

US EPA ARCHIVE DOCUMENT

CATALOG DOCUMENTATION  
REGIONAL ENVIRONMENTAL MONITORING AND ASSESSMENT PROGRAM - REGION 1  
1993-1994 FISH TISSUE CONTAMINATION IN MAINE LAKES  
FISH TISSUE METAL CONCENTRATIONS BY LAKE DATA

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1. DATA SET IDENTIFICATION

1.1 Title of Catalog document

Regional Environmental Monitoring and Assessment Program - Region 1  
1993-94 Fish Tissue Contamination in Maine Lakes  
Fish Tissue Metal Concentrations by Lake Data Set

1.2 Author of the Catalog entry

Melissa Hughes, OAO Corporation

1.3 Catalog revision date

12 March 1998

1.4 Data set name

ALFISHME

1.5 Task Group

Region 1

1.6 Data set identification code

000012

## 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 Regional EMAP 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 Investigators

Barry Mower  
Jeanne DiFranco  
Linda Bacon  
David Courtemanch  
State of Maine Department of Environmental Protection

### 2.2 Investigation Participant-Sample Collection

Not applicable

## 3. DATA SET ABSTRACT

### 3.1 Abstract of the Data Set

The R-EMAP Region 1 Fish Tissue Metal Concentrations by Lake data set presents the results of chemical analyses on all composites of fish tissue collected from each lake. Lead, cadmium and mercury results are reported for the following composites: predator whole fish, predator fillet and omnivore whole fish. Quality assurance issues are flagged.

### 3.2 Keywords for the Data Set

Lake, Maine, fish, fish tissue, mercury, lead, cadmium

## 4. OBJECTIVES AND INTRODUCTION

### 4.1 Program and Project Objectives

#### 4.1.1 Program Objective

Regional Environmental Assessment and Monitoring Program (R-EMAP) was initiated to test the applicability of the EMAP approach to answer questions about ecological conditions at regional and local scales. Using EMAP's statistical design and indicator concepts, R-EMAP conducts projects at smaller geographic scales and in shorter time frames.

#### 4.1.2 Project Objective

The primary goal of this study was to estimate the levels of contamination in fish populations, and the risk these levels pose to human and wildlife consumers. The primary objective was to determine concentrations of cadmium, lead, mercury, PCBs and selected pesticides in fish collected from Maine lakes.

#### 4.2 Data Set Objective

Inorganic compound concentrations from fish tissue homogenates are presented to characterize the relationships among the following factors: fish community and age structure, trophic level and contaminant distribution.

#### 4.3 Data Set Background Discussion

Because high levels of contaminants have been found in Maine fish since the early 1970's, studies were begun to assess the relationship of these findings to low bald eagle reproduction rates. These studies revealed high mercury and polychlorinated biphenyls (PCBs) levels in nesting eaglets, while studies in other states have continued to report high levels of these and other contaminants in fish. These findings led the Maine DEP to initiate this study to measure levels of contamination in fish populations in the State's lakes and ponds, in order to determine the potential risks to both ecological and human health.

#### 4.4 Summary of Data Set Parameters

The concentration of three inorganic compounds (lead, cadmium and mercury) are presented for each fish tissue composite; Quality Assurance problems are flagged, as necessary.

### 5. DATA ACQUISITION AND PROCESSING METHODS

#### 5.1 Data Acquisition

##### 5.1.1 Sampling Objective

Target fish specimen collection based on size, trophic level, distribution and desirability as game fish.

##### 5.1.2 Sample Collection Methods Summary

Fish were collected by various methods to accumulate ten predators and five omnivores of the same species from each lake. Samples were extracted for age analysis. Fish were rinsed in lake water, and wrapped in aluminum foil and kept on ice in a cooler.

##### 5.1.3 Sampling Start Date

June 1993  
September 1994

##### 5.1.4 Sampling End Date

September 1993  
September 1994

##### 5.1.5 Platform

Not applicable.

##### 5.1.6 Sampling Equipment

fishing rods, gill nets, trap nets, dip nets and beach seines

##### 5.1.7 Manufacturer of Sampling Equipment

Not known



7.1 Description of Parameters, continued

#	Parameter SAS Name	Data Type	Len	Format	Parameter Label
11	CD_PPM1	Num	8	9.3	Cadmium (ppm) in predator whole fish composite
12	CDQ1	Char	5	\$5.	Flag for cadmium (ppm) in predator whole fish composite
13	PB_PPM1	Num	8	9.3	Lead (ppm) in predator whole fish composite
14	PBQ1	Char	5	\$5.	Flag for lead (ppm) in predator whole fish composite
15	SP3	Char	5	\$5.	Omnivore whole fish species
16	NUM3	Num	8	5.	Omnivore whole fish composite (# fish)
17	HG_WH2	Num	8	8.3	Mercury (ppm) in omnivore whole fish composite
18	HGQ2	Char	6	\$6.	Flag for mercury (ppm) in omnivore whole fish composite
19	CD_PPM2	Num	8	10.3	Cadmium (ppm) in omnivore whole fish composite
20	CDQ2	Char	6	\$6.	Flag for cadmium (ppm) in omnivore whole fish composite
21	PB_PPM2	Num	8	9.3	Lead (ppm) in omnivore whole fish composite
22	PBQ2	Char	8	\$8.	Flag for lead (ppm) in omnivore whole fish composite

7.1.6 Precision to which values are reported

Data were reported to the number of decimal places noted in 7.1.

7.1.7 Minimum values in data set

Variable	Minimum
NUM1	0
HG_FIL	0.02
NUM2	0
HG_WH1	0.064
CD_PPM1	0.010
PB_PPM1	0.020
NUM3	0
HG_WH2	0.002
CD_PPM2	0.009
PB_PPM2	0.027

7.1.8 Maximum values in data set

Variable	Maximum
NUM1	5
HG_FIL	2.50
NUM2	5
HG_WH1	1.800
CD_PPM1	0.240
PB_PPM1	0.310
NUM3	5
HG_WH2	1.200
CD_PPM2	0.600
PB_PPM2	0.640

## 7.2 Data Record Example

### 7.2.1 Column Names for Example Records

LAKE;TOWN;MIDAS;SP1;NUM1;HG\_FIL;SP2;NUM2;HG\_WH1;HGQ1;CD\_PPM1;CDQ1;PB\_PPM1;PBQ1 ;  
SP3;NUM3;HG\_WH2;HGQ2;CD\_PPM2;CDQ2;PB\_PPM2;PBQ2;

### 7.2.2 Example Data Records

LAKE;TOWN;MIDAS;SP1;NUM1;HG\_FIL;SP2;NUM2;HG\_WH1;HGQ1;CD\_PPM1;CDQ1;PB\_PPM1;PBQ1 ;SP3;  
NUM3;HG\_WH2;HGQ2;CD\_PPM2;CDQ2;PB\_PPM2;PBQ2;  
BRANCH P (UPPER MID);AURORA AURORA AURORA;4492;LLS;3;0.43;LLS;3;0.320; ;0.022; ;  
0.023; ;WHS;5;0.150; ;0.140; ;0.077; ;  
SANDY RIVER P (MID);SANDY RIVER PLT;3566;BKT;5;0.37;BKT;5;0.330; ;0.024; ;0.024; ;  
WHS;5;0.120; ;0.039; ;0.058; ;  
SYMMES P;NEWFIELD;3892;YLP;5;0.18;YLP;5;0.210; ;0.019;ND;0.100; ; ;0;9.999; ;  
9.999; ;9.999; ;  
BRACKETT L;WESTON;1068;SMB;5;0.31;SMB;5;0.260; ;0.028; ;0.050; ;WHS;5;0.083; ;  
0.082; ;0.160; ;  
OTTER P;PARMACHENEE TWP;3972;BKT;3;0.13;BKT;3;0.390; ;0.019;ND;0.045; ;WHS;5;  
0.590; ;0.019;ND;0.170; ;

## 8. GEOGRAPHIC AND SPATIAL INFORMATION

### 8.1 Minimum Longitude

-71 Degrees 00 Minutes 47 Decimal Seconds

### 8.2 Maximum Longitude

-67 Degrees 10 Minutes 30 Decimal Seconds

### 8.3 Minimum Latitude

43 Degrees 15 Minutes 21 Decimal Seconds

### 8.4 Maximum Latitude

47 Degrees 07 Minutes 11 Decimal Seconds

### 8.5 Name of area or region

EPA Region 1

The sampling area included the entire state of Maine.

## 9. QUALITY CONTROL AND QUALITY ASSURANCE

### 9.1 Data Quality Objectives

The data quality objective was to have less than 50% relative percent difference for all split samples.

### 9.2 Data Quality Assurance Procedures

The following is a list of QA samples analyzed: split samples between laboratories and duplicate, spiked and reference samples analyzed in one laboratory. These procedures are detailed in the documents listed under 11. REFERENCES.

## 10. DATA ACCESS

### 10.1 Data Access Procedures

Data can be downloaded from the WWW site or contact personnel listed in Section 10.3.

### 10.2 Data Access Restrictions

Not Applicable

### 10.3 Data Access Contact Persons

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### 10.4 Data Set Format

Data files are in ASCII semi-colon delimited format.

### 10.5 Information Concerning Anonymous FTP

Data cannot be accessed via ftp.

### 10.6 Information Concerning WWW

Data can be downloaded from the WWW site.

### 10.7 EMAP CD-ROM Containing the Data Set

Data are not available on CD-ROM

## 11. REFERENCES

DiFranco et. al., 1995. Fish Tissue Contamination in Maine Lakes. Data Report. State of Maine Department of Environmental Protection, Bureau of Land and Water Quality, Division of Environmental Assessment. September 1995.

Maine Department of Environmental Protection et. al., 1993. Project Work/Quality Assurance Plan, Fish Tissue Contamination in the State of Maine. Maine Department of Environmental Protection, Maine Department of Inland Fisheries and Wildlife and U.S. EPA Region 1 Environmental Services Division. December 20, 1993.

## 12. TABLE OF ACRONYMS

ACRONYM	DESCRIPTION
DEP	Maine Department of Environmental Protection
DIFW	Maine Department of Inland Fisheries and Wildlife



EMAP Environmental Monitoring and Assessment Program  
EPA Environmental Protection Agency  
HetL Maine Department of Human Services Health and Environmental  
Testing Laboratory  
MIDAS Maine Information Display Analysis System - unique number  
assigned to each Maine lake  
PCBs polychlorinated biphenyls  
QA Quality Assurance  
QA/QC Quality Assurance/Quality Control  
REMAP Regional Environmental Monitoring and Assessment Program  
UMO National Biological Survey and Sawyer Environmental Chemistry  
Laboratories at the University of Maine at Orono

13. PERSONNEL INFORMATION

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