STAR Science Needs Meeting: Toxic Contaminants Research (including Policy and Prevention PCB science)

Emily Majcher (USGS), Greg Allen (USEPA)

Completed Science Needs

- Generate further information on mercury in the watershed
  - Story map completed (regular updates planned)
  - Science synthesis provided to TCW for consideration of the watershed-wide monitoring efforts (Whillacker and others 2020), inventories Eagle-Smith (USGS)
  - CBP and state jurisdiction monitoring for fish consumption
  - Ongoing monitoring of remaining impaired areas, ongoing monitoring of fish consumption and fish effects by jurisdictions
  - May this science need be archived in the database? – *Perhaps modify language, but deleted as written?*

Ongoing/In Progress/New Science Needs

- Improve understanding of PCB sources and fate in the environment to better inform PCB mitigation (Also TC Research 1.2)
  - Tracking of progress on published studies (Majcher and others, 2022; Bokare and others, 2022) of PCB source refinement in urban areas (e.g., Back and Anacostia rivers)
  - Tracking progress of guidance documents for PCB TMDLs (MDE, VA, EPA)
  - Tracking new TMDLs, implementation of existing TMDLs, and alternative approaches (e.g., and science used to move toward compliance (round table, status document)
  - *Remaining need:* Literature review to assess need for further study of PCBs in environment from biosolids
  - *Remaining need*: Hierarchy of PCB field and analytical methods for desired use, interpretation guidance to promote comparison of data

Status of the resource

- Full resources
- **Partial resources**
- No resources

Category of the need (Research, Synthesis)

Ongoing/In Progress Science Needs

- Improved understanding of BMP effectiveness for removal of PCBs (Also TC Research 4.2)
  - Wastewater BMP effectiveness (Majcher and others, 2022)
  - Bioretention efficacy and optimization for toxic contaminant removal (PCBs, metals, etc.; Kjellerup and Davis projects), associations with land use (CBT restoration research effort)
  - Wet pond capture of PCBs (MDE and USGS)
  - To date literature review of BMP science advances (USGS), *paper in preparation* and bibliography included in MDE PCB TMDL guidance document
  - *Remaining need*: Ongoing literature tracking of BMP removal efficiencies
  - *Remaining need*: Summary science document from January national PCB strategy meeting

Status of the resource

- Full resources
- **Partial resources**
- No resources

Category of the need (Analysis, monitoring, .)

New Science Need - Medium Priority

- Enhanced monitoring for PCBs (as outlined in PSC report) - to evaluate recovery of surface water/fish in areas where management for PCBs is occurring
  - Assess feasibility, design, and resource needs to meet objective
  - Existing data are not usable to meet this objective
  - Prioritized by the TCW

Status of the resource

- Full resources
- Partial resources
- **No resources**

Category of the need (Data gathering,, monitoring, research)

Ongoing/In Progress/New Science Needs

- Assess effects of toxic contaminants on fish and shellfish in tidal waters
  - Tracking studies that examine the decline in tumor prevalence in the Anacostia River
  - Tracking study on the yellow perch condition in urban areas
  - Inform results of studies designed to address temporal and spatial changes in fish health in mixed use watersheds in the freshwater portion of the Watershed
  - *New*: Impacts of PFAS on health of fish (fish plasma from CB long-term monitoring sites)
  - *New*: Guidance for PFAS sampling and analysis methods to support fish health studies and fish consumption (bioconcentration and biomagnification)

***STAC recommendation in database is not aligned with our LAP

Status of the resource

- **Full resources**
- Partial resources
- No resources

Category of the need (Data gathering, Synthesis, monitoring)

Ongoing/In Progress/New Science Needs

- Synthesize and communicate information to document fish health and wildlife conditions in the Bay watershed
  - Synthesis of numerous publications conducted as part of the endocrine disrupting study published as a geonarrative Endocrine Disrupting Compounds in the Chesapeake (usgs.gov)
  - Communicate results of fish conditions in areas of concern
  - *New*: Gather information and communicate appropriate fish and portions of fish to analyze to assess impacts for fish health studies, recommended methods, and interpretation of the data

*** STAC recommendation in database is not aligned with our LAP

Status of the resource

- Full resources
- **Partial resources**
- No resources

Category of the need (Data gathering, research, Synthesis)

Ongoing/In Progress/New Science Needs

- Document occurrence, concentrations, and sources of legacy and widespread contaminants in different landscape settings
  - Tracking of progress and results of studies examining occurrence and concentrations of PFAS in wastewater effluent
  - Tracking of progress and results of studies examing occurrence and concentrations of PCBs and PFAS in wet pond drainages categorized by land use
  - Ongoing inventory of PFAS sampling efforts in the watershed that includes sampling and analysis methods
  - *New*: Utilize DRBC databases of 1668 (congener-based) PCB data and PCB-era and current land use to develop a statistical model to identify patterns in PCBs related to current/former land use categories.

** STAC recommendation in database is not aligned with our LAP

Status of the resource

- Full resources
- **Partial resources**
- No resources

Category of the need (Data gathering, Synthesis, monitoring)

Ongoing/In Progress Science Needs

- Prioritize options for mitigation of toxic contaminants to help inform policy and prevention
  - Study to explore water quality response to BMP implementation in agricultural watersheds using estrogenicity as an indicator of EDCs.
  - Continue to evaluate outcomes from Anacostia River sediment project to improve understanding of PCBs and other contaminants of concern in urban environments.
  - Promote and track removal of non-PCBs toxic contaminants in agricultural BMPs to better define removal efficiencies.

Status of the resource

- Full resources
- **Partial resources**
- No resources

Category of the need (Synthesis, research)

New and Emerging Science Needs - High Priority

- Select forthcoming PFAS STAC Recommendations
  - Highlight select, urgent science needs from STAC workshop report
  - The rapidly evolving nature of PFAS requires timely response
  - Jurisdictions, academic and federal researchers

Status of the resource

- Full resources
- **Partial resources**
- No resources

Category of the need (Synthesis, Literature Review, etc.)

New and Emerging Science Needs - High Priority

- PFAS Guidance and Tracking
  - Anticipated need to develop field and analytical guidance to encourage consistency and data sharing between stakeholders in the Watershed. Maintain inventory of points of contact, studies, and objectives to maximize leveraging and cost effectiveness
  - Rapidly evolving studies and monitoring efforts
  - No engaged resources beyond jurisdictions

Status of the resource

- Full resources
- **Partial resources**
- No resources

Questions?

Point of Contact information

- Emily Majcher
- emajcher@usgs.gov