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Illinois Environmental Protection Agency

Phillip C. Morgan, Director
Danville Sanitary District

Indiana

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Bowers, Harrison, Kent & Miller

Vasiliki Keramida, President & Chief Executive Officer
Keramida Environmental, Inc.

Michael O'Connor, Commissioner
Department of Environmental Management

Kentucky

James E. Bickford, Secretary
Natural Resources & Environmental
Protection Cabinet

Stephen L. Henry, M.D.
Lieutenant Governor

Roy W. Mundy, Vice President & Manager
Kentucky-American Water Company

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Chautauqua Institution

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& Geology
Jamestown Community College

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Department of Environmental
Conservation

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Richard Miller

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Pennsylvania

Melvin E. Hook
R & D Engineering, P.C.

William M. Kudaroski
Operations Manager/Production
Pennsylvania-American Water Company

James M. Seif, Secretary
Department of Environmental Protection

Virginia

Archie Bailey
State Water Control Board

Filbert Tobias
State Water Control Board

W. Bidgood Wall, Jr.
State Water Control Board

West Virginia

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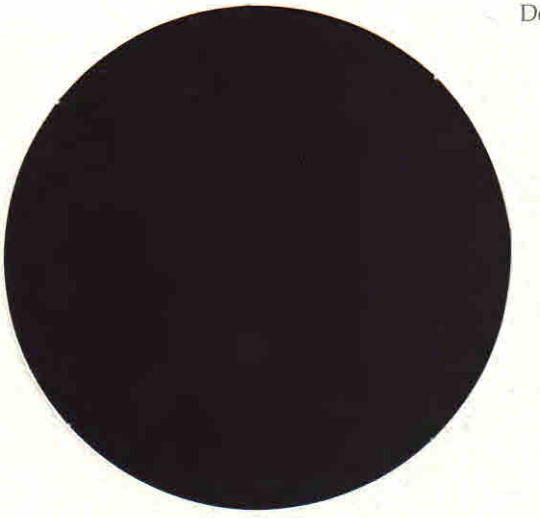
National Institute for Chemical Studies

L. Eli McCoy, Ph.D., Director
Department of Commerce, Labor
& Environmental Resources
Division of Environmental
Protection

Ronald R. Potesta, President
Potesta and Associates



Federal

Valdas V. Adamkus
Regional Administrator
U.S. Environmental
Protection Agency, Region V

Robin Corathers
Executive Director
Rivers Unlimited Mill Creek
Restoration Project

Phillip J. Shepherd, Attorney
Newberry, Hargrove & Rambicure

Officers

Richard Miller, Chairman
William M. Kudaroski, Vice Chairman
Phillip C. Morgan, Secretary
Richard L. Herd, Jr., Treasurer
Alan H. Vicory Jr., Executive Director and Chief Engineer

* As of December 31, 1996

The Commissioners of the Ohio River Valley Water Sanitation Commission (ORSANCO)—an interstate water pollution control commission created jointly in 1948 by the State of Illinois, the State of Indiana, the Commonwealth of Kentucky, the State of New York, the State of Ohio, the Commonwealth of Pennsylvania, the Commonwealth of Virginia, and the State of West Virginia, with approval of the Congress of the United States—respectfully submit the following report of the Commission's activities for 1996 to:

The Honorable Jim Edgar Governor of Illinois

The Honorable Frank O'Bannon Governor of Indiana

The Honorable Paul E. Patton Governor of Kentucky

The Honorable George Pataki Governor of New York

The Honorable George V. Voinovich Governor of Ohio

The Honorable Thomas J. Ridge Governor of Pennsylvania

The Honorable George Allen, Jr. Governor of Virginia

The Honorable Cecil H. Underwood Governor of West Virginia

and

The Honorable William J. Clinton President of the United States

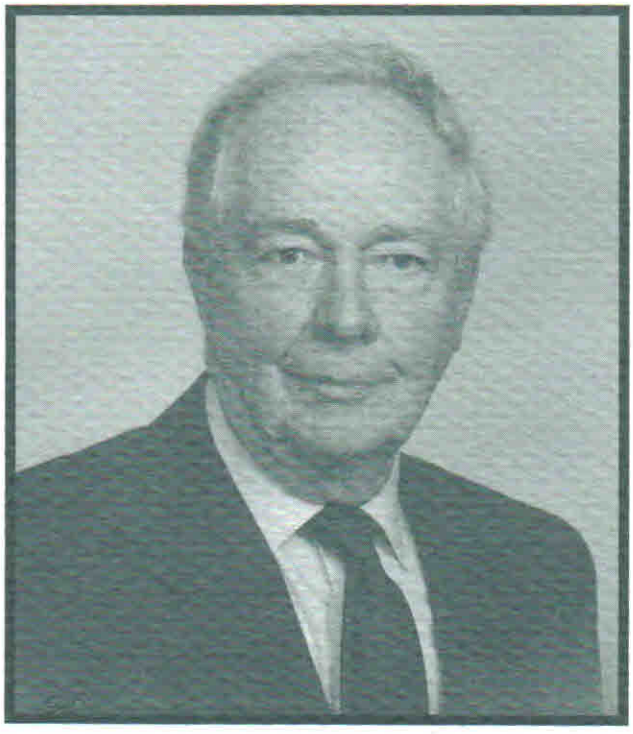
Ohio River Valley Water Sanitation Commission
5735 Kellogg Avenue, Cincinnati, Ohio 45228-1112
513/231-7719
Visit ORSANCO on the World Wide Web at http://www.orsanco.org/

Message from the Chairman

The magnificent Ohio River unfortunately commands attention most often in times of stress and hardship. Major floods or spills of toxic substances which threaten drinking water supplies occupy headline space in our newspapers and considerable time slots on radio and television broadcasts. But the wealth of the River, which is shared by millions of people in the watershed, receives little attention or recognition.

Who shares in that wealth and how does the Ohio River Valley Water Sanitation Commission's programs both benefit from, and contribute to that wealth? This 1996 Annual Report will supply many answers to that question.

Sharing in the River's Wealth



Chairman Richard Miller, former director of Cincinnati Water Works, was instrumental in developing the Commission's Organics Detection System.

Certainly the scenic beauty of the River, as it cuts through the steep rolling hills of its upper 500 miles and the gently rolling farmlands of its lower reaches of equal distance, is a priceless treasure that can be enjoyed by all. The Ohio River was the nation's interstate highway of the late 1700s and the early 1800s, providing the road west for thousands of settlers hoping to improve their lot in life and their fortunes. They shared its wealth.

During the next 200 years, the River became a vehicle for commerce. A recent study published by ORSANCO indicates that over 35,000 people are employed in more than 600 businesses whose jobs and companies are directly dependent on the Ohio River. U.S. Army Corps of Engineers' records show that barge tonnage on this waterway is eight times that which is shipped on the Great Lakes System. Those involved in these activities share its wealth in a most important way.

As the nation moved west, the major growth of population and commerce in the Ohio River Valley changed the environmental quality of its waters, leading to the formation of ORSANCO in 1948. The eight signatory states pledged to control future pollution and to abate existing pollution in the waters of the Ohio River Basin. Through the cooperative efforts of many, a milestone was reached in 1995

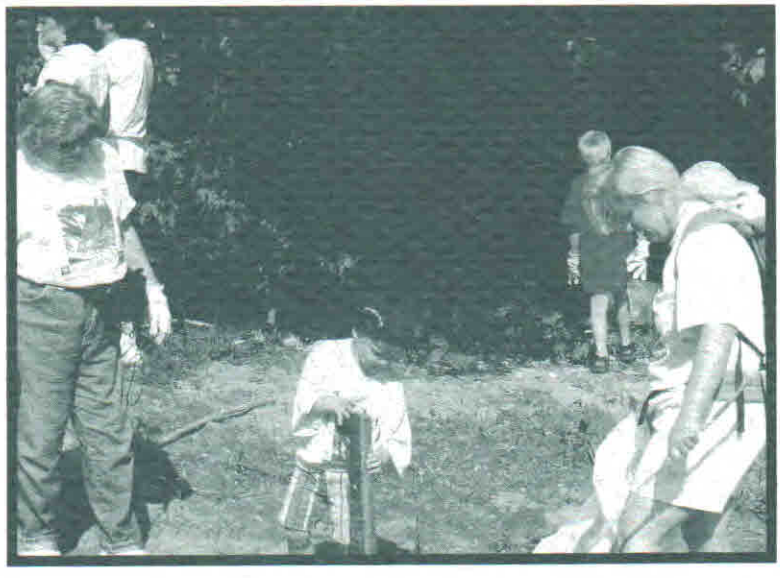
when all publicly-owned treatment facilities discharging to the River achieved secondary treatment. This accomplishment has benefited recreational boaters and fishing enthusiasts who share in the wealth of cleaner water.

Although this milestone was reached, the Commission realized that this was not a time to rest on its laurels. Accordingly, some existing programs are being expanded and new programs instituted to increase our knowledge of this large and dynamic Ohio River. These programs are addressed in detail within this Report.

The individual Commissioners and staff of ORSANCO know that sound and expansive scientific knowledge is a prerequisite to our task of stewardship of this invaluable resource. Many in-depth studies have been done on lakes and estuaries, but few, if any, have been done on large rivers, such as the Ohio. That is why our task is so challenging; there is no path to follow. As such, criteria for many ORSANCO projects and studies have to be developed in house.

On a personal basis, many of us have shared in the Ohio River's wealth. I spent my childhood within sight of the River, approximately four miles west of Cincinnati, OH. The River was my playground in the 1930s. I surely shared its wealth by the relief that it provided me on a hot summer day. As a child, I was not cognizant of the pollution problems, because study of our environment was not part of my school's curriculum.

That is why I am so pleased with the ORSANCO programs that involve the Valley's young citizens. The annual Ohio River Sweep and the RiverWatchers volunteer monitoring programs invite thousands of children to participate in improving the quality of the main stem and its tributaries. These youngsters are benefiting from a hands-on environmental experience with this mighty resource, and the knowledge they are gaining will certainly make them better stewards of the River than were those of my generation. Future generations will only be guaranteed a sharing in the wealth of the great Ohio River by being aware of its problems and contributing to possible solutions.

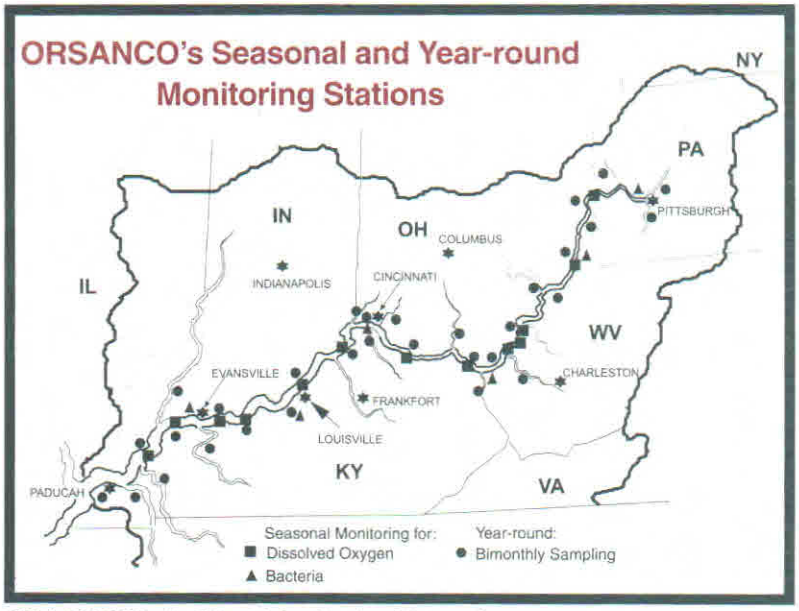


Richard Miller

Through the signing of the Ohio River Valley Water Sanitation Compact, member states pledge to cooperate in the control of future pollution to and abatement of existing pollution from the rivers, streams, and water in the Ohio River Basin. A guiding principle of this Compact is that pollution within one state shall not injuriously affect the uses of the interstate waters. ORSANCO works with the states to achieve these goals.

Assessing Water Quality

The Ohio River is a valuable asset to all whose lives and work depend on it. In addition to serving as the "industrial aorta" of the nation, where its availability as an industrial water supply and transportation artery have attracted many large companies to its valley, the Ohio River provides drinking water to millions of people. Water quality improvements have magnified its value as a recreational resource, resulting in numerous riverfront enhancements in cities along its banks, and an increasing presence of boaters and skiers on the water. Water quality improvements have also provided favorable conditions for the development of a diverse and plentiful aquatic community, luring many fishing enthusiasts to its shores.



ORSANCO's Ambient Monitoring Network

To determine the extent the Ohio River achieves certain water quality standards, ORSANCO operates monitoring programs to check for pollutants and toxins which may inhibit its varied uses. Because of the potential interstate impacts of such pollution, the states bordering the River have given the Commission the responsibility of monitoring the main stem and lower reaches of several major tributaries.

During 1996, the Commission's monitoring programs included: year-round bimonthly sampling for the presence of various chemical constituents and physical properties; bacteria and dissolved oxygen monitoring during the recreational season; and yearly biological assessments of fish and macroinvertebrates in selected areas of the River.

Year-round Bimonthly Sampling

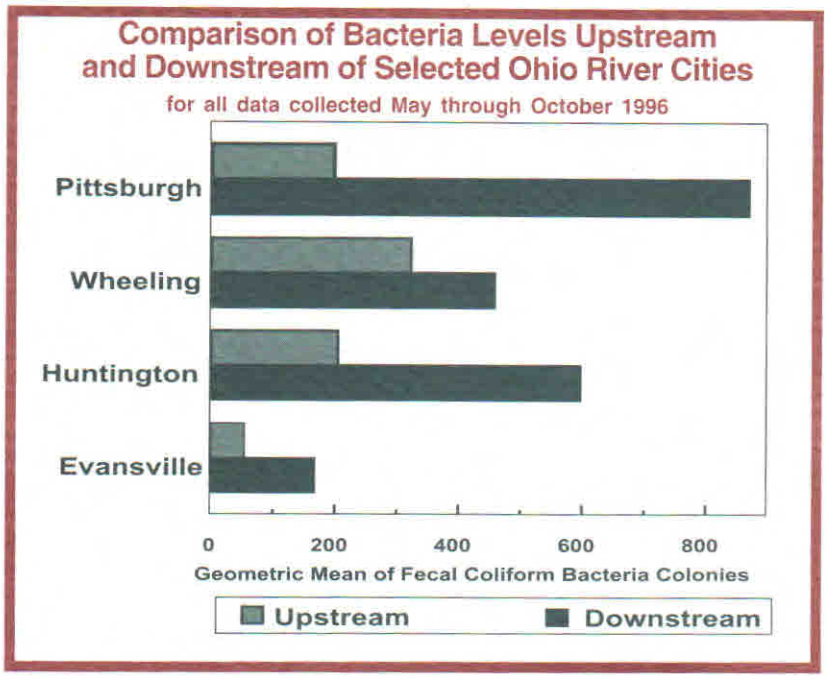
The Commission has adopted water quality criteria for substances which can be toxic to humans or aquatic organisms. At 31 stations, 17 on the Ohio River and 14 on major tributaries, bimonthly samples were collected and analyzed for specific physical and chemical characteristics generally associated with water quality. These assessments also include certain toxic pollutants, such as heavy metals, phenolics, and cyanide.

While ORSANCO has established aquatic life criteria for both *acute* (short-term or brief exposure), and *chronic* (long-term or indefinite exposure), results of 1996 monitoring indicated no exceedances of the acute criteria. Occasional violations of the chronic criteria were recorded for copper, lead, and zinc.

Seasonal Bacteria Monitoring

The Ohio River's value as a recreational resource is apparent during the warm summer months when thousands of visitors participate in community sponsored riverfront activities, such as festivals, regattas, fishing tournaments, and river boat races. Some of these activities, such as swimming and skiing, bring humans in contact with the water, a situation which poses potential health risks from certain forms of bacteria and other microorganisms which may be present.

To protect human health, the Commission has established criteria for two types of bacteria, fecal coliform and *E. coli*, and monitors the Ohio River during the contact recreation season (May through October). These bacteria are indicators that more harmful disease-carrying bacteria, pathogens, may be present.



To protect the health of Ohio River contact recreational users, ORSANCO has adopted a fecal coliform criterion of 200 colony forming units per 100 mL as a monthly geometric mean. "Colony forming units" are a measurement of fecal coliform bacteria.

During 1996, the Commission collected samples five times monthly at six sites on the Ohio River, and received information collected by water utilities at seven locations. While utility water intakes are located upstream of cities where pollution is less likely to be present, ORSANCO's stations are sited downstream of these areas where problems generally occur. Exceedances of the Commission's criteria were recorded at all six ORSANCO stations during the monitoring season. The upper and middle reaches of the River recorded more violations than in the lower stretches.

Seasonal Dissolved Oxygen Monitoring

Dissolved oxygen criteria has been established by ORSANCO to protect the health of the aquatic community in the Ohio River. From May through October, the months when lower oxygen levels may affect fish and other organisms, the Commission receives data from electronic monitors stationed at 13 navigational dams. These monitors are operated by the U.S. Army Corps of Engineers and hydropower plants.

During 1996, intermittent low dissolved oxygen levels were recorded at several locations between Gallipolis, OH and Louisville, KY, and most frequently at Meldahl Lock & Dam (upstream of Cincinnati, OH). These were detected during July, September, and October.

The Ohio River is treasured for its recreational uses. Warm temperatures bring thousands of boating, skiing and fishing enthusiasts into contact with the water every year.

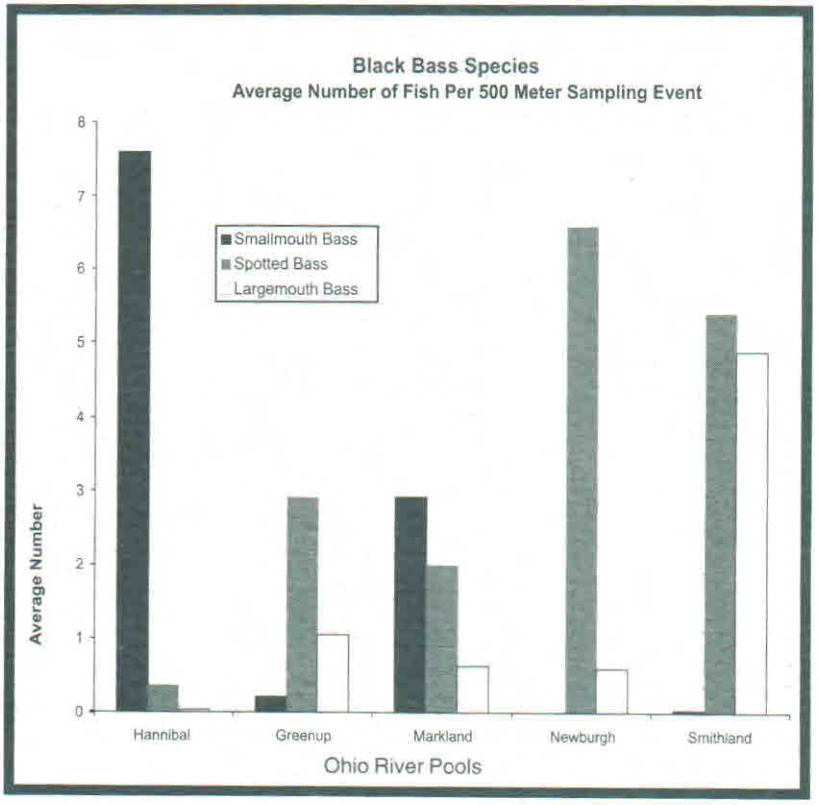
Yearly Biological Assessments

The Ohio River Valley Water Sanitation Compact states that the Ohio River should have the capability to support and maintain a balanced, diverse, and healthy aquatic ecosystem. Through its yearly biological assessments, the Commission determines if pollution control efforts have achieved this objective. ORSANCO's biological program includes fish population and macroinvertebrate surveys, and tissue contaminants studies, which are conducted in cooperation with state and federal environmental and natural resource agencies.

As part of a multi-year effort to develop better methods for biological assessment, certain environmental factors, such as habitat, availability of food, and water quality data are being evaluated. In 1996, the Commission invited a panel of experts from state and federal fisheries agencies, universities, and industries to assist in developing methods which will be used to determine if specific areas of the Ohio River are producing the expected aquatic community.

During electrofishing surveys, fish are collected at night, using an electrical current which is generated in the water around the boat. Fish swim into the electrical field and are immobilized, allowing the crew to gather them. Fish are then placed in a holding tank on the boat. After electrofishing an area, fish are identified, weighed, measured, and returned to the water alive, except for the those retained for tissue contaminants analysis.

The graph below displays differences in the quantities of three black bass species as you travel downstream from the upper Ohio River (Hannibal Pool) to the lower stretches (Smithland Pool). Fish were collected by electrofishing during ORSANCO's fish population surveys.



Evaluations of Fish and Macroinvertebrate Populations and Their Habitats

In 1996, ORSANCO investigated three components of the aquatic community in the Smithland Pool (near Paducah, KY) and the Hannibal Pool (near Wheeling, WV) by collecting fish and macroinvertebrates, and supplementing that data with habitat information.

To better assess conditions in two other pools— Greenup (near Huntington, WV) and Newburgh (near Owensboro, KY)—ORSANCO collected habitat data in 1996 from areas where electrofishing was conducted in past years.

In 1996, the Commission collected fish and macroinvertebrates at 28 sites in the Newburgh Pool to generate a data base for the lower area of the Ohio River. Data from the habitat studies will aid in the overall understanding of water quality of these pools.

Tissue from Ohio River fish, such as bass and catfish, which are caught during electrofishing or lock chamber surveys, are checked for contaminants.

Fish Tissue Contaminants Studies

Each year, the Commission coordinates fish population surveys with state and federal environmental protection, water resource and wildlife agencies at selected Ohio River navigational dams and other sites on the main stem. Fish collected during these surveys are analyzed for the presence of certain chemicals, pesticides, and metals which can accumulate in tissue and may be harmful to humans if eaten.

Data from this program are provided to state environmental and health agencies, who then determine whether advisories should be issued for consumption of certain fish species. Individual states use different criteria when interpreting fish tissue data, resulting in inconsistent advisories for Ohio River fish. ORSANCO and the states are working toward uniform guidelines for evaluating fish tissue data for such advisories.

During 1996, samples of carp, catfish, bass and others were collected at 16 Ohio River locations. Tissue was examined for the presence of polychlorinated biphenyls (PCBs), and the pesticides aldrin, chlordane, DDT, dieldrin, and endrin. Samples were checked for other contaminants, and mercury, lead, and cadmium. Historically, chlordane and PCBs have been a river-wide concern, especially in carp and catfish.

In 1996, main stem states collectively issued consumption advisories for 11 species commonly found in the Ohio River.

1996 Ohio River Fish Consumption Advisories

Pennsylvania
carp, channel catfish ***(do not eat)***

West Virginia
largemouth bass, smallmouth bass, sauger
(no more than 52 meals per year)
white bass, hybrid striped bass, freshwater drum
(no more than 12 meals per year)
flathead catfish ***(no more than six meals per year)***
carp, channel catfish ***(do not eat)***

Ohio
largemouth bass, smallmouth bass, sauger
(no more than 52 meals per year)
white bass, hybrid striped bass, freshwater drum
(no more than 12 meals per year)
flathead catfish ***(no more than six meals per year)***
carp, channel catfish ***(do not eat)***

Kentucky
channel catfish, carp, white bass, and paddlefish and their eggs ***(do not eat)***

Indiana
11-13" largemouth bass, 12-13" spotted bass ***(No more than 52 meals per year for adults, 1 meal per month for women of childbearing age and children under 15 years)***
15-20" carp, 13-18" channel catfish, 15" freshwater drum, 13"+ largemouth bass, 13-16"sauger, 13"+ spotted bass ***(No more than 12 meals per year for adults, no consumption for women of childbearing age and children under 15 years))***
21-25"carp, 19-21"channel catfish, 15"+ freshwater drum, 16"+ sauger, 13-15" smallmouth bass ***(No more than six meals per year for adults, no consumption for women of childbearing age and children under 15 years)***
21"+ channel catfish, 25"+ carp, 15"+ smallmouth bass ***(do not eat)***

Illinois
No Ohio River Advisories

Acting in accordance with the authority contained in the Compact, the Commission sets effluent Pollution Control Standards for industries and municipalities that discharge to the Ohio River. The Standards designate specific uses for the River and establish stream criteria to be achieved, thereby assuring the River's suitability as a public and industrial water supply, and availability as a safe recreational resource. It must also be capable of supporting a healthy and diverse aquatic community.

Maintaining Pollution Control Standards

Triennial Review

The Commission's Pollution Control Standards are reviewed every three years, assuring that they address current issues. In 1995, ORSANCO initiated the most recent review process, and during 1996, held two workshops and one public hearing to facilitate discussion of water quality concerns. This was followed by a formal comment period that allowed additional input from industries, municipalities, and others in the Ohio River Basin.

The review was concluded in 1996. Revisions, which included the following changes or additions, were formally adopted by the Commission in January 1997:

- The definitions of *acute* and *chronic* criteria, *sewage*, and *toxic wastes* were revised.
- Provisions were incorporated for the treatment of flows from combined sewer systems during wet weather conditions.
- Specific requirements for industrial cooling water were added.
- Mixing zone designations were changed.
- Provisions were included for the development of site-specific water quality criteria.

The revised Pollution Control Standards will be available for distribution in early 1997.

ORSANCO'S Tracking List of Ohio River Dischargers

ORSANCO routinely reviews the performance of certain industries or municipalities with either high-volume effluent discharges (greater than 10 million gallons per day) or those with prior problems complying with its Pollution Control Standards. The latter are removed from the list when they achieve and maintain compliance. When the Commission began tracking discharges that could seriously impact Ohio River water quality in 1984, the list contained more than 40 facilities.

In 1996, 23 facilities were tracked. Of these, 16 were high-volume dischargers; seven were monitored for previous compliance problems. No facilities on the list were free from violations during this year.

ORSANCO possesses enforcement powers to address compliance problems with its Pollution Control Standards. During 1996, the Commission, in conjunction with U.S. and Ohio Environmental Protection Agencies, was party to two consent orders involving the Cincinnati Mill Creek waste water treatment facility, and the Village of Wellsville, OH.

Concern with the Mill Creek facility involved achieving full secondary treatment and disinfection. That goal has been reached. Operation of Wellsville's treatment plant has been restored.

Investigating Impacts from Combined Sewer Overflows

Combined sewer overflows (CSOs) contribute bacteria and other pollutants to Basin waterways.

With more than 1,300 identified combined sewer overflows (CSOs) along the Ohio River main stem, a potentially serious problem exists, especially in large urban areas where most of these structures are located. Combined sewer systems, those carrying both storm water and waste water from cities, contribute large quantities of bacteria and other contaminants to Basin waterways. In 1992, ORSANCO initiated development of a strategy for CSO abatement to address this problem in the Ohio River. Working with representatives of the states, U.S. EPA and local waste water treatment utilities, the Commission adopted a strategy for monitoring overflow impacts in 1993.

As part of its efforts to understand, and ultimately, control pollution from combined sewer systems in the Ohio River and its tributaries, ORSANCO completed several studies which demonstrated methods for monitoring CSO impacts on the main stem.

Wet Weather Demonstration Study

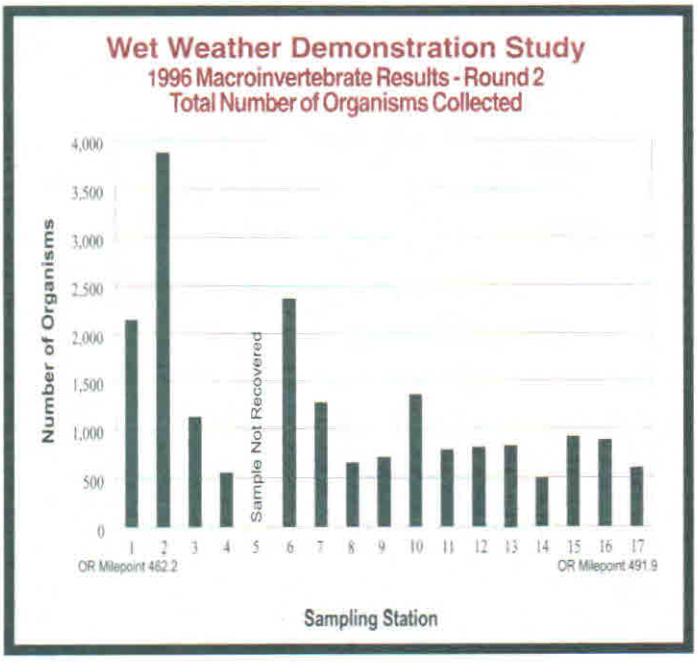
In 1995, the Commission began a two-year study of water quality impacts from wet weather events in the Cincinnati/Northern Kentucky area. With funding from U.S. EPA, Metropolitan Sewer District of Greater Cincinnati, Sanitation District #1 (Northern Kentucky), and Cincinnati Water Works, ORSANCO studied the effects of pollution from CSOs and nonpoint (not attributed to an end-of-pipe discharge) sources under both wet and dry weather conditions. A primary objective of this project is to develop techniques for evaluating and controlling wet weather water quality problems in large river systems.

During the first year, the Commission obtained biological, chemical and physical baseline data and initiated development of a water quality model that simulates pollutant loadings during wet weather events. The most significant finding from 1995 was that fecal coliform bacteria is the most frequently and excessively exceeded water quality parameter in the study area.

In 1996, two dry weather and three wet weather surveys were conducted to gather additional information on Ohio River conditions and further define water quality conditions in the tributaries. Continuing efforts will include more accurate identification of various pollution loadings and refinement of the water quality simulation model.

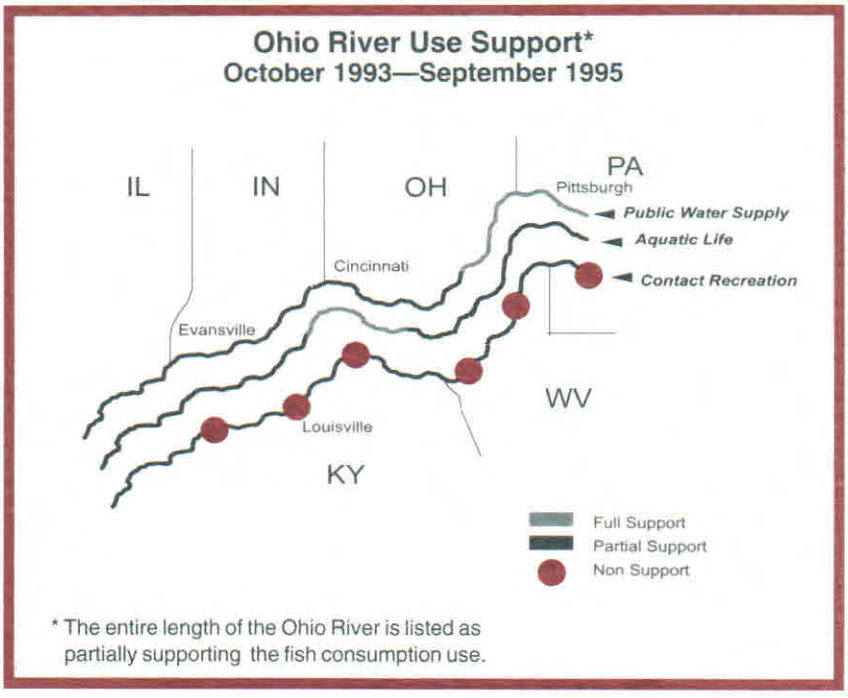
The project will be completed and a final report produced in 1997.

Expected results for macroinvertebrate collection are that their numbers generally decrease traveling downstream through the urban area due to the pollution loadings from CSOs and nonpoint source pollution.



The Compact charges the Commission to maintain or achieve full support of the beneficial uses of the Ohio River. Additionally, the Commission is directed to conduct a survey to determine water pollution problems and identify instances in which pollution from one state injuriously affects waters of another state. To carry out these directives, ORSANCO biennially prepares a comprehensive report of Ohio River water quality conditions.

Biennial Assessment of Water Quality Conditions



During 1996, the Commission completed its biennial assessment of Ohio River water quality conditions for the period from October 1993 through September 1995. This assessment, which describes conditions in terms of the River's degree of *use support*, revealed several concerns, including impairments of all four "designated" uses: aquatic life, public water supply, contact recreation, and fish consumption.

For the Ohio River to "support" a use, certain water quality requirements or numerical criteria must be met. Use support is listed as ***full, partial or non.***

Ohio River Water Quality Assessment Summary - October 1993 through September 1995:

Warm Water Aquatic Life Use
Most of ORSANCO's Bimonthly Sampling stations recorded one or more violations of the chronic lead criterion. This reflects only minor impairments.

The Markland Pool in the middle stretches of the River from Meldahl Dam to Markland Dam recorded several violations of additional water quality criteria in selected areas.

Fish population studies indicate substantial communities along the entire length of the Ohio River.

Public Water Supply Use
Approximately 80 percent of the Ohio River, from below Parkersburg, WV to its confluence with the Mississippi River, is impaired due to spills and the presence of atrazine, a herbicide used mainly for corn and soybean production.

Contact Recreation Use
In all six areas monitored by ORSANCO for bacteria, which are generally located downstream of large urban areas with numerous CSOs, frequent exceedances of the stream criteria for fecal coliform and *E. coli* occurred.

Fish Consumption
The entire length of the River is impaired due to states' issuance of fish consumption advisories, which are based on river-wide contamination in certain species from two banned substances, polychlorinated biphenyls (PCBs) and the pesticide chlordane.

ORSANCO/Ohio River Users Program Investors

Allegheny County Sanitary Authority
Allegheny Power Systems
American Commercial Barge Line Co.
American Electric Power
ARCO Chemical Company
Ashland Inc.
Banner Fibreboard Company
CGB Enterprises
Campbell Transportation Company, Inc.
Cincinnati Water Works
Cinergy Corporation
Dayton Power & Light Company
Dow Corning Corporation
Duquesne Light Company
Electric Energy, Inc.
Elf Atochem North America
Evansville IN Water and Sewer Utility
Greater Cincinnati Marine Service, Inc.
Industry Terminal & Salvage Company
Inland Marine Services
ITW Signode Consumable Products Operations
Koppers Industries, Inc.
Kroger Food Stores, Louisville, KY
Louisville and Jefferson County MSD
McGinnis, Inc.
Mead Johnson Nutritional Group
Northern Kentucky Water Service District
The Ohio River Company
Olin Chemicals
Ormet Primary Aluminum Corporation
Pennsylvania-American Water Co.
Paducah Water Works
PPG Industries
River Road Terminal, Inc.
Shell Chemical Company
John W. Stone Oil Distributor, Inc.
Superior Marine Ways, Inc.
Weirton Steel Corporation
Municipal Authority of the Borough of West View
West Virginia-American Water Company
Whirlpool Corporation - Evansville Division
Wilkinsburg-Penn Joint Water Authority
Zeon Chemicals, Inc.

Involving Ohio River Users in Water Quality Studies

Throughout its history, ORSANCO has worked cooperatively with industries, municipalities and other river users mainly through its advisory committees. In 1993, the ORSANCO/Ohio River Users Program was established which combines financial support and expertise of river users with the technical capabilities of the Commission to conduct studies necessary for improving the scientific basis for water quality management decisions. Through this program's advisory committee, which includes representatives of chemical, power, barge transportation, and petrochemical industries, plus power and waste water utilities, river users can recommend studies that support the Commission's mandate.

In 1994, the ORSANCO/Ohio River Users Program initiated its first project, which was the development of an electronic clearinghouse for Ohio River biological information. The Biological Management Information System went on line in 1995, and consolidates information collected by agencies, educational institutions, industries, and individual researchers into one data base.

During 1996, the Commission approved one new project and evaluated several others. The approved project, Development of Methods to Protect Local Water Quality for Aquatic Life, will provide guidance to river users interested in petitioning regulatory agencies for the establishment of site-specific water quality criteria for the Ohio River.

Four studies under consideration for approval by the Commission focus on mixing zone determinations, background water quality conditions, water quality models, and dissolved metals. If approved, these projects will be implemented in 1997.

ORSANCO's public information and education programs encourage citizens to become interested and involved in issues relating to water quality. Two Commission programs, the award-winning River Sweep and the RiverWatchers Volunteer Monitoring Program, provide hands-on opportunities for thousands of concerned citizens to participate in improving the quality, and ultimately, the value of the Ohio River.

Inviting Public Participation

Ohio River Sweep

The River Sweep, one of the largest environmental events of its kind in the country, illustrates a cooperative effort toward improving the value of the Ohio River and its tributaries. Working with corporate sponsors, state environmental agencies, Valley industries and businesses, ORSANCO has brought together more than 150,000 people to collect trash and debris from the shorelines since its inception in 1989. While early Sweeps focused on the 72 counties bordering the main stem, recent cleanups have branched out into the Basin.

Past efforts to include more participants have targeted industries and businesses whose properties adjoin the River. Many have organized cleanups on their frontages in conjunction with ORSANCO's River Sweep, or have joined other local Sweep cleanup efforts.

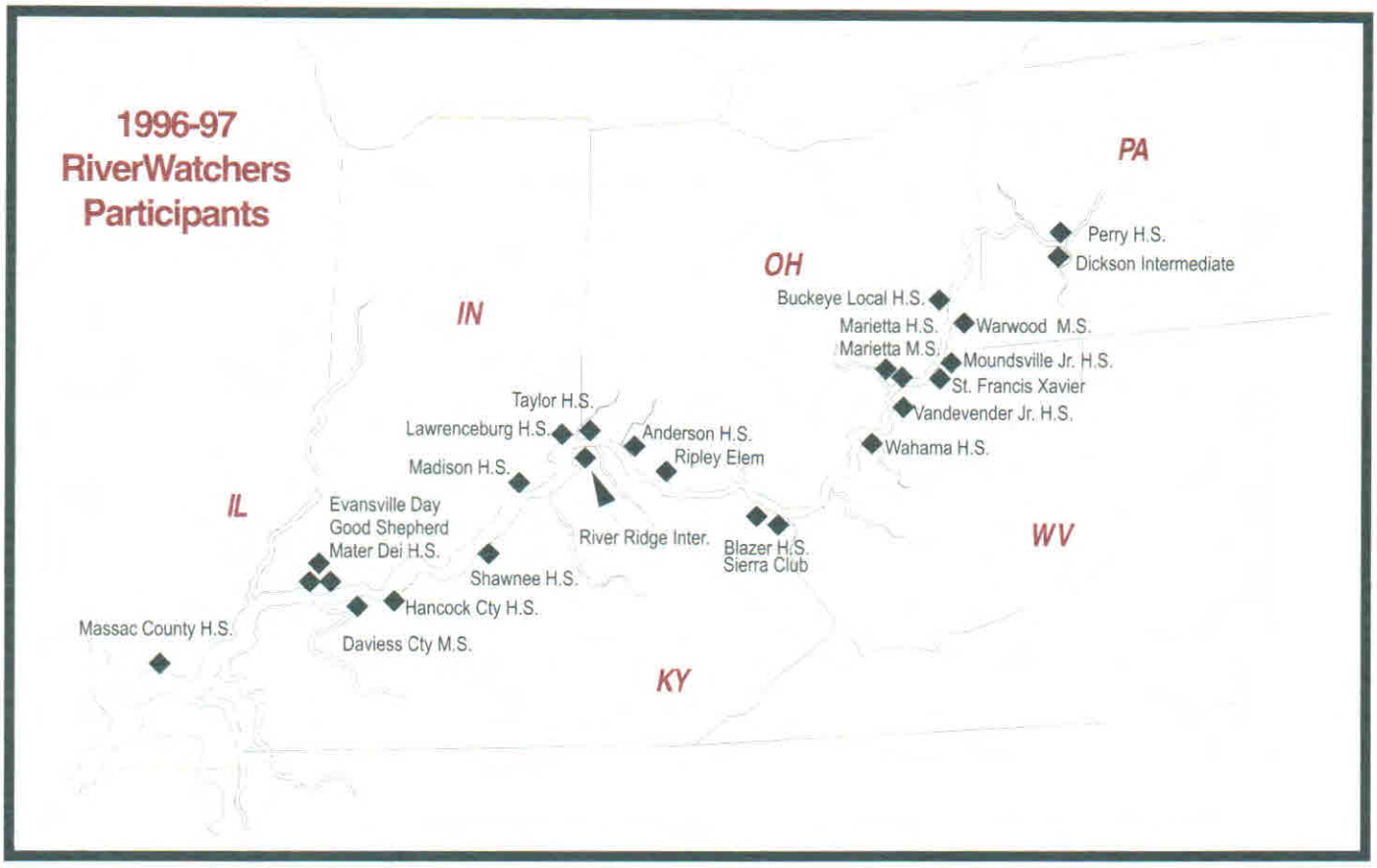
Not only has the Sweep continued to grow yearly, but a poster contest—an annual event since 1994—has attracted creative efforts from more than 2,100 kindergarten through 12th grade students who attend schools in counties along the Ohio River. The 1996 grand prize winner was awarded a $1,000 U.S. Savings Bond. Judges selected one grand prize runner up and a winner in each grade category.

Due to an overwhelming number of exceptional entries in this year's contest, ORSANCO presented special merit awards to five additional posters.
Visit the Sweep on the world wide web at: http://www.orsanco.org/sweep.html

1997 River Sweep poster contest Grand Prize winning entry created by Brandy Snyder, Williamstown High School, Williamstown, WV will be used to promote the event.

1996 Ohio River Sweep Corporate Contributors

- American Electric Power
- Allegheny Ludlum Steel
- American Commercial Lines
- ARCO Chemical
- Ashland Inc.
- BASF
- Bayer
- BFI
- CH2M Hill
- Cinergy Foundation
- Dow Corning
- DuPont
- Duquesne Light
- Elf Atochem NA
- GE Plastics
- Heinz
- Louisville Gas & Electric
- Louisville Water Company
- Lukens
- Neville Chemical
- North American Stainless
- Procter & Gamble
- US Steel
- Weirton Steel
- Wheeling Pittsburgh Steel



RiverWatchers Volunteer Monitoring Program

ORSANCO's efforts to involve citizens in monitoring the Ohio River began in 1992 as a pilot project with five groups testing in three states. The project's success prompted expansion of the program that included more participants at sites in all six main stem states.

Outfitted with chemical test kits, a basic knowledge of water quality, and a desire to learn more about the effects of pollution on the Basin's rivers and streams, groups collected samples and conducted tests to evaluate the health of a local waterway. Data from testing were provided to the Commission as supplemental water quality information, particularly in areas where ORSANCO does not conduct routine monitoring.

Some groups examine the aquatic community which inhabit their waterway. Several have added interesting dimensions to their participation. The group from Warwood, WV designed and constructed an outdoor classroom from a waste-infested riverfront property adjacent to their school, providing not only the school, but the surrounding community with a new park and a scenic view of the Ohio River.

Groups are encouraged to share their data and experiences with other RiverWatchers participants. RiverWatchers 1996 involved 25 groups testing at sites on the Ohio River and seven tributaries. Information about this program can be received from its site on the world wide web at: *http://www.orsanco.org/rivwatch.html.*

RiverWatchers from Wahama High School in Mason, WV conducting their monthly tests at the Ohio River.

Assessing Nonpoint Source Pollution

Historically, the Commission programs to reduce Ohio River pollution have focused on end-of-pipe, or point source pollution from industries and municipalities. With installation and operation of waste water treatment plants, much of this pollution has been controlled. Today, results of ORSANCO's monitoring and assessment programs demonstrate that pollution from nonpoint sources account for most of the remaining water quality impairment of the Ohio River and its tributaries.

Nonpoint source (NPS) pollution results from activities such as urbanization, agriculture, mining, construction, and silviculture, and is difficult to regulate and control. In the Ohio River, pesticides, bacteria and metals are the most widespread nonpoint source pollutants, and ORSANCO has focused its efforts on identifying problem areas and their possible sources.

Pollution from nonpoint sources contribute to water quality impairments in the Ohio River.

In 1995, the Commission adopted a strategy developed by a Nonpoint Source Pollution Abatement Task Force to address water quality impacts from these sources. The ultimate goal of the strategy is to achieve a coordinated approach to nonpoint source pollution reduction. This will be accomplished by working with public agencies and private organizations to develop alternative approaches for reducing pollution loadings necessary to reach and maintain water quality objectives on the Ohio River main stem.

The Commission completed a study in 1996 on water quality of Basin rivers and streams which cross boundaries of the Compact states. It also established a long-term monitoring station for atrazine at Cairo, IL, near the Ohio River's confluence with the Mississippi River. Atrazine, a herbicide used in crop production, is a concern in the lower reaches of the Ohio River from Cincinnati, OH to Cairo.

Conducting Special Projects and Studies

In addition to its regular water pollution control programs, the Commission periodically undertakes special projects and specific studies to strengthen its understanding of the Ohio River. During 1996, ORSANCO conducted the projects and studies listed below and on the following page.

ORSANCO/US Army Corps of Engineers Partnership

In 1996, ORSANCO and the U.S. Army Corps of Engineers received funding to conduct several joint projects. As part of the five-year-plan, a hazardous materials site inventory, which agencies could use to pinpoint potential spill problems along the River, would be developed in a geographical information system (GIS). Additionally, a system would be designed to track hazardous cargo transported on the River.

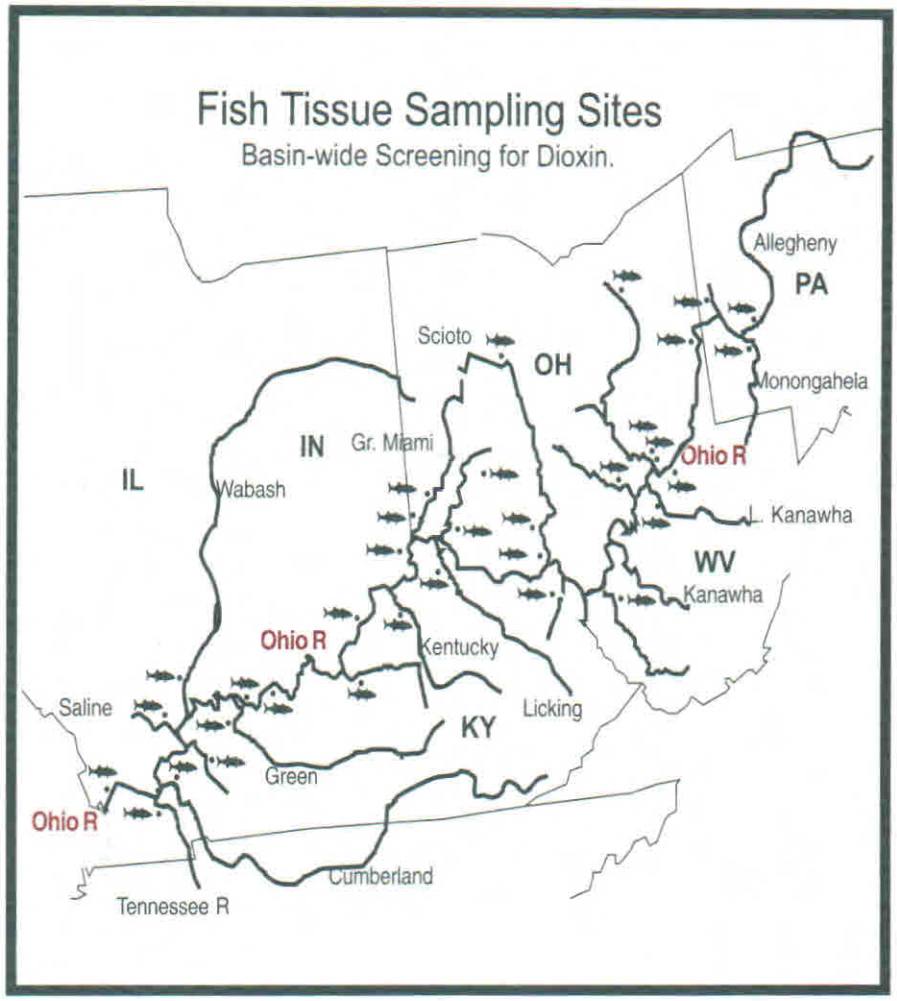
The Corps conducted studies at Ohio River dams to determine dam gate settings to achieve maximum reaeration. ORSANCO completed a dye study in the 61-mile Greenup Pool (from the Robert C. Byrd Lock and Dam near Gallipolis, OH to the Greenup Lock and Dam upstream of Portsmouth, OH). The study was conducted to compare existing models with actual data, and adjust calculations if needed. The Commission uses such models during spill monitoring to assess time-of-travel and concentration of the contaminant.

Future studies for this project will depend on continued federal funding.

Ohio River Watershed Pollutant Reduction Program

To better understand and reduce levels of certain pollutants in the Ohio River, the Commission, with funding from U.S. EPA, designed an Ohio River Watershed Pollutant Reduction Program in 1995. Objectives of this program are to compile information and existing data on the geographic extent and severity of certain pollutants within the watershed; determine sources; specify water quality objectives and determine reductions needed to achieve objectives, and; evaluate the effectiveness of pollutant controls. Based on input from four public workshops, ORSANCO selected eight pollutants—atrazine, chlordane, dioxin, lead, copper, nitrogen, phosphorous, and polychlorinated biphenyls (PCBs)—for study.

With dioxin selected as a priority toxin in 1996, the Commission collected information from throughout the Ohio River Basin and designed a monitoring program to characterize the location of problems. As part of this effort, fish tissue samples were collected from 33 Ohio River locations for analysis.



The Commission collected fish tissue samples from 33 Ohio River Basin locations—from both the main stem and tributaries—to analyze for dioxin contamination.

The second phase of this program, which will continue through 1997, includes compilation of background information on the seven other targeted pollutants, implementation of basinwide and geographically-targeted dioxin sampling programs, and specific modeling of dioxin transportation to evaluate various abatement strategies.

Upper Ohio River Basin Recreational Use and Aquatic Resources Studies

In 1991, the Pennsylvania Department of Environmental Protection and Pennsylvania Fish and Boat Commission entered into an agreement with the Commission to assist in planning and managing a study of recreational use and aquatic resources on the upper Ohio River and lower reaches of the Allegheny and Monongahela Rivers. From this five-year effort, a detailed geographical information system (GIS) for these areas will be produced that natural resource managers could use in evaluating the impacts of spills and for planning future recreational development.

To characterize the habitats of specific aquatic organisms, information on fish and mussel species was collected. Several activities, including biological investigations of selected habitat will be conducted in 1997. A complete report on the project will follow.

The Ohio River serves the country as a major transportation highway for barges and other vessels that carry coal, chemicals, petroleum products, grain, and goods from many areas of the Basin to the nation's shores and beyond. The River also receives treated waste water discharged to Basin waterways from more than 650 industries and municipalities, and various chemical products manufactured in the Valley are stored along the Ohio River and its tributaries. Spills and accidental releases associated with these activities can have serious effects on Ohio River water quality.

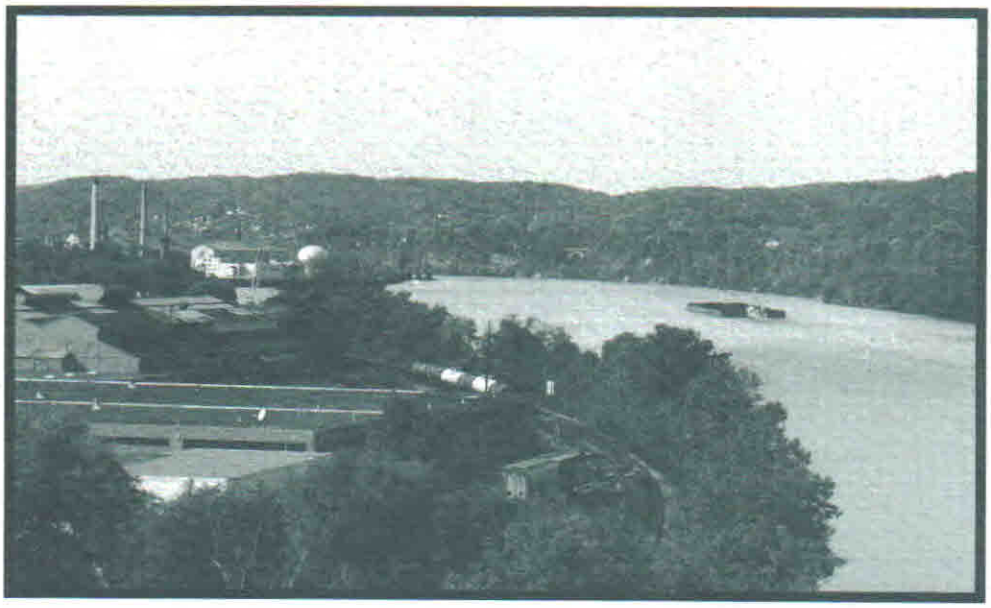
Detecting Spills and Responding to Emergencies

Organics Detection System

Working with Ohio River water utilities and industries, ORSANCO established an Organics Detection System (ODS) in 1978 to monitor for the presence of certain organic chemicals in the River and selected tributaries. The ODS enhances the Commission's ability to promptly notify downstream drinking water utilities if a harmful substance enters the waterway. As part of its emergency response program, ORSANCO maintains a 24-hour telephone service to receive spill information and posts all reports to an electronic bulletin board.

To provide more effective and efficient response to spills, in 1995 the Commission installed new computer equipment at several ODS stations which enhances communications capabilities.

The Commission has the capability to conduct monitoring activities during a major spill to the Ohio River.



Accidental spills and discharges to the Ohio River can have serious impacts on its water quality.

Officers Elected

In 1996, Richard Miller of Ohio was elected chairman and William M. Kudaroski of Pennsylvania was elected vice chairman. Phillip C. Morgan of Illinois was elected secretary and Richard L. Herd of the Commission staff was elected treasurer for the period July 1, 1996 through June 30, 1997.

Review of 1996 Administrative Events

New Commissioners Appointed

During 1996, the following Commissioners were appointed to ORSANCO:
Indiana : Vasiliki Keramida, Michael 'Connor
Kentucky: Roy W. Mundy, Stephen L. Henry
Ohio: Keith Harshman
Virginia: Archie Bailey, Filbert Tobias
West Virginia: Paul L. Hill, Ph.D.

Advisory Committees

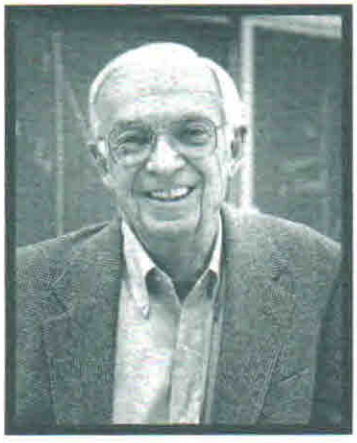
The Commission receives advice and counsel from a wide range of viewpoints through its advisory committees. Each represents a particular river-based interest. PIACO, the Public Interest Advisory Committee, is comprised of private citizens from the member states. Public and private utilities that use the river as a source of water supply make up the Water Users Advisory Committee. The Publicly Owned Treatment Works (POTW) Advisory Committee represents municipal waste water treatment departments or districts in the Ohio River Valley.

Industry advisory committees include those representing power and chemical production. The ORSANCO/Ohio River Users Program Advisory Committee includes representatives from manufacturing, petrochemicals, barge, power, and pharmaceutical industries, and water/waste water utilities.

50th Anniversary Committee Formed

In 1998, the Commission will celebrate 50 years of working with state and federal agencies, as well as industries, municipalities, civic and environmental organizations, and private citizens to reduce and control pollution in the Ohio River and its tributaries.

In recognition of this fast-approaching milestone, a committee was formed in 1996 to plan and implement various activities which showcase the River and ORSANCO's historical efforts in pollution control. In addition to an Ohio River 2000 conference, the Commission's Public Interest Advisory Committee will present a map of the Corridor—those 72 counties bordering the Ohio River—highlighting the Valley's points of interest, historical features, scenic highways, marinas, natural resources, and cultural history. Other activities include informational displays throughout the Valley and a photo contest.



In Memory

On September 1, Richard S. Engelbrecht, ORSANCO Commissioner for more than 20 years and past Commission chairman, died at his home in Urbana, IL. Dr. Engelbrecht was considered a pioneer in environmental science and a leader in the field of waste water treatment who diligently pursued programs for improving water quality in the Ohio River. He was an instrumental force in establishing important Commission programs and advisory committees, including most recently, the ORSANCO/River Users Program and Water Quality Review Committee. Dr. Engelbrecht received numerous awards, including a 1993 Order of the Sacred Treasure from the emperor of Japan for his education of Japanese environmental engineers and his contributions to the development of that country's waste water treatment technology. He was professor emeritus of environmental engineering at the University of Illinois.

Financial Report

Audited Financial Statements Prepared By Berge & Company LTD Certified Public Accountants

OHIO RIVER VALLEY WATER SANITATION COMMISSION
Combined Balance Sheet
All Fund Types and Account Groups

Year Ended June 30, 1996

	Governmental Fund Types		Fiduciary Fund Types	Account Groups		
Assets	General Fund	Special Revenue Funds	Agency and Trust Funds	General Fixed Assets	General Long-Term Debt	Total (Memorandum Only)
Cash	$ 272,715	$ 240,117	$	$	$	$ 512,832
Restricted investments			1,653,252			1,653,252
Accounts receivable:						
Due from the Federal government		217,439				217,439
Due from state and local governments		112,348				112,348
Other receivables	1,750					1,750
Prepaid expenditures	1,563					1,563
Property and equipment				1,811,104		1,811,104
Amount to be provided for retirement of long-term debt and pension obligation in future years					1,107,243	1,107,243
	$ 276,028	$ 569,904	$ 1,653,252	$ 1,811,104	$ 1,065,720	$ 5,417,531
Liabilities						
Accounts payable	$ 20,968	$ 47,537	$	$	$	$ 68,505
Accrued expenses:						
Contracted services	25,000	43,997				68,997
Annual leave	27,514					27,514
Workers' compensation	4,148					4,148
Deferred compensation			199,172			199,172
Unfunded pension obligation					41,523	41,523
General long-term debt					1,065,720	1,065,720
	77,630	91,534	199,172		1,065,720	1,475,579
Fund Equity						
Investment in general fixed assets				1,811,104		1,811,104
Fund balances:						
Reserved for prepaid expenditures	1,563					1,563
Reserved for employee retirement benefits			1,454,080			1,454,080
Unreserved:						
Designated for specific fund purposes	196,835					196,835
Undesignated		478,370				478,370
Total fund equity	198,398	478,370	1,653,252	1,811,104	-	3,941,952
	$ 276,028	$ 569,904	$ 1,653,252	$ 1,811,104	$ 1,065,720	$ 5,417,531

OHIO RIVER VALLEY WATER SANITATION COMMISSION
Combined Statement of Revenues, Expenditures and Changes in Fund Balance
All Governmental Fund Types

Year Ended June 30, 1996

	Governmental Fund types		
	General Fund	Special Revenue Funds	Total (Memorandum Only)
Revenues			
Federal, and State and local grants	$	$ 1,547,075	$ 1,547,075
State assistance *	996,200		996,200
Contributions		212,625	212,625
Other	100,668		100,668
	1,096,868	1,759,700	2,856,568
Expenditures			
Programs:			
Water Pollution Control and Abatement	753,322	369,222	1,122,544
Land Use Study	2,827	23,321	26,148
Combined Sewer Overflow Demonstration	79,910	774,851	854,761
Upper River Recreational/Aquatic Habitat Study	76,620	427,138	503,758
Ohio River Sweep	1,360	189,492	190,852
Biological Information Systems	80	8,039	8,119
ORSANCO/Ohio River Users Program	19,622	594	20,216
Watershed Pollutant Reduction	75,814	50,000	125,814
Capital Outlay	133,447		133,447
	1,143,002	1,842,657	2,985,659
Excess of revenues over (under) expenditures	(46,134)	(82,957)	(129,091)
Fund equity, beginning of year	244,532	561,327	805,859
Fund equity, end of year	$ 198,398	$ 478,370	$ 676,768

**State Revenues for 1996:*

ILLINOIS	$ 50,100
INDIANA	189,800
KENTUCKY	207,900
NEW YORK	10,300
OHIO	260,400
PENNSYLVANIA	135,600
VIRGINIA	35,900
WEST VIRGINIA	106,200
TOTAL	$ 996,200

Staff*

Donna M. Beatsch *Data Processing Specialist*

L. Dane Boggs *Data Systems Administrator*

Tracey A. Campbell *Public Information Programs Secretary*

Isabel E. Caputa *Environmental Chemist*

Samuel A. Dinkins *Environmental Specialist*

Geoffrey M. Edwards *Environmental Specialist*

Erich B. Emery *Aquatic Biologist*

Karel M. Fraser *Communications Coordinator*

James P. Gibson, Jr. *Environmental Specialist*

Joseph T. Gilligan *Finance Manager*

Jason P. Heath *Environmental Engineer*

Richard L. Herd, Jr. *Administrative Programs Manager*

Barbara A. Horton *Technical Programs Secretary*

Jeanne J. Ison *Public Information Programs Manager*

Marilyn P. Kavanaugh *Administrative Assistant*

John T. Lyons, P.E. *Environmental Engineer*

John C. McManus *Environmental Specialist*

Jonathan A. McSayles *Analytical Chemist*

Robert L. Ovies *Environmental Specialist*

David K. Plummer *Environmental Engineer*

Jerry G. Schulte *Senior Biologist*

Peter A. Tennant, P.E. *Technical Programs Manager*

Alan H. Vicory, Jr., P.E.
Executive Director and Chief Engineer

** as of December 31, 1996*

Publications

Publications are developed to provide information on water quality conditions and activities of the Commission. Charges are levied for some publications to cover production and mailing costs. These charges are waived for requests from educational institutions, government agencies and nonprofit organizations. The following publications were produced in 1996:

ORSANCO 1995
Annual report of activities during 1994

Quality Monitor
Semiannual publication of data summaries from the Bimonthly Sampling and Bacteria Monitoring Programs, and the Organics Detection System

Emergency Response Directory
A semiannual compilation of instructions concerning the appropriate agencies to notify when a spill or accidental discharge occurs to the Ohio River or a tributary

The ORSANCO Outlook
A newsletter published periodically with general information on water quality conditions and the activities of the Commission

RiverWatchers
A newsletter for participants in the Commission's volunteer monitoring program

ORSANCO/Ohio River Users Program
An annual report of this program's activities for 1996

Technical Reports:

A Strategy for Monitoring the Impacts of Combined Sewer Overflows on the Ohio River
A plan for achieving a coordinated effort to understand the impacts of combined sewer overflows on Ohio River water quality

Ohio River Combined Sewer Overflows
A public information brochure about Ohio River CSOs and the Commission's efforts to address their impacts.

For a complete list of publications, visit ORSANCO's publication list on the world wide web at http://www.orsanco.org/orpub.html

Regulatory Agencies of the Signatory States

Illinois
Environmental Protection Agency
Bureau of Water
2200 Churchill Road
Post Office Box 19276
Springfield, Illinois 62794-9276

Indiana
Department of Environmental Management
Office of Water Management
100 North Senate Avenue
Post Office Box 6015
Indianapolis, Indiana 46206-6015

Kentucky
Natural Resources and Environmental
Protection Cabinet
Division of Water Quality
14 Reilly Road
Frankfort, Kentucky 40601

New York
Division of Water
Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233-3500

Ohio
Environmental Protection Agency
Division of Water Pollution Control
1800 WaterMark Drive
Post Office Box 1049
Columbus, Ohio 43266-1049

Pennsylvania
Department of Environmental Protection
Bureau of Water Quality Protection
Post Office Box 8465
Harrisburg, Pennsylvania 17105-8465

Virginia
Department of Environmental Quality
Post Office Box 10009
Richmond, Virginia 23240

West Virginia
Division of Environmental Protection
Office of Water Resources
1201 Greenbrier Street
Charleston, West Virginia 24311

Since 1989, more than 150,000 volunteers have contributed time and toil to make the annual River Sweep one of the largest environmental cleanups in the country. On June 15, 1996, ORSANCO Chairman Dick Miller lends a helping hand at the Schmidt Field site in Cincinnati, OH.