From the desk of

HO[illegible]RD S. BERGEN, JR. 7/31/10

→ 1). ~~Dr [illegible]~~

~~2) Dr R Keller~~

3) HSBergen.

MONS 098496

Medical Department

July 28, 1970

WARF Proposal for Further Study of Lake Michigan

~~H. S. Bergen, [illegible]~~
R. E. Keller, S. Second St.
J. Mason, JMASO
J. E. Springgate, JSPRI

W. B. Papageorge
WPAPA

Earlier this month I received the attached report from WARF Institute and the accompanying March 31 report of Mount's committee. With the report was another copy of the "Brief Summary of PCB Meeting, March 17, 1970", copies of which you have in your files.

You will note that the WARF progress report proposes additional studies and estimated costs. I asked Birdsall this past week if he had heard from other people from Montrose, Shell, etc. who had received copies and he said he had not. I asked him further to send me a letter indicating a request for further support if that is what he wanted. No such cover letter was sent with these reports.

Birdsall told me also that as a follow-up of work they have done since they were here earlier this year, they have been able to get some PCB like peaks in chlorinated water or wastes containing naphthalenes. I should think this is something we would want to discuss with him further in some detail.

~~[illegible]~~ RK

I should get a letter this week with reference to financial support for the continuing study.

Elmer P. Wheeler

EPW:ju

Enclosure

Certain conditions of electrolysis - this might need further clarification. It doesn't sound to optimistic to me. WRR 8/5/70

maybe possible to get some of the peaks - not the likely cause of world-wide contamination with a full compliment of PCB peaks. REK 8/2[illegible]

MONS 098497

WARF Institute, Inc.
MADISON, WISCONSIN

JUL 1 1970

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REPORT

PROGRESS REPORT

Lake Michigan Pesticide Investigations

Attached is a copy of the Interstate Pesticides Committee Report to the Lake Michigan Enforcement Conference. This report summarizes the status of the work quite well.

We have, however, been doing some additional investigation work since our last report. Trials have been conducted to determine whether chlorination of a variety of materials will yield compounds which might be confused for insecticides and/or PCB type compounds. Whereas direct addition of chlorine to gasoline, automobile oil, etc. in water does not seem to cause production of such compounds, under certain conditions of electrolysis, additions of chlorine do cause possible interfering compounds to occur, particularly with naphthalene.

Chlorination of sewage plant effluents has been studied and no significant increases in apparent insecticides have been observed.

Also enclosed is a brief summary of a meeting on PCB's which we think is also indicative of the status of the situation.

Funds supplied by industry in 1969 have been exhausted. While we do not recommend a full scale sampling program for 1970, we do think that some further work is warranted.

Our proposal is based on various recommendations of the Interstate Pesticides Committee Report and the PCB meeting and is as follows:

MUNS 098498

1. Conduct stream water and stream sediment analyses on 10 selected streams three times (July, September, October) $1,800.00
2. Conduct analyses of 10 composite fish samples from each of 5 sites around the lake, concentrating on chubs, alewives and trout. $2,000.00
3. Develop and evaluate a better procedure for stream water sampling. This would be a submersible pump with micropore filter, to filter at least 50 gallons over a 30 minute period, battery operated. $1,000.00
4. Conduct further evaluations of possible creation of pesticide-like chemicals from chlorination. $1,000.00
5. Conduct studies of rain-out and storm water run-off $1,000.00

6800.00

Mr. Sam Rotrosen
Montrose Chemical Corp.
of Calif.

Dr. M. J. Sloan
Shell Chemical Co.

Mr. J. O. King
Diamond Shamrock Chemical Co.

Dr. R. Hanson
Shell Chemical Co.

Dr. Elmer Wheeler
Monsanto Company

Mr. Louis P. Wilks
Chicago, Ill.

INTERSTATE PESTICIDES COMMITTEE REPORT

to the

LAKE MICHIGAN ENFORCEMENT CONFERENCE

Milwaukee, Wisconsin

March 31, 1970

by

Donald I. Mount, Chairman
Interstate Pesticides Committee
and
Carlos M. Fetterolf
Michigan Representative

MONS 098500

Since this Enforcement Conference last convened in early 1969, the United States Food and Drug Administration seized sizable shipments of coho salmon because of excessive concentrations of DDT. This seizure demonstrated the concern of Federal agencies in the public health aspects of pesticides and emphasized the importance of the pesticide problem in the Lake Michigan Basin. Thus, the importance of monitoring pesticides and controlling their input in Lake Michigan assumed a new significance and, as a result, the Lake Michigan Pesticides Committee, without written instructions from the Lake Michigan Enforcement Conference, assumed the role of the Interstate Pesticides Committee as recommended by our report. The same representatives continued to serve on the committee in its new function and have held four meetings since this conference last convened.

During the same period of time, WARF Institute, Inc., utilizing monies provided to it by the pesticide manufacturing industry, became an active cooperator in the monitoring program and has completed nearly half as many analyses of samples as the rest of the agencies combined. In addition, the United States Department of Agriculture sent a representative to the May, 1969 meeting and he discussed with the committee the Department of Agriculture's plan for completing an analytical survey of soils and an interview-type inventory of pesticide formulators and manufacturers in the Lake Michigan Basin. Approximately 1400 samples have been collected, of which some 900 have been analyzed, excluding the samples analyzed by the United States Department of Agriculture. The Department of Agriculture has provided general statements regarding the results of their investigations.

In the summer of 1969 the States were granted Federal monies to aid in initiating their monitoring programs. Unfortunately, the Federal

assistance money to the States was not made available until October, 1969, and, as a result, only Wisconsin, which already had a monitoring program underway, and Indiana, which was assigned a small program, were able to complete a substantial portion of their part of the monitoring program. As of this date, it would appear that the full monitoring program should be under way during the spring and summer of 1970.

The following brief and general conclusions can be drawn concerning our present knowledge of the pesticide problem in Lake Michigan, utilizing as a basis the information collected principally by WARF Institute, Inc., the State of Wisconsin, the State of Indiana, and the Bureau of Commercial Fisheries at Ann Arbor, Michigan.

1. The concentration of DDT and its analogs in open lake water of Lake Michigan is nearly always less than 10 ppt (parts per trillion) and is often less than 5 ppt. The concentration of dieldrin in lake water is nearly always less than 5 ppt and usually less than 3 ppt. To aid the public in comprehending the magnitude of this concentration, a ppt is equivalent to 1 inch in 30 round trips to the moon. Biological magnification enables the fish to concentrate this infinitesimal amount a million fold to 20 ppm.

2. The monitoring program to date has not identified major sources of pesticides that could have contributed in a major way to the problem in Lake Michigan. A few small industrial dischargers have been identified during the year and, according to the reports of the states involved, corrective action has been taken.

3. The concentrations of DDT in the Wisconsin and Indiana tributaries to Lake Michigan appear to be generally less than 50 ppt, with

some exceptions.

4. The concentration of DDT in fish flesh has not changed perceptibly in the past five years, and at present is about five times higher than any of the other Great Lakes. It is higher in fish from the southern basin than in those from the north (Figure 1).

5. There was no mass mortality of coho sac fry in Michigan hatcheries during the spring of 1969, as there had been in the spring of 1968, possibly because of revised hatchery operations.

6. Polychlorinated biphenyls (PCB's), water contaminants which act as a toxicant in a similar manner to the chlorinated hydrocarbon pesticides, have been reported in measurable quantities in the Lake Michigan system. They may interfere with some pesticide measurements, but certainly DDT and dieldrin remain a significant problem even though the recent discovery of PCB contamination has clouded past analytical results somewhat.

7. The present contamination in Lake Michigan is apparently a result of: a) much higher volume sources of pesticides in previous years that are not presently discharging in similar volumes, or b) a result of the general contamination of the entire basin, because low concentrations of DDT are still measurable in nearly all tributaries.

8. The use of DDT for Dutch Elm Disease control has been drastically reduced. This could have been a significant source of DDT in the past. The importance of this use should continue to diminish considerably in the future.

9. Clams, used as biological monitors in our programs, have accumulated concentrations of DDT from the water only in those cases where the water contained high concentrations of DDT. In low concentrations the clams were apparently not sensitive enough to detect the concentrations.

The following needs have been identified by the committee as being priority items for the coming year.

1. Complete one season of tributary sampling as outlined by the Lake Michigan Pesticides Committee in the drainage area located in the State of Michigan.

2. Develop a mass balance for pesticide input and output in Lake Michigan.

3. Institute the weekly monitoring program at the Chicago water intake, in order that the trend of pesticide contamination in Lake Michigan can be established.

4. Make positive identifications of the pesticides found in the samples thus far collected through the use of infrared or mass spectrometry.

5. Determine the concentrations and sources of polychlorinated biphenyls in Lake Michigan.

6. Determine the pesticide contribution from rain-out and storm water run-off in the basin.

7. Determine the point sources of pesticide contributions to the tributaries so that the present lowlevel contamination in the tributaries can be reduced significantly.

8. A final need and conclusion is that this monitoring program offers an excellent tool for the States to detect at early stages the input of new, or as yet unrecognized, environmental contaminants such as PCB's, mercury, and herbicides.

Recognition of this value and need should place continuous finding of this program by the FWPCA and the States high on any priority list if we are to keep abreast of our developing environmental problems.

Respectfully submitted by:
D. I. Mount, Ph.D.
Chairman, Interstate Pesticides Committee
Presented by:
Carlos M. Fetterolf, Michigan Representative
Lake Michigan Enforcement Conference

MONS 098504

Fig. 1. DDT Concentrations in Lake Michigan Lake Trout ('66–'69) as Related to Region of Lake & Fish Size

