

Sources of Pollution: Point and Nonpoint

Any activity that occurs on the land can affect water quality because pollutants on land or in the air can wash into waterways when it rains. For example, rain that washes over your yard may pick up excess fertilizers and pesticides and carry them into your local water body. This may also happen on farmland. When rain washes over driveways, roofs, and streets, it can pick up oil, rubber and other residues. On hot days, paved surfaces heat up rain runoff that can then enter a waterway and raise water temperatures.

What's Your Point?

When asked to picture pollution entering rivers, most people think of discharge pipes from factories spewing foul-smelling chemicals into the water. Factory discharge pipes also are known as **point sources** of pollution because they come from a single source. Point sources of pollution threaten the health of rivers and are subject to federal regulations under the Clean Water Act. The National Pollution Discharge Elimination System (NPDES) requires factories and other point source dischargers to obtain permits and adhere to standards. Since its enactment, the Clean Water Act has been directly responsible for removing more than 1 billion pounds of toxic chemicals per year and more than 6 billion pounds of oxygen-depleting pollution from wastewater each year.

The major threat to today's water quality is pollution without an easily identifiable source, or **nonpoint-source** pollution. Nonpoint-source pollution accounts for more than half of all surface water pollution. We all contribute to nonpoint-source pollution. Using fertilizer and pesticides on our lawns, failing to clean up after our pets, and washing our cars cause nonpoint-source pollution. Every time it rains or snows, natural and man-made pollutants on the land are washed into streams and wetlands with the storm water. These pollutants include pesticides, fertilizers, metals, manure, road salt and motor oil that originate from farms, lawns, paved surfaces, landfills and home septic systems. In addition, air pollutants contaminate rain water.

Another significant contributor to nonpoint-source pollution is **soil erosion**. Although erosion is a natural process, an unnatural acceleration of this process may be caused by construction sites, dirt roads, and other land disturbances. In fact, according to the Environmental Protection Agency, eroded soil is the most widespread pollutant in rivers. Other possible sources of sediment pollution are cropland, surface mines, overgrazed pastures, landfills, logging operations and other activities that produce areas of bare soil. The texture of the soil and its potential for absorbing water, the steepness of the slope and the adequacy of protective ground cover are all factors that influence the extent of erosion.

Nonpoint-source pollution can degrade a stream quickly by introducing organic and inorganic pollutants that bury streambeds, decrease oxygen and negatively affect aquatic life. Nutrients such as nitrogen and phosphorus that enter streams through storm water runoff cause excess algae growth in streams, lakes, wetlands and estuaries. When the algae die, the plants decompose, depleting dissolved oxygen required by fish and other aquatic organisms. Erosion of sediment into a stream can smother aquatic life and clog the gills of fish as well as diminish light

that underwater plants need to grow. Bacteria washed into streams from septic tanks and animal waste runoff can make aquatic organisms and humans sick.

Nonpoint-source pollution problems are increased in urban and suburban areas because paved surfaces cause runoff to occur faster and in greater quantities. In a healthy and functioning watershed, pollutants are absorbed and filtered by soil and vegetation before they can reach waterways. Paved roads, parking lots and rooftops are called impervious because water is unable to penetrate these surfaces to reach the soil beneath them. In many urban areas, storm water rushes over pavement, collecting nonpoint-source pollution. This water then flows into a storm drain and shoots through an outfall pipe directly into the stream. This high volume of storm water can erode stream banks, thus increasing the problem of sediment pollution downstream. New construction sites can also lead to sediment pollution if steps are not taken to prevent erosion of exposed soil. Impervious surfaces also cause thermal pollution because rainwater flows over hot pavement before entering the stream. As urban sprawl becomes the norm, nonpoint-source pollution becomes more and more difficult to address.

Non-point source pollution is a fancy term for polluted runoff. The term is used to distinguish this type of pollution from **point source pollution**, which comes from a single specific source such as a sewage treatment plant or industrial facilities.

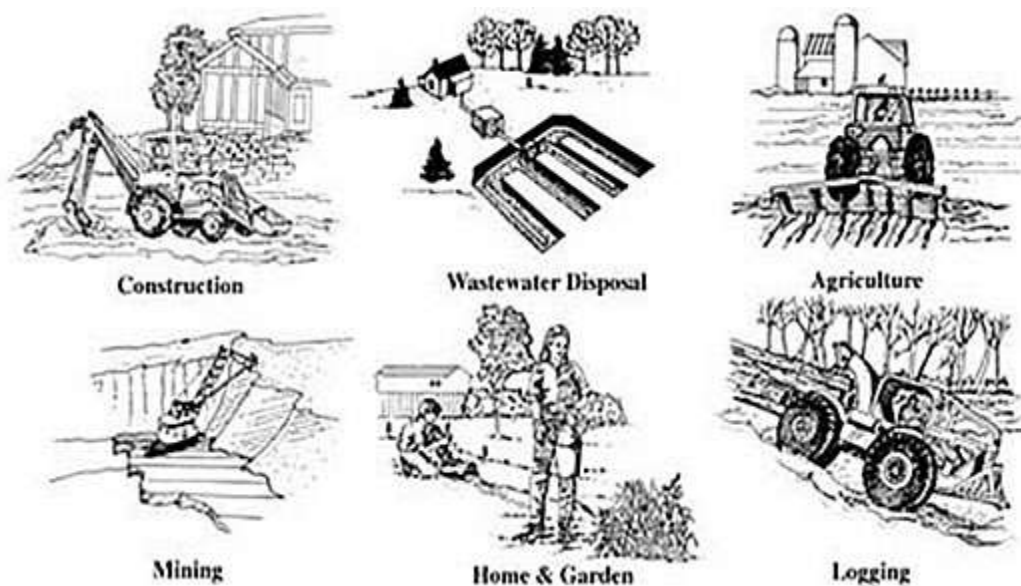


Figure 1.0 Non-Point Sources of Pollution

Soil disruption contamination

Adding fill

Fills such large boulders and sand are biological deserts. Sand does not support native vegetation that is commonly found around the lakes

Clearing ditches

This practice in the watershed contributes to phosphorus loading and sediments. When soil is disturbed, phosphorus is released. It then runs off into the groundwater and into lakes

Clearing riparian areas

Land that has been cleared high in the watershed takes away vital natural water filter systems known as riparian zones

Retaining walls

These structures destroy habitat and degrade water quality. By the way they also require a development permit. You could be subjecting yourself to a large fine should you decide to go without.



There are many actions you can take, both as an individual and as a part of your community, to prevent nonpoint-source pollution and to alleviate its effects on local waterways. There are choices we make every day that can affect the amount of nonpoint-source pollution entering our streams.

<http://www.creekfreaks.net/node/57>

<http://www.cusheonlakestewardship.com/polution-problems.htm>