GREAT LAKES
FOCUS On Water Quality
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SIGNS OF PROGRESS

WATER QUALITY CONDITIONS

The Great Lakes Water Quality Agreement requires the development of remedial programs and other measures to prevent or reduce the input of pollutants to the Great Lakes System and compatible regulatory requirements in both the United States and Canada directed towards achievement of the water quality objectives.

The 1972 Agreement emphasized control of conventional pollutants from point sources. The 1978 Agreement and new legislation place added emphasis on the control of toxic substances and pollution from nonpoint sources. Point source control programs are well under way and signs that they are working are visible. However, more work is needed to control nonpoint sources and toxic substances. The latter, though coming under controls, should be the focus of concerted research and regulatory effort.

Remedial Programs

In its July 1979 presentation to IJC, the Great Lakes Water Quality Board (WQB) reported a significant increase in the number of industrial facilities in compliance with domestic pollution control programs. Of the 864 industrial and municipal dischargers listed in the WQB's point source inventory, 447 of the United States and 171 of the Canadian dischargers met the effluent limitations imposed by pollution control agencies in 1978. The significant improvement in the status of compliance for the United States dischargers can be attributed to the 1978 achievement of the more stringent industrial requirements after July 1, 1977 and the completion during 1978 of municipal treatment plants that have been awaiting federal grant funding. In Canada, continued upgrading of wastewater treatment facilities and emphasis on plant operations account for the improvements noted.

A still higher rate of compliance basinwide would be expected were dischargers to follow optimum operation and maintenance procedures to ensure that performance approaches design efficiency of the facilities and were programs in effect to continually upgrade the skills of the operators. During discussions, after the Board presented its report on July 11, Commissioner Jean Roy asked how much more efficiently municipal treatment plants could operate with improved operation and maintenance. Howard Zar, Chairman of the Remedial Programs Sub-

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GOOD NEWS: THE FISH ARE COMING BACK

Dr. Joseph Kutkuhn, Director of the Fish and Wildlife Service, Great Lakes Research Laboratory in Ann Arbor, gave the Science Advisory Board's presentation on biological indicators of ecosystem quality. The following is an edited version of his remarks.

Just how well are we doing in a sizable and costly effort to clean up the Great Lakes, and at the same time, to repair the damaged living resources they harbor?

We don't have to be reminded that this question preoccupies increasing numbers of our constituents, and that for the large and increasing amounts of money and manpower being expended on such a monumental task, we are understandably being held, and in fact we are holding ourselves, more closely accountable now than ever before. So where in the Great Lakes do we seem to be making headway, if indeed we really are, and by what criterion do we make our assessment? Isn't it time we began listing achievements, if not to counterbalance the claims of omnipresent pessimists, then to demonstrate that cooperative application of technical know-how and management capability can and does pay off?

The well-being of the lakes' fish resources is perhaps the simplest and most direct indication. It is one the general public can easily comprehend. I think that the public can readily appreciate the very close, intrinsic relation that the productivity of fish resources bears to the quality of their habitat, and in a broader sense, to the health of the lakes as an ecosystem.

The Science Advisory Board (SAB) recognizes signs of progress in restoring the lakes' valuable fishery resources. What we have been doing is paying off. In pointing to these unmistakable indicators of new vitality in the lakes, however, the Board does not mean to imply that apparently healthier fish communities are necessarily the sole, the direct, the unequivocal result of improved water quality and a generally cleaner environment.

No one doubts that concerted action can enhance the quality of the Great Lakes as a priceless source of water and can help appreciably to make them better habitat for fish. It is true, however, that our analytical capability cannot yet quantitatively and reliably discriminate from the parallel contributions of other management tactics. Among the other management tactics are tighter regula-

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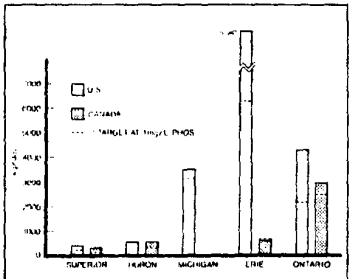
target, Detroit will still contribute about 36 percent of the residual load. The accompanying graph compares reported and target loadings.



REPORTED MUNICIPAL PHOSPHORUS LOADS

Biological Indicators

PCBs in eastern Lake Michigan coho salmon from the Platte and Grand rivers (Michigan) and bloater chubs from Saugatuck, Michigan continued to decline in 1978. Since 1975 there has been as much as a 50 percent decrease, but levels in fillets are still well above the Agreement objective of 10 μg/L (whole fish). Preliminary information from western Lake Michigan shows no similar decline in PCB levels, the Board noted. In all lakes, PCB levels are declining but still exceed the objective.

Dieldrin levels in bloater chubs in Lake Michigan have increased, yet levels in coho salmon appear to be declining. Dieldrin levels in coho salmon from Lake Erie were below the Agreement objective.

Trace levels of chlorinated dioxin were reported in fish from Lake Ontario and Saginaw Bay. Further assessments of the presence of environmental effects and possible sources of this contaminant are required.

The Agreement objective for mercury levels in fish is 0.5 μg/L. In Lake Superior that objective was exceeded in fish samples taken along the Ontario shoreline. In Lake Huron, Ontario's survey found that mercury levels in walleye over 26 inches (66 cm) collected at Port Severn and Giant's Tomb Island exceeded the objective. However, levels in other species were in compliance at all sampling locations. Though mercury levels in Lake Erie fish have declined since source controls were initiated, total mercury concentrations in the waters along the south shore of eastern Lake Erie frequently exceeded the Agreement objective of 0.2 μg/L. Values up to 6.1 μg/L were reported off Presque Isle, and elevated levels were also reported off Erie and Dunkirk in 1978.

Decreases in the concentration of DDT, DDE, dieldrin, HCB, mirex, and PCBs in herring gull eggs from Lakes Superior, Huron, Erie and Ontario were observed in 1978. The low reproductive success of herring gull populations that was reported last year in Lake Ontario is no longer apparent. Herring gull reproduction rates now appear normal in all boundary lakes. Studies of reproduction rates of herring gull eggs were initiated last year in Lake Michigan and will be reported by the Board when samples are analyzed. It can be stated that dieldrin levels in the eggs are high as are residues of other organochlorines, especially PCBs.

New compounds detected in herring gull eggs from Lake Erie (Fighting Island and Middle Sister Island), previously not reported by the Board, include polychlorinated terphenyls. These industrial chemicals have similar uses and are expected to exhibit environmental characteristics similar to those of PCBs.

Problem Areas

The term problem area was initially used by the Water Quality Board in 1975 to indicate localities in the Great Lakes where field measurements show degraded water quality. The basis for these determinations was the specific water quality objectives in the 1972 Agreement or the general objectives as expressed by jurisdictional standards or criteria. The 1972 Agreement objectives did not contain the specific objectives for toxic substances referenced in the 1978 Agreement.

The Water Quality Board recognizes three categories of problem areas:

1. An area where water quality objectives have not been achieved because remedial programs are not yet completed.
2. An area where remedial programs have been completed, but a delay is expected before conditions in the lake show improvement.
3. An area where further remedial programs may be required.

With these considerations, the Water Quality Board has identified 46 problem areas in the Great Lakes Basin. Of these, twenty-six problem areas were classified as category 1 and six as category 2. The sixteen in category 3 (remedial programs underway) may require further corrective action because of nonpoint pollution and storm and combined sewer overflows.

New problem areas have been identified in Lake Ontario, at Clarkson in Mississauga, Ontario, where high phenol concentrations (18 μg/L) have been observed near the Gulf Oil of Canada outfall; and in the St. Lawrence, at the mouth of the Grass River, New York, where high PCB levels have been reported. In Michigan, the Pine River, which discharges to the St. Clair River, is no longer considered a problem area; coliform violations at the river mouth were not detected.

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