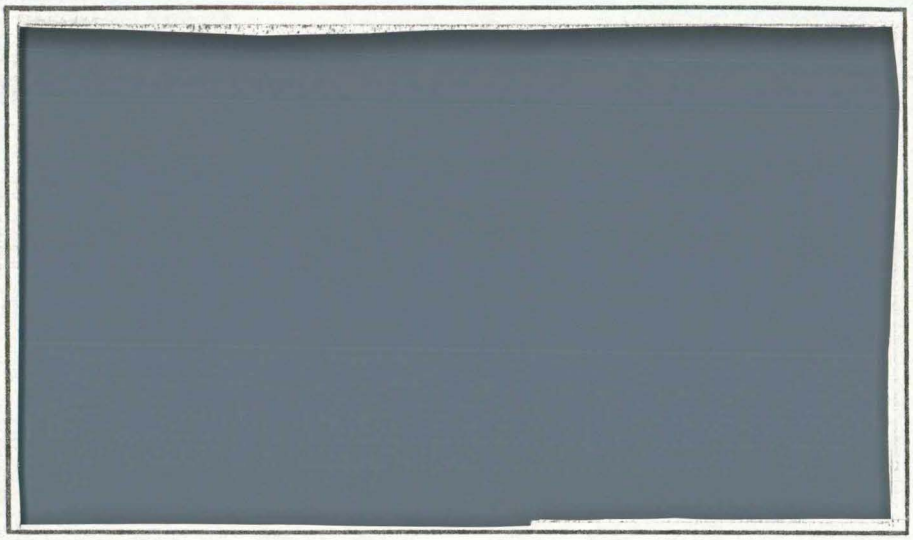

A REPORT FROM

The State Hygienic Laboratory

MEDICAL LABORATORIES BUILDING

THE UNIVERSITY OF IOWA

IOWA CITY, IOWA 52240

MERCURY CONCENTRATIONS IN SURFACE WATERS, PUBLIC WATER SUPPLIES AND CATFISH IN IOWA

#71-27

MERCURY CONCENTRATIONS IN SURFACE WATERS, PUBLIC WATER SUPPLIES AND CATFISH IN IOWA

Submitted to the Iowa Water Pollution Control Commission - 11/5/70

by the
State Hygienic Laboratory
University of Iowa
Iowa City, Iowa

IOWA WATER POLLUTION CONTROL COMMISSION REPORT ON MERCURY (Hg) IN THE IOWA ENVIRONMENT

The recent interest in mercury (Hg) in drinking water and in the edible portion of fish prompted the State Hygienic Laboratory to evaluate this significant quality parameter on a statewide basis.

All values are reported using cold vapor atomic absorption technique after sulfuric acid-permanganate digestion for water samples and sulfuric acid-nitric acid predigestion followed by nitric-perchloric digestion for fish.

TABLE I

MERCURY IN WATER

Date	Lab No.	Source	Type Sample	Mercury (ppb)
6/18/70	6129	Volney	Yellow River (Raw)	<1.0 ppb
6/18/70	6130	Littleport	Volga River (Raw)	<1.0
6/18/70	6131	Garber	Turkey (Raw)	<1.0
6/18/70	6132	Dubuque	Mississippi River (Raw)	<1.0
6/18/70	6133	Lansing	Mississippi River (Raw)	<1.0
6/18/70	6134	Decorah	Upper Iowa River (Raw)	<1.0
6/18/70	6070	Lansing	Mississippi River (Raw)	<1.0
6/18/70	6072	Decorah	Upper Iowa River (Raw)	<1.0
6/18/70	6073	Littleport	Volga River (Raw)	<1.0
6/18/70	6074	Garber	Turkey River (Raw)	<1.0
6/18/70	6075	Volney	Yellow River (Raw)	<1.0
7/17/70	333	Dubuque	Mississippi River (Raw)	<1.0
7/17/70	334	Davenport	Mississippi River (Raw)	<1.0
7/17/70	335	Burlington	Mississippi River (Raw)	<1.0
7/17/70	336	Wapello	Iowa River (Raw)	<1.0
7/17/70	337	DeWitt	Wapsipinicon River (Raw)	<1.0
7/17/70	338	Maquoketa	Maquoketa River (Raw)	<1.0
7/20/70	367	Council Bluffs	Missouri River (Raw)	<1.0
7/20/70	368	Ottumwa	Des Moines River (Raw)	<1.0
7/20/70	369	Keokuk	Des Moines River (Raw)	<1.0
7/20/70	370	Iowa City	Iowa River (Raw)	<1.0
7/20/70	371	Ft Madison	Mississippi River (Raw)	<1.0
7/20/70	372	Keokuk	Mississippi River (Raw)	<1.0

TABLE I Con't

ate	Lab No.	Source	Type Sample	Mercury (ppb)
/17/70	6004	Des Moines	Sewage Treatment Plant, Raw	5.0 ppb
/17/70	6005	Des Moines	Sewage Treatment Plant, Settled	6.0
/17/70	6006	Des Moines	Sewage Treatment Plant, Filtered	5.0
/17/70	6007	Des Moines	Sewage Treatment Plant, Final	4.0
/30/70	6251	Des Moines River		
		Des Moines	Euclid Avenue	1.0
/30/70	6252	Des Moines	Sewage Treatment Plant, Effluent	2.0
/30/70	6253	Des Moines River	Des Moines, IPALCO	1.0
/30/70	6254	Raccoon River	Des Moines Water Works	1.0

TABLE II

MERCURY IN FINISHED WATER

Date	Lab No.	Source	Type Sample	Mercury (ppb)
9/8/70	1584	Afton	Impounded Reservoir	<1.0 ppb
9/8/70	1579	Albia	Reservoir	<1.0
9/5/70	1509	Allerton	Reservoir	<1.0
9/8/70	1575	Arnolds Park	W Lake Okoboji	<1.0
9/9/70	1622	Bedford	Imp Res & 102 River	<1.0
9/8/70	1580	Bloomfield	Lake Fisher (Imp)	<1.0
9/8/70	1624	Burlington	Mississippi River	<1.0
9/8/70	1636	Centerville	Imp Res	<1.0
9/8/70	1571	Chariton	Lake Morris (Imp)	<1.0
9/18/70	1771	Clarinda	Nodaway River	<1.0
9/8/70	1581	Corning	Imp Res	2.0
9/8/70	1566	Corydon	Imp Res	<1.0
9/8/70	1574	Council Bluffs	Missouri River	1.0
9/5/70	1510	Creston	Imp Res	<1.0
9/8/70	1638	Davenport	Mississippi River	<1.0
9/9/70	1593	Des Moines	Raccoon River	<1.0
9/10/70	1653	Fairfield	Imp Res	<1.0
9/8/70	1578	Greenfield	Nodaway River (Imp)	1.0
9/8/70	1651	Humeston	Imp Res	<1.0
9/11/70	1710	Iowa City	Iowa River	<1.0
9/8/70	1582	Keokuk	Mississippi River	<1.0
9/9/70	1621	Lake Park	Silver Lake	<1.0
9/8/70	1637	Lamoni	Imp Res	<1.0
9/9/70	1626	Lenox	Impounded Reservoir	<1.0
9/8/70	1573	Milford	W Lake Okoboji	1.0
9/9/70	1625	Montezuma	Impounded Reservoir	<1.0
9/15/70	1752	Mt Ayr	Impounded Reservoir	<1.0
9/8/70	1583	Okoboji	W Lake Okoboji	2.0
9/8/70	1572	Osceola	Impounded Reservoir	<1.0
9/8/70	1570	Ottumwa	Des Moines River	<1.0
9/9/70	1623	Panora	Raccoon River	<1.0
9/8/70	1577	Seymour	Impounded Reservoir	<1.0
9/14/70	1717	Spirit Lake	Big Spirit Lake	<1.0
9/8/70	1569	Winterset	Impounded Reservoir	<1.0
8/24/70	1173	Clear Lake	Clear Lake	<1.0

TABLE III

MERCURY IN FISH - CATFISH COMPOSITE

Date	Lab No.	Type	Source	Mercury ppm
10/8/70	1656 (F-8)	Rochester	Cedar River	0.19 ppm
10/8/70	1657 (F-21)	Clarinda	Nodaway River	0.20
10/8/70	58 (F-22)	Davis	E Grande River	0.06
10/8/70	59 (F-20)	Garber	Turkey River	0.12
10/8/70	1660 (F-23)	Mt Vernon	Cedar River	0.24
10/8/70	61 (F-10)	Muscatine	Mississippi River	0.10
10/8/70	62 (F-15)	Red Rock Res	Des Moines River	0.27
10/8/70	63 (F-18)	Sioux City	Missouri River	0.04
10/8/70	64 (F-11)	Burlington	Mississippi River	0.13
10/8/70	65 (F-9)	Dubuque	Mississippi River	0.08
10/8/70	66 (F-16)	Sioux City	Big Sioux River	0.06
10/8/70	67 (F-17)	Correctionville	Little Sioux River	0.07
10/8/70	68 (F-4)	Below Coralville Dam	Iowa River	0.38
10/8/70	1669 (F-6)	Coralville Res	Iowa River	0.31
10/8/70	1905 (F-24)	Allerton	Lake Allerton	0.05
10/8/70	06 (F-25)	Rathbun Res	Chariton River	0.25
10/8/70	07 (F-26)	Oakland Mills	Skunk River	0.11
10/8/70	08 (F-27)	Maquoketa	Maquoketa River	0.25
10/8/70	09 (F-28)	Elkader	Turkey River	0.33
10/8/70	1910 (F-29)	Wheatland	Wapsipinicon River	0.10
10/8/70	11 (F-30)	Independence	Wapsipinicon River	0.12
10/8/70	12 (F-31)	Solon	Lake McBride	0.18
10/8/70	13 (F-32)	Solon	Lake McBride	0.12
10/8/70	1914 (F-33)	Loveland	Boyer River	0.08

To date, all values on surface waters either raw or finished have been well within the prescribed limits set by the United States Public Health Service for drinking water and the Food and Drug Administration for the edible portion of fish.

Maximum permissible concentrations of mercury are five (5) parts per billion in drinking water (USPHS) and 0.5 parts per million in the edible portion of fish (FDA).

We are continuing our mercury studies with special attention to specific areas where mercury is used such as university areas where this element is used in laboratory work. We also will be investigating bottom sludges, water, fish and digester sludges in an area where mercury has been used in an industrial process.

Mercury in pheasants and ducks are also being studied and will be reported in a subsequent release.

In summary, a considerable number of environmental specimens have been investigated for mercury content and no values exceeding recommended maximum levels have been found.

R L Morris

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Associate Director
11/4/70

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