

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

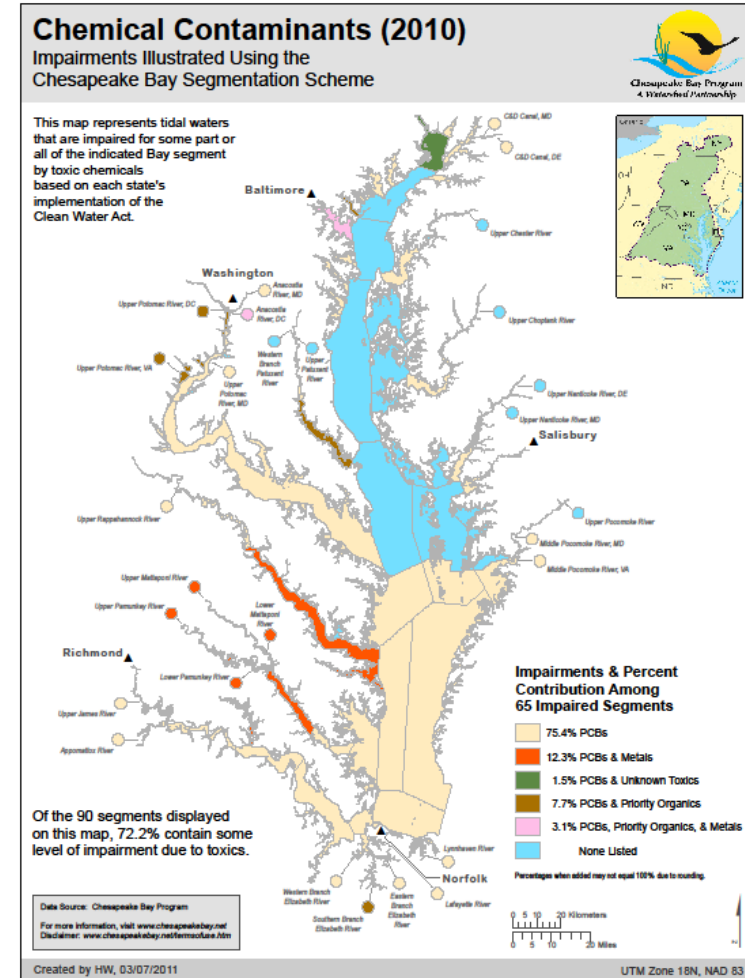
Scott Phillips (USGS) and Greg Allen (EPA)

Topics for today

- Overview of report findings (Scott and Greg)
- Fish and wildlife findings (Fred)
- Contaminants of Emerging Concern (Mike)
- Science needed to support goal setting (Greg)
- Discussion: Opportunities for STAR to support science for goal setting and research/monitoring recommendation
- Atmospheric Hg (Mark Castro) Pharmaceuticals

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



- 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

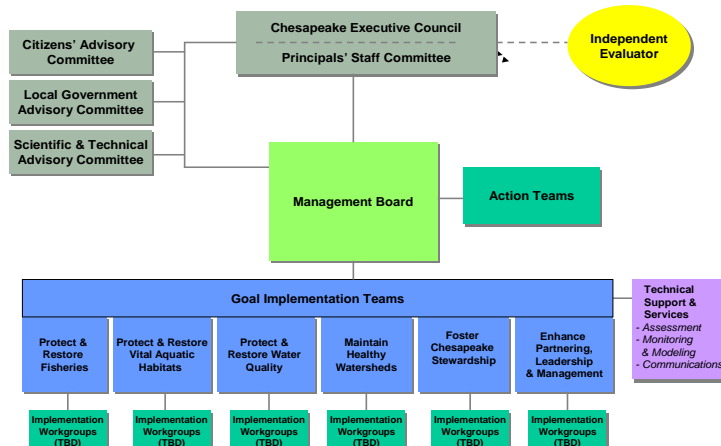
- Monitoring to better define extent
 - Groups with “uncertain” or “localized” occurrence
- Research-Severity
 - Exposure studies
 - Multiple contaminants and stressors
 - Effects of newer contaminants
 - Sources, pathways and exposure

Need for Partnership Goal

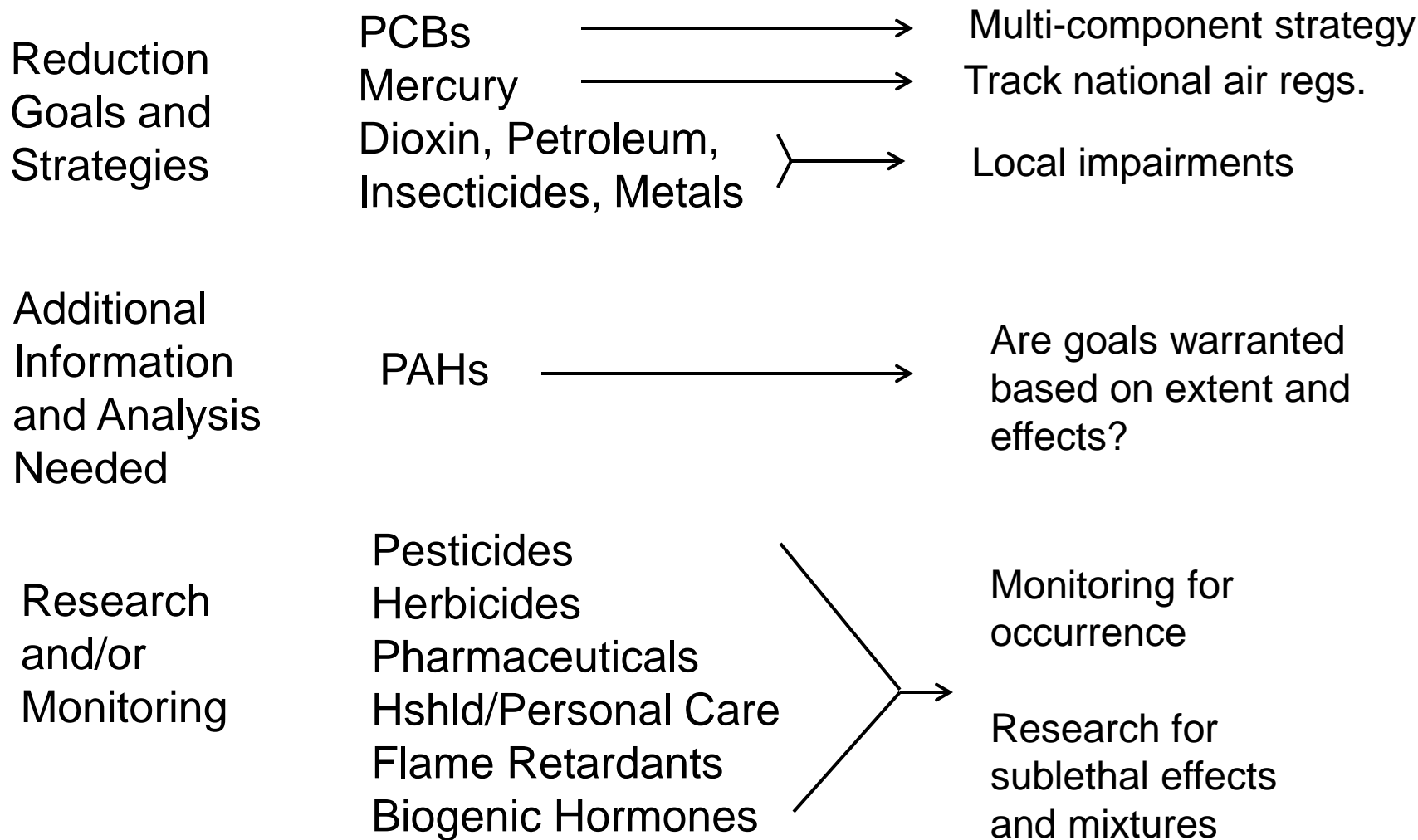
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- Required in CBP reauthorization
- Widespread extent and severity of contaminants
- Current controls producing minimal reductions
- Effects other CBP goals (fish, habitat, water quality) and human health
- Benefit from coordination



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