The Unfinished Agenda for the Ohio River Valley

The Ohio River flows for nearly 1,000 miles past some of America's largest cities and richest farmland. Eighteen high-lift and two wicket dams maintain a minimum depth for navigation. The river drains more than 200,000 square miles, and includes among its tributaries such far reaching rivers as the Allegheny, Monongahela, Kanawha, Scioto, Kentucky, Wabash, Tennessee and Cumberland.

Today, more than ever, the people living in the Ohio River Valley are dependent upon the Ohio River and its tributaries for their health and well-being. The Ohio River alone is the source of drinking water supply for three million people. Fishing for bass, sauger, walleye, catfish and paddlefish is popular and reported in outdoors columns throughout the Ohio Valley. The chemical, food processing, power, steel and other industries use large amounts of water for their operations. Finally, the water of these rivers serve to carry away the treated wastes from these industries and from the homes, schools, hospitals and other facilities in the Ohio Valley.

For most of the first half of the 20th Century, the rivers of the Ohio Valley were open sewers. Few communities and industries treated their wastes. Serious outbreaks of water-borne diseases were recorded, particularly during drought years when there was less dilution of the wastes discharged.

In 1948, the Ohio River Valley Water Sanitation Compact was signed and a Commission created as its operating agency to provide a regional approach to solving the problem of water pollution on interstate streams and boundary waters. The Compact had been proposed as early as 1934 and had taken 14 years to become a reality. Now there were pollution control requirements and goals that applied to every municipality and industry in the Compact District.

Since 1948, the Ohio Valley's rivers have undergone, for the most part, a renaissance. The Ohio River, in particular, has become a popular recreational fishery. Some milestones in the clean-up of Ohio Valley streams are listed on the next page.

However, certain water quality problems remain, because:

- growing populations and increased use of water has strained or exceeded the capacities of many municipal wastewater treatment plants;
- developing technology and processes in many industries have resulted in new substances in the environment, some of which can be dangerous if not contained;
- a pollution incident can occur at anytime, due to accident, negligence or both;
- modifications to the rivers from human activity;
- runoff from land areas has yet to be adequately controlled;
- development of detection capability has increased knowledge of unseen pollutants.

Milestones in Ohio Valley Water Pollution Control

1984 Dramatic decrease in unreported major spills and accidental discharges to the Ohio River and major tributaries.

1983 Approval of an Ohio Valley Toxic Substances Control Strategy.

1982 Diversity of fish in upper Ohio River increased by approximately 40 percent over 13 years of fish population surveys at Ohio River locks and dams.

1981 Adoption of resolution permitting the controlled discharge to the Ohio River of residues from drinking water treatment processes of sedimentation, coagulation and filtration, provided they cause no adverse effect on water quality.

1977 Establishment of the Organics Detection System, currently a 12-station network for spill detection and notification downstream.

1976 Implementation by the commission of coordinated manual sampling of the Ohio River and lower reaches of major tributaries to eliminate duplication of effort and achieve substantial cost savings.

1974 Study of power generating facilities' discharges to the Ohio River indicates no cumulative thermal effects on the river.

1970 Adoption of Pollution Control Standards, including requirements for municipal secondary treatment of wastewaters.

1968 Commission awarded the Wildlife Society's Group Achievement Award.

1966 Adoption of stream water quality criteria.

1964 Wastewaters from 99 percent of the sewered communities in the Ohio Valley is handled through sewage treatment facilities, up from less than 1 percent in 1948.

1963 Commission member states awarded the Outstanding Civil Engineering Achievement Award for "the most effective large scale water pollution abatement program ever undertaken in the Western Hemisphere."

1961 Initiation of remote controlled automatic sampling for basic water quality information — the electronic monitors.

1960 Adoption of mine-drainage controls to prevent acid contamination of Valley rivers and streams.

1959 Resolution adopted making industries responsible for reporting spills and accidental discharges to regulatory agencies.

1957 Inventory of Ohio River aquatic life resources completed.

1952 First monitoring network along entire Ohio River initiated through water utilities and industrial water intakes.

1950 Initiation of annual status report on municipal wastewater treatment.

1949 First sewage treatment standards adopted for an Ohio River segment.

1948 Signing of the Ohio River Valley Water Sanitation Compact.

Thus, the Commission's work is an Unfinished Agenda — a blueprint for its future endeavors.

The Unfinished Agenda of the Ohio River Valley Water Sanitatio Commission:

Item: *Municipal wastewater treatment plants that fai meet even minimum discharge requirements, d to increases in population, industrial activity ar the use of water.*

Situation: The Commission has required since 1970 that al municipal treatment plants along the Ohio Rive provide secondary treatment, or biological brea down of wastes. This has been required nation- ally since 1972. To enable cities and towns to provide this treatment, the federal government until 1984 covered 75 percent of the costs of co structing secondary wastewater treatment plan About 70 percent of the treatment plants along the Ohio River have facilities to provide this leve of treatment. These plants serve 90 percent of t population.

However, about 10 percent of these municipal plants with secondary treatment facilities are m functioning. Two of these plants serve more tha 800,000 people or approximately 25 percent of the population along the Ohio River. These plar receive both industrial and domestic wastes. Their discharges are inadequately treated and result in adverse impacts on the stream.

Throughout the Ohio Valley, 44 percent of the existing municipal treatment plants have need f expansion, upgrading or replacement. Slightly more than 20 percent of these are considered to cause major adverse impacts to the streams int which they discharge. Seven percent of Valley industries with their own treatment systems (as opposed to using municipal systems) have similar needs.

The First Step: The Commission member states are reporting regularly on the status of treatment plants knov to be out of compliance.

The Next Step: If non-compliance persists, enforcement can be initiated by the affected state directly, by the Commission at the request of the states or by th US Environmental Protection Agency (US EPA) under terms of the federal Clean Water Act.

Item: *Industrial discharges, particularly of organic chemicals in toxic amounts.*

Situation: Relatively little is known about the hazards of exposure to many of the chemicals in com- merce. Many of these chemicals are not found in nature and can pose a threat even at extremely small concentrations. Furthermore, detection technology for some of these materials remains in the early stages of develo ment and is relatively expensive.

First Step: The Commission adopted a Toxic Substances Control Strategy in 1983 to supplement — with coordinated, regional approach — the Commis- sion member states and US EPA's activities in th area. The Strategy's program calls for the iden- tification and evaluation of problem areas, the development of corrective action and monitorin programs and the establishment of a clearing- house for toxics data.

Next Step: Implement the Strategy. The Commission's

Program Plan for July 1, 1984 — June 30, 1985 includes:

- preparation of a summary report on toxic substances in the Ohio River, with emphasis on organic chemicals;
- preparation of an inventory of potential sources of toxic substances along the Ohio River; and
- organization of a Toxic Control Strategy Work Group, consisting of representatives selected by the Commission member states, US EPA, US Army Corps of Engineers (USCOE) and US Geological Survey (USGS).

'em: *Spills and Accidental Discharges.*

ituation: Spills and accidental discharges of various materials, including petroleum products and chemicals, to Ohio Valley streams occur due to accident or negligence or both. Spills can occur during transport of these materials by truck, rail or barge or during loading. They can also result from accidental discharges from facilities along a river's banks. The effects of a spill can range from negligible — as when two barrels of oil fell off a barge during a high flow period on the Ohio River in early 1983 — to dangerous — as when 1.5 million fish were killed when zinc cyanide was discharged from a plating plant directly to the Ohio River in September of 1983.

Data on spills to streams within Commission member states can be obtained from those states' pollution control agencies. Spills to the Ohio River reported to the Commission have decreased from 114 in 1980 to 71 in 1983. Half of the 1983 spills occurred in the upper Ohio River, between Pittsburgh, PA, and Wheeling, WV. Slightly more than half were due to industrial discharges; 10 happened during transport; 12 were of unknown origin.

The First Step: Currently, federal, state and local pollution control and safety agency personnel are on call 24 hours a day to deal with spill emergencies. The US Coast Guard also responds when a spill is near a port or involves vessels, such as barges. The Commission serves as a communication link and source of information regarding Ohio River flows and sources of discharges. In addition, the Commission also operates an Organics Detection System in cooperation with 10 water utilities and 2 industries along the Ohio River and three of its major tributaries. This system gives an early warning of spills and accidental discharges of certain organic chemicals. The Commission also publishes a "Spills Notification Manual" which describes procedures to follow in the case of a spill.

The Next Step: Continue to strengthen current procedures. The Organics Detection System will be expanded to include one more station in late 1984 or early 1985, to be located at Paducah, KY.

tem: *Pollution from Non-Point Sources.*

ituation: Run-off from urban areas, agricultural land, strip mines and forests is considered a "non-point" source of pollution; in other words, the wastewater flows from an area, as opposed to an effluent pipe. Such run-off can be a significant source of substances such as lead (from gasoline); fecal coliform bacteria (from animal wastes); pesticides and herbicides (from agricultural land); iron, manganese and sulfur (from acid-mine drainage); nitrogen, phosphorus and biochemical oxygen demand (from urban and agricultural land and forests); and suspended solids (from all land uses).

First Step: Concerning the Ohio River, a non-point source analysis determined statistically the relative amounts of certain substances coming from various non-point sources in 1980. [1] A more recent (1984) data analysis concerning violations of the Commission's recreational season fecal coliform bacteria criterion also pointed out the significant but unquantifiable contribution from non-point sources.

The Next Step: The impact of non-point sources of pollution on the Ohio River and its tributaries is determined as part of the review of incoming data from monitoring programs. Since almost all the non-point source contribution to the Ohio River comes through the tributary streams, as opposed to direct drainage, corrective actions will be achieved largely through the programs of the member states' agencies.

Item: *Pollution of Groundwaters and its effect upon surface waters.*

Siutation: A number of cities in the Ohio Valley are wholly or partially dependent upon groundwater for their drinking water supplies. Examples are Marietta, OH, Dayton, OH, and Owensboro, KY. Groundwater is also the prime source of supply in rural areas. In the Ohio Valley, municipal, rural and industrial use of groundwater is estimated at close to 2,500 million gallons per day.[2] This amounts to only 14 percent of the amount recharged. Usage is up however, from 1960, when it was estimated at six percent of recharge.[3]

Usually, groundwater needs minimal treatment before it can be distributed for human consumption. But recent evidence of the dangers of seepage of toxic materials from waste into groundwater aquifers has led to concern regarding the quality and safety of those sources. The quality of groundwater can impact the quality of the Ohio River.

The First Step: Most efforts concerning groundwater have been initiated by pollution control agencies in the member states, US EPA and USGS. The Commission has gathered information from these sources to develop a comprehensive map of the groundwater resources of the Ohio Valley.

The Next Step: A summary review of groundwater quality and quantity in the Ohio Valley is under development. Further study of state and federal groundwater programs will be done to determine groundwater effects upon the quality of the surface water of the Ohio River.

1. *Land Use and Hydrologic Impacts on Water Quality — Ohio River Basin,* Ohio River Valley Water Sanitation Commission, March, 1980.
2. US Geological Survey, National Water Use Information Program, Open File Report, 82-862.
3. Todd, D.K. *Groundwater Resources of the United States,* Berkeley, CA., 1983, p. 127.

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