative measures.

Thank you again for the opportunity to provide testimony on this important topic, and I welcome any questions that you may have. Additionally, AWWA will be conducting an informational webinar on April 10, entitled Microplastics 2024: Practical State-of-the-Science in Drinking Water.

Brent Alspach

Brent Alspach holds both Bachelor and Master of Science degrees in Civil and Environmental Engineering from Cornell University. Brent joined Arcadis in 1997 and serves as a Vice President and Director of Applied Research. He oversees a program that has conducted approximately $30 million in drinking water, potable reuse, wastewater, and stormwater research funded by the Water Research Foundation, AWWA, the US Bureau of Reclamation, and NASA's Jet Propulsion Lab, among other organizations. Mr. Alspach is a past President of the American Membrane Technology Association (AMTA) past Chair of the AWWA Water Quality & Technology Division Board of Trustees. He also serves on the AWWA Technical & Education Council, as well as on the advisory / editorial boards for the publications *Journal AWWA*, *AWWA Water Science*, and *Opflow*. He has a wide range of water quality and treatment expertise, with a contemporary focus on microplastics in drinking water over that has made him one of the industry's most recognized authorities on the issues associated with this important emerging contaminant. Accordingly, he has been a featured speaker on microplastics at numerous industry conferecnces and serves as a peer-reviewer for microplastics literature for multiple technical journals. He has also been engaged in microplastics issues with both the Outdoor Industry Association's Sustainability Working Group and the Interstate Technology Research Council's (ITRC) Microplastics Outreach and Education group, also Chairing the Microplastics Consumer Messaging Workgroup under the California Water Quality Monitoring Council.