

"Who Killed Lake Erie?"

In 1969, NBC made a television documentary by the above title. Lake Erie was quite generally regarded as "dead": It was low in oxygen and high in pollution and algae. Its situation was a consequence partly of geology and partly of human use.



Figure 1 - Lake Erie and its heavily populated environs.

The lake is bordered by an especially large number of major cities (see figure 1). Each of these contributed both sewage and industrial wastes to the lake. Among the many industries in the region are the automotive manufacturers of Detroit, petrochemical and steel industries in Cleveland, glass and steel works in Toledo, paper mills in Erie, and chemical manufacturing in Buffalo. By the late 1960s, sewer systems serving about 9 million people on the U.S. side of the lake were discharging partially treated wastes into Lake Erie; another 2 million persons had septic-tank systems from which some wastes might have reached the lake.

Lake Erie's geometry and geography make it especially vulnerable to pollution. Although its area is large, the volume of water is low, especially in relation to the waste discharges. The lake is nearly 400 kilometers long and 80 kilometers wide, but its average depth is less than 20 meters. Some pollution was observed as early as the 1920s. Decreasing fish catches began to indicate that all was not well with the lake. Matters grew progressively worse until the early 1970s, when neighboring states were shocked into action by the lake's appalling condition.

High-phosphate detergents were banned by several states, including Michigan, Indiana, and New York. Industrial waste dumping was brought under stricter control, and municipal sewage was more extensively treated before discharge to reduce phosphorous loading by nearly 50 million pounds.

It now appears that Lake Erie's obituary may have been premature. Airline pilots have observed a shrinking of the algal mats on the surface. Dissolved oxygen has been sufficiently restored that some game fish have been successfully restocked in the lake. Beaches closed for a decade or more have been reopened.

The cure is incomplete. Lake Erie drains through Niagara Falls; foaming water below the falls bespeaks residual pollution (figure 2A). Just downstream, sewer outfalls may contribute more pollution, sediment pollution from storm runoff at a minimum (figure 2B). The lake is still far from having the sparkling, pristine water it did when the retreating glaciers filled it twelve thousand years ago. That high quality of water is almost certainly irrecoverable. However, Lake Erie's condition is improving. Once a widely cited environmental disaster, Lake Erie is now acclaimed as a dramatic example of the kind of environmental recovery possible with concerted efforts.

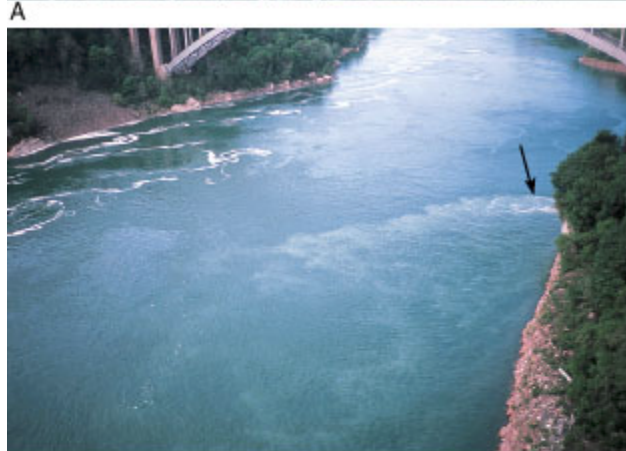


Figure 2 - Pollution below Niagara Falls, at the outflow of Lake Erie. (A) Foaming water below the falls. (B) Nearby sewer outfall just downstream.

