PCB Pollutant Minimization Plan Annual Report Workshop:

A Comparison of Current and Historical PCB Effluent Data for Selected Dischargers

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The Enterprise Center at Burlington County College

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Presentation Elements:

- Concentration Trend Analysis for Group 1 dischargers who utilized Method 1668a - Stage 1 (2000-01) versus Stage 2 (2005-06) data sets
- Data Comparison for seven dischargers - October 2002 versus Stage 2 data sets
- Concentration Trend Analysis using data from the Stage 1, October 2002, and Stage 2 data sets for selected dischargers
- Method evaluation and the implications for baseline calculations and future reductions

Differences Between Data Collected during Stage 1, 2000-2001 and Stage 2, 2005-2006

- 2000-2001
  - Two analytical methods 8082a and 1668a were used for analysis
    - 8082a Detection Limits ~500-1250 pg/L
    - 1668a Detection Limits ~50-100 pg/L
  - Analytical results were reported for 82 congeners
  - 1-liter samples were collected
  - Electronic Data Deliverable (EDD) formats were not specified
  - Rinsate Blank data was not required

    41 Dischargers utilized Method 1668A

    54 Dischargers utilized Method 8082a

Differences Between Data Collected during Stage 1, 2000-2001 and Stage 2, 2005-2006

- 2005-2006
  - Method 1668a utilized for all analysis
  - Detection limits between 1-3 pg/L were routinely achieved
  - 2-liter samples were collected
  - Analytical results were reported for all 209 congeners
  - Electronic Data Deliverable format was specified

Comparison of Group 1 Dischargers:

Who analyzed their 2000-01 samples using method 1668A (n=24 dischargers consisting of n= 55 outfall samples)

- Utilize data from 2000-01 for Group 1 dischargers
  1. Detected concentrations were used (~50% of the congeners were detected)
  2. For non-detected concentrations the following convention was used:

     nd="0"

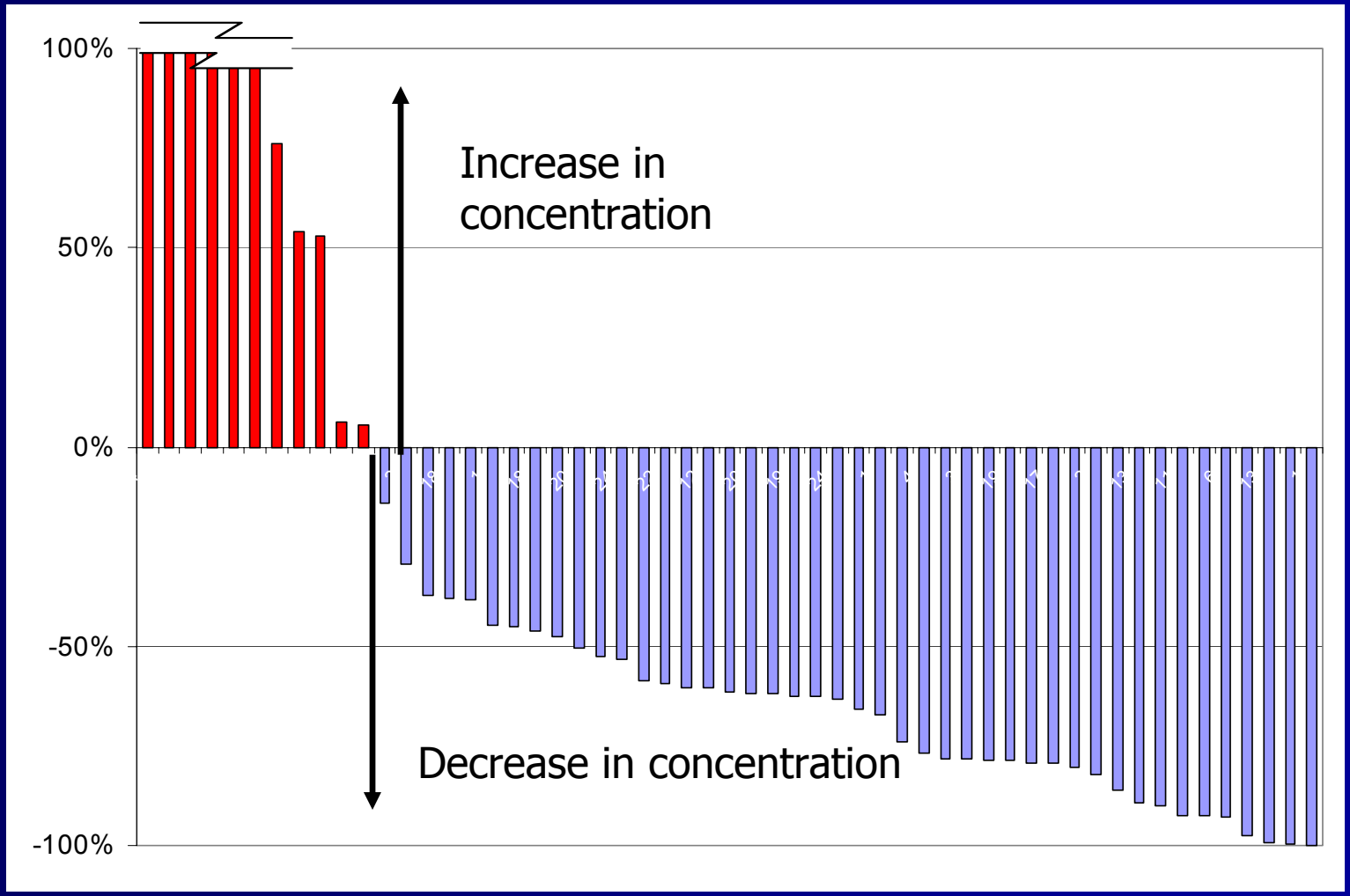
- Utilize data from 2005-06 for Group 1 dischargers
  1. 82 congeners were subset from the 209 reported
  2. Detected concentrations were used (~60% of the 82 congeners were detected)
  3. For non-detected concentrations the following convention was used:

     nd="0"

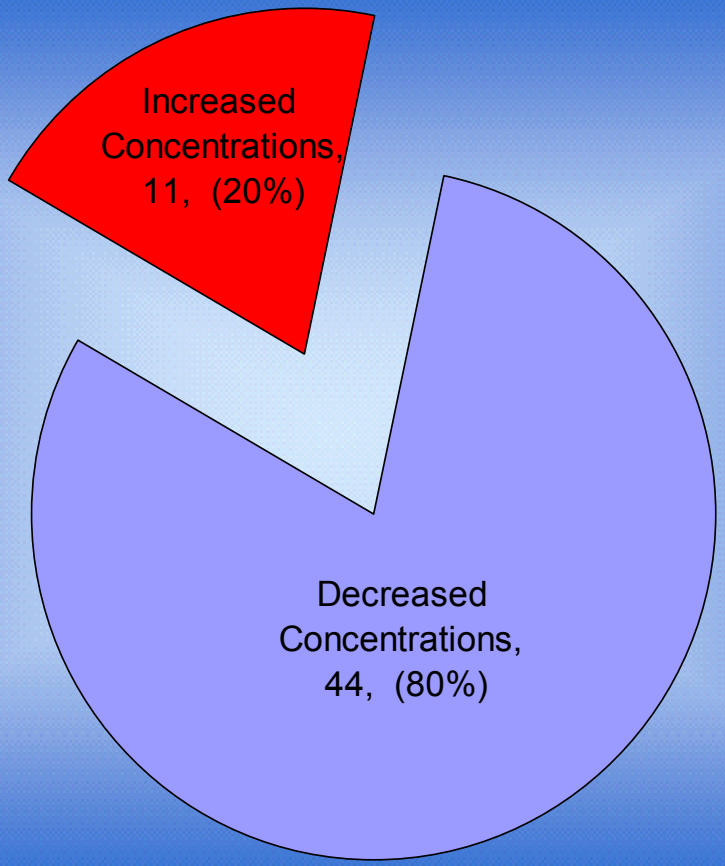
Group 1 discharges---1668a data

Percent Difference Between 2000-01 and 2005-06 data

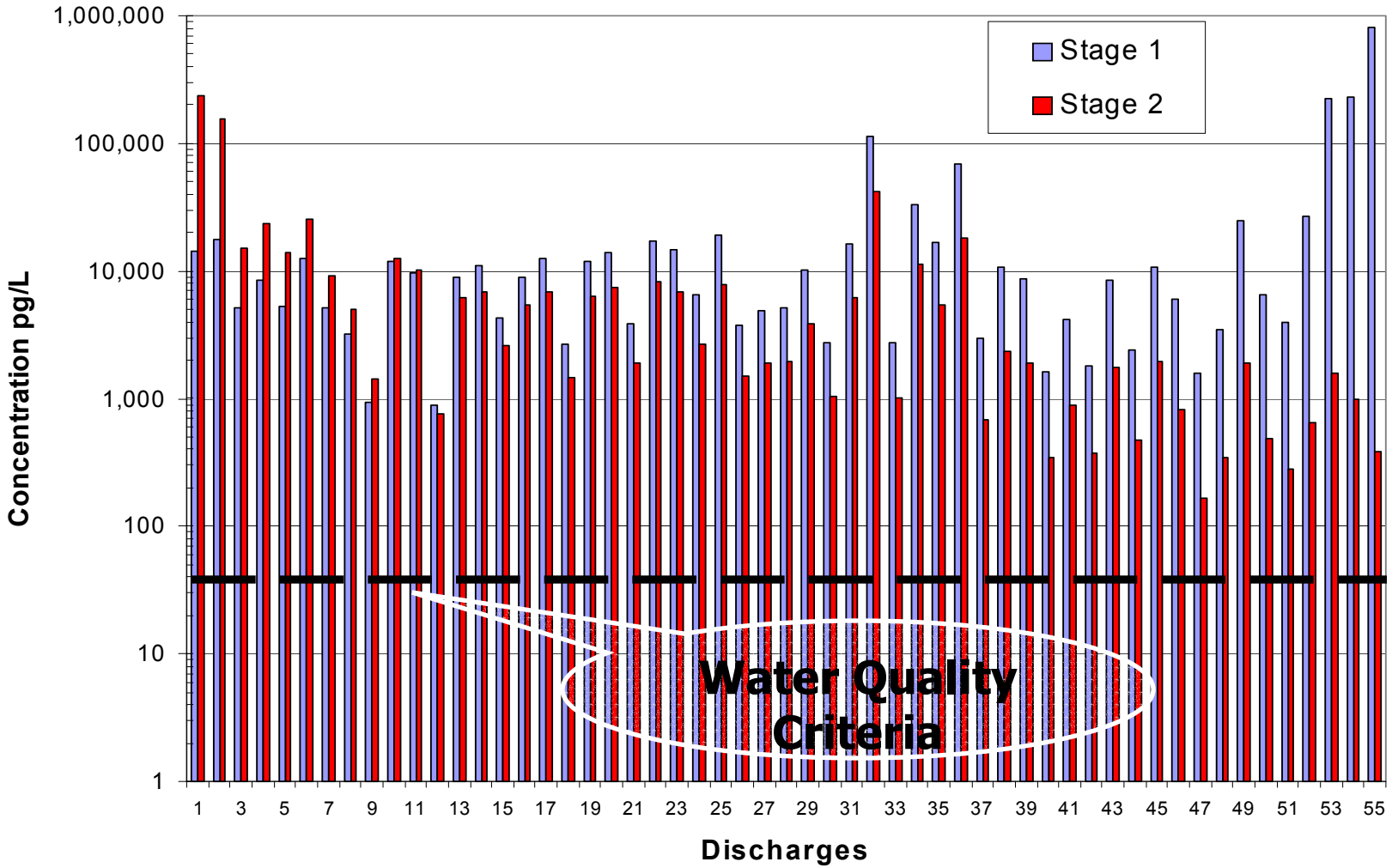
n=24, 55 outfall samples, nd="0"



Results: When nd set to “0”



Stage 1 vs. Stage 2 Concentrations



The Commission Conducted a Survey of Seven Dischargers on October 4 and 7, 2002

- This survey was designed to provide information for the development of the water quality model.
- Seven dischargers were requested to collect effluent samples.
- Samples were submitted to the DRBC's contract laboratory for analysis and all costs were borne by the DRBC.

Dischargers who collected Samples in October 2002

Discharger	NPDES No.
Camden County Municipal Utilities Authority	NJ0026182
Trenton Sewer Utility	NJ0020923
City of Wilmington, Department of Public Works	DE0020320
General Chemical Corporation	DE0000655
Hamilton Township - Wastewater Utility Department of Water Pollution Control	NJ0026301
Valero (formerly Premcor and Motiva)	DE0000256
USX Realty Development (formerly USS)	PA0013463

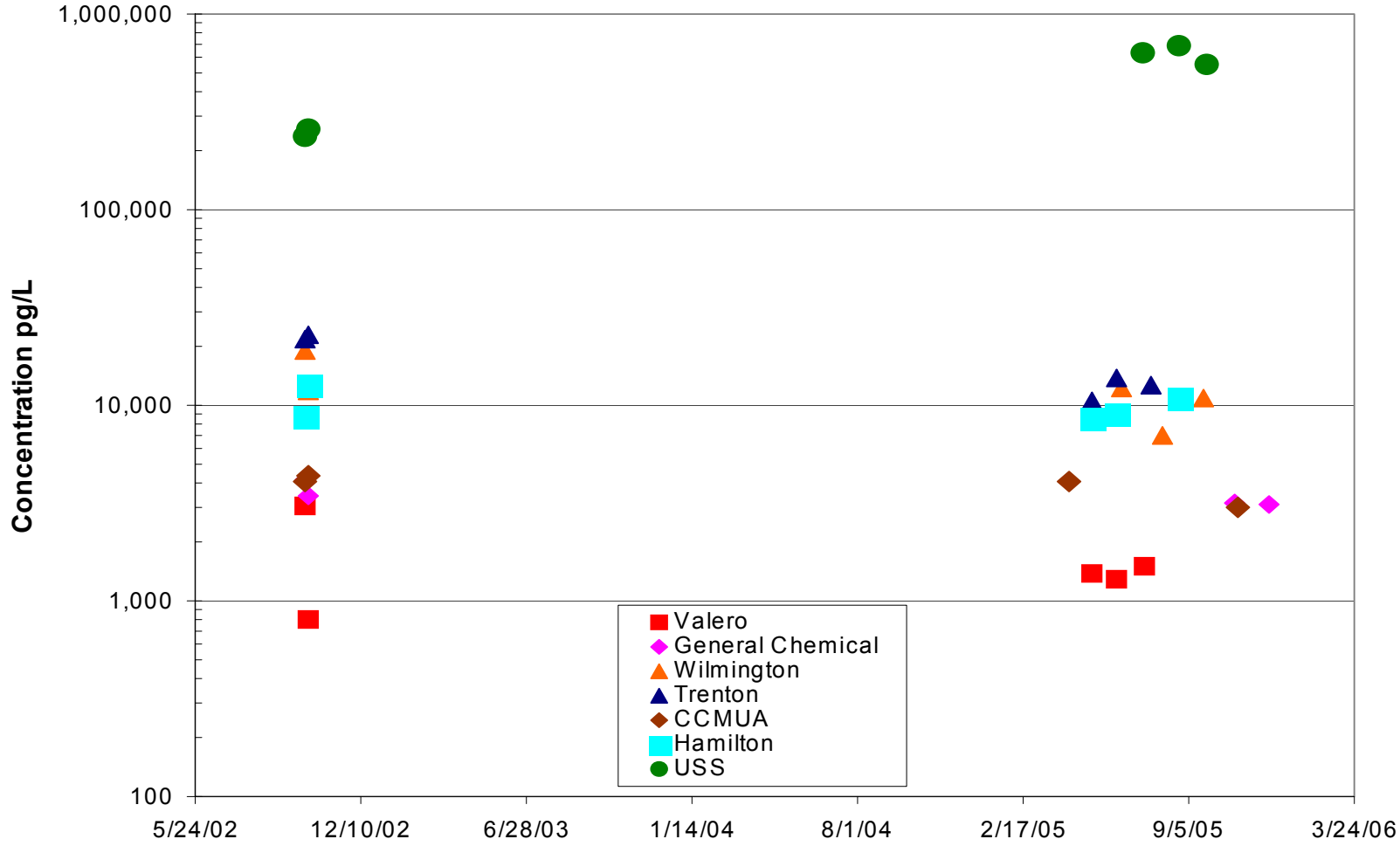
Sampling and Analytical Approaches

- October 2002 Surveys
  - 24-hour composite samples were collected during a defined dry weather event.
  - Two 2-liter samples were collected and analyzed by Axys Analytical for 148 congeners utilizing EPA Method 1668a
- Stage 2 Data Collected 2005
  - 24-hour composite samples were collected during a defined dry weather event.
  - 2-liter samples were collected and analyzed for 209 congeners utilizing EPA Method 1668a

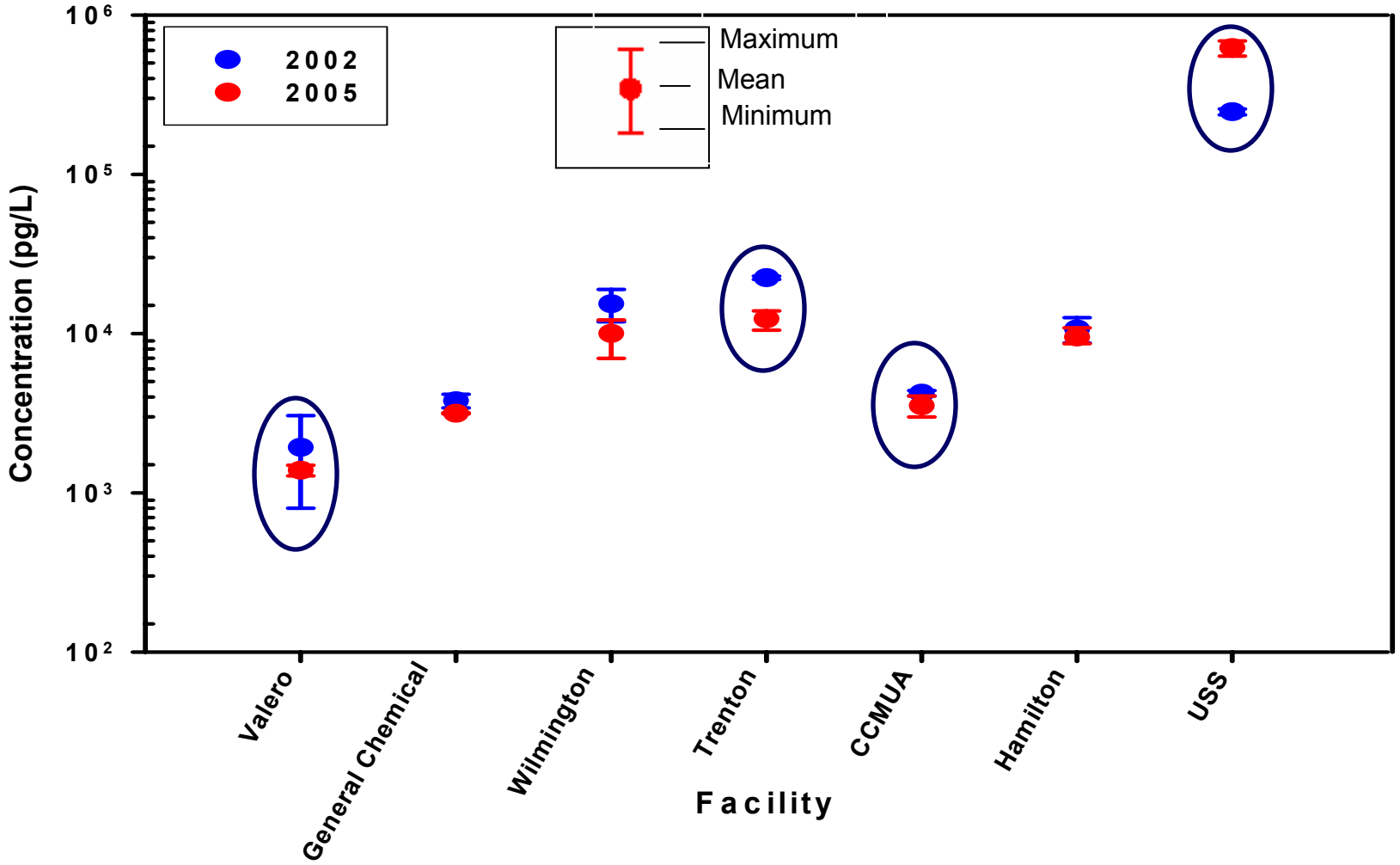
Data Analysis

- PCB concentrations for the 148 congeners from the 2002 sampling events and the same 148 congeners from the 2005-2006 sampling events were compared
- The 148 congeners represent > 90% of the mass represented by the 209 congeners and have a median value of 96% for the seven dischargers
- Similar Detection limits were achieved in the 2002 and 2005-06 surveys

PCB Concentrations for seven Dischargers for during 2002 and 2005-2006



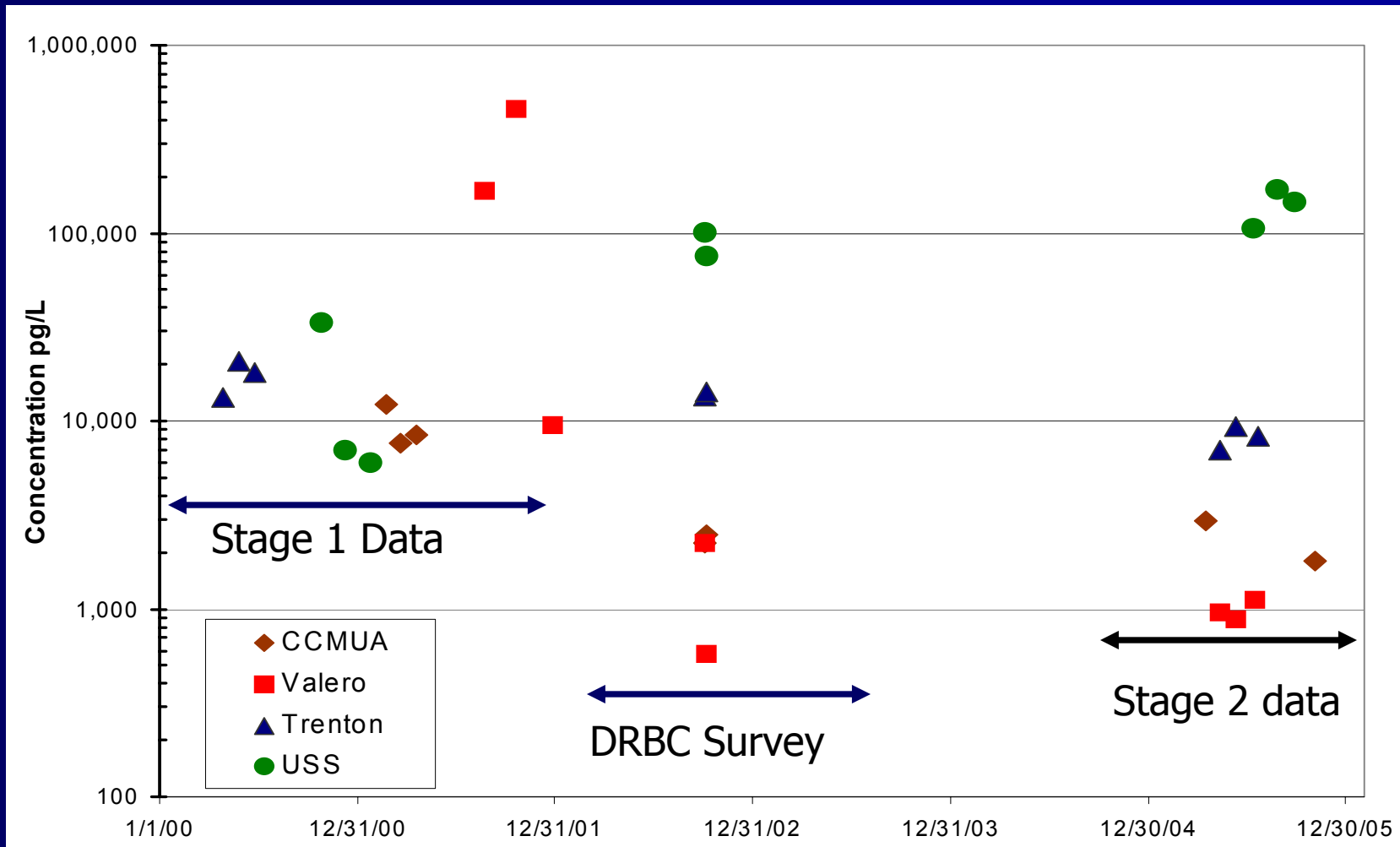
PCB Concentrations for seven Dischargers for 2002 and 2005-2006



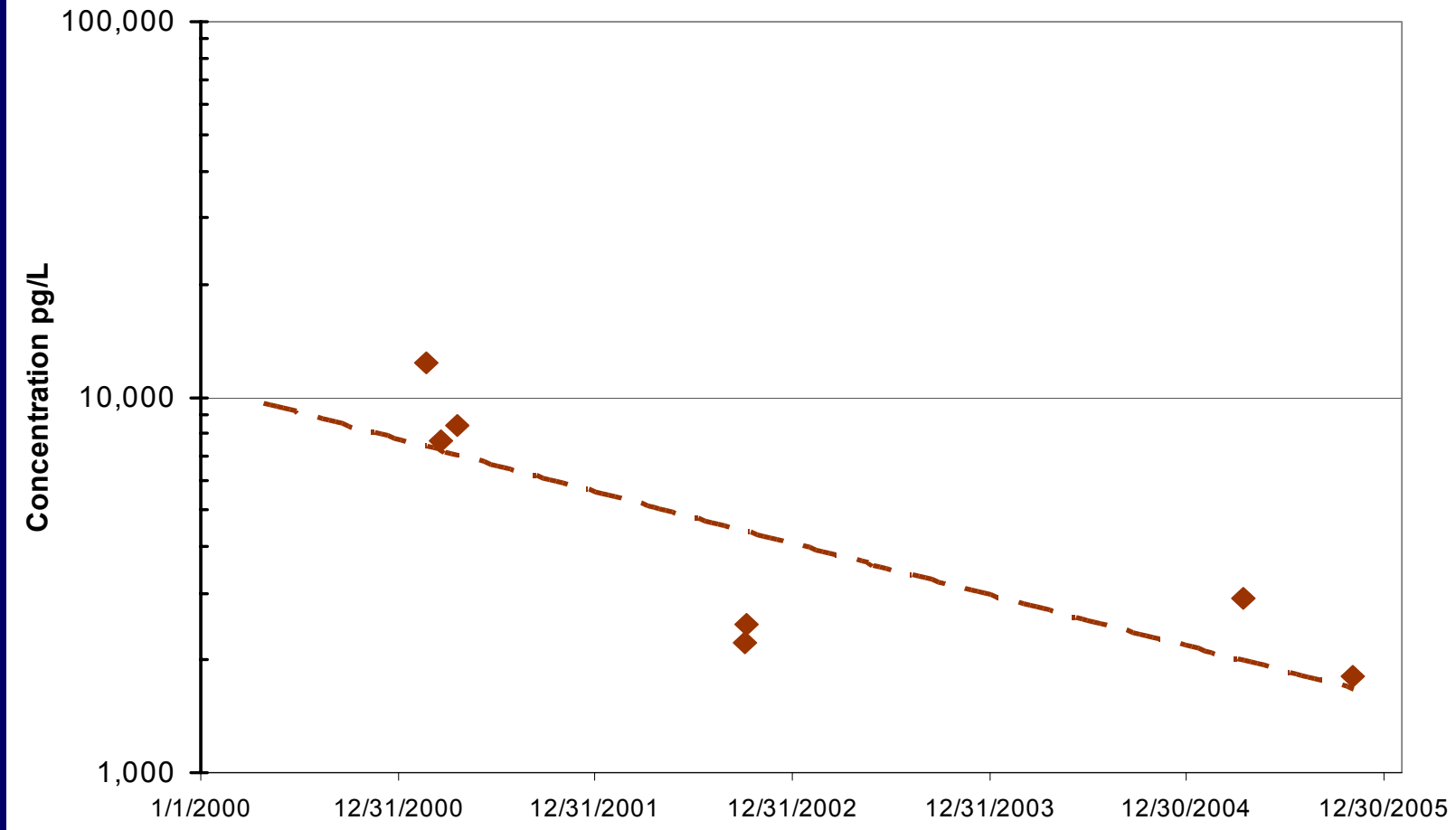
PCB Trends in Discharges for CCMUA, Valero, Trenton and USS

- Utilized data from:
  - Stage 1
  - 2002 survey
  - Stage 2,
- Data comparability across data sets
  - 82 congeners subset from the 2002 and Stage 2 data sets

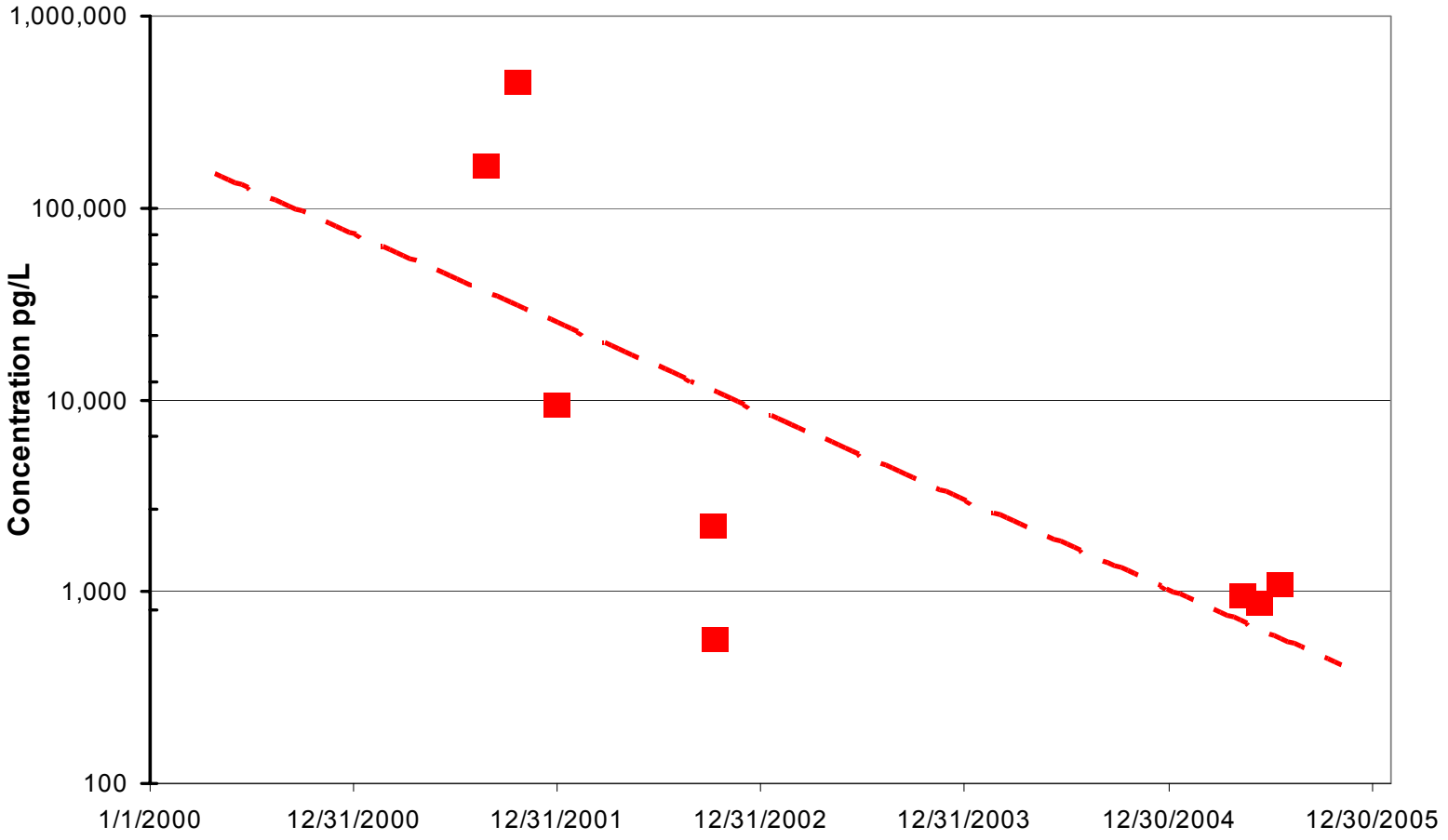
Trends in PCB Concentrations:
for CCMUA, Valero, Trenton, USS
2000-01, 2002 and 2005 data used



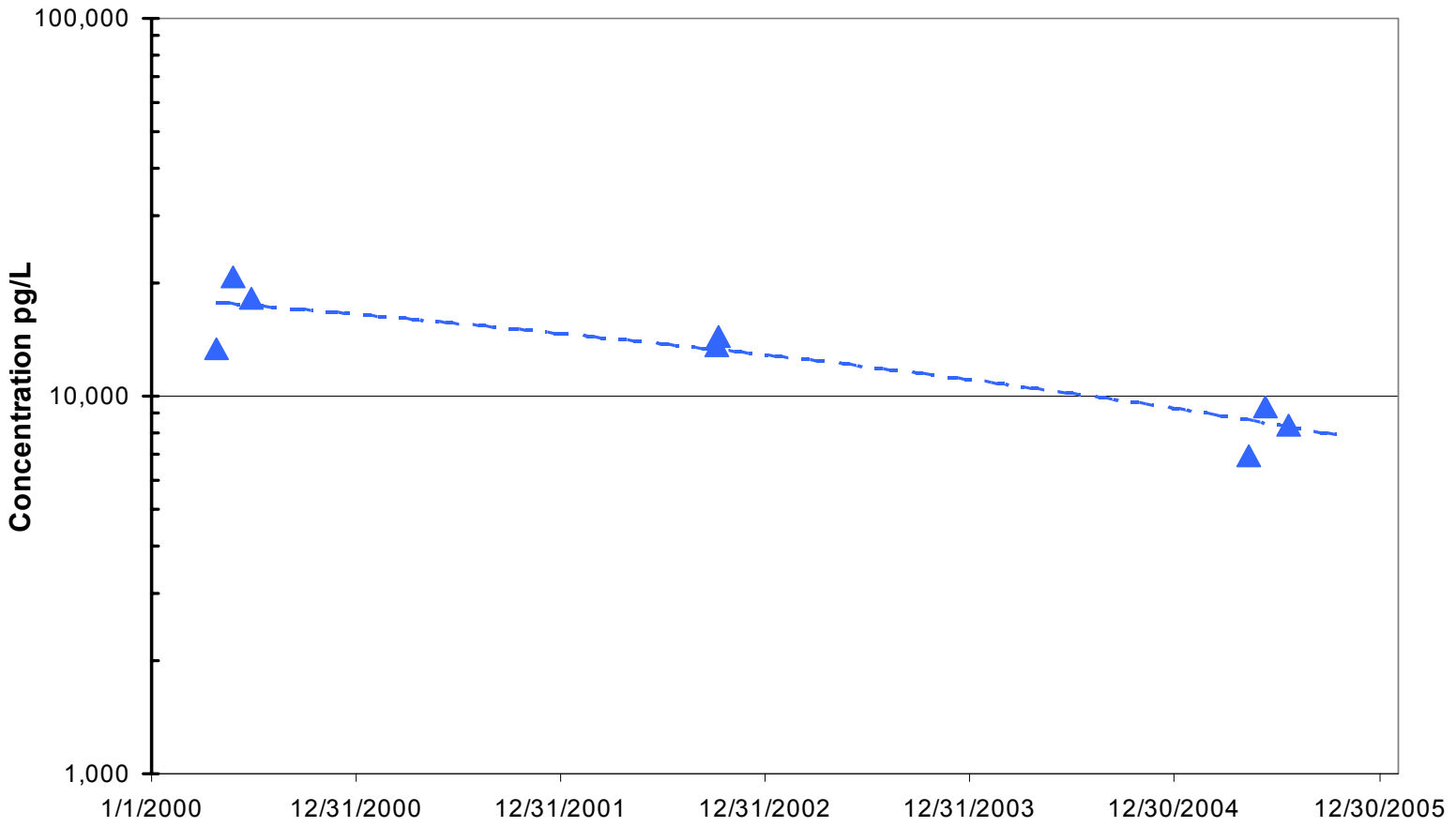
Trend in CCMUA PCB Concentrations



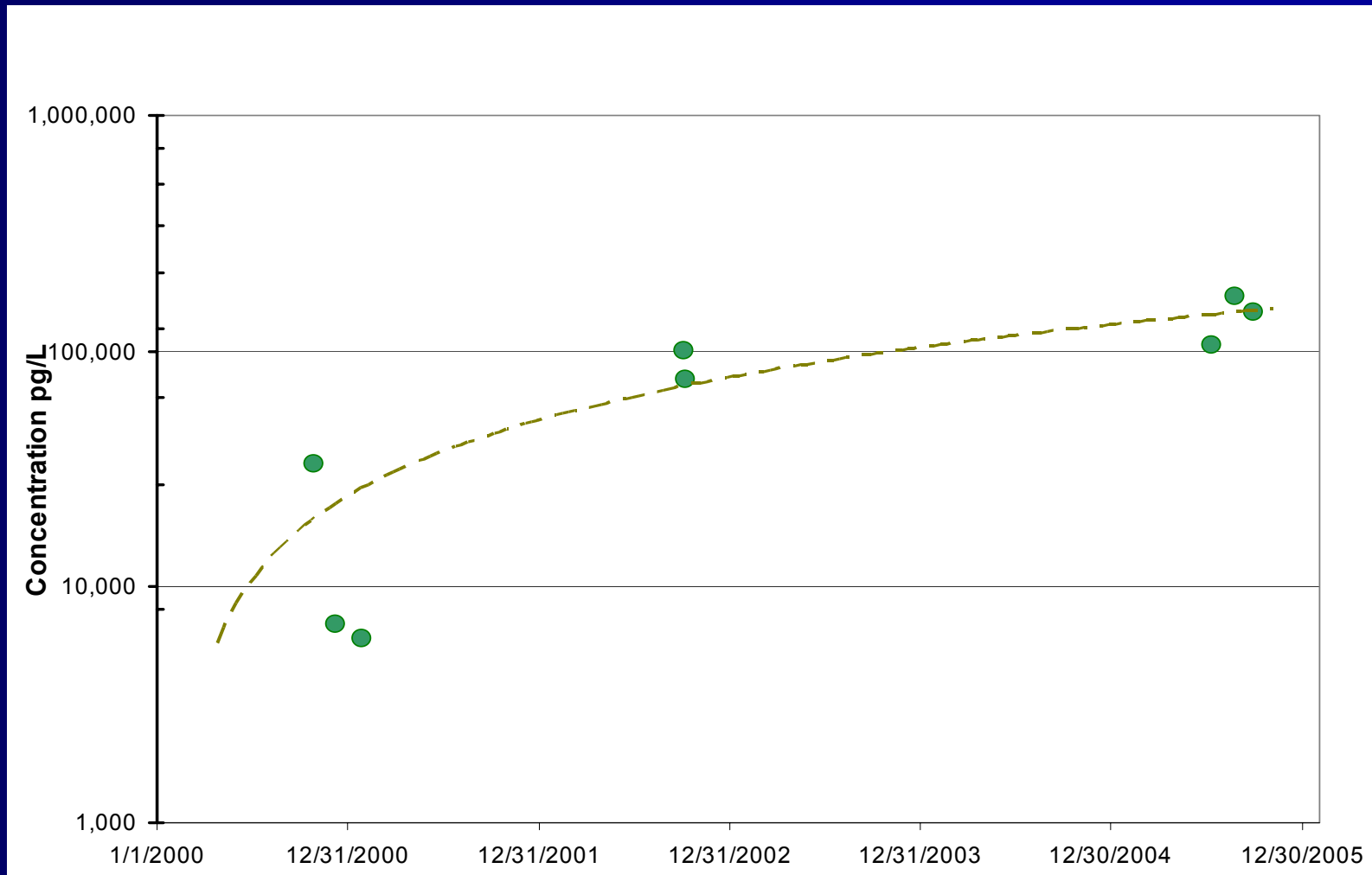
Trend in Valero PCB Concentrations



Trend in Trenton PCB Concentrations



Trend in USX PCB Concentrations



Conclusions

- For the analysis presented PCB concentrations have declined from 2000 to the present for some of the dischargers
- Decreasing trends for CCMUA, Trenton and Valero from 2000 to 2005 are supported by the 2002 DRBC survey
- Alternatively, increasing PCB concentrations was observed for the USS discharge from 2000-01 through 2005-06 and supported by the 2002 DRBC Survey

Conclusions

- Data limitations of the Stage 1 data set include lack rinsate and method blank acceptability criteria
- Data collected in 2000-01 utilizing Method 1668a but fewer target congeners (82) still provides a useful baseline of PCB concentrations
- Future data collection efforts will benefit from the standardized sampling analytical and reporting protocols enacted for the Stage 2 PCB TMDL and provide information to evaluate future PCB reductions