Toxic Contaminants Research Outcome Effective dates: 2016-2017

Goal: *Toxic Contaminants*

Outcome: Research

Long term Target: Develop a research agenda and further characterize the occurrence, concentrations, sources and effects of toxic contaminants of emerging and widespread concern.

2 year Target: Completion of performance targets related to key actions

Partner contributions to 2 year target: As-listed under performance targets

Management Approach 1: Supply information to make fish and shellfish safe for human consumption

Key Action	Performance Target(s)	Partners	Geographic Location	Timeline	Factors Influencing and/or Gap
Description of work/project. Define each major action step on its own row. Identify specific program that will be used to achieve action.	*Identify incremental steps to achieve Key Action*	**Responsible** *Identify responsible partner for each step .*		*Identify completion date (month and year) for each step.*	*ID related factor or gap in Mgmt. Strat*
1. Use existing information to provide overviews of the effects of multiple toxic contaminants on shellfish and fisheries.	NOAA is preparing a National Bioeffects report that will contain a chapter on Chesapeake Bay. NOAA will present the Chesapeake summary to the TCW.				

	Other existing NOAA reports include:http://ccma.nos.noaa.gov/publications/NCCOSTM47.pdf) http://www.ccma.nos.noaa.gov/publications/nccoschesapeakebay.pdf	NOAA	Tidal waters in MD and VA	2016	Different thresholds for effects on shellfish and fisheries. Resource constraints
2. Generate further information on mercury, focused on determining whether further Chesapeake Strategies are needed to supplement national efforts to reduce its impact on fish and associated consumption advisories.	Establish a Mercury Subgroup that would begin to summarize information to be considered by TCW to minimize effects of mercury.	TCW UMCES, SERC, NOAA-ARL, ERM, Inc., MDE, DNR-PPRP	Watershed-wide	2016-17	Resource constraints

					Resource constraints
	Conduct sampling of mercury in young of the year fish. Results will eventually be used to assess trends.	MDE and MD DNR	Maryland	2016-2017	
	Review and obtain information documented during the establishment of Maryland's proposed Mercury TMDL.	MDE	Maryland	2016-2017	
3. Generate further information on selected pesticides to help TCW consider a future management strategy	Interact with MD Pesticide network and associated research WG (see Management Approach 4)	MD Pesticide Network	MD focused	2016	Staff constraints

4. Consider the development of a PCB mass balance model for the Chesapeake Bay.	Discuss utility, feasibility and practicality of developing a mass-balance model for PCBs.	TCW and science partners	Chesapeake Bay Watershed-wide	2016-17	Resource constraints
5. Monitor levels of PCBs in fish and shellfish and move contaminated sites towards cleanup.	(Please see the Toxic Contaminants Policy and Prevention Workplan- Management Approach 1, Key Action 1)	(See Toxic Contaminants Policy and Prevention Workplan)	(See Toxic Contaminants Policy and Prevention Workplan)	(See Toxic Contaminants Policy and Prevention Workplan)	N/A
6. Better delineate PCB sources from diffuse sources of land, release from deposits in stormwater pipes, and atmospheric deposition.	(Please see the Toxic Contaminants Policy and Prevention Workplan- Management Approach 1, Key Actions 6 and 10; Management Approach 4, Key Actions 1 and 5)	(See Toxic Contaminants Policy and Prevention Workplan)	(See Toxic Contaminants Policy and Prevention Workplan)	(See Toxic Contaminants Policy and Prevention Workplan)	N/A

Management Approach 2: Understanding the influence of contaminants in degrading the health, and contributing to mortality, of fish and wildlife

Key Action *Description of work/project. Define each major action step on its own row. Identify specific program that will be used to achieve action.*	**Performance Target(s)** *Identify incremental steps to achieve Key Action*	**Partners** **Responsible** *Identify responsible partner for each step .*	**Geographic Location**	**Timeline** *Identify completion date (month and year) for each step.*	**Factors Influencing and/or Gap** *ID related factor or gap in Mgmt. Strat*
1.Assess the effects of contaminants on fish and shell fish in tidal waters	Continue studies of tumors found in Bullheads catfish	FWS	Tidal Potomac	2016-17	-Lack of comprehensive monitoring program in tidal waters. -Complexity of relating mixtures of contaminants to effects on fish and shellfish -resource constraints
	Evaluate findings from condition of Yellow Perch in urban areas.	FWS MD DNR USGS	Selected MD rivers		

2.Generate information to document fish health conditions in the Bay watershed.	Conduct studies to understand the influence of contaminants and other factors degrading the health, and contributing to mortality of fish. Products include summary of fish health conditions (including intersex) over the last 10 years in the watershed. Studies have partners in several states (see below)	USGS	Susquehanna and Potomac watersheds	2016-17	-Lack of comprehensive monitoring program in the watershed
	Better understand the influence of endocrine-disrupting compounds (EDCs) and their effects on fish conditions. Focus on agricultural areas in 2016-17 with urban areas addressed in 2018-19. (in collaboration with project listed above)	USGS	Susquehanna and Potomac watersheds		
	Continue monitoring of fish conditions in areas of concern within jurisdictions (most in cooperation with USGS projects listed above)	PA DEP	Susquehanna and Potomac watersheds	2016-17	-Complexity of relating mixtures of contaminants to effects on fisheries
		MD DNR			
		WV DEP			

	Continue studies on the relationship between the amount of impervious surface and the impact on fish conditions	MD DNR	Maryland	2016-17	-resource constraints
	Continue stream IBI studies as part of the Maryland biological stream survey to evaluate health of fish communities and identify potential linkages to toxic contaminants.	MD DNR and MDE	Maryland	2016-17	
3.Assess the effects of toxic contaminants on wildlife by summarizing existing studies and considering additional research activities. Information will be used to TCW on implications for relative risk (see management approach 4)	Complete and present review of EDC found in wildlife within the Chesapeake watershed. Based on results consider additional studies.	USGS	Chesapeake Bay Watershed-wide	2016	-Lack of wildlife monitoring program -Complexity of relating mixtures of contaminants to effects on wildlife
	Publish results from the recently published Chesapeake Bay osprey food study. Assess if results from the Delaware-based osprey food study are applicable.	USGS	Baltimore Harbor, Anacostia, Elizabeth River	2016	-resource constraints

Management Approach 3: Document the occurrence, concentrations, and sources of contaminants causing fish and wildlife degradation

Key Action *Description of work/project. Define each major action step on its own row. Identify specific program that will be used to achieve action.*	**Performance Target(s)** *Identify incremental steps to achieve Key Action*	**Partners** **Responsible** *Identify responsible partner for each step .*	**Geographic Location**	**Timeline** *Identify completion date (month and year) for each step.*	**Factors Influencing and/or Gap** *ID related factor or gap in Mgmt. Strat*
1. Better define the sources and occurrence of EDCs and other contaminant groups that are affecting the health of fish and wildlife in the watershed.	Conduct projects to identify the sources and occurrence of toxic contaminants contributing to degraded fish health. Prepare initial summary of the occurrence and sources of contaminants based on information collected by USGS over the last 10 years in the Bay watershed. Assess the potential association with nutrients. Studies have partners in several states (see below).	USGS	Multiple locations, mostly in Susquehanna and Potomac	2016-17	-Lack of comprehensive monitoring programs in watershed. -Lack of consistent information on the occurrence of contaminants.

Continue study of sources and occurrence of EDCs in agricultural watersheds (same locations as USGS fish health studies). Collect samples for Gather information for GIS analysis of sources and occurrence of EDCs in the watershed. Begin planning for study of urban watersheds, focusing on impact of BMPs on EDCs in the environment.	USGS		2016-17	
Continue Pennsylvania studies on pesticides and hormones.	PA DEP	Susquehanna basin	2016	-resource and lab constraints

	Continue studies on the impacts of algal toxins on fish kills in West Virginia and identify potential links to toxic contaminants.	WV DEP (working with USGS)	Upper Potomac basin, WVA	2016-17	
	Evaluate outcomes from Anacostia River sediment investigation to improve understanding of contaminants other than PCBs.	DOEE	Anacostia River, MD-DC	2016-17	
2. Better define sources and occurrence contaminant groups occurring in tidal waters	-use new Chesapeake bio-effects summary and Utilize information from existing NOAA documents http://ccma.nos.noaa.gov/publications/NCCOSTM47.pdf	NOAA	Tidal waters	2016	-Lack of comprehensive monitoring programs in tidal waters. -Lack of consistent information on the occurrence of contaminants. -resource and lab constraints

Management Approach 4: Assess the relative risk of contaminants, and options for mitigation, to inform policy and prevention

Key Action *Description of work/project. Define each major action step on its own row. Identify specific program that will be used to achieve action.*	**Performance Target(s)** *Identify incremental steps to achieve Key Action*	**Partners** **Responsible** *Identify responsible partner for each step .*	**Geographic Location**	**Timeline** *Identify completion date (month and year) for each step.*	**Factors Influencing and/or Gap** *ID related factor or gap in Mgmt. Strat*
1. Develop approaches to assess the relative risk of contaminants to help inform policy and prevention strategies.	Develop approaches to assess relative risk to help inform policy and prevention strategies.	EPA Office of Water, Office of Science and Technology	Chesapeake Bay Watershed-wide	2016-17	Mixtures of contaminants complicate risk assessment Lack of toxicity thresholds.
	Begin to develop methods for summarizing existing information on Hg, pesticides, PAHs, for future consideration within the Policy and Prevention Management Strategy.	TCW	Chesapeake Bay Watershed-wide		
2. Share approaches for assessing relative risk with the TCW so that they can consider options for mitigating impacts of toxic contaminants.	Develop a lessons learned document based on the results from the Anacostia River study.	DOEE TCW	Anacostia	2016-17	

	Begin a risk assessment study of EDCs compounds with occurrence of intersex and other fish health conditions	USGS	Focused on Susquehanna and Potomac basins	2016-17	Limited information on effectiveness of BMPs for reducing contaminants.
	Conduct GIS analysis to identify toxic contaminant “hotspots” based on land use. Relate to areas of nutrient loading	USGS	Watershed wide		
	Evaluate outcomes from the literature review on the potential toxic contaminant reductions provided by traditional stormwater BMPs, and conduct outreach efforts to share those results.	CSN	Watershed-wide		
		TCW			
	Have MD Pesticides share methodology for prioritizing pesticides. Work with them to assess use for TCW	MD Pesticide Network (research workgroup)	Mostly MD	2016	

Management Approach 5: Gather information on issues of emerging concern

Key Action *Description of work/project. Define each major action step on its own row. Identify specific program that will be used to achieve action.*	Performance Target(s) *Identify incremental steps to achieve Key Action*	Partners Responsible *Identify responsible partner for each step .*	Geographic Location	Timeline *Identify completion date (month and year) for each step.*	Factors Influencing and/or Gap *ID related factor or gap in Mgmt. Strat*
1. Propose STAC workshops to address contaminant toxicity to pollinators, and microplastics.	Have STAC conduct a literature review on the effects of microplastics on fish and wildlife.	STAC	Watershed-wide	2016	Limited knowledge, resource constraints
	Evaluate results of STAC literature review and determine next steps.	TCW			
2. Better delineate potential impacts of UOG activities.	Conduct research on impacts of UOG activities (part of wider studies of UOGs)	USGS with partners	Upper Susquehanna River, Pennsylvania and NY	2016-17	Limited knowledge, resource constraints

Definitions:

EPA	U.S. Environmental Protection Agency
DE DNREC	Delaware Department of Natutral Resources and Environmental Control
DOEE	District of Columbia Department of Energy and Environment
MDE	Maryland Department of the Environment
MD DNR	Maryland Department of Natural Resources
NYS DEC	New York State Department of Environmental Control
PA DEP	Pennsylvania Department of Environmental Protection
VA DEQ	Virginia Department of Environmental Quality
WV DEP	West Virginia Department of Environmental Protection

USGS	U.S. Geological Survey
FWS	U.S. Fish and Wildlife Service
UMCES	University of Maryland Center for Environmental Science
UMBC	University of Maryland Baltimore County
NOAA	National Oceanic and Atmospheric Administration
USDA	U.S. Department of Agriculture
NRCS	National Resource Conservation Service
DoD	U.S. Department of Defense
USACE	U.S. Army Corps of Engineers
DOT	Department of Transportation
SRBC	Susquehanna River Basin Commission
CBP	Chesapeake Bay Program Partnership
CBPO	Chesaoeake Bay Program Office
WQGIT	Water Quality Goal Implementation Team
STAC	Scientifical and Technical Advisory Committee
MB	Chesapeake Bay Program's Management Board
PSC	Chesapeake Bay Program's Principles' Staff Committee
WIP	Watershed Implementation Plan
TMDL	Total Maximum Daily Load
NATA	National Air Toxics Assessment
DAT	Chesapeake Bay Program Diversity Action Team
HSCD	EPA Hazardous Site Cleanup Division
TSCA	Toxic Substance Control Act
PMP	Pollution Minimization Plan
ASTSWMO	Association of State and Territorial Solid Waste Management Officials
CSN	Chesapeake Stormwater Network