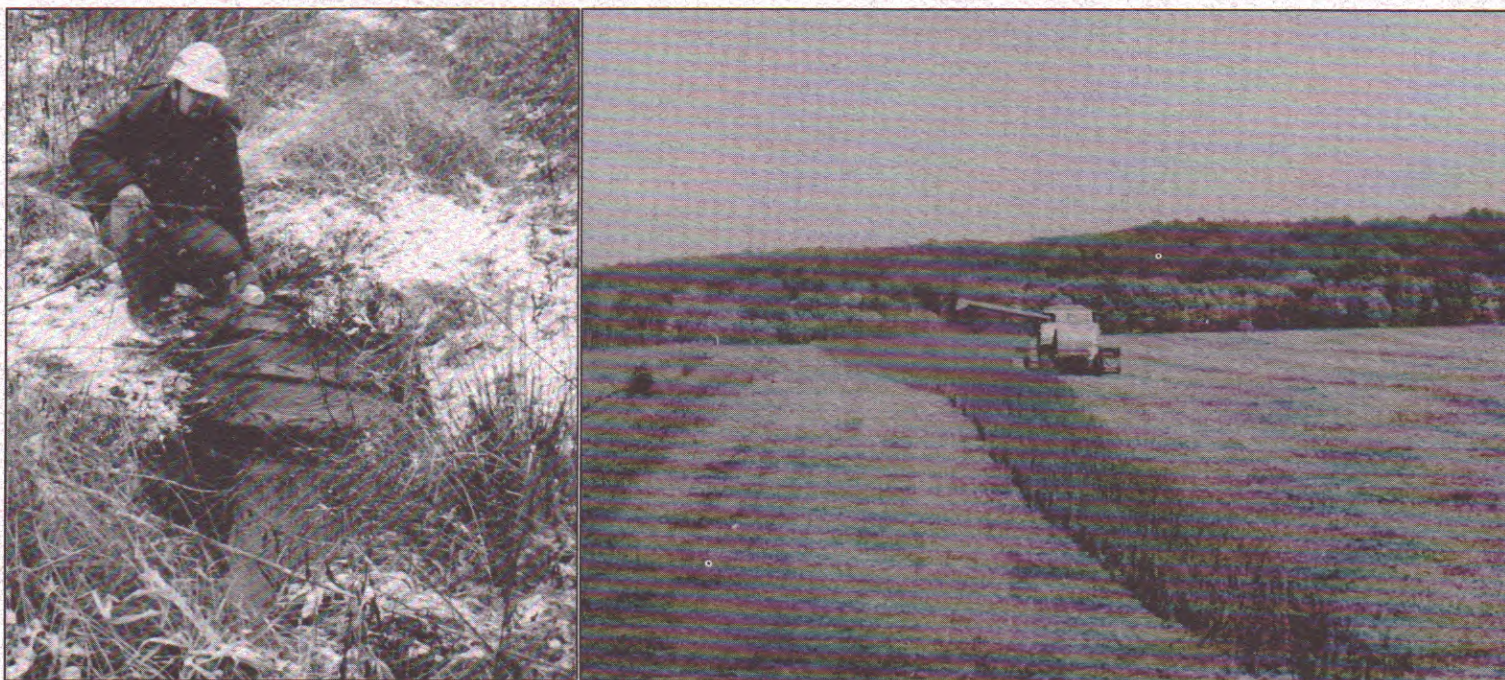


# Nonpoint Source Pollution

*in the Ohio River*





# What is Nonpoint Source Pollution?

Nonpoint source pollution is pollution which does not come from a specific location (such as a single pipe) but rather results from such land uses as agriculture, mining, forestry, and urban activity. Rainfall moving over and through the ground picks up pollutants from these areas and carries them into lakes, rivers, and groundwater. Because of its diffuse nature, nonpoint source pollution is difficult to regulate.

## Why a Problem?

Although many of us associate water pollution with industrial and sewage discharges, recent studies show that nonpoint sources actually contribute the largest amount of pollution to the nation's surface waters.

In part, this is due to the success with which point source discharges have been controlled over the last 20 years. Within the Ohio River Basin alone, control of domestic waste discharges has improved from providing treatment to only 39% of the sewered population in 1951 to providing at least secondary treatment to 95% of the sewered population in 1988. There have also been similar improvements in industrial wastewater treatment.

*ORSANCO is an interstate agency created to administer a compact among the states of Illinois, Indiana, Kentucky, New York, Ohio, Pennsylvania, Virginia, and West Virginia, to control present pollution and prevent further degradation of the waters of the Ohio River Basin. Established in 1948, ORSANCO works with these eight states as well as the federal government to implement water pollution control and abatement programs.*

Nonpoint source pollution can contribute levels of toxic substances to streams which exceed the established standards set by water pollution control agencies. This type of pollution can interfere with the designated uses of a water body, although it does not necessarily make the water "unsafe."

---

***Recent studies show that nonpoint sources actually contribute the largest amount of pollution to the nation's surface waters***

---

Parts of the Ohio River are moderately impaired for such uses as recreation, drinking water, and warm water aquatic life habitat.

For example, fish tissue studies conducted by the Ohio River Valley Water Sanitation Commission (ORSANCO) suggest nonpoint sources contribute toxic substances such as polychlorinated biphenyls (PCBs) and chlordane, which bioaccumulate in fish tissue. Fish in some parts of the river contain levels of these substances that surpass the action levels for human consumption set by the U.S. Food and Drug Administration, causing some states to issue advisories against eating certain types of fish.



# What is Nonpoint Source Pollution?

Nonpoint source pollution is pollution which does not come from a specific location (such as a single pipe) but rather results from such land uses as agriculture, mining, forestry, and urban activity. Rainfall moving over and through the ground picks up pollutants from these areas and carries them into lakes, rivers, and groundwater. Because of its diffuse nature, nonpoint source pollution is difficult to regulate.

## Why a Problem?

Although many of us associate water pollution with industrial and sewage discharges, recent studies show that nonpoint sources actually contribute the largest amount of pollution to the nation's surface waters.

In part, this is due to the success with which point source discharges have been controlled over the last 20 years. Within the Ohio River Basin alone, control of domestic waste discharges has improved from providing treatment to only 39% of the sewered population in 1951 to providing at least secondary treatment to 95% of the sewered population in 1988. There have also been similar improvements in industrial wastewater treatment.

*ORSANCO is an interstate agency created to administer a compact among the states of Illinois, Indiana, Kentucky, New York, Ohio, Pennsylvania, Virginia, and West Virginia, to control present pollution and prevent further degradation of the waters of the Ohio River Basin. Established in 1948, ORSANCO works with these eight states as well as the federal government to implement water pollution control and abatement programs.*

Nonpoint source pollution can contribute levels of toxic substances to streams which exceed the established standards set by water pollution control agencies. This type of pollution can interfere with the designated uses of a water body, although it does not necessarily make the water "unsafe."

---

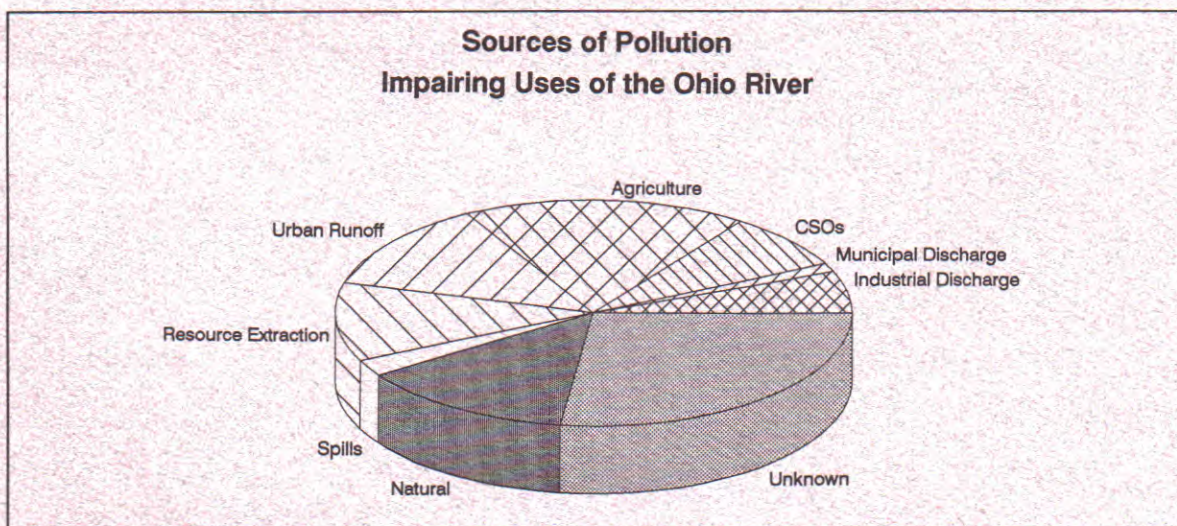
***Recent studies show that nonpoint sources actually contribute the largest amount of pollution to the nation's surface waters***

---

Parts of the Ohio River are moderately impaired for such uses as recreation, drinking water, and warm water aquatic life habitat.

For example, fish tissue studies conducted by the Ohio River Valley Water Sanitation Commission (ORSANCO) suggest nonpoint sources contribute toxic substances such as polychlorinated biphenyls (PCBs) and chlordane, which bioaccumulate in fish tissue. Fish in some parts of the river contain levels of these substances that surpass the action levels for human consumption set by the U.S. Food and Drug Administration, causing some states to issue advisories against eating certain types of fish.





## Major Causes in the Ohio River Valley

ORSANCO has identified three major land uses that contribute the greatest amount of nonpoint source pollution to Ohio Valley waterways: agriculture, mining, and urban activity. Figure 1 shows the proportion of nonpoint source pollution which affects the water quality of the Ohio River.

Agriculture (both crop and livestock production) is generally considered to be the most pervasive cause of nonpoint source pollution. This is due to such intensive activities as plowing and tilling, and the extensive amount of land used for agricultural purposes (approximately 48%) in the Ohio River Basin.

The largest contribution of nonpoint source pollution from agricultural land is sediment, which is carried off with overland runoff. Each year, 7-10 tons of soil per acre are lost from cultivated cropland. This sediment carries with it any residual fertilizers, pesticides, and herbicides applied to the land.

The impacts of mining operations include surface runoff from disturbed areas and discharge from inactive mining areas. The most serious

impact from coal mining is acid mine drainage. Acidic wastes can render streams biologically dead. While the amount of land used for mining is not extensive, the effects on water quality can be more harmful than those of agriculture.

---

***Each year, 7-10 tons of soil per acre are lost from cultivated cropland.***

---

Urban areas, due to their high percentage of impervious surfaces (roof tops, parking lots, etc.), allow a greater proportion of rainfall to run off and not be absorbed. This, coupled with the intensity of human activity in urban areas, can contribute significant sediment loadings to waterways. Construction, household hazardous waste, road salt, and synthetic pesticides and fertilizers all contribute to nonpoint source pollution.

The high percentage of unknown sources in Figure 1 is attributed to the large number of fish contaminated with PCBs and chlor-dane in parts of the river which are not near urban areas. Since no point sources of these contaminants have been identified, it is strongly suggested that they originate from nonpoint sources.





Photo courtesy of Tim McCabe, USDA Soil Conservation Service.

## What You Can Do

Since nonpoint source pollution is difficult and costly to treat, prevention is the most effective approach to managing the problem.

- Avoid using synthetic chemical fertilizers or pesticides on your lawn. Even though more pesticides are used on agricultural land, treated residential lawns show *concentrations* of up to 10 times the chemicals used on farms. In fact, the EPA estimates that 65 million pounds of pesticides were applied to homes and gardens in 1984.
- Don't pour used motor oil on the ground or down the drain. Just one quart of oil can contaminate two million gallons of drinking water or cause an oil slick almost two acres in size. Take your used oil to a service station that accepts it for recycling.

- Keep litter, leaves, and pet wastes out of street gutters, where they can make their way into streams and rivers.
- Plant trees and groundcover on your property to control soil erosion.
- If you farm, use "Best Management Practices" (BMP) in such areas as soil and water conservation, livestock management, and chemical use. Protect your drinking water supply by using fewer pesticides and disposing of containers properly. For more information contact your local county extension service.

*If you would like to learn more about nonpoint source pollution, contact ORSANCO for a copy of "Assessment of Nonpoint Source Pollution of the Ohio River."*

**OHIO RIVER VALLEY WATER  
SANITATION COMMISSION**  
817 MAIN STREET, 2ND FLOOR  
CINCINNATI, OHIO 45202

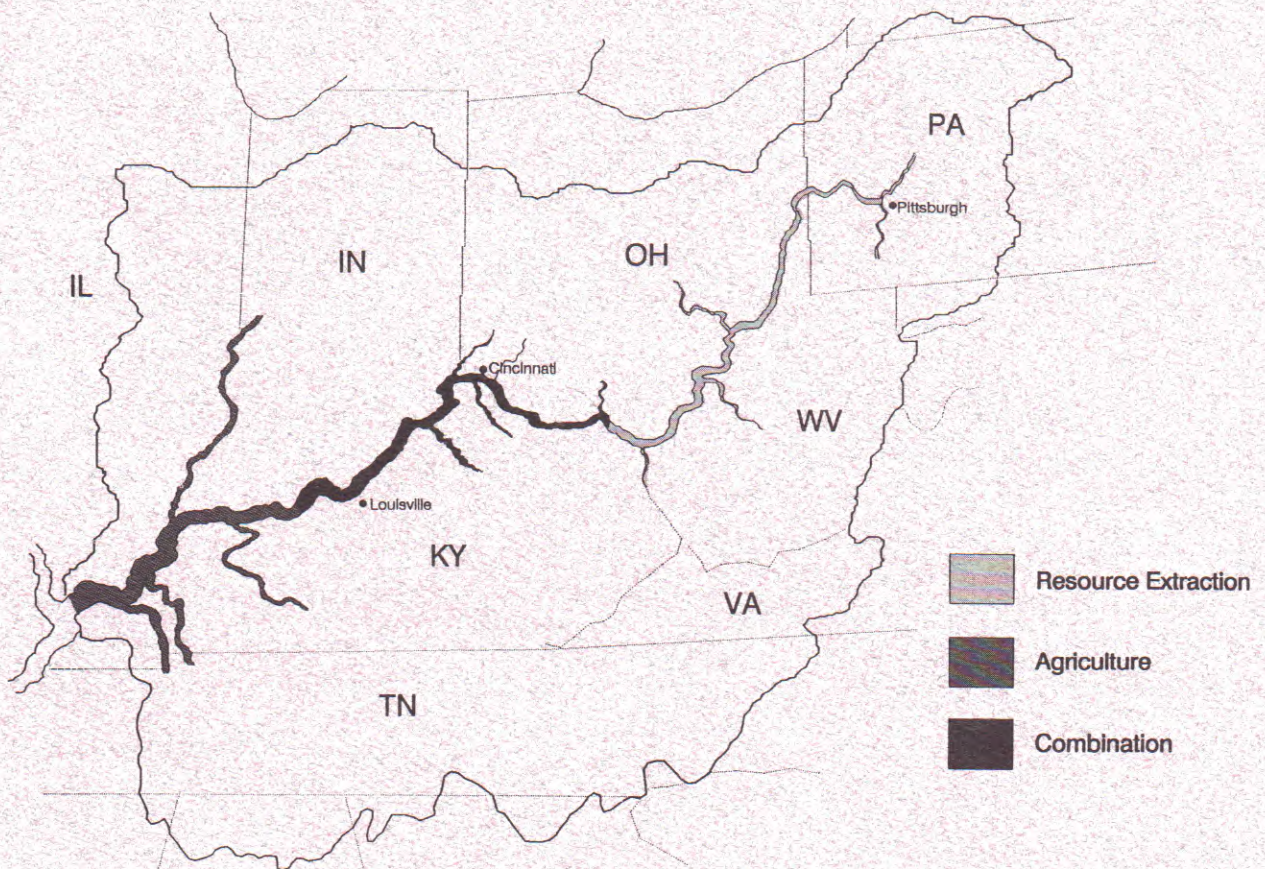


## Conclusions

A recent report by ORSANCO draws several main conclusions regarding nonpoint source pollution:

- Agriculture and resource extraction have the greatest impact on the water quality of the Ohio River.
- Resource extraction, especially acid mine drainage, is the major nonpoint source of pollution in the upper Ohio River Basin (the area drained by the upper 350 miles of the Ohio River).
- Agricultural activity, particularly crop production, is the major nonpoint source of pollution in the lower Ohio River Basin (the area drained by the lower 350 miles of the Ohio River).
- There is a combination of effects from resource extraction and agricultural activities in the area drained by the middle 281 miles of the Ohio River.
- Excessive levels of chlordane in fish tissue are associated with urban runoff.
- PCB contamination in fish tissue appears to be a problem throughout the Ohio River Basin.
- Goals should be set for reducing the loads of nonpoint source pollutants to the Ohio River. This would entail coordinating efforts among the Ohio River states to reduce the amount of nonpoint source pollution entering tributaries which eventually reach the Ohio River.

### Major Nonpoint Sources of Pollution in the Ohio River





***For further information on nonpoint source pollution in your state, contact:***

Illinois EPA  
2200 Churchill Road  
Box 19276  
Springfield, IL 62794  
(217) 872-3397

Indiana Dept. of Environmental Mgmt.  
105 S. Meridian Street  
Box 6015  
Indianapolis, IN 46206  
(317) 232-8560

Kentucky Natural Resources and Environmental Protection Cabinet  
18 Reilly Road  
Frankfort, KY 40601  
(502) 564-2150

Ohio EPA  
1800 Watermark Drive  
Box 1049  
Columbus, OH 43266-0149  
(614) 644-2160

Pennsylvania Department of Environmental Resources  
121 S. Highland Avenue  
Pittsburgh, PA 15200  
(412) 645-7138

West Virginia Department of Natural Resources  
1201 Greenbrier Street  
Charleston, WV 25311  
(304) 348-2108



*Runoff from urban areas contributes to nonpoint source pollution.*

**Sources:**

GAO. Nonagricultural Pesticides, Risks and Regulations. Washington, D.C. 1986.  
ORSANCO. Assessment of Nonpoint Source Pollution of the Ohio River. Cincinnati, OH 1990.  
Sen. Harry Reid, D-Nevada, Chairman, Senate Environment Subcommittee.

USDA. The Homeowner's Conservation Guide. Ohio-Kentucky-Indiana Regional Council of Governments, 1990.  
USDA. Trees are the Answer..., Soil Conservation Service, 1989  
US EPA & ASIWPCA. America's Clean Water, the States' Nonpoint Source Assessment 1985.