U.S. Environmental Protection Agency
National Drinking Water Advisory Council (NDWAC)
Virtual Public Meeting
April 19, 2022

Meeting Summary

Meeting Purpose

The purpose of the meeting was for the U.S. Environmental Protection Agency (EPA) to update the NDWAC on Safe Drinking Water Act (SDWA) programs and to consult with the NDWAC on a proposed national primary drinking water regulation for per- and polyfluoroalkyl substances (PFAS).

Opening and Welcome

Ms. Elizabeth Corr, the Designated Federal Officer (DFO) for the NDWAC, opened the meeting. She thanked the technical support team, provided an overview of agenda logistics, and introduced NDWAC Chair Lisa Daniels.

Chair's Welcome and Council's Introductions

Ms. Lisa Daniels, NDWAC Chair, welcomed participants to the meeting and asked the NDWAC members and the Council's Centers for Disease Control liaisons to introduce themselves.[1] She then introduced Mr. Bruno Pigott, Deputy Assistant Administrator of EPA's Office of Water.

Office of Water's Welcome

Mr. Pigott stated it was an honor to speak with the NDWAC and conveyed that their work is important for promoting water safety and has been invaluable to the Office of Water. He said it is "water's moment" thanks to the Bipartisan Infrastructure Law (BIL). He spoke about how the BIL provided much needed funding for lead service line replacement, replacing aging infrastructure, and addressing emerging contaminants such as PFAS. Mr. Pigott stated that the Office of Water looks forward to a national drinking water standard for PFAS. He also discussed the newly formed NDWAC Working Group which will inform the NDWAC's recommendations to EPA related to rule revisions of the Microbial and Disinfection Byproducts Rules. Mr. Pigott thanked everyone for their participation and said he looked forward to the meeting discussions.

[1] Please see Appendix A for the list of NDWAC members and liaisons.

Office Director's Update

Ms. Daniels introduced Dr. Jennifer McLain, Director of EPA's Office of Ground Water and Drinking Water (OGWDW). Dr. McLain welcomed and thanked the NDWAC members. She discussed EPA's OGWDW priorities, which include implementing the BIL to strengthen water and wastewater systems, and touched on OGWDW's work with public water systems related to security. Dr. McLain highlighted PFAS as an agency priority and discussed EPA's PFAS Strategic Roadmap. One of the key components of the PFAS Roadmap is developing a national primary drinking water regulation. Additionally, under the BIL there are significant funds available to address emerging contaminants, which will enable investments in affected communities to mitigate impacts from these contaminants, specifically including PFAS. She further explained that OGWDW is implementing the Fifth Unregulated Contaminant Monitoring Rule (UCMR 5) to require sampling of 30 contaminants between 2023 and 2025, including 29 PFAS and lithium. She also discussed lead in drinking water including lead service line replacement as a priority for the administration and noted work on the Lead and Copper Rule Improvements. Dr. McLain concluded by thanking the NDWAC and the Consumer Confidence Report (CCR) Rule Revision Working Group and noted that OGWDW is in the midst of other conversations on the CCR rule revisions and is aiming to have a proposed rule in the spring of 2023.

Health Advisories (HAs) Update: Perfluorooctanoic Acid (PFOA), and Perfluorooctanesulfonic Acid (PFOS), Perfluorobutane Sulfonic Acid (PFBS), and Hexafluoropropylene oxide (HFPO) dimer acid and its ammonium salt (referred to as "GenX Chemicals")

Ms. Betsy Behl, Director of EPA's Health and Ecological Division in the Office of Water's Office of Science and Technology, provided a presentation on the development status of updated HAs for PFAS, including updates to PFOA and PFOS HAs and new HAs for GenX chemicals and PFBS. Ms. Behl's presentation is in Appendix B.

Council members did not have questions or comments on the PFAS HAs presentation.

Public Comment to the NDWAC

The Council members heard public comment from one registered commenter:

- Dr. Joseph Cotruvo, Water Consultant, Joseph Cotruvo and Associates

This and other comments received in writing were circulated to Council members. To view the comments, please refer to Appendix F.

Consultation: Proposed National Primary Drinking Water Regulation (NPDWR) for PFAS, including PFOS and PFOA

Ms. Daniels introduced Dr. Ryan Albert, Chief of EPA's Standards and Risk Reduction Branch (SRRB) in the Standards and Risk Management Division (SRMD) of OGWDW, who in turn introduced Mr. Alex Lan,

PFAS NPDWR Team Lead, SRRB, to present on the development of the proposed NPDWR. Mr. Lan provided background on PFAS and the SDWA requirements for developing a drinking water regulation, as well as key areas of consideration related to the development of the proposed PFAS NPDWR for which EPA was seeking input from the NDWAC. Within the presentation, the key considerations focused on four areas of the rule development including treatment, monitoring, public notification, and mixtures of PFAS. See Appendix C for the presentation, which includes specific consultation discussion questions for which the Council members were asked for their input.

NDWAC Discussion, Questions, and Comments

Various NDWAC members asked Mr. Lan, Dr. Albert, and Mr. Eric Burneson, Director of SRMD in OGWDW, questions about PFAS and the information EPA presented related to the proposed rule development. The discussion was divided into four question and answer sessions based upon the proposed rule development key consideration areas within the presentation.

Treatment Considerations Question and Answer

NDWAC members provided the following comments regarding discussion questions posed by EPA staff on the topic of treatment.

Ms. Shellie Chard voiced that, while disposal costs are important to consider in their cost analysis, EPA also needs to include the costs of replenishing various exchange media for PFAS removal and to consider whether said media regeneration/destruction methods are effectively destroying PFAS or simply transferring it from one area to another (such as the air). She also said that EPA needs to consider operations and maintenance costs. Traditional State Revolving Funds (SRFs) provide availability for capital costs but not ongoing maintenance. Workforce training is a third consideration, especially for smaller systems. She added that consolidation is not an option for very small systems that are 25 miles apart from each other.

Ms. Chard also discussed point-of-use (POU) water treatment systems, adding that EPA needs to consider who owns and operates them. Is the homeowner going to give the city access to their property to maintain residential POUs? Is EPA going to expect public water systems to maintain in-home units? How many different POUs are there in each person's home? Will these POUs be tracked in SDWIS (Safe Drinking Water Information System), and will the responsibility of tracking them fall on the public water system? She does not see these expectations on a system as reasonable.

Mr. Scott Borman echoed Ms. Chard in that treatment systems will require further consideration, given the ineffectiveness of conventional treatment systems. He also agreed that homeowners do not usually let other people inside their properties. He only disagreed with Ms. Chard in that he thought that regionalization is not as feasible as her remarks suggested. He added that residual disposal will present another problem, as carbon will absorb PFOA and PFOS, which will go out with water plant residual. He asked about water reuse and what they would do with the residuals. He noted that there are several potential unintended consequences associated with treatment.

Mr. James Proctor emphasized that manufacturers may be disincentivized from bringing treatment technology into the market, as there is currently pending litigation against people involved in the lifecycle chain of PFAS. In addition, there are regulatory risks to keep in mind, and therefore safe harbor may be needed for producers adhering to certain standards of construction.

Mr. Jeffrey Szabo asked if EPA was considering exemptions to providers related to the disposal of the waste post-treatment. Dr. Albert responded that OGWDW cannot specifically say what the EPA Office of Land and Emergency Management is considering in their rulemaking effort for this potential action, but the Office of Water is aware of this issue. EPA is also actively considering the implications of different EPA actions related to PFAS.

Ms. Jennifer Peters stated that the burden to remove PFAS should not fall solely on public water systems and that manufacturers and producers who release PFAS into the environment should be responsible for limiting the formation and discharges of PFAS. Ms. Peters also stated that environmental statutes such as the Clean Water Act should be used to prevent the discharge of PFAS into drinking water and other statutes should be used to prevent the introduction of PFAS into the marketplace. She said the only way to ensure the discontinuation of PFAS into the environment is by making a hazardous waste designation. She concluded that the burden to remove PFAS should not fall solely on public water systems.

Mr. Steven Elmore commented that there should be more research into the ultimate destruction and disposal of PFAS. He cited examples of public water systems that use powdered activated carbon and said EPA should monitor them for correct discharge and use. He also urged EPA to consider other solutions, such as Wisconsin's policy that requires a new well to be identified for systems before they apply treatment. EPA can emulate this policy by requiring systems to consider a new source before they add treatment. Mr. Elmore also suggested that EPA include new sources contaminated with PFAS in their economic analysis.

Ms. Alexandra Campbell-Ferrari asked how many public water systems are impacted by PFOA and PFOS. She also asked about the likelihood of small system variances given potential technology costs, as well as what is currently being done to focus on those who discharge PFOS and PFOA. Ms. Campbell-Ferrari stated that she is concerned about consumers bearing the cost of treatment, as well as the impact of PFAS residuals and incinerated substances containing PFAS.

Mr. Lan discussed the percentage of systems that reported PFOS or PFOA detections. Mr. Burneson added it is too early to say if there will be small system variances. EPA first needs to establish whether there are small system compliance technologies available. If not, they must consider particular variance technologies that are both available and protective of public health, even if they do not comply with the standard. If there are available technologies, they will be incorporated into the final rule, but the states will decide if that variance will be created, and small systems would have to apply for this variance. He stated that EPA is currently in the initial stages of determining which technologies, such as POU devices, would be considered small systems compliance technologies.

Mr. Burneson responded to Ms. Campbell-Ferrari's third question and said that (as described in the EPA PFAS Strategic Roadmap) EPA will limit discharges of PFAS from manufacturers. EPA will also use water quality criteria to limit PFAS.

Ms. Nancy Quirk noted that research on treating PFAS is still ongoing and suggested therefore leaving the option open that additional treatment technologies might arise. Ms. Quirk concluded by highlighting the need to destroy PFAS particles before they enter land.

Ms. Daniels concluded the Treatment Question and Answer section with some comments about treatment technologies for PFAS and noted that there is an option in her state that allows treatment

technologies that do not yet exist to be later implemented by public water systems. She added that, in some cases when contaminated wells are taken offline, nearby wells that remain online could have elevated PFAS levels because the plume could move between wells. Additionally, it is important to determine which types of PFAS are present. For bituminous-coal granular activated carbon (GAC), there is potential for arsenic contamination. Startup procedures should be utilized, including backwashing and flushing new or regenerated media, to get to a 30% bed expansion. For ion exchange, Ms. Daniels said her state knew little about the new resins being used for PFAS removal, so her state required water systems to conduct a pilot study prior to approving the technology.

Monitoring Considerations Question and Answer

NDWAC members provided the following comments in regard to discussion questions posed by EPA staff on the topic of monitoring.

Mr. Szabo asked about composite monitoring and multiple entry points and wondered if a well field comprised of three to four wells is considered a composite site. Mr. Lan responded by stating that composite sampling pools samples together from multiple entry points. Mr. Burneson also clarified that composite samples can be taken from multiple places.

Ms. Chard stated that PFAS chemicals are everywhere and asked how systems can qualify for a monitoring waiver by proving a lack of PFAS use in the area. Also, under the standard monitoring framework (SMF) for synthetic organic compounds (SOCs), a waiver would remove the compliance monitoring for PFAS if the public water system can prove that PFAS has not been present in the area and the public water system is not susceptible to PFAS exposure. She concluded that she does not see how public water systems could get this waiver because PFAS is so ubiquitous in the environment.

Ms. Campbell-Ferrari stated that under the SMF for SOCs, a waiver would obviate the need for monitoring if the public water system can prove that PFAS has not been used in the area or if water is not vulnerable to PFAS contamination.

Mr. Borman added that states should look at UCMR data and third-party verified data. He said he is not a fan of waivers and if the health impact is present, small systems are also susceptible. He recommended it should be similar to SOC waivers that are based on sampling results.

Ms. Quirk explained that her system conducted UCMR 3 monitoring in 2016 and detected almost no PFAS samples, but in 2018 her state started to detect PFOS and PFOA. Therefore, UCMR 3 might not be the best data source due to the years it covers and the robustness of more current technology. Once her system started receiving hits for PFOA and PFOS, they spoke with the state about the hazard index that Wisconsin Department of Natural Resources uses to determine when the public water system must issue a health advisory. She added that she could see some conditions where systems could receive a waiver, based on their water source. Systems getting water from a big body of water, such as Lake Michigan, will see very little variation in their sampling.

Ms. Yolanda Barney stated that most of the UCMR 3 data is from surface water systems. Additionally, the Source Water Assessment Program can help identify contaminants and vulnerabilities for public water systems to see if a waiver is applicable. She asked about what EPA is doing to consider EJ (Environmental Justice) in their PFAS work. Mr. Lan responded that UCMR 3 was a census of all large

systems and a representative sample of small systems that covered both surface water and ground water systems.

Mr. Elmore said that more recent data under EPA's Method 533 and Method 537 should be used because detection limits are different and therefore UCMR 3 data may not give the entire picture. His understanding is that the methods have not significantly changed, rather the detection limits are just much lower. He wondered if the older data could be used as a screening tool or help frame the economic assessment. Additionally, Mr. Elmore asked if all PFAS detected with a method will be required to be reported, or just PFOA and PFOS? He described how Wisconsin has been using a hazard index approach to look at multiple mixtures of PFAS and referred to the state's recommended ground water standards and the state's work to see how a mixture of 18 different PFAS will cause potential health impacts, observing that it would be useful to Wisconsin if all detections with a method were required to be reported.

Mr. Lan clarified that UCMR 5 will require sample collection for 30 compounds captured between EPA's 533 and 537.1 methods and includes 29 PFAS plus lithium. Mr. Burneson further explained how the method reporting limites are lower in UCMR 5 than in UCMR 3 due to analytical and method improvements. For that reason, he agreed use of the more recent UCMR data was a good suggestion. He also responded to Ms. Barney's point regarding EJ that EPA has already conducted some EJ meetings and tribal consultations and, as a part of the rule development and proposal, will perform technical analysis to determine any disproportionate impacts to disadvantaged communities.

Ms. Elin Betanzo asked if there were any concerns about laboratory capacity given new PFAS testing requirements. Mr. Burneson responded that EPA has confidence in lab capabilities given the current UCMR 5 timeline and is currently implementing a laboratory certification program. Additionally, one of the reasons EPA is considering waiver requirements is to address lab capacity. Ms. Betanzo suggested that there could be a phased schedule for monitoring.

Mr. Eagle Jones posited that small and tribal public water systems are not reflected in UCMR data, but the promulgation of these regulations will require monitoring for these public water systems. He wondered if there would be funding from federal agencies such as the Indian Health Service (IHS) or from federal grants for these public water systems if significant treatment is required. He also asked how regulations regarding the SMF will be incorporated.

Mr. Burneson responded that, for the BIL, there is specific tribal system funding. Dr. McLain added that EPA is collaborating with the IHS to fund tribal infrastructure, including emerging contaminant concerns through the Water Infrastructure Improvements for the Nation (WIIN) grant. Mr. Lan added that one of the benefits of the SMF is that it reduces the variability in monitoring. Dr. Albert added that EPA aims to get UCMR 5 monitoring data from all public water systems serving more than 3,300 people (pending Congressional appropriations). There are also ongoing monitoring efforts from EPA Regions to collect voluntary PFAS sampling data from small tribal water systems.

Ms. Daniels concluded the Questions and Answer session on monitoring and stated that any additional data should be evaluated and compared using QA/QC with historical data. UCMR 3 data has very high detection limits and, therefore, that historical data would not compare well if, for example, EPA is looking at a reporting limit of 5 parts per trillion (ppt). If this were a special primacy agency requirement, each state would have to look at their own acceptance criteria and determine what data meets the criteria anyway. She added that the public water systems she has seen already move forward also

already have some slight differences in the levels they are observing and whether these levels are referred to as a detection limit or a reporting limit.

Ms. Daniels then stated that Pennsylvania considers PFAS a chronic contaminant based on an earlier study from Drexel and, therefore, it makes sense to use an SMF. The state is also contemplating sampling waivers, although they do not yet have a firm grasp on what the waiver criteria would be. In terms of sample compositing, Ms. Daniels added that Pennsylvania tries to give water systems as much opportunity as possible for cost savings, but this might be difficult because labs would need to meet a reported detection limit of 1/5th, which would be very low given a reporting limit of 5 ppt. Pennsylvania is also concerned about lab capacity due to UCMR 5 and that there are six to ten states with their own MCLs that require extra testing beyond federal regulations. Outside of the drinking water programs, most states that are active regarding PFAS also have active environmental cleanup efforts and are conducting sampling on possibly hundreds of private wells in their investigation. Pennsylvania is also conducting surface water sampling to look into ambient water. All this sampling demand will create capacity concerns.

Public Communication Considerations Question and Answer

NDWAC members provided the following comments in regard to discussion questions posed by EPA staff on the topic of public communication.

Mr. Borman stated that Tier 2 or Tier 3 Public Notification (PN) Rule notices are the most appropriate, as PFOA and PFOS are a chronic issue from an operations standpoint. He also stated that PFAS violations need to be included in the Consumer Confidence Report (CCR), but not every PFAS detection, as including every PFAS detection would just alarm the public.

Ms. Daniels stated that there will be different mandatory health effects language across states. Pennsylvania is considering Tier 2 PN notices in their proposed rulemaking and is including language about sources, but the mandatory health effects language they use will not make sense for other states. The challenge lies in determining national mandatory health effects language because of its variance between states.

Ms. Campbell-Ferrari stated that, from a public perspective, it is best to notify the public of any detected PFAS samples as soon as possible but be clear with the health effect language. She said language is critical because the public needs to learn what this means for them in a way that does not cause public panic. Ms. Campbell-Ferrari said that can be difficult, but it is important to notify the public for non-MCL violations and for any detection. There could be heightened impacts for the children and elderly as well, so it is best to notify and explain what that detection means.

Mr. Jones agreed that a Tier 2 PN would be most appropriate for PFAS and that it is consistent with PN requirements. He echoed Ms. Campbell-Ferrari's comments and stated that providing information to the public as soon as possible is necessary. He concluded that it is important to have that message for the consumer.

Ms. Peters stated that the public needs to be notified when there is a violation, although ideally there would be a PN Tier between Tier 1 and Tier 2 that this type of notification could fall under. Ms. Peters stated that the CCR should contain information about the violation, as well as mandatory language about potential health risks. She concluded that there should be an explanation about how people can reduce their exposure to PFAS beyond drinking water risks.

Ms. Betanzo echoed Ms. Campbell-Ferrari's and Ms. Peters' points about notifying the public whenever PFAS is identified. She said that a Tier 2 notice may suffice but a notification of 24 hours seemed most appropriate, and that it may be appropriate to identify a contamination level above the MCL that would require 24-hour notice.

Ms. Daniels stated that, in a best-case scenario, the water supplier would explain why the contamination occurred in the PN and what they are doing to correct it, which would usually include taking the source of the contamination offline. However, it is not always possible for water suppliers to take sources offline, such as in circumstances where no alternative water sources are available. In these circumstances, PNs will be different and must include as much information as possible, including treatment information.

Mixtures of PFAS Considerations Question and Answer

NDWAC members provided the following comments regarding discussion questions posed by EPA staff on the topic of mixtures.

Ms. Betanzo stated that EPA should consider mixtures of PFAS and ensure the safety of the drinking water as a whole. She also said that, to the extent possible, addressing multiple contaminants at once is important.

Mr. Elmore stated a mixture of PFAS should be considered for regulations. He suggested that this should include precursors. He concluded by stating that Wisconsin has a hazard index approach which takes into effect a combination of contaminants. All PFAS detected in the method should be reported.

Mr. Borman agreed that adding additional rules for every type of PFAS would be unnecessary. He stated it may be easiest to look at groupings in reporting for all PFAS. There will be differences between individual species of PFAS, but the health effects will be similar for the group as a whole. He suggested the creation of a family MCL to deal with each grouping at one time. He also stated that this could be similar to total trihalomethanes (TTHM) and haloacetic acids (HAA) that are grouped together for regulation.

Ms. Daniels agreed that no one wants to analyze 4,000 PFAS at one time, especially since PFAS are not the only contaminants of concern. She pointed out that groupings present a challenge as a study from Drexel found that there were not enough similarities in health effects to group different types of PFAS together. Pennsylvania ended up developing individual Maximum Contaminant Level Goals (MCLGs) as a result. She also added that it is important to consider that there are other PFAS that impact customers than just PFOA and PFOS.

Ms. Jana Littlewood stated that those responsible for PFAS discharges should be financially responsible and reminded the group about the number of small systems in the U.S.

Ms. Barney thanked the online seminar presenters and said she learned much from this online seminar. She urged EPA again to consider EJ when forming their regulations.

Ms. Daniels added that sources of PFAS contamination must be addressed, or systems will always be playing catch-up with contaminants.

Ms. Chard stated that the same consumers will pay for PFAS remediation, regardless of whether a drinking water program or clean water program is responsible for their remediation. Additionally, industrial discharge of PFAS into the public drinking water supply is an important pre-treatment aspect to consider.

Bipartisan Infrastructure Law (BIL) Implementation

Ms. Anita Thompkins, Director of EPA's Drinking Water Protection Division (DWPD) in OGWDW, presented on implementation of the BIL. Her presentation can be found in Appendix D.

NDWAC Discussion, Questions, and Comments

NDWAC members provided the following questions and feedback.

Ms. Daniels asked whether public water systems would include the cost for replacing the private portion of a lead service line when they apply for funding for lead service line replacement. Ms. Thompkins responded that public water systems will submit the cost of the full-service line replacement, including both private and public portions, although some states may still have laws stating that they cannot pay for the private portion of lead service line replacement.

Ms. Daniels added that the Pennsylvania Department of Environmental Protection will be adding some new conditions for their lead service line replacement applications, such as providing follow-up sampling and filters, and asked whether EPA supported these measures. Ms. Thompkins responded that EPA does support those measures.

Ms. Campbell-Ferrari stated that the BIL created a rural and low-income pilot assistance program and delegated authority over it to EPA but did not provide funding for it. She asked whether EPA would wait until funding is provided before moving forward with it. Ms. Thompkins responded that EPA has been working with the Department of Health and Human Services (HHS) to support the Low-Income Household Water Assistance Program (LIHWAP), but that EPA does not begin work on projects until funds have been appropriated, so the pilot program has not yet begun.

Ms. Campbell-Ferrari stated that there have been many groups examining the equity side of the SRF. She had heard that EPA is doing a study on how equitable SRF funding has been and asked if it is correct that EPA is conducting this study. Ms. Thompkins said that EPA tracks whether states are properly providing funds to meet necessary conditions for SRF funding. Dr. McLain later responded further, prior to her closing remarks at the end of the meeting, noting a report to Congress on compliance with fund distribution that EPA is required to author and a current audit by the Office of Inspector General regarding SRF distributions to disadvantaged communities to see if states are meeting their subsidy goals for distribution to disadvantaged communities as identified in their Intended Use Plans, as well as to see if EPA has identified and addressed barriers that hinder states from spending the maximum allowed on loan subsidies for disadvantaged communities. Dr. McLain thought that either one of those could be the study Ms. Campbell-Ferrari had cited.

Mr. Jones stated that he did not see much information in the general supplemental section of the presentation about funding for tribes and asked whether tribes apply directly to the state through SRF for funding. Ms. Thompkins responded that the greater of 2% of SRF funding or $20 million of SRF

funding is set aside for tribal projects, and that EPA will work with IHS to make sure funds are set aside to tribes. EPA is currently working on the implementation schedule for the tribes.

Ms. Daniels asked where funding for earmarked projects would come from. Ms. Thompkins explained that funding for earmarked projects will be coming from the SRF program appropriation.

Ms. Daniels asked when more details would be available about Water Infrastructure Improvements for the Nation (WIIN) funding grants. Ms. Thompkins stated that EPA is in the process of working to announce those funds and allocations. She stated that EPA also has traditional Small, Underserved, and Disadvantaged Communities (SUDC) WIIN grants and is working through the process for announcing those funds and allocations as well. Ms. Thompkins stated that EPA aims to complete these steps by the end of Spring 2022.

Mr. Szabo asked if the earmarked funding will also go through the SRF. Ms. Thompkins explained that EPA is still working through this question, but that earmarked funding is not planned to be managed through the SRFs, and that it has never traditionally been done so.

Mr. Jones asked if there are funds identified in the BIL to fund third party technical assistance providers to help states identify disadvantaged communities and their needs. Ms. Thompkins responded that there are no funds specifically set aside for this in the BIL, but that states can still take their set-asides and use these funds to provide technical assistance. She added that EPA was also provided authority to take technical assistance set-asides, so EPA will plan to provide technical assistance to states as well.

Mr. Szabo asked whether EPA would rely on states to develop their own scoring system to evaluate their proposals, or whether EPA would develop their own criteria. Ms. Thompkins stated that the SRF program is managed by the state, so they can develop their own criteria for scoring. EPA will review the criteria that states create to ensure equity, but the state has the authority to set these standards.

Ms. Daniels asked when more information will be available about technical assistance hubs that EPA has stated it will create. She added that states would look at the resources gaps they have and may use set asides to fill in those gaps. Ms. Thompkins stated that EPA is still in the process of discussing the best approach for the technical assistance hubs, and that EPA wants state drinking water administrators' input when developing their plan. She stated that EPA is still receiving feedback from stakeholders but will provide more information soon.

Ms. Daniels stated that it was unclear to her how Justice40 requirements for this funding would be defined, applied, and tracked. She stated that the definition for EJ communities is a bit different than disadvantaged communities and asked if states will be able to define EJ communities the same way that they define disadvantaged communities. Ms. Thompkins stated that EPA will share this information as soon as they receive it and stated that much of the Justice40 requirements will be based off information that EPA has already collected.

Ms. Barney stated that Native American tribes seeking funding will have to work with IHS and that funding for EJ projects can be used to extend from the utility's responsibility to homeowners with regards to lead and copper.

Ms. Thompkins closed by stating that EPA is excited for this investment and historic down payment for the United States' water infrastructure. Ms. Thompkins stated that this funding will make a significant

impact on the lives of so many people, and that EPA looks forward to improving the water infrastructure across the United States.

Microbial and Disinfection Byproducts (MDBP) Rule Revisions Working Group Update

Ms. Katie Foreman, Acting Associate Branch Chief for EPA's SRRB in OGWDW, presented information about EPA's charge to the NDWAC to provide the agency with advice and recommendations that will be used to inform the development of potential MDBP rule revisions and the working group that will provide support to the NDWAC. Ms. Foreman's presentation can be found in Appendix E.

NDWAC Discussion, Questions, and Comments

Mr. Jones asked if he could participate in this working group as a member of the public. Ms. Corr responded that there are NDWAC members on the working group, and NDWAC members will be the ones providing the final advice to EPA. She noted that EPA prefers NDWAC members to participate in this way, rather than as a member of the public, and that EPA will keep NDWAC members informed of the working group proceedings.

Closing Remarks

After adding as previously noted to the discussion with Ms. Thompkins, Dr. McLain thanked NDWAC members for all of the conversation and noted that the NDWAC members' input will be helpful as EPA conducts their assessments and evaluations. Ms. Daniels also thanked the meeting attendees.

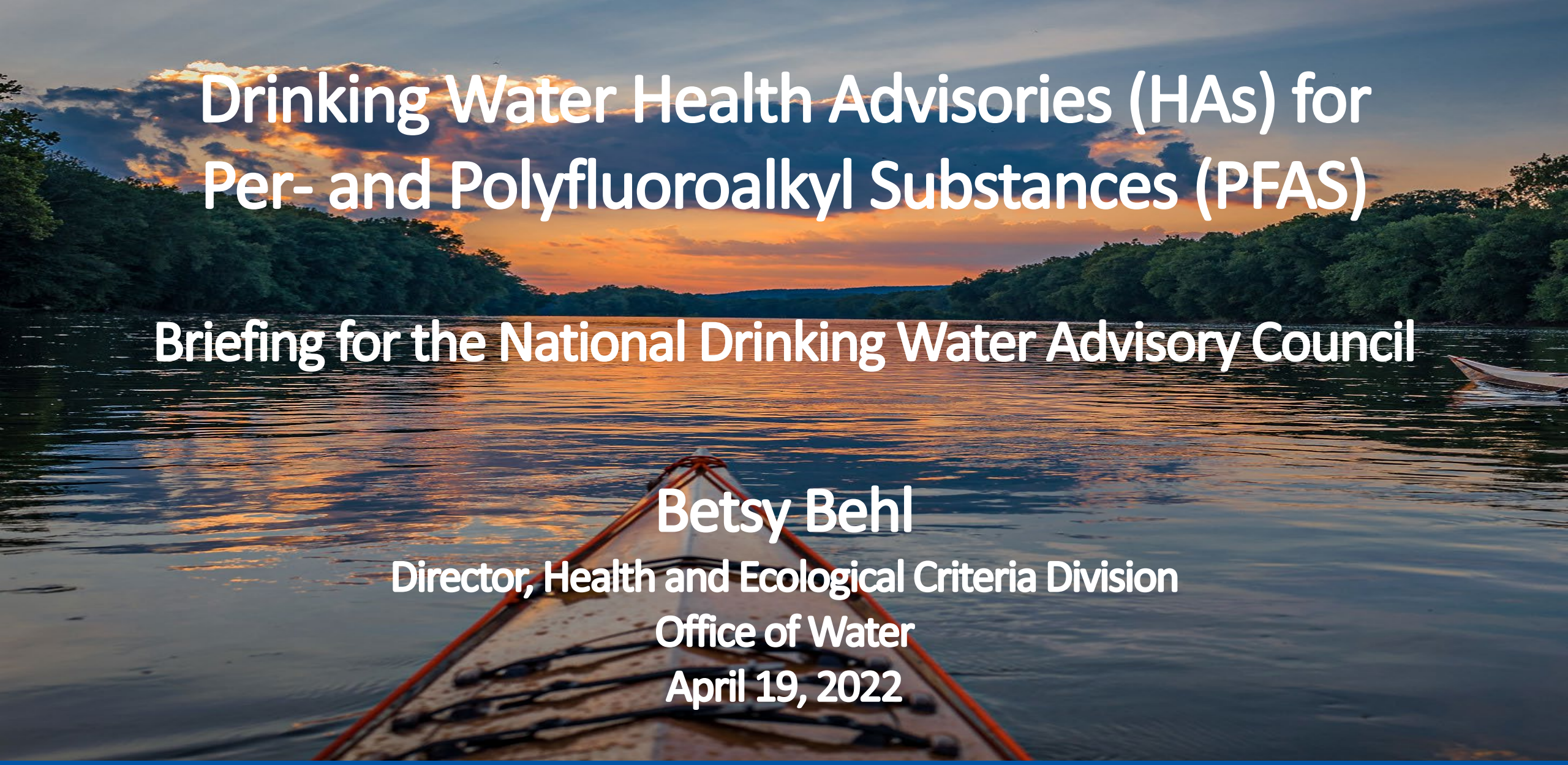
Ms. Corr adjourned the meeting.

Appendix A:
NDWAC Roster

NDWAC Roster 4/19/22

Members, National Drinking Water Advisory Council	
Ms. Lisa D. Daniels, NDWAC Chair Director, Bureau of Safe Drinking Water Pennsylvania Department of Environmental Protection Harrisburg, PA	Ms. Yolanda Barney Environmental Program Manager Navajo Public Water System Supervision Program Navajo Nation Environmental Protection Agency Window Rock, AZ
Ms. Elin W. Betanzo Founder and Principal Safe Water Engineering, LLC Detroit, MI	Mr. D. Scott Borman General Manager Benton/Washington Regional Public Water Authority Rogers, AR
Ms. Alexandra Campbell-Ferrari Co-Founder and Executive Director The Center for Water Security and Cooperation Washington, DC	Ms. Shellie R. Chard Director, Water Quality Division Oklahoma Department of Environmental Quality Oklahoma City, OK
Mr. Steven B. Elmore Program Director Bureau of Drinking Water and Groundwater Wisconsin Department of Natural Resources Madison, WI	Mr. Eagle Jones Director of Water Operations Pechanga Tribal Government Temecula, CA
Ms. Jana Littlewood National Rural Water Association Board of Directors -- Alaska Representative Wasilla, AK	Ms. Jennifer L. Peters National Water Programs Director Clean Water Action/Clean Water Fund Littleton, CO
Mr. James M. Proctor, II Senior Vice President and General Counsel McWane, Inc. Birmingham, AL	Ms. Nancy A. Quirk General Manager Green Bay Water Utility Green Bay, WI
Mr. Alex Rodriguez President and Chief Executive Officer DCG Public Affairs Diversity Consulting Group, LLC Santa Barbara, CA	Mr. Jeffrey W. Szabo Chief Executive Officer Suffolk County Water Authority Oakdale, NY
Mr. Macaroy "Mac" Underwood Principal Consultant Raftelis Financial Consultants, Inc. Vestavia, AL	
Liaisons, Centers for Disease Control and Prevention	
Dr. Arthur S. Chang Chief Medical Officer Division of Environmental Health Science and Practice National Center for Environmental Health Centers for Disease Control and Prevention Atlanta, GA	Dr. Vincent Hill Chief, Waterborne Disease Prevention Branch Division of Foodborne, Waterborne and Environmental Diseases National Center for Emerging and Zoonotic Infectious Diseases Centers for Disease Control and Prevention Atlanta, GA

Appendix B: PFAS Health Advisories Presentation



Drinking Water Health Advisories (HAs) for Per- and Polyfluoroalkyl Substances (PFAS)

Briefing for the National Drinking Water Advisory Council

Betsy Behl

Director, Health and Ecological Criteria Division

Office of Water

April 19, 2022

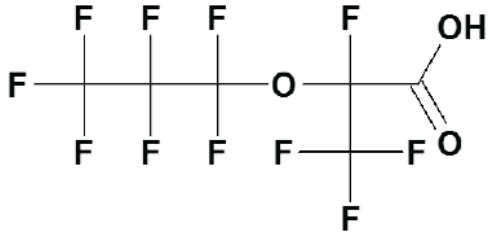
Background

- The Safe Drinking Water Act (SDWA) authorizes EPA to develop drinking water Health Advisories (HAs).
- HAs are *non-regulatory* concentrations of drinking water contaminants that are defined as a level of drinking water contaminant concentration for a specific exposure duration, at or below which exposure is not anticipated to lead to adverse human health effects.
- HAs can be developed more rapidly than SDWA regulations when concerns arise about drinking water quality.
- There are currently over 200 HAs that provide states/tribes and drinking water utilities technical information on health effects, analytical detection methods, and treatment technology.
- EPA is currently developing Final HAs for **GenX chemicals** and **PFBS**, which we expect to publish in Spring 2022, as stated in the PFAS Strategic Roadmap.
- In November 2021, EPA committed to updating the HAs for **PFOA** and **PFOS** as quickly as possible, in light of new data and the agency's draft health effects analyses developed to support the SDWA National Primary Drinking Water Regulation.

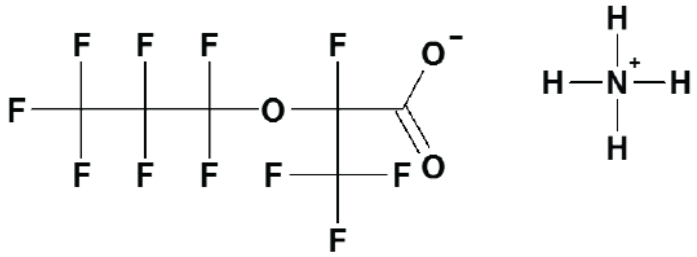
GenX Chemicals and PFBS

GenX Chemicals – Background

- GenX is a trade name for a processing aid technology used to make high-performance fluoropolymers without the use of PFOA. Hexafluoropropylene oxide (HFPO) dimer acid and its ammonium salt are the major chemicals associated with the GenX processing aid technology.
- Products that used to be made using PFOA may now rely on GenX chemicals. According to the Chemours Company, fluoropolymers have “countless” industrial applications, including in the medical, automotive, electronics, aerospace, energy, and semiconductor industries.
- GenX chemicals have been found in surface water, groundwater, drinking water, rainwater, and air emissions.



HFPO dimer acid
CASRN 13252-13-6



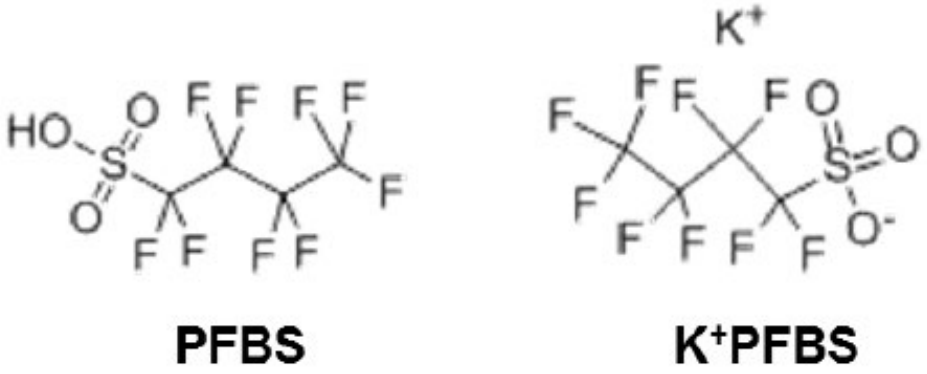
HFPO dimer acid ammonium salt
CASRN 62037-80-3

GenX Chemicals – Health Effects and HA

- Final HA will be based on EPA's 2021 final toxicity assessment for GenX chemicals:
  - Animal toxicity studies following oral exposure to GenX chemicals have found health effects on the liver, the kidney, the immune system, and developmental effects, as well as cancer.
  - The liver appears to be particularly sensitive after oral exposure to GenX chemicals.
    - Chronic **RfD is 3×10^{-6} mg/kg/day** based on critical liver effects (constellation of liver lesions as defined by the National Toxicology Program Pathology Working Group) in parental female mice exposed to HFPO dimer acid ammonium salt by gavage for 53–64 days.
  - Suggestive evidence of carcinogenic potential of oral exposure to GenX chemicals in humans.

PFBS - Background

- Perfluorobutane sulfonic acid and its related compound potassium perfluorobutane sulfonate (PFBS) is a replacement chemical for PFOS, which was voluntarily phased out by the primary U.S. manufacturer by 2002.
- PFBS-based compounds are surfactants used primarily in the manufacture of paints, cleaning agents, and water- and stain-repellent products and coatings.
- PFBS has been identified surface water, wastewater, drinking water, dust, and a variety of consumer products.



PFBS **K^+PFBS**

PFBS – Health Effects and HA

- Final HA will be based on EPA's 2021 final toxicity assessment for PFBS:
  - Animal studies following oral exposure to PFBS have shown health effects on the thyroid, reproductive organs and tissues, developing fetus, and kidney following oral exposure.
  - The thyroid appears to be particularly sensitive to oral PFBS exposure.
    - Chronic RfD is **3×10^{-4} mg/kg/day** based on critical effect of decreased serum total thyroxine (T4) in newborn (postnatal day (PND) 1) mice.
  - There are no known studies evaluating potential cancer effects of PFBS and so the potential for cancer effects after PFBS exposure could not be evaluated.

PFOA and PFOS

Previous and Current Uses: Industrial and Consumer Products

Perfluorooctanoic Acid (PFOA)

- Cooking surfaces
- **Fire fighting foams**
- Toothpaste, shampoos, cosmetics
- Semiconductor industry
- Polishes and waxes
- Electronics
- **Lubricants/surfactants/emulsifiers**
- Pesticide
- Plumbing tape
- Food containers and contact paper
- Textiles and leather
- Paints, varnishes, sealants
- Cleaning products
- And more…

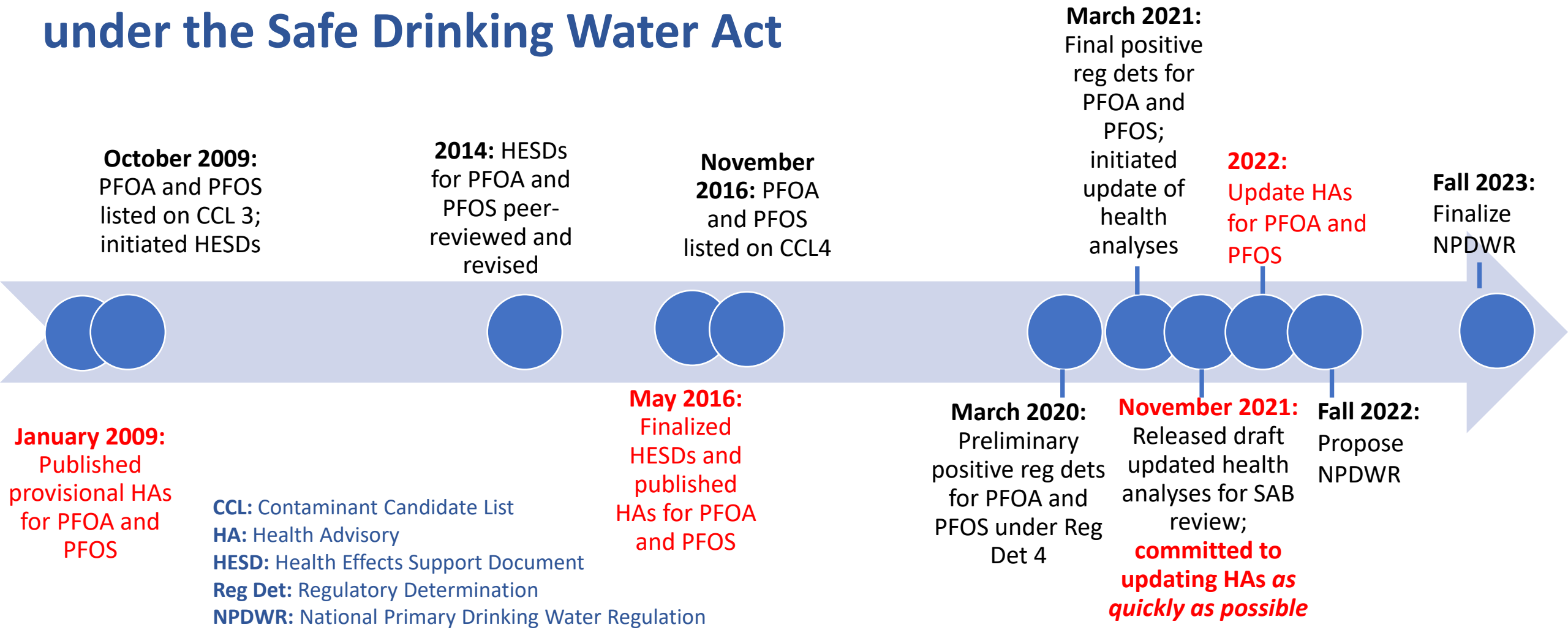
***NOTE*: GenX chemicals replaced PFOA**

Perfluorooctane Sulfonic Acid (PFOS)

- **Metal plating and finishing**
- **Fire fighting foams**
- **Photograph development**
- Semiconductor industry
- **Aviation fluids**
- Flame repellants
- Packaging papers
- Oil and mining
- Stain repellants on carpets and upholstery
- Cleaning products
- Paints, varnishes, sealants
- Leathers, textiles
- And more…

***NOTE*: PFBS replaced PFOS**

EPA's Assessment of PFOA and PFOS under the Safe Drinking Water Act



CCL: Contaminant Candidate List
HA: Health Advisory
HESD: Health Effects Support Document
Reg Det: Regulatory Determination
NPDWR: National Primary Drinking Water Regulation

Draft Health Effects Analyses for PFOA and PFOS

- EPA is conducting extensive evaluations of human epidemiological and experimental animal study data to support the SDWA National Primary Drinking Water Regulation for PFOA and PFOS.
- In November 2021, EPA released draft updated health effects analyses for Science Advisory Board review.
  - EPA evaluated over 400 studies published since 2016 and used new approaches, tools, and models.

	PFOA	PFOS
# of new animal tox studies	25 relevant studies	29 relevant studies
# of new human epi studies	350 relevant studies	338 relevant studies
# of new cancer studies – epi; tox	13 (8 medium or high quality); 1	11 (8 medium or high quality); 0
Health effects observed	immune, developmental, cardiovascular, hepatic, reproductive, nervous, endocrine, and metabolic effects and cancer	immune, developmental, cardiovascular, reproductive, endocrine, metabolic, and hepatic effects and cancer
# of new PK or PBPK studies	44 relevant studies	37 relevant studies

Draft Health Effects Analyses for PFOA and PFOS

- EPA's November 2021 draft analyses indicate that the levels at which negative health effects could occur are likely **much lower** than previously understood when EPA issued the EPA's 2016 HAs for PFOA and PFOS (70 parts per trillion or ppt) – including near zero for certain health effects.
  - EPA's 2021 draft noncancer reference doses (RfDs) based on human epidemiology studies for various effects (e.g., developmental/growth, cardiovascular health outcomes, immune health) range from ~10^{-7} to 10^{-9} mg/kg/day, **two to four orders of magnitude lower** than the 2016 RfDs of 2 x 10^{-5} mg/kg/day.
  - In addition, PFOA is a likely carcinogen (cancer-causing agent) and PFOS is a suggestive carcinogen.

Additional PFAS

PFAS IRIS Assessments

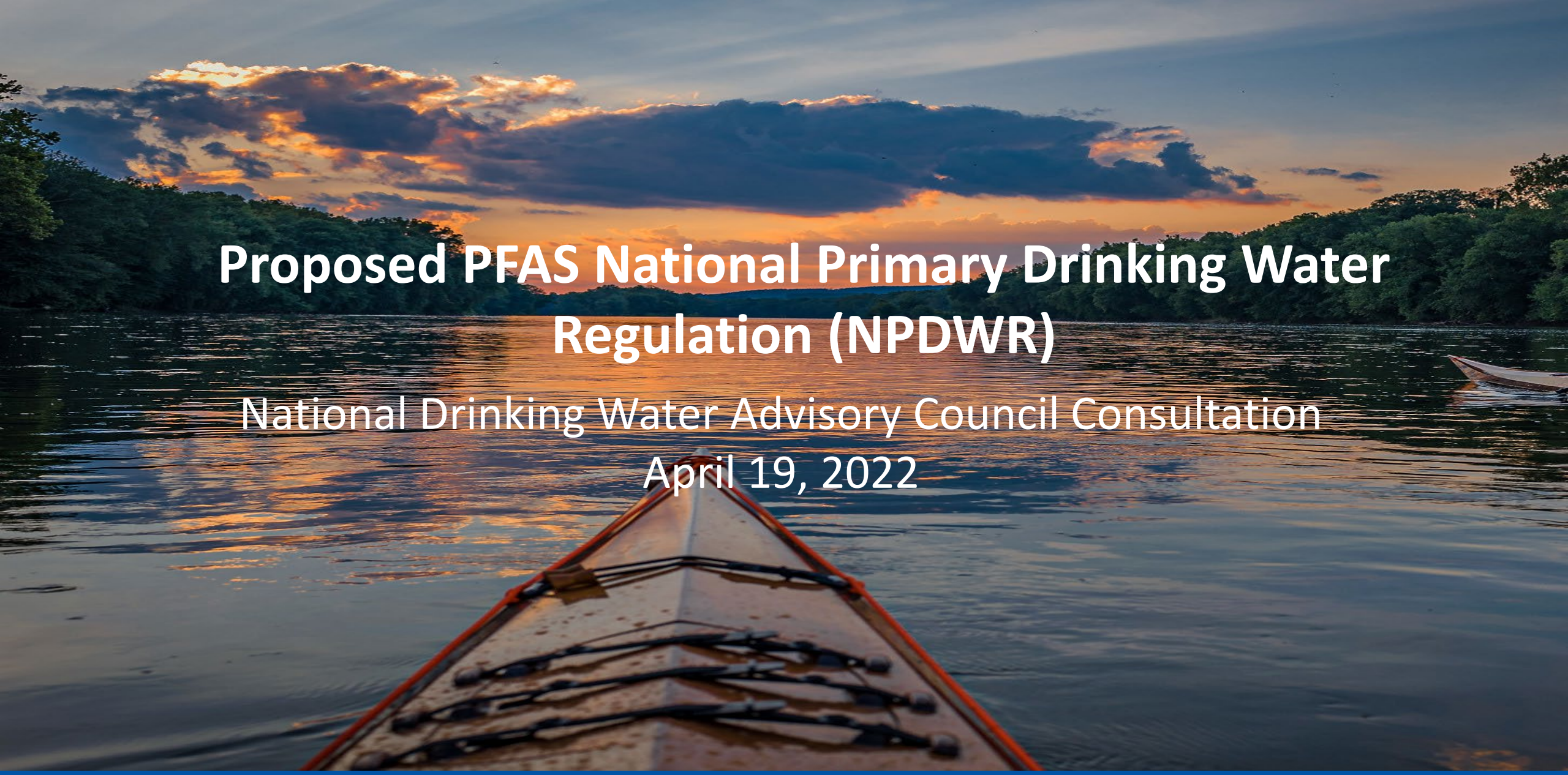
- EPA will prioritize HA development for PFAS with IRIS assessments under development:

Chemical	Public Product(s)/Activity	Projected Date
Perfluorobutanoic Acid (PFBA)	External Peer Review	February 22-23, 2022
Perfluorodecanoic Acid (PFDA)	Public Comment Draft Release External Peer Review	FY23 Q1 FY23 Q2
Perfluorohexanoic Acid (PFHxA)	External Peer Review	FY22 Q3
Perfluorohexanesulfonic Acid (PFHxS)	Public Comment Draft Release External Peer Review	FY23 Q2 FY23 Q2
Perfluorononanoic Acid (PFNA)	Public Comment Draft Release External Peer Review	FY23 Q2 FY23 Q3

Source: EPA IRIS Program Outlook (February 2022)

QUESTIONS ?

Appendix C: Proposed PFAS NPDWR Presentation



Proposed PFAS National Primary Drinking Water Regulation (NPDWR)

National Drinking Water Advisory Council Consultation

April 19, 2022

United States Environmental Protection Agency

Office of Water

Purpose

- To provide the National Drinking Water Advisory Council (NDWAC) with information on the development of the proposed per-and polyfluoroalkyl substances (PFAS) National Primary Drinking Water Regulation (NPDWR)
- To solicit input from NDWAC members on key areas of the development of the proposed PFAS NPDWR

Overview

- Background
- Key Areas of Consideration on potential NPDWR requirements
- Cost information and funding considerations
- Next steps

Background

PFAS Overview

- PFAS are a group of synthetic chemicals that have been in use since the 1940s.
- There are thousands of types of PFAS chemicals, some of which may have been more widely used than others.
- PFAS can be found in stain and water repellants used in fabrics, carpets and outerwear, among other consumer products.
- PFAS can also be found at manufacturing and processing facilities, and airports and military installations that use firefighting foams which contain PFAS.
- Over the past few years, science has progressed rapidly, and the agency must move forward with actions that are based on this new science and a better understanding of the challenges many communities are facing.

PFAS Health Effects and Drinking Water Occurrence

- Perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) have been the most extensively studied PFAS.
  - Both are very persistent in the environment and human body.
- Current scientific research and available evidence have shown links between oral exposure to studied PFAS chemicals and adverse health outcomes and effects, including prenatal and postnatal development (e.g., low birth weight), cancer (e.g., kidney), liver effects (e.g., tissue damage), immune effects (e.g., antibody production and immunity), and other effects (e.g., cholesterol changes).
- PFOA and PFOS occur with a frequency and at levels of public health concern at public water systems (PWSs) based on available occurrence information from the third Unregulated Contaminant Monitoring Rule (UCMR 3). Recent state PFAS monitoring data demonstrates occurrence consistent with UCMR 3 monitoring.
  - Under UCMR 3, 4,920 PWSs were analyzed for PFOA and PFOS. A total of 162 PWSs (3.29%) had reported detections (greater than or equal to the Minimum Reporting Level (0.02 µg/L and 0.04 µg/L, respectively)) of at least one of the two compounds within 25 states, tribes, and territories.

Regulating PFAS in Drinking Water

- On March 3rd, 2021 EPA published the final regulatory determinations for PFOA and PFOS under the Safe Drinking Water Act (SDWA).
- With the final regulatory determinations for PFOA and PFOS, EPA is developing a proposed SDWA NPDWR for PFAS.
- EPA is also evaluating inclusion of additional PFAS chemicals into the NPDWR as supported by the best available science.
- Additionally, EPA released the PFAS Strategic Roadmap in October 2021 which lays out the Administrator's commitment to addressing PFAS. The plan includes an overall strategy of tangible actions both upstream and downstream to deliver public health benefits to all people.
- Under the PFAS Roadmap, establishing a PFAS NPDWR is a key action. EPA anticipates publishing the proposed rule for public comment in Fall 2022 and promulgating a final rule in Fall 2023.

SDWA: Proposing an NPDWR

- An NPDWR establishes requirements applicable to PWSs.
- A PWS provides water for human consumption to at least 15 service connections or serves an average of at least 25 people for at least 60 days a year.
- EPA defines three types of PWSs:
  - Community Water System (CWS): Serves same population year round
  - Non-Transient Non-Community Water System (NTNCWS): Regularly supplies water to at least 25 of the same people at least six months per year (e.g., school)
  - Transient Non-Community Water System: Serves water where people do not remain for long period of time (e.g., gas station)
    - EPA does not anticipate that the PFAS NPDWR will affect transient non-community water systems.

SDWA: Proposing an NPDWR

- For each contaminant receiving a positive determination, the Administrator shall:
  - Propose a Maximum Contaminant Level Goal (MCLG) and NPDWR not later than 24 months after determination and promulgate within 18 months after proposal
- An **MCLG** is the non-enforceable level at which no known or adverse effects on the health of persons occur and which allows for an adequate margin of safety. It does not account for limits of detection and treatment technology effectiveness.
- An enforceable **Maximum Contaminant Level (MCL)** is set as close as feasible to the MCLG (taking costs and benefits into consideration).
- If it is not economically/technologically feasible to ascertain the level of the contaminant EPA may propose a Treatment Technique (TT) in lieu of an MCL.
  - Prevents known or anticipated adverse effects to the extent feasible
  - Minimizes overall risk by balancing risk from the contaminant and the risk from other contaminants the concentrations of which may be affected by the TT

SDWA: Proposing an NPDWR

- EPA is seeking Science Advisory Board (SAB) input on draft documents, including those that describe EPA's proposed approaches toward deriving the health-based MCLGs for PFOA and PFOS.
  - Within the documents are key inputs for deriving MCLGs including draft toxicity values and the available animal toxicity and human epidemiological data on health effects from exposure to PFOA and PFOS. They do not contain the draft MCLG values.
  - The SAB has formed a PFAS Review Panel and have developed a draft SAB PFAS Review Panel report with recommendations which will be provided to the full chartered SAB body. The chartered SAB members will review and provide input on the draft report and it will be finalized and transmitted to the EPA Administrator as early as August 2022.
  - EPA will consider the SAB's recommendations to inform the development of the proposed MCLGs and NPDWR requirements.

SDWA: Proposing an NPDWR

- Identify available technologies for contaminant removal
  - Small System Compliance Technologies (SSCT) that are affordable* for:
    - Systems serving 25-500 people,
    - Systems serving 501-3,300 people, and
    - Systems serving 3,301-10,000 people
  - Best Available Technologies (BATs)
    - Examined under field conditions
    - Consider efficacy and cost

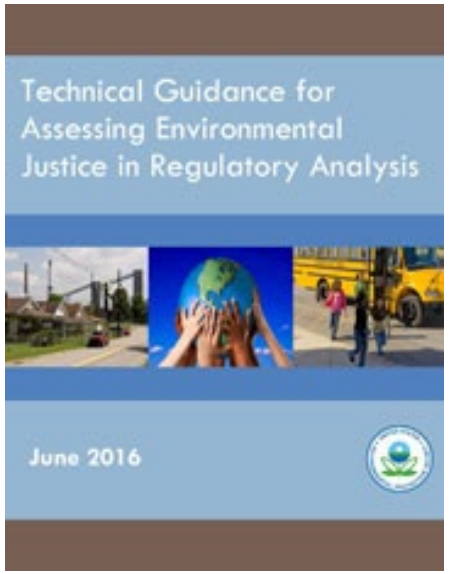
* If there are no affordable SSCTs for one or more category of small systems, EPA must identify variance technologies that may not achieve compliance but that achieve the maximum reduction that is affordable and are “protective of public health”.

SDWA: Proposing an NPDWR

- A Health Risk Reduction Cost Analysis that includes:
  - Quantifiable and non-quantifiable health risk reduction benefits from removing the regulated contaminant and co-occurring contaminants;
  - Quantifiable and non-quantifiable health risk reduction costs of compliance;
  - Incremental costs and benefits;
  - Effects on sensitive populations such as infants, children, pregnant women, and the elderly;
  - Any increased health risk that may result from compliance; and
  - Other relevant factors including the quality of information.
- A determination as to whether the benefits of the proposed MCL justify, or do not justify, the cost
  - If benefits do not justify costs, EPA may set the MCL at a level at which health risk reduction benefits are maximized at a cost justified by the benefits.

EJ Considerations for Proposing a Drinking Water Regulation

- EPA is committed to ensuring the fair treatment and meaningful involvement of all people with respect to environmental laws, regulations, and policies.
- A priority action under EPA's Equity Action Plan is to also "develop a comprehensive framework for considering cumulative impacts in relevant EPA decisions and operationalize that framework in EPA's programs and activities."
- To directly support this commitment to EJ, EPA's *Technical Guidance for Assessing Environmental Justice in Regulatory Analysis* outlines particular technical approaches and methods to help EPA analyze potential EJ concerns for regulatory actions.
- As a part of the PFAS drinking water rule development process, EPA is currently conducting this analysis and will provide this information when issuing the proposed rule.
- Within the analysis, EPA is considering if population groups of concern (e.g., low-income populations) are disproportionately exposed to PFAS in drinking water.
- EPA's analysis will also evaluate whether population groups of concern are disproportionately affected by PFAS regulatory options under consideration.



Key Areas of Consideration

Key Areas of Consideration for Potential NPDWR Requirements

- EPA is considering practical monitoring options and treatment technology feasibility to control for PFAS as a part of MCL and/or TT requirements.
- EPA is interested in input related to implementation challenges to achieving MCLs and/or TTs.
- EPA is specifically interested in input related to the following proposed rule areas:
  - Treatment
  - Monitoring
  - Public notification
  - PFAS Mixtures

Treatment Considerations

PFAS Treatment – General Considerations

- Traditional treatment technologies are largely ineffective at removing PFOA and PFOS to drinking water levels protective of public health.
- Some water systems with PFAS contamination will be required to install treatment or take other actions to reduce PFAS levels in their drinking water.
- EPA is evaluating technologies and has studies that demonstrate the following PFAS reductions for each technology:
  - Activated carbon can remove greater than 92% and 95% of PFOA and PFOS, respectively.
  - Ion exchange achieved removal of greater than 75% and 92% of PFOA and PFOS, respectively, however may not be as effective if not designed to remove PFOA and PFOS.
  - Nanofiltration and reverse osmosis are both highly effective in separating PFOA and PFOS, often to a 99% reduction in both PFOA and PFOS.
- These technologies may also remove other contaminants.
- Some water systems may be able to reduce PFAS levels without installing treatment by developing a new source of water that does not have PFAS contamination.

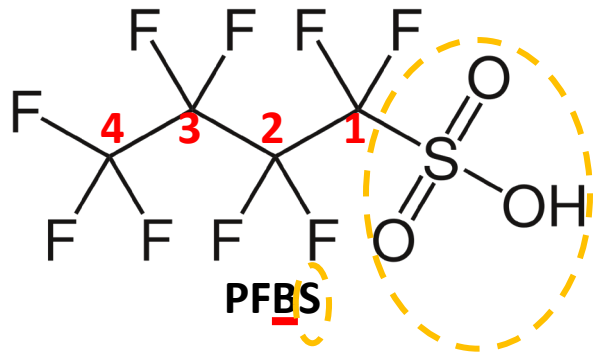
PFAS Drinking Water Treatment Overview

What Works

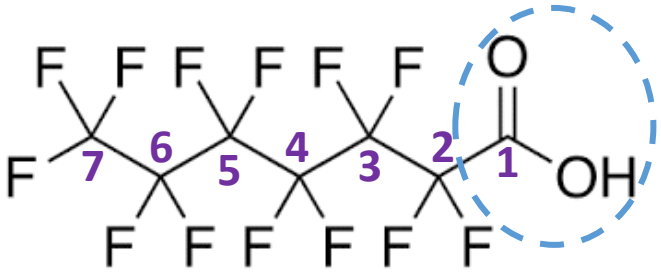
- Activated Carbon
- Ion Exchange
- Nanofiltration
- Reverse Osmosis

Broad Considerations

- "Longer Chain" PFAS are easier to remove
- Site specific footprints
- Formation from precursors
- Ancillary benefits especially with DBP
- These technologies have been demonstrated to achieve or go below current analytical quantitation limits in drinking water



PFBS



PFHpA

Root	Carbon Length
Meth-	1
Eth-	2
Prop-	3
But-	4
Pent-	5
Hex-	6
Hept-	7
Oct-	8
Non-	9
Dec-	10
Undeca-	11
Dodeca-	12
Trideca-	13
Tetradeca-	14

Activated Carbon Background

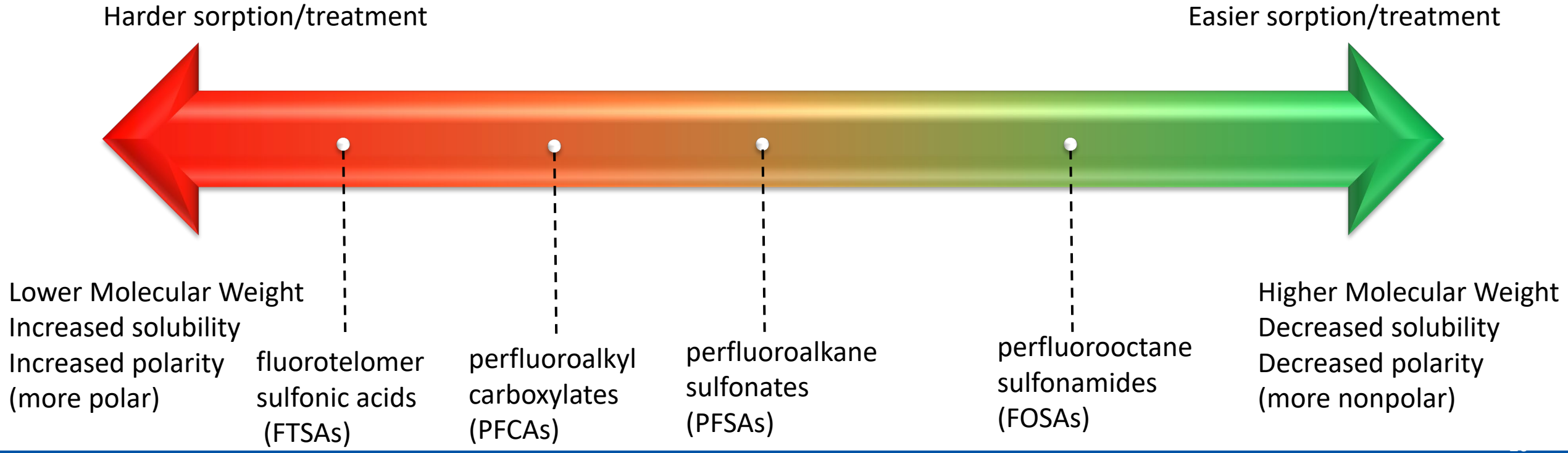
- Produced from:
  - Anthracite, lignite, peat, coconut husks, peach pits, etc
- Activation – increases surface area
  - Thermally (steam, pyrolysis), chemically
  - May be reactivated
- Reversible process
  - Chromatographic Peaking, Competitive Sorption

Granular

Powdered

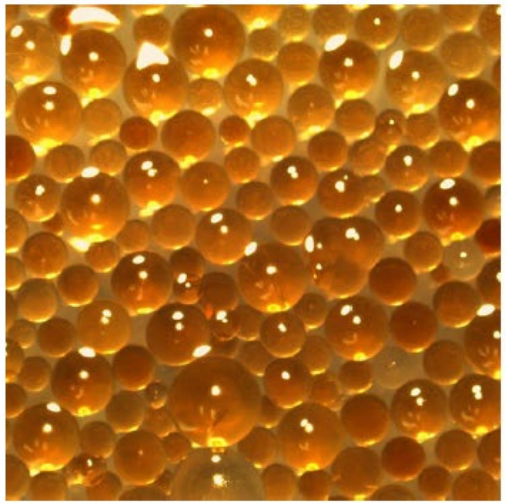
Activated Carbon Sorption

- PFAS sorption to activated carbon varies by the characteristics of the PFAS
- From ≈C7-C17 linearly dependent on chain length shifted by functional group



Ion Exchange

- Exchanges unwanted minerals with less objectionable ones
- Resins absorb PFAS and replace it with a negative anion
- Resins may be reactivated
- Reversible process



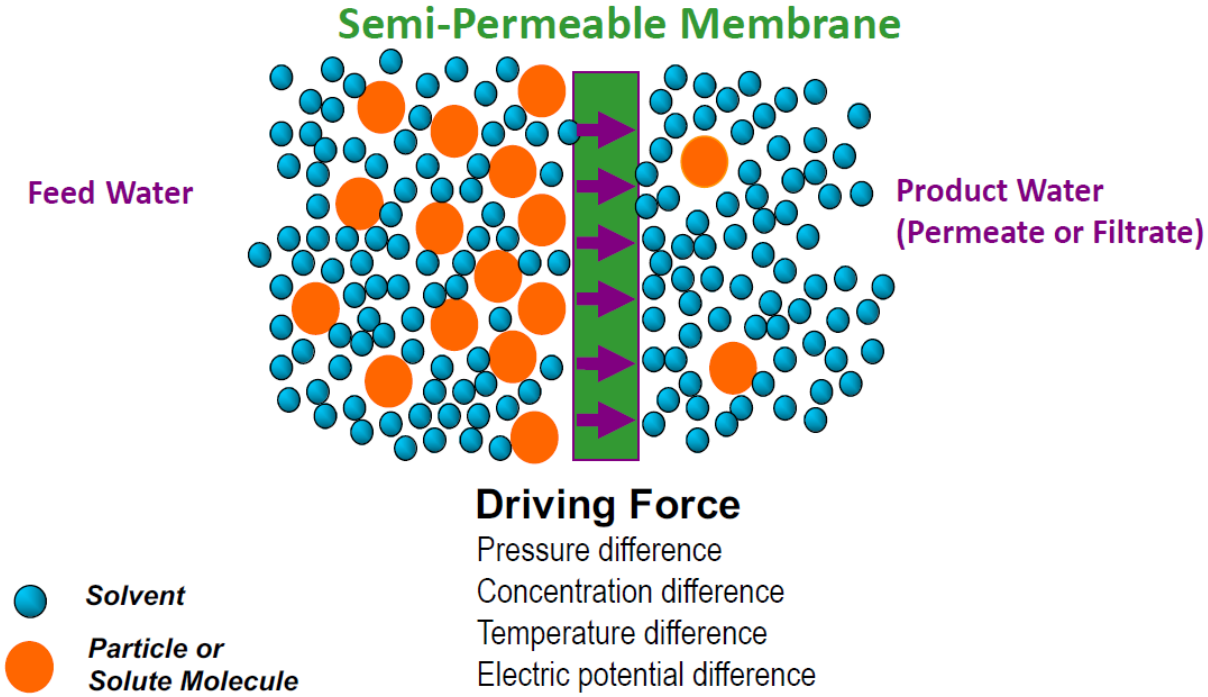
Nanofiltration (NF) and Reverse Osmosis (RO)

NF

- Removal occurs due to size exclusion and diffusivity/solubility differences
- Typically characterized by Molecular Weight Cut Off (MWCO) or NaCl/$MgSO_4$ rejection
- 90-150 psi operating pressure

RO

- Removal occurs due to diffusivity/solubility differences
- Typically characterized by NaCl rejection
- 100-1,100 psi operating pressure (400 psi minimum for desalinization but normally around 800-1,100 psi)



Treatment Residuals and Disposal

- EPA has prioritized research on PFAS disposal options in different environmental media and best management practices.
  - Evaluation of single use disposal options and reactivation potential of certain media, concentrate disposal for NF and RO, and related uncertainties for each disposal option.
- EPA is also evaluating the actions that PWSs must take to dispose of treatment residuals that contain PFAS, including actions resulting from other environmental statutes that may impact drinking water treatment and disposal options.
  - EPA interim guidance is available for destruction and disposal of PFAS and PFAS-containing materials from some products, including spent drinking water treatment media.
- As part of proposed PFAS NPDWR, EPA is considering the costs of various disposal options for drinking water treatment residuals that contain PFAS.

Treatment: Consultation Questions

- What input do NDWAC members have related to the identified of treatment technologies for removal of PFAS (GAC/PAC, IX, RO and NF)?
- Are there other treatment technologies that EPA should consider?
- What non-treatment options for reducing levels of PFAS in drinking water should EPA consider?
- How should EPA consider the disposal of PFAS treatment residuals or regenerating treatment media?

Monitoring Considerations

Monitoring

- Monitoring is critical to assuring that water systems are providing public health protection. EPA is evaluating requirements for PWSs to conduct initial and ongoing monitoring that will be required under the rule.
- Possible options for initial monitoring of PFAS concentrations include:
  - Two or four samples collected over a period of one year, dependent on system size
  - Use of recent, previously acquired PFAS drinking water data from the Unregulated Contaminant Monitoring Rule (UCMR) or a state-level drinking water occurrence data collection program

Monitoring

- EPA is considering provisions for systems with multiple entry points to consider analyzing composite samples to reduce analytical costs (i.e., a single analysis may establish a below-detection-limit concentration across multiple entry points).
- EPA is considering provisions for ongoing monitoring similar to current regulations for Synthetic Organic Contaminants under the Standardized Monitoring Framework.
  - Systems may be granted a monitoring waiver by the primacy agency if a vulnerability assessment finds that the contaminant has not been used in the area, or that the PWS can prove it is not susceptible to contamination from that contaminant. Vulnerability assessments must be updated every three years.
  - The frequency of monitoring for systems that do not receive waivers is set based upon a comparison of past monitoring results to a "trigger level" and to the MCL. A trigger level is often based on the sensitivity of analytical methods for the contaminant.

Monitoring

Standardized Monitoring Framework for Synthetic Organic Contaminants.

Synthetic Organic Contaminants	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9
Pop. > 3,300 (Below Trigger Level)									
Waiver		X			X			X	
No Waiver		**			**			**	
Pop. < 3,300 (Below Trigger Level)									
Waiver		X			X			X	
No Waiver		*			*			*	
Above Trigger Level									
Reliably and Consistently ≤ MCL	*	*	*	*	*	*	*	*	*
Not Reliably and Consistently ≤ MCL	****	****	****	****	****	****	****	****	****

X = No sampling unless required by the primacy agency

* = 1 sample per entry point to the distribution system (EPTDS)

** = 2 quarterly samples at each EPTDS. Samples must be taken during two quarters of a single calendar year during each 3-year compliance period.

**** = 4 quarterly samples at each EPTDS within time frame designated by the primacy agency

Monitoring: Consultation Questions

- What input do NDWAC members have related to:
  - How should available PFAS drinking water monitoring data be considered in the initial monitoring requirements?
    - UCMR Data
    - State Data
    - Other Data
  - Should the PFAS regulation incorporate Standardized Monitoring Framework provisions for Synthetic Organic Contaminants?
    - Monitoring waivers based on vulnerability assessments
    - Monitoring frequency determined based on previous monitoring results

Public Communication Considerations

Communication with the Public

- PWSs may be required to issue public notification to customers if PFAS levels in drinking water exceed regulatory standards.
- Under the Public Notification Rule, there are three tiers of notification:
  - Tier 1: Immediate notice where there is potential for human health to be immediately impacted; water systems have 24 hours to notify consumers
  - Tier 2: Notice as soon as possible where does not pose immediate risk to human health; within 30 days of violation
  - Tier 3: Annual notice, does not have direct impact on public health
- EPA is currently considering which notification tier will be required for proposed PFAS regulation.
- Community water systems may also be required to include PFAS information in the Consumer Confidence Report distributed to their customers including:
  - The level of PFAS that is measured in the drinking water.
  - The potential health effects of any PFAS detected in violation of an EPA health standard.

Public Communication: Consultation Questions

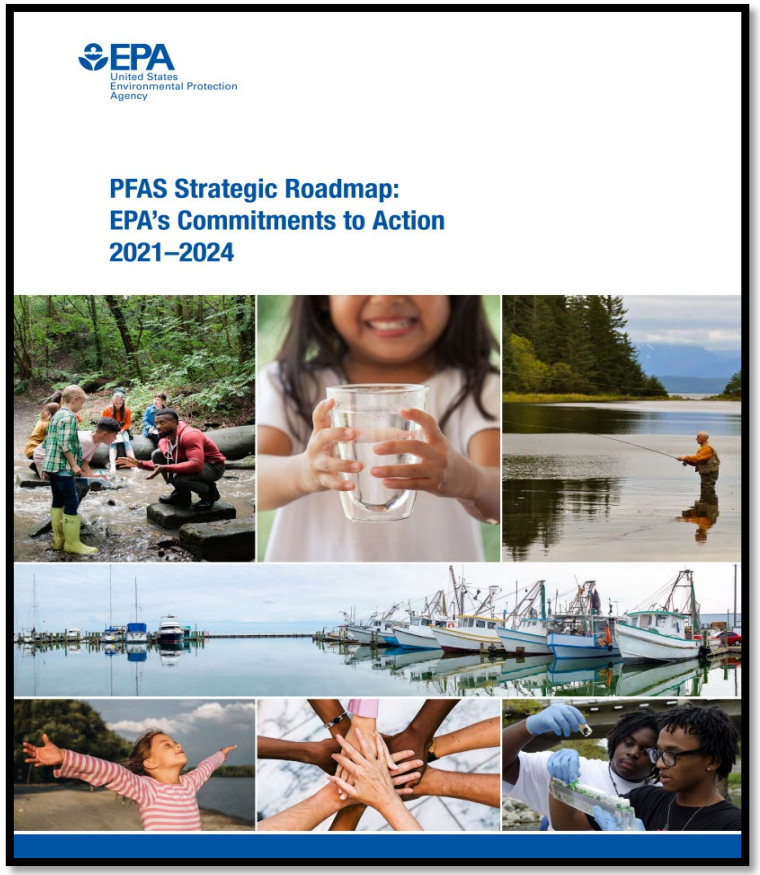
- What input do NDWAC members have related to:
  - How quickly should water systems be required to notify the public following a violation of the PFAS standard?
  - What information should be included in Consumer Confidence Reports regarding PFAS in drinking water?

Considerations for PFAS Mixtures

PFAS Mixtures - Background

- Since the 1940's, over 4,000 PFAS have been manufactured and used in a variety of industries across the world (OECD, 2019). There are also over 700 TSCA-registered PFAS and over 9,000 PFAS based on the CompTox Dashboard.
- PFAS have been found around the world in abiotic media, aquatic and terrestrial organisms, and humans.
- Targeted and non-targeted analysis of environmental media, such as water, has revealed the co-occurrence of multiple PFAS.
    - Among samples with reported levels of PFAS in UCMR 3: Two or more PFAS co-occurred in 48% of sampling events; PFOA and PFOS co-occurred in 27% of sampling events.
- Human biomonitoring data indicates multiple PFAS in blood
- Human health risks associated with exposure to mixtures of PFAS has not been well characterized – few whole mixture studies; a formal PFAS mixtures assessment has not been conducted by federal government entities.

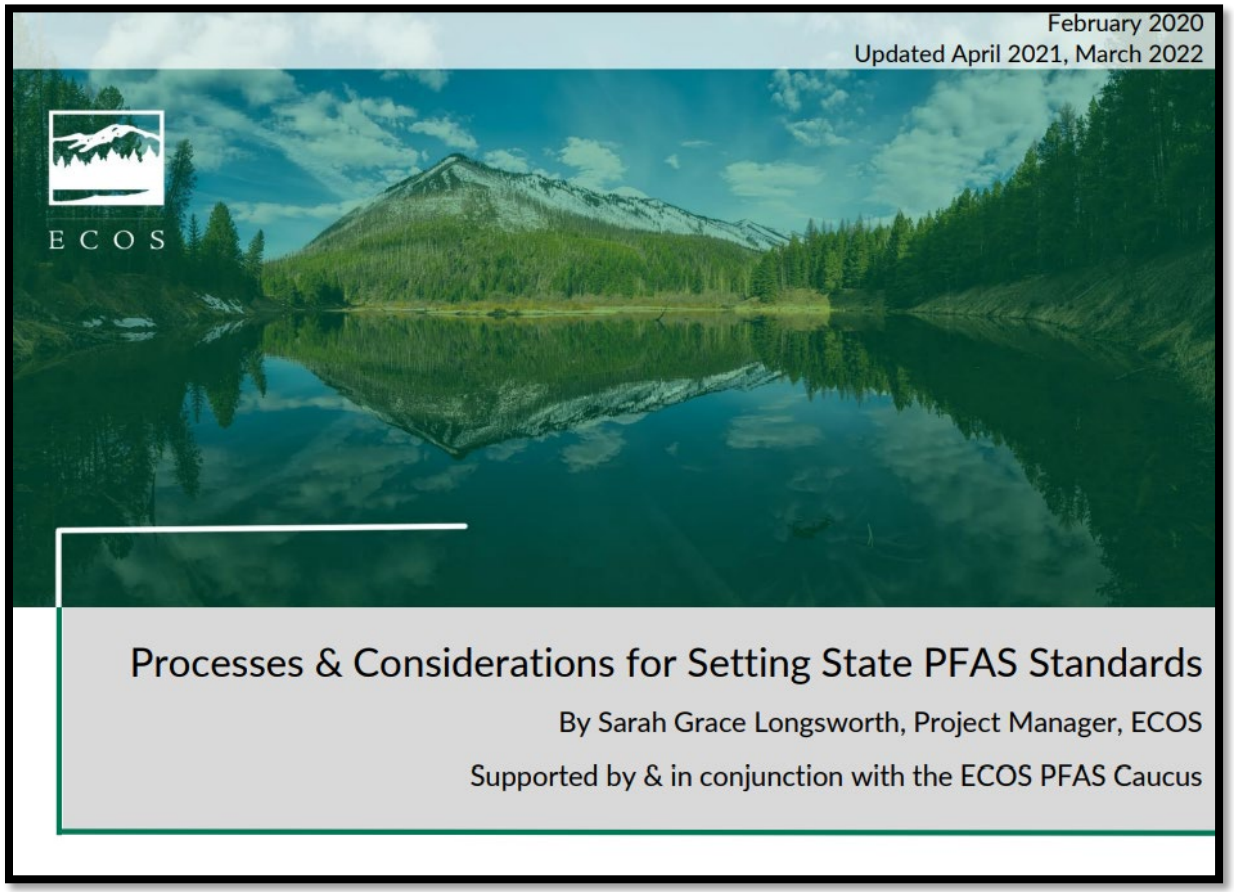
PFAS Mixtures - Background



- EPA is investing in scientific research to fill data gaps in understanding PFAS, including new research on "…how to address groups and categories of PFAS."
  - *EPA PFAS Strategic Roadmap, 2021*
- Under the Safe Drinking Water Act, EPA is considering "…to further evaluate additional PFAS chemicals and provide flexibility for the agency to consider groups of PFAS as supported by the best available science."
  - *EPA Final Regulatory Determinations 4, 2021*
- The EPA has regulated contaminants as a group in drinking water, including disinfection byproducts (*i.e.,* haloacetic acids and total trihalomethanes).

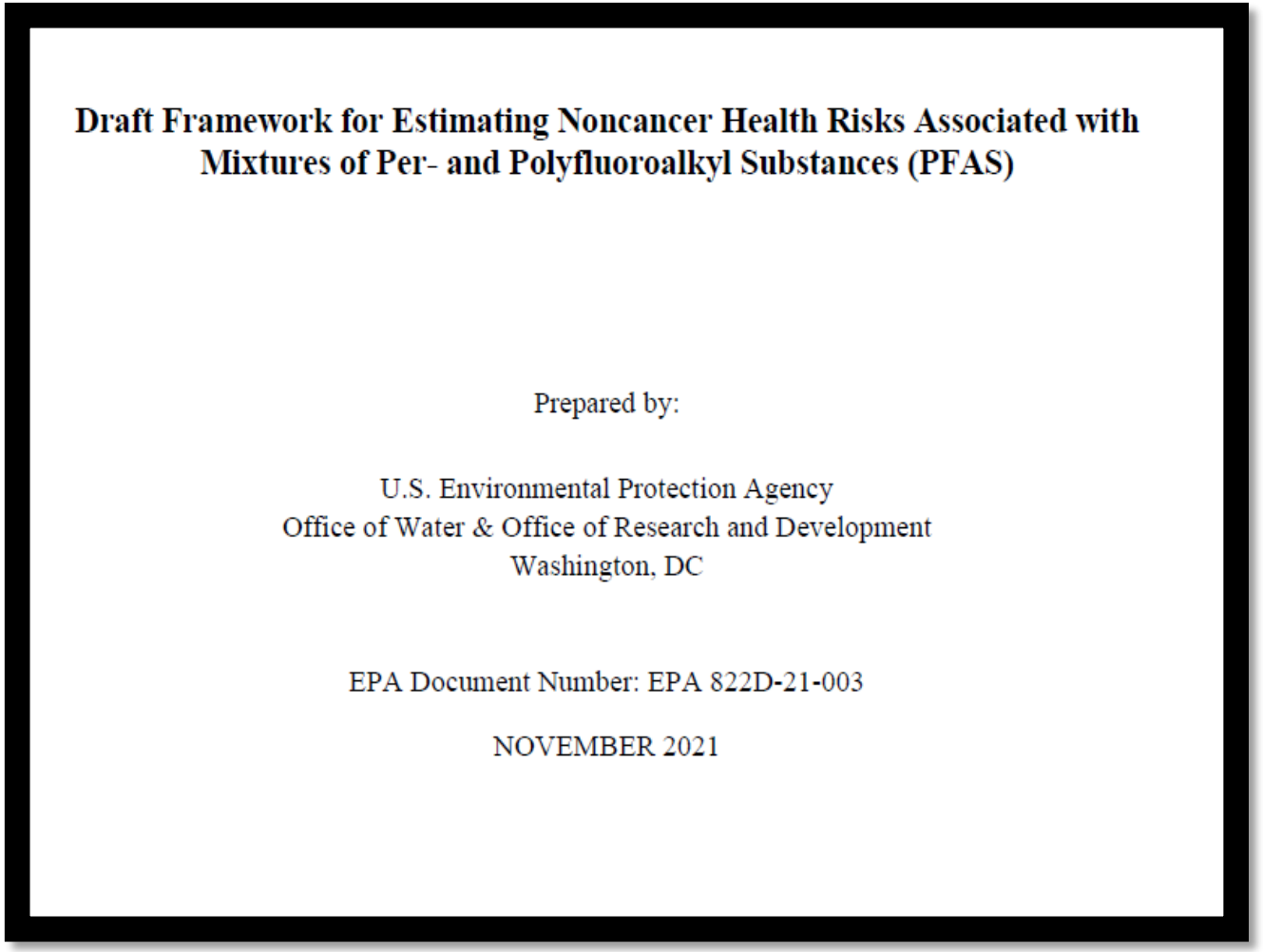
PFAS Mixtures

- Some States are considering human health risks posed by mixtures of PFAS and different class-based approaches, including:
  - State of Wisconsin's hazard index (HI) approach for groundwater quality.
  - State of Rhode Island's considerations for a class-based MCL based on structural similarity and surrogate toxicity.
  - State of Minnesota's Health Risk Index approach to evaluate mixtures of similar PFAS.
  - State of Massachusetts's Total Hazard Index waste site evaluation.
  - ..and more.



PFAS Mixtures

- Purpose: Provide a data-driven framework for estimating human health risks associated with oral exposures to mixtures of PFAS, consistent with existing EPA guidance.
- Based on common health outcomes/endpoints among PFAS.
- Assumes dose additivity for chemicals with common health outcomes.
- Relies on EPA component-based mixture assessment methods:
  - **Hazard Index,**
  - **Relative Potency Factors,** and
  - **Mixture Benchmark Dose** approach.



Draft Framework for Estimating Noncancer Health Risks Associated with Mixtures of Per- and Polyfluoroalkyl Substances (PFAS)

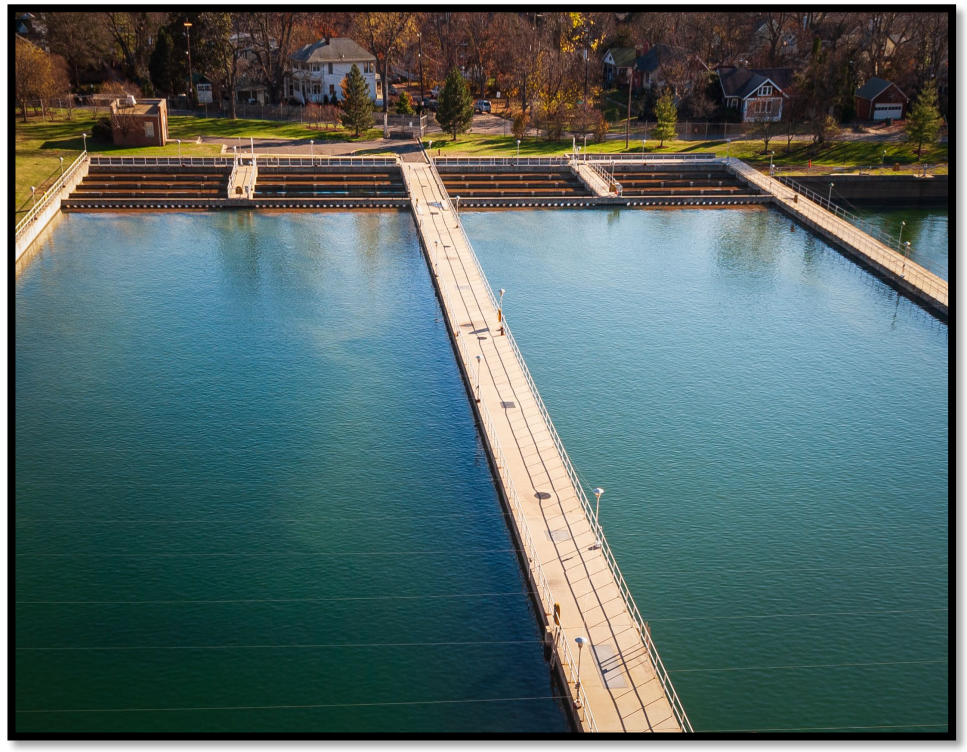
Prepared by:

U.S. Environmental Protection Agency
Office of Water & Office of Research and Development
Washington, DC

EPA Document Number: EPA 822D-21-003

NOVEMBER 2021

PFAS Mixtures



- When it is not economically or technologically feasible to ascertain the level of the contaminant, SDWA authorizes EPA to promulgate a **Treatment Technique (TT)**
  - an enforceable procedure or level of technological performance that PWSs must follow to ensure control of a contaminant.
  - would prevent known or anticipated adverse effects on the health of persons to the extent feasible.
- The Surface Water Treatment Rules are examples of treatment techniques that remove multiple contaminants (pathogens)
- Treatment technologies to remove PFOA and PFOS have been demonstrated to co-remove other PFAS compounds and co-occurring contaminants.

PFAS Mixtures: Consultation Questions

- How should EPA consider or address potential mixtures of PFAS in the proposed drinking water standard?

Cost Information and Funding Considerations

Cost Information

- The proposed PFAS NPDWR will not uniformly impact every PWS.
  - Costs will vary significantly depending on monitoring results.
  - Only systems that exceed PFAS regulatory standards or action levels would need to install treatment and incur these costs. Further, those treatment costs will vary depending on source water characteristics.
  - There may also be point-of-use (POU) treatment options that may be more cost effective for some systems, particularly very small systems, than centralized treatment.
  - Costs will also vary based upon the extent to which systems must conduct and pay for monitoring. EPA is considering multiple monitoring-related flexibilities to help reduce burden and costs to systems.

Economic Impacts Public Water Systems

- EPA estimated preliminary regulatory cost impacts associated with the proposed PFAS NPDWR. These costs include monitoring and treatment components for systems that install treatment to comply with the rule, including some POU cost estimates.
- In determining costs, the agency typically accounts for a 20 percent operational safety margin, which PWSs have previously incorporated to ensure drinking water rule compliance.
- Treatment cost estimates developed based on externally peer-reviewed Work Breakdown Structure (WBS) models that are updated annually to capture changes in labor construction, and commodities costs (https://www.epa.gov/sdwa/drinking-water-treatment-technology-unit-cost-models).
- Treatment costs include both indirect and direct capital and operations and maintenance costs annualized over a 20-year period.
- EPA is considering the potential costs to systems associated with management of possible simultaneous compliance issues that may get triggered with a PFAS drinking water regulation.

Monitoring and Treatment Cost Information

Annualized Cost per System of Proposed PFAS NPDWR by System Size (2020$, 3% discounting, numbers round to the closest hundred)

	Population Served ≤500	Population Served 501 to 3,300	Population Served 3,301 to 10,000	Population Served 10,001 to 50,000	Population Served 50,001 to 100,000	Population Served 100,001 to 500,000
Monitoring Costs[a]	$900 ($300 to $1,500)	$1,800 ($600 to $2,900)	$2,100 ($1,300 to $3,000)	$3,200 ($1,900 to $4,500)	$5,400 ($3,200 to $7,500)	$5,400 ($3,200 to $7,500)
Treatment Costs: GAC[b]	$25,000 ($19,800 to $30,300)	$110,900 ($87,700 to $134,000)	$412,200 ($335,000 to $489,500)	$1,246,400 ($1,016,000 to $1,476,900)	$2,799,400 ($2,281,900 to $3,316,800)	$8,947,800 ($7,255,600 to $10,640,000)
Treatment Costs: IX[b]	$19,500 ($15,000 to $24,000)	$74,000 ($59,100 to $88,900)	$262,400 ($212,400 to $312,300)	$869,700 ($692,700 to $1,046,600)	$2,036,400 ($1,623,400 to $2,449,300)	$7,339,100 ($5,777,400 to $8,900,800)
Treatment Costs: POU RO[c]	$17,800 ($1,700 to $33,800)	$128,500 ($33,800 to $223,100)	$449,600 ($223,100 to $676,000)	Not applicable	Not applicable	Not applicable

Data shown are the midpoint of estimated annualized costs per system, with the estimated range in parenthesis.

a) The ranges shown reflect differences in annualized monitoring cost between analytical methods that might be required (low cost of $302 for EPA Method 537.1 or high cost of $376 for EPA Method 533), differing numbers of samples per year per entry point as noted in the text, and the number entry points per system (an average of 1 entry point for systems serving less than or equal to 500 people and 2 entry points for systems serving more than 500). They do not consider potential cost savings that may be realized by utilizing existing monitoring data.

b) The range shown reflect differences in cost among treatment technologies (granular activated carbon or ion exchange), example PFAS contaminants (PFOA or PFOS), and variations in treatment system design (high, mid, or low cost). Estimates assume 90 percent removal for GAC and IX. Treatment process designs assume the specified percent removal of PFOA or PFOS at all entry points. Systems requiring lower removal percentages or with fewer-than-average entry points requiring treatment could have costs lower than the ranges shown. Systems requiring higher removal percentages could have costs greater than the ranges shown.

c) The values shown reflect minimum, midpoint, and maximum population served within each size range divided by an average household size of 2.58 people to approximate the number of residential connections that would need a POU RO device. Annualized cost includes POU RO device purchase ($312/unit) and installation (0.6 hours per unit for administrative time and 2 hours per unit for installation), which are annualized over a 10-year device useful life at 3%, plus annual filter maintenance costs ($93 for filters and 0.6 hours/unit). The values are based on the plumbed-in RO costs and assumptions developed for the Lead and Copper Rule Revisions. RO devices are certified by third parties for contaminant removal effectiveness and currently the removal standard is 70 parts per trillion (ppt). EPA notes that the standard for the final regulation may differ from 70 ppt.

Public Communication Cost Information

- EPA estimates that public notifications can cost systems approximately $1,100 (2020$ for Tier 1 notification) each though costs vary based on system size and public notification tier.
- EPA does not anticipate the PFAS NPDWR to impose any significant additional costs associated with Consumer Confidence Report requirements since systems are already required to prepare a report.

Funding Considerations

- The recently enacted Bipartisan Infrastructure Law (BIL) provides for significant investments in safe drinking water infrastructure and drinking water programs.
- EPA is working to ensure the funds are available to drinking water systems, especially those within disadvantaged communities.
- Specific funds to potentially support addressing drinking water PFAS contamination:
  - $11.7 billion: Funding to supplement the Drinking Water State Revolving Loan Fund (DWSRF)
  - $4 billion: Funding to specifically address emerging contaminants, including PFAS, through the DWSRF
  - $5 billion: Funding through the Small, Underserved, and Disadvantaged Communities Grants, which can be used to address and remediate emerging contaminants, including PFAS, in drinking water within disadvantaged communities
  - An example eligible project for all of these funds may upgrading treatment technologies.

Next Steps

- In addition to this consultation, EPA is seeking input from other key stakeholders and entities to inform the proposed PFAS NPDWR.
  - Science Advisory Board, Small Business Advocacy Review Panel, Local, State and Tribal government officials, environmental justice-related organizations, and others
- EPA anticipates publishing the proposed rule for public comment in Fall 2022 and promulgating a final rule in Fall 2023.

Consultation Questions

Treatment: Consultation Questions

- What input do NDWAC members have related to the identified of treatment technologies for removal of PFAS (GAC/PAC, IX, RO and NF)?
- Are there other treatment technologies that EPA should consider?
- What non-treatment options for reducing levels of PFAS in drinking water should EPA consider?
- How should EPA consider the disposal of PFAS treatment residuals or regenerating treatment media?

Monitoring: Consultation Questions

- What input do NDWAC members have related to:
  - How should available PFAS drinking water monitoring data be considered in the initial monitoring requirements?
    - UCMR Data
    - State Data
    - Other Data
  - Should the PFAS regulation incorporate Standardized Monitoring Framework provisions for Synthetic Organic Contaminants?
    - Monitoring waivers based on vulnerability assessments
    - Monitoring frequency determined based on previous monitoring results

Public Communication: Consultation Questions

- What input do NDWAC members have related to:
  - How quickly should water systems be required to notify the public following a violation of the PFAS standard?
  - What information should be included in Consumer Confidence Reports regarding PFAS in drinking water?

PFAS Mixtures: Consultation Questions

- How should EPA address potential mixtures of PFAS in the proposed drinking water standard?

EPA United States Environmental Protection Agency

Office of Water

Appendix D:
BIL Implementation Presentation

Bipartisan Infrastructure Law Implementation Overview

April 19, 2022

United States Environmental Protection Agency

Office of Water

Implementation Overview

- Key Priorities
- BIL Funding Provisions
- Nuts and Bolts
- Disadvantaged Communities
- Base Program Provisions
- Community Technical Assistance
- Next Steps

BIL Implementation Key Priorities

- **Provide Flexibility to Meet Local Water Needs*:*** A fundamental principle of the SRFs—flexibility provided to states and borrowers to addressing varied local water challenges.
- **Increase Investment in Underserved Communities:** Use 49% of DWSRF General Supplemental funds and the DWSRF Lead Service Line Replacement funds and at least 25% of the DWSRF Emerging Contaminants funds as grants and forgivable loans to disadvantaged communities
- **Make Rapid Progress on Lead Service Line Replacement:** Maximize the $15 billion dedicated to lead service line removal, as well as other funding streams, towards President Biden's 100% goal
- **Tackle Forever Chemicals:** Invest $5 billion through the SRFs to reduce people's exposure to perfluoroalkyl and polyfluoroalkyl substances (PFAS) and other emerging contaminants
- **Focus on Resilience, Climate, One Water Innovation:** Prioritize projects for climate mitigation, adaptation, coastal and drought resilience, flooding, natural infrastructure, and ecosystem preservation and restoration

BIL Implementation Key Priorities

- **Support American Workers and Renew the Water Workforce:** Renew America's water workforce and create good-paying jobs in communities across America
- **Cultivate Domestic Manufacturing:** Create long-term opportunities for domestic manufacturers and manufacturing jobs and build resilient domestic supply chains for a wide range of products
- **Fully Enforce Civil Rights:** Ensure federal funds are not being used to subsidize discrimination based on race, color, or national origin
- **Refine State SRFs to Build the Pipeline of Projects:** Strategically use new authorities and funds from BIL as a catalyst to continue building and maintaining a robust project pipeline of SRF projects

The Bipartisan Infrastructure Law (BIL)

Public Law No. 117-58

Significant new appropriations for supplemental DWSRF and CWSRF funds for 5 years

Amendments to SDWA 1452 and CWA Title VI

(the SDWA DWSRF and CWA CWSRF authorizing sections)

BIL is also referred to as:

State Revolving Fund (SRF) Funding in the BIL

Appropriation	FY 2022 ($)	FY 2023 ($)	FY 2024 ($)	FY 2025 ($)	FY 2026 ($)	Five Year Total ($)
CWSRF General Supplemental	1,902,000,000	2,202,000,000	2,403,000,000	2,603,000,000	2,603,000,000	**11,713,000,000**
CWSRF Emerging Contaminants	100,000,000	225,000,000	225,000,000	225,000,000	225,000,000	**1,000,000,000**
DWSRF General Supplemental	1,902,000,000	2,202,000,000	2,403,000,000	2,603,000,000	2,603,000,000	**11,713,000,000**
DWSRF Emerging Contaminants	800,000,000	800,000,000	800,000,000	800,000,000	800,000,000	**4,000,000,000**
DWSRF Lead Service Line Replacement	3,000,000,000	3,000,000,000	3,000,000,000	3,000,000,000	3,000,000,000	**15,000,000,000**

BIL Implementation Memo

Cover Memo

Attachment 1 – BIL Funding Implementation

- CWSRF General Supplemental Funding
- CWSRF Emerging Contaminants Funding
- DWSRF General Supplemental Funding
- DWSRF Emerging Contaminants Funding
- DWSRF Lead Service Line Replacement Funding

Attachment 2 – CWSRF Base Program Implementation
The BIL amends the CWA to include new provisions applicable to the base CWSRF programs and unless otherwise directed, applicable to projects funded in whole or in part with funds made available by BIL.

Attachment 3 – DWSRF Base Program Implementation
The BIL amends the SDWA to include new provisions applicable to the base DWSRF programs and unless otherwise directed, applicable to projects funded in whole or in part with funds made available by BIL.

Capitalization Grants Application Process

- Flexibility for states to combine Intended Use Plans (IUPs) and Project Priority Lists (PPLs) for both the BIL and base funding or submit separate IUPs and PPLs for base and BIL funding
- If combined, states must construct the IUPs and PPLs to ensure that EPA and the public can clearly identify BIL- and base-eligible projects, including identifying additional subsidization and funding amounts
- The IUPs and PPLs must meet existing SRF requirements
- States must submit separate grant applications for each BIL appropriation, and separately from "base" SRF capitalization grant applications in grants.gov
- BIL funds have the same CFDA (now called "Assistance Listing") number as base SRF capitalization grants to ease the application process

Timelines

- Per law, states have until September 30, 2023, to apply for *and receive* the FY22 BIL capitalization grants. The statutes require EPA to *obligate* the funds to states within that period of time.
  - States can submit cap grant applications to EPA Regions at any time.
  - It is important to submit applications in time for the EPA to process the award.

- Per law and regulation, states have 1 year to commit funds (i.e., sign funds into final loans) after each capitalization grant payment from EPA to the states.

- Once EPA obligates the capitalization grants to the states, the funds will be available to states pursuant to grant regulations.

- States should make effort to draw down those capitalization grant funds within 2 years of cap grant payments.

Bipartisan Infrastructure Law

Drinking Water State Revolving Funds

United States Environmental Protection Agency

Office of Water

3 Pots of Supplemental DWSRF Funds for 5 Years

GENERAL SUPPLEMENTAL

EMERGING CONTAMINANTS (FOCUS: PFAS) SUPPLEMENTAL

LEAD SERVICE LINE SUPPLEMENTAL

DWSRF General Supplemental

"$11,713,000,000 for capitalization grants for the Drinking Water State Revolving Funds under section 1452 of the Safe Drinking Water Act"

FY22	FY23	FY24	FY25	FY26
$1.9B	$2.2B	$2.4B	$2.6B	$2.6B

"Provided further, That for the funds made available under this paragraph in this Act, forty-nine percent of the funds made available to each State for Drinking Water State Revolving Fund capitalization grants shall be used by the State to provide subsidy to eligible recipients in the form of assistance agreements with 100 percent forgiveness of principal or grants (or any combination of these), notwithstanding section 1452(d)(2) of the Safe Drinking Water Act (42 U.S.C. 300j–12)"

DWSRF General Supplemental

- 10% state match required for the first two years; match returns to the standard 20% for the remaining three years
- All DWSRF eligibilities
- States may take set-asides
- As directed by BIL, exactly 49% of this capitalization grant must be provided as additional subsidy in the form of principal forgiveness or grants (or a combination of those)
  - States must provide additional subsidization to water systems that meet the state's disadvantaged community criteria as described in section 1452(d) of the SDWA
  - States have flexibility to determine the amount of additional subsidization provided in a given assistance agreement

DWSRF Emerging Contaminants (PFAS Focus) Supplemental

"$4,000,000,000 for capitalization grants for the Drinking Water State Revolving Funds under section 1452 of the Safe Drinking Water Act"

FY22	FY23	FY24	FY25	FY26
$800M	$800M	$800M	$800M	$800M

"That funds provided under this paragraph in this Act shall be to address emerging contaminants in drinking water with a focus on perfluoroalkyl and polyfluoroalkyl substances through capitalization grants under section 1452(t) of the Safe Drinking Water Act for the purposes described in section 1452(a)(2)(G) of such Act: Provided further, That funds provided under this paragraph in this Act deposited into the State revolving fund shall be provided to eligible recipients as loans with 100 percent principal forgiveness or as grants (or a combination of these)"

DWSRF Emerging Contaminants (PFAS Focus) Supplemental

- No state match requirement
- As directed by BIL, can only be used for DWSRF-eligible projects that "address emerging contaminants in drinking water with a focus on perfluoroalkyl and polyfluoroalkyl substances."
- Set-asides, if taken, must be used to either administer this capitalization grant or meet the stated purpose of these funds
- As directed by BIL, 100% of this capitalization grant, net of set-asides taken, must be provided as additional subsidy in the form of principal forgiveness or grants (or a combination of those)
  - States must direct at least 25 percent of these funds to disadvantaged communities (as defined by the state under SDWA 1452(d)) or public water systems serving fewer than 25,000 persons
  - States have flexibility to determine the amount of additional subsidization provided in a given assistance agreement
- Eligible:
  - DWSRF-eligible projects for which the primary purpose is to address PFAS or contaminants on any of EPA's Contaminant Candidate Lists
  - Note statutory PFAS focus; states must actively solicit for PFAS-focused projects
- Not Eligible: Projects for which the primary purpose is to address contaminant(s) with a National Primary Drinking Water Regulation

DWSRF Lead Service Line Replacement Supplemental

"$15,000,000,000 for capitalization grants for the Drinking Water State Revolving Funds under section 1452 of the Safe Drinking Water Act"

FY22	FY23	FY24	FY25	FY26
$3.0B	$3.0B	$3.0B	$3.0B	$3.0B

"Provided further, That the funds provided under this paragraph in this Act shall be for lead service line replacement projects and associated activities directly connected to the identification, planning, design, and replacement of lead service lines: Provided further, That for the funds made available under this paragraph in this Act, forty-nine percent of the funds made available to each State for Drinking Water State Revolving Fund capitalization grants shall be used by the State to provide subsidy to eligible recipients in the form of assistance agreements with 100 percent forgiveness of principal or grants (or any combination of these), notwithstanding section 1452(d)(2) of the Safe Drinking Water Act (42 U.S.C. 300j-12)"

DWSRF Lead Service Line Replacement Supplemental

- No state match requirement.
- As directed by BIL, can only be used for DWSRF-eligible "lead service line replacement projects and associated activities directly connected with the identification, planning, design, and replacement of lead service lines."
- Set-asides, if taken, must be used to either administer this capitalization grant or meet the stated purpose of these funds
- As directed by BIL, exactly 49% of this capitalization grant must be provided as additional subsidy in the form of principal forgiveness or grants (or a combination of those)
  - States must provide additional subsidization to water systems that meet the state's disadvantaged community criteria as described in section 1452(d) of the SDWA
  - States have flexibility to determine the amount of additional subsidization provided in a given assistance agreement
- Lead service line inventories are also eligible from both the loan and set-asides.
- Any project involving the replacement of a lead service line must replace the entire lead service line, not just a portion, unless a portion has already been replaced.
- To address household affordability concerns, we encourage states to fund the private portion of service line replacements at no additional cost to the homeowner.

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SRF Nuts and Bolts

United States Environmental Protection Agency

Office of Water

BIL – Supplemental Funding Nuts and Bolts

- **Build America, Buy America Act:** BIL creates the Build America, Buy America (BABA) Act domestic sourcing requirements for Federal financial assistance programs for infrastructure. EPA will issue a separate memorandum for BABA after OMB publishes its guidance.
- **Federal Civil Rights Responsibilities, including Title VI of the Civil Rights Act of 1964:** EPA has a responsibility to ensure that recipients and subrecipients of federal financial assistance from EPA comply with federal civil rights laws.
- **Allotment:** Per statute, EPA will use the existing SRF allotment formulas for all BIL SRF appropriations. For the DWSRF, the allotment formula will change upon release of new data derived from the Seventh Drinking Water Needs Survey and Assessment.
- **Period of Capitalization Grant Availability and Reallotment:** Per statute, funds will remain available for obligation to states for the fiscal year in which they are appropriated and the following fiscal year, per the Clean Water Act (CWA) and Safe Drinking Water Act (SDWA). After that time, EPA will reallot any unobligated funds.

BIL – Supplemental Funding Nuts and Bolts

- **Reporting:** States must use EPA's SRF Data System to report key BIL project characteristics and milestone information, no less than quarterly. Additional reporting may be required.
- **Recycled Funds**: Once assistance recipients repay BIL funds to the state SRF program, those repaid funds may be used for any SRF-eligible purpose.
- **Equivalency:** Each BIL capitalization grant must meet the equivalency requirements separately.
- **Inter-SRF Transfers:** States may only transfer funds between the CWSRF and DWSRF General BIL capitalization grants and between the CWSRF and DWSRF BIL Emerging Contaminant capitalization grants. Because there is no similar CWSRF appropriation to the DWSRF BIL Lead Service Line Replacement appropriation, no funds may be transferred from or to the DWSRF BIL Lead Service Line Replacement appropriation. States may not transfer BIL appropriations to or from base appropriations.

BIL – Supplemental Funding Nuts and Bolts

- **Green Project Reserve:** If provided for in the annual appropriation, the green project reserve (GPR) is applicable to the BIL capitalization grants for the corresponding fiscal year.
- **Blending Funds and Cash Draws:** States may craft single assistance agreements (e.g., loans) that contain multiple types of construction components and activities. BIL and base funds must be separately managed and tracked for accounting purposes.
- **Reservation of DWSRF Set-Aside Authority**: Consistent with the DWSRF regulations, states may reserve the *authority* (under the 2%, 4%, and 10% set-asides) to take from future capitalization grants those set-aside funds they have not included in workplans. However, given the narrower eligibilities under the BIL Emerging Contaminants and Lead Service Line Replacement appropriations, future use of authority reserved under those BIL capitalization grants will be limited to eligible uses under those grants.
- **Structuring Assistance Agreements:** Assistance agreements may include any combination of additional subsidization (i.e., principal forgiveness or grant) and repayable financing, subject to the limitations of the BIL. States have flexibility to determine the amount of additional subsidization provided in a given assistance agreement.

Disadvantaged Communities

- Effective Integration of the Program to Reach Disadvantaged Communities
  - Utilizing various funding sources and SRF eligible activities to support project planning and design and pre-project costs
- Review Disadvantaged Community Definition and Affordability Criteria
  - Evaluate criteria to meet requirements and address community needs
- Review Priority Scoring and Ranking Criteria
  - Evaluate criteria to meet requirements and address community needs
- Reaching Disadvantaged Neighborhoods within Larger Communities
  - Target benefits to individual ratepayers

Implementation Memo Appendices

- **Appendix A:** Allotment tables
- **Appendix B:** CWSRF definition of emerging contaminants
- **Appendix C:** DWSRF emerging contaminant project and activity examples
- **Appendix D:** DWSRF lead service line replacement project and activity examples
- **Appendix E:** Additional Information to Assist States with Developing a Disadvantaged Community Definition and Affordability Criteria

Bipartisan Infrastructure Law

DWSRF Base Program Changes

United States Environmental Protection Agency

Office of Water

Attachment 3: Amendments to SDWA 1452
(DWSRF Base Program Amendments)

Reauthorizes the program at the following annual amounts:

Note: these are not actual appropriations

- **2022**: $2.4B; **2023**: $2.75B; **2024**: $3.0B; **2025 & 2026**: $3.25B

Expands allowable forms of SDWA 1452(d) Disadvantaged Additional Subsidy

- Grants, negative interest loans, other loan forgiveness, buying, refinancing, restructuring debt

Raises minimum SDWA 1452(d) Disadvantaged Additional Subsidy floor from 6% to 12%

American Iron & Steel procurement requirement made permanent

Build America, Buy America procurement requirement added

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Next Steps

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Next Steps

- Ongoing Q and As and other memos as needed
- Ongoing webinars (states and interested parties)
- Ongoing trainings
  - SRF 101/201
  - BIL
- Ongoing discussions and meetings/suggestions for forums and topics?

United States Environmental Protection Agency

Office of Water

Appendix E:
MDBP Rule Revisions Presentation

Consideration of Potential MDBP Rule Revisions

Update on Working Group to Inform NDWAC Advice and Recommendations

Katie Foreman
Office of Ground Water and Drinking Water
April 19, 2022

EPA
OFFICE OF GROUND WATER AND DRINKING WATER

Presentation Overview

- Working group (WG) purpose
- Background
- WG membership
- Scope of WG discussions
- Timelines and next steps

Purpose

- In November 2021, EPA provided a charge to the NDWAC seeking consensus recommendations from the Council that would improve public health protection provided by the Microbial and Disinfection Byproducts regulations and better assure the regulations equitably protect consumers' health, particularly disadvantaged communities.

- Microbial and Disinfection Byproducts [MDBP] Rule Revisions Working Group will support the work of the Council by developing recommendations for the Council's consideration.

Background: MDBP Rule Revisions

- In January 2017, EPA announced the review results for the Agency's third Six-Year Review (Six-Year Review 3) of NDPWRs.
- Based on the Agency's review of newly available data, information, and technologies, EPA identified the following eight NPDWRs as candidates for revision.
- Chlorite, *Cryptosporidium*, Haloacetic acids, heterotrophic bacteria, *Giardia lamblia*, *Legionella*, Total Trihalomethanes, and viruses.
- These eight NPDWRs are included in the following MDBP rules:
  - Stage 1 and Stage 2 Disinfectants and Disinfection Byproduct Rules (D/DBPRs)
  - Surface Water Treatment Rule (SWTR)
  - Interim Enhanced Surface Water Treatment Rule (IESWTR)
  - Long-Term 1 Enhanced Surface Water Treatment Rule (LT1)

Forming the WG

- In November 2021, EPA requested nominations to serve on the MDBP Rule Revisions WG.
- More than 30 nominations were received by EPA.
- WG members were selected by EPA in consultation with the NDWAC chair based on the expertise, experience, and perspectives needed to inform recommendations to the NDWAC on issues related to MDBP rules.
- WG includes membership from state organizations, drinking water systems of all sizes, and environmental and public interest representatives.
- WG membership includes representatives with a variety of experience, educational and professional backgrounds, and from diverse geographic locations.

WG membership

Working Group Member	Title and Affiliation
Lisa D. Daniels [1] (WG Co-chair)	Director, Bureau of Safe Drinking Water, Pennsylvania Department of Environmental Protection
Andy Kricun, PE [2] (WG Co-chair)	Senior Fellow, US Water Alliance and Managing Director, Moonshot Missions
Elin W. Betanzo, PE [1]	Founder and Principal, Safe Water Engineering, LLC
D. Scott Borman [1]	General Manager, Benton/Washington Regional Public Water Authority
John Choate	General Manager, Tri County Regional Water Distribution District
Kay Coffey, PhD, PE	Engineering Manager and Public Water Supply Group Project Adviser, Water Quality Division, Oklahoma Department of Environmental Quality
Jeffrey K. Griffiths, MD, MPH&TM	Professor of Public Health and Community Medicine, and of Medicine, Tufts University School of Medicine
Michael Hotaling, MBA, PE	Facilities Manager (Retired), Newport News Waterworks Department
Jolyn Leslie, PE	Regional Engineer, Office of Drinking Water, Northwest Regional Office, Washington State Department of Health
Rosemary Menard	Water Director, City of Santa Cruz
William F. Moody, PE, BCEE	Director of the Bureau of Public Water Supply, Mississippi State Department of Health
Erik D. Olson	Senior Strategic Director, Health & Food, Healthy People & Thriving Communities Program, Natural Resources Defense Council
Benjamin J. Pauli, PhD [2]	Associate Professor of Social Science, Department of Liberal Studies, Kettering University
Nancy A. Quirk, PE [1]	General Manager, Green Bay Water Utility
Lisa J. Ragain	Principal Water Resources Planner, Metropolitan Washington Council of Governments
Alex Rodriguez[1]	President & CEO, Diversity Consulting Group
Lynn W. Thorp	National Campaigns Director, Clean Water Action, Clean Water Action/Clean Water Fund
Gary Williams	Executive Director, Florida Rural Water Association

1. Member of U.S. EPA's National Drinking Water Advisory Council
2. Member of U.S. EPA's National Environmental Justice Advisory Council

Potential topics for WG discussions

- Disinfectant residuals and opportunistic pathogens
- Regulated and unregulated DBPs
- Finished water storage facilities
- Distribution system water quality management
- Source water quality considerations, including DBP precursor removal
- Ground water under the direct influence of surface water (GWUDI) systems
- Sanitary survey
- Water Safety Plans
- Consecutive and small systems

Anticipated Working Group Schedule and Related Process with NDWAC

- WG meetings are anticipated from Spring 2022 through Summer 2023.
  - All meetings will be open to the public to observe.
  - Meetings will be held on a monthly or bimonthly basis.
  - First meeting will be May 2022
- WG will update NDWAC on progress and share meeting material, as applicable.
- WG will prepare a final report for NDWAC's consideration and deliberation on the Committee's recommendations to EPA.

Timeline for Rule Revisions

- EPA has agreed to the following deadlines:
  - Rule proposal or a formal decision not to propose amended rules: by July 31, 2024*. EPA may delay proposal until July 31, 2025, as needed.
  - Final Agency Action: Final rule or withdraw proposal by September 30, 2027*. EPA may delay proposal until September 30, 2028, as needed.

* Source: Waterkeepers Alliance, Inc. et al v. U.S. et al, EPA Settlement Agreement, filed June 1, 2020 (19 Civ. 899 (LJL)).

Appendix F:
Public Comments to the NDWAC

Submission to National Drinking Water Advisory Council

April 11, 2022

Regulating Perfluoro (PFAS) Chemicals in Drinking Water

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PFAS chemicals in the environment are a dilemma, primarily because of their environmental persistence, and the lengthy half-lives of some of them after ingestion. There are commercial PFAS chemicals and many more byproducts that have been detected in the environment. There are numerous exposure sources including in-home from soil repellant fabrics on treated furniture, clothes, and carpets, and residues in some foods. There are low PPT levels in some surface waters, but presence in some groundwaters at PPT's can be a primary source for those drinking water consumers, especially since other sources and exposures are being reduced.

USEPA is currently developing standards for Perfluorooctanoic acid (PFOA) and Perfluorooctane sulfonic acid (PFOS) which were among the principal commercial PFAS chemicals in the US. PFOA is primarily used as a surfactant and dirt repellant, and one of the PFOS major uses was in firefighting foams at airports and military bases. They are no longer in production or in common use in the US by agreements between industry and USEPA from around 2002-2006 and have been virtually eliminated except as legacy contaminants in some foods, and some groundwaters that have slow turnover, and low PPT levels in some surface waters. Some replacements include PFBA which has a much shorter ingestion half-life.

About the year 2000 essentially every American tested positive for detections in blood serum at ppb levels. The frequency and blood serum concentrations in the US population have declined significantly since 1999-2000 as seen in CDC/NHANES monitoring data. The latest CDC data[1] available were for 2017-2018, so blood serum concentrations have likely been reduced further since then. These numbers below would represent the net effect of bodily elimination and continued exposures. Workers in some PFAS production plants had blood levels more than 100 times greater than the general population.

PFOA and PFOS examples from CDC:

PFOA 1999-2000, Geometric means: 5.21 ug/L; 2017-2018, 1.42 ug/L (over 70% decline)

PFOS 1999-2000, Geometric means: 30.4 ug/L; 2017-2018, 2.94 ug/L (over 90% decline)

There is no international or even US consensus on the health risks of the various PFAS chemicals at low exposures, and they differ significantly by chemical and occurrence, and only a few have been evaluated. There are several human epidemiological studies that have been conducted including in occupational settings with high exposures as indicated by blood serum measurements. These human data are likely the best sources of human toxicology and risk information, since various animals handle PFAS chemicals in different ways and sometimes different than humans. It is generally felt that PFAS chemicals with longer half-lives in the body contribute to higher risks.

Some US states have selected notifications or guidance or standards in the 5 ppt to low ppt teens. The original EPA Health Advisories for PFOA and PFOS are 70 ppt (0.07 ppb) each or combined. Several

countries (e.g. Australia and UK) use 100 ppt (0.1 ppb) as a guidance or action level; Canada's current drinking water guidelines[2] are 200 ppt (0.2 ppb) for PFOA, and 600 ppt (0.6 ppb) for PFOS. The WHO has drafted a drinking water guideline, but it has not yet been released. Since PFAS is an international issue, it would be important for credibility to establish a process for quickly producing an international consensus on PFAS values in drinking water and other exposure sources, to achieve scientifically supportable and reasonable safe values and to provide a basis for public confidence in the outcome and provide confidence in the risk assessment and regulatory processes.

EPA reported the Third Unregulated Contaminant Monitoring Rule (UCMR 3) results in 2017 for 6 PFAS chemicals. There were 4,930 water supplies tested; about 80 % were large systems above 10,000 covering most of the population that more commonly use surface waters, the remaining approximately 800 were in small systems. PFOA was detected in 117 systems above the reporting limit (MRL) of 20 ppt with 13 above the 70 ppt Health Advisory. PFOS was detected in 95 systems above the MRL of 40 ppt and 46 were above 70 ppt. The next UCMR 5[5] between 2022 and 2025, will include analyses for 29 PFAS chemicals in about 10,3 00 water systems, including all large systems (4,364) above 10,000 population, plus about 5,147 systems between 3300 and 10,000, and about 800 systems smaller than 3,300. So, the total numbers of systems tested will be more than 10,000, and the MRLs will be in single digits. PFOA and PFOS's MRLs will be 4 ppt. More analytes and more than twice as many systems will be tested at about one tenth of the prior reporting limits, so there will be many more positive detections. Also, Health Advisory values will likely be reduced. It will still be important to obtain analyses from more targeted very small systems that could be potential sources of exposure.

There is debate on whether to produce individual MCLs for higher concern PFAS, Total PFAS, or a Treatment Technique requirement for enforceable drinking water standards. MCLs for a few of the most commonly detected and more potentially harmful PFAS chemicals can be produced if an exposure and sufficient toxicology basis can be generated. Monitoring must be technically and economically feasible for an MCL. It is, at least technically feasible, as the UCMR 5 demonstrates. Analytical methods have been developed for several PFAS chemicals with detection limits at low ppt concentrations. Compliance monitoring costs would be significant. It would be essential to be consistent with the requirements in the Safe Drinking Water Act regarding detection prevalence in drinking water supplies at public health significant levels, and articulating health benefits that would be provided by a standard.

The logic for selecting a Total PFAS standard or a treatment requirement for total PFAS is tenuous, because of the wide range of putative risks for individual PFAS chemicals. For example: Some Canadian Screening values are: PFBA, 30,000 ppt (30 ppb); PFHxS, 600 ppt (0.6 ppb); PFNA, 20 ppt (0.02 ppb)[2]. For a treatment technique, EPA would have to conclude that monitoring is not technically and economically feasible.

Another difficult issue is management and controlled disposal of drinking water treatment concentrates from effective anion exchange, reverse osmosis or granular activated carbon treatments, and even from sewage treatment sludges. Since the PFAS chemicals are environmentally very stable, improper disposal would likely put them back into the environmental exposure cycle. Destructive processes would be ideal, but they are even more expensive and more difficult for small systems to handle. One non-traditional compliance approach particularly suitable for very small systems is managed community-wide Point of Use treatment at the kitchen tap of water consumed for drinking and cooking. As an

example, this has been applied successfully for arsenic treatment and was found to be feasible and reliable and the costs were about half the cost of equivalent central treatment[3].

Accurate Relative Source Contribution (RSC) analysis is essential for determining drinking water's contributions to total exposures and for putting that into perspective for consequences of regulations, implementation costs, and cost effectiveness.

Small systems now have the greatest likely impacts and they are least capable of dealing with any water quality problems. Lower is often better, but a balance of risks and monitoring and compliance costs is always necessary to prioritize public expenditures and assure that drinking water funds are expended to deal with the local drinking water's most important risks, which are mainly infrastructure and legionella growth in plumbing.

EPA and OGWDW should support and participate in an international process of qualified and objective PFAS experts to arrive at a credible consensus value for safe drinking water for PFAS chemicals and to be in the mainstream of qualified scientific judgments.

About the author. JAC was Director OGW Drinking Water Standards Division to 1990, TSCA Risk Assessment Division Director to 1996, and is a member of the World Health Organization Guidelines for Drinking Water Quality Committee. Joseph Cotruvo & Associates, Water Consultant.

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Fiber Optic Sensing Association
Connect and Protect

FOSA Statement for the National Drinking Water Advisory Council

The American Water Works Association estimates that 2.1 trillion gallons of potable water is lost each year in the U.S. because of aging and leaking pipes, broken water mains, theft, and faulty meters. In North America, it is estimated that between 20% to 50% of the water escapes from water utilities' pipes before it is delivered to homes or businesses. When a utility experiences leakage in its water distribution system, the losses drive up production costs and force the water utility to withdraw more water from its sources than its customers need, impacting the environment and increasing the energy required to produce more water.

The Fiber Optic Sensing Association (FOSA) represents organizations involved with fiber optic sensing systems used to monitor infrastructure. Specific to water pipelines, fiber optic sensing technology is used to monitor for leaks.

WHAT IS FIBER OPTIC SENSING?

Fiber optic sensing works by measuring changes in the "backscattering" of light occurring in an optical fiber when the fiber encounters vibration, strain, or temperature change. It can be deployed to continuously monitor vehicle movement, human traffic, digging activity, seismic activity, the health of structures and assets, temperatures, liquid and gas leaks, and many other conditions and activities. Fiber optic sensing is used worldwide to monitor smart infrastructure, including tunnels, railways, bridges, borders, power stations, and pipelines.

Fiber optic sensing is not constrained by line of sight or remote power access and, depending on system configuration, can be deployed in continuous lengths exceeding 45 km (30 miles) with detection at every point along its path. Cost per sensing point over great distances cannot be matched by competing technologies and often existing deployed fibers can be utilized.

Through a maintenance program that includes fiber optic leak detection, a water utility can intervene on their lines and evaluate the precise location of tiny leaks, perform remediation works with less disruption and reduce the cost of their containment losses. With water losses reduced by even a small percentage, this technology rapidly pays for itself, with the return on investment increasing over time due to the rising costs of leaks that have been found and stopped. FOSA encourages the Council and water utilities to consider deploying this technology in their operations and maintenance

investments to address the issue of potable water loss across the Nation, improve their bottom lines and reduce costs for consumers.

ABOUT THE FIBER OPTIC SENSING ASSOCIATION.

FOSA is a non-profit organization created in Washington DC in 2017 with the mission of educating industry, government and the public on the benefits of fiber optic sensing. Through webinars, videos, white papers, public presentations and public policy advocacy, the organization provides information on the use of fiber optic sensing to secure critical facilities, enhance public safety and protect the environment. FOSA members include AP Sensing, Corning, Ditch Witch, Dura-Line, FEBUS Optics, Fotech Solutions, Graz University of Technology, Hifi, NBG Fiber Optic Corp, NEC, Network Integrity Systems, NKT Photonics, OFS, Omnisens, OptaSense, OZ Optics, Prysmian Group, Sensonic, Senstar, Smartpipe Technologies, Terra Sound, the University of California - Berkeley, and VIAVI Solutions.

For more information, see: https://www.fiberopticsensing.org/ or our YouTube channel, https://www.youtube.com/c/FiberOpticSensingAssociation

April 11, 2022

Docket: FRL-9577-01-OW
National Drinking Water Advisory Council (NDWAC)

Thank you for the opportunity to submit public comment on a proposed National Primary Drinking Water Regulation (NPDWR) for per- and polyfluoroalkyl substances (PFAS), including perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS).

The Water & Health Advisory Council's (WHAC's) mission is to provide clarity and context to drinking water utilities and policy makers, public health professionals and the public to help navigate complex issues and assure protection of our nation's drinking water supply. We advocate a risk-based approach to identifying and addressing the challenges associated with delivering safe drinking water to Americans, including emerging contaminants.

The Council supports the U.S. Environmental Protection Agency's (EPA's) efforts to develop a reasonable, risk- and science-based national drinking water standard PFOA/PFOS. Our Council urges policymakers to be guided by the language and intent of the Safe Drinking Water Act and prioritize actions that provide the greatest public health benefit.

The World Health Organization routinely makes clear that microbial contamination poses the greatest risk to drinking water safety across the globe, and illnesses linked to these contaminants claim thousands of lives daily.[1] Here in the U.S., the American Society for Civil Engineers recently gave our drinking water infrastructure a C- grade and estimated the cost of upgrading our system to be in the vicinity of $500 billion.[2] Systems with degraded infrastructure are at higher risk of microbial contamination. Under these circumstances, our Council strongly believes that investments in our drinking water must be primarily focused on protecting citizens from these naturally occurring, microbial contaminants.

The fact is that our nation's water systems have limited resources, funding, and operational capacity. As such, a national PFAS standard must be fully substantiated by toxicity and occurrence data before water systems are required to direct more funding and resources towards PFOS/PFOA monitoring. As part of your deliberations, we urge you to consider a risk- and science-based approach to PFAS regulations which include:

1. More Robust Occurrence Data. More occurrence data is needed to determine where high-concentration areas of PFOS/PFOA exist nationally. There are regions in the U.S. that face high PFOS/PFOA concentrations, and those communities require immediate action and response. However, regulating PFAS on a national level must be based on

[1] World Health Organization: https://www.who.int/news-room/fact-sheets/detail/drinking-water
[2] American Society for Civil Engineers:https://infrastructurereportcard.org/cat-item/drinking-water/

accurate and current national occurrence data. A one-size-fits-all approach will require water systems to regularly monitor, test and invest millions of dollars and staffing to address contaminants that may not be impacting their community.

2. More Substantial Epidemiological and Toxicity Data. Based on the current epidemiological and toxicological data available, regulating PFOA and PFOS does not represent a meaningful opportunity for health risk reduction as defined by previously regulated contaminants.[3] The Meaningful Opportunity for Health Risk Reduction is an essential mandate of the Safe Drinking Water Act, and we believe it must be considered as you deliberate on this proposed rule.
3. A Careful Assessment of Cost and Impact. A handful of known risks present the greatest threats to our drinking water systems, and we must prioritize funding to the areas of highest need. Some communities require swift remedial action to address unacceptable levels of PFAS in their drinking water supply, while many others do not. As you evaluate a national standard for PFAS, we ask that you consider how this will impact local water systems that do not have a threat of PFAS in their systems. We have great concern that such as national standard will shift funding priorities away from known threats impacting public health, such as failing and aging water infrastructure and protections against microbial contaminants.

The Safe Drinking Water Act calls on our nation's leaders to take effective steps towards ensuring a safe, affordable, and reliable drinking water supply for everyone. We ask that you continue to apply a science-based, risk- and cost-benefit analysis when approaching regulating PFOA / PFOS. Our Council stands ready to provide additional comment, testimony or other ways that our expertise can be of value to this process. Thank you.

Sincerely,

The Water & Health Advisory Council

Rob Renner, Council Chair, Former Chief Executive Officer at Water Research Foundation
Chad Seidel, Ph.D., President, Corona Environmental Consulting
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[3] 14 September 2021, AWWA Water Science, "Does regulating per- and polyfluoroalkyl substances represent a meaningful opportunity for health risk reduction?" By Katherine Alfredo, Chad Seidel, Amlan Ghosh https://awwa.onlinelibrary.wiley.com/doi/10.1002/aws2.1240