

# ENVIRONMENTAL MANAGEMENT



Assignment:

## WATER POLLUTION

- 1) What is water pollution?
  
- 2) What causes water pollution?
  
- 3) Name the 2 sources of pollution
  
- 4) What are the different types of water pollution?
  
- 5) How can water pollution be prevented?
  
- 6) Pollution can be: MICROBIOLOGICAL, CHEMICAL, SUSPENDED MATTER, NUTRIENTS, OXYGEN-DEPLETING SUBSTANCES.

Give one real example for each case with a brief explanation.

1) 1- Water pollution is the contamination of water bodies, very often by human activities.

2- Water pollution is caused by:

- Industrial waste
- Sewage and waste water
- Mining activities
- Marine dumping
- Accidental oil leakage
- Burning of fossil fuels
- Leakage from sewer lines
- Chemical fertilizers and pesticides
- Global warming
- Radioactive waste
- Urban development
- Leakage from the landfills
- Animal waste
- Underground storage leakage

3) **Point-source** pollutants in surface water and groundwater are usually found in a plume that has the highest concentrations of the pollutant nearest the source (such as the end of a pipe or an underground injection system) and diminishing concentrations farther away from the source. The various types of point-source pollutants found in waters are as varied as the types of business, industry, agricultural, and urban sources that produce them.

If the facility or operator does not handle, store and dispose of the raw materials and wastes properly, these pollutants could end up in the water supply. This may occur through discharges at the end of a pipe to surface water, discharges

on the ground that move through the ground with infiltrating rainwater, or direct discharges beneath the ground surface. Nonpoint-source pollution occurs as water moves across the land or through the ground and picks up natural and human-made pollutants, which can then be deposited in lakes, rivers, wetlands, coastal waters, and even groundwater. The water that carries nonpoint-source pollution may originate from natural processes such as rainfall or snowmelt, or from human activities such as crop irrigation or lawn maintenance.

**Nonpoint-source** pollution is usually found spread out throughout a large area. It is often difficult to trace the exact origin of these pollutants because they result from a wide variety of human activities on the land as well as natural characteristics of the soil, climate, and topography. The most common nonpoint-source pollutants are sediment, nutrients, microorganisms and toxics. Sediment can degrade water quality by contaminating drinking water supplies or silting in spawning grounds for fish and other aquatic species. Nutrients, microorganisms, and other toxic substances can be dangerous to human health and aquatic life.



This silt-laden runoff from a residential area contains not only soil and clay particles from nearby construction, but also is likely to contain small amounts of lawn chemicals, oil, grease, gasoline, and even residues from recent highway de-icing.

These are all examples of pollutants released from nonpoint sources.

4) There are different types of water pollution:

**Chemicals:** Industrial and agricultural work involves the use of many different chemicals that can run-off into water and pollute it. These are poisonous to aquatic life and could also affect humans and birds because as we eat fish, if they are infected, in some way affects our health and our body. Some examples of these chemicals could be metals, solvents and petrol from industrial activities and pesticides from agriculture.

**Microbiological:** This is a natural form of water pollution caused by microorganisms such as bacteria, viruses and protozoa. The consequences are diseases that could affect fishes, humans and land animals.

**Suspended Matter:** This is caused because of suspended particles of pollutants that couldn't dissolve in water. These could harm aquatic life that live in the floor of lakes and rivers.

**Nutrients:** Some wastewater and fertilizers contain high levels of nutrients that encourage the growth of different water plants like algae.

This is a problem because if there are so many plants they might use up the oxygen available and not leaving sufficient for fishes.

**Ground water pollution:** This kind of pollution is often caused because of the pesticides in the soil and could provoke huge problems to humans.

as some use it as a source of drinking water.

Oxygen-depleting: This is originated because of the excess of biodegradable material in water. As fishes feed on biodegradable material when there is too much of it, the number of microorganisms increase and they use all the oxygen available developing like this which is called oxygen depletion.

When oxygen levels in the water are depleted, relatively harmless aerobic microorganisms die and anaerobic microorganisms begin to thrive. Some anaerobic microorganisms are harmful to people, animals and the environment, as they produce harmful toxins.

Surfaces water pollution: Surface waters are the natural water resources of Earth such as rivers, oceans, lagoons and seas. These waters can become polluted in a number of ways giving like this place to the surface water pollution.

5) what can do to help. You can prevent water pollution of nearby rivers and lakes as well as groundwater and drinking water by following some simple guidelines in your everyday life.

- Conserve water by turning off the tap when running water is not necessary. This helps prevent water shortages and reduces the amount of contaminated water that needs treatment.
- Be careful about what you throw down your sink or toilet. Don't throw paints, oils or other forms of litter down the drain.
- Try to use environmentally household products, such as washing powder, household cleaning agents and toiletries.
- Take great care not to overuse pesticides and fertilisers.

This will prevent runoffs of the material into nearby water sources.

- By having more plants in your garden you are preventing fertiliser, pesticides and contaminated water from running off into nearby water sources.
- Don't throw litter into rivers, lakes or oceans. Help clean up any litter you see on beaches or in rivers and lakes, make sure it is safe to collect the litter and put it in a nearby dustbin.

6)

### **Microbiological pollution**

Microbiological pollution is the pollution that is caused by microorganisms. Most of them are not dangerous but they still make the water not clean. But there are some of the organisms like bacteria, viruses can lead to serious diseases that can lead to death. So that's why some of the countries don't have clean water to drink and lead to sickness.

**Real Life** The faecal microbiological pollution was investigated in the Upper Great Lakes Connecting Channels (zones of the St. Marys River in Sault Ste. Marie, the St. Clair River in Sarnia and the Detroit River in Windsor (Ontario)) Water samples from these rivers and various sources of faecal pollution were analyzed for the indicator organism recommended by Health and Welfare Canada - *Escherichia coli*.



Local improvements can be achieved by manipulating bacteria transport in rivers - preventing influx of contaminated waters to the areas used for water-based recreation.

### **Chemical pollution**

Many industrial works have to use many chemicals that can leak and get into water and pollute the water. Metals from industrial pollute the rivers and lakes. And because of that the animals that live in the water are become endangered. Petroleum is a different type of chemical by oil spills. Oil spills have a localized effect on wildlife, but can spread out for many miles. This oil can cause the death of many

fish.

**Real Life** The Yangtze River leaks most of the concern in China

In January, water supplies in the southern region of Guangxi became contaminated with cadmium from a mining company. People were warned not to drink water from rivers in affected areas. There was panic buying of bottled water in some areas in Jiangsu after residents noticed a foul smell coming from the tap water Shanghai's drinking water supply mainly comes from the Yangtze River. An environment official has said that the city was ready to shut down water supplies from the Yangtze should the need arise.

(I want also want to add that I have read a book called “La Apelacion” of John Grishman that talked the same of the chemical pollution. When a company from the south of Mississippi that destarched toxic waste in the water system of the city, prompting the impact of hundreds of cases of cancer. This is one of millions of consequence from the chemical pollution )



## Suspended Matter

This pollution are caused because of when the pollutants get into the water and it didn't mix with the water molecules. And all of these particles will form fine silt on the bottom of the water. Then, it will harm the animals that live in the water by taking all the nutrients and effect their habitat.

**Real Life** Raritan and Lower New York Bays using dissolved and particulate elemental concentrations The concentrations of 22 elements also were measured in the suspended matter of Raritan and Lower New York Bays and brackish water sources. Statistical differences among the geographical regions were detected in the relationships of Ti, Ni, Co, As, and U with Fe, with particulate As being an especially strong geochemical indicator of Raritan River particles.

### **Nutrients poluttion**

Nutrients are the things that plants need for growing and developing. Also, most of them are found in a waste water. These can cause excess weed and algae growth if there are large concentrations in water. Drinking water can be contaminated. The algae use up all the oxygen in the water and leave nothing to the surrounding marine life and this can damage other organisms that live in the water.

**Real Life** Nutrients pollution in Mexico

One prominent example of the process is the so-called dead zone that occurs annually in the Gulf of Mexico. The dead zone is caused by nitrogen carried to the Gulf from the Mississippi River. The Mississippi drains much of the land in the Midwestern United States, an area known for its farming operations and agriculture. In the Gulf of Mexico, the extra nitrogen causes blooms of algae, which

die and deplete the oxygen in the water. Fish and shellfish that can't escape the zone are killed.



### **OXYGEN-DEPLETING SUBSTANCES.**

Oxygen depletion in a pond is the result of demand exceeding supply. Aquatic animals, plants, and decaying organic matter consume oxygen. Aquatic plants are primary producers of oxygen. Plants produce oxygen as a by-product of photosynthesis. The rate of photosynthesis is dependent upon light. Because of the effect of sunlight on photosynthesis, the amount of oxygen in pond water fluctuates daily. Oxygen levels are usually highest at midday and lowest just before sunrise. Fish kills usually occur when more oxygen is consumed during the night hours than is produced during daylight hours. Warm water does not contain as much oxygen as cold water. Thus, during warm weather months, mismanagement of ponds by overstocking, overfeeding, overfertilization, pollution

from barns and feedlots, or chemical treatment of aquatic weeds can result in oxygen depletion and fish kills.

**Real Life**

The San Joaquin River . It has been approved by the State Water Resources Control Board (SWRCB) and the Office of Administrative Law.

