

Revised PCB Water Quality
Criterion for Zones 2 - 6 and
Enhanced Implementation for the
Stage 2 PCB TMDLs for the
Delaware Estuary

Commission Meeting
December 4, 2013

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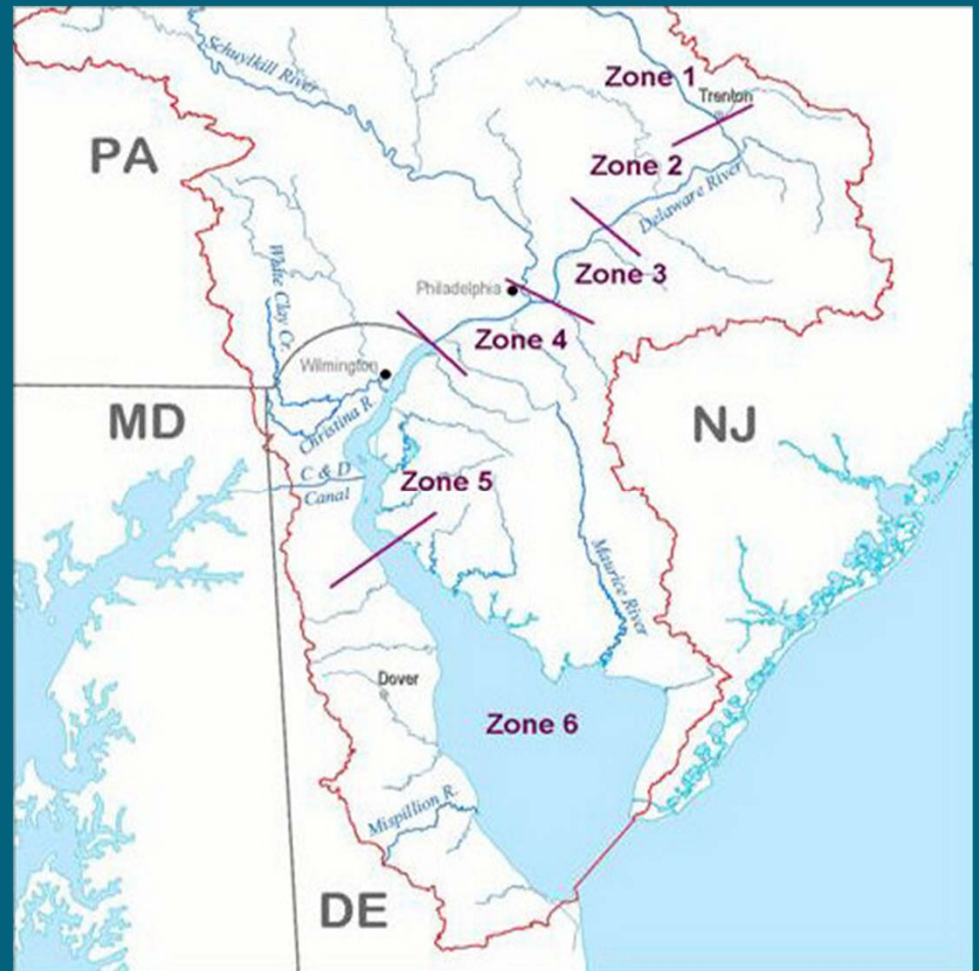


Presentation Outline

- ✓ Background
- ✓ Proposed Human Health Water Quality Criterion for Total PCBs
- ✓ NPDES Permitting Strategy
- ✓ Other Implementation Strategy Elements
- ✓ Public Participation

Background

- Delaware Estuary portion of the Basin is 133 miles long and is bordered by DE, NJ and PA.
- It consists of 5 water quality management units called Zones.
- EPA Regions II & III establish Stage 1 TMDLs for Zones 2 – 5 in December 2003.
- EPA Regions II & III establish Stage 1 TMDL for Zone 6 in December 2006.



Background (cont.)

- ❑ These TMDLs were based upon the current criteria of either the states or DRBC.
- ❑ A new methodology for deriving human health water quality criteria had been issued by U.S. EPA in 2000.
- ❑ In March 2003, the Commission directed staff to develop revised human health criteria based upon this new methodology.
- ❑ In December 2005, the Commission directed the Executive Director to proceed with rulemaking on a revised PCB criterion of 16 pg/L.

Background (cont.)

- ❑ In December 2005 resolution, the Commission also requested the Executive Director to work with other federal and state regulatory agencies develop recommendations for implementing criteria for bioaccumulative pollutants.
- ❑ These recommendations should be consistent with the existing Clean Water Act NPDES framework while also reflecting principles of adaptive management.
- ❑ The proposed PCB TMDL Implementation Strategy is the result of this effort.

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Background

- In October 2000, the U.S. EPA issued a revised methodology for deriving human health water quality criteria. The Commission's Toxics Advisory Committee recommended that this new methodology be used.
- Five factors are utilized in the new methodology:
 - ① Risk-specific dose,
 - ② Body weight,
 - ③ Drinking water intake per day,
 - ④ Fish intake at various trophic levels, and
 - ⑤ Bioaccumulation factor at each trophic level.

Risk-specific Dose

- This factor can also be expressed as
Risk Level / Cancer Potency Factor
- The risk level chosen is a risk management policy. The DRBC and the states bordering the Delaware Estuary all utilize a risk of 10^{-6} in establishing water quality criteria.
- Although the U.S. EPA's IRIS presents a range of CPFs, the subcommittee recommended the use of the upper bound estimate of **2.0** (mg/KG)/day.

Fish Consumption Rate

- The revised methodology recommends the use of local data on fish consumption patterns.
- Consumption rate used was based upon catch and consumption surveys conducted in Zones 2-6.
- The subcommittee recommended that a rate of 17.5 grams/day be used in establishing the revised criteria.

Bioaccumulation Factor

- BAFs represent the accumulation of a chemical in an aquatic species through all routes of exposure rather than uptake from water only (BCFs).
- Use of BAFs in the revised criteria was directed by the Commission in March 2003.
- The U.S. EPA methodology recommends the use of field measurements in ambient water and tissue to derive the BAFs.
- Zone-specific data from studies conducted in the fall of 2001 and the spring of 2002 were used.

Probabilistic Analyses of Criteria Parameters

- In order to assess the uncertainty in the parameters used to calculate the revised criterion, a probabilistic analyses was also conducted using @Risk software.
- Similar results were obtained using both methods.
- TAC recommended that the Commission adopt a criterion of 16 picograms per liter for Total PCBs for Zones 2 through 6 of the Delaware Estuary

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Achieving PCB WQ Criteria

- Reductions in PCB loadings will not immediately result in lower ambient water concentrations or in reduced tissue levels of PCBs in resident fish species.
- This is due to the continuing flux of PCBs from the sediments to the water column. As solids uncontaminated by PCBs settle to the bottom, this flux will ultimately reach equilibrium with the water column.

The Problem

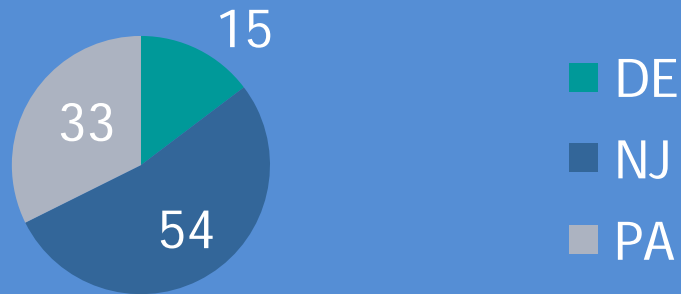
- A long-term strategy for permitting point source discharges and addressing non-point sources such as contaminated sites and air sources is needed to gain acceptance by stakeholders and ensure continued progress in reducing PCBs.
- In view of the uncertainty in data on PCB concentrations in point source discharges, need for additional PCB model refinements, and uncertainty in treatment technologies, implementation of Stage 1 TMDLs was unconventional.

Stage 1 Implementation

- Utilize non-numeric effluent requirements.
- Stage 1 TMDLs Implementation:
 - ✓ Monitoring for 209 PCB congeners using Method 1668A.
 - ✓ Requirement for the development and implementation of Pollutant Minimization Plans or PMPs.

Dischargers in PCB TMDL

Number of Dischargers

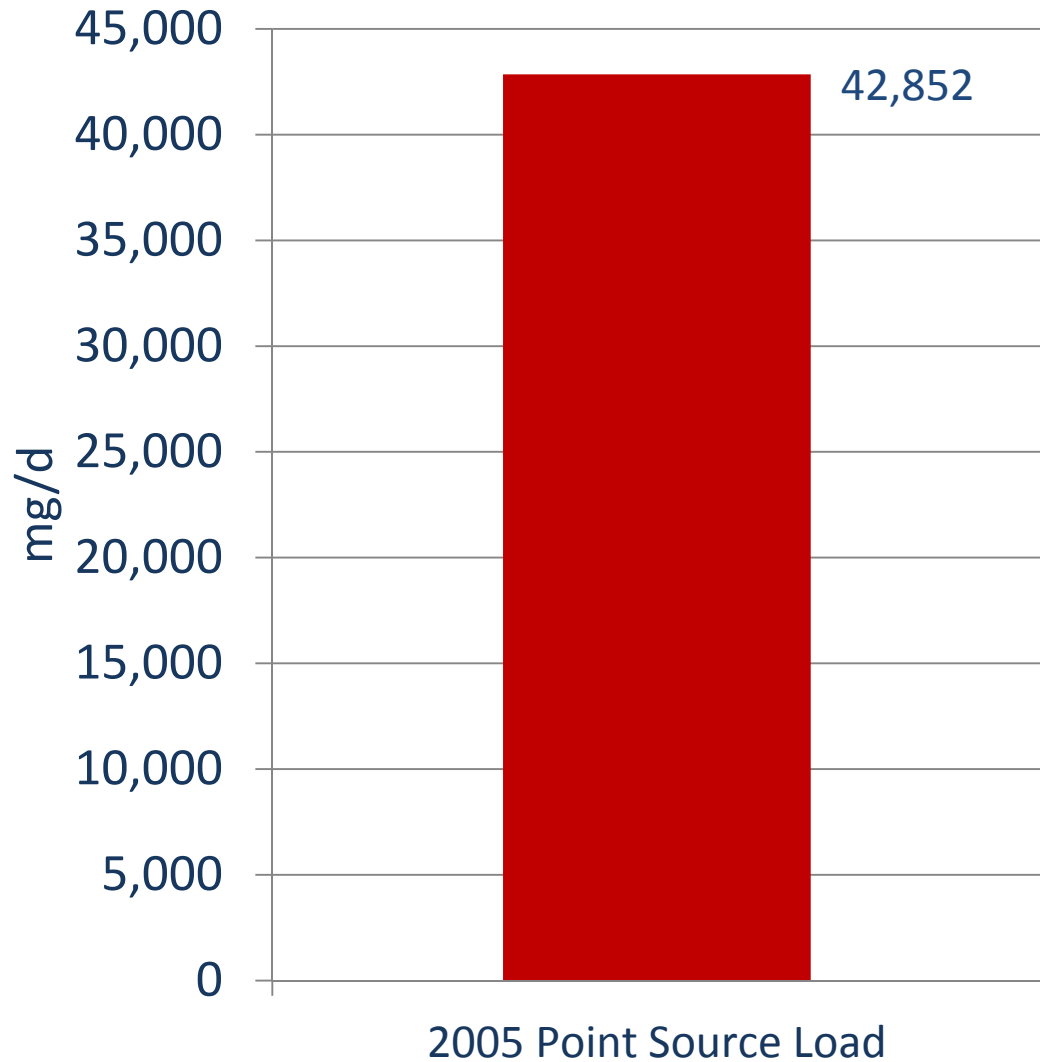


Total number of dischargers = 102

PMP Oversight



10 Dischargers Representing 90% of Point Source PCB Loadings in the Estuary



Stage 1 Implementation

- Utilize non-numeric effluent requirements.
- Stage 1 TMDLs Implementation:
 - ✓ Monitoring for 209 PCB congeners using Method 1668A.
 - ✓ Requirement for the development and implementation of Pollutant Minimization Plans or PMPs.
- Stage 2 TMDLs are needed to:
 - Update the basis of the TMDLs - the WQ criterion,
 - Utilize a new, more equitable wasteload allocation procedure agreed upon by stakeholders,
 - Utilize an improved PCB water quality model.
 - Include an implementation strategy as an Appendix to the Stage 2 TMDL report.
 - Provide certainty to this process.

Elements of NPDES Permitting Strategy

- ✓ The strategy developed by the co-regulators includes 6 elements.
- ✓ Builds upon the implementation requirements of the Stage 1 TMDLs that required PMPs and monitoring using Method 1668A.
- ✓ New provisions include:
 - a. An **Action Level** based upon Existing Effluent Quality (EEQ).
 - b. Technology-based requirements for Total Suspended Solids (TSS).

Elements of NPDES Permitting Strategy

- ✓ New provisions (cont.):
 - c. A requirement to submit a PMP Progress Report to accompany permit renewal application.
 - d. A requirement to submit a revised PMP if the permitting agency determines that the PMP will not likely achieve the maximum practicable reduction of PCBs.
 - e. A requirement that these elements remain in place until the discharger's wasteload allocation (WLA) is achieved.

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Other Proposed Elements of the Implementation Strategy

- DRBC to conduct Zone-wide and estuary-wide assessments of cumulative changes in ambient and effluent PCB levels periodically (every 5-10 years) to measure cumulative progress.
- EPA will evaluate the implementation approach no less frequently than every ten years.

Other Proposed Elements of the Implementation Strategy

❑ Non-Point Sources

- Strategies for addressing NPSs were included in the 2009 TMDL Implementation Plan publically noticed by DRBC.
- The strategies focus on identifying and prioritizing sources of PCBs in each non-point source category described in the plan.
- Existing authorities would be utilized to focus on water quality impacts and achieve the load allocations assigned to these sources.

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Public Participation

- ❑ Notice of Proposed Rulemaking published in August 2013 in federal register and all state registers.
- ❑ Public hearing held on September 10, 2013 at DRBC offices.
 - Oral testimony received from 2 individuals.
- ❑ Comment period closed on September 20, 2013.
 - Written comments received from 4 individuals or entities; two of which presented oral testimony at the hearing.

Response to Comments

- Staff reviewed and prepared responses to the comments in a document.
- Staff identified five major concerns or “themes” of the comments and prepared short essays responding to each theme.
- Individual comments were also assigned numbers and a direct response to each was prepared.

Themes

1. Whether the Commission should defer action on the water quality criterion and draft implementation strategy.
2. Concerns regarding the criterion and whether the criterion can be achieved.
3. Whether a Use Attainability Analysis should be performed in lieu of action.
4. Use of Method 1668A.
5. Need for details on how the Action Level will be established and what actions will be required.