

US EPA ARCHIVE DOCUMENT

CATALOG DOCUMENTATION  
REGIONAL EMAP DATABASE  
1993-1994 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  
1993-1994 New York/New Jersey Harbor System  
Sediment Analyte Concentrations by Site

1.2 Author of the Catalog entry

Melissa Hughes, OAO Corporation

1.3 Catalog revision date

6 January 1997

1.4 Data set name

SEDIMENT ANALYTE CONCENTRATIONS

## 1.5 Task Group

Regional Environmental Monitoring and Assessment Program

## 1.6 Data set identification code

223

## 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

Ms. Darvene A. Adams  
U.S. Environmental Protection Agency - Region II

### 2.2. Investigation Participant

Mr. Joel S. O'Connor  
U.S. Environmental Protection Agency - Region II

## 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 sulfides (AVS)/Simultaneously Extracted Metals (SEM).

### 3.2 Keywords for the Data Set

sediment contaminants, inorganics, organics, AVS/SEM, 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 Bight Apex 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 sediment 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

July 1993

July 1994

#### 5.1.4 Sampling End Date

September 1993

September 1994

#### 5.1.5 Platform

Sampling was conducted from two U.S. EPA research vessels, the R/V CLEAN WATERS and OSV PETER W. ANDERSON.

#### 5.1.6 Sampling Gear

A 0.04-m<sup>2</sup> or 0.1-m<sup>2</sup>, stainless steel, Young-modified Van Veen Grab sampler was used to collect sediment grabs.

This grab sampled an area of 440 cm<sup>2</sup> 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, D.A., J.S. O'Connor and S.B. Weisberg. 1996. Sediment Quality of the NY/NJ Harbor System. Draft Final Report. U.S. Environmental Protection Agency-Region 2. Edison, NJ. October 1996.

#### 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 20 PCB congeners - Total PCBs (for analysis only)  
Sum of 23 individual PAHs - Total PAHs (for analysis only)  
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 SAS Name	Data Type	Len	Format	Parameter Label
1	STATION	Char	10	\$10.	Station Identifier
2	ANALYTE	Char	8	\$10.	Chemical Analyte Code
4	CHMUNITS	Char	40	\$26.	Unit of Measure
3	CONC	Num	8	10.2	Concentration of Analyte in Sample
5	EVNTDATE	Num	8	DATE7.	Date of Sampling

#### 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

OBS	ANALYTE	MINIMUM
1	ACENTHE	0.0
2	ACENTHY	0.0
3	AG	0.0
4	AG_RECOV	0.0
5	AL	7084.0
6	ALDRIN	0.0
7	ALPHACHL	0.0
8	AL_RECOV	404.0
9	ANTHRA	0.0
10	AS	0.0
11	AS_RECOV	0.0
12	AVS_MM	0.0
13	BENANTH	0.0
14	BENAPY	0.0
15	BENEPY	0.0
16	BENZOFL	10.0
17	BENZOP	0.0
18	BIPHENYL	0.0
19	CD	0.0
20	CD_RECOV	0.0
21	CHL_TOTC	0.0
22	CHRYSENE	0.0
23	CLOSTR	0.0
24	CR	5.6
25	CR_RECOV	3.0
26	CU	0.0
27	CU_RECOV	0.0
28	DBT	0.0
29	DDT_TOT	0.0
30	DIBENZ	0.0
31	DIELDRIN	0.0
32	DIMETH	0.0
33	ENDRIN	0.0

## 7.1.7 Minimum value in data set, continued

OBS	ANALYTE	MINIMUM
34	FE	3532.0
35	FE_RECOV	1110.0
36	FLUORANT	0.0
37	FLUORENE	0.0
38	HEPTACHL	0.0
39	HEPTAEPO	0.0
40	HEXACHL	0.0
41	HG	0.0
42	HG_RECOV	0.0
43	INDENO	0.0
44	LINDANE	0.0
45	MBT	0.0
46	MENAP1	0.0
47	MENAP2	0.0
48	MEPHEN1	0.0
49	MIREX	0.0
50	MN	65.0
51	MN_RECOV	11.0
52	NAPH	0.00
53	NI	1.32
54	NI_RECOV	0.00
55	OPDDD	0.00
56	OPDDE	0.00
57	OPDDT	0.00
58	PB	5.78
59	PB_RECOV	0.00
60	PCB101	0.00
61	PCB105	0.00
62	PCB11077	0.00
63	PCB118	0.00
64	PCB126	0.00
65	PCB128	0.00
66	PCB138	0.00
67	PCB153	0.00
68	PCB170	0.00
69	PCB18	0.00
70	PCB180	0.00
71	PCB187	0.00
72	PCB195	0.00
73	PCB206	0.00
74	PCB209	0.00
75	PCB28	0.00
76	PCB44	0.00
77	PCB52	0.00
78	PCB66	0.00
79	PCB8	0.00
80	PERYLENE	0.00
81	PHENANTH	0.00
82	PPDDD	0.00
83	PPDDE	0.00
84	PPDDT	0.00
85	PYRENE	0.00
86	SB	0.00
87	SB_RECOV	0.00

## 7.1.7 Minimum value in data set, continued

OBS	ANALYTE	MINIMUM
88	SE	0.00
89	SEM_CD	0.00
90	SEM_CD_M	0.00
91	SEM_CU	0.00
92	SEM_CU_M	0.00
93	SEM_HG	0.00
94	SEM_HG_M	0.00
95	SEM_NI	0.00
96	SEM_NI_M	0.00
97	SEM_PB	0.00
98	SEM_PB_M	0.00
99	SEM_ZN	0.00
100	SEM_ZN_M	0.00
101	SE_RECOV	0.00
102	SI	168410.00
103	SN	0.10
104	TBT	0
105	TETBT	0
106	TNONCHL	0
107	TOC	525
108	TRI235	0
109	ZN	11
110	ZN_RECOV	0

## 7.1.8 Maximum value in Data Set

OBS	ANALYTE	MAXIMUM
1	ACENTHE	5400.00
2	ACENTHY	3000.00
3	AG	5.61
4	AG_RECOV	12.00
5	AL	86100.00
6	ALDRIN	5.73
7	ALPHACHL	144.42
8	AL_RECOV	56000.00
9	ANTHRA	18000.00
10	AS	114.08
11	AS_RECOV	118.00
12	AVS_MM	389.86
13	BENANTH	6900.00
14	BENAPY	7500.00
15	BENEPY	4100.00
16	BENZOFI	10100.00
17	BENZOP	5600.00
18	BIPHENYL	900.00
19	CD	12.90
20	CD_RECOV	7.75
21	CHL_TOTC	384.91
22	CHRYSENE	9200.00
23	CLOSTR	89000.00
24	CR	244.00
25	CR_RECOV	214.00
26	CU	1028.50

## 7.1.8 Maximum value in Data Set, continued

OBS	ANALYTE	MAXIMUM
27	CU_RECOV	561.00
28	DBT	129.60
29	DDT_TOT	1325.70
30	DIBENZ	2400.00
31	DIELDRIN	6.67
32	DIMETH	6200.00
33	ENDRIN	24.79
34	FE	52900.00
35	FE_RECOV	77700.00
36	FLUORANT	21000.00
37	FLUORENE	15000.00
38	HEPTACHL	4.13
39	HEPTAEPO	2.26
40	HEXACHL	25.26
41	HG	6.70
42	HG_RECOV	5.91
43	INDENO	6500.00
44	LINDANE	6.54
45	MBT	69.00
46	MENAP1	1900.00
47	MENAP2	3300.00
48	MEPHEN1	6300.00
49	MIREX	134.95
50	MN	2447.00
51	MN_RECOV	1690.00
52	NAPH	8300.00
53	NI	180.80
54	NI_RECOV	223.00
55	OPDDD	90.81
56	OPDDE	88.30
57	OPDDT	14.22
58	PB	650.70
59	PB_RECOV	423.00
60	PCB101	156.64
61	PCB105	55.33
62	PCB11077	416.76
63	PCB118	139.87
64	PCB126	33.82
65	PCB128	26.53
66	PCB138	247.62
67	PCB153	388.69
68	PCB170	281.06
69	PCB18	61.84
70	PCB180	287.37
71	PCB187	141.42
72	PCB195	31.40
73	PCB206	10.20
74	PCB209	30.99
75	PCB28	178.96
76	PCB44	99.77
77	PCB52	151.73
78	PCB66	161.09
79	PCB8	27.14
80	PERYLENE	8100.00

7.1.8 Maximum value in Data Set, continued

OBS	ANALYTE	MAXIMUM
81	PHENANTH	43000.00
82	PPDDD	568.40
83	PPDDE	213.50
84	PPDDT	769.60
85	PYRENE	17000.00
86	SB	36.10
87	SB_RECOV	8.00
88	SE	38.10
89	SEM_CD	6.07
90	SEM_CD_M	0.05
91	SEM_CU	141.00
92	SEM_CU_M	2.22
93	SEM_HG	0.00
94	SEM_HG_M	0.00
95	SEM_NI	21.70
96	SEM_NI_M	0.37
97	SEM_PB	520.00
98	SEM_PB_M	2.51
99	SEM_ZN	849.90
100	SEM_ZN_M	13.00
101	SE_RECOV	16.00
102	SI	480000.00
103	SN	72.74
104	TBT	289.80
105	TETBT	62.00
106	TNONCHL	55.33
107	TOC	152000.00
108	TRI235	4900.00
109	ZN	1278.00
110	ZN_RECOV	592.00

7.2 Data Record Example

7.2.1 Column Names for Example Records

STATION EVNTDATE ANALYTE CONC CHMUNITS

7.2.2 Example Data Records

OBS	STATION	EVNTDATE	ANALYTE	CONC	CHMUNITS
1	BA002	03OCT93	ACENTHE	0.00	ppb
2	BA002	03OCT93	ACENTHY	0.00	ppb
3	BA002	03OCT93	AG	0.17	ppm
4	BA002	03OCT93	AG_RECOV	0.00	ppm
5	BA002	03OCT93	AL	26522.00	ppm
6	BA002	03OCT93	ALDRIN	0.00	ppb
7	BA002	03OCT93	ALPHACHL	0.03	ppb
8	BA002	03OCT93	AL_RECOV	1560.00	ppm
9	BA002	03OCT93	ANTHRA	0.00	ppb
10	BA002	03OCT93	AS	7.62	ppm

## 8. GEOGRAPHIC AND SPATIAL INFORMATION

### 8.1 Minimum Longitude

-74 Degrees 16 Minutes 17.76 Decimal Seconds

### 8.2 Maximum Longitude

-73 Degrees 21 Minutes 0.72 Decimal Seconds

### 8.3 Minimum Latitude

40 Degrees 10 Minutes 35.00 Decimal Seconds

### 8.4 Maximum Latitude

41 Degrees 4 Minutes 53.22 Decimal Seconds

### 8.5 Name of area or region

New York/New Jersey Harbor System

Six sub-basins were sampled in the New York/New Jersey Harbor, including: Upper Harbor, Newark Bay, Lower Harbor (includes Raritan and Sandy Hook Bays), Jamaica Bay, western Long Island Sound and the New York Bight Apex. 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. The New York Bight Apex is defined as the area of ocean bounded on the northwest by the transect from Sandy Hook, NJ to Rockaway Point, NY, the east by 73 deg 30' W longitude and the south by 40 deg. 10'N latitude. The eastern boundary of the western Long Island Sound sub-basin is 73 deg 24' W longitude (from Eaton's Neck Point, NY to Norwalk, CT).

## 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.

### 9.4 Unassessed Errors

NA

## 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

Ms. Darvene A. Adams  
U.S. EPA Region II

### 10.4 Data Set Format

NA

### 10.5 Information Concerning Anonymous FTP

Data cannot be accessed via ftp.

### 10.6 Information Concerning Gopher and 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.A. and M. Hunt. 1993. Quality Assurance Project Plan for Environmental Monitoring Projects, "Sediment Quality of the NY/NJ Harbor." U.S. Environmental Protection Agency-Region 2. Edison, NJ.

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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

13. PERSONNEL INFORMATION

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