Chesapeake Bay Program
Science. Restoration. Partnership.

Toxic Contaminants Research Outcome

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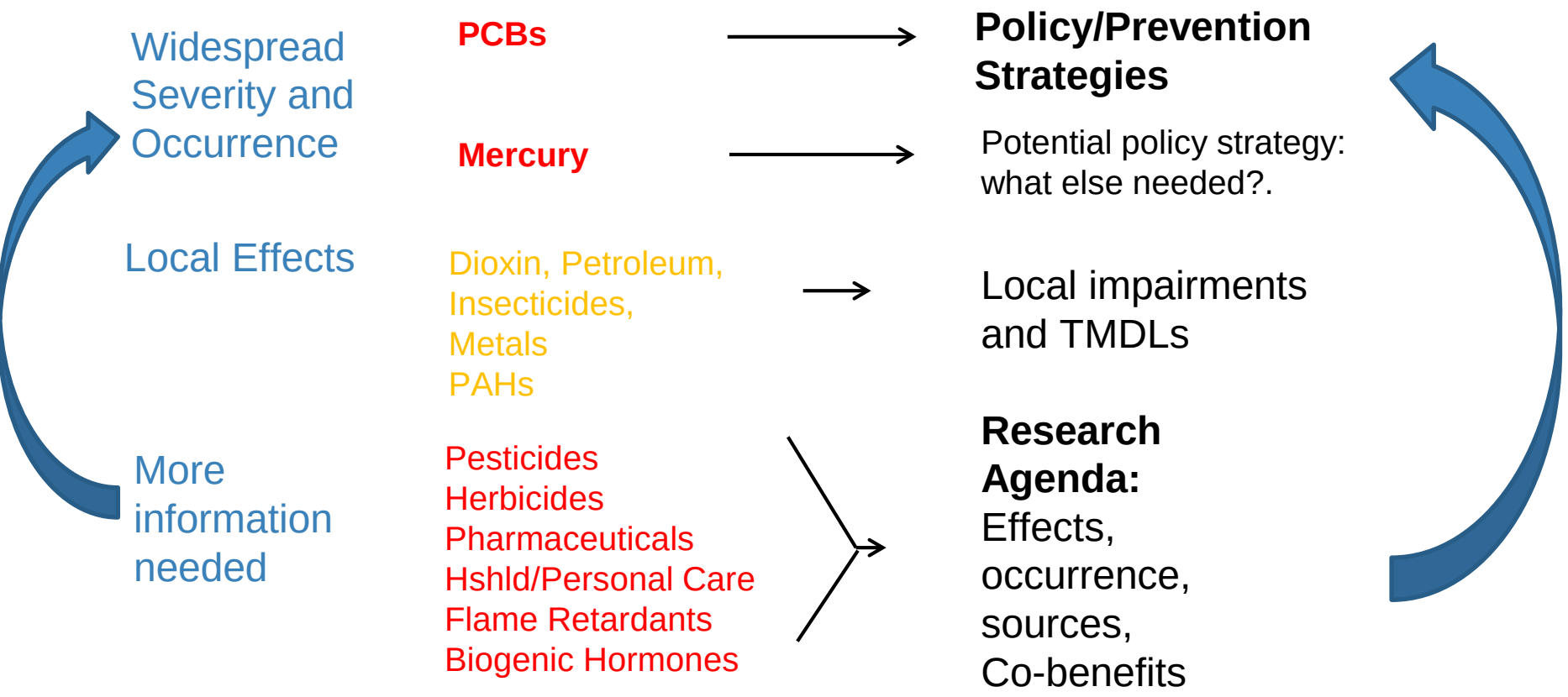
Toxic Contaminants:

-Threats to human health

-Degrade fish and wildlife

Logic: Contaminant Groups and Strategies

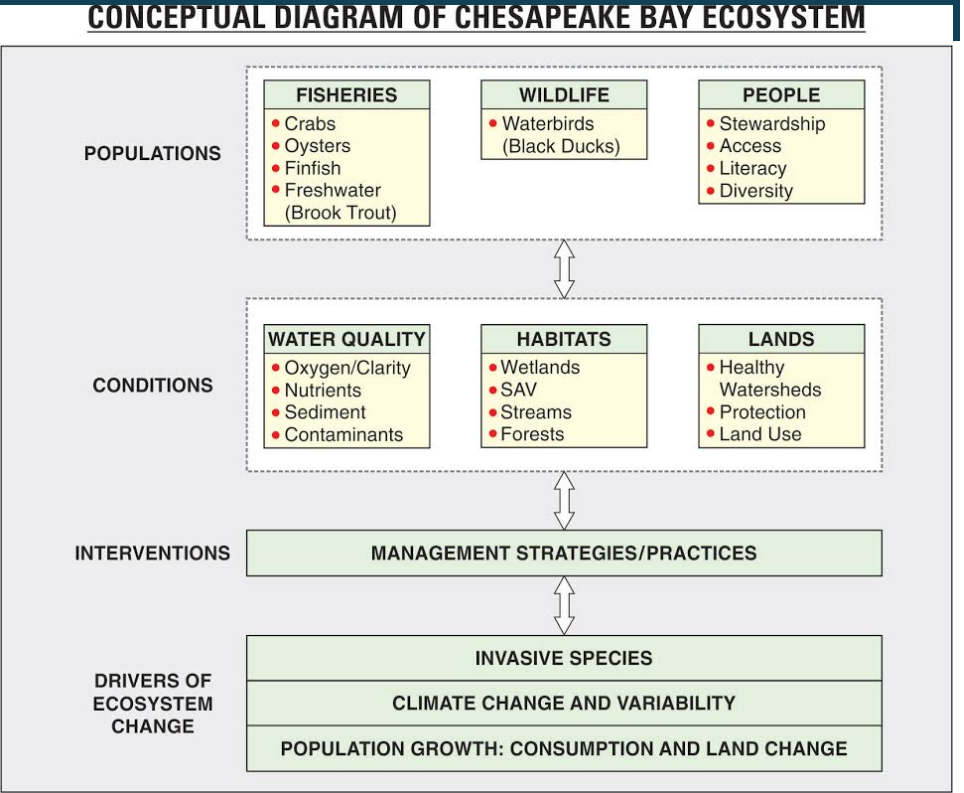


Goal: *Toxic Contaminants Goal*

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



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

1

Setting the Stage:

What are our assumptions?

Logic Behind Our Outcome

Following the Decision Framework:

What is our progress?

- Widespread severity and occurrence
- Local Effects
- What more do we need

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
PCBs				
Dioxins/Furans				
PAHs				
Petroleum Hydrocarbons				
Pesticides				
Bio. Hormones				
Pharms.				
HPCP				
PBDEs				
Metals				
Mixtures				

Uncertainty
Small
Mid
Large

Priorities for an agenda to increase certainty?

Logic Behind Our Outcome

Factors

- Different assumptions about human exposure & fish consumption
- Identifying causes of the degradation to fish and wildlife
- Lack of consistent information
- Lack of toxicity thresholds
- Assessing the relative risk groups of contaminants and their mixtures
- Resource constraints

Management Approaches

Logic Behind Our Outcome

- 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

2

Progress:

Are we doing what we said we would do?

Are we on track?

- 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: Microplactics

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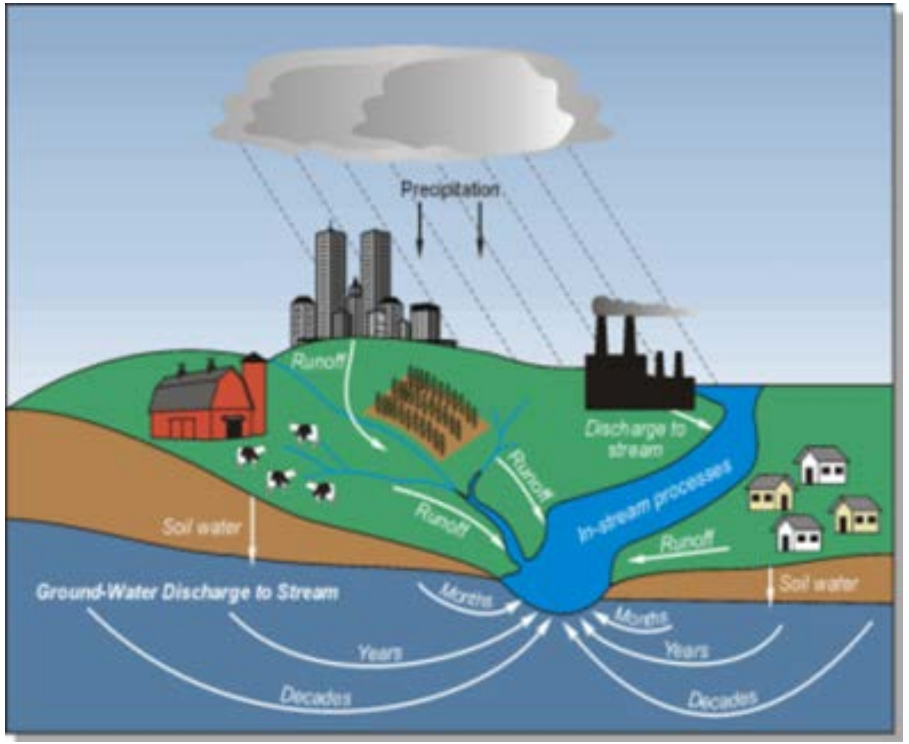
Challenges:

Are our actions having the expected effect?

Challenges

- "Too many" contaminants and mixtures
- Understanding causes
- Difficulty with relative risk
- Resource constraints

- Synthesis and implications
- Source sectors and integration with WG GIT



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Adaptations:

How should we adapt?

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

- Fish and shellfish safer for human consumption
  Adapt**:** Address needs for Mercury
- Contaminants degrading the health of fish and wildlife;
  Adapt: Less focus on individual contaminants
- Occurrence, concentrations and sources;
  Adapt**:** more use of state monitoring and academic research
- Relative risk.
  Adapt**:** Focus on potential co-benefits of practices in different source sectors
- Issues of emerging concern: Adapt: new issues?
- New: more syntheses and implications

Mercury Issues and Options

- Reductions in air emissions
- Less fish consumption advisories
- Concern: mercury already in envir.

Options for MB:

-Trend analysis to see if decreasing

-Synthesis on amount in watershed

-Implications

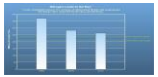
Agreement Goals and Outcomes

Sustainable Fisheries

- Blue Crab Abundance
- Blue Crab Management
- Oyster
- Forage Fish
- Fish Habitat

Vital Habitats Goal

- Wetlands
- Black Duck
- Stream Health
- Brook Trout
- Fish Passage
- Submerged Aquatic Vegetation (SAV)
- Forest Buffer
- Tree Canopy



Water Quality Goal

- 2017 Watershed Implementation Plans (WIP)
- 2025 WIP
- Water Quality Standards Attainment and Monitoring

Toxic Contaminants Goal

- Toxic Contaminants Research
  Toxic Contaminants Policy and Prevention

Healthy Watersheds Goal

- Healthy Waters

Stewardship Goal

- Citizen Stewardship
- Local Leadership
- Diversity

Land Conservation Goal

- Protected Lands
- Land Use Methods and Metrics Development
  Land Use Options Evaluation

Public Access Goal

- Public Access Site Development

Environmental Literacy Goal

- Student
- Sustainable Schools
- Environmental Literacy Planning

Climate Resiliency Goal

- Monitoring and Assessment
- Adaptation Outcome

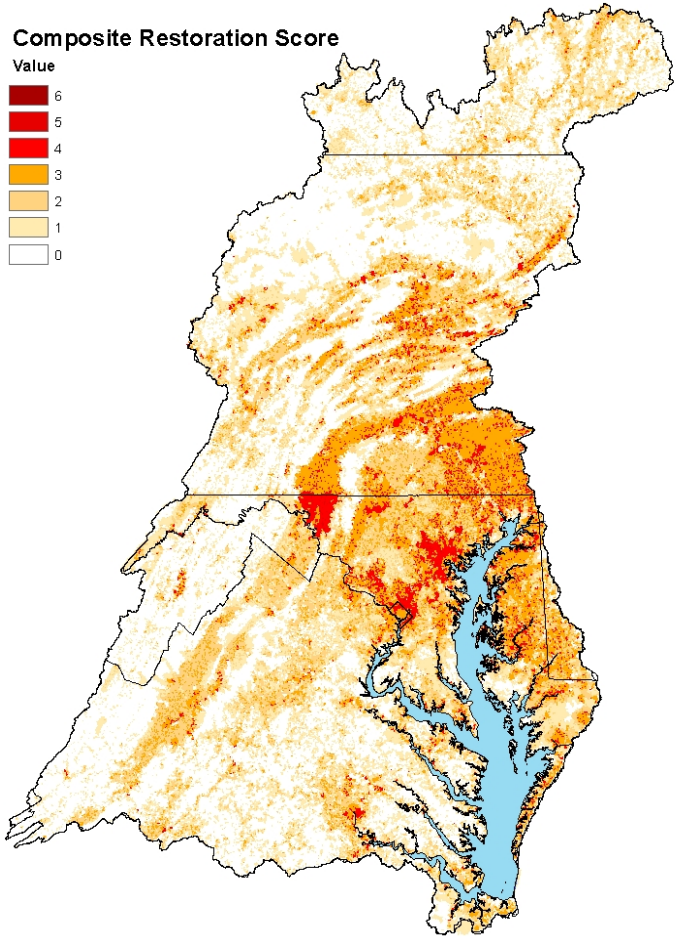
Cross-Outcome Considerations

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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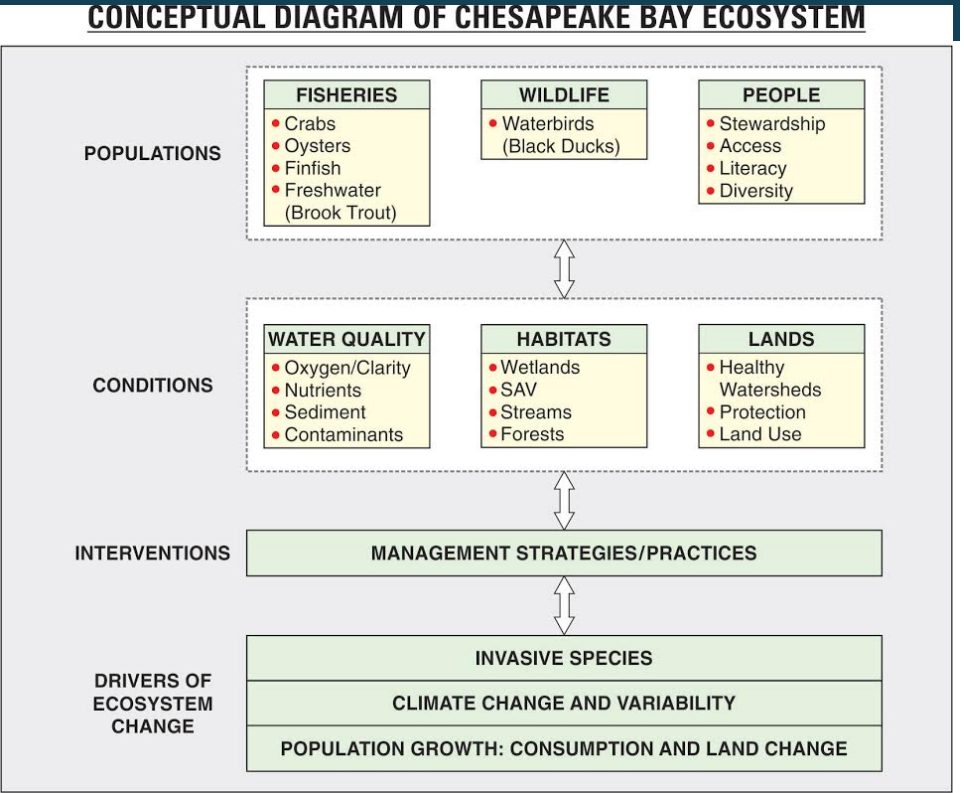

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Discussion