

US EPA ARCHIVE DOCUMENT

CATALOG DOCUMENTATION  
REGIONAL ENVIRONMENTAL MONITORING AND ASSESSMENT PROGRAM - REGION 1  
1993-1994 FISH TISSUE CONTAMINATION IN MAINE LAKES  
LAKE TOTAL PHOSPHORUS 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  
Lake Total Phosphorus Data Set

1.2 Author of the Catalog entry

Melissa Hughes, OAO Corporation

1.3 Catalog revision date

10 March 1998

1.4 Data set name

PHOS

1.5 Task Group

Region 1

1.6 Data set identification code

00007

## 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 Lake Total Phosphorus data set presents total phosphorus concentrations measured from water samples taken at three depths in the water column. This is a factor that may affect a fish's or lake's sensitivity to contamination.

### 3.2 Keywords for the Data Set

Lake, Maine, water column, total phosphorus

## 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

The objective of this data set is to characterize total phosphorus concentrations in each lake: in the epilimnion, at the top of the hypolimnion layers and at the bottom waters of a lake.

#### 4.3 Data Set Background Discussion

From a population of 1800 Maine lakes that have been surveyed by the Maine DIFW and have principal fisheries, one hundred and fifty lakes were selected using the EMAP sampling design and 125 were sampled. Correlations with factors that may affect a fish's or lake's sensitivity to contamination will be examined secondarily. These factors include species, size, age, geography, geology, water and sediment chemistry, hydrology, trophic state and air flow patterns. The results will be used to develop preventive actions and management techniques.

#### 4.4 Summary of Data Set Parameters

Total phosphorus was measured in water samples collected at three depths in each lake.

### 5. DATA ACQUISITION AND PROCESSING METHODS

#### 5.1 Data Acquisition

##### 5.1.1 Sampling Objective

Collect a water sample at three depths for total phosphorus.

##### 5.1.2 Sample Collection Methods Summary

DIFW bathymetric maps were used to determine the deepest part of each lake. Water samples were collected from this point. Kemmerer or Van Dorn water bottles were used to collect water samples. Water samples were collected from a core of the epilimnion, at the top of the hypolimnion (in stratified lakes) and at one meter above the bottom. The epilimnetic core was taken using a ten meter section of Tygon tubing (1/2-5/8 inch diameter). After collection, samples were placed in a cooler on ice.

##### 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

Kemmerer or Van Dorn water bottles  
Tygon tubing

##### 5.1.7 Manufacturer of Sampling Equipment

Not known



## 7.1.7 Minimum values in data set

Variable	Minimum
DEPTH	0
TP_PPM	0.001

## 7.1.8 Maximum values in data set

Variable	Maximum
DEPTH	95.0
TP_PPM	0.280

## 7.2 Data Record Example

## 7.2.1 Column Names for Example Records

LAKE;MIDAS;SAMPDATE;DEPTH;TP\_PPM;TYPE;REP;

## 7.2.2 Example Data Records

LAKE;MIDAS;SAMPDATE;DEPTH;TP\_PPM;TYPE;REP;  
 BLAN;0000;08/30/93;0.0;0.001;BK; ;  
 BLAN;0000;08/30/93;6.0;0.002;BK; ;  
 CARL;0041;08/11/93;1.0;0.038;EC; ;  
 CARL;0041;08/11/93;1.0;0.032;SG; ;  
 EMBD;0078;08/17/93;9.0;0.004;EC; ;

## 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 for aqueous samples was to have no more than a 30% relative percent difference.

## 9.2 Data Quality Assurance Procedures

Collection of one set of field duplicate samples for each region ensured that duplicates were collected from a minimum of 5% of the project lakes for all parameters sampled, as required in the Project Work/QA Plan.

A sample duplicate is a second sample obtained following the same procedures as for the first sample. It provides information on the homogeneity of the matrix and the consistency with which samples are collected, preserved and analyzed.

Duplicates were assigned unique identification numbers for use in laboratory analyses. Pre-labeled containers were identified as additional samples, not as duplicates, to reduce analytical bias. The duplicate results were not averaged with the sample, but were maintained in the data base as quality control indicators.

Equipment blanks samples were collected for total phosphorus and were noted as such in field records. After routine decontamination of equipment upon completion of sampling a lake, each team submitted one equipment blank for these parameters in the form of the water core tubing.

## 9.3 Quality Assessment Results

All water sample field duplicates met the stated data quality objective with the exception of one calcium sample.

## 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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