

EPA JOURNAL

Ohio and the Environment

***Sailing
on
Lake Erie***





Ohio Perspectives

Sailboats rippled through the Lake Erie waters, their brilliantly dyed sails ballooning before them. A water skier wearing an orange jacket clung to his guide ropes as his skis bounced through the choppy wake of a careening motor boat.

On the shore in a park near Painesville, Ohio, a large family speaking volubly in Italian sat

at a long picnic table under the cottonwood trees. From time to time they glanced upward and laughed nervously as a few drops of rain splattered on the table and thunder rumbled in the distance.

On the beach a mother raised her umbrella and called for her young child wading in the water to come ashore.

Despite the threatening weather, this was a scene of people enjoying the waterfront of Lake Erie, a body of water once almost given up for dead.

This lake, while still afflicted with pollution ills, is today a major recreational asset. On warm summer days thousands of peo-

ple swim, fish and boat in this body of water.

A major beneficiary of this improvement in water quality is the State of Ohio, which is also profiting from many other pollution control advances.

This issue of EPA Journal contains several reports from and about Ohio—spotlighting this highly industrialized State's efforts to control the inevitable waste byproducts.

The general consensus of the reports is that Ohio has been making considerable progress, but still has serious problems to wrestle with in the years ahead.

Acknowledging that some parts of his State have been

widely known in the past for their pollution, Gov. James A. Rhodes emphasizes that Ohio for the past several years has led the Nation in State capital expenditures to improve waste control.

Valdas V. Adamkus, EPA's Midwest Regional Administrator, reports significant gains in both air and water pollution conditions in Ohio.

While no one is claiming that waste maladies in Ohio have been completely conquered, the articles give several specific examples of progress in air, land and water quality, reflecting improvements in the State's overall environmental condition. □

EPA JOURNAL

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EPA is charged by Congress to protect the Nation's land, air and water systems. Under a mandate of national environmental laws, the Agency strives to formulate and implement actions which lead to a compatible balance between human activities and the ability of natural systems to support and nurture life.

The EPA Journal is published bi-monthly by the U.S. Environmental Protection Agency. The Administrator of EPA has determined that the publication of this periodical is necessary in the transaction of the public business required by law of this Agency. Use of funds for printing this periodical has been approved by the Director of the Office of Management and Budget through 4/1/84. Views expressed by authors do not necessarily reflect EPA policy. Contributions and inquiries should be addressed to the Editor (A-107), Waterside Mall, 401 M St., S.W., Washington, D.C. 20460. No permission necessary to reproduce contents except copyrighted photos and other materials.

Front Cover: A sailboat knifes through Lake Erie waters as its red and black spinnaker billows before a stiff breeze.

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Design Credits: Robert Flanagan and Ron Farrah

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The annual rate for subscribers in the U.S. for the bi-monthly EPA Journal is \$9.50. The charge to subscribers in foreign countries is \$11.90 a year. The price of a single copy of the Journal is \$2.75 in this country and \$3.45 if sent to a foreign country. Prices include mailing costs. Subscriptions to EPA Journal, as well as to other Federal Government magazines, are handled only by the U.S. Government Printing Office. Anyone wishing to subscribe to the Journal should fill in the form at right and enclose a check or money order payable to the Superintendent of Documents. The request should be mailed to: Superintendent of Documents, GPO, Washington, D.C. 20402

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Protecting Ohio's Environment

By Governor James A. Rhodes

The State of Ohio often takes a "bad rap" when it comes to environmental matters. Over the years, we have been singled out for having the dirtiest city in the country (Steubenville), a river so polluted it burned (the Cuyahoga), and a Great Lake that was nearly unusable for recreation (Lake Erie). Problems like these are part of Ohio's history because Ohio is an industrial state, and as such we have had more pollution problems than states with less industry. But Ohio has done more to clean up these problems. Ours is a state of great natural beauty. We take pride in it, and we work hard to protect it.

For the past several years, the State of Ohio has led the nation in state capital expenditures for pollution control, according to a federal report on environmental quality. In air, water, and solid waste categories, Ohio has ranked first. In fact, according to the most recent figures available from the U.S. Department of Commerce, Ohio accounted for nearly three-quarters of all state government expenditures on air pollution control. In addition, Ohio industries have spent more than \$1.5 billion since 1972 on air pollution control equipment.

The results of these expenditures have been striking. In 1972 Steubenville averaged 230 micrograms per cubic meter of particulates per day. In 1972, an average of one air pollution alert a month was called, and in 1975, Steubenville had 35 air alert days. In 1981, the particulate average was down to 83.7 micrograms per cubic meter per day, and Steubenville had not had an air alert in two years.

Across Ohio, the improvements in air quality are evident. In the past ten years, particulate levels have dropped 30% and sulfur



Gov. James A. Rhodes

dioxide levels have dropped 47%. This last point is important, because Ohio is so often accused of being the major contributor to the problem of acid rain.

While it is true that Ohio is the largest emitter of sulfur dioxide in the United States, few people realize how much Ohio is doing to reduce these emissions. This is despite the fact that far more study is needed before we can pinpoint the causes of acid rain. For example, Ohio industries are now spending \$150 million every year to control their sulfur dioxide emissions. To do this, nearly 50% of the coal burned in Ohio today is imported from other states. Unfortunately, this has helped to cause unemployment and personal hardship in the coalfields in Southeast Ohio.

Nevertheless our sulfur dioxide emissions have dropped from 3.2 million tons in 1976 to 2.7 million tons in 1980. Consequently in 1981, there was not a single violation of the sulfur dioxide air quality standards in Ohio.

*Lake Erie freighter
looms against skyline*

Swimmers on Lake Erie beach



By 1985, sulfur dioxide emissions should be down around 2.3 million tons. We have three major coal washing facilities completed, two more under construction, and one for which a permit has just been issued. The Ohio Environmental Protection Agency, acting on the recommendation of my Governor's Task Force on Acid Precipitation, has created an Acid Rain section to handle this problem, and we are supporting additional research.

To control water pollution, industry has spent more than \$1.2 billion in Ohio since 1972. Also in the past 10 years, Ohio communities have spent or committed \$2.7 billion for 250 sewage treatment projects through the federal Construction Grants program, over which Ohio EPA now has delegation. This is more than ten times the amount that was spent from 1956 to 1972. We expect that most major Ohio municipalities will have funding for at least secondary treatment by 1985.

As a result of these expenditures, Ohio now ranks above the national average in compliance with wastewater discharge standards. Eighty-six percent of Ohio's municipal dischargers are in compliance compared with a national average of 73 per cent.

Ohio's lakes, rivers, and streams show the improvement our efforts have brought about. The Cuyahoga River is only one among many that are significantly cleaner than they were ten years ago. And Lake Erie, which was declared dead in the early seventies, now boasts record walleye catches as one of the best sports fishing areas in the world. The beaches have reopened, and the Lake is thriving once again. And, we now project that Ohio will meet the International Joint Commission standards for phosphorus to the Lake by the end of this year.

Drinking water quality is also an important consideration in Ohio. We have abundant water resources, and value them highly. To protect our drinking water supply, we have increased sanitary inspections from 552 in 1972 to 1,166 in 1981. Ninety-five percent of public water supplies are now monitored regularly, and Ohio is developing a ground water protection strategy to insure continued supplies of safe drinking water.



Ohio has also made progress in the area of solid waste disposal. In place of the 1,300 open dumps that marred our landscape in the 1960's, today we have 235 sanitary landfills. Two resource recovery plants are being developed, and others are in the planning stages. Ohio also has an active multi-million dollar litter prevention program.

The first part of the program is regulations to control hazardous waste disposal now and in the future. Under Ohio's hazardous waste legislation, which I signed into law on October 9, 1980, Ohio EPA has adopted and is enforcing regulations parallel to U.S. EPA's regulations under the Resource Conservation and Recovery Act. We have applied to U.S. EPA for interim authorization of the hazardous waste program, and hope to achieve that status by early 1983.

The second part of the program is permitting of the facilities that store, treat, or dispose of hazardous waste in Ohio. In 1981,

Ohio's Hazardous Waste Facility Approval Board issued permits to 336 such facilities, making Ohio the first state in the nation to have its operating hazardous waste facilities under permit. Each of these facilities is inspected regularly to make sure that it is complying with state and federal requirements.

The third part of our program is the clean-up of problem hazardous waste sites that were created in the past. We have had much success in this area with nineteen sites cleaned up or in the clean-up process. At two of the largest sites, multi-million dollar settlements have been reached with companies that originally sent waste to the sites. Another large part of our success has been the result of the federal Superfund, from which we have received over \$8 million. The Superfund program has been an overwhelming success in Ohio. One of our nationally ranked sites and several smaller ones, have been fully cleaned up and money has been provided for critical emergency measures at others. For their cooperative effort in

processing Superfund grants to Ohio, we owe U.S. EPA a lot of gratitude.

The bottom line in Ohio is that as long as we have industry which provides badly needed jobs, we will have pollution. This is true everywhere. But in Ohio, we will continue to work toward cleaning up our environment, so that industry and nature can both prosper.

Ohio is a national leader in pollution control. We have the figures to prove it, and more importantly, we have some of the best fishing, the finest parks, and the greatest outdoor recreational opportunities. We can stand on that record, and we are committed to maintain it. □

Progressive Environmental Control

by Valdas V. Adamkus,
Regional Administrator,
EPA Region 5



Valdas V. Adamkus

Historically, few States in our nation have enjoyed as much economic growth and development as Ohio. Strategically located between rich iron deposits to the west and the coal reserves of the Appalachian Valley, Ohio is within 500 miles of two-thirds of the country's population and three-fourths of most of its natural wealth. Its own abundant natural resources provide the State a commanding industrial potential that has yet to be fully realized.

Although its land area is small, 35th among all the States in the Union, Ohio ranks third among States in manufacturing output: an astounding \$37 billion annually. This enormous production helps explain why Ohio is tied for second among States in the generation of hazardous waste materials.

With thousands of factories affecting air and water quality, and millions of people living within its borders, Ohio is a microcosm of all the environmental problems confronted by this nation. There are no easy solutions to the country's pollution dilemma, and none exist for Ohio.

Controlling Wastes

Ohio EPA, like the Federal EPA, has assigned its highest priority to the proper management of hazardous and toxic wastes. Under the authority of Ohio Senate Bill 269, enacted in 1980, the State has established a very active program covering both the control of newly generated wastes and the cleanup of sites where there has been uncontrolled disposal of hazardous materials.

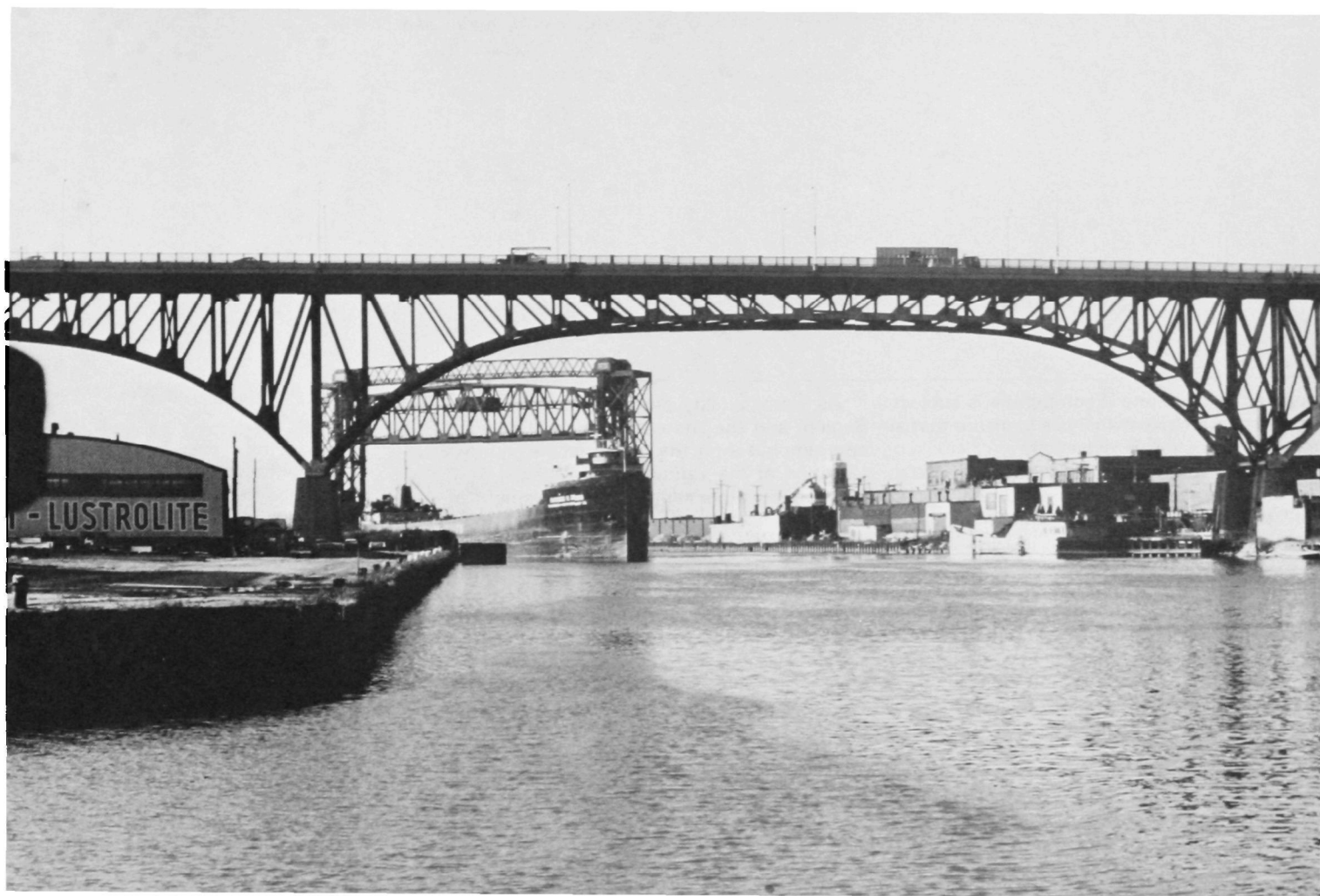
Even though Ohio has not yet been authorized to operate its program in lieu of the Federal program, the State has accepted a major role in the implementation of the mandated Federal program pending authorization. The State entered into a "Cooperative Agreement" with Region 5 under which Ohio EPA, with funding from U.S. EPA, provides information and assistance to the regulated community on all aspects of the program, initiates action to resolve discrepancies between information reported by generators at the time of shipment and that reported by treatment and disposal facilities at the time of receipt, and performs com-

pliance inspections. This is a substantial commitment by Ohio EPA since there are approximately 900 treatment, storage and disposal facilities, 3,700 generators, and 850 transporters who have filed notifications in Ohio.

More than 95 percent of all compliance inspections conducted in Ohio during Fiscal Year 1982 have been completed by State personnel. Inspectors are required, among other things, to review and evaluate contingency plans and emergency procedures, waste analysis plans, and groundwater monitoring data. During 1981, Ohio EPA conducted approximately 550 such inspections, and in FY 1982, another 450 inspections have been completed by the State.

Unlike the Resource Conservation and Recovery Act, which provides grant assistance to States for the development of programs to control newly generated hazardous wastes, the Comprehensive Environmental Response, Compensation and Liability Act ("Superfund") contains no support for State management of the program. It provides U.S. EPA with the authority to initiate enforcement actions so that uncontrolled waste sites can be cleaned up by those responsible for the disposal of wastes, and it established a trust fund to be used in cleanups where responsible parties are unknown, or are unable or unwilling to undertake the cleanup. A State's ability to use these provisions successfully depends on cooperation between key agencies and on the State's ability to meet the statutory requirement for matching funds requested from the trust fund.

Ohio has been notably successful, both in securing voluntary cleanups by responsible parties and in qualifying sites for cleanup using Superfund. Ohio EPA played an important role in the successful negotiations which resulted in a settlement under which more than 100 companies will pay \$2.4 million towards the cleanup of the Chem-Dyne site in Hamilton, Ohio. That settlement, which was the largest voluntary waste cleanup commitment by industry in the nation, and was characterized by Administrator Anne Gorsuch as "dramatic evidence of a new trend," succeeded in large part because of the State's commitment to proper waste management.



Ohio EPA and U.S. EPA continue to work closely on a number of removal actions—short-term cleanups, which cost less than \$1 million and can be completed within 6 months

Managing Air Pollution Problems

Air quality in Ohio has improved significantly in the last ten years. Sulfur dioxide has been reduced to the point that it is virtually no longer a health problem anywhere in the State. Although most Ohio urban areas are currently designated as non-attainment for ozone, the Ohio EPA has developed evidence that indicates that control strategies are working and that all of the State may be rid of unhealthy levels of this pollutant by year's end. Total suspended particulates have proven to be a more stubborn adversary, and even with recession-reduced production levels the State's steel making areas continue to violate health standards.

State, local and Federal air pollution control officials are focusing their enforcement efforts on these remaining pockets of pollution, with particular emphasis on insuring

compliance with the State's newly adopted fugitive dust regulations. These rules address for the first time the problem of windblown dust from storage piles and heavily used in-plant roads which have been identified as major contributors to the remaining particulate problems. One fortunate aspect of controlling this type of air pollution during a period of economic hardship is that fugitive dust controls do not generally require large capital investments but can accomplish significant air quality improvements with improved housekeeping practices.

The pollutants nitrogen dioxide and carbon monoxide are associated almost entirely with automobile emissions. Ohio has no ambient nitrogen dioxide problems and has seen significant reductions in its carbon monoxide levels due in large part to improved vehicle emission controls. Of course, continued diligent air quality monitoring will be needed to determine if these improvements will be maintained in the future. Strong State and local air pollution efforts will be needed to keep the gains of the last decade.

Ohio EPA and the local air pollution con-

trol agencies that it oversees have demonstrated a high degree of technical competence and program management. A greatly improved State enforcement capability has caused a shift in the relative burden of compliance activities from the Federal level as the State has assumed more of the primary role assigned to it by the Clean Air Act. Further evidence of the strength of the State program is the delegation to the Ohio EPA of the responsibility for administering the important Federal programs for controlling hazardous air pollutants and standards for new sources of air pollutants.

Ohio was among the first States to assume a major role in enforcing Federal rules curbing lead in gasoline. With its industrial sector beset with economic problems, Ohio has been receptive to many of the cost effective regulatory reform initiatives of the U.S. EPA and the "bubble" concept which was pioneered at an Ohio facility of Armco Steel. This has led to many other applications from in-

dustries in the State. Each bubble is subject to a strong technical analysis to insure that air quality protection is achieved.

A major air quality issue that could have a significant impact on Ohio is acid rain. About half of Ohio's utilities burn locally mined medium- to high-sulfur coal in rural areas. Most power plants located in urban areas use low sulfur coal. As noted above, current use of coal does not violate ground-level ambient air quality standards, but a number of eastern States and Canada have alleged that Midwestern power plants contribute to acid rain through long-range transport and conversion of sulfur dioxide into particulate sulfates.

While agreeing with U.S. EPA that the causes of acid rain remain a matter of conjecture, Ohio EPA is exploring alternative ways to reduce sulfur dioxide emissions through such techniques as coal washing. The fact that installing scrubbers on existing plants or switching to low-sulfur coal will have immediate, severe economic impacts on the State's industrial base or on its coal-mining communities—with no scientifically demonstrated benefit to the acid rain problem—is a primary reason for the State's position. All new power plants built in Ohio do employ scrubber technology and over time will gradually replace the existing generating capacity.

Ohio continues to make good progress in cleaning its air and is doing so in the face of the difficult social and economic problems caused by a declining industrial base.

Water Quality

Water quality in Ohio has labored under tarnished images of Cleveland's Cuyahoga River afire and a "dying" Lake Erie. In fact, a walk down the Cuyahoga or along Ohio's Great Lake would surprise the most jaundiced critic. As stories on those waterways elsewhere in this Journal will reveal, Ohio has seen real progress in cleaning up not only its water resources, but its national environmental image as well. The progress made by Ohio EPA management to achieve the goals of the Clean Water Act and the Safe Drinking Water Act is impressive and the State's 11 million residents have benefited.

As water quality programs mature, the Region, and the State as well, are placing new emphasis on the coordination and integration of the various program components—planning, the development of standards, construction grants, permit monitoring and compliance. We recognize this new approach is helping to achieve water quality improvements.

The State was quick to implement the "stream specific approach" to water quality standards. These standards are based on the physical, chemical, biological factors of specific stream segments, rather than on state-wide numerical criteria. Local economic conditions are also a prime consideration when the State proposes new standards for U.S. EPA review. Ohio is further along than most other States in meeting water quality standards and in recognizing environmental economic realities without violating legal responsibility.

The State is a leader in the use of biological criteria to determine "use classification" when developing standards. As opposed to using strictly chemical water quality criteria, which can vary widely from day to day, this approach looks at a habitat for species and ecological composition. Biological evidence presents a truer determination of how a body of water should be restored and protected.

Ohio EPA and this Agency have been encouraged by the results of a project recently funded by U.S. EPA for the management of non-point pollution in the farm community. Together with agricultural public interest groups, the State is identifying small geographic areas that impact water quality, and designing appropriate land management practices for these critical areas. Through voluntary public implementation, this program is succeeding.

Wayne S. Nichols, Director of Ohio EPA, and his staff have also succeeded in creating a new effluent toxicant strategy in conjunction with our Regional Office. This is an important activity because it allows us to identify the most significant sources of toxicants

in industrial effluents through the National Pollutant Discharge Elimination System (NPDES) permitting and pretreatment programs. Now, after evaluating effluents, Ohio EPA can identify significant facilities that have the highest potential for toxicant discharge and control where toxicants are found in high enough levels of concern to human health and aquatic life. We expect NPDES permitting for the iron and steel industry to reflect this new strategy by year's end.

One of the goals of this Agency has been the delegation of as many Federal programs to the States as they can effectively manage. Procedures have recently been developed between Ohio and U.S. EPA to fully delegate the overview function for NPDES permitting programs, minimizing Federal overview. U.S. EPA is also working with the State to complete delegation of NPDES pretreatment permitting to Ohio.





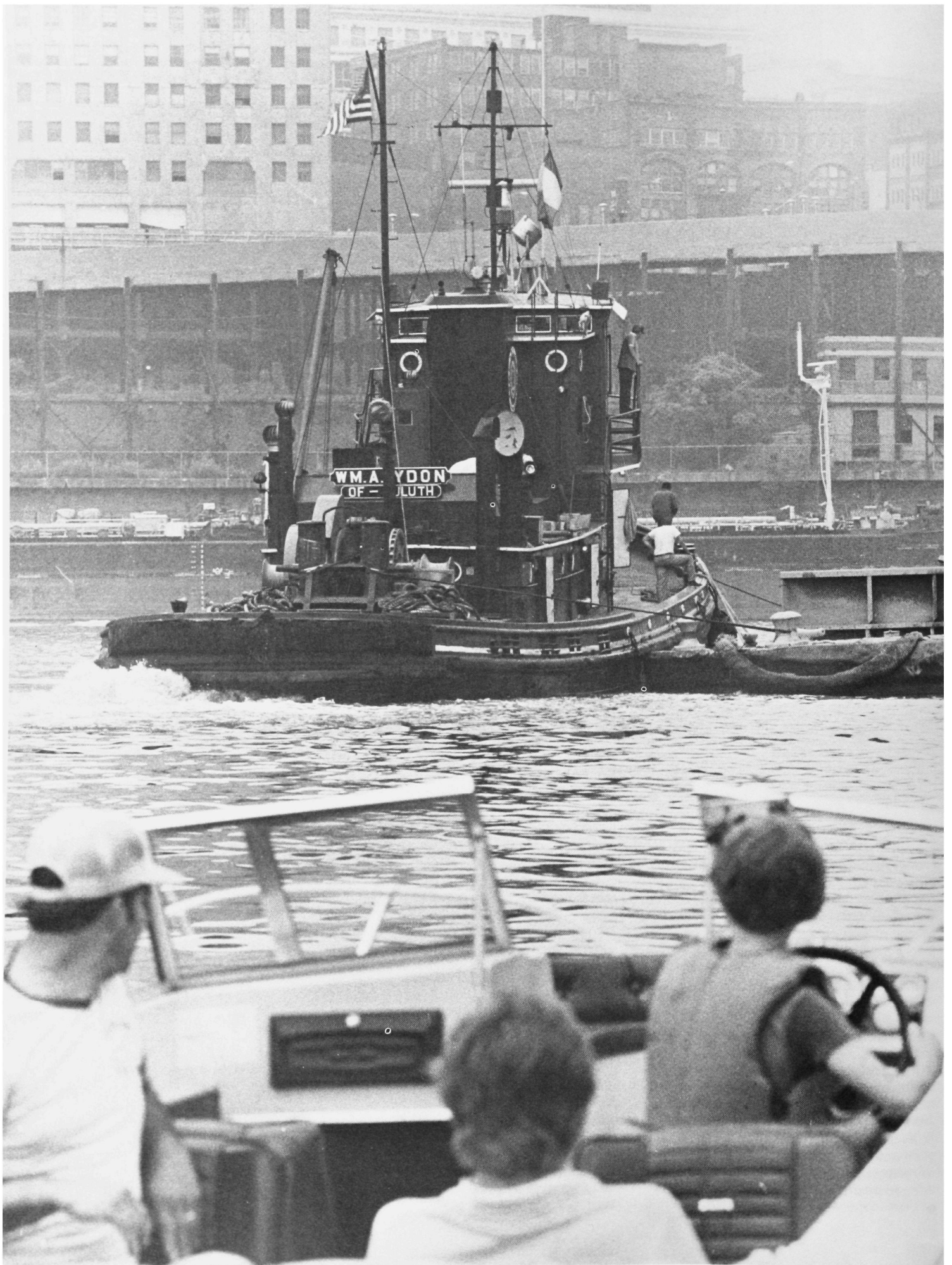
Another program in which Ohio is firmly established is its monitoring of the stringent Federal requirements of the Safe Drinking Water Act. Since the State had a successful history of managing its own water supply program prior to the enactment of the Federal legislation, there were few difficulties in transferring Federal enforcement responsibilities to the State in 1978. The 1,691 community water systems in Ohio directly supervised by the State have an exceptional compliance record of 97%.

Improving water quality through the construction of municipal wastewater facilities has been a major effort of U.S. EPA. Ohio is 3rd among States in the nation in total Federal monies allotted for construction grant activities, and as of March of this year has been managing this program under a delegation from U.S. EPA.

This achievement is the result of many years of effort on the part of Ohio EPA and this Agency to create a satisfactory management program despite a history of problems. At one time, Ohio had been the first State in the history of national construction grant allocations to lose money from the program when it was unable to provide a sufficient stream of fundable projects in the late 70's. This situation has been reversed and the State now has proven its ability to manage its own construction grants activities.

Both Ohio and U.S. EPA are keenly aware of Ohio's environmental problems caused by heavy industry and dense population. Yet, we share a sense of pride, as must most Ohioans, in the environmental achievements in the State during this past decade. Despite a myriad of social and economic problems, Ohio has made progress in cleaning up its land, air and water.

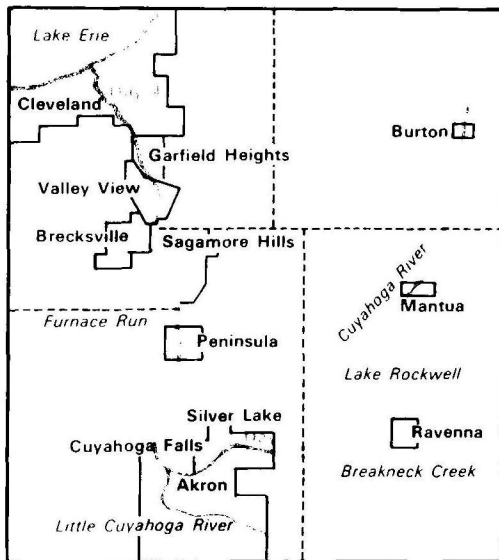
I am encouraged by our developing partnership in meeting these responsibilities. With Ohio's support, and with the assistance of local governments, industry and citizens, we will continue to gain the benefit of a cleaner and more healthful environment in which all Ohioans can live and prosper. □



Cleveland's River on the Mend

By Bill Sloat
Beacon Journal Staff Writer

This article is a reprint of the final one in a series about the Cuyahoga River carried by the Akron Beacon Journal last summer. Akron Beacon Journal reporter Bill Sloat and photographer Ron Kuner set out to discover the Cuyahoga River by canoe and boat. The river that once gained national notoriety for catching fire is nothing like the river found by Sloat and Kuner. They started in Geauga County, followed the Cuyahoga through Portage and Summit counties and traveled through Cleveland into Lake Erie.



Jean and Peggy La Barre, with friend Samuel Luciano, aboard their boat on the Cuyahoga River near downtown Cleveland.

Pleasure boats and working craft share the Cuyahoga River in Cleveland

Jean LaBarre lives in a trailer on the banks of the Cuyahoga River in downtown Cleveland.

Sometimes at night, he said, he can hear car thieves pushing stripped hulks into the water.

His home is where the river once was stained red by pollution, a spot where all visible life was extinguished by chemicals and abuse.

But things have changed, said LaBarre, and the Cuyahoga River doesn't paint Lake Erie with hues "that would make Picasso proud."

Now you can see hundreds of fishermen lined up on jetties at the mouth. They catch rock bass and perch and arrive early to claim their posts.

According to biologists who have studied this part of the river, it is still "severely degraded," but improving.

Migratory fish, including walleye, have been sighted in the lower Cuyahoga, although none stay long enough for sportfishing.

A 1972 federal law, the Clean Water Act, is the main impetus behind the cleanup. The act said all U.S. waters must be fit for swimming and fishing by July 1983.

"The Cuyahoga won't meet that goal," said Andy Vidra, an environmental specialist for the Northeast Ohio Areawide Coordinating Agency (NOACA), the planning agency for Cuyahoga County. "But it's in halfway decent and not in all that bad a shape compared to where it was 10 years ago."

The Northeast Ohio Four County Regional Planning and Development Organization (NEFCO), the planning agency for Summit County, said in a recent environmental assessment that the Cuyahoga River remains troubled.

"Various physical, chemical and biological factors contribute to the degradation of water quality of the lower Cuyahoga River, including the dredging of the channel for navigation purposes, the naturally occurring low velocity of the river's flow, the high con-



*The Cuyahoga River
winds past scenic factories and bridges
in Cleveland's Flats.*

centration of chemical and steel plants," NEFCO concluded.

"This segment is so polluted that it cannot meet the state's general water quality standards. Therefore Ohio EPA has applied special, less stringent standards."

Even so, water samples taken in the heart of Cleveland indicate there is less pollution there than upstream near Akron and Peninsula.

One reason is rigid enforcement of clean water standards set by the Ohio and U.S. Environmental Protection Agencies.

Another is that the dredged river channel allows cleaner water from Lake Erie to flood the mouth, turning it into an estuary.

The Northeast Ohio Regional Sewer District also has spent almost \$300 million on the Southerly sewage treatment plant in Garfield Heights, which sprawls over several hundred acres of bottomland.

Neighbors complain that the plant is noisy and stinks, and it is under a court order to eliminate those problems. It often breaks down, and Ohio EPA inspectors from Twinsburg have cited it more than 200 times for violating discharge regulations.

But the giant sewage plant is bettering its record.

LaBarre, 60, keeps his head shaved and smokes cigars and is putting the finishing touches on a 49-foot sailboat he has been building since 1972. It is docked in the river by his house-trailer.

He's known as "The Colonel." He subscribes to *Soldier of Fortune* magazine and dreams of sailing away to the South Pacific.

He's a self-avowed river rat. And for the last 10 years he has watched the river improve, "although the pollution problems haven't been solved by any stretch of the imagination."

The Cuyahoga is a wide, deep stream as it flows past LaBarre's home near the Columbus Street Bridge, about two miles from Lake Erie.

The navigation channel is 500 feet wide, 30 feet deep, with mud, silt and organic debris on the bottom.

There is hardly any current and scientists describe the mouth as having a lake effect. The water is stratified, with river water intruding over lake water.

There is hardly any aquatic vegetation. Freighters carry iron ore, coal, limestone, lumber and petroleum products up the river into the heart of Northeast Ohio's most industrialized valley. Docks and factories line the banks here—a place that Clevelanders call The Flats.

No longer is the Cuyahoga a recreational stream flowing through rural countryside, looping and lallygagging under a green canopy of sycamore and aspen. It's not a lazy river at the finish.

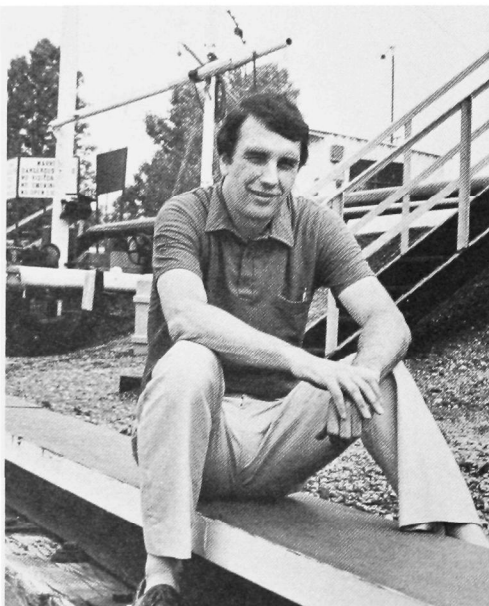
Three miles from the mouth, the terrain flattens out, forming Lake Erie's Basin.

Here it's a tough, blue-collar river that works for a living like the men in the factories and ships.

It's dirty but it won't burn. Toss a match into the water and the flame hisses out.

"The water has been progressively getting better," LaBarre said. "Sometimes we can

Businessman Clem Reiss believes Cuyahoga River pollution controls are stronger.



see fish swimming upstream, and that never used to happen. They probably come in from Lake Erie."

His wife, Peggy, a doctoral student at Kent State University, said she also has seen the fish die.

"When they get to the pollution, we can watch them float to the surface dead. It seems like they die as they move up the river," she said.

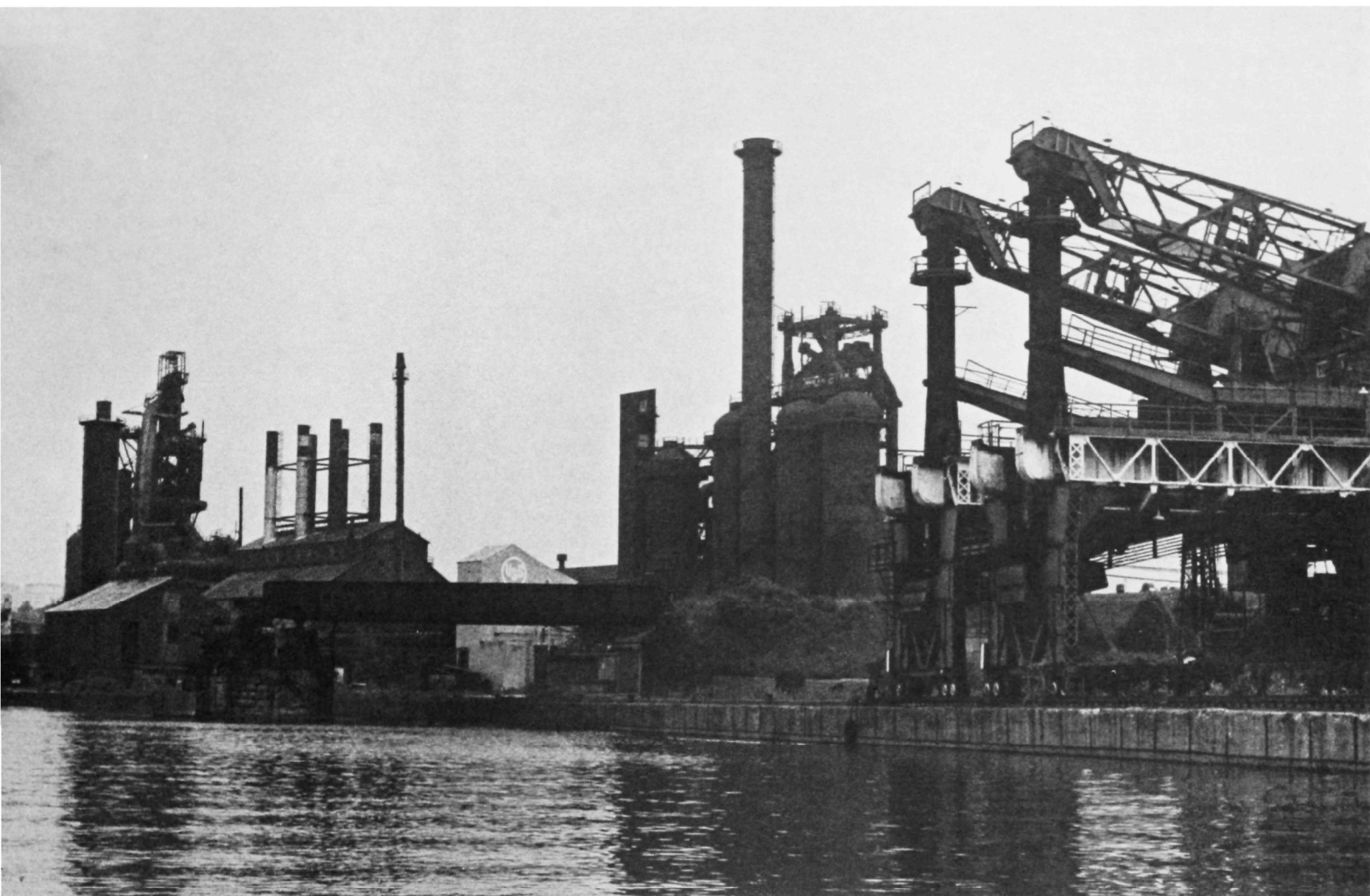
Saturday's leg of our trip from Geauga County to the Cuyahoga's mouth took us from Cleveland Heights, north of the Flats, to Lake Erie. Because canoeing experts warned us a canoe would be hazardous on this leg of the river, we switched to a 14-foot boat.

But we still had problems.

In shallow water in Cuyahoga Heights, we damaged our outboard motor's prop, and by the time we reached the Flats, it conked out.

John Bohach, 47, of Brecksville, and his son Rick, 13, found us stranded at the Jones & Laughlin steel mill ore dock. He towed us to the river's mouth.

That opening has been moved since 1796, when Moses Cleaveland first entered the region and founded the city. Shipping interests had a new mouth built in the 1800s.



A whitewashed but abandoned U.S. Coast Guard lighthouse marks the conclusion of the river's meandering 100-mile course through Northeast Ohio.

Saturday's journey took us past West Third Street, where the river burned on June 22, 1969. The water was a respectable green, and not stained copper-color by waste dumped from the mills.

It was still a great torrent of capitalism.

But the Audubon Society's description of the Cuyahoga River as "oiled and happily bubbling-oozing waters" no longer applies.

A flotilla of boaters was using the river Saturday, many lured into Cleveland by the city's "Days of the Ships" celebration.

They shared the channel with the tugboat William A. Lydon, which nudged a barge carrying sand downstream under draw bridges. All the action was near high-rise office buildings.

It seemed like hordes of pleasure craft churned up white wakes below mills belonging to Republic Steel and Jones & Laughlin.

While the boats played, blast furnaces worked, smelting ball bearing-sized pellets of iron ore into steel ingots to make cars.

The ore from mines in Canada and northern Minnesota was piled up in mountains along the river.

But not far away from that, people, too, were piled up on the waterfront. They were partying at riverside restaurants called Fagan's, D'Poo's and the Dock.

And like the LaBarres, people told us of seeing signs of life where once there were none.

In 1969, after the notorious fire, the U.S. Water Pollution Control Administration issued a report that called the Cuyahoga River a "virtual waste treatment lagoon."

The agency said the river was so horribly scarred by pollution, it was unable to support "any visible life, even low forms such as leeches and sludgeworms, which usually thrive on wastes."

Chester Barzal, 58, a steelworker at Jones & Laughlin, said he started seeing the water change seven years ago.

"Up until then, it seems, everything used to go in the river," Barzal said. "Now they're very strict at the plant."

Barzal has been at the plant for 36 years.

"I've seen the river both ways, dead and alive like it is now," he said. "It's not only anymore like it used to be. That's all it was, an open sewer."

"I like it a lot better alive. They're doing a good job bringing it back."

Businessmen like Clem Reiss, 40, president of Reiss Oil Terminal Corp., have learned to live with the new environmental rules affecting the Cuyahoga River.

He said the EPA and Coast Guard monitor his company, which has a cluster of oil storage tanks in the Flats.

"They do a good job in following up on what's happening," Reiss said. "The rules are a little more defined."

He said he has been told that there hasn't been a major spill for "quite some time."

Bohach, our rescuer, said he has been cruising the Cuyahoga River on weekends for the last five years.

"It's starting to get real nice," he said. "In fact, I think the river down here is one of the best places around to go for a boat ride. If you go to Portage Lakes, that's like suicide because so many boats are there. And I don't like Lake Erie because it can get so bad if the weather gets bad, so we come down here and we don't have to go far out."

One treat about the Cuyahoga, Bohach added, is that there is a lot to see.

"It's a scenic route, with all the old factories and bridges, to take in a boat. You get a nice view of the skyline." □

Rescued from Death

Lake Erie has undergone a striking change for the better during the past dozen years or so. The wide, green mats of floating algae that once washed up on the Ohio shores are now mostly gone. Gone, too, are the masses of alewives, herring and decaying plant material that littered the beaches.

So notorious was the condition of the "dying" lake that one of the earliest proclamations of the first EPA Administrator, William D. Ruckelshaus, was a demand in 1971 that Cleveland and Detroit reduce their pollution of Lake Erie. Beaches were closed, commercial and sport fishing in the lake had practically ceased, and drinking water drawn from Lake Erie frequently had taste and odor problems.

Today the Lake Erie beaches are open and frequented by crowds of swimmers, boaters, and water skiers. Commercial fishing is making a comeback, and the walleye catch by sport fishermen has tripled since 1975. The near-shore lake water is clear, and while Cleveland-area residents still complain that the tap-water sometimes smells and tastes peculiar, there is a consensus among environmentalists, scientists, sanitation engineers, and the general public that accelerated eutrophication (or premature aging), which was killing Lake Erie long before its time, is being slowed and even reversed by pollution control measures adopted in response to the demands of an aroused public.

How did Lake Erie reach the condition at which it found itself at the beginning of the "Decade of the Environment"? The situation was at least a century and a half in the making.

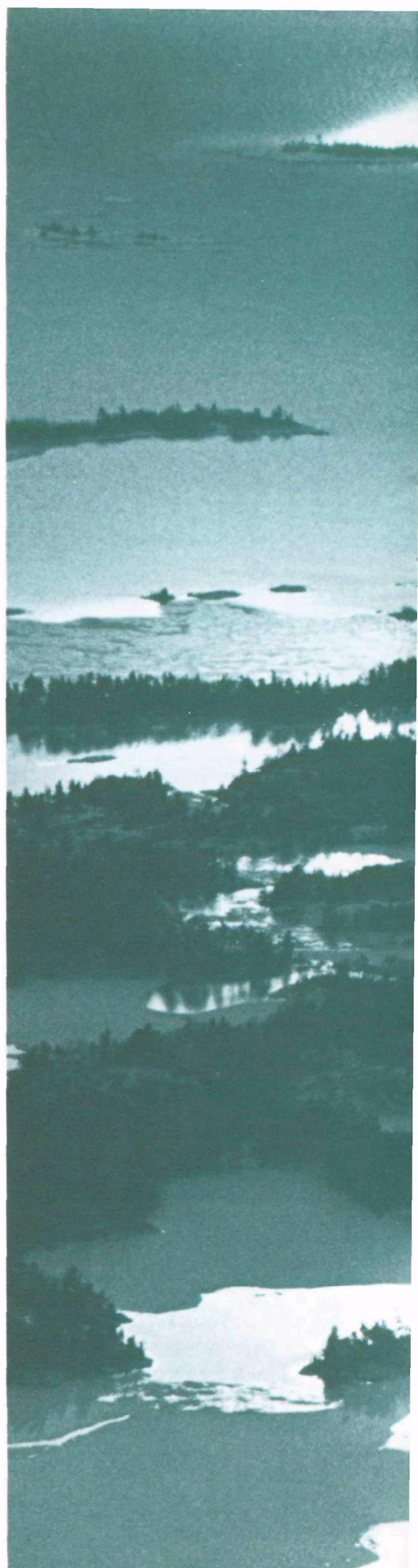
The five Great Lakes, of which Lake Erie is the shallowest, constitute the world's largest reservoir of navigable, drinkable water. They were formed by a two-billion-year process that included shifts in the earth's crust and glacial movements through several ice ages. The last glacial withdrawal took place about 10,000 years ago, and the level of the Lakes has been stabilized for some 2,500 years. The Lakes contain 20 percent (6 quadrillion gallons) of the earth's and

95 percent of the United States' supply of fresh surface water. They cover some 94,750 square miles, extending 850 miles from east to west and 700 miles north to south. Lake Erie has a surface area of 9,910 square miles, is about 240 miles long and 57 miles wide at its broadest. Its average depth is only 58 feet (28 feet in the Western Basin). With high winds, this shallowness allows extremely turbulent waves to develop with very little warning, making the lake a graveyard of ships and boats.

All five of the Great Lakes were discovered by the French. Lake Erie remained under French control until the British, after their victory in the French and Indian War, took over in 1760. After the War of 1812, which saw the Americans under Commodore Oliver Hazard Perry triumphant in the naval Battle of Lake Erie, settlement around the lake began in earnest. The Erie Canal, completed in 1825, connected the Hudson Valley with Buffalo at the eastern end of Lake Erie, opened up the Great Lakes area to trade, and by reducing the cost and difficulty of travel, promoted the settlement of the Great Lakes Basin.

The southern shore of Lake Erie was a logical site for the infant steel industry. Ships brought iron ore from the Minnesota ranges to the smelters around cities like Cleveland, and the smelters fed pig iron to the ravenous steel mills. Railroads were built to haul coal up from the Appalachians to fuel the mills. In 1859 (in Pennsylvania) Col. Edmund Drake brought in the Nation's first oil well, and by 1866, just seven years later—Cleveland was having problems with drinking water drawn from an intake in Lake Erie near the mouth of the Cuyahoga. This river was already badly polluted by industrial wastes that came mainly from the oil refineries on its banks.

*Sun rises over
the world's greatest
fresh water supply,
the Great Lakes,
of which Lake Erie
is the shallowest.*





By 1909, the United States and Canada were sufficiently concerned about pollution in Lake Erie and the other Great Lakes to sign the Boundary Waters Treaty, in which each sovereign power promised not to do anything to harm the Lakes. The agreement established the International Joint Commission, with members from both countries, to identify Great Lakes problems. Despite the existence of the treaty, industries and municipalities in both countries continued to contribute to the deterioration of the lakes. In response to the environmental movement in the 1960's, the Canadian and U.S. Governments held a series of meetings that resulted in the United States-Canada Water Quality Agreement of 1972. It set limits for the allowable concentration of pollutants in the waters of the Lakes. These pollutants included phosphorus, radioactivity, petrochemicals, and metals such as mercury.

In 1978 the agreement was expanded to specifically address many different toxic compounds, particularly persistent chlorinated organics that accumulate in living organisms.

Lake Erie is a vital resource serving millions of people. In comparison with the other Great Lakes, it contains the smallest water volume while its drainage basin includes the largest population. Because of this, Lake Erie has experienced greater changes in water quality than any other Great Lake.

Lake Erie water quality declined during the 1960's, prohibiting the full recreational and commercial use of the lake. Like many similar lakes exposed to cultural changes in their drainage basins, Lake Erie underwent accelerated eutrophication. The major symptoms of this premature aging are high production of algae, cloudiness, and at times low oxygen content. These conditions combine to cause unpleasant tastes and odors, nuisance plants and organisms on surface waters and on beaches, and a general degradation of the lake's ecosystem, which leads to the proliferation of undesirable fish species in the lake.

Approximately one-fifth of the water draining into the lake originates within its own drainage basin. The other 80 percent comes from the upper Great Lakes and enters Lake Erie via the Detroit River. Except for evaporation from the lake surface, 97 percent of the outflow from Lake Erie leaves by way of the Niagara River, the other 3 percent leaving by way of the Welland Canal.

Population within the Lake Erie Drainage basin grew from 2 million in 1878 to 14 million in 1979, contributing nutrient

loadings (mainly phosphorus) which have, in turn, stimulated the growth of phytoplankton, the first biological level in a lake's ecosystem. Phosphorus enters the lake from the atmosphere, from tributaries that drain the watershed, and from direct wastewater discharges.

Phosphorus loadings into the lake are being reduced, however, by control of phosphorus discharges from point sources. This is being achieved by adding phosphorus removal processes to existing wastewater



Ohio Edison Spending \$600 Million To Control Pollutants

Massive air pollution control equipment has been erected on a special deck constructed over a highway at Ohio Edison's W. H. Sammis power plant at Stratton, Ohio.



treatment plants or by incorporating these processes in newly constructed plants. This program will reduce the total loadings of phosphorus to Lake Erie from the present estimated "base year" figure of 19,969 metric tons per year to between 14,200 and 15,500 metric tons per year. Between 1975 and 1981 the point-source loading from major U.S. plants was reduced from 6,719 to 2,654 metric tons per year. This stands as a world-class success in pollution control. The United States-Canada Water Quality Agreement of 1978 set a total phosphorus loading objective of 11,000 metric tons per year, a goal dependent on control of nonpoint sources of pollution, such as agricultural runoff, as well as point sources such as municipal wastewater treatments plants.

Even if all point sources were eliminated, the phosphorus loading objectives would not be achieved without reduction of pollution from non-point sources, a fact first quantified by IJC studies and confirmed by the Corps of Engineers. The Corps study, building upon earlier EPA projects, also quantified the benefits of low-cost farm tillage practices. The practices leave crop residues on the surface, reducing erosion of soil and associated phosphorus to such an extent that widespread adoption could result in meeting the target loads needed to protect the Lake.

The challenge of further analysis and cleanup is especially intense in a few concentrated problem areas. The IJC has identified a list of key "areas of concern" where uses of Lake water and fish are impaired and require special attention due to both local impairment and lake-wide loading of pollutants coming from these areas. While these are certainly not the only problem areas, they are the most acute and are targeted for closest observation. The areas are reported in the U.S.-Canada Water Quality Board reports of 1981 and 1982, and include the following in the Lake Erie basin: Detroit River, toxics; Rouge River, toxics; lower portion of the Raisin River near Monroe, Mich., toxics; Maumee River, phosphorus; Lower Maumee River near Toledo, toxics; Lower Black River near Lorain, Ohio, toxics; Lower Cuyahoga River near Cleveland, oxygen loss; Lower Ashtabula River, toxics.

The need to protect Lake Erie and the other Great lakes has reaffirmed EPA's commitment to an aggressive and dynamic Great Lakes program. EPA, in late 1977, created the Great Lakes National Program Office (GLNPO) headquartered in Chicago. Its pur-

pose is to keep the Agency's focus on Great Lakes cleanup efforts as they are related to the U.S.-Canadian Great Lakes Water Quality Agreement, and to support the Regional Administrator as EPA's national Program Manager for the Great Lakes and as the U.S. Co-Chairman of the U.S.-Canada Water Quality Board of the International Joint Commission.

The Great Lakes National Program office has been supporting agricultural demonstration projects in the Lake Erie Basin. These projects are designed to determine the feasibility of using various conservation practices in reducing the use of phosphorus. Together with a demonstration project conducted by the Corps of Engineers, the agricultural projects have shown that conservation tillage practices are highly cost-effective in terms of both phosphorus control and farm income. EPA is currently supporting an expanded demonstration program by assisting soil and water conservation districts in 31 counties that are conducting projects to demonstrate conservation tillage practices. The projects are being carried out in close cooperation with the States, the Corps of Engineers, the U.S. Soil Conservation Service and other U.S. Department of Agriculture agencies.



One of the most serious results of phosphorus pollution in Lake Erie was the decline of commercial and sport fishing. Species of desirable fish simply could not live in water depleted of its oxygen by phosphorus-nourished algae.

Lake Erie fish are used not only by the people of Ohio, but also by the populations of the surrounding States of Michigan, Pennsylvania, and New York, and the Canadian Province of Ontario. Although there are differing State and Provincial views on the use of the common fish stocks, all fishery and environment protection agencies recognize the need for management programs designed to maintain or improve fish populations in Lake Erie.

The results of these conservation programs have been significant. The dramatically increased walleye population is an example. During the 1960's and early 1970's, the "fishable" walleye population (fish 14 1/2 inches and larger) was estimated at or below two million. But by 1981 the fishable walleye population in the lake had jumped to nearly 20 million. This tenfold increase is a result of good international and State management of fish harvests as well as of improved water quality in the lake. The Lake Erie Fisheries Unit Staff of the Ohio Department of National Resources, Division of Wildlife, reports that their Fall 1981 survey of Lake Erie fish also indicated the presence of older and larger walleyes.

Other fish species, such as freshwater drum and white perch, are either maintaining high population levels in the lake or increasing. The total estimated Ohio Lake Erie fish harvest for 1981 was 15.9 million pounds.

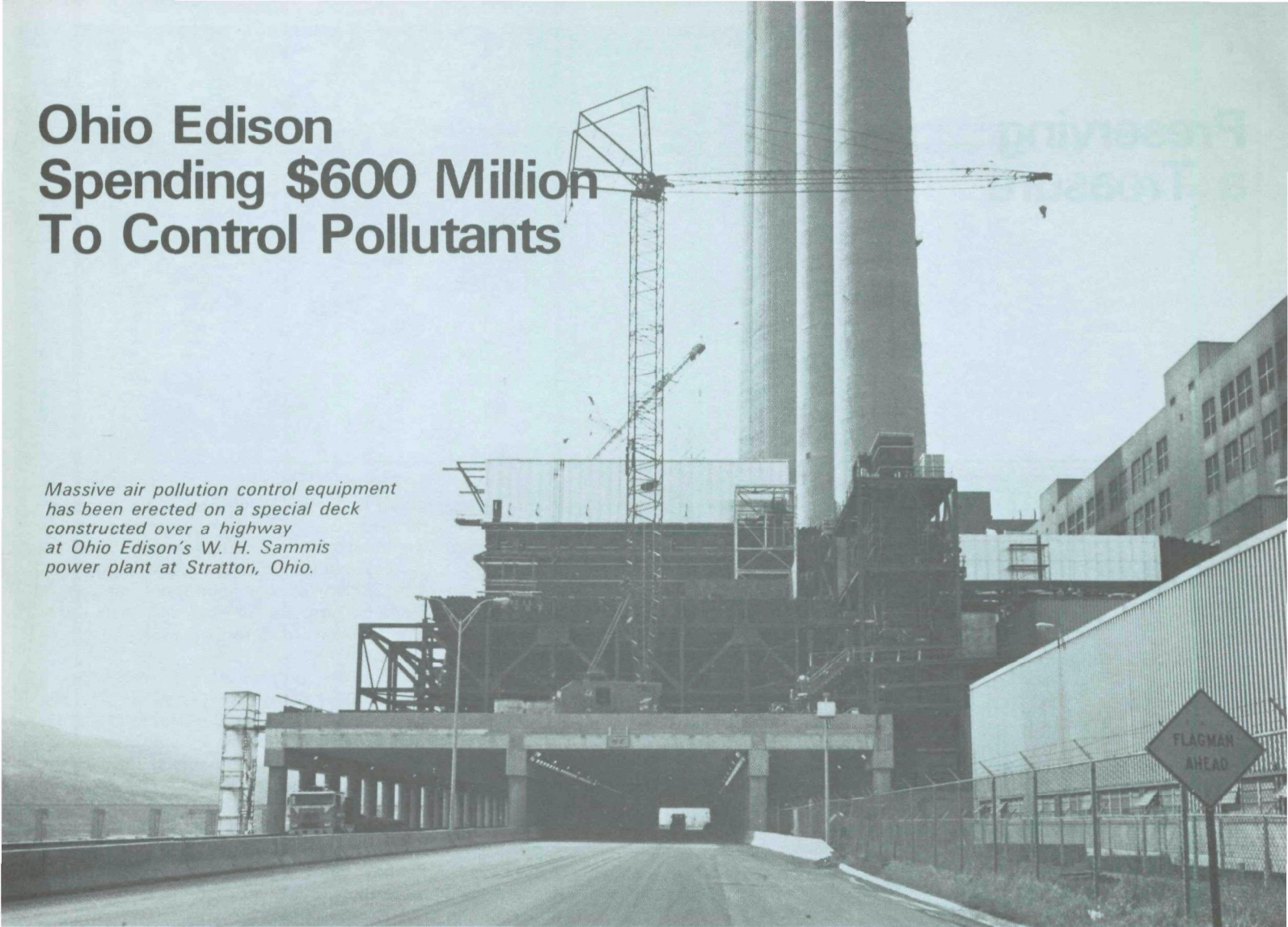
recreationally, and esthetically.

"Much remains to be done, however. Further reduction of phosphorous pollution in the lake will require sound land as well as water management practices. And other, more recently recognized pollution problems, especially that of toxic pollutants, will have to be dealt with. The record indicates that the people of Ohio and the other residents of Lake Erie's shores are equal to the task.

"It is important to remember that the Great Lakes are themselves part of a watershed or drainage basin that forms a sensitive ecosystem. The improvement in the fish population in Lake Erie is a heartening example of what can be done when the State, Provincial and Federal Governments, using professional expertise and supported by public opinion, unite to protect these natural systems. We need to continue the same interdisciplinary and intergovernmental approach to remedy the remaining problems in the Great Lakes system." □

Ohio Edison Spending \$600 Million To Control Pollutants

Massive air pollution control equipment has been erected on a special deck constructed over a highway at Ohio Edison's W. H. Sammis power plant at Stratton, Ohio.



The Ohio Edison Company is engaged in a massive air pollution control improvement program at seven of its coal burning power generating stations which serve eastern Ohio, West Virginia, and western Pennsylvania.

Ohio Edison has been spending over \$600 million on the cleanup effort which has been progressing rapidly following lengthy negotiations to settle EPA's enforcement action against the company.

A total of \$445 million of the \$600 million the company is spending is earmarked for a project at its W. H. Sammis plant at Stratton, Ohio. This project is designed to eliminate the emission of 75,000 tons of particulate matter each year and achieve a major reduction in sulfur dioxide emissions.

Valdas V. Adamkus, EPA Regional Administrator in Chicago, said he was "greatly encouraged" by the progress

made by Ohio Edison. He added after making a recent visit to the Sammis plant, "I was intrigued by the unique deck and the shoehorn precision involved in the installation of the equipment at Sammis."

At Sammis, Ohio Edison is now installing baghouses on four generating units, and electrostatic precipitators on the remaining three. Six of the seven devices have been installed on a bridge constructed over Ohio Highway 7. Approximately three football fields in length, this deck holds all the necessary control equipment.

The decree requires that Sammis achieve compliance by August of 1984.

Ohio Edison's other six facilities will reduce particulate emissions by a total of 41,000 tons a year. The company's settlement with EPA will bring all facilities except Sammis into compliance with Ohio's particulate emission regulations by the end of 1982. The other six facilities are: R. E. Burger (Shadyside, Ohio);

Edgewater (Lorain, Ohio); Gorge (Akron, Ohio); Niles (Niles, Ohio); Toronto (Toronto, Ohio); and Mad River (Springfield, Ohio).

The original consent decree required that the company clean up twelve plants in the state. However, since 1980, three of the older, less efficient plants have been closed, and two have been sold, leaving a total of seven needing improvement.

The Sammis station located on the Ohio River in Stratton, Ohio, is the largest single generating station in the Ohio Edison System.

EPA's Region 5 has been concerned about the operation of the Sammis plant since 1973.

Following an EPA request for emission data pursuant to Section 114 of the Clean Air Act, the Company submitted an air pollution emissions report in September of 1973. The report detailed information regarding combustion for generation of heat, steam and power, air cleaning equip-

ment, and stack and pollutant emissions data.

Air monitoring in 1974 revealed that the area in which the station is located did not achieve the National Ambient Air Quality Standards for Particulates of 75 micrograms per cubic meter set to protect human health.

In 1974, EPA smoke readers visited the Sammis facility and conducted readings of visible emissions emanating from the second stack from the south. In 1976, smoke readers again made observations of the visible emissions at the Sammis plant.

On September 22, 1976, EPA issued a Notice of Violation to the Ohio Edison Company detailing a violations of the applicable implementation plan for the State of Ohio. A formal court-order was filed against the company in 1979 seeking a court-ordered compliance schedule. □

Preserving a Treasure



Aerial surveillance flights sponsored by Little Miami Inc. have detected illegal construction in the Little Miami river floodplain which could not be seen from the road because of trees and shrubs

Techniques used by an Ohio citizens' group to protect the scenic Little Miami River include aerial and canoe surveillance.

Eric Partee, Director of the Little Miami River, Inc., explains that even though the waterway has been designated as a scenic river by both the State and Federal Governments, it is still threatened by pollution and sometimes illegal construction on its banks and within the flood plain.

A tributary of the Ohio, the Little Miami's main stem runs approximately 105 miles from its source near Dayton, Ohio, to its confluence with the Ohio River at Cincinnati.

"Throughout the summer trees and other vegetation sometimes form a screen to hide illegal construction of buildings on the flood plain," Partee explained.

"In less populated areas, whole houses can be constructed in the floodplain in spite of the best efforts of local building inspection and zoning offices."

He said that a pilot friend of his takes his plane up for a "cost only" charge when requested to allow aerial photos to be taken of the stream area.

Information and photos from these aerial surveys sponsored by the Little Miami River group has led to investigations by the Ohio EPA and the apprehension of companies breaking state environmental regulations, Partee said.

Generally, he noted, normal government aerial surveillance work is not sufficiently timely and is not oriented toward protecting the Little Miami. However, he said, his organization hopes soon to co-sponsor with the State a detailed aerial surveillance of the entire river valley.

Partee said that aerial surveillance is backed up by canoe trips by organization members when they receive complaints from river area residents of foul odors, construction activities, and other types of degradation.

These surveillance float trips have provided information to local and State authorities who have then been able to correct problem discharges.

Also of concern to the Little Miami River group is controlling abuses in the increasing recreational activities along the river. Last September the group began a study of the recreational demands being placed on the Little Miami so that appropriate policies could be proposed to local and State agencies to deal with litter, trespass and other problems.

To further protect the river, the Little Miami River organization has joined forces with the State and local governments to increase funding priorities for municipal waste water treatment projects along the river.

"Reports containing Little Miami views were developed and submitted to the Ohio EPA for consideration in the development of the Statewide priority list and formula. Political allies were also brought in to reinforce the group's suggestions. Other State agencies were also solicited for their support, particularly those holding land or facilities along the State's scenic rivers."

The Ohio Department of Natural Resources, for example, has provided \$3 million for land acquisition and development for public access areas along the river.

"Besides water pollution," Partee said, "highway construction continues to be a major threat to the survival of the lower segment of the river. The organization has been successful in holding back the bulldozers for fifteen years, ever since the first meetings were called to discuss the relocation of a major highway along, and in some places within, the stream banks of the Little Miami. With the recent completion of an interstate highway connector to the Cincinnati business district in Kentucky, projected traffic loads have been diminished and even current computer models show that a mild upgrade of existing highways in the valley will be sufficient to solve all anticipated traffic problems. Little Miami members have been active and in the forefront throughout this long historic battle and are responsible for sidetracking efforts to destroy the serenity of the river.

"On the legislative front, Little Miami has been active over the years to promote legislation which will directly or indirectly, benefit the valley. More recently, the river organ-



*A scenic vista
on the Little Miami river
near its headwaters*

ization has actively supported two pieces of legislation with its testimony and phone and letter campaigns." New to most states is the check-off system for raising monies for wildlife and natural area protection. Little Miami Inc. has presented a united front with the Sierra Club of Ohio and other groups to push this bill through the Ohio legislature. When enacted, this bill would give Ohio citizens the option to donate all or part of their tax refund to preservation in Ohio. This would be accomplished through use of a "check-off" box on the State tax form and a space for the dollar amount. Some 12 States have enacted this law and have raised as much as several million dollars annually.

Little Miami has introduced another bill in the State legislature which would establish the Little Miami Forest Preserve. Starting with existing State-owned lands, the preserve concept is designed to stimulate donations from private individuals and corporations.

The river organization is also actively engaged in several reforestation and land preservation efforts.

While the Little Miami Inc. has been widely recognized for its work, Partee states that "our job is far from over. There is still precious little protection for the river. Zoning remains inconsistent or incomplete and there are 52 governmental entities which govern the river the valley. There is not protection or recognition of several natural areas along the river and there is a great need for a master plan for development, recreation and preservation." □

Hazardous Waste Management in Ohio

by Charles J. Wilhelm, Chief,
Ohio Division of Hazardous Materials
Management

"We have produced almost as many automobiles as Michigan, led the nation in tire production, had a major share of the steel industry and been a major glass producer. Our industry has brought Ohio many benefits, but it also made us one of the nation's top generators of hazardous waste."

Wayne S. Nichols, Director, Ohio Environmental Protection Agency

As Director Nichols has pointed out, Ohio has historically been one of the leading industrial states. And, prior to passage by Congress of the Resource Conservation and Recovery Act of 1976, much of the hazardous waste generated in industrial production in Ohio and elsewhere around the country was transported, treated, stored, and disposed of by a variety of improper methods.

Even after the passage of RCRA in 1976, to avoid future hazardous waste problems, Ohio, and most of the other states, still had to deal with numerous abandoned and dangerous hazardous waste disposal sites that originated from past practices.

To assist the states in dealing with problems of abandoned hazardous waste sites, Congress enacted the Comprehensive Environmental Response, Compensation and Liability Act, generally referred to as the "Superfund" law, in 1980.

In that same year, the Ohio General Assembly passed Senate Bill 269, which gave the Ohio EPA the responsibility for managing the hazardous waste control programs in the state.

On July 20, 1981, our Division was provided an initial start-up appropriation by the Ohio General Assembly. We moved immediately to establish an Unregulated Sites Superfund Unit headed up by Roger Hannahs. This unit is under our Surveillance and Enforcement Section, managed by Richard Shank. In August, 1981, the agency submitted a list of 20 sites to U.S. EPA for possible Superfund grants. Four of these 20 Ohio sites subsequently appeared on U.S. EPA's National Interim Priority List of 115 sites: Summit National in Deerfield, Chem-Dyne in Hamilton, Chemical Mineral Reclamation in Cleveland, and Fields Brook in Ashtabula.



This was the scene in February, 1980, at the Summit National Liquid Disposal Service site in Deerfield, Ohio, marked by the Ohio EPA as its worst abandoned hazardous waste facility.



This photo shows the same setting last June after the drums of hazardous wastes had been removed as a result of cleanup financed by the waste generators. The removal action was spurred by an agreement negotiated by the Ohio EPA and the Ohio Attorney General's Office.

At Summit National, once Ohio's worst site, several of the hazardous waste generators contributed nearly \$3 million to a private-sector-financed, total-surface cleanup negotiated by the Ohio EPA and the Ohio Attorney General. This surface cleanup was completed in June, 1982. At Chem-Dyne, Ohio's other large site, about 21,000 of the 30,000 barrels of drummed waste that had accumulated since 1975 were removed and properly disposed of by the generators, through negotiations conducted by the Ohio EPA and the Ohio Attorney General.

Ohio then received the first remedial grant in the Midwest from Superfund for Chem-Dyne, a \$3.4 million award to complete the surface cleanup and to study any subsurface soil and ground water contamination problems that may exist. Recently, U.S. EPA and Ohio EPA announced that over 100 of the original generators would subsidize 70% of the award. This was the largest settlement of its kind nationwide.

The Ohio EPA has also submitted State Superfund Agreement contracts to U.S. EPA for a Superfund-financed study of subsurface soil and ground water contamination at Summit National, and for an engineering study to determine the nature and extent of contamination and cleanup alternatives at Fields Brook.

Removals are short-term cleanups which cost less than \$1 million and which can be completed in six months or less. In the case of removals, the Division sent U.S. EPA, Region 5 pollution reports which provided information on the nature and extent of the problems. These reports were sometimes supplemented by Region 5 with additional data before the formal requests were forwarded to Washington.

Removal grants have been awarded for complete sampling, surface analysis and the removal of all waste at: Chemical Mineral Reclamation in Cleveland, \$440,000; Rock Creek \$160,000 and Raser Tannery in north-

eastern Ohio, \$50,000, \$100,000 to cap a lagoon at Greiner's in northwestern Ohio, \$50,000 for the Ohio Drum site in Cleveland; \$50,000 for the Anaconda site in Akron; and three separate removal grants totaling \$1.64 million for the Laskins/Poplar Oil site in northeastern Ohio. To contend with the contamination problems at this latter site, U.S. EPA lifted the \$1 million, six-month ceiling for expenditures at a single site.

In all, Ohio has been allocated \$7.1 million for nine immediate or planned removals; believed to be more than any other state, and for three remedial grants. Eight other sites have also been cleaned up without Superfund money. Earlier this fall, thirty-five additional sites were sent to U.S. EPA for potential inclusion on the National Superfund Priority List of 400 sites.

Ohio EPA has taken positive steps to clean up those sites that posed an immediate danger to the people of Ohio. Ohio EPA's commitment to protecting public health and the environment is clear from the progress we have made in cleaning up our state's abandoned hazardous waste sites. However, our commitment does not stop there.

We have established our regulatory control program by adopting regulations that are "consistent with, and substantially equivalent to" the federal regulations. With the help of Steve White, Assistant Chief, and Martha Gibbons, RCRA Administrator, Phase II regulations are being developed that parallel the federal regulations under RCRA. This will help the Ohio EPA insure that hazardous waste generated now and in the future is properly managed.

We are also developing a Comprehensive Hazardous Waste Data Management System in our Permit Records Section. It will include information from annual reports by generators and facilities and from our regular compliance inspections. We consider this information essential for effective program planning and decision-making. The manager of this section is Thomas Crepeau. As one of the five national recipients of a 1982-1983 German Marshall Fund Scholarships, he is currently in Europe studying similar systems in three countries.

A notable achievement of Ohio's hazardous materials management program occurred in October 8, 1981, when Ohio became the first state in the nation to issue state permits to existing treatment, storage and disposal facilities. The Division and its engineering section, managed by Paul Flanigan, had made technical recommendation on 350 permit applications for approval or denial to the State of Ohio's permit issuance agency, the Hazardous Waste Facility Approval Board (HWFAB). The five-member board, chaired by Director Nichols, took the following action: 336 applications were approved, nine were denied in full and five were partially denied, and special terms and conditions were added to over 70 of the permits.

Now that Ohio's existing facility permitting process is complete, the Division's inspection unit, headed by Paula Cotter, will inspect all of these facilities at least once a year, and more often if the terms and conditions in the permit require it or if the facility handles large amounts of waste. This helps insure that all permitted facilities meet the applicable federal and state statutory and regulatory requirements and comply with any special terms and conditions in their permit.

Governor Rhodes has made this program Ohio's top environmental priority. We feel we have already made progress in better managing our hazardous materials and we see no reduction in our effort for the next several years. □

Massive Voluntary Cleanup to Help With Hazardous Waste Removal

A total of 109 firms are paying \$2.4 million to help finance cleanup of hazardous waste deposits at the Chem-Dyne waste facility.

This is the largest voluntary waste cleanup commitment so far and will fund 70 percent of the costs of EPA-managed surface cleanup and an assessment of possible groundwater damage caused by the facility.

Meanwhile, the Justice Department, acting on EPA's behalf, has filed suit against 23 companies and two individuals who used the site but declined to voluntarily participate in the settlement.

The 10-acre Chem-Dyne Corp. site in downtown Hamilton was used to store hundreds of thousands of gallons of chemical and industrial wastes, including arsenic and PCB's. The list of defendants that have used the dump includes Shell Oil Co., Phillips Petroleum Co., Monsanto Co., B.F. Goodrich Co., Georgia-Pacific Corp., Allied Corp., and Ciba-Geigy Corp.

Some of the largest companies that voluntarily agreed to share the cleanup costs are General Electric Co., DuPont Co., Stauffer Chemical Co., American Cyanamid Co., PPG Industries Inc., Owens-Corning Fiberglass Corp., Union Carbide Corp., Volkswagen of America Inc. and units of Dow Chemical Co., and Occidental Petroleum Corp.

The lawsuit stated that large quantities of a variety of hazardous chemicals (including PCB's, vinyl chloride, benzene, and trichloroethylene) stored at Chem-Dyne have contaminated soil and groundwater beneath and near the site, and also present a danger of fire and explosion. The abandoned facility is in an urban-industrial area. It recently contained about 10,000 drums and 150,000 gallons of hazardous waste in bulk.

The Chem-Dyne site is one of the largest hazardous waste facilities in the country and one of the 160 sites targeted for priority action under Superfund (the Comprehensive Environmental Response, Compensation and Liability Act of 1980).

EPA Administrator Anne M. Gorsuch commented on this landmark event: "With the very large number of companies agreeing to help share environmental responsibility at Chem-Dyne, we see dramatic evidence of a new trend. We believe this is being engendered by EPA's approach of a willingness to negotiate, backed with a strong enforcement commitment to litigation when negotiation fails to reach voluntary resolution." Mrs. Gorsuch said that the settlement is an indication of the success of EPA's policy of encouraging the private sector to assume an attitude of responsibility and cooperation.

"This agreement," she added, "demonstrates that this approach will succeed even where we confront complex legal issues with many companies involved in discussions." She emphasized that "Where parties responsible for depositing hazardous waste are willing to talk about contributing substantial amounts to cleanup, EPA is willing to talk. However, EPA is prepared to sue under provisions of the Superfund law and the Resource Conservation and Recovery Act to establish the liability of parties who contributed to hazards and to have courts direct their participation in cleanup activities when they shun opportunities to do so voluntarily."

Rita M. Lavelle, Assistant Administrator for Solid Waste and Emergency Response also commented on this agreement to clean up the Chem-Dyne site.

She said, "This agreement represents by far the largest and most complex settlement negotiated to date by State and Federal officials and private industries involved in any hazardous waste site.

"It is a tribute to the responsibility of the industrial community which is accepting the challenge of cleaning up the nation's abandoned sites.



"It also confirms the validity of EPA's new policy of cooperation with industry rather than confrontation. Together the public and private sector are accomplishing far more than the government could ever accomplish by itself, and we are doing the job much faster.

"More than 100 private companies have agreed to help fund this massive cleanup. Together they are contributing more than two-thirds of the estimated \$3.4 million required for the first phase of the work, a cleanup of the surface and an assessment of groundwater contamination.

"This is not an isolated action in Hamilton. Concerted attacks by industry and govern-

ment on hazardous waste sites are being mounted across the country, with increasing regularity."

She continued, "I commend the State of Ohio which has demonstrated strong and consistent leadership throughout this Chem-Dyne case. I applaud industry which has stepped up to the table and accepted their fair share of the responsibility.

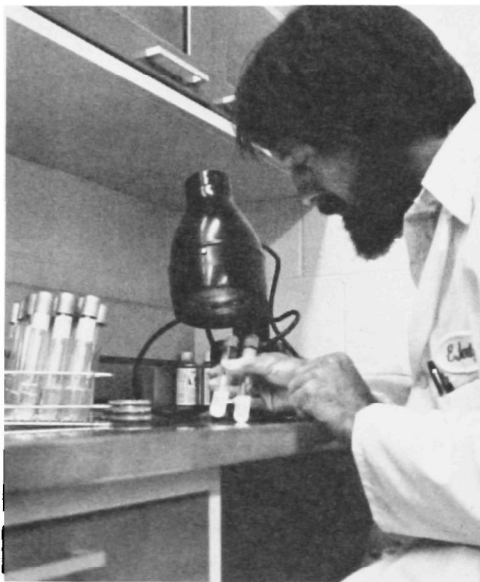
"Continuation of such cooperation will ensure an early and effective eradication of our hazardous waste problem." □

EPA Water Pollution Control Center Internationally Recognized

To protect, preserve, and maintain the environment we live in, the U.S. Environmental Protection Agency must have the scientific expertise to understand many physical, chemical, and biological aspects of the environment and ways to maintain its quality. The mission of the Andrew W. Breidenbach Environmental Research Center in Cincinnati, Ohio, is to help in providing this understanding.

Reflecting multi-disciplinary approaches to environmental problems, the research and monitoring carried out at the Center provides for the study not only of the effects of environmental contamination on man and the ecology, but also of the means for controlling and preventing these effects. Such research programs provide the necessary foundation for EPA's environmental regulatory programs.

The \$28 million Center, a 10-story structure situated on a 22-acre site donated by the City of Cincinnati, houses extensive research laboratories and administrative offices. It is recognized as the most modern research facility of its type in the world. In recent years, it has attracted water pollution specialists from every corner of the globe who come to meet and exchange information with its staff.



Scientist conducting research project at the EPA research center in Cincinnati

The history of Federal water pollution control in Cincinnati dates from 1913, when a team of physicians, sanitary engineers, chemists, biologists and bacteriologists—officers of the U.S. Public Health Service—under the direction of Wade Hampton Frost set up the Stream Pollution Investigations Station there. The Station was housed in the old Kilgour Mansion, an abandoned Public Health Service Marine Hospital, near the Ohio River.

By the time the Ohio River Survey had been completed in the 1920's these investigators had developed what remain today as two of the best known indices of pollution, the coliform bacteria index and the biochemical oxygen demand test. Harold W. Streeter, one of the early workers and director for a short time, was well known for his contribution to stream modeling and the development of the Streeter-Phelps equation, still used in calculating the effects of pollution on the dissolved oxygen concentration in streams. Still used information on the design and operation of municipal sewage treatment plants also grew out of studies at the Cincinnati laboratory during the 1920's and 1930's.

Further noteworthy benchmarks in this history include these:

1948—The first Federal Water Pollution Control Act authorized the Public Health Service to protect water quality for fish and aquatic life, and authorized facilities at Cincinnati for research on water pollution and for training personnel in pollution control.

The Water and Sanitation Investigations Station was renamed the Environmental Health Center and given more responsibilities.

1953—The Center moved to a new laboratory building on Columbia Parkway, subsequently dedicated as the Robert A. Taft Sanitary Engineering Center.

1966—The Federal Water Pollution Control Program was transferred to the newly created Federal Water Pollution Control Administration, first as an independent agency in the Department of Health, Education and Welfare, and later within the Department of Interior, where it was renamed the Federal Water Quality Administration. The Cincinnati operation then became a Regional Office of the FWQA.

During this decade another major study of the Ohio river dwarfed the earlier one. The Ohio River Basin Comprehensive Study in 1969 presented a comprehensive program for water and related land resources of the Ohio River Basin, including water pollution control. Cincinnati facilities and field stations in Wheeling, West Virginia, and Evansville, Indiana participated.

1969—Cincinnati acquired 22 acres of prime land near the University of Cincinnati and donated it to the government. This led to construction of the present facility, named in

memory of its first Director and former Assistant Administrator for EPA, Andrew W. Breidenbach. President Gerald R. Ford participated in dedication ceremonies on July 3, 1975.

1970—The Federal Water Quality Administration, National Air Pollution Control Administration and 13 other Federal units were merged to create the Environmental Protection Agency.

At the Cincinnati facilities, the major emphasis has remained on water pollution control, although research now deals with all aspects of environmental pollution. These programs represent a vital segment of the Agency's Office of Research and Development (ORD). In August 1971, the facility was designated as one of three National Environmental Research Centers. Cincinnati's role was later broadened, particularly with respect to hazardous wastes, and today scientists there also assist and train foreign scientists and engineers seeking to establish environmental programs in their home countries.

The Breidenbach Center is organized with three major ORD research laboratories plus other research components, as well as units from the EPA Office of Water and Office of Administration.

Dr. David G. Stephan is the Senior ORD Official at the Breidenbach Center and functions as "post commander" for the facility as well as Director of one of its laboratories. Following are the components and their functions:

The Municipal Environmental Research Laboratory develops technology to prevent, control and treat pollution affecting cities and towns. Under the direction of Francis T. Mayo, research includes the development and demonstration of cost-effective methods for handling sewage and urban stream runoff, solid and hazardous wastes, abandoned hazardous waste dumps, spills of oil or hazardous materials, community environmental management, and protection of public drinking water supplies.

The goal of the Industrial Environmental Research Laboratory, under the direction of Dr. Stephan, is to identify and assess industrial, mining and energy-related sources of pollution and to develop and demonstrate cost-effective control methods. The current programs of the Laboratory include industrial air and water pollution control, environmental problems of oil shale mining and retorting, and hazardous waste incineration or detoxification by other methods.

The Environmental Monitoring and Support Laboratory develops methods for the analysis of water and wastewater under the direction of Robert L. Booth. These include analyses for physical properties, chemical, biological, microbiological, and radiochemical constituents. The Laboratory also provides specifications and test instruments that will continuously monitor water quality.



The Toxicology and Microbiology Division is part of the Health Effects Research Laboratory in Research Triangle Park, N.C. The Laboratory generates data for development of environmental standards. The Cincinnati Division, supervised by Richard J. Bull, performs research to identify, characterize, and quantify harmful effects that may result from exposure to biological or chemical agents found in the environment.

The Environmental Criteria and Assessment Office documents the degree of hazard posed by toxic waters to human health and the environment. Under the direction of Jerry F. Stara, risk/hazard assessment documents primarily concerning water pollution and solid and hazardous wastes are prepared as a basis for setting environmental standards and legislative and enforcement activities of EPA.

The Center for Environmental Research Information, directed by Calvin O. Lawrence, distributes scientific and technical information to other Federal, State and local agencies and to the public. The center's Technology Transfer and Technical Information staffs coordinate a comprehensive technical information program to support EPA's Office of Research and Development.

The Technical Support Division, Office of Water, is directed by Lowell A. Van Den Berg. It provides technical support on the operation and maintenance of water treatment plants, monitoring and surveillance programs, and in the development and review of regulations and guidelines to help EPA Regions and States carry out their

EPA's Andrew W. Breidenbach Environmental Research Center in Cincinnati.

responsibilities under the Safe Drinking Water Act.

The Office of Administration, under the direction of William J. Benoit, provides personnel services, facilities management, and contracts management and also operates an ultramodern library, complete in-house television unit and a central computer facility for the Center.

As a result of its long and distinguished history in the environmental field, Cincinnati research has been responsible for many significant advances in environmental protection. Some of the most significant are:

- Research on treatment techniques to control trihalomethanes (THM) formed by the chlorination of drinking water and considered to be human carcinogens has led to the THM Regulation protecting the health of approximately 35 million people served by community water systems.
- Control technology for mining operations has dramatically enhanced the environment for minimizing adverse environmental impacts from both surface and underground coal mining.
- The development and evaluation of biological and physical-chemical treatment techniques for a broad range of municipal industrial sources and pollutants has allowed

numerous cities and industries to reduce their water pollution discharges to acceptable levels.

- Methodology for control of phosphorus in municipal wastewaters has been a major contributor to improvement in the quality of the Great Lakes. The successful development of this technology has also contributed to the improvement in quality of many lesser known ponds, lakes and estuaries.
- Development of proper techniques for spreading municipal wastewater sludge on land has provided valuable fertilizers. By using sludge this way, environmental disadvantages, such as air pollution from incinerating sludge, can be avoided.
- Standardization of analytical and biological methodology, the development of quality control samples, and work on a laboratory certification program have helped provide monitoring tools and techniques required to generate environmental data of known quality that can be used by both EPA and State management to make regulatory decisions.
- Studies of water supply problems have resulted in a number of actions under the Safe Drinking Water Act. These studies helped determine how clean water supplies must be to protect public health and how water can be treated economically to meet the standards. □



Bubble Plan Expected to Save Millions

An outstanding example of how air pollution control plans known as "bubbles" can bring both savings and cleaner air is at Middletown, Ohio where Armco Steel Company operates a large complex.

Armco estimates that its bubble control plan is eliminating six times the amount of air particles—4,000 tons per year—that the firm would have had to achieve under existing regulations.

The company also anticipates savings of at least \$14 million to \$16 million at the facility as a result of the plan. If the program were duplicated at all of Armco's other facilities, it could save as much as \$42 million without sacrificing air quality, according to the company.

EPA's bubble policy visualizes a factory with many smokestacks under a large imaginary dome or bubble with only one emission point. The policy permits industry management to calculate the best way to clean up air pollution at individual plants provided overall clean air requirements are met.

The program, which is voluntary, differs from the traditional approach of having regulatory agencies set specific emission standards at each pollution source within a factory. The bubble allows plant managers to propose their own emission standards—tightening them in places where it is least costly and relaxing them elsewhere where pollution control costs are high, to achieve the same desired results.

Final approval of Armco Steel's bubble by EPA was granted on March 26, 1981.

Ten sprayers mounted on towers near a 15-acre coal pile at Armco's Middletown Works regularly cover the coal with water to keep coal dust out of the air. The spraying is part of Armco's \$6 million implementation of EPA's bubble policy

However, the story went back several years before that date during which a prototype program was developed to show that significant improvements in ambient air concentrations of total suspended particulates were possible with a comprehensive fugitive dust control program. In addition, improvements in smaller particles were also achieved.

In late 1977, Armco had begun to assemble information supporting the position that controlling fugitive dust sources would be more effective and less costly than controlling process fugitive emissions of particulates, escaping from the plant's doors, windows, and vents.

Methods for estimating emissions of fugitive dust from sources such as traffic on paved and unpaved roads, material handling, and storage piles were developed by Midwest Research Institute under contract from EPA.

A comprehensive emission inventory of the Middletown works revealed that more than 60 percent of the plant's particulate emissions evolved from such open dust sources. Other studies showed significant impacts of open dust sources on areawide air quality but little impact from process-related (that is, steelmaking) sources.

So the bubble concept furnished a means for focusing on fugitive dust sources as a better alternative.

In 1979 Armco decided to go ahead with a \$6 million fugitive dust control plan containing these measures:

- Paved parking lots;
- A shuttle bus system to reduce the number of trips within the grounds;
- Paving and sweeping of permanent plant roads;
- Treating unpaved plant roads with chemical dust-retardants;
- Installation of water and dust suppressant sprays on raw material and ore piles;
- Seeding of open areas;
- Installation of monitors to measure air quality improvements.

At that time open dust sources were excluded from bubble concept considerations, but Armco went ahead anyhow and kept EPA advised of its progress on the Middletown program. The turning point came December 11, 1979 when the final bubble policy published in the Federal Register no longer excluded open dust sources. However, it did impose some limiting requirements for making demonstrations in cases involving such sources.

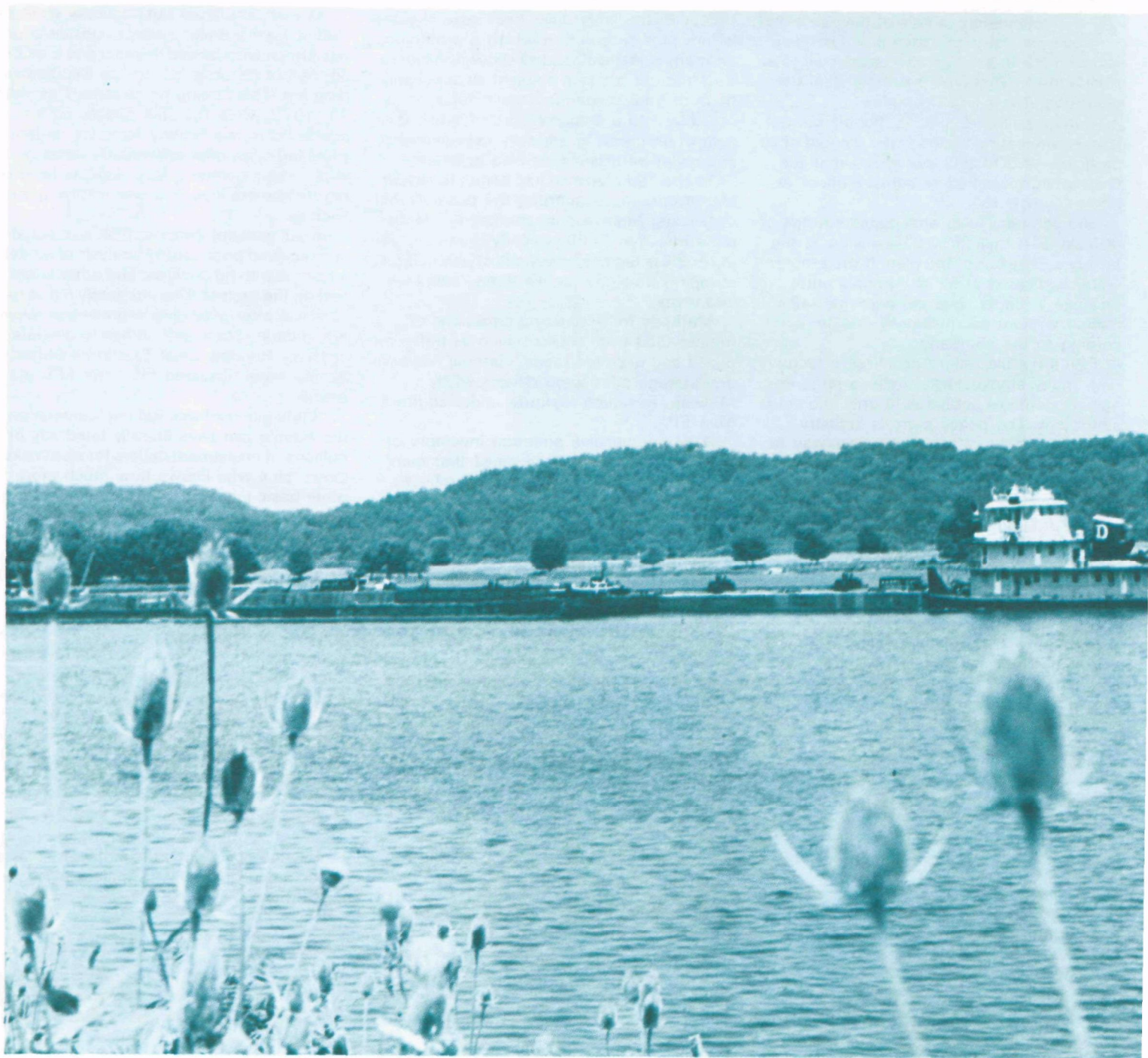
In subsequent actions, EPA requested and received post-control analysis of air data, a historical trend analysis, and other information on the project. This ultimately led to final approval after extensive negotiations involving Federal, State and company officials.

Harry Holiday, Chief Executive Officer of Armco Steel, declared following EPA approval,

"I'm convinced that full implementation of the bubble can save literally hundreds of millions of investment dollars for steelmakers alone, plus who knows how much more for other basic industries. And its greatest asset is that such savings can be achieved in conjunction with the improvement of ambient air quality. That's a combination hard to beat, and I'm confident the Reagan Administration will vigorously support this cooperative approach to fewer and better regulations."

John E. Barker, Armco's Director of Environmental Engineering, said that other steel companies and industries such as aluminum, copper, mining, chemicals and utilities have been watching Armco's program evolve in hopes that they too can apply the bubble concept to their plants.

"Based on the Armco experience," he declared, "the bubble concept can prove to be of great value and utility if a bubble policy were to be implemented across the nation. Significant environmental improvements can occur much quicker with major savings in capital and energy" □



Cleaning Up the Ohio River

During the first half of this century, the Ohio River and its major tributaries had all the attributes of a sewer as they carried "away" the domestic and industrial wastes of the numerous cities and towns lining their banks.

At the same time, these waterways were the sources of drinking water for the populations of many cities. Historically, major fluctuations in river stage were common: at Cincinnati in 1883, for instance, the level dropped one foot, 11 inches. At such low water levels the likelihood that waste discharges would create serious water-borne disease problems was more threatening as water users made more demands on the meager supply.

By the 1930's, public health officials and others were extremely concerned about the growing number of outbreaks of pollution-related illnesses and taste and odor problems in water supplies in the Ohio Valley. However, Valley States were reluctant to take action to control pollution and increase the financial burden on their citizens and industries unless States upstream acted similarly. But who would make the first move?

It finally took a consortium of business and government interests to get the ball rolling. In 1934, the Cincinnati Chamber of Commerce was celebrating "Clean Up and Beautify Week." "Was there anything left to clean up?" asked the Chairman of the event, *Cincinnati Enquirer* Editor William F. Wiley, at the conclusion of the highly successful project.

"Yes, the Ohio River," came the unexpected reply from Hudson Biery, public relations director for the Cincinnati Street Railway Company. And with that suggestion, the Chamber's Stream Pollution Control Committee was born.

Historic Compact

However, World War II intervened, and it wasn't until 1948 that eight States—Illinois, Indiana, Kentucky, New York, Ohio, Pennsylvania, Virginia and West Virginia with the approval of the U.S. Congress signed a Compact pledging to enact legislation

preventing pollution from entering their waters. The Compact also established the Ohio River Valley Water Sanitation Commission (ORSANCO), an interstate agency invested with the powers to promulgate and enforce rules and regulations protecting the interstate waters of the valley from water pollution. One sign of growing national awareness of pollution problems was that President Harry S. Truman signed the first Federal water pollution control legislation on the very same day the governors of the eight States signed the Compact.

The Compact was nothing short of revolutionary. The eight States were establishing a separate entity—controlled by the States in concert, but separate nonetheless—with powers previously reserved for those States alone.

The Commission consisted of three representatives from each State, appointed by their respective governors, and three representatives of the Federal government, appointed by the President. The budget allocation from each State is determined by a 50 percent matching formula for population and land area in the Ohio Valley. The commission currently also receives grants from the U.S. Environmental Protection Agency under Section 106 of the Clean Water Act, and operating assistance for monitoring from the U.S. Army Corps of Engineers. A number of advisory committees assist the commission and provide information from a variety of viewpoints. Commissioners and committee members receive no compensation, only reimbursement from commission-related expenses. Advisory committees representing Ohio Valley industrial sectors cover their own expenses.

The *1950 Annual Report* of the Ohio River Valley Water Sanitation Commission demonstrated how much work needed to be done. The status of wastewater treatment in cities in the Ohio Valley with populations over 5000 was by today's standards seriously deficient. Of the 310 cities in the valley in this category, only one-third had sewage treatment plants serving the sewered population, two percent had plants under construction and 50 percent had plans for

sewage treatment plants in preparation. However, by 1961 approximately 87 percent of the valley's cities with populations over 5000 were providing treatment, and by 1964, this figure was 99 percent.

Spill Alerts

The 1960 *Annual Report* emphasized a new commission requirement: Industries in the valley were required to inform State pollution control agencies in the event of a spill or accidental discharge. This requirement was begun more than ten years before a national spills alert system was developed and a number of years before computers eased the process of tracking the movement of hazardous chemicals. The annual report also announced the ORSANCO Robot Monitors, a system of electronic analyzers and transmission equipment, aimed at automatically providing information about waterways along the valley. This system is still in operation measuring temperature, dissolved oxygen, acidity and alkalinity, and dissolved solids at 21 key locations along the Ohio River and its major tributaries. The Corps of Engineers is one of the major users of this and contributes to the electronic monitoring program's support. The program, along with a monthly manual Sampling Program which collects data from 37 locations, forms the nucleus of ORSANCO water quality data provided to State and Federal agencies.

By 1965, the Federal government intensified its activity in water pollution control. States were required to adopt water quality standards for submission to the Secretary of the Interior. The commission in 1970 promulgated effluent standards for the Ohio River which met the requirements of the individual states but also permitted a compatible approach to the problem. One of the major sections of these standards required secondary treatment at municipal sewage facilities. It also set limitations on the concentration of certain substances in industrial effluents, including inorganic chemicals, cyanide and pesticides. Federal legislation adopted in 1972 established a national pollution discharge elimination system (NPDES) designed to establish technology-based effluent standards as a more viable approach to regulate discharges.

Fish Increase

During the late 1960's and 1970's, the commission intensified its data collection and evaluation activities, enabling the member States to develop and implement cooperative pollution control projects as well as reduce duplication of efforts in monitoring programs. Annual fish population surveys were begun in 1968, and data obtained over the years indicate that fish diversity has increased in the

Valley. Fish fillet and whole fish analysis by the U.S. Food and Drug Administration and Fish and Wildlife Service measured levels of bioaccumulative chemicals such as chlorinated biphenyls (PCBs) and pesticides. In 1981, only two fish out of 70 showed either of these substances in their fillet portions at levels above the FDA temporary tolerance limits.

As the rivers of the Ohio Valley became cleansed of what are commonly called the conventional pollutants, new substances appeared on the danger lists, man-made chemicals unknown in nature, with toxicities at extremely minute concentrations. Their control was difficult and their detection also impossible without extremely sophisticated expensive equipment.

Help from EPA

But these chemicals could cause grave concern. In the winter of 1977-78, a series of spills of carbon tetrachloride on the Kanawha River in West Virginia found their way undetected into Ohio River water supplies. In response to the intense public reaction to this threat, the commission, along with nine water utilities and two concerned industries in the Valley, all chosen for their locations, laboratory support and willingness to participate, formed the Organics Detection System (ODS). A special grant from EPA helped provide the stations with detection equipment, telecopiers and gas chromatographs. In the event of a spill or accidental discharge, the ODS provides immediate notification to downstream water users. Because samples are analyzed daily at the 11 sites, the System is also compiling an impressive data base on background river levels of the family of chemicals known as volatile halogenated organics. This family includes chloroform, carbon tetrachloride and other halogenated ethanes and ethylenes. Two of the stations also monitor for aromatic hydrocarbons such as toluene and benzene.

Since the ODS was established, the number of unreported spills on the Ohio River and its major tributaries has dramatically decreased. Between May, 1978 and August 1980, nine "unusual levels" of chemicals were detected and six later confirmed by special laboratory analysis. Since August of 1980, no detections have been confirmed. (An "unusual level" is defined by the ODS as a concentration of a detectable chemical of more than 25 micrograms per liter or 10 times the previous day's reading.)

The comparison functions at its best when it is coordinating, bringing together the parties to a dispute, the experts needed for a project, and the support essential for a program. The commission has grown into the key role of providing a forum, of being a mechanism that enables communication and cooperation among its member States. This

activity has become essential in recent times with the realization of how interdependent the States of the Ohio Valley are in terms of economics, environment, and social and political impacts. Yet very few organizations and governmental bodies deal with these issues from a regional viewpoint. Fewer yet define their regions on the basis of river basins. In the Ohio Valley, however, it is the rivers that interconnect the States, as well as form their boundaries.

This was made obvious to the commission in a recent joint study with the Council of State governments of how to deal with interstate issues arising from energy facilities development. The Ohio Valley has been cited as a prime area for energy facilities expansion because of its proximity to major population centers and coal fields, abundant water supply, and trained workforce. The commission was concerned that this development occur in an orderly manner, with attention to interstate issues, particularly environmental ones dealing with water quality and quantity.

As a result of the study, the commission is establishing an Ohio Valley Energy Roundtable, consisting of one commissioner from each State and the Federal government and representatives of the power, transportation, coal and oil and gas industries, the general public, and public utilities commissions. The Roundtable is aimed at better communication among the parties interested in energy development to resolve interstate issues early in the process and avoid costly and time-consuming litigation. These issues do not recognize State boundaries and thus, can only be resolved through regionally based decision-making. □



A freighter plys the St. Lawrence River which connects Lake Erie and the other Great Lakes with the Atlantic Ocean and countries around the world.

Back Cover: A shower of spray marks the course of a water skier on Lake Erie.