Chesapeake Bay Program's

Toxic Contaminants Workgroup
Meeting Minutes
Wednesday, November 8th, 2023
1:00 - 3:15 PM
November Meeting Materials

Chesapeake Bay Program
A Watershed Partnership

Meeting Minutes

1. **Introduction and Announcements:**
   i. *Links to PCB symposium repository of all presentation files*
   ii. *Pesticides and the Chesapeake Bay Watershed Project Conference*
2. **PFAS Analytic Tools for Source Assessment and a Case Study Technical Presentations:**
   i. **An Introduction to the EPA PFAS Analytic Tools** - Nick Spalt, EPA OECA
      - **Summary**: Nick provided an overview of the EPA OECA's PFAS Analytic tools. This included EPA's PFAS Strategic Roadmap, the goals of the tools, their development history, and how to access the tools. Nick followed up with a demonstration of the PFAS tools, both in the Bay region and the whole US.
      - Presentation
   ii. **Using Geospatial Data and Random Forests to Predict PFAS Contamination in Fish Tissue in the Columbia River Basin, United States** – Nicole DeLuca, EPA ORD
      - **Summary**: Nicole explained how her group used existing geospatial data and a limited set of existing PFAS measurements in fish tissue, in addition to a random forest model, to perform regressions and classifications of relationships between PFAS in fish tissue and variables that could be related, such as land use types or manufacturing sectors. The group concluded that among other things, distance to industrial facilities and the amount of developed land cover were correlated with higher PFAS levels in fish tissue.
      - Presentation
   iii. **Discussion – Usefulness and Application of the Tools in the Chesapeake Bay Watershed**

      Leonard Schugam: Question for Nikki regarding the Columbia River model, where are you in terms of validating the model? Have you taken follow up fish tissue sampling at sites where you predicted there would be elevated concentrations?

      Nikki DeLuca: We haven't personally done that. It was initially a plan in the project to go out and validate using new samples but permits and other things made that more difficult than expected. We're hoping that partners in the region

will use this model to go out and confirm it over the next couple years, but as of now we split the dataset to evaluate the models using what we already had. We don't have anything new quite yet.
Greg Allen: Nick, the spider diagram that you show really helps to see what is in there. The quadrant that is water quality data, and things flowing through the water quality portal are of particular interest to us. I was wondering what the sources and QA for that data are. Is it an open poral or are there checks on the data before it goes in?
Nick Spalt: The data flows vary. We've got national aquatic resource surveys in there, like the National Rivers and Streams Assessment, there's the Great Lakes Assessment. So, some of those national surveys coordinated by EPA that have PFAS testing make it into the water quality portal, and I think there's some that are scheduled to happen in the future as well. The Coastal Condition Assessment which might be related to the Chesapeake Bay Program. You can expect to see those in the water quality portal if whoever's running the survey submits them through the water quality exchange. With that specific data set [brings it up using the tool] there is a field for whether that sampling initiative had an approved QAPP and who the QAPP approver was. If you wanted to dive into that you could find out more about what the project was and who approved it.
Greg Allen: So is having an approved QAPP a condition for being able to upload?
Nick Spalt: No, all this data is coming from the water quality portal (https://www.waterqualitydata.us). There's information in the help section about contributing organizations and how to contribute. If folks on the call are interested in that, then we could probably coordinate something with the EPA Office of Water.
Greg Allen: Question for Nikki, I understand you don't have new data, but is it conceivable that we could test the model somewhere where there is additional data, not necessarily new but data that's available in other watersheds like the Chesapeake?
Nikki DeLuca: Because we only trained this model on Washington and Oregon there might be some regional specific results in there. We anticipated this being a methodology where you could download your own data (i.e., the Chesapeake specifically), train models, and then validate it in your own watershed. Since there are regional differences and sources could be different, and the type of fish could even be different (i.e., freshwater vs estuarine). I don't know if I would go and apply the particular model in the paper anywhere, but it's more of a proof of concept and the data is publicly available if you want to run it for your own area of interest.
Nick Spalt: We are aware of other modeling efforts by other organizations that are looking at other media. Nikki's presentation is focused on fish tissue, but there are other media you can look at. There are organizations working on identifying PFAS in ambient surface water versus predictive analytics in groundwater. I think what you all would be most interested in is the surface water and fish tissues side, but there are USGS researchers who've released papers on predictive analytics for PFAS in groundwater. The ones that haven't been talked about much are the efforts focused on surface water predictions.

Emily Majcher: The integrated tab was helpful, in terms of seeing you walk through those. Is there a way to download the data from the integrated interface (obviously you can also download it from the water quality portal)? Are any of the other datasets downloadable or is it just interactive in the tool itself?
Nick Spalt: All of the datasets are downloadable from their tables in the individual tabs. You could also download them all from the analytics tools database. You can't download everything from the integrated map at this time.

3. **Use of Existing Monitoring Networks for Occurrence and Source Assessments Technical Presentations:**
   i. **PFAS in Pennsylvania's Surface Waters: A Statewide Assessment, Associated Sources and Land-Use Relations** – Amy Williams, PA DEP
      - **Summary**: Amy went over efforts by the PA DEP to identify PFAS in PA surface waters and conduct analyses to relate these sites to sources of contamination. Amy covered the study design, monitoring network, data visualizations, and sampling techniques.
      - Presentation
   ii. **Utilization and Optimization of an Existing Chesapeake Bay Monitoring Network for a Statewide Surface Water PFAS Investigation in Pennsylvania** – Emily Woodward, USGS
      - **Summary**: Emily presented in lieu of Sara Breitmeyer. Emily summarized the study, which used the PA water quality network (the same network used in the paper Amy presented on) to look for correlations between PFAS levels at individual monitoring sites and land uses based on a geospatial dataset. The statistical analyses performed showed a correlation between PFAS yields and urbanization, electronics manufacturing facilities, water pollution control facilities, and proximity to oil and gas development, among other variables.
      - Presentation
   iii. **Discussion – Promoting Consistency in Surface Water Investigations in the Chesapeake Bay Watershed**

Greg Allen: Question for Amy, to my knowledge this is one of the first instances of the monitoring (non-tidal) network being leveraged for something related to toxic contaminants. It's not inexpensive to do that, so I was wondering about the analytical costs in particular, how were they covered?
Amy Williams: We had a contract agreement with SGS AXYS where we do a lot of our passive water sample analyses and any other Contaminant of Emerging Concern (CEC) analyses. I need to check on what each PFAS sample costs there, I think its about $390 per sample. Not the most expensive of water samples; we were originally going through our own lab, but they couldn't handle the workload.
Greg Allen: What source was the money coming from? How did the state manage to come up with the money to add to the non-tidal network activities so that this was able to happen?
Amy Williams: I don't recall the source; my supervisor Dustin Shull is on, and he may remember.
Dustin Shull: We have a couple statewide and federal funds that we use. Our [CWA Section] 106 base funding goes to support our water quality network, but from a state perspective we have two funds that we use for our water quality

network. One is the clean water fund which is appropriated through legislative actions and the other is the environmental stewardship fund which some folks might know as growing greener. With all those pots of money we have routine sampling we do and use the funds for, and there's a contingent of those funds that are allocated for emerging contaminants program.
Amy Williams: Each discrete sample is approximately $390; each fish tissue sample is approximately $440, and I've also done some passive water sampling for PFAS and that's about $370. Just to get an idea of the cost. This particular study was quite a large sum of money.
Greg Allen: Do those prices include TOP or were they just the 33 PFAS analytes?
Amy Williams: I don't think that included the TOP. The TOP is the same sample analyzed again, which we haven't been doing anymore. That was special for this particular year.
Greg Allen: The question is, can our other jurisdiction partners leverage the non-tidal or tidal network similarly. That's why we're curious about where you found the money for the analysis, but we understand those were state funds in state programs. Maybe we can see where something like that is possible [in other jurisdictions] because this is one of the first times, I've seen the monitoring network leveraged for something related to emerging contaminants.
Emily Majcher: Are you targeting additional sampling going forward at any of the sites, or a subset of the sites? How did you select which ones to include was it based on the initial results or is It just a one-time event?
Amy Williams: You got it exactly, we are doing ten studies across a subset of the sites currently, we started in 2020 so 2020 through this year. We based that off the results of the first study, areas that were of concern. So, it's a much smaller subset but we are sampling them multiple times during the year.
Emily Majcher: I have a question for some of our jurisdictional partners who are on; we've been talking throughout this year about growing PFAS projects in the region and I was curious if any other jurisdictions have moved in the direction of sampling their non-tidal network to include PFAS? I think about using the tool to inform where to sample, but it's very interesting to see the results of this paper with such a widespread effort and an existing network as opposed to targeted at specific source areas.
Leonard Schugam: We haven't been doing surface water at that scale on the non-tidal network. We were pairing surface water with fish consumption data. With regards to the non-tidal network, it was more on the fish consumption side of things. With the drinking water, wherever there were drinking water intakes and surface water we have that data as well, so on various reservoirs and the Potomac and places like that. That's a question for Emily too, in regard to the connection between the MCLs and how they're evaluating the data, are they looking into the connection with fish consumption advice?
Sara Breitmeyer: I think there was one fish consumption advisory that PA DEP put out after the study, I believe for the highest yielding study stream, Valley Creek.
Amy Williams: It's for the Neshaminy Creek watershed, which Valley Creek is in that area. That's the only current fish consumption advisory for PFAS in the state.

Emily Majcher: Did the surface water network results trigger any sort of response actions due to high concentrations, from a source track down perspective or anything?
Sara Breitmeyer: One example would be that we are now concluding an oil and gas study because of the oil and gas impacts we found. I don't know how many sites but at least one and maybe a few.
Emily Woodward: We've done a few more defined source studies now based on these results. The oil and gas study that Sara mentioned, we have five sites across that state that we sampled quarterly upstream and downstream. Four of the plants reported as accepting unconventional oil and gas waste and one as a control. That sampling completed in August and we're getting results back from SGS AXYS on that. We've also done a more focused source attribution study in the Neshaminy Creek basin that was mentioned for the fish consumption advisory. That's using a time of travel approach to sample upstream and downstream of known sources so that we can try to understand those mass load inputs along the reach. So, we have designed more focused source studies based on this statewide study, and a lot of those things are being analyzed or drafted into manuscripts as we speak.
Amy Williams: I placed the Neshaminy Creek fish consumption advisory link in that chat. We don't have any additional studies going on with regards to specific sources, although its pretty well known that a lot of the aircraft base runoff has problems, especially in Neshaminy Creek. There's a lot of studies going on with drinking water in those areas with PFAS as well.
Greg Allen: PA is doing an amazing job using resources to get a lot of great data on this. If there is something we could do, particularly Amy Williams, maybe our Bay Program communications team could write up a piece on this that might spur others to do similar work and show your leadership on this. If that's of interest I'd be glad to work with you on it.

Participants

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Acronym List

BMP: Best Management Practice
CAST: Chesapeake Assessment Scenario Tool
CBF: Chesapeake Bay Foundation
CRC: Chesapeake Research Consortium
CWA: Clean Water Act
DNREC: [DE] Department of Natural Resources and Environmental Control
DOEE: [DC] Department of Energy and the Environment
EPA: [US] Environmental Protection Agency
MCL: Maximum Contaminant Level
MDE: Maryland Department of the Environment
OECA: [EPA] Office of Enforcement and Compliance Assurance
ORD: [EPA] Office of Research and Development
PFAS: Per- and Polyfluoroalkyl Substances
PFOS: Perfluorooctanesulfonic Acid
TOP: Total Oxidizable Precursors
UMBC: University of Maryland, Baltimore County
USDA: United States Department of Agriculture
USGS: United States Geological Survey