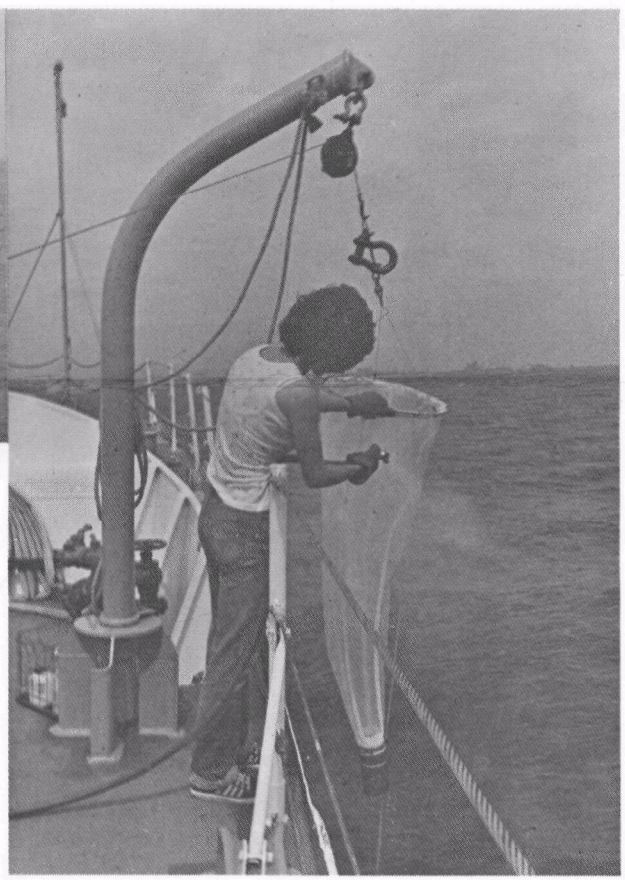
Each lake has its own particular trouble spots and pollution problems. Experiments are designed and courses charted to best study these.

Nearly every future action taken to preserve and improve water quality in the Great Lakes will be influenced by the findings of the *Rachel Carson* and other elements of the monitoring program. This information, marking how the lakes are responding to treatment programs and what new problems are developing, is vital if we wish to wisely invest the billions of dollars being spent to protect the Great Lakes.

EPA

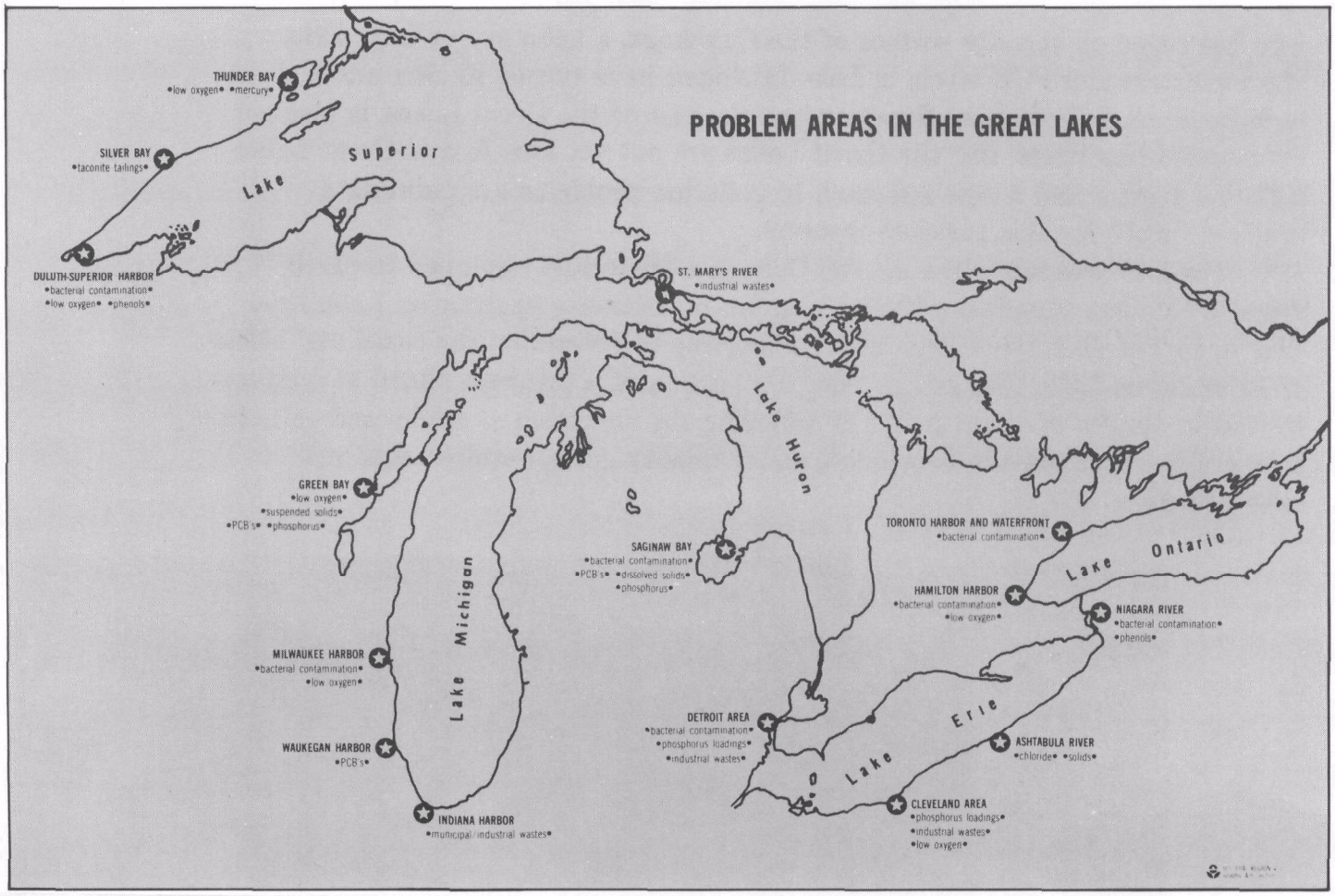
Fire has raged on the oily surface of the Cuyahoga, a tributary of Lake Erie. High mercury and PCB levels in Lake Michigan have turned its fish into a hazardous meal. Even Lake Superior, the cleanest of the Great Lakes, is plagued by asbestos like fibers. But the Great Lakes are not yet lost. A new Great Lakes pollution fighter and a new approach to pollution problems are painting a brighter future for this priceless resource.

The new weapon is the *Rachel Carson,* a laboratory equipped research vessel which has launched a 2-year program of intensive analysis on Lake Erie. This is part of an international study underway to determine the cause and effect of pollution on Lake Erie and in turn is a portion of a program aimed at monitoring the entire system of Great Lakes. Monitoring the condition of a lake and collecting data are the first steps in developing water quality goals, requirements, and expectations.



THE RACHEL CARSON

The *Rachel Carson,* formerly the USS Crockett, is the largest U.S. limnological vessel on the Great Lakes. It is 165 feet long and 24 feet wide. She houses laboratories as well as a staff of 8 operating crewmen and 8 to 15 scientists and technicians. Her size enables most of the sample analyses to be completed within the ship's laboratories, contributing to the efficiency and accuracy of such measurements as bacterial growth which are affected by time and environment. Dissolved oxygen, Ph, alkalinity, specific conductivity, silica, reactive phosphorous, ammonia, nitrates & nitrites, total heterotrophs, and Biological Oxygen Demand are among the measurements completed on board ship. In addition to her size the *Rachel Carson* has an advantage over many other ships because she is lightweight and can travel at greater speeds. Her weight permits her to draw only 9 feet of water. This enables her to work near shore as well as in the deepest parts of the lake. An auxilliary boat will enable her to collect samples from water less than 5 feet deep. Region V of the U.S. Environmental Protection Agency received the ship, a former U.S. Navy patrol gunboat, during July of 1977 at Norfolk, Virginia.



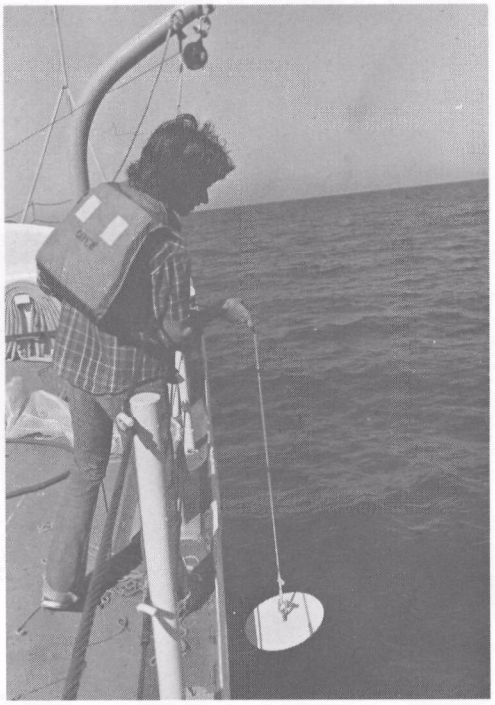
THE PROGRAM

In order to make effective decisions regarding pollution emission standards and guidelines, the EPA must have an accurate idea of toxicity levels in the lake. The Great Lakes surveillance effort which is already underway will not only provide this information but will give an indication of how pollution levels are changing with time. This U.S. study, conducted in conjunction with Canada, is on a nine year cycle, with at least one year of intensive research being done on each lake. At the present time Lake Erie is under inspection.

The *Rachel Carson* handles the open water portion of the Great Lakes monitoring program. The near shore analyses are done by Heidelburg University, Ohio State, and State University of New York at Buffalo, all experienced in environmental research. The National Oceanographic and Atmospheric Administration (NOAA) is studying the currents in the lake. Finally, the National Aeronautics and Space Administration (NASA) is trying to develop remote sensing techniques to determine chlorophyll concentrations in the lakes via satellite.

OTHER ASPECTS

In addition to the *Rachel Carson,* the EPA owns 4 other research vessels: The Roger R. Simons, a former Coast Guard buoy tender, currently on loan to Heidelburg University in Tiffin, Ohio; and 3 other vessels also loaned out to various Universities for research purposes. Before the Lake Erie study began, the Simons spent 2 years monitoring the water quality of Lake Michigan to compare current results with those of the past. Evidence of the study indicates that the lake is showing considerable improvement in nearshore areas, but the open water portions of the lake have not yet begun to improve.



THE VOYAGE

Both the *Rachel Carson* and the Simons are currently working on Lake Erie. Between April and November of 1978, the *Rachel Carson* will complete 9 10-day cruises on the lake, docking nightly at one of the following ports: Cleveland, Ohio; Fairport, Ohio; Port Stanley, Ontario; Erie, Pennsylvania; Buffalo, New York; Lorain, Ohio; and Monroe, Michigan.

At the end of 1979, when Lake Erie studies are completed, she will move on to Lake Huron.

SCHEDULE

1978 Lake Erie
1979 Lake Erie
1980 Lake Huron
1981 Lake Ontario (tentative)★
1982 Lake Ontario (tentative)★
1983 Lake Superior
1984 Connecting Channels (Lake St. Clair, St. Clair River, Detroit River, etc.)
1985 Lake Michigan
1986 Lake Michigan

★ Canada may handle this portion of the program. If so, related research may be conducted by the *Rachel Carson* at this time.