Extent and Severity of Toxic Contaminants in Chesapeake Bay and the Watershed

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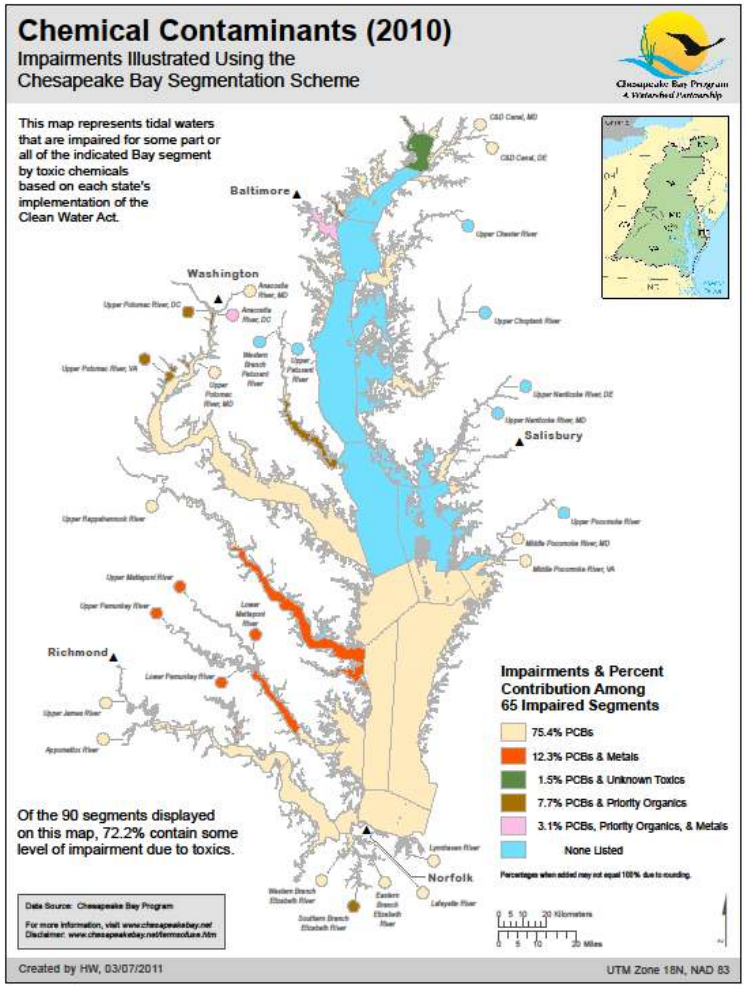
Report and Objectives

- Contaminants affect fish and wildlife
- CBP Toxics 2000
- Existing conditions/new issues
- EO Strategy
- Summary Report released
  - Extent and severity
  - Biological effects
- Used by EPA and CBP to consider:
  - Goals for reducing contaminants
  - Monitoring and research



Contaminant Groups

- Polychlorinated biphenyls
- Dioxins and Furans
- Polycyclic aromatic hydrocarbons
- Petroleum hydrocarbons
- Pesticides
- Pharmaceuticals
- Household and Personal Care Products
- Polybrominated diphenyl ether Flame Retardants
- Biogenic hormones
- Metals and Metalloids

- Effects on fish and wildlife

Assessment Approach

- Define extent and severity
  - Widespread, localized, or uncertain
  - Information used and limitations
- Extent
  - Widespread: throughout watershed
  - Localized: limited watersheds
- Severity
  - Widespread: impairments listed at many locations
  - Localized: few locations
- Uncertain: lack of monitoring or standards

Extent

- Widespread:
  - PCBs, PAHs, Mercury
  - some herbicides (atrazine, simazine, metochlor, and their degradation products)
- Localized:
  - Dioxins/furans, petroleum hydrocarbons
  - Insecticides (aldrin, chlordane, dieldrin, DDT/DDE, heptachlor epoxide, mirex)
  - Metals: Al, Cr, Fe, Pb, Mn, Zn
- Uncertain: pharmaceuticals, care products, flame retardants, some pesticides, hormones

Severity

Widespread: PCBs and mercury

Localized:

– dioxins/furans, PAHs, petroleum,

– Insecticides: aldrin, chlordane, dieldrin, DDT/DDE, heptachlor epoxide, mirex

– Metals: Al, Cr, Fe, Pb, Mn, Zn

Uncertain:

– pharmaceuticals, care products, flame retardants, biogenic hormones

– herbicides (atrazine, simazine, metochlor, and their degradation products)

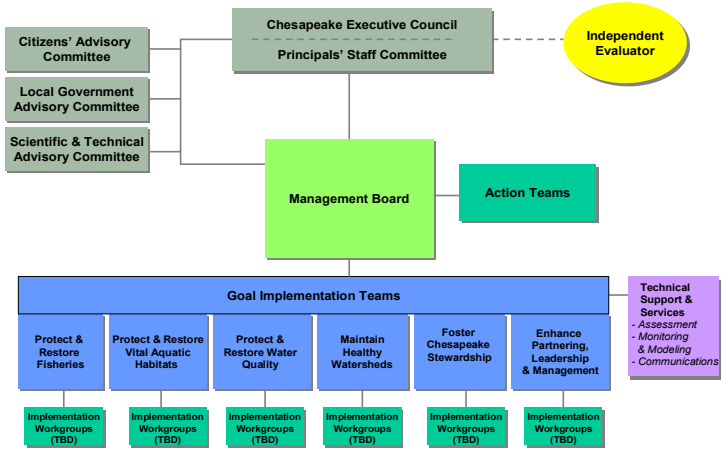
Biological Effects

- Degraded fish health
  - Infections and parasites
  - Feminization
  - Reduced reproduction
  - Tumors
- Wildlife: Reproductive impairment in water birds
  - Eggshell thinning (DDE)
  - Embryo lethality (pesticides)
  - Hatching success (PCBs)

Monitoring and Research Gaps

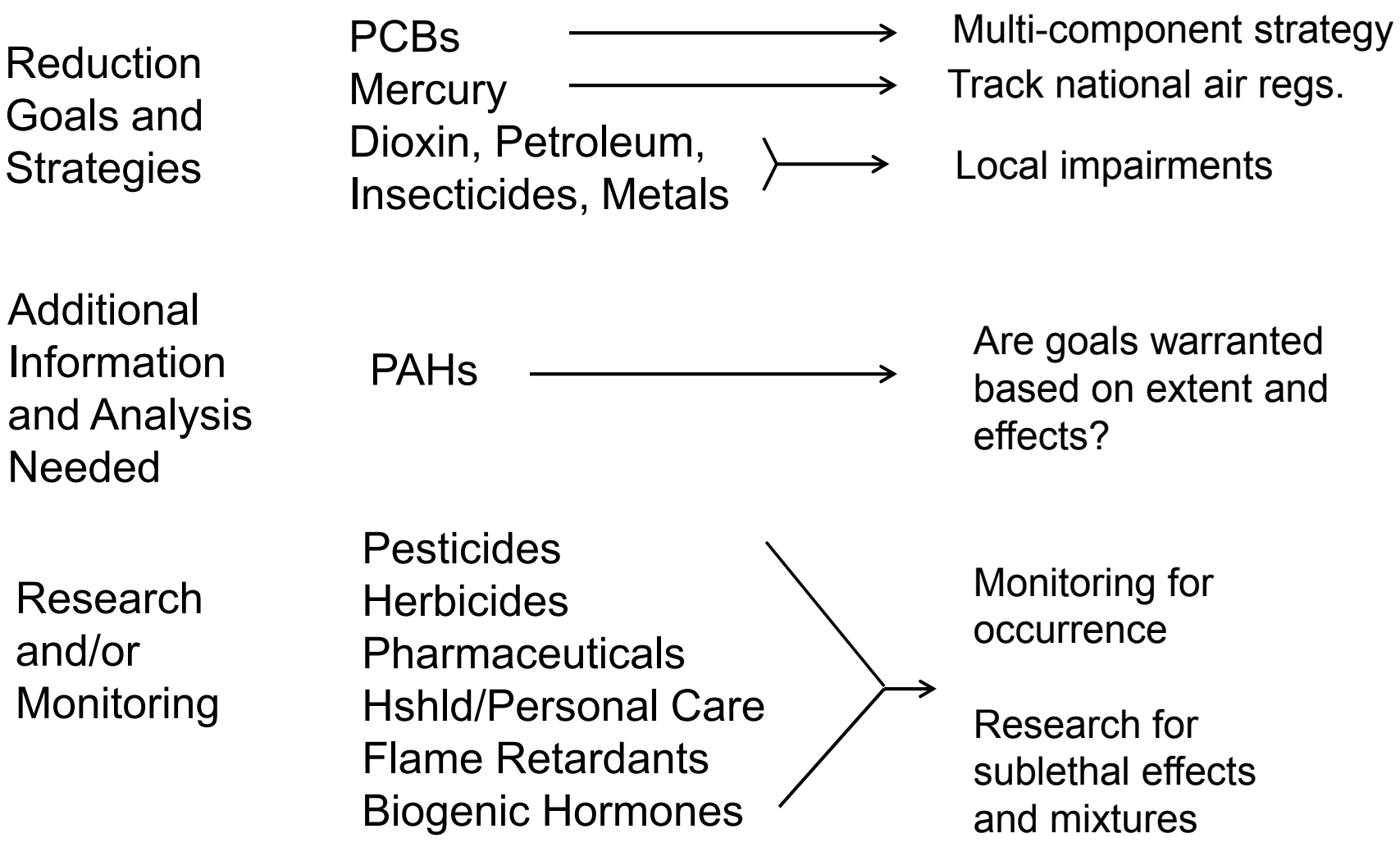
- Monitoring to better define extent
  - Groups with “uncertain” or “localized” occurrence
- Research-Severity
  - Exposure studies
  - Multiple contaminants and stressors
  - Effects of newer contaminants
  - Sources, pathways and exposure

Need for Partnership Goal



- Required in CBP reauthorization
- Widespread extent and severity of contaminants
- Current controls producing minimal reductions
- Effects other CBP goals (fish, habitat, water quality) and human health
- Benefit from coordination

Concept for Goal Types



DRAFT For discussion purposes only. Final goal decisions TBD

PCB example for goal/strategy

PCBs are widespread in extent and severity …

Possible PCB Goal Structures

- Concentrations in fish tissue
- Pounds of PCBs remediated
- Number of transformers decommissioned
- Site cleanups completed

Possible PCB Reduction Strategies

- Optimize reductions from nutrient/sediment TMDL
- Partner voluntary removal of PCB fluids
- Coordination with regulatory programs
- Contaminated sediment remediation

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Next Steps

- Next steps
  - CBP consider toxic contaminants in future efforts
  - Balance focus on nutrients/sediment
  - WQ GIT, MB, PSC, EC
- Opportunities
  - Support inclusion of toxic contaminant goal at upcoming CBP discussions/decisions
  - Help to develop goals and strategies
  - Enhance science to address gaps in monitoring and research