

Evaluation of PCB TMDL Efforts in the Delaware Estuary

New Jersey Water Environment Association
2013 Annual Conference

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Modeling, Monitoring and Assessment Branch



Outline

- Method 1668 Revision A.
 - Objectives and Approach
 - Supporting information
- PMP Key Elements and Activities
- Trends in effluent data from 2005-2010
- Trends in blanks
- Point and non-point source initiatives
- O&M requirements
- Achieving individual WLA

Method 1668 Revision A.

Objectives and Approach:

- To develop a more accurate Stage 2 TMDL by requiring better quantification of the concentrations from various PCB sources.
- A HRGC/HRMS analytical methodology capable of providing detection limits low pg/L (ppq) levels for all 209 PCB congeners.
- DRBC's convened a Data Quality Subcommittee to address issues regarding monitoring approaches.
- Participants included:
 - Industry, Municipal, Academic, Environmental and Laboratory representatives.

Approach (cont.)

- DQ Subcommittee Recommended:
 - Sample identification protocols
 - Sample size and collection methods
 - Analytical methodology
 - Electronic data formatting and reporting
- Results:
 - Comparability of analytical results
 - Reduced analytical uncertainty
 - Greater accuracy in estimating loadings
 - More accurate long-term trend analysis
 - Better temporal and spatial analysis

Supporting Documentation

- Adopted Recommendations available at:
 - www.state.nj.us/drbc/quality/toxics/pcbs/monitoring.html
- Additionally, the Commission in cooperation with select point source dischargers developed an Access database to organize the information.
- Commission maintains the database for all discharge data
- Benefits:
 - Provide a basis for determining effectiveness of pollutant reduction measures.
 - An open and transparent database will provide for direct and candid communication between the regulated community and the regulatory agencies.

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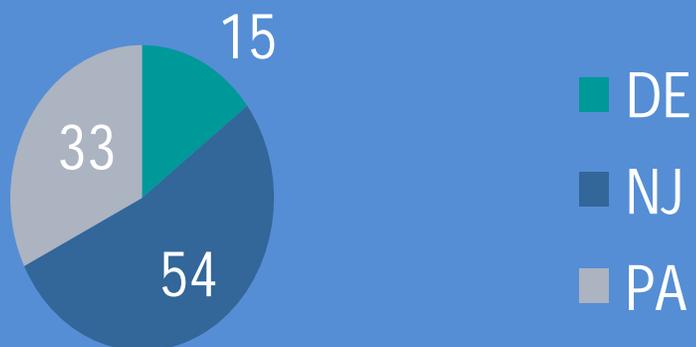
PMP Key Elements

Goal: Reduction of PCB Loadings to the Estuary

- Key PMP Elements
 - Source identification and reduction
 - Remediation activities
 - Monitoring and progress report
- PMP Approaches:
 - Remove PCB transformers and capacitors
 - Trackdown studies to identify and remove sources
 - Contaminated sediment control or removal

Dischargers in PCB TMDL (n=102)

Number of Dischargers



PMP Oversight



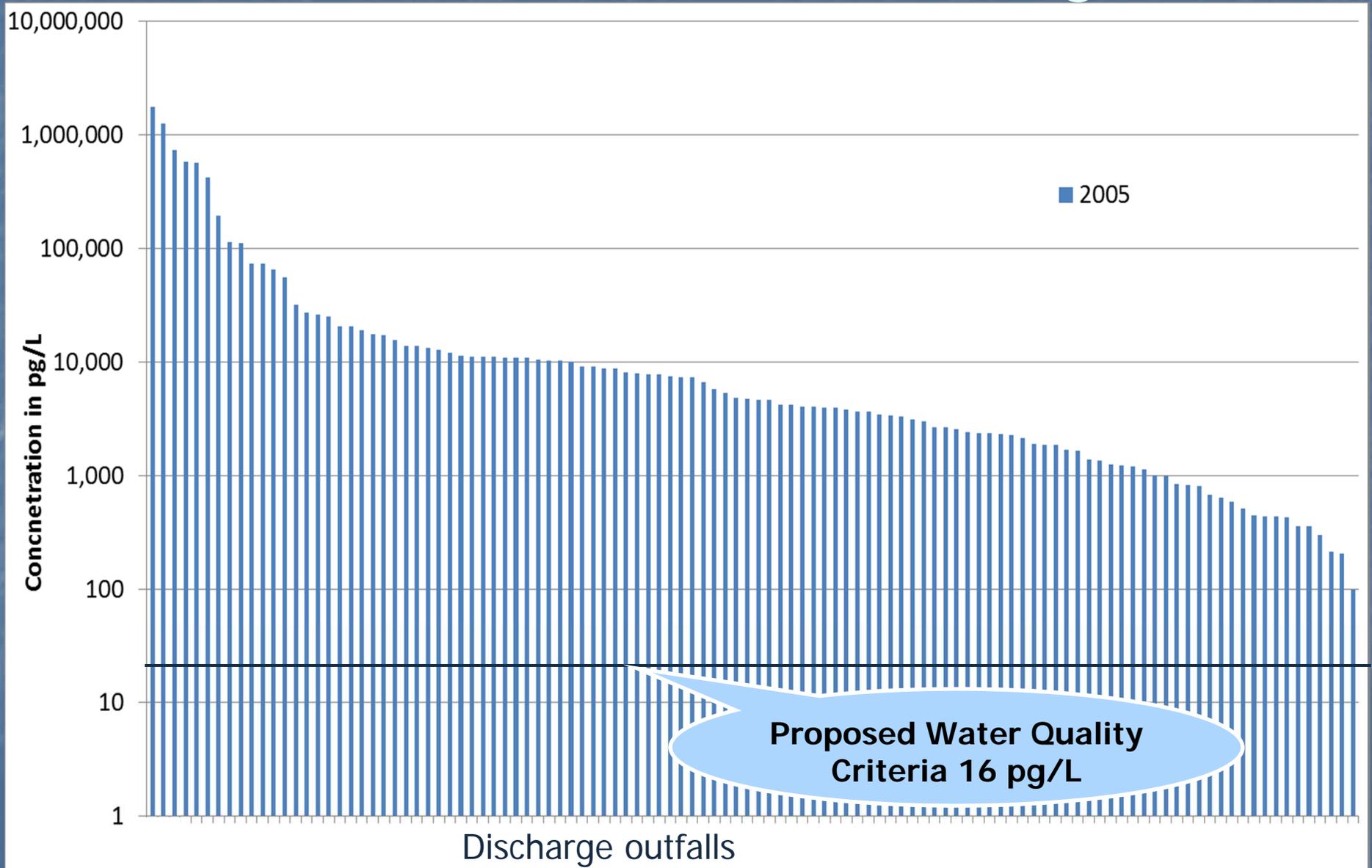
Commission PMP Activities

- Workshops were provided for dischargers in 2005, 2007 and 2012 to assist in:
 - Preparation and approval of PMPs
 - Preparation and submittal of Annual Reports
 - Illustrate effectiveness of remedial measures
- Training sessions were provided by DRBC for PADEP and NJDEP staff to foster a consistent approach for PMP evaluation.
- Commission staff have provided technical assistance to dischargers and their consultants.
- PMP resources available at:
 - <http://www.state.nj.us/drbc/programs/quality/pmp.html>

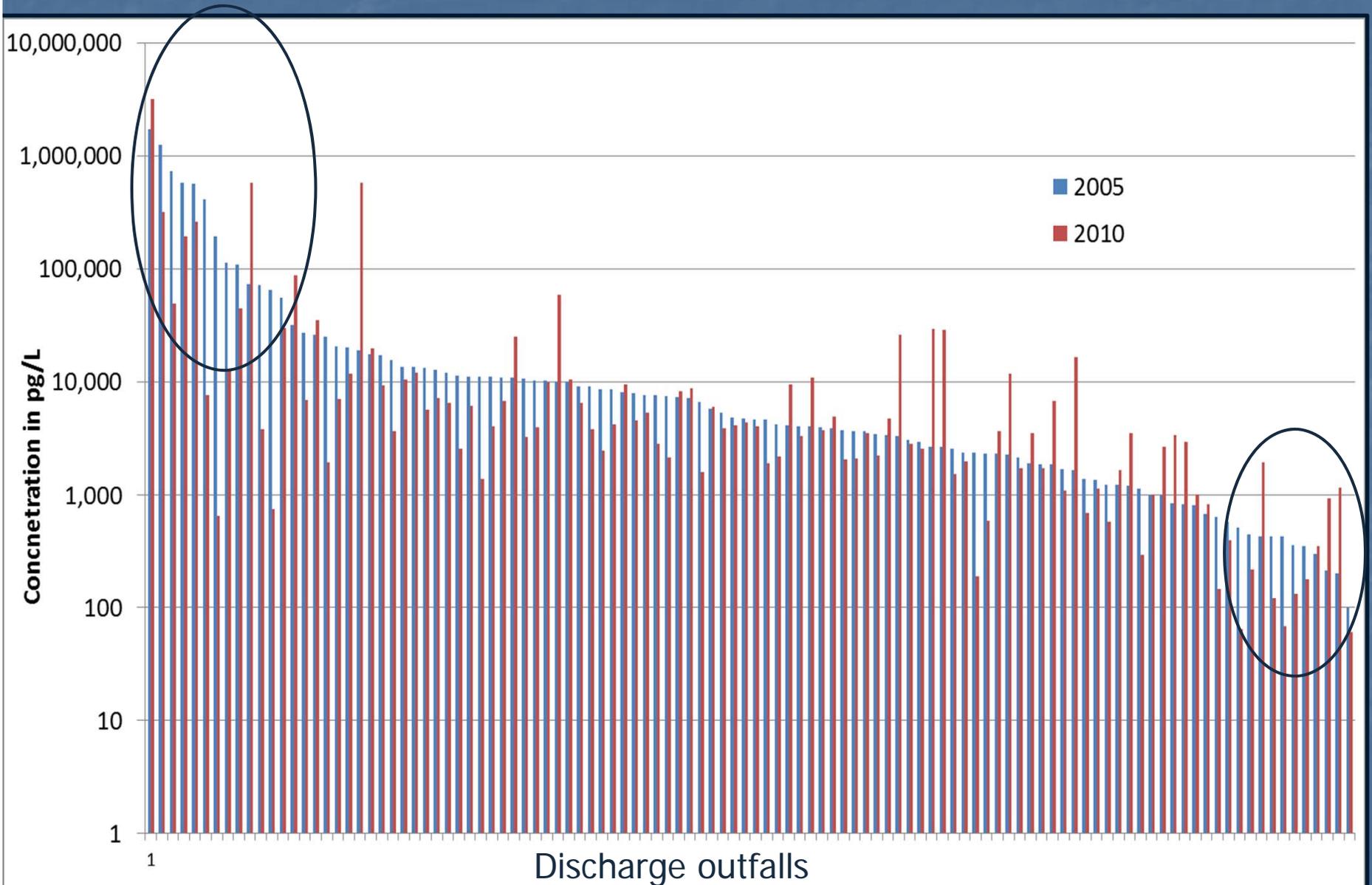
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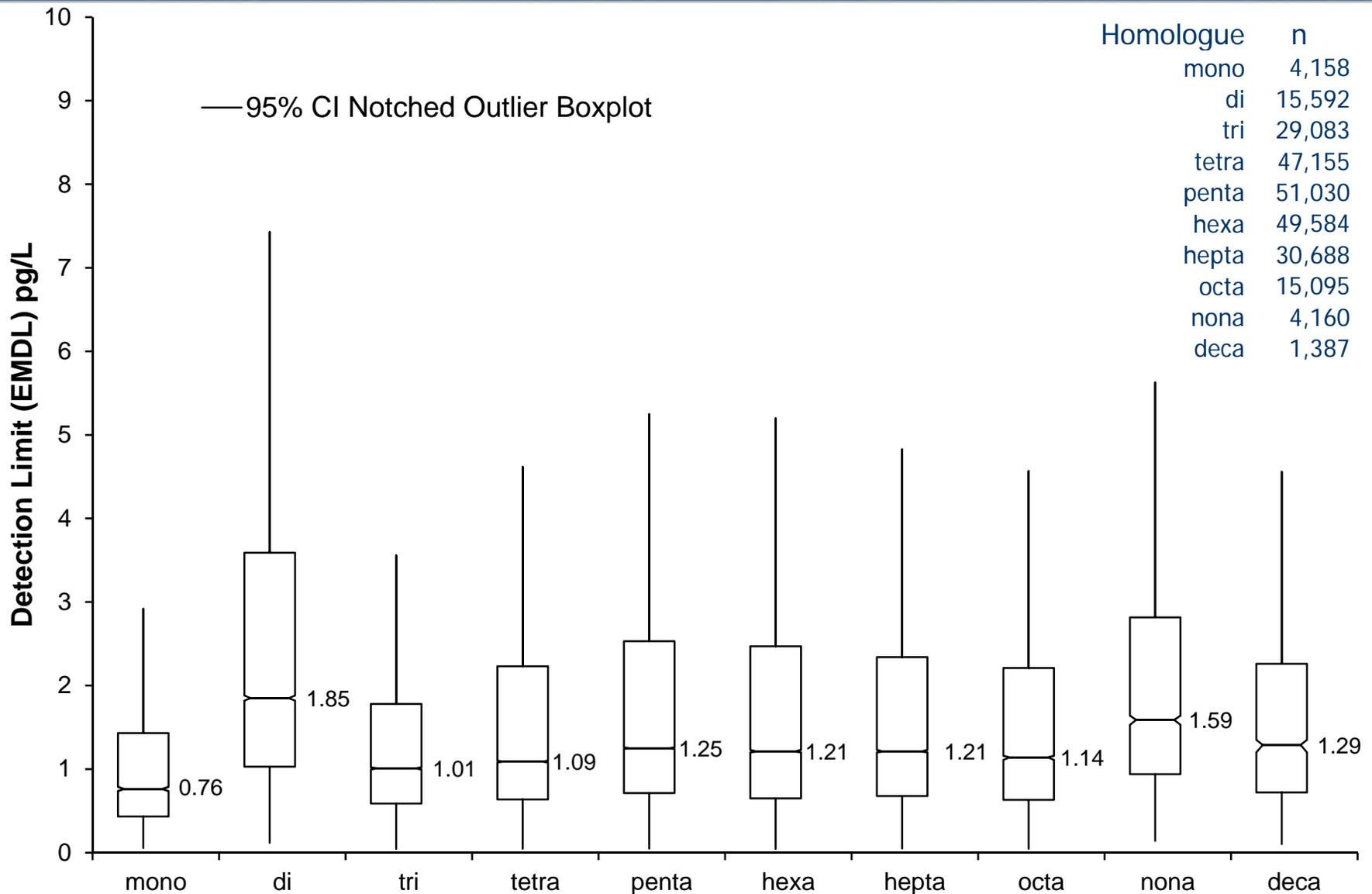
2005 Ranked Point Source PCB Concentrations in All Discharges



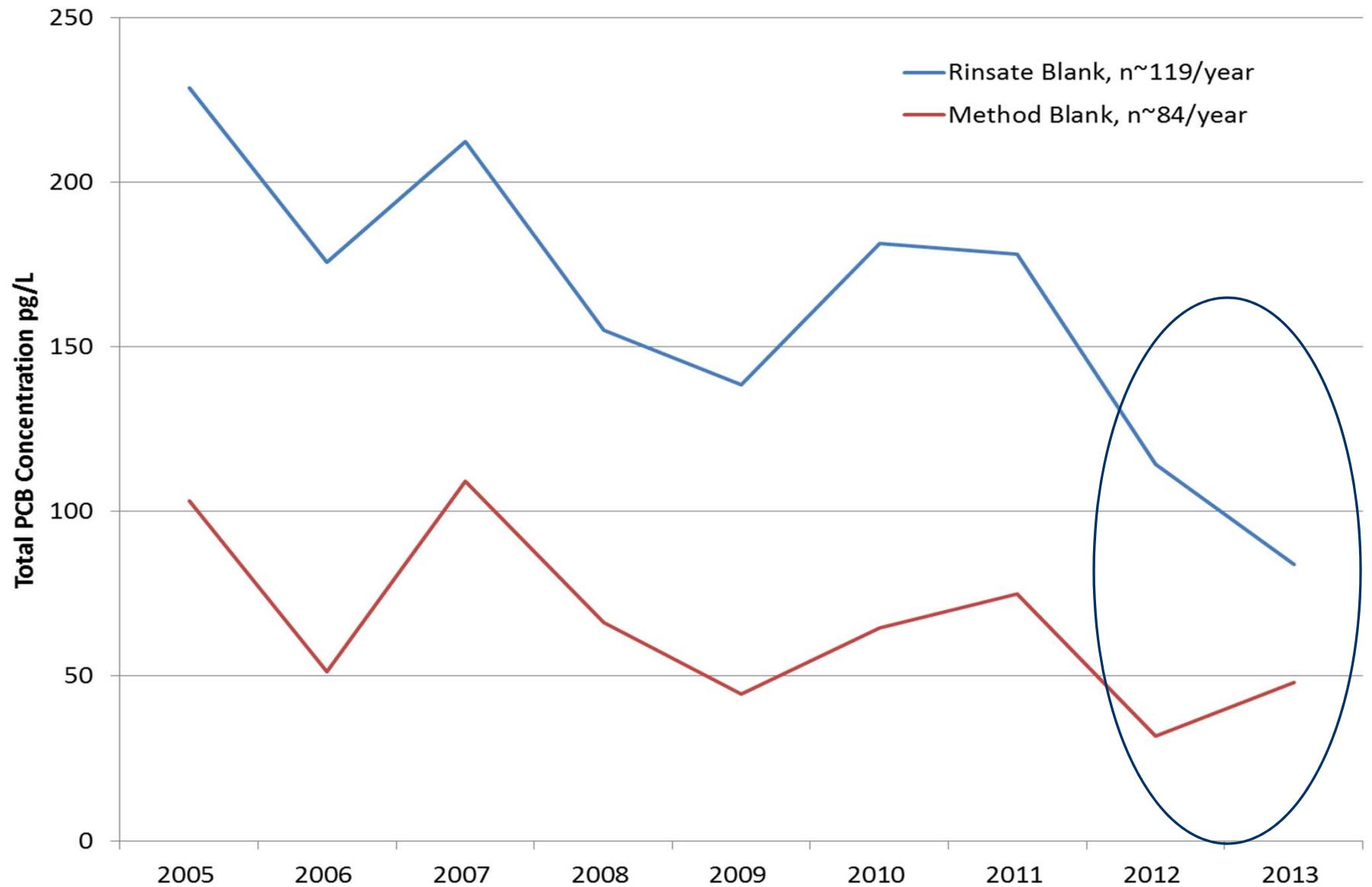
Ranked Point Source PCB Concentrations



1668A Detection Limits by Homolog



Rinsate and Method Blank Results



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Municipal Initiatives

■ Tincicum Township

- Increased solids removal efficiency at WWTP
- Annual sediment removal at pump stations
- Trackdown studies have identified a major source of PCBs Airport Business Complex (ABC)
 - Sewer line relining to eliminate infiltration

■ Camden County Municipal Authority (CCMUA)

Trackdown studies identified:

- Sewer interceptors with elevated PCB sediment concentrations
- Existing and abandoned industries contributing PCBs.

Coordinating efforts with NJDEP, EPA and City of Camden

Industrial Initiatives

- USX Steel Fairless Hills, PA
 - Removed 700,000 lbs. of PCB transformer oil
 - Removed 440,000 lbs. of PCB debris and capacitors
 - Removed contaminated sediment; initiated stormwater controls
- Amtrak Wilmington, DE
 - Sediment removal from sewer lines (60 tons)
 - Redesigned stormwater system to reduce direct discharge
 - Considering additional sediment removal

Specific Example

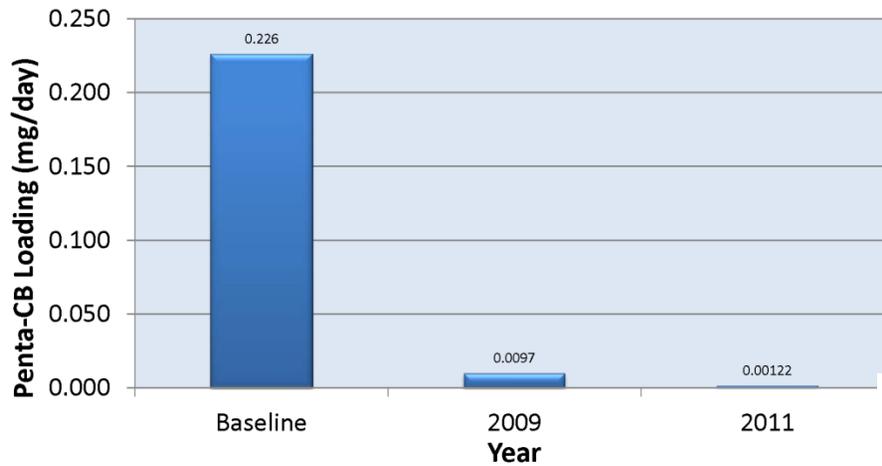
- Calpine Deepwater Energy Facility
 - Legacy contamination (built 1929)
- Two stormwater outfalls monitored
 - PCB transformers removed
 - Catchments and stormwater lines cleaned
 - Geotextile filter baskets and filter guards deployed at drains



Slides courtesy Calpine Energy and Cardno ENTRIX

Deepwater Results

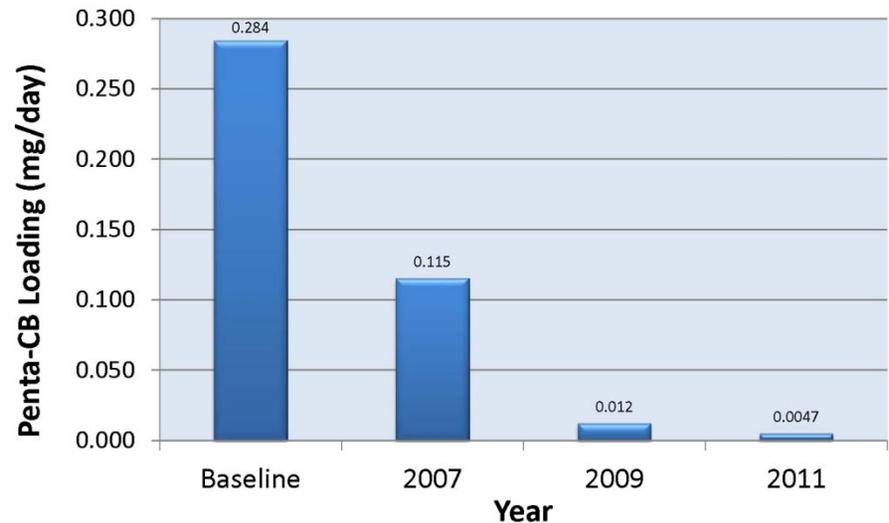
**Penta-CB Loading at Deepwater Energy Center
Outfall 002**



Cumulative Reduction of Penta-CBs: 99.5%

Slides courtesy of Calpine
Energy and Cardno ENTRIX

**Penta-CB Loading at Deepwater Energy Center
Outfall 017**



Cumulative Reduction of Penta-CBs: 98.3%

Non-Point Source Successes

- Exxon Mobil, Paulsboro NJ
 - 16 acre tidal wetland containing PCB contaminated aluminosilicate pellets
 - Excavated 120,000 tons of material
 - Estimated 30-40,000 lbs. of PCBs removed
- Numerous other examples including sites in Delaware and Pennsylvania



Mantua Creek

Exxon Mobil Site 2004

406 ft

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Remedial Efforts 2008-09



Slides Courtesy of Alan
Motter NJDEP



Gloucester Co. • East Greenwich Twp



Approximately
30-40,000 lbs. of
PCBs Removed

Mantua Creek 2010

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O&M Requirements

- Why is O&M necessary?
 - Prevention of backsliding i.e. increasing loading after an initial reduction
- Example: US Pipe and Foundry
 - Manufactured iron pipe from recycled and new material
 - Stored scrap metal on-site
 - Legacy site >100 years old
 - Storm water effluent contaminated with PCBs

U.S. Pipe and Foundry (Outfall 004)

Year	PMP Initiatives	Analytical Results
2007	Existing sedimentation basin no treatment	118,923 pg/L

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- **Achieving individual WLA**

Dischargers Approaching Individual WLA

- Degussa Corporation (NPDES #PA0051713)
 - Manufactures inorganic industrial products
 - Discharge is treated by Industrial Waste Water Treatment Plant
 - Neutralized
 - Solids removed
- BP Paulsboro (NJPDES #NJ0005584)
 - Former refinery, since demolished undergoing ground water remediation
 - Discharge is treated by Groundwater Treatment Plant
 - Air stripping
 - Carbon filtration

Summary

- The majority of facilities that are implementing a PMP are reporting lower concentrations/loadings of total PCBs in their discharges.
- The top ten dischargers that contribute 90% of the point source PCB loading have reduced their loadings by 46% since 2005.
- The PMP approach is demonstrating progress in reducing PCB loadings from point source discharges.
- Selected dischargers are close to achieving their WLA
- Continuation of this cooperative approach is an essential component of a long-term strategy to achieve the PCB TMDLs.

Questions?

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