ATTACHMENT B

MINNESOTA POLLUTION CONTROL AGENCY
Division of Water Quality
May 20, 1975

Status Memorandum on Polychlorinated Biphenyl Problem in the Mississippi River

Introduction

Polychlorinated biphenyls (PCB's) have been used in the United States and elsewhere over the past 40 years. The principal uses for PCB fluids are in the electrical industry. Because of their dielectric properties, they are widely used in various products such as capacitors and transformers where insulation or superior cooling is needed.

Another large use of PCB's had been in carbonless duplicating paper. This use has been discontinued. There is a strong suspicion that PCB's may be contained within inks used in the printing industry.

Recently, adequate data has been accumulated which indicates that PCB's are now widely dispersed throughout the environment.

PCB's are synthetic (man-made) chemicals which do not occur naturally within the environment. Monsanto Corporation, St. Louis, Missouri is the sole manufacturer of PCB's. It is reported that Monsanto has voluntarily taken actions to reduce the production of PCB and to limit its distribution to industries.

Wrong

Toxicology

Studies have been completed that demonstrate accumulation factors of up to 75,000 in whole organisms. This concept deplicts the uptake of PCB

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residues from extremely low environmental concentrations. PCB's like many of the organic insecticides, are fat soluble, and are stored in the lipids of animals. Like insecticides, they are chemically stable, and tend to be concentrated (to an extent) at exceedingly higher levels as they pass through the various members of the food chain.

Current Situation

May 7, 1975

The staff was contacted on May 7, 1975 by the U.S. Food and Drug Administration regarding their confiscation of a shipment of carp from a commercial fisherman from Wisconsin. The fish were taken from Lake Pepin and the flesh when analyzed by the Food and Drug Administration from selected samples exceeded the FDA "Action Limit" of 5 ppm PCB. An estimated 20,000 pounds of carp filets were disposed of due to these concentrations of PCB. Because of the action by the Food and Drug Administration as well as a study completed by the Wisconsin Department of Natural Resources on concentrations of PCB within fish flesh, the staff felt that considerable effort should be implemented to find the source of these compounds within the Mississippi River. The following data summary of the Wisconsin study illustrates the levels of PCB found within selected fish from the Mississippi River.

River Mile - 811 (Below Hastings, Mn.)

No.	Species	Average PCB level	Median PCB level
4	Walleye (1970)	30.1 ppm	28.1 ppm
5	Walleye (1973)	9.0 ppm	9.0 ppm
7	Carp (1970)	12.8 ppm	10.7 ppm
8	Carp (1973)	8.4 ppm	8.1 ppm

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River Mile - 765 (At Pepin, Wisconsin)

No.	Species	Average PCB level	Median PCB level
13	Walleye (1970)	32.4 ppm	25.4 ppm

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River Mile - 765 (At Pepin, Wisconsin) cont.

No.	Species	Average PCB level	Median PCB level
7	Walleye (1973)	21.8 ppm	25.4 ppm
5	Carp (1970)	16.2 ppm	16.7 ppm
7	Carp (1973)	7.7 ppm	7.4 ppm

River Mile - 758 (At Wabasha, Mn.)

No.	Species	Average PCB level	Median PCB level
5	Walleye (1970)	7.7 ppm	8.6 ppm
5	Walleye (1973)	5.9 ppm	5.8 ppm
5	Carp (1970)	31.7 ppm	34.8 ppm
7	Carp (1973)	7.8 ppm	8.0 ppm

After looking at the above data, attention is warranted to the median values which more accurately reflect the concentrations that could be expected to be found within the flesh. It is apparent that a significant reduction in the levels of PCB's has occurred during the period from 1970 to 1973 except for walleyes at River Mile - 765 (Lake Pepin) and 758 (Lake Pepin). The Wisconsin study is in disagreement with work completed by the Minnesota Department of Natural Resources from the same reach of the Mississippi River. With this in mind the staff felt that additional studies should be completed to delineate whether the concentrations within the fish have in fact gone up or have decreased or remained the same.

May 16, 1975

Because of the problem indicated previously regarding the Wisconsin and Minnesota Department of Natural Resources studies on the concentrations of PCB's within the fish of the Mississippi River the staff felt that additional fish should be collected from the river and analyzed for PCB levels. With this in mind, fish were collected by the Lake City Area District of the Department of Natural Resources on the 16th of

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May. A total of 25 fish were collected and fileted with three separate samples being obtained from each filet. Plans have been made to split the filet samples between the following three laboratories: Minnesota Department of Health, Minnesota Department of Natural Resources, and U.S. EPA Central Regional Laboratory, Chicago. will conc. [illegible] in fish body. So SPLIT will not have to acct. . .

Also on the 16th the staff received the latest update of water quality data for PCB's in the Mississippi River from the routine monitoring program. Following is the data from those stations that we currently have on file.

Date	Station	Concentration
3-18-75	UM-840 (Below Wabasha St. Bridge)	25.5 ppb
3-18-75	UM-826 (Above Grey Cloud Island)	35.4 ppb
3-18-75	UM-815 (Lock & Dam #2, Hastings)	20.1 ppb
3-5-75	UM-738 (Lock & Dam #5)	8.1 ppb
3-5-75	UM-698 (Bridge on U.S. 14, LaCrosse)	11.4 ppb
4-2-75	UM-738 (Lock & Dam #5)	6.8 ppb
4-2-75	UM-698 (Bridge, etc.)	12.2 ppb

It should be pointed out that these concentrations are the highest values that the staff has observed in any surface water of the state to this date. Because these values are exceedingly high for surface waters the staff recognized the seriousness of the situation and felt that a more extensive sampling of the river should take place with possible split samples being sent to the U.S. EPA Central Regional Laboratory to ascertain the confirmation as to the presence of these levels of PCB's.

May 19, 1975

Due to the serious nature of this problem, the staff felt that all interested parties should be brought together to discuss all aspects of this particular problem. With this in mind the staff has scheduled a meeting for Friday, May 23 at the Agency at 10:00 a.m. The meeting will involve state agencies from both Minnesota and Wisconsin and federal agencies

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River Mile - 765 (At Pepin, Wisconsin) cont.

No.	Species	Average PCB level	Median PCB level
7	Walleye (1973)	21.8 ppm	25.4 ppm
5	Carp (1970)	16.2 ppm	16.7 ppm
7	Carp (1973)	7.7 ppm	7.4 ppm

River Mile - 758 (At Wabasha, Mn.)

No.	Species	Average PCB level	Median PCB level
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After looking at the above data, attention is warranted to the median values which more accurately reflect the concentrations that could be expected to be found within the flesh. It is apparent that a significant reduction in the levels of PCB's has occurred during the period from 1970 to 1973 except for walleyes at River Mile - 765 (Lake Pepin) and 758 (Lake Pepin). The Wisconsin study is in disagreement with work completed by the Minnesota Department of Natural Resources from the same reach of the Mississippi River. With this in mind the staff felt that additional studies should be completed to delineate whether the concentrations within the fish have in fact gone up or have decreased or remained the same.

May 16, 1975

Because of the problem indicated previously regarding the Wisconsin and Minnesota Department of Natural Resources studies on the concentrations of PCB's within the fish of the Mississippi River the staff felt that additional fish should be collected from the river and analyzed for PCB levels. With this in mind, fish were collected by the Lake City Area District of the Department of Natural Resources on the 16th of

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that also have an interest in this matter.

It is hoped that the following items can be accomplished at this meeting.

1) Present all existing background data on PCB's in the Mississippi River.
2) Discuss proposed additional sampling of the Mississippi River and major tributaries.
3) Discuss possible effluent sources of PCB's to the Mississippi River.

Following this meeting and additional work on this problem to identify the source of the PCB's the staff will present to the Agency Board a complete review of this situation at the June Agency Board meeting.

Joel G. Schilling, Head
Lake Surveys Sub-Unit
Section of Surface & Groundwaters
Division of Water Quality

Attachments

DSW 345888

STATE OF MINNESOTA JGS

DEPARTMENT Pollution Control Agency

Office Memorandum

TO : Barry C. Schade, Assistant Director
Division of Water Quality

DATE: May 12, 1975

FROM : Joel G. Schilling, Head
Lake Survey Sub-Unit

THROUGH: John F. McGuire, P.E.
Chief, Surface & Groundwater Section

SUBJECT: PCB problem in the Mississippi River

The staff has been recently made aware of the fact that the levels of PCB's in fish flesh within the Mississippi River (Lake Pepin) are exceeding the USFDA "Action Limit" of 5 ppm.

Mr. Schilling received a call from Mr. Mike Morehead, U.S. Food and Drug Administration on Wednesday, May 7, 1975 to report that their agency had confiscated a shipment of carp from a commercial fisherman from Wisconsin. The fish were taken from Lake Pepin and the flesh, when analysed from selected samples, exceeded the FDA "Action Limit" of 5 ppm PCB. The specific polychlorinated biphenyl found was Aroclor #1254.

This particular situation presents further concern to the staff in that certain questions on this matter need to be answered very soon. As you may be aware, this was a rather hot item in 1972. Dr. Jere Mossier had done some work on this problem as shown within a memo of April 1, 1972 to the Agency Board. That memo had included a study with an accompanying letter from Wisconsin Department of Natural Resources regarding fish collection and analysis for PCB's from the Mississippi River. The Wisconsin study had indicated high levels of PCB's in the fish taken in 1970 (data revealed levels as much as 10 times the FDA limit of 5 ppm). We have recently received an update (to 1973) to the Wisconsin study which has added to the concern on this matter. The following data summary of Wisconsin study reveals this problem.

River Mile - 811 (Below Hastings, Mn.)

No.	Species	Average PCB level	Median PCB level
4	Walleye (1970)	30.1 ppm	28.1 ppm
5	Walleye (1973)	9.0 ppm	9.0 ppm
7	Carp (1970)	12.8 ppm	10.7 ppm
8	Carp (1973)	8.4 ppm	8.1 ppm

River Mile - 765 (At Pepin, Wisconsin)

No.	Species	Average PCB level	Median PCB level
13	Walleye	32.4 ppm	25.4 ppm
7	Walleye (1973)	21.8 ppm	25.7 ppm
5	Carp (1970)	16.2 ppm	16.7 ppm
7	Carp (1973)	7.7 ppm	7.4 ppm

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River Mile - 758 (At Wabasha, Mn.)

No.	Species	Average PCB level	Median PCB level
3	Walleye (1970)	7.7 ppm	8.6 ppm
5	Walleye (1973)	5.9 ppm	5.8 ppm
5	Carp (1970)	31.7 ppm	34.8 ppm
7	Carp (1973)	7.8 ppm	8.0 ppm

Attention is warranted to the median values which more accurately reflect the concentrations that could be expected to be found within the fish flesh. It is apparent that a significant reduction in the levels of PCB's has occurred during the interim from 1970 to 1973 except for walleyes at River Mile - 765 (Lake Pepin) and 758 (Lake Pepin). Why the levels of PCB's in the walleyes from Lake Pepin has remained relatively unchanged is not presently known. A number of possibilities exist which could be explored.

Of particular concern is the role of the Division in this matter to date. The staff has been closely monitoring this problem from the standpoint of the waste sources which might be contributing to this problem. The work done previously in 1972 was aimed chiefly at the 3M - Chemolite plant in Cottage Grove as the source of PCB's. The data which is being summarized to date seems to indicate that 3M is not presently the main source of these compounds. This would directly correlate with the reduction in fish flesh levels found below Hastings, Minnesota. However, Foot Tanning Company, Red Wing, Minnesota had the highest levels of PCB's in their effluent during the surveys of 1972. For some reason, no follow-up composite sampling of Foot Tanning was undertaken as was the case at Chemolite.

It is quite apparent that follow-up studies of this problem should be carried out. The staff of the Special Investigations Unit of this Section would be willing to coordinate additional study with the assistance of the Facilities Section to identify point sources which might be contributing to this problem. However, authority to act in this area previously resided in the Division of Special Services. We therefore request that you seek clarification to determine who has this responsibility.

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STATE OF MINNESOTA

EPARTMENT Pollution Control Agency

Office Memorandum

TO : Barry C. Schade
Acting Director
Division of Water Quality

DATE: May 16, 1975

FROM : Joel G. Schilling, Head
Lake Survey Sub-Unit
ough: John F. McGuire, P.E.
Chief, Surface & Groundwater Section

SUBJECT: Update to PCB Problem on the Mississippi River (No. 2).

ie following is an update to the first memo developed on this problem dated y 12, 1975.

extensive conversation with Mr. Chuck Burrows, Chief, Section of Fisheries, nnesota Dept. of Natural Resources on May 15 involved the matter of fish col- ction and subsequent lab analysis for PCB's in fish flesh from Lake Pepin ecies. This particular problem stems from a noticeable discrepency between ta on PCB concentration in fish from studies completed by Wisconsin Dept. Natural Resources and Minnesota Dept. of Natural Resources (reference is made a letter from Commissioner Herbst to Mr. Merritt, dated May 13 on this matter). agreed that fish collection would take place on May 16 in Lake Pepin conducted the Dept. of Natural Resources Lake City Area District both game and rough sh species. Plans have been made to split the fillets between the following ree laboratories: Minnesota Dept. of Health, Minnesota Dept. of Natural sources, and USEPA Central Regional Lab Chicago. A more detailed memo will tline this situation later.

discussed briefly the matter regarding a public announcement about the con- mption of fish by the public. There is a problem here with the lack of equate data concerning the human health effects from the consumption of these mpounds. We arrived at no conclusion on this matter because of DNR's concern out the data discussed previously. It was indicated that Mr. Burrows would obably contact the Health Dept. for their advice on this matter.

e following is the latest update of Water Quality data on PCB's in the Mis- ssippi River from the routine monitoring program.

Date	Station	Concentration
3-18-75	UM-840(Below Wabasha St. Bridge)	25.5 ppb
3-18-75	UM-826(Above Grey Cloud Island)	35.4 ppb
3-18-75	UM-815(Lock & Dam #2, Hastings)	20.1 ppb
3-5-75	UM-738(Lock & Dam #5)	8.1 ppb
3-5-75	UM-698(Bridge on U.S. 14, LaCrosse)	11.4 ppb
4-2-75	UM-738(Lock & Dam #5)	6.8 ppb
4-2-75	UM-698(Bridge, etc.)	12.2 ppb

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It should be pointed out that these concentrations are the highest values the staff has observed in any surface water of the state to date. Because these values are exceedingly high for surface waters the staff feels that a more extensive sampling of the River should take place with split samples sent to USEPA Central Regional Laboratory for confirmation as to the presence of these concentrations.

Staff members of the Section of Surface and Groundwaters conducted a field survey on May 15, 1975 to attempt to identify possible sources of PCB's to the Mississippi River. Effluent samples were obtained from the Red Wing Municipal Wastewater Treatment Plant and the S.B. Foot Tanning Co. Also, tributary samples were obtained from the Cannon River at its confluence with the Mississippi River.

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STATE OF MINNESOTA

DEPARTMENT Pollution Control Agency

Office Memorandum

TO : Barry C. Schade, Assistant Director
Division of Water Quality

DATE: May 19, 1975

FROM : Joel G. Schilling, Head
Lake Surveys Sub-Unit

THROUGH: John F. McGuire, P.E.
Chief, Section of Surface & Groundwaters

SUBJECT: Update Memo to PCB problem in the Mississippi River (No. 3)

The following is a current update of the PCB problem in the Mississippi River.

Mr. Schilling, on May 16, 1975, participated in the acquisition of fish samples from the head of Lake Pepin, Mississippi River for analysis of PCB's. The collection of fish was accomplished by the Minnesota Department of Natural Resources, Lake City area district. A total of 25 fish were collected and filleted for packaging and subsequent shipment to 3 analytical laboratories. Mr. Schilling supervised these operations and transported the filets back to Minneapolis for storage until they're transferred to the laboratories on Monday, May 19. The three laboratories which will be conducting the analysis on the fish flesh specimens will be the Minnesota Department of Health, Minnesota Department of Natural Resources and the U.S. EPA Central Regional Laboratory in Chicago. Each laboratory will be receiving 15 total fish specimens. The remaining ten specimens will be kept in storage here in the Agency for later analysis.

Mr. Schilling received a request for attendence at a meeting on the 27th of May in Wabasha, Minnesota at 7:30 p.m. to participate in a discussion with commercial fishermen in the Lake Pepin area with regard to the PCB problem in the Mississippi River. The request was made by Mr. Dan McGuinness from the Southeast Planning Commission, 149 Main Street, Wabasha, Minnesota. Mr. Schilling indicated that the Agency would request that Mr. McGuinness ask personnel from the Minnesota Department of Natural Resources to also attend this meeting.

An additional meeting has been set up [redacted] on May 23rd at 10:00 a.m. here at the Agency to discuss with all participating and interested parties the PCB problem in the Mississippi River. The meeting will involve state agencies from both Minnesota and Wisconsin and federal agencies that also have an interest in this matter.

The staff proposes to conduct additional field surveys the week of May 19-23 on possible sources of PCB's to the Mississippi River. This will involve both effluents and tributaries to the Mississippi to determine the exact source of these compounds.

DSW 345893

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