States side has hampered complete identification of "problem areas". An improved international surveillance program has been developed to evaluate whole lake and problem area water quality. The Board stated that the program is vitally needed and deserves the full support of all governments in the United States and Canada.

Of the 63 problem areas, 11 are along Lake Superior's shore: 1. Marathon-Peninsula Harbour, 2. Jackfish Bay, 3. Nipigon Bay, 4. Thunder Bay, 5. Silver Bay, 6. Duluth-Superior Harbour, 7. Duluth to Montreal River Area, 8. Mineral River, 9. Upper Portage Entry, 10. Carp River and 11. Munising Harbor.

Eight occur in the Lake Huron Basin: 1. Alpena-Thunder Bay Area, 2. Saginaw Bay, 3. Harbor Beach Bay Area, 4. Collingwood Harbour, 5. Penetang Bay, 6. Spanish River, 7. Serpent Harbour and 8. St. Marys River.

Only five are listed for Lake Michigan: 1. Manistique River, 2. Escanaba River, 3. Green Bay, 4. Milwaukee Harbor and 5. Indiana Harbor Ship Canal and Inner Harbor Basin.

Twenty-four are along Lake Erie: 1. Black River, Michigan, 2. Upper St. Clair River, 3. Pine River, 4. Clinton River, 5. Thomas River, 6. Lower St. Clair River—Lake St. Clair, 7. Detroit River, 8. Toledo Area, 9. Portage River, 10. Sandusky River, 11. Huron River, 12. Vermillion River, 13. Black River, Ohio, 14. Rocky River, 15. Cleveland Area, 16. Chagrin River, 17. Grand River, Ohio, 18. Ashtabula River, 19. Conneaut Creek, 20. Presque Isle Bay, 21. Westfield Area, 22. Fredonia Area, 23. Grand River, Ontario and 24. Wheatley Harbour.

Lake Ontario has 15 problem areas; 1. Buffalo River, 2. Upper Niagara River (Fort Erie-Buffalo Area), 3. Tonawanda Channel (Niagara River), 4. Lower Niagara River (below Falls), 5. Nearshore Area from mouth of Niagara River to Eighteen Mile Creek, 6. Rochester Harbor Area, 7. Oswego Harbor Area, 8. Black River, New York, 9. Amherst Island Area, 10. Bay of Quinte, 11. Port Hope Area, 12. North Shore—Lake Ontario, 13. Toronto Harbour and Waterfront, 14. Hamilton Harbour, and 15. St. Lawrence River.

The Board enumerated some aspects of the Agreement related to long range planning in the Basin. Members concluded that the water quality objectives should be expanded to cover additional pollutants, should be used as explicit guides for planning and, where appropriate, should be embodied in developmental planning policies, legislation, plans or by-laws. Further, objectives should be translated into requirements for reduction of presently uncontrolled sources of phosphorus and other pollutants.

Copies of the 1975 recommendations and conclusions presented to the IJC are available from the Regional Office as are limited copies of the Board's report and those of its subcommittees: Appendix A — Water Quality Objectives Subcommittee; Appendix B (not yet printed) — Surveillance Subcommittee, with Data Quality Subcommittee; Appendix C — Remedial Programs Subcommittee; Appendix D — Radioactivity Subcommittee.

PCBs AND PEOPLE

Recently the Michigan Department of Public Health released the results of a two-year United States Federal Drug Administration sponsored study of PCBs in humans. The study represents an attempt to evaluate human exposure to PCB from consumption of sport-caught Lake Michigan fish. There was no intention that the study be a full toxicological evaluation of the human health effects of PCB exposure. The study was designed to provide information on the levels and changes in the levels of PCBs in humans.

To achieve that goal, a total of 161 adults from the shoreline communities of Traverse City, Manistee, Ludington and South Haven, Michigan, participated in the study. Of these participants, 105 consumed more fish that the Department of Public Health recommends (no more than one meal per week or 24 pounds per year) and were considered the PCB "exposed" group. The 37 participants consuming 6 pounds or less per year, 19 persons eating an intermediate amount, and 19 fish eaters from Algonac (on Lake St. Clair) where sport fish are low in PCB were used for comparison groups. A short medical history, dietary record, and blood specimens were obtained from all par-

MONS 030796

ticipants.

The findings confirmed what scientists have suspected. There was a direct relationship between the size and quantity of sport species of fish eaten and the PCB levels found in human blood. The level of PCB in the blood did not significantly change from year to year. It did not become significantly lower when fish consumption was eliminated for up to 9 months. More specifically, blood levels ranged from 0.007 ppm in persons who ate no fish to a maximum of 0.36 ppm for a Lake Michigan fish eater. In 1973, the people consuming 24 or more pounds had a mean blood PCB value of 0.073 ppm; persons eating 6 pounds or less had a mean level of 0.020 ppm; those eating no fish averaged 0.017 ppm, and the people in Algonac had an average blood level of 0.023 ppm. Results in 1974 were similar.

The U.S. FDA recommends that PCB intake not exceed 1 µg/kg body weight per day for long term exposure. Eighty-two percent of the participants who exceeded the state's recommended maximum intake of 1 meal per week or 24 pounds per year received an estimated annual dose of PCB greater than the FDA recommends. Intake ranged from 0.49 µg PCB/kg body weight per day to 3.94 µg/kg/day and averaged 1.7 µg/kg/day. However, the "exposed" group exhibited no health problems or medical conditions which could be correlated with PCB blood levels, exposure to Lake Michigan fish, or known symptoms of PCB poisoning.

Overall, the researchers concluded that:

1. Consumption of Lake Michigan fish contributed substantially to the FCB levels in the blood of humans.
2. The dose received is insufficient to produce a detectable effect on human health at present.
3. It has not been determined whether long term exposure to PCB contaminated fish will result in a continuing accumulation of PCBs or eventually produce identifiable health effects in humans.
4. The data gathered to date appear to justify continued surveillance of this situation in Michigan.
5. The data also justify continued recommendations that intake of Lake Michigan salmon and lake trout be limited to less than one meal per week or 24 pounds per year, and, a warning that pregnant women should eat none at all.

Dr. Harold E. B. Humphrey, Project Director of the PCB's study, is concerned that the public understand that there is no demonstrable hazard; to date PCBs in fish are not a human health problem. PCBs are, however, worthy of scientific concern and their monitoring should be continued. Dr. Humphrey pointed to this study as an example of why the health aspects must be included in environmental monitoring programs. Without interpretation of data from the viewpoint of public health, citizens can be unduly alarmed.

For copies of the complete report, write to Dr. H. E. B. Humphrey, Michigan Department of Public Health, 3500 N. Logan Street, Lansing, Michigan 48914.

BRIEFS

On April 27 the Minnesota Pollution Control Agency Board banned the use of household detergents containing phosphates.

In April, Ontario Premier William G. Davis announced the appointment of the first Environmental Assessment Board. David S. Caverly, of Toronto, is the chairman and Eleanor Lancaster of St. Catharines is vice-chairman. Members are: Dr. Donald Chant (Toronto), Kelly Culin (Flamboro), David Dehler (Ottawa), Gil Fories (Moose Factory), Raoul W. Gagner (Paincourt), Keith Laver (Mississauga), Dr. Carl A. Martin (Mieton), James Meakes (Sudbury), D. Aubrey Moodie (Richmond), David C. Morton (Brockville), John Root (Orton), and Harry Smith (Ajax). The Board will expedite the implementation of the Environmental Assessment Act and will assume all the ongoing activities of the Environmental Hearing Board as prescribed under the Environmental Protection Act of 1971 and the Ontario Water Resources Act.

MONS 030797