Ohio Department of Natural Resources
Division of Water Fact Sheet

Fact Sheet 97–44

What is Nonpoint Source Pollution?

Some Preliminaries

Question: have you ever thought of where the motor oil that drips from a car ends up? Answer: it is washed away with rainwater and finds its way into surface or ground water. When people think of water pollution, they usually visualize a large industrial plant discharging a mucky sludge into a river. Though this type of pollution is environmentally damaging, it is usually not the major factor contributing to water contamination. The majority of pollutants that are found in water are not derived from a direct source, such as an industrial plant pipe, but from sources "dispersed" throughout the environment. These dispersed sources are known as nonpoint sources (NPS).

NPS pollution comes from many sources in both urban and rural areas. Runoff from cropland, parking lots, lawns, mines, and septic systems often contribute to NPS pollution. NPS pollutants are transported to the surface and ground water by precipitation. During large storms, the runoff to surface water and infiltration to ground water increases and so does the rate of NPS movement (or transport).

Agricultural Influences

A significant source of NPS pollution comes from the addition of excessive agricultural chemicals to farm fields. Fertilizers and herbicides, such as atrazine, are applied to fields to enhance crop yield. However, only limited concentrations of these chemicals are needed to be effective. Excess compound will remain in the soil. Here, these compounds may degrade or adhere to soil particles. Any compound remaining unattached to the soil will eventually travel to a water store.

Nitrate is a compound often found in surface waters adjacent to croplands and pastures. Nitrate is an oxidized species of the element nitrogen, and is considered toxic at levels above 10mg/L. It is derived from manufactured fertilizers, organic wastes, and legume crops. Nitrate is easily transported to water sources when it is added to the soil at rates exceeding what the natural environment removes. Accumulation of nitrate and other compounds in lakes, for example, may cause eutrophication. This results in a reduction in the dissolved oxygen content of the water, thus killing off much of the animal and plant life.

Urban Influences

NPS pollution is not only present in agricultural settings, but also occurs in urban areas. Such origins of NPS pollution are fertilizers from lawns and gardens, street runoff, and construction sites. Vegetation, which normally slows the rate at which contaminants travel, is scarce in urbanized areas compared to rural regions. This can lead to a faster contamination rate where more highly concentrated pollutants are transported into surrounding water reserves.

Evidence for this rapid runoff can be observed during any rainstorm where sheets of water glide across roadways. Any pollutant such as oil, gas, road salt, etc. is washed into storm sewers eventually making its way to local streams. The high population density of urban areas can potentially increase the concentration of pollutants when compared with less populated rural areas.

BMPs

Methods to reduce or eliminate the effect of NPS pollution on the water supply can be achieved through best management practices (BMPs). BMPs are a management strategy that incorporates both engineering and cultural techniques that have been proven effective and practical in reducing water contamination. BMPs are usually carried out in an agricultural location, but can also be used successfully in urban areas.

BMPs are used extensively in pest, nutrient, and waste management. Timely application of fertilizers and pesticides, as well as specific applicator rates can substantially reduce NPS pollution problems. This type of approach works for the farmer with 1000 acres or the homeowner with a small garden.

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Another commonly used type of BMP is the construction of filter strips. Filter strips are tracts of land surrounding fields that border a surface water source. The strips contain natural vegetative growth such as trees, grasses, and shrubbery. Filter strips act as a buffer between the field and the water. The strips remove contaminants (nutrients) before they enter the water supply. They also significantly reduce the sediment flowing into adjacent surface water bodies. The Ohio State University Extension in your county can provide more detailed information on the BMP's appropriate for your area.

Wetlands behave in much the same manner as filter strips. Natural wetlands, such as swamps and marshes, trap and/or filter sediment, nutrients, and other NPS pollutants. They protect surface water from runoff of fields, mines, and various other rural and urban sources. Because wetlands behave as a natural water cleansing system, it is imperative that preservation efforts for these areas continue.

Summing It All Up

As you may have already concluded, NPS pollution comes from a myriad of places. Anything we discard will eventually arrive in our water reserves. We must take responsibility and care when applying chemicals to the ground and discarding our wastes. To limit the contamination of our waters, we must guard the natural filtering systems. Finally, we must always remember that just because NPS pollution may be out of sight, does not mean it should be out of mind!

If you have any questions on how to protect water quality in your home or town, or have questions on how to get in touch with the appropriate agencies, please contact:

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