

A

Seminar report

On

Water Pollution

Submitted in partial fulfillment of the requirement for the award of degree
of Civil

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Preface

I have made this report file on the topic **Water Pollution**; I have tried my best to elucidate all the relevant detail to the topic to be included in the report. While in the beginning I have tried to give a general view about this topic.

My efforts and wholehearted co-corporation of each and everyone has ended on a successful note. I express my sincere gratitude towho assisting me throughout the preparation of this topic. I thank him for providing me the reinforcement, confidence and most importantly the track for the topic whenever I needed it.

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Introduction

Water pollution is a major global problem which requires ongoing evaluation and revision of water resource policy at all levels (international down to individual aquifers and wells). It has been suggested that water pollution is the leading worldwide cause of deaths and diseases, and that it accounts for the deaths of more than 14,000 people daily.

An estimated 580 people in India die of water pollution related illness every day. Around 90% the water in the cities of China is polluted, and as of 2007, half a billion Chinese had no access to safe drinking water. In addition to the acute problems of water pollution in developing countries, developed countries also continue to struggle with pollution problems.

For example, in the most recent national report on water quality in the United States, 45 percent of assessed stream miles, 47% of assessed lake acres, and 32 percent of assessed bays and estuarine square miles were classified as polluted. The head of China's national development agency said in 2007 that one quarter the length of China's seven main rivers were so poisoned the water harmed the skin.

Water is typically referred to as polluted when it is impaired by anthropogenic contaminants and either does not support a human use, such as drinking water, or undergoes a marked shift in its ability to support its constituent biotic communities, such as fish. Natural phenomena such as volcanoes, algae blooms, storms, and earthquakes also cause major changes in water quality and the ecological status of water.

What is Water Pollution?

Water pollution is any chemical, physical or biological change in the quality of water that has a harmful effect on any living thing that drinks or uses or lives (in) it. When humans drink polluted water it often has serious effects on their health. Water pollution can also make water unsuited for the desired use.

Categories

Although interrelated, surface water and groundwater have often been studied and managed as separate resources. Surface water seeps through the soil and becomes groundwater. Conversely, groundwater can also feed surface water sources. Sources of surface water pollution are generally grouped into two categories based on their origin.

Point sources

Point source water pollution refers to contaminants that enter a waterway from a single, identifiable source, such as a pipe or ditch. Examples of sources in this category include discharges from a sewage treatment plant, a factory, or a city storm drain. The U.S. Clean Water Act (CWA) defines point source for regulatory enforcement purposes. The CWA definition of point source was amended in 1987 to include municipal storm sewer systems, as well as industrial storm water, such as from construction sites.

Nonpoint sources

Nonpoint source pollution refers to diffuse contamination that does not originate from a single discrete source. NPS pollution is often the cumulative effect of small amounts of contaminants gathered from a large area.

A common example is the leaching out of nitrogen compounds from fertilized agricultural lands. Nutrient runoff in storm water from "sheet flow" over an agricultural field or a forest are also cited as examples of NPS pollution.

Contaminated storm water washed off of parking lots, roads and highways, called urban runoff, is sometimes included under the category of NPS pollution. However, because this runoff is typically channeled into storm drain systems and discharged through pipes to local surface waters, it becomes a point source.

Groundwater pollution

Interactions between groundwater and surface water are complex. Consequently, groundwater pollution, sometimes referred to as groundwater contamination, is not as easily classified as surface water pollution.

By its very nature, groundwater aquifers are susceptible to contamination from sources that may not directly affect surface water bodies, and the distinction of point vs. non-point source may be irrelevant.

A spill or ongoing release of chemical or radionuclide contaminants into soil (located away from a surface water body) may not create point or non-point source pollution but can contaminate the aquifer below, creating a toxic plume.

The movement of the plume, called a plume front, may be analyzed through a hydrological transport model or groundwater model. Analysis of groundwater contamination may focus on soil characteristics and site geology, hydrogeology, hydrology, and the nature of the contaminants.

Where does water pollution come from?

Water pollution is usually caused by human activities. Different human sources add to the pollution of water. There are two sorts of sources, point and nonpoint sources. Point sources discharge pollutants at specific locations through pipelines or sewers into the surface water. Nonpoint sources are sources that cannot be traced to a single site of discharge.

Examples of point sources are: factories, sewage treatment plants, underground mines, oil wells, oil tankers and agriculture.

Examples of nonpoint sources are: acid deposition from the air, traffic, pollutants that are spread through rivers and pollutants that enter the water through groundwater. Nonpoint pollution is hard to control because the perpetrators cannot be traced.

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Common causes of water pollution

- Sewage and wastewater: Out of sight, out of mind? Surfers will tell you that sewage contains all kinds of horrific nasties, from sanitary products, condoms, paper, and plastics, to bacteria and viruses that can make you extremely ill.
- Soaps and washing detergents: Phosphates in detergents can fertilize rivers and seas, causing algal blooms that use up oxygen and kill fish life.
- Oil poured down the drain: You might think oil tankers make the most oil pollution, but quite a lot of oil enters water simply by being tipped (or washing) down the drain.
- Invasive species: Often carried around the world by ships, they suddenly appear in rivers, lakes, and seas where they have no predators, quickly wiping out their natural rivals.
- Atmospheric deposition: This is air pollution that returns to Earth as land and water pollution, including acid rain that falls into oceans, rivers, and seas, chemical discharges from chimneys (smokestacks), and fly ash from waste incinerators.
- Highway and street runoff: Cars obviously wear out as they drive down roads—but it's less obvious that they wear out and leave toxic residues on the roads themselves. Heavy storms wash poisoned sludge off roads into surrounding land where it drains into rivers or groundwater.
- Agricultural runoff: Fertilizers, weedkillers, and other farm chemicals wash into rivers and groundwater, causing algal blooms and potentially contaminating drinking water.
- Litter: Plastic bottles and bags can last up to 500 years in the environment without biodegrading (breaking down naturally). If you've ever done a beach clean and studied the waste you collect, you will have noticed that the vast majority of it is small, random bits of plastic.
- Oil production: Most oil is produced offshore and transported by ships, so it's no surprise that the oil industry is a big polluter. Despite the huge media attention they gain, tanker accidents account for only about 10 percent of the total amount of oil that enters the oceans. Unfortunately, they often create a huge amount of pollution in one place, overwhelming the local ecosystem.
- Ship pollution: Several decades after important international agreements to stop marine pollution were signed, oil leakage and waste disposal from ships (including cruise ships, warships, and tankers) remains a significant cause of ocean pollution.

Water pollution solutions

- **Understanding causes:** If we don't understand why pollution happens, how can we hope to stop it? We need to know whether pollution is point source or nonpoint source—and what causes it in each case.
- **Legislation:** There are many different anti-pollution laws and agreements in operation in the United States, Europe, and worldwide. Examples include the US Clean Water Act, the EU Bathing Water Directive, and the MARPOL International Convention for the Prevention of Pollution from Ships.
- **Regulation:** Sometimes pollution seems unavoidable: from papermaking to oil refining, many industrial processes create pollution as a byproduct. But instead of accepting that as a fact, we can regulate factories and allow them to emit or discharge only limited amounts of carefully controlled pollutants. By slowly reducing the levels of permitted discharges, year by year and decade by decade, we can gradually bring pollution under control.
- **Effective enforcement:** Laws and regulations are worth nothing unless we're prepared to enforce them—and punish offenders with fines or jail sentences. This is part of an idea known as the polluter pays principle, which means people who produce pollution should have to pay the costs they inflict on society.
- **Public awareness:** The more people know about the causes and effects of pollution, the more likely they're going to be to avoid adding to the problem. Community action to tackle pollution, such as voluntary cleanups of rivers and beaches, is very important.
- **Education:** If we teach schoolchildren that pollution is a problem, perhaps we can avoid turning them into future polluters?
- **Political pressure:** If we want to create laws and regulations that effectively tackle pollution, against the wishes of powerful companies, we're going to need ordinary people to apply considerable pressure to their elected political representatives. That's where campaigning groups and activists can play an important role.
- **Cooperation:** It's easy to point fingers and blame "greedy corporations" for polluting the planet, but we all have a share of the responsibility for pollution: if you drive a car, travel by bus, or buy any goods that have been transported, you use oil, directly or indirectly, and you're partly to blame for oil spillages in the ocean.
- **Science:** Understanding how pollution travels and persists in the environment can play an important part in public awareness, education, and applying political pressure. Good science can inform policy and legislation and empower campaigners, but science alone rarely makes much difference.
- **Technology:** There may be superb technological ways of cleaning-up pollution we haven't yet discovered; similarly, there may be ways of avoiding pollution (for example, by switching from gasoline-powered cars to electric ones to reduce our dependence on oil).

Types of water pollution

There are many types of water pollution because water comes from many sources. Here are a few types of water pollution:

- **Nutrients Pollution**

Some wastewater, fertilizers and sewage contain high levels of nutrients. If they end up in water bodies, they encourage algae and weed growth in the water. This will make the water undrinkable, and even clog filters. Too much algae will also use up all the oxygen in the water, and other water organisms in the water will die out of oxygen starvation.

- **Surface water pollution**

Surface water includes natural water found on the earth's surface, like rivers, lakes, lagoons and oceans. Hazardous substances coming into contact with this surface water, dissolving or mixing physically with the water can be called surface water pollution.

- **Oxygen Depleting**

Water bodies have micro-organisms. These include aerobic and anaerobic organisms. When too much biodegradable matter (things that easily decay) end up in water, it encourages more microorganism growth, and they use up more oxygen in the water. If oxygen is depleted, aerobic organisms die, and anaerobic organisms grow more to produce harmful toxins such as ammonia and sulfides.

- **Ground water pollution**

When humans apply pesticides and chemicals to soils, they are washed deep into the ground by rain water. This gets to underground water, causing pollution underground.

This means when we dig wells and bore holes to get water from underground, it needs to be checked for ground water pollution.

- **Microbiological**

In many communities in the world, people drink untreated water (straight from a river or stream). Sometimes there is natural pollution caused by micro-organisms like viruses,

bacteria and protozoa. This natural pollution can cause fishes and other water life to die. They can also cause serious illness to humans who drink from such waters.

- **Suspended Matter**

Some pollutants (substances, particles and chemicals) do not easily dissolve in water. This kind of material is called particulate matter. Some suspended pollutants later settle under the water body. This can harm and even kill aquatic life that live at the floor of water bodies.

- **Chemical Water Pollution**

Many industries and farmers work with chemicals that end up in water. This is common with Point-source Pollution. These include chemicals that are used to control weeds, insects and pests. Metals and solvents from industries can pollute water bodies. These are poisonous to many forms of aquatic life and may slow their development, make them infertile and kill them.

- **Oil Spillage**

Oil spills usually have only a localized effect on wildlife but can spread for miles. The oil can cause the death to many fish and get stuck to the feathers of seabirds causing them to lose their ability to fly.

CONCLUSION

Water pollution is bad and it's not good for people to drink the water that's polluted and for all organisms that need water to survive.

There are millions of people that don't have good clean access to water and that they even have to drink the bad polluted water for them to survive, Sewage can cause water pollution along with the toxic chemicals from Industrial business.

There are a bunch of water pollutions like toxic and organic and thermal water. And solutions to stop the water pollution are to clean up the garbage and keep your yard clean.

To try to stop the water pollution clean up your yard and make sure there is no garbage left anywhere around in the area you live like the streets and neighborhood.

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