Final February 18, 2021

STAC Workshop State of the Science Proposal

Improve the Understanding and Coordination of Science Activities for PFAS in the Chesapeake Bay Watershed.

Requested by

- Water-Quality Goal Team, in cooperation with their Toxic Contaminants Work Group
- Scientific, Technical Assessment, and Reporting (STAR) team

Workshop Steering Committee and Contributing Expertise (in alphabetical order):

- Greg Allen, US EPA, Chair of the CBP Toxic Contaminant Workgroup
- Lee Blaney, UMBC, **STAC Sponsor** and PFAS research in the Chesapeake
- Lara Fowler, PSU, Liaison with PFAS research being conducted at PSU and facilitation
- Tom Ihde, Morgan State University, STAC member and PFAS research
- Denise Keehner, MDE, Host of MD PFAS Roundtable and jurisdictional representative
- Michelle Lorah, USGS, Co-Chair of the USGS NE Region PFAS Capability Team
- Emily Majcher, USGS, leadership on the Toxic Contaminant Research Outcome
- George Onyullo, DOEE, agency is addressing PFAS and input on jurisdictional needs
- Scott Phillips, USGS, STAR Co-Chair, interaction with CBP Goal Teams
- Kelly Smalling, USGS, PFAS research and member of USGS National PFAS team
- Other: technical expertise on PFAS in fish and wildlife; and fish consumption advisories

Workshop Topics and Objectives

Per- and polyfluoroalkyl Substances compounds (PFAS) have been manufactured and used in a variety of industries in the United States since the 1940s. These compounds are persistent in the environment and have been shown to have adverse human and ecological health effects. Little is known about PFAS in the Chesapeake Bay, but due to its wide use in many consumer (e.g., food packaging, non-stick cookware, fabric softeners) as well as industrial products (firefighting foams), and their biomagnification potential through the food web, there is the possibility for widespread occurrence and risk to fish, wildlife, and human health. Therefore, a STAC workshop is needed to improve the understanding and science coordination for PFAS in the Chesapeake ecosystem.

The purpose of the workshop is to gather state, federal, and academic partners to better understand the state of the science and improve science coordination for these objectives:

- **Summarize the current understanding of the sources, occurrence, and fate of PFAS**. The focus would be on the unique Chesapeake Bay ecosystem settings, such as freshwaters to tidal waters, differing land uses, and the affecting resources in each.
- **Identify current efforts and approaches to inform the potential effects on fish and wildlife, and their consumption.** Selected fish and wildlife species, including those common for human consumption in the Chesapeake watershed, would be chosen for focus in the workshop.
- **Consider study designs, and comparable sampling and analysis methods, for a more coordinated PFAS science effort.** Recommendations would be developed to have a more coordinated science effort to address objectives 1 and 2; and strive to have an integrated and cost-effective approach for monitoring, modeling, and innovative methods across the watershed.

Urgency for the workshop Most jurisdictions have voiced an imminent need to advance their understanding on these PFAS objectives since they are independently working toward establishing local, PFAS footprints in their jurisdictions. A STAC workshop is needed now to bring together scientists with

jurisdictions and agencies that need to develop monitoring and assessment activities for PFAS. By coordinating science approaches at this stage, the CBP has an opportunity be a national leader in addressing PFAS.

Background Information, Current Efforts, and CBP Discussions

During the Feb 10, 2021 meeting of the CBP Toxic Contaminant Workgroup (TCW), state, federal and academic partners discussed their current efforts to study PFAS and gaps that need to be addressed. *Some of the recent and current efforts highlighted in the discussion included:*

- **The State of Maryland sponsored a PFAS Round Table.** The half-day round table brought together over 20 scientists and PFAS experts from academia, six federal agencies, and the states of Pennsylvania and Delaware and identified gaps (related to toxicity, fate and transport, degradation in the environment, human exposure pathways) and suggested priorities include characterization of PFAS in wastewater effluents and biosolids, landfill leachates, and nearby other manufacturing sources.
- **Presence of PFAS in drinking-water supplies**. All states, and USEPA, are concerned about occurrence of PFAS in drinking-water supplies and have some type of ongoing studies to assess impacts. Since drinking- water studies are underway, the jurisdictions felt the STAC workshop should focus on fish and wildlife and implications to human health through their consumption.

The major gaps identified by CBP partners during the Feb 10 call included:

- **Sources, occurrence and fate of PFAS:** While many jurisdictions have initiated some desktop source-tracking efforts, the watershed wide occurrence of PFAS, particularly as it relates to the non-tidal (freshwater) to tidal (salt water) gradient is not well understood. Similarly, PFAS mixtures associated with specific sources (e.g., wastewater effluents, or landfills), their transformations, and pathways to fish and wildlife need improved understanding.
- **PFAS in fish and wildlife, and implications for ecosystem and human health.** The occurrence of PFAS in fish and wildlife only has limited study. Jurisdictions are keenly interested in the potential risk to human health from consumption of fish and shellfish and said this is the optimal time to understand what is needed to develop fish-consumption advisories for PFAS.
- **Coordinated study approach with common, cost-effective monitoring and analysis methods and tools so results can be shared between states and agencies.** The sampling and analytical methods for PFAS, particularly in fish tissue, are rapidly evolving. Field studies of concentrations in fish, which are used to establish jurisdiction fish consumption advisories, could benefit greatly from a more coordinated study approach with consistent and standardized methods across the watershed.

Management Relevance

The results of the workshop can be used to make progress toward the CBP Contaminant Research Outcome. At the SRS presentation of Toxic Contaminant Research Outcome in August 2020, the opportunity to take a coordinated science approach to PFAS was identified and supported by the Management Board. The actions to address PFAS was written into the updated documents for the Toxic Contaminant Research Outcome, that were approved in Jan 2021. Specifically, actions for PFAS were incorporated into activities to: "Understand the influence of contaminants in degrading the health, and contributing to mortality, of fish and wildlife", and "Document the sources, occurrence, concentrations, and transport of contaminants in different landscape settings".

Questions Being Considered for the Workshop, and Expertise Needed

Questions would be developed for the workshop, with associated expertise invited, including:

- What are the current approaches and lessons learned for source identification across the watershed to establish PFAS footprint? How do they differ?
- What is current state of science regarding the fate and transport of PFAS compounds as a contaminant class under differing environmental conditions of the Chesapeake (non-tidal, tidal), sources (e.g., effluents, landfills), and land use?
- What are the species of most concern in the Bay and watershed? What are the current sampling approaches and what is most appropriate for assessing presence of PFAS in fish?
- What have investigations in other watersheds (e.g., Delaware River, Great Lakes) discovered about the ecological burden of PFAS on fish and wildlife?
- What components are needed to develop Chesapeake fish consumption advisories? How do we address differences between species, salinity gradient effects?

Workshop Planning, Format, Products, and Outcomes

The workshop would have three phases:

- Pre-workshop activities. Work with CBP partners, through the TCW, to develop the questions that should be addressed during the workshop. The interaction would include input on desired level of detail needed to address 1) sources, occurrence and fate of PFAS; and (2) presence in fish and wildlife, including developing fish consumption advisories. An inventory would be conducted of current study efforts that address the questions.
    - Products: Questions and information needs, and summary of current efforts addressing those needs. Would be part of materials provided for the workshop. Expected Fall, 2021.
- Workshop. Gathering of experts and jurisdictions to provide input on guidance, gaps, and recommendations for workshop objectives. Timing would be between Fall 2021-Spring 2022. Workshop would be in person or virtual depending on COVID-19 restrictions.
    - Products: Webpage with all presentations. Initial answers and associated recommendations developed for workshop questions.
- Steering committee develops report and final products. The products would include:
    - Report that summarizes the findings of workshop, identifies gaps, and makes recommendations on science activities that could address the gaps.
    - Summary presentation of report findings and recommendations that could be used as guidance by jurisdictions on planning PFAS studies.
    - Blog of workshop findings prepared by CBP Communications Office

Budget

The total cost is projected to be between 8,000 to $10,000 and will vary if held virtually or in person. For an in-person workshop costs include venue: $1500; food: $2,500; travel/lodging for selected participants: $3,000; and $3,000 for contractual assistance for compilation and synthesis of scientific findings. If held virtually, funding for venue and food and travel would not be needed but there could be an additional cost for technical support needed for successful virtual workshop. USGS would provide some staff support for pre-workshop activities, and TCW would facilitate pre-workshop activities.

Previous STAC funded workshops

The TCW held a successful STAC workshop in May 2019 on “Integrating Science and Developing Approaches to Inform Management for Contaminants of Concern in Agricultural and Urban Settings”.