

Name: _____

Period: _____ Date: _____

River of Shame

Company Name: _____

Type of Company: _____

Turn this paper into a key by adding one dot of each respective color to the space in front of the pollutant. You will then need to decide how much of each pollutant your company produces and circle the correct amount. You must be able to give the reason behind your choice.

Black

Sediments

Your company's out-put: High Medium Low

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 a pollutant. 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 invertebrates by covering their nests and habitats, and clogging their gills.

Brown

Animal & Human Waste

Your company's out-put: High Medium Low

Human wastes that are not properly treated at a waste treatment plant and then released to water may contain harmful bacteria and viruses. Typhoid fever, polio, cholera, dysentery (diarrhea), hepatitis, flu, and the common cold germs are examples of diseases caused by bacteria and viruses in contaminated water. The main source of this problem is sewage getting into the water. People can come into contact with these microorganisms by coming in contact with or drinking the polluted water, or by eating fish from the polluted water. Often unexpected flooding of barnyards or stock pens can suddenly increase the toxic effects of animal waste in water. CAFOs (Concentrated Animal Farming Operations) are also a major source of animal waste, destroying vegetation and producing unacceptable amounts of pollution in the form of animal waste in runoff and ground water when not designed properly or the regulations are not followed. Animal waste can also act as fertilizer and create damage by increasing nutrients.

Orange

Acid Precipitation

Your company's out-put: High Medium Low

Aquatic animals and plants are adapted to a rather narrow range of pH levels. PH is a measure of the acidity of a solution. When water becomes too acidic, due to inorganic chemical pollution and acid rain, fish and other organisms die.

Purple

Pesticides, Herbicides, Fungicides

Your company's out-put: High Medium Low

Agricultural chemicals designed to kill or limit the growth of 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 rings. These toxic substances end up in rivers, streams, lakes, and oceans.

Yellow

Petroleum Products

Your company's out-put: High Medium Low

Oil and other petroleum products like gasoline and kerosene can find their way into water from ships, oil drilling, oil refineries, automobile service stations, leaky cars, residential disposal (from home oil changes, etc) and roads. Fuel oil, gasoline, and kerosene may leak into ground water through damaged underground storage tanks. Oil spills kill aquatic life (fish, birds, invertebrates, and vegetation). Birds are unable to fly when oil loads the feathers and invertebrates and fish can be poisoned. If the oil washes up on the beach it can require much labor and money to clean up.

Blue

Heated or Cooled Water

Your company's out-put: High Medium Low

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. As a result of the change in temperature and the resulting changes in oxygen levels, fish and other aquatic life can be harmed. Water temperatures that are much lower than normal can also cause habitat damage. Deep dams often allow extra water flow downstream, and when the water comes from the bottom of the dams it is often much colder than normal.

Green

Fertilizers

Your company's out-put: High Medium Low

The major source of pollution from agriculture comes from surplus fertilizers in the runoff. Fertilizers contain nitrogen and phosphorus that can cause large amounts of algae to grow. The large algae blooms cover the water's surface. The algae die and sink to the bottom of the river where bacteria feed on them. The bacterial populations grow and use up most of the oxygen in the water. Once the free oxygen is gone many aquatic organisms die. This process of increasing nutrients is called eutrophication. This process can cause large so called "dead zones", which are really the result of too much organic growth.

Red

Inorganic Chemicals and Compounds

Your company's out-put: High Medium Low

Inorganic chemicals and compounds such as mineral substances, solid matter, perfumes, pharmaceutical products, detergents, pesticides, and metal salts commonly dissolve in water. They often come from mining and manufacturing industries, oil field operations, agriculture, and even your own home. These chemicals interfere with natural stream purification; and destroy fish and other aquatic life. They can also cause taste and odor problems, corrode expensive equipment, and often cannot be treated effectively. Still largely unknown are the effects of pharmaceuticals, over the counter medications (especially acetaminophen), and other human care products.

Remember to think of all of the aspects of your business or community service and read through all of the pollutant types so you can accurately estimate the levels your company produces. You will need to be able to explain your choices.