

US EPA ARCHIVE DOCUMENT

CATALOG DOCUMENTATION
REGIONAL EMAP DATABASE
1998 NEW YORK/NEW JERSEY HARBOR SYSTEM
SEDIMENT ANALYTE CONCENTRATIONS BY SITE

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1. DATA SET IDENTIFICATION

1.1 Title of Catalog document

Regional EMAP Database
1998 New York/New Jersey Harbor System
Sediment Analyte Concentrations by Site

1.2 Author of the Catalog entry

Melissa Hughes, Computer Sciences Corporation

1.3 Catalog revision date

18 May 2004

1.4 Data set name

Sediment Analyte Concentrations

1.5 Task Group

Regional Environmental Monitoring and Assessment Program

1.6 Data set identification code

233

1.7 Version

001

1.8 Requested Acknowledgment

If you plan to publish these data in any way, EPA requires a standard statement for work it has supported: "Although the data described in this article have been funded wholly or in part by the U. S. Environmental Protection Agency through its EMAP-Estuaries Program, it has not been subjected to Agency review, and therefore does not necessarily reflect the views of the Agency and no official endorsement should be inferred."

2. INVESTIGATOR INFORMATION

2.1 Principal Investigator

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2.2. Investigation Participant

Ms. Sandi Benyi

U.S. Environmental Protection Agency - ORD/NHEERL/AED

3. DATA SET ABSTRACT

3.1 Abstract of the Data Set

The Sediment Analyte Concentrations data set reports the concentrations of a suite of analytes measured in surficial sediment samples. These samples were taken in the New York/New Jersey Harbor region. The suite of compounds analyzed included: 4 major and 12 trace inorganic elements, 23 polycyclic aromatic hydrocarbons (PAHs), DDT and its metabolites, 10 other chlorinated pesticides, 20 PCB congeners, 17 dioxin and furan congeners (only analyzed in samples from selected regions), total organic carbon (TOC), mono-, di-, tri- and tetra-butyltins, and acid volatile sulfide (AVS). PCB data are not included due to quality assurance issues.

The data on the web site are divided into three comma-delimited files:

R298_org.txt - All organic compound concentrations

R298_hfa_totmet.txt - Total metal concentrations, hydrofluoric acid digestion.

R298_sa_totrmet.txt - Total recoverable metal concentrations, sulfuric acid (H₂SO₄) digestion.

3.2 Keywords for the Data Set

sediment contaminants, inorganics, organics, AVS, TOC

4. OBJECTIVES AND INTRODUCTION

4.1 Program Objective

The project was designed to support resource management decisions related to pollution control and remediation throughout the New York/New Jersey (NY/NJ) Harbor and to assist the New York-New Jersey Harbor Estuary Program (HEP) in developing a contaminant monitoring strategy to be included in the Comprehensive Conservation and Management Plan (CCMP) for the NY/NJ Harbor system.

4.2 Data Set Objective

To provide an overview of the extent of the sediment contamination in the NY/NJ harbor region based on chemical analyses.

4.3 Data Set Background Discussion

The New York/New Jersey Harbor System has been susceptible to toxic contamination due to surrounding land uses. Harbor sediments are contaminant reservoirs which can function as a secondary source of these land use contaminants. Contaminated sediments pose a substantial threat to Harbor resources and are a management challenge. Dredging and disposal of contaminated sediments are controversial issues. Adverse changes in the biota of the system have been documented with increasing frequency, and many of these changes have been linked to toxic contamination.

4.4 Summary of Data Set Parameters

Sediment Analyte Concentration data set values were based on the results of laboratory analyses.

5. DATA ACQUISITION AND PROCESSING METHODS

5.1 Data Acquisition

5.1.1 Sampling Objective

Collect sediment grab samples suitable for the analysis of organic and inorganic contaminants.

5.1.2 Sample Collection Methods Summary

The grab sampler was lowered through the water column; the grab penetrated the sediment by gravity releasing a trigger allowing the jaws to close. When the grab was pulled from the sediment using the winch, the jaws closed, encapsulating the sediment sample.

Multiple grabs were required to collect enough volume for analysis. Overlying water was carefully drained. Aliquots of the top 2 cm were taken from the undisturbed surface of individual grabs using a 60-cc syringe which had the narrow end removed to create a mini-corer. When the sample container was filled to the top, it was sealed with Teflon tape and immediately frozen.

The remaining top 2 cm of sediment from each grab was removed using stainless steel spoons. A composite of all grabs was homogenized in a glass bowl for 10 minutes. Subsamples were removed for metals, organics, and TOC and transferred to sample containers that were stored on ice.

5.1.3 Sampling Start Date

June 1998

5.1.4 Sampling End Date

August 1998

5.1.5 Platform

Sampling was conducted from the U.S.EPA research vessel, R/V CLEAN WATERS.

5.1.6 Sampling Gear

A 0.04-m² or 0.1-m², stainless steel, Young-modified Van Veen Grab sampler was used to collect sediment grabs. This grab sampled an area of 440 cm² and a maximum depth of penetration in the sediment of 10 cm.

5.1.7 Manufacturer of Sampling Equipment

Young's Welding, Sandwich, MA

5.1.8 Key Variables

No data were recorded at the time of sample collection.

5.1.9 Collection Method Calibration

The sampling gear did not require any calibration. It required inspection for deformities incurred due to mishandling or impact on rocky substrates.

5.1.10 Sample Collection Quality Control

A successful grab had relatively level, intact sediment over the entire area of the grab and a sediment depth at the center of at least 5 centimeters. Unacceptable grabs included those with grossly slumped surfaces and those completely filled to the top, where the sediment was in direct contact with the hinged top.

Care was taken to avoid sediment that had touched the surface of the grab and to use only samples with undisturbed surfaces. Clean stainless steel spoons and glass mixing bowls were used to prevent accidental contamination. The van Veen Grab was rinsed with ambient seawater between grabs at a station and thoroughly cleaned with detergent and water between stations.

5.1.11 Sample Collection Method Reference

Reifsteck, D.M., C.J. Strobel and D.J. Keith. 1993. Environmental Monitoring and Assessment Program - Near Coastal Component: 1993 Virginian Province Field Operations and Safety Manual. U.S. EPA NHEERL-AED. Narragansett, RI.

5.2 Data Preparation and Sample Processing

5.2.1 Sample Processing Objective

Process sediment samples to accurately measure organic and inorganic compounds, TOC and AVS.

5.2.2 Sample Processing Methods Summary

The samples were analyzed by standard methods.

5.2.3 Sample Processing Method Calibration

Appropriate Sediment Reference Materials (SRM) from the National Research Council of Canada (NRCC), the National Institute of Technology (NIST) and Cambridge Isotope Laboratories were used.

5.2.4 Sample Processing Quality Control

All analyses employed appropriate quality assurance samples.

5.2.5 Sample Processing Method Reference

Adams, Darvene and Sandra Benyi. 2003. Final Report: Sediment Quality of the NY/NJ Harbor System - A 5-Year Revisit. EPA/902-R-03-002. USEPA-Region 2, Division of Science and Assessment. Edison, NJ. December, 2003.

5.2.6 Sample Processing Method Deviations

NA

6. DATA MANIPULATIONS

Total concentrations for specific groups of compounds were calculated.

6.1 Name of new or modified values

CHL_TOTC - Total chlordanes

6.2 Data Manipulation Description

Sum of heptachlor, heptachlor-epoxide, oxychlordanes, gamma-chlordanes, alpha-chlordanes, trans-nonachlor, cis-nonachlor - Total chlordanes

6.3 Data Manipulation Examples

NA

7. DATA DESCRIPTION

7.1 Description of Parameters

Parameter Name	Data Type	Len	Format	Parameter Label
STATION	Char	10	\$10.	Station identifier
DATE	Num	8	DATE7.	Date of sampling
ANALYTE	Char	8	\$10.	Chemical analyte code
CONC	Num	8	10.2	Concentration of analyte
UNITS	Char	40	\$26.	Unit of measure
QACODE	Char	40	\$40.	Quality assurance code
CHEMNAME	Char	40	\$40.	Chemical analyte name

7.1.6 Precision to which values are reported

The precision is indicated by the attribute format reported under 7.1

7.1.7 Minimum value in data set

Analyte	Minimum
14_HXCDD	0.053
14_HXCDF	0.617
16_HXCDD	0.231
16_HXCDF	0.212
17_HXCDD	0.404
17_HXCDF	0.072
18_HPCDD	2.787
18_HPCDF	0.74
18_PECDD	0.072
18_PECDF	0.236
19_HPCDF	0.185
28_HXCDF	0.321
28_PECDF	0.576
ACENTHE	0
ACENTHY	0
ALDRIN	0
ALPHABHC	0
ALPHACHL	0
ANTHRA	0
AVS	0.167
BENANTH	0
BENAPY	0
BENEPY	0
BENZOBFL	0
BENZOKFL	0
BENZOP	0
BETABHC	0
BIPHENYL	0
CHL_TOTC	0
CHRYSENE	0
CISNONA	0
CL6BNZ	0
DDD	0
DDE	0
DDT	0
DELTABHC	0
DIBENZ	0
DIELDRIN	0
DIMETH	0
ENDOSUI	0
ENDRIN	0
FLUORANT	0
FLUORENE	0
GAMMACHL	0
HEPTACHL	0
HEPTAEPO	0
INDENO	0
LINDANE	0
MENAP1	0
MENAP2	0
MEPHEN1	0

MIREX	0
MTHXCHLR	0
NAPH	0
NI	0
OCDD	10.948
OCDF	1.797
OPDD	0
OPDDE	0
OPDDT	0
OXYCHL	0
PERYLENE	0
PHENANTH	0
PPDD	0
PPDDE	0
PPDDT	0
PYRENE	0
SI	.
TCDD	0.204
TCDF	0.341
TL	.
TNONCHL	0
TRIMETH	0

7.1.8 Maximum value in Data Set

Analyte	Maximum
14_HXCDD	14.884
14_HXCDF	247.981
16_HXCDD	65.282
16_HXCDF	57.158
17_HXCDD	51.869
17_HXCDF	13.744
18_HPCDD	1292.1
18_HPCDF	1150.13
18_PECDD	17.791
18_PECDF	23.529
19_HPCDF	53.054
28_HXCDF	37.9
28_PECDF	51.266
ACENTHE	1600
ACENTHY	7900
ALDRIN	0
ALPHABHC	1.9
ALPHACHL	23.4
ANTHRA	7600
AVS	10900
BENANTH	24000
BENAPY	30000
BENEPY	4700
BENZOBFL	23000
BENZOKFL	6800
BENZOP	6400
BETABHC	0
BIPHENYL	350
CHL_TOTC	46
CHRYSENE	25000
CISNONA	0

CL6BNZ	11.5
DDD	417.9
DDE	180.7
DDT	2208.5
DELTABHC	0
DIBENZ	2400
DIELDRIN	2.3
DIMETH	1300
ENDOSUI	0
ENDRIN	0
FLUORANT	26000
FLUORENE	1700
GAMMACHL	22.6
HEPTACHL	0
HEPTAEPO	0
INDENO	8000
LINDANE	0.7
MENAP1	930
MENAP2	1500
MEPHEN1	3300
MIREX	5.3
MTHXCHLR	0
NAPH	2100
NI	115
OCDD	12761.59
OCDF	1990.47
OPDDD	91.2
OPDDE	70.9
OPDDT	189.8
OXYCHL	0
PERYLENE	12000
PHENANTH	7100
PPDDD	326.7
PPDDE	130.1
PPDDT	2018.7
PYRENE	36000
SI	.
TCDD	383.704
TCDF	71.74
TL	.
TNONCHL	0
TRIMETH	430

7.2 Data Record Example

7.2.1 Column Names for Example Records

STATION;DATE;ANALYTE;CONC;UNITS;CHEMNAME;QACODE

7.2.2 Example Data Records

STATION;DATE;ANALYTE;CONC;UNITS;CHEMNAME;QACODE

JB008;08/04/98;AG;2.0000;mg/kg;SILVER; ;

JB008;08/04/98;AL;21700.0000;mg/kg;ALUMINUM; ;

JB008;08/04/98;ALDRIN;0.0000;ug/kg;ALDRIN; ;

8. GEOGRAPHIC AND SPATIAL INFORMATION

8.1 Minimum Longitude

-74 Degrees 17.4 Minutes 48.00 Decimal Seconds

8.2 Maximum Longitude

-73 Degrees 45 Minutes 0.54 Decimal Seconds

8.3 Minimum Latitude

40 Degrees 25.2 Minutes 36.00 Decimal Seconds

8.4 Maximum Latitude

40 Degrees 51.6 Minutes 42.00 Decimal Seconds

8.5 Name of area or region

New York/New Jersey Harbor System:

Four sub-basins were sampled in the New York/New Jersey Harbor, including: Upper Harbor, Newark Bay, Lower Harbor (includes Raritan and Sandy Hook Bays), and Jamaica Bay. For purposes of this study, the region includes the lower portions of the Hudson, Passaic, Harlem, Hackensack and Raritan Rivers, upstream to a near-bottom salinity of 15 ppt, the East River to Long Island Sound and Lower Harbor to the Atlantic Ocean.

9. QUALITY CONTROL AND QUALITY ASSURANCE

9.1 Data Quality Objectives

Quality assurance goals were developed and followed for each QA sample type and for each analysis.

9.2 Quality Assurance/Quality Control Procedures

The QA/QC procedures for the laboratory chemical methods will follow a performance-based approach, which involves continuous laboratory evaluation through the use of accuracy-certified reference materials (CRMs), laboratory-fortified sample matrices, reagent blanks, calibration standards and laboratory and field replicates.

9.3 Quality Assessment Results

These in-house QC measures met the requirements established in the QA Plan.

10. DATA ACCESS

10.1 Data Access Procedures

Data can be downloaded from the WWW server.

10.2 Data Access Restrictions

Data can only be accessed from the WWW server.

10.3 Data Access Contact Persons

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10.4 Data Set Format

Comma delimited

10.5 Information Concerning Anonymous FTP

Data cannot be accessed via ftp.

10.6 Information Concerning WWW

Data can be downloaded from the WWW servers.

10.7 EMAP CD-ROM Containing the Data Set

Data are not available on CD-ROM

11. REFERENCES

Adams, D. 1998. Quality Assurance Project Plan for Environmental Monitoring, "A 5-year Revisit of Sediment Quality in the NY/NJ Harbor." U.S. Environmental Protection Agency, Region 2, Edison, NJ.

Adams, Darvene and Sandra Benyi. 2003. Final Report: Sediment Quality of the NY/NJ Harbor System - A 5-Year Revisit. EPA/902-R-03-002. USEPA-Region 2, Division of Science and Assessment. Edison, NJ. December, 2003.

Overton, W.S., D.L. Stevens and D. White. 1990. Design Report for EMAP: Environmental Monitoring and Assessment Program. EPA/600/3-91/053. U.S. Environmental Protection Agency, ORD, Washington, DC.

Reifsteck, D.M., C.J. Strobel and D.J. Keith. 1993. Environmental Monitoring and Assessment Program - Near Coastal Component: 1993 Virginian Province Field Operations and Safety Manual. U.S. EPA NHEERL-AED. Narragansett, RI.

U.S. EPA. 1993. EMAP Laboratory Methods Manual: Estuaries. U.S. Environmental Protection Agency, Office of Research and Development, Environmental Monitoring Systems Laboratory, Cincinnati, OH.

12. TABLE OF ACRONYMS

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