A Short History of the Causes of Our Joint Concern

The Lakes began about 14,000 years ago when the edges of the glaciers melted and left puddles behind. The ones we now call Michigan and Erie were the first. Erie, the larger, included parts of what are now Huron and Ontario. Superior appeared, Michigan grew, Erie shrank and Huron and Ontario were linked. Another lake, the one which would be called Champlain, covered an enormous expanse and then, as the eons passed, dwindled to a wet splinter.

Seventy-five hundred years before the birth of Christ the biggest lake of all took shape, a huge triangle of icy water north of Ontario and east of Superior. It would dry up completely long before the first European mapmaker arrived to give it a name.

In the last two hundred years the Lakes have changed more than in the previous five thousand, and in the last three decades the change has accelerated disastrously. They have been polluted by man's droppings—slags and chemicals from his plants, acids from his mills, sewage from his cities and most recently, algae nurtured by his laundry detergents.

As a result the Lakes have given the United States and Canada a bond as well as a boundary.

In 1912 the two governments asked the International Joint Commission (which had just begun operations) to consider the pollution which was causing an increasing number of typhoid fever cases. In 1918 the Commission reported that the pollution responsible was "very intense along the

What Pollutes the Lakes?

We are essentially concerned with man-made pollution from city sewage, industrial waste and farm run-off. Most comes out of a sewer pipe or a plant outlet, but some is carried by wind or rain. Each type requires its own solution. Listed below are the pollutants which significantly injure the Great Lakes:

Phosphorous Concentrations: Most phosphorus comes from laundry detergents. The suds from the family wash go down the drain and into the rivers and lakes. It also comes from farm fertilizers. Phosphorus feeds plants, including algae, and an increase in phosphorus means an increase in algae. Rotting algae falls to the lower depths, consumes the oxygen in the water and kills fish. When algae overwhelms the fish—as in Lake Erie—the water is in a state called eutrophication. Phosphorus may be controlled by treating sewage or (as it is in Canada, three states and several US municipalities) by limiting its quantity in detergents.

Bacterial Matter: The most frequent bacterial products of sewage are coliforms which do not cause diseases. Their presence however indicates the possible presence of dangerous organisms, more difficult to detect, such as those causing typhoid, dysentery and cholera. Bacteria can be removed or killed by chemical treatment or other methods, but they still pose serious problems in many Lake areas.

Industrial Discharges: These include phenols, asbestos, cyanide, oil, mercury, wood fibers and a rich variety of other wastes. In the US, government permits which limit effluents and set deadlines for compliance have been issued for 292 of the 312 major industrial dischargers.

Toxic-Organic Contaminants: These come to the Lakes through aerial spraying, industrial discharge and farm run-off. They are ingested by fish and by people who eat the fish. Polychlorinated biphenyls (PCBs) have been monitored since 1970, and Lake Michigan fish show residues above the recognized safe level. Significant levels have also been reported in Lake Ontario. Occasional checks in other Lakes indicate Superior and Huron levels are low. Those in Erie are generally low too, though high levels have been found in some carp. DDT levels have dropped spectacularly in the last six years, since the restriction of its use both in Canada and the United States.

Thermal: This does not involve substances but temperatures. Water is used in many industries for cooling—cool water is removed and warm water returned. Many organisms are harmed by heat. Trout, for example, are cold-water fish and if warm water is added to their river they will depart or be killed. The eggs of whitefish will not hatch if the water is above 4°C (39°F).