THE OHIO STATE UNIVERSITY EXTENSION

Extension FactSheet

AEX–441

Food, Agricultural and Biological Engineering, 590 Woody Hayes Dr., Columbus, OH 43210

# Non Point Source Water Pollution

## What is Nonpoint Source Pollution?

Nonpoint source pollution is a fancy term for polluted runoff. Water washing over the land, whether from rain, car washing, or the watering of crops or lawns, picks up an array of contaminants including oil and sand from roadways, agricultural chemicals from farmland, and nutrients and toxic materials from urban and suburban areas. This runoff finds its way into our waterways, either directly or through storm drain collection systems. The term nonpoint is used to distinguish this type of pollution from point source pollution, which comes from specific sources such as sewage treatment plants or industrial facilities. Scientific evidence shows that although huge strides have been made in cleaning up major point sources, our precious water resources are still threatened by the effects of polluted runoff. In fact, the Environmental Protection Agency has estimated that this type of pollution is now the single largest cause of the deterioration of out nation's water quality.

## Whatever They Call It, Why Should I Care About It?

The effects of polluted runoff are not limited to large lakes or coastal bays. In fact, chances are you don't have to look any farther than your neighborhood stream or duck pond. Water pollution in your town, and perhaps in your own backyard, can result in anything from weed-choked ponds to fish kills to contaminated drinking water.

There's not much chance that you can ignore this problem, even if you want to. Concern over polluted runoff has resulted in an ever-increasing number of state and federal laws enacted over the last five years. At the federal level, a permit program for stormwater discharges from certain municipalities and businesses is now underway. In addition to implementing this federal program, many states have passed laws altering local land use (planning and zoning) processes and building codes to address the problem of polluted runoff. The bottom line is that both polluted runoff and its management are likely to affect you and your community in the near future.

## What Causes Polluted Runoff?

You do. We all do. Polluted runoff is the cumulative result of our everyday personal actions and our local land use policies. Here's a brief rundown on the causes and effects of the major types of pollutants carried by runoff.

**Pathogens:** Pathogens are disease-causing microorganisms, such as bacteria and viruses, that come from the fecal waste of humans and animals. Exposure to pathogens from direct contact or ingestion of water can cause a number of health problems. Because of this, bathing beaches are closed, and boil water alerts are issued when testing reveals significant pathogen levels. Pathogens wash off the land from wild animals, farm animals, and pet waste, and can also enter our waterways from improperly functioning septic tanks, leaky sewer lines, and boat sanitary disposal systems.

**Nutrients:** Nutrients are compounds that stimulate plant growth, like nitrogen and phosphorous. Under normal conditions, nutrients are beneficial and necessary, but in high concentrations, they can become an environmental threat. Nitrogen contamination of drinking water can cause health problems, including "blue baby" syndrome. Over fertilization of ponds, streams, and lakes by nutrients can lead to massive algal blooms, the decay of which can create odors and rob the waters of life-sustaining dissolved oxygen. Nutrients in polluted runoff can come from agricultural fertilizers, septic systems, home lawn care products, and yard and animal wastes.

**Sediment:** Sand, dirt, and gravel eroded by runoff usually ends up in stream beds, ponds, or lakes where they can alter stream flow and decrease the availability of healthy aquatic habitat. Poorly protected construction sites, agricultural fields, roadways, and suburban gardens can be major sources of sediment.

**Toxic Contaminants:** Toxic contaminants are substances that can harm the health of aquatic life and/or human beings. Toxins are created by a wide variety of human practices and products, and include heavy metals, pesticides, and organic compounds like PCBs. Many toxins are very resistant to breakdown and tend to be passed through the food chain to be concentrated in top predators. Fish consumption health advisories are the result of concern over toxins. Oil, grease, and gasoline from roadways and chemicals used in homes, gardens, yards, and on farm crops, are major sources of toxic contaminants.

**Debris:** Trash is without a doubt the simplest type of pollution to understand. It interferes with enjoyment of our water resources and, in the case of plastic and polystyrene foam, can be a health threat to aquatic organisms. Typically this debris starts as street litter that is carried by runoff into our waterways.

## What Can I Do About All This?

First of all, you can begin to clean up your own act. There are many good publications and programs that can help you do simple, but important things like conserving water, disposing of hazardous waste properly, and gardening in an environmentally responsible manner.

Polluted runoff is largely the result of the way we develop, use, and maintain our land. These policies are largely decided at the municipal level, through the actions of local officials.. There are many techniques and regulations that can greatly reduce the effects of polluted runoff, and there are more being developed every day. Other Ohio NEMO fact sheets are devoted to telling you about your options. If you're a local official, learn a little more about polluted runoff and how you can combat it in the course of your everyday decisions. If you're not, ask your local officials, friends, and neighbors what they are doing about polluted runoff.

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