LimnoTech
Water Environment | Scientists Engineers

What Can We Learn from Other Comprehensive Plans: San Francisco Bay PCB TMDL

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Spokane River Regional Toxics Task Force Workshop

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Outline

- Background on San Francisco Bay impairment
- Evaluation of sources
- Evaluation of Best Management Practices
- Implementation Plan
- Monitoring and Adaptive Management

Key Documents Developed

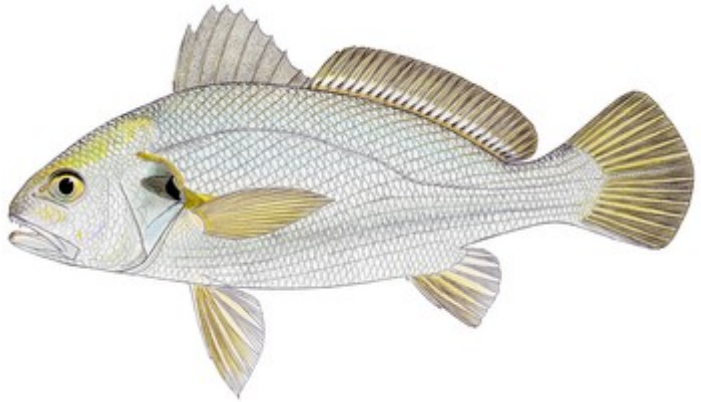
- SF Bay PCB TMDL
- SFEI White Paper
- BMP Toolbox
- Desktop Evaluation
- Integrated Monitoring Report Parts A,B,C

Background

- All segments of the San Francisco Bay were identified as impaired due to elevated levels of PCBs in sport fish
- Narrative water quality objective
  - "Controllable water quality factors shall not cause a detrimental increase in toxic substances found in bottom sediments or aquatic life"
- Numeric water quality objective
  - 0.00017 µg/L

TMDL Target

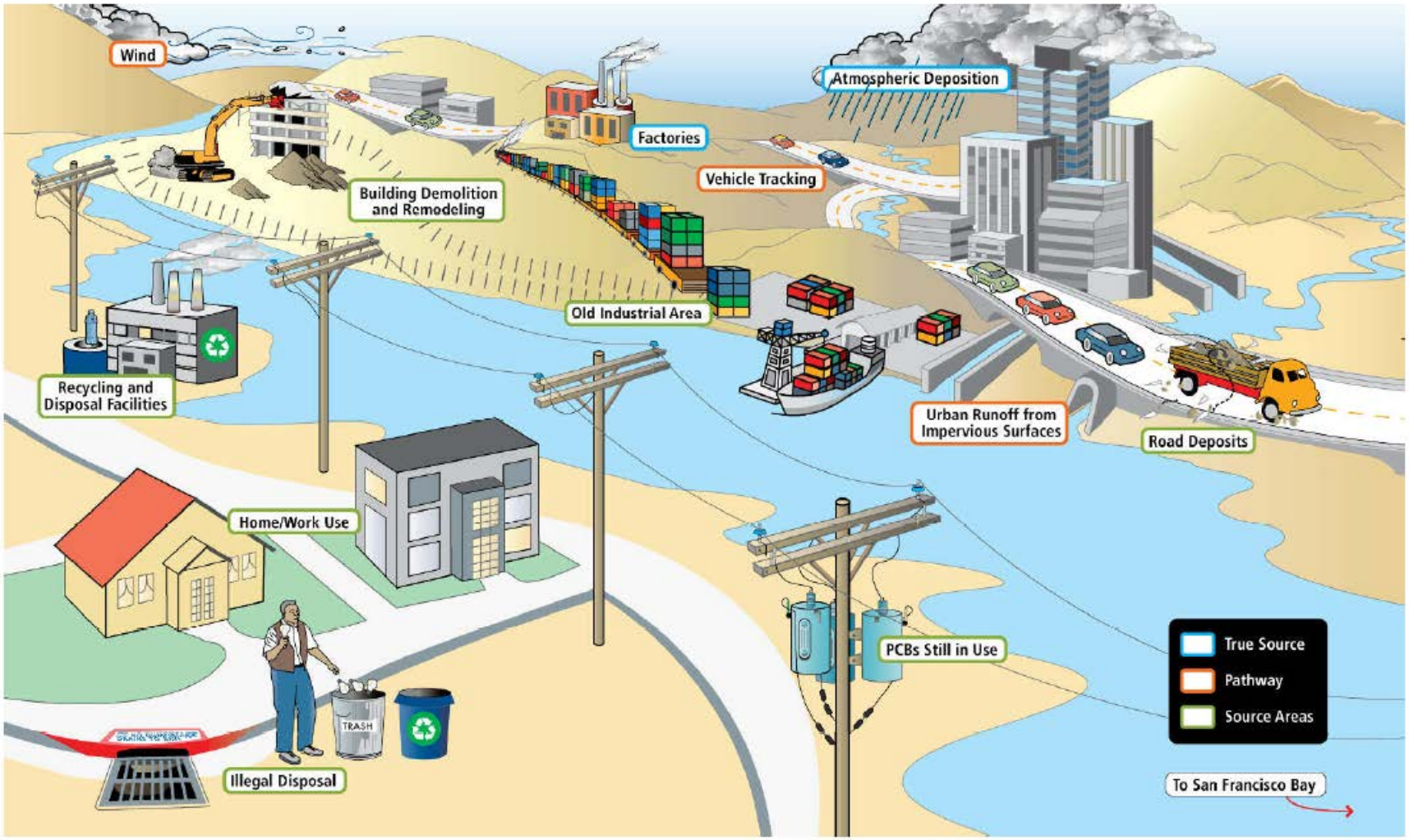
- Average fish tissue concentration of 10 µg/kg of total PCBs of typically consumed fish, on a wet weight basis
- Attainment will be assessed by monitoring most highly contaminated species
  - white croaker
  - shiner surfperch



SFEI White Paper Conceptual Model

1. True sources
   - The real origin of the contaminant – chemical factory
2. Source areas
   - Places in the landscape where contaminants were used, inadvertently released, systematically discarded or accumulated
3. Pathways
   - a conduit or process that delivers contaminants from the source or true source to an urban storm drain, creek and ultimately to the receiving water

Conceptual Model



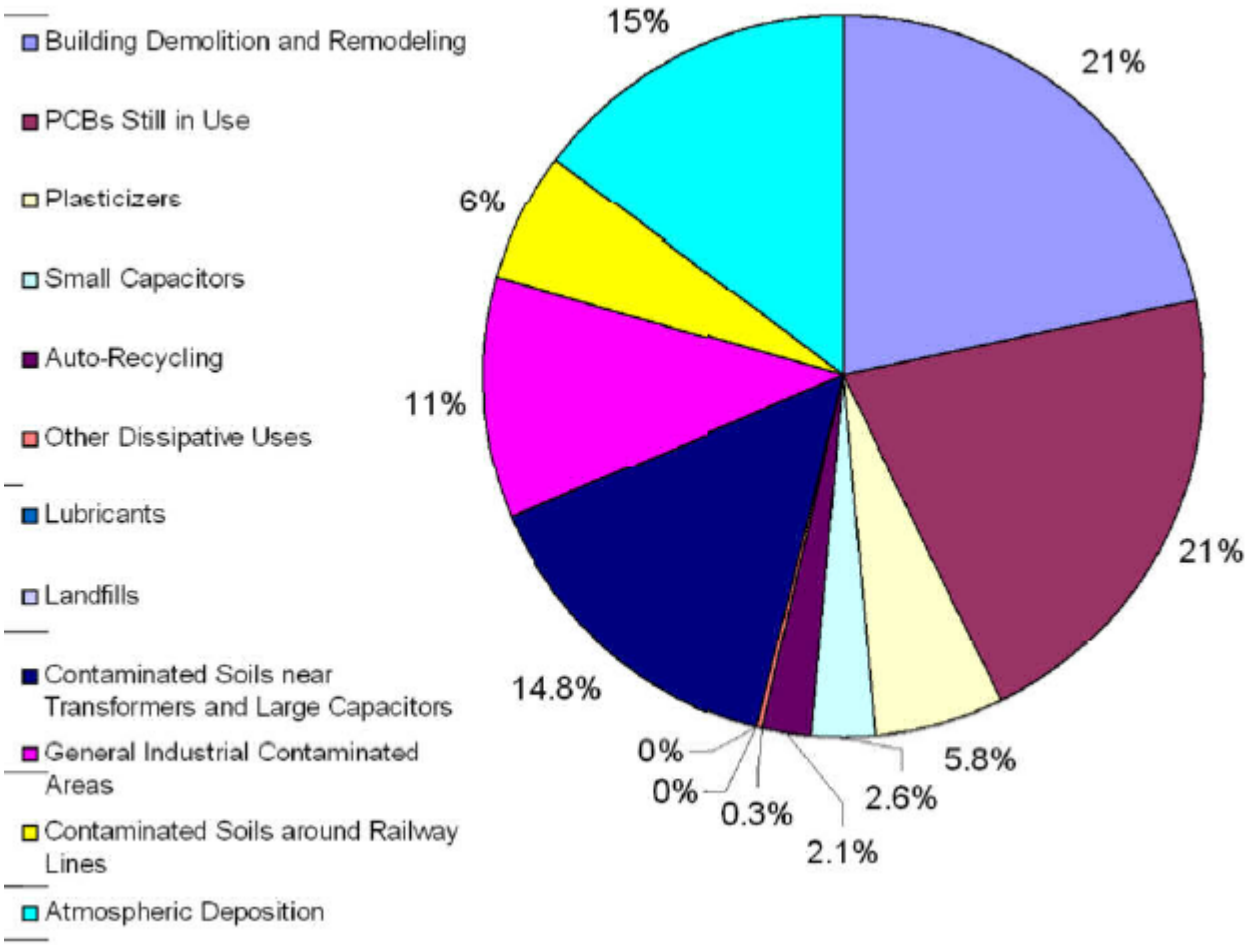
PCB Source Areas

- Old industrial areas (1950-1990)
- PCBs still in use
- Illegal disposal
- Recycling and disposal facilities
- Road deposits
- In the home and work place
- Building demolition and remodeling

Estimation of Source Contribution

- Local and regional studies/databases when available; otherwise literature values
- Scaled according to land use/population
- High uncertainty due to scaling

Estimation of Source Contribution



Fate and Transport Findings

- PCBs are largely transported in stormwater in the particulate phase
- The major mobilization process in urban areas is rainfall-runoff from impervious surfaces.

Best Management Practices

- Organized by implementation point/method
  - Institutional approaches
    - Civic behavior
    - Municipal operations
  - Source control and soil remediation approaches
  - Treatment controls
    - Start of pipe
    - Within pipe
    - End of pipe

Implementation Requirements

- Municipal and Industrial Wastewater
  - Maintain optimum treatment performance for solids removal
  - Identification and management of controllable sources.
- Stormwater
  - 20 years implementation schedule
  - First five years:
    - Implement control measures on a pilot scale to determine their effectiveness and technical feasibility

Implementation Requirements

- Stormwater (continued)
  - Second five years
    - Implement control measures in strategic locations
    - Develop a plan to fully implement control measures that will result in attainment of allocations
  - Final ten years
    - Implement technically feasible, effective and cost efficient control measures to attain allocations.
    - If allocations cannot be attained, revise allocations and implementation requirements as part of adaptive implementation.

Monitoring and Adaptive Management

- Monitoring to demonstrate progress
  - PCBs in fish, sediments, and water
  - To be conducted by wastewater dischargers and stormwater permittees
- Adaptive Management
  - Adapt the implementation plan to incorporate new and relevant scientific information
  - Present an annual progress report on implementation that includes evaluation of new and relevant information
  - Within ten years, amend the implementation plan as necessary to reflect and incorporate the data and information that is generated in the intervening years.

Key Points

- Even with millions dollars of effort
  - Only a coarse understanding of the magnitude of PCB sources and transport pathways
  - Most effective and appropriate Best Management Practices still to be defined
  - Progress will be achieved via adaptive management