Written Testimony
Senate Homeland Security and Government Affairs Committee

Improving Interagency and Intergovernmental Coordination on PFAS for Michigan Communities

Statement of
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Chairman Peters, Ranking Member Portman, Distinguished Members of the Senate Committee on Homeland Security and Governmental Affairs. I am Dr. Patrick Breysse, the Director of the National Center for Environmental Health at the Centers for Disease Control and Prevention, and the Director of the Agency for Toxic Substances and Disease Registry. I appreciate the opportunity to be here today to discuss CDC and ATSDR's (CDC/ATSDR) role in investigating exposure to and possible health effects associated with per- and polyfluoroalkyl substances (PFAS).

In 1980, Congress created the Agency for Toxic Substances and Disease Registry (ATSDR) to implement the health-related sections of laws that protect the public from hazardous wastes and spills of hazardous substances. As the lead Agency within the Public Health Service for implementing the health-related provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), ATSDR is charged under the Superfund Amendments and Reauthorization Act to assess the presence and nature of health hazards at specific Superfund and other sites, to help prevent or reduce further exposure and the illnesses that result from such exposures, and to expand the knowledge base about health effects of exposure to hazardous substances.

Per- and polyfluoroalkyl substances (PFAS) are a family of synthetic chemicals, estimated to number in the thousands, some of which have been used in industry and consumer products since the 1940s. While the health effects of many PFAS chemicals are not well understood, a recent NASEM (https://www.nationalacademies.org/our-work/guidance-on-pfas-testing-and-health-outcomes#sectionPublications, n.d.) report identified several health effects for which there was sufficient evidence of an association between exposure to some chemicals in the PFAS family and health effects. ATSDR has a significant portfolio of work addressing PFAS and has undertaken studies to fill the scientific gaps on human health effects.

ATSDR's Role in Addressing PFAS Contamination

Scientific Reference Guides

ATSDR published a Toxicological Profile (Tox Profile) for Perfluoroalkyls in May 2021. Tox Profiles are reference guides that provide information about a toxic substance, such as its chemical and physical properties, sources of exposure, routes of exposure, health effects, and how the substance may interact with the environment.

In addition to summarizing information on PFAS toxicity, the Tox Profile included oral Minimal Risk Levels (MRLs) for four PFAS: perfluorooctanoic acid (PFOA), perfluorooctane sulfonic acid (PFOS), perfluorohexane sulfonic acid (PFHxS), and perfluorononanoic acid (PFNA). An MRL is an estimate of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse non-cancer health effects over a specified duration of exposure. MRLs are intended to serve as a tool to help public health professionals determine areas and populations potentially at risk for health effects from exposure to a particular chemical. It is important to note that MRLs are screening tools that help identify exposures that could be *potentially* hazardous to human health. Exposures above the MRL do not mean that health problems will occur, but rather serve as a signal to health assessors to look more closely at a particular site. MRLs do not define regulatory or action levels for ATSDR.

As the science related to PFAS advances, ATSDR continues to review and integrate new information into the toxicological profile. An update to the Perfluoroalkyls profile is currently in development, which will incorporate the most recent literature and consider existing and potential new MRLs.

PFAS Guidelines for Clinicians

With widespread exposure to PFAS, it is important that clinicians are well-informed to handle concerns of communities. ATSDR developed guidelines and continuing education to help clinicians deal with patient management and treatment after PFAS exposure. It highlights what PFAS are, which chemicals fall into this category of substances, routes of exposure, exposure limits, and it identifies health effects associated with exposure to various PFAS and suggests answers to specific patient questions about potential PFAS exposure.

The National Academies of Sciences, Engineering, and Medicine (NASEM) has recently released a report examining the current evidence regarding human health effects of the most widely studied PFAS. NASEM provided CDC/ATSDR a review of current evidence regarding human health effects of those PFAS being monitored in the CDC's National Report on Human Exposure to Environmental Chemicals. NASEM also provided recommendations regarding potential changes to CDC/ATSDR PFAS clinician guidance. We are reviewing the report and will consider the guidance and recommendations from NASEM as we update our guidance for clinicians.

Support to Health Departments and work in Michigan

The State of Michigan is a leader in addressing PFAS concerns. The efforts undertaken by the Michigan PFAS Action Response Team (MPART) to bring together different state agencies which include the Environmental Protection, Public Health, Natural Resources, Agriculture, Military Affairs, Transportation, and State Fire Marshall to address PFAS has been a model for others. ATSDR continues to work closely with the Michigan Department of Health and Human Services (MDHHS). ATSDR's Region 5 office provides technical assistance and support to MDHHS and the MPART regarding PFAS issues.

Michigan Department of Environment, Great Lakes, and Energy (EGLE), ATSDR, MDHSS, the Kent County Health Department and federal partner EPA-Region 5 have collaborated for many years at the Wolverine Worldwide, Inc. site. The agencies are working to address concerns raised by the disposal of PFAS in areas primarily served by private water wells and many are contaminated with PFAS. The agency has provided technical assistance to MPART and are participating in workgroups involved in the study protocol preparation, data management, communications, and overall project coordination. In addition, ATSDR is providing support to Michigan's efforts to address contamination in the City of Parchment in Kalamazoo County and at Camp Grayling US Army National Guard Base. ATSDR also recently updated a public health assessment on the former Wurtsmith Air Force base with current scientific knowledge about volatile organic compounds (VOCs) Although we were asked to address PFAS contamination at this site we were unable to do so.

Studying PFAS Exposure and its Impact on Human Health

ATSTR has been conducting work to study the human health implications of PFAS under recent National Defense Authorization Acts and subsequent appropriations. ATSDR is carrying out these activities through PFAS exposure assessments and a multi-site health study.

Exposure assessments were conducted in ten communities across the nation (Alaska, Colorado, Delaware, Massachusetts, New York (2), Pennsylvania, Texas, West Virginia, and Washington) in communities that were known to have PFAS in their drinking water. The exposure assessments included over 2,300 participants from approximately 1,400 households. Although elevated PFAS levels were found at all sites, some sites had much higher exposures than others. Reports summarizing individual community data have been released for all sites and an overall summary report is under development.

In addition to the exposure assessments, CDC and ATSDR are conducting a PFAS Multi-site Study (MSS) to learn about the relationship between PFAS and health outcomes in multiple communities with contaminated drinking water. The study is the first major health study to look at multiple PFAS at sites across the nation with different exposure levels. This groundbreaking work will provide information that will help all communities in the United States facing PFAS drinking water exposure, including those that do not directly participate in the MSS. The MSS will look at health outcomes including lipid metabolism; kidney function; thyroid disease; liver disease; glycemic parameters and diabetes; and immune response and function, among other health endpoints.

CDC and ATSDR initiated the health study with the Pease Study at the Pease International Tradeport in Portsmouth, New Hampshire. The study was expanded to include research cooperative agreements with seven recipients to conduct work in additional states - California, Colorado, Michigan, New Jersey, Massachusetts, New York, and Pennsylvania. Although delayed by the COVID pandemic, the study sites have been recruiting participants for the study and continue to work closely with the agency and across study sites. The MDHHS is one of the MSS recipients and will evaluate exposures in the city of Parchment/Cooper Township, (Kalamazoo County), and the Belmont/Rockford area (Kent County) as part of the study.

Laboratory Projects to Address Critical Research Gaps

Through the National Biomonitoring Program, CDC's Environmental Health Laboratory has spent two decades documenting PFAS exposure in the U.S. general population reported through the National Health and Nutrition Examination Survey (NHANES). The National Biomonitoring Program continues to measure a suite of PFAS in blood samples collected through the NHANES program and provides national reference values for PFAS exposure. The laboratory has adapted its methods to detect the most relevant PFAS based on the trends in exposure obtained through the analyses of NHANES samples and currently tests for 18 different PFAS. In addition, the lab completed biomonitoring measurements for the ATSDR exposure assessments and for the Pease Study.

Several PFAS have been measured in NHANES participants 12 years of age and older since 1999-2000, but data for children younger than 12 years did not exist. In 2018, the CDC Environmental Health Lab reported the first nationally representative exposure information for PFAS among children 3-11 years of age.[1] CDC detected PFOS, PFOA, PFHxS, and PFNA in all children at concentrations similar to those of NHANES 2013–2014 adolescents and adults, suggesting prevalent exposure to these PFAS or their precursors among U.S. 3–11-year-old children, most of whom were born after the phase out of PFOS in the United States in 2002.

[1] Ye X, Kato K, Wong LY, Jia T, Kalathil A, Latremouille J, Calafat AM. Per- and polyfluoroalkyl substances in sera from children 3 to 11 years of age participating in the National Health and Nutrition Examination Survey 2013-2014. Int J Hyg Environ Health. 2018 Jan;221(1):9-16.

The lab has also partnered on almost 60 collaborative studies and are engaged in 18 ongoing projects with academic and government investigators to increase our understanding of PFAS exposures and their health effects in specific populations including, among others, pregnant women and children, residents of communities affected by PFAS contamination, as well as in occupational settings (e.g., firefighters). Health effects studied include cancer, diabetes, and metabolic, neurobehavioral, and reproductive health. In one such study, the lab contributed PFAS biomonitoring data to the National Cancer Institute to assist in their evaluation of PFAS exposure and risk of kidney cancer.[2]

Additional Studies

CDC and ATSDR are also developing a questionnaire-based study of the impact of PFAS exposure on susceptibility to viral infections. ATSDR is also developing a suite of models to provide communities with a simple and cost-effective way to estimate their blood PFAS levels based on a variety of inputs into a water-to-serum online calculator. The models will also provide users with comparisons to national averages obtained through NHANES.

Coordination Across Government

ATSDR is committed to working at all governmental levels to help address PFAS. We are collaborating with EPA on PFAS studies and site work, providing technical support and guidance to state and local health departments, and participating in interagency science teams with FDA, NIEHS, EPA, DOD, VA, and NASA, among other agencies. These efforts acknowledge the need to coordinate and ensure that we are addressing PFAS in a systematic, harmonized approach.

Lessons Learned Over the Past Four Years

As the science evolves our understanding of PFAS and its implications, we have learned a few lessons since I last testified before this Committee in 2018.

1. **People in the U.S. have been exposed to PFAS in their drinking water or via other pathways**

   The exposure assessments (EAs) clearly show that people who live in these locations where aqueous film-forming foam (AFFF) was repeatedly used and migrated into nearby drinking water systems resulting in elevated levels of PFAS, have higher levels of PFAS in their bodies than the general U.S. population, and that this is driven by drinking water exposures.The EAs also confirmed what we have long suspected about the pharmacokinetics of PFAS – levels tend to be higher in older people and in men, likely because older people have been exposed for longer periods of time, and men have fewer excretion pathways than women (who excrete PFAS during pregnancy, menstruation, and breastfeeding). However, the EAs also suggest that not all the PFAS in a person's body can be explained by their drinking water exposures. While the EAs did not evaluate non-drinking water exposures, they point to the fact that PFAS are ubiquitous and people can be exposed using consumer products, food packaging materials, etc.

[2] Shearer JJ, Callahan CL, Calafat AM, Huang WY, Jones RR, Sabbisetti VS, Freedman ND, Sampson JN, Silverman DT, Purdue MP, Hofmann JN. Serum Concentrations of Per- and Polyfluoroalkyl Substances and Risk of Renal Cell Carcinoma. J Natl Cancer Inst. 2021 May 4;113(5):580-587. doi: 10.1093/jnci/djaa143. PMID: 32944748; PMCID: PMC8096365.

This suggestion is corroborated by extensive research being conducted in the academic and non-profit sectors, and ATSDR is actively engaged in a follow up exposure investigation designed specifically to learn more about non-drinking water exposures.

2. **Expanding the evidence base on the human health effects of PFAS is a priority.**

   While the health effects of many PFAS chemicals are not well understood, ATSDR continues to make contributions to build the scientific base. ATSDR's Tox Profile for PFAS reveals many studies that suggest the potential for an association between PFAS exposure and health impacts in many different body systems. Our review of the evidence identified the need to conduct studies of PFAS health effects in human populations. The MSS and Pease study findings are still in progress, but we expect they will be a significant contribution to our understanding of the relationship between PFAS exposure and adverse health effects. Many of the most important epidemiological studies on PFAS over the last decade have been directly supported by the CDC Environmental Health Lab.

3. **Efforts to remove PFAS from commerce (manufacturing and use in consumer products) are effective**

   The CDC National Biomonitoring Program has measured PFAS in the blood of the US population since 1999. This data strongly suggests that federal actions to reduce the use of PFAS, including asking industry to commit to reducing PFOA and PFOS from emissions and product content (the EPA's 2010/2015 PFOA Stewardship Program), resulted in significant decreases in the levels of PFOA and PFOS in the blood of the general US population. (https://www.atsdr.cdc.gov/pfas/health-effects/us-population.html)

4. **Communities are effective partners in the pursuit of public health when they are empowered with up-to-date and transparent scientific information.**

   ATSDR's uniqueness stems from the priority we place on direct engagement with impacted communities. Our partnership with community groups and individuals across the country has demonstrated that we accomplish much, we make more effective recommendations, and we do a better job of promoting public health when we treat community members as equal contributors to the conversation. The communities we serve have taught us that when we are able to transparently provide strong scientific information (even when it is still developing), they are empowered to identify actions (both at the individual level and more broadly) that promote public health.

In closing, I would like to leave you with a few key points. First, PFAS exposure is widespread and, while there is still a lot of scientific uncertainty, we are concerned about the toxicity of these chemicals and their health impacts. Second, CDC/ATSDR is working across the United States to study PFAS exposure and its health effects and is working with other federal, state, and local agencies to improve coordination. Third, we are hearing from people in affected communities and know that it is a major concern across our country. Their engagement has allowed us to lead with science and better understand the impacts. Thank you again for the invitation to speak to you today. I welcome your questions.