

Pollutant Information Sheet

FOR STUDENTS

Sediments

Particles of soils, sand, silt, clay, and minerals wash from land and paved areas into creeks and tributaries. In large unnatural quantities, these natural materials can be considered pollutants. Construction projects often contribute large amounts of sediment. Certain lumbering practices affect sediments in runoff. Sediments may fill stream channels and harbors that later require dredging. Sediments suffocate fish and shellfish populations by covering fish nests and clogging the gills of bottom fish and shellfish.

Petroleum Products

Oil and other petroleum products such as gasoline and kerosene can find their way into water from ships, oil-drilling rigs, oil refineries, automobile service stations, and streets. Oil spills kill aquatic life (fish, birds, shellfish, and vegetation). Birds are unable to fly when oil loads their feathers. Shellfish and small fish are poisoned. If it is washed on the beach, oil requires much labor to clean up. Fuel oil, gasoline, and kerosene may leak into groundwater through damaged underground storage tanks.

Human and Animal Waste

Human waste that is not properly treated at a waste treatment plant and then released into water may contain harmful bacteria and viruses. Typhoid fever, polio, cholera, dysentery, hepatitis, flu, and the common cold are examples of diseases caused by bacteria and viruses in contaminated water. The main source of this problem is sewage entering water. People can come into contact with these microorganisms by drinking polluted water or through swimming, fishing, or eating shellfish living in polluted waters. Often unexpected flooding of barnyards or stock pens can suddenly increase the toxic effects of animal waste in water. Animal waste can also act as a fertilizer and damage the ecosystem by increasing nutrients. Especially in urban areas, pet waste can enter water environments through stormwater systems that carry water directly to bayous, bays, and other waterbodies.

Organic Waste

Domestic sewage treatment plants, food-processing plants, paper mill plants, and leather tanning factories release organic wastes that bacteria consume. If too much waste is released, the bacterial populations increase and use up the oxygen in the water. Fish die if too much oxygen is consumed by decomposing organic matter.

Inorganic Chemicals

Inorganic chemicals and mineral substances, solid matter, and metal salts commonly dissolve in water. They often come from mining and manufacturing industries, oil field operations, agriculture, and natural sources. These chemicals interfere with natural stream purification. They destroy fish and other aquatic life. They also corrode expensive water treatment equipment and increase the cost of boat maintenance.

Detergents and Fertilizers

Many of these substances are toxic to fish and harmful to humans. Some are very poisonous even at low concentrations. The major source of pollution from agriculture comes from surplus fertilizers in runoff. Fertilizers contain nitrogen and phosphorous that can cause large amounts of algae to grow. The large algae blooms cover the water's surface. The algae die after they have used all of the nutrients. Once dead, they sink to the bottom where bacteria feed on them. The bacterial populations increase and use up most of the oxygen in the water. Once the free oxygen is gone, many aquatic animals die. This process is called "eutrophication."

Heated or Cooled Water

Heat reduces the ability of water to dissolve oxygen. Electric power plants use large quantities of water in their steam turbines. The heated water is often returned to streams, lagoons, or reservoirs. With less oxygen in the water, fish and other aquatic life can be harmed. Water temperatures that are much lower than normal can cause habitat damage. Deep dams often let extra water flow downstream. When the water comes from the bottom of the dam, it is much colder than normal.

Acidic Precipitation

Aquatic animals and plants are adjusted to a rather narrow range of pH levels. When water becomes too acidic because of inorganic chemical pollution or from acidic rain, fish and other organisms die.

Pesticides, Herbicides, and Fungicides

Chemicals that are designed to limit growth of or to kill life forms are a common form of pollution. This pollution results from attempts to limit the negative effects of undesirable species on agricultural crop production. Irrigation, groundwater flow, and natural runoff bring such toxic substances to rivers, streams, lakes, and oceans.