



Toxic Contaminants Research Outcome

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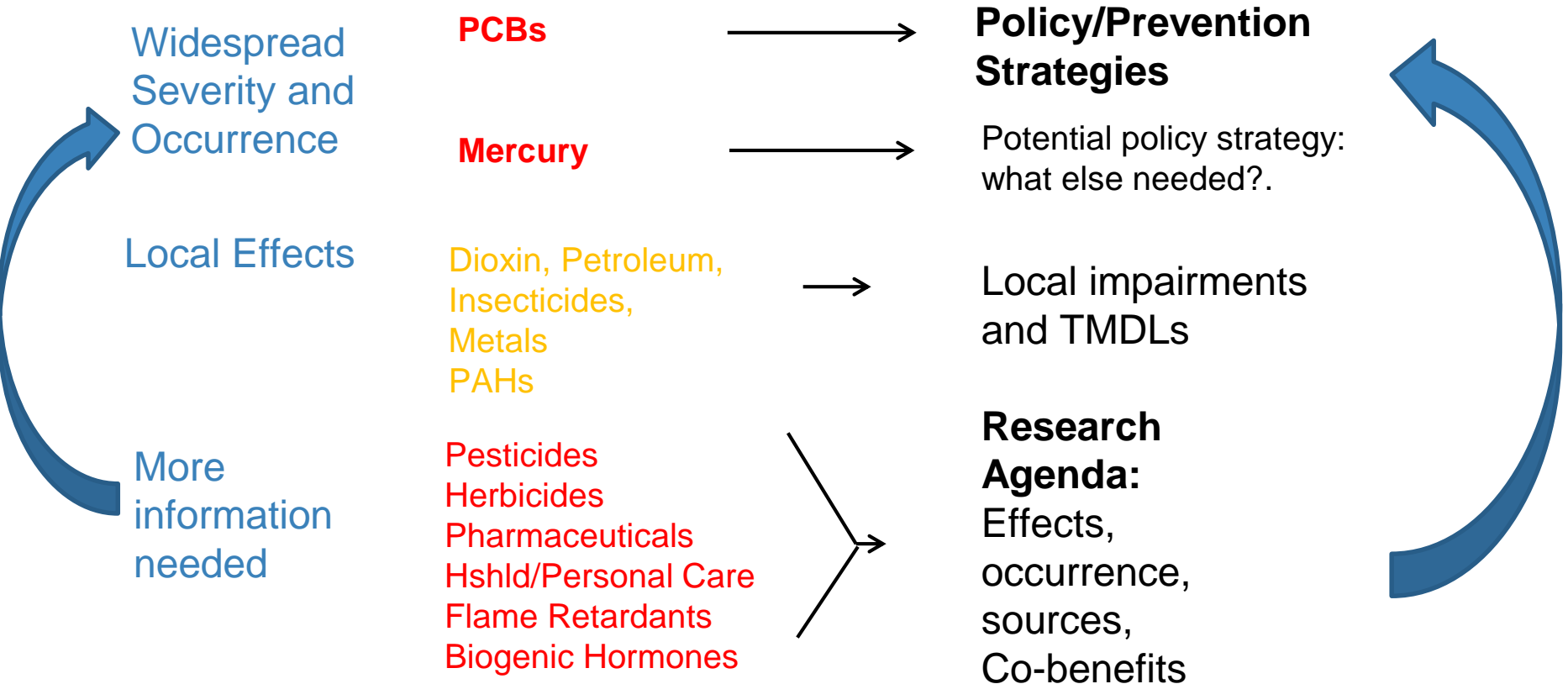
Toxic Contaminants:

- Threats to human health

- Degrade fish and wildlife



Logic: Contaminant Groups and Strategies



Goal: *Toxic Contaminants Goal*

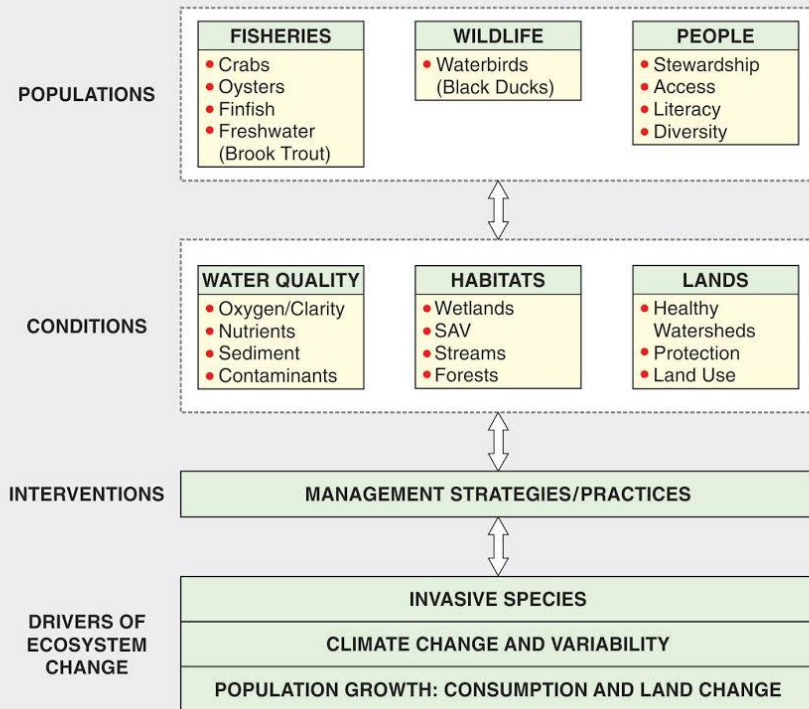
Outcome:

Continually increase our understanding of the impacts and mitigation options for toxic contaminants. Develop a **research agenda** and further characterize the **occurrence, concentrations, sources and effects** of **mercury, PCBs and other contaminants** of emerging and widespread concern. In addition, identify which best management practices might provide **multiple benefits of reducing nutrient and sediment pollution as well as toxic contaminants** in waterways.



What We Want

CONCEPTUAL DIAGRAM OF CHESAPEAKE BAY ECOSYSTEM



Develop actions for Co-benefits: Next steps on co-benefits for 12 outcomes.

More emphasis on contaminants in source sectors: Nutrients, sediment, and toxic contaminants

Mercury: Options to see if plans to reduce air emissions are working

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Setting the Stage:

What are our assumptions?

Assumptions

- Improve understanding
- Management implications

Concept for Determining Highest Priorities for Research to Increase Understanding Impacts and Mitigation Options for Toxic Contaminants (Color codes are examples)

Contaminant Groups	Occurrence	Concentrations	Sources	Effects	Uncertainty
PCBs	Small	Mid	Mid	Small	Priorities for an agenda to increase certainty?
Dioxins/Furans	Small	Mid	Small	Small	
PAHs	Small	Small	Small	Small	
Petroleum Hydrocarbons	Mid	Mid	Small	Small	
Pesticides	Large	Large	Mid	Mid	
Bio. Hormones	Large	Large	Mid	Large	
Pharms.	Large	Large	Mid	Large	
HPCP	Large	Large	Mid	Large	
PBDEs	Large	Large	Mid	Mid	
Metals	Mid	Mid	Mid	Small	
Mixtures	Large	Large	Large	Large	



Logic Behind Our Outcome

Following the Decision Framework:

**Factors
Influencing
Success**

**Current
Efforts
and Gaps**

**Management
Approaches**



Logic Behind Our Outcome

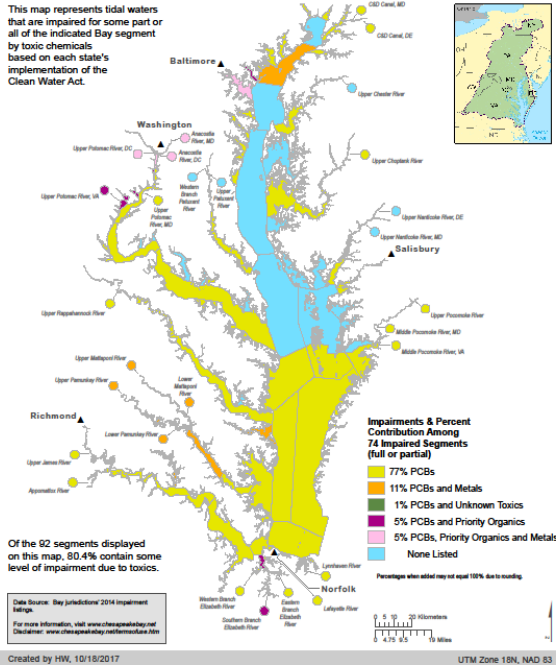
Factors

Chemical Contaminants (2014)

Impairments Illustrated Using the Chesapeake Bay Segmentation Scheme



This map represents tidal waters that are impaired for some part or all of the indicated Bay segment by toxic chemicals based on each state's implementation of the Clean Water Act.



- Different assumptions about fish consumption
- Causes of the degradation to fish and wildlife
- Lack of consistent information
- Lack of toxicity thresholds
- Prioritizing contaminants and addressing mixtures
- Resource constraints



Logic Behind Our Outcome

Management Approaches

- Fish and shellfish safer for human consumption;
- Contaminants degrading the health, and contributing to mortality, of fish and wildlife;
- Occurrence, concentrations and sources;
- Assess relative risk of contaminants, and options for mitigation, to inform policy and prevention strategies,
- Issues of emerging concern

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Progress:

Are we doing what we said we would do?

Are we on track?



Analysis

- Fish and shellfish safer for human consumption:
PCBs; Mercury
- Contaminants degrading the health, and contributing to mortality, of fish and wildlife:
Effects; Causes
- Occurrence, concentrations and sources:
EDC study; State monitoring;
- Assess relative risk of contaminants, and options for mitigation, to inform policy and prevention strategies:
Relative risk; Co-benefits
- Issues of emerging concern: Micro-plastics

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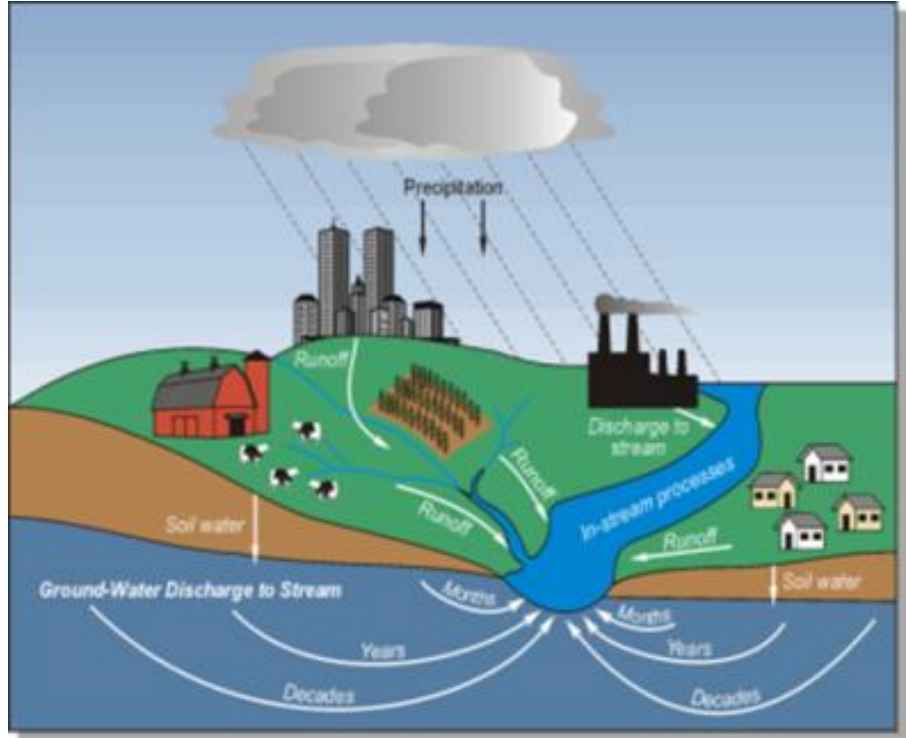
Challenges:

Are our actions having the expected effect?



Challenges

- “Too many” contaminants and mixtures
- Understanding causes
- Risk and prioritization
- Resource constraints & lack of capacity
- Synthesis and implications



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Adaptations:

How should we adapt?



Based on what we've learned, we plan to...

- Address Mercury
- Less focus on impacts of individual contaminants
- More use of state monitoring and academic research
- Greater focus on potential co-benefits of practices
 - WWTP, storm water, and agriculture
- More syntheses
- Management implications and WQ GIT WGs



Mercury Issues

- Reductions in air emissions
- Less fish consumption advisories
- Concern: mercury already in environment
- Are additional practices needed?





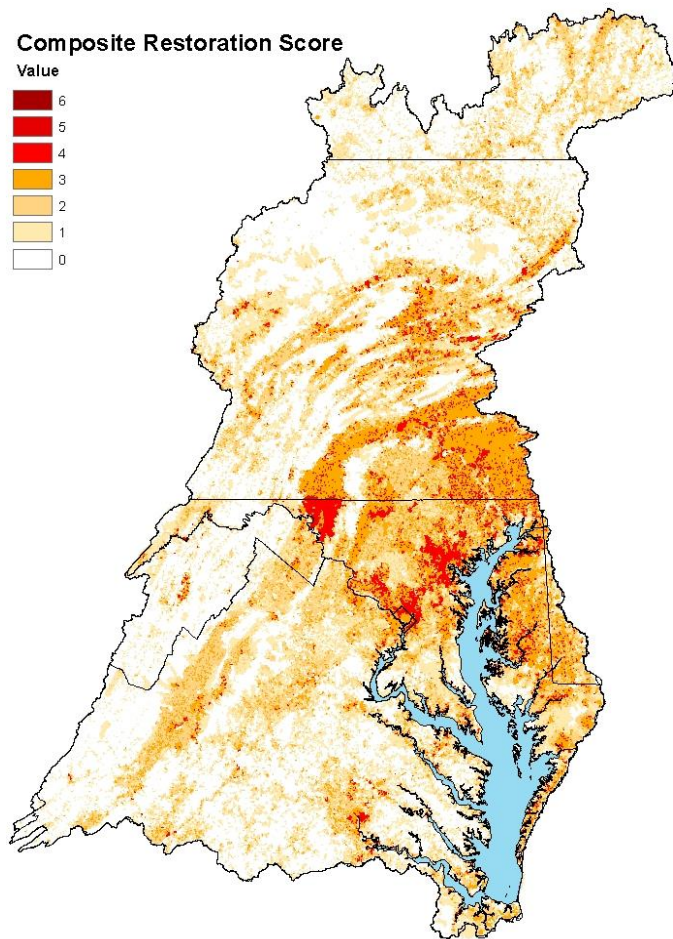
Cross-Outcome Considerations

WQ: Source sector WGs and co-benefits of nutrient and sediment practices

Habitat: Stream health, lessen impacts from contaminants

Fisheries: crabs, oysters, fish habitat

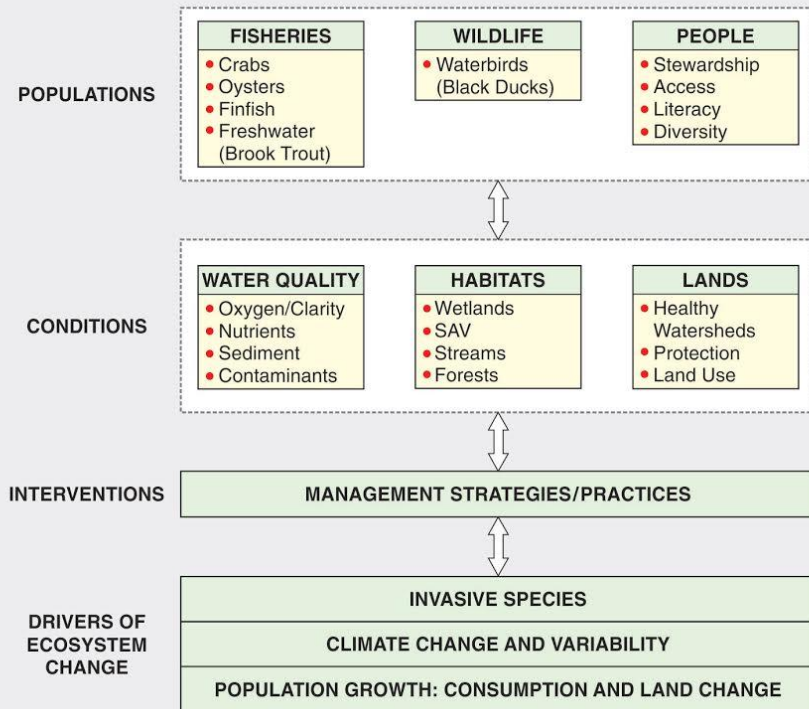
Stewardship: safe access, fish consumption, diversity





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Discussion



Discussion for MB “asks”

Mercury: Options to see if plans to reduce air emissions are working

- Trend analysis to see changes
- Synthesis on recycling in watershed
- Implications

▪ **Develop next steps for co-benefits:**

- More focus in revised work plans of each outcome
- List specific actions to be taken
- Identify geographic areas to focus efforts

▪ **Contaminants & source sectors:**

- WQ GIT work groups
- CAST
- BMP efficiencies