



## WATER POLLUTION AS A PROBLEM AND THE PREVENTIVE MEASURES TO CURB IT

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### ABSTRACT

Water is essential for life. Two third of the total covered area of the earth is covered by water. Out of the entire land mass found on the earth, 97 percent is in the ocean and seas. The remaining 3 percent is fresh water found in different sources. Human beings and most of the other animals require fresh water for their use and survival.

Pollution is at a very rapid growth. It is devastating and annihilating. The entire globe is now the breeding ground of poisonous water and water borne diseases. In India, 50 to 60 percent of population suffers from diseases caused by polluted water. Thus, the peoples should have to awaken the humane attitudes and benevolence to protect the living creatures on Earth.

In recent years because of unlimited greed and need various inhuman activities, the sources of water is getting polluted. Industries are the chief cause of water pollution. Many industries discharge the hot water and hot by-products directly in the rivers.

The Government should pass strict laws to prevent pollution of water. WHO must have a very important role to control pollution from Earth? People should be awakened by arranging various awareness programmers.

**KEYWORDS:** Pollution, Water Pollution, Preventive measures.

### INTRODUCTION:

Water is one of the most important requirements for human beings. The surface water may contain a lot of organic materials and contaminants. Such contaminated water may be sometimes dangerous for human consumption and needs to purify before use.

Pollution is defined as an undesirable change in the physical, chemical and biological characteristic of the environment which harmfully affects human life and other desirable species in the environment. Environmental pollution has now become a serious global problem.

Water pollution means any physical or chemical change in the surface or ground water which adversely affects living organisms.

Water pollution is now not a local but a regional and global problem. Water pollution has become a serious problem in third world countries and measures are being taken for providing safe drinking water to the inhabitants of such countries.

### CAUSES OF WATER POLLUTION:

Factors polluting water:

- a) Dissolved salts
- b) Industrial waste
- c) Marine Dumping

- d) Thermal pollution
- e) Disposal sewage
- f) Oil spills
- g) Insecticides
- h) Mining

a) **Dissolved Salts:** The dissolved salts, which as pollutants, are chloride, carbonates, bicarbonates and sulphates of sodium; potassium magnesium etc. FLUROSIS disease is caused by excessive fluoride in water.

b) **Industrial Waste:** Industries are the chief cause of water pollution. The major industries releasing their toxic effluents into aquatic bodies and thereby causing water pollution. Many chemical effluents released into aquatic systems change the pH of water and make it unsuitable for the survival of plants and animals.



c) **Marine Dumping:** This form of pollution can result in the death of aquatic life. It takes variable periods of time for degrade.

Cardboard – 2 weeks

Newspaper – 6 weeks

Foam – 50 years

Aluminum – 200 years

Plastic packaging – 400 years

d) **Thermal Pollution:** Many industries discharge the hot water and hot by products in the rivers. The hot water kills aquatic organisms present in the rivers and disturbs the food chains and aquatic life.

e) **Disposal of Sewage:** Medical waste (waste material from hospitals) and waste from slaughter houses are also thrown in the rivers. Sewage and household waste contains large number of disease causing germs (Bacteria and Viruses), which cause untold suffering to man.

f) **Oil Spills:** The other major cause of marine pollution is leakage of oil in sea. Big tankers, ships, loaded with oil sometimes discharge their oil accidentally in sea water. The thick oil may form a layer on the surface of water. Fishes and other animals die in millions as their respiratory organs get clogged by the oil. Pollution of this sort kills several species of aquatic plants and animals due to suffocation.



g) **Insecticides:** The excessive use of pesticides cause water pollution, by penetrating through soil and getting dissolved in soil water. Some of them like DDT, DDE, DDD are washed down with rain water do not decompose readily. As the result, they get incorporated to food chain by entering into the bodies of aquatic organisms.

h) **Mining:** Rainwater leaches heavy metals and sulphur compounds out of the exposed earth, resulting in “Acid mine drainage” and heavy metal pollution that can continue long after the mining operations have ceased. Similarly, the action of rain water on piles of mining waste transfers pollution to fresh water supplies. In the case of gold mining, cyanide is intentionally poured on piles of mined rock, (a leach heap) to chemically extract the gold from the ore.

#### DISEASES CAUSED BY WATER POLLUTION:

1) Diseases caused by microbes (germs): A large no. of microorganism exit in polluted in water. On their entry in the human body, they cause disease.

<u>Diseases</u>	<u>Pathogens</u>
Typhoid	Salmonella Typhi
Cholera	Vibrato Cholera
Jaundice	Virus
Amoebic dysentery	Entamoeba histolytica

2) **Vectors:** many insects like mosquitoes thrive in water. They carry the germs (Pathogens). They cause diseases Malaria, Filaria.

- i. Virus: Infections disease like the hepatitis, Jaundice and polio disease are caused by virus.
- ii. Bacteria: Bacteria cause Typhoid, Paratyphoid, Plague, Diarrhea, and Dysentery.
- iii. Protozoa: Thrombosis, Amoebic, Hepatitis, Apses etc.
- iv. Worms: Round worms, Hip worms, Tape worms, Thread worms.

3) Diseases caused by chemical substances mixed with water:

Fluorides: Affect teeth and bone (Fluorosis).

Mercury: causes consumption, Minamata disease.

Nitrates: Reduce the oxygen carrying capacity of blood.

Cadmium: Painful disease ( itai –itai) (“ouch-ouch”) in Japan.

A world Health Organization (WHO) report of 1982 had indicated effect of water pollution on man as under water:-

- i. Every year 2,500 persons die in the world due to use of polluted water.
- ii. Every year 2,500 persons and one core children die in the world due to non-available of sufficient water.
- iii. In the world, 200 core persons do not get pure and perfect drinking water.
- iv. In developing countries, four out of every five children die because of water borne diseases.
- v. Every year 50 core persons suffer from water borne diseases.
- vi. 30% population of the world suffers from dysentery.
- vii. 40% persons suffer from diseases caused by water-borne worms.

#### CONTROL BY WATER POLLUTION:

There is no concrete formula for the control of water pollution. Various techniques, methods and rules are used jointly to reduce the level water pollution.

Types of treatment help the purification of water.

1. Primary treatment
2. Secondary treatment
3. Tertiary treatment

**1. Primary treatment:** It is a mechanical process which use screens, filters, grit chambers and sedimentation tanks. First of all the debris are filtered out by the screens and filters and then the suspended solids settle as sludge in the sedimentation tank.

The above operations remove about-

60% of Suspended solids

30% of Oxygen demanding wastes

20% of Nitrogen compounds

10% of Phosphorous compounds

**2. Secondary Treatment:** It is a biological process where aerobic bacteria are used to remove biodegradable organic wastes. About 90% of the oxygen demanding wastes are removed by the use of trickling filters or activated sludge process.

**3. Tertiary Treatment:** It involves a series of specialized chemical and physical processes which reduce the quantity of pollutants still further. The most common methods of the tertiary treatment involve precipitation which removes about 90% of the suspended solids and phosphates, filtration with activated carbon which removes dissolved organic compounds and remaining suspended solid and reverse osmosis in which the water is passed through a membrane to remove dissolved organic substances. The water is then disinfected by the way of use of chlorine gas or Ozone.

#### Steps to be taken at the citizen (individual) level:

1. Washing clothes with soap and detergent in the rivers, ponds and other water bodies should be stopped.



2. Water bodies should be protected. Throwing of ashes, dead bodies, dirt, filth, hair and garbage should be stopped.



3. Bathing with soap in the rivers and ponds should be avoided.



#### **DIFFERENT STEPS TO BE TAKEN AT THE INDIAN GOVERNMENT TO CONTROL THE WATER POLLUTION:**

1. Govt. should form strict laws to prevent pollution of water. Efficient monitoring system should be ensured to see the compliance of the laws framed in this connection.
2. Industries should have their own anti-pollution treatment plants which should ensure that effluents produced by them are free from harmful chemicals and other harmful products.
3. Untreated municipal, household waste and sewage should not allowed to be discharged in the rivers or water bodies found around the city.
4. The sewage produced in the cities contains organic pollutants, feces, dung, urine, filth, hospital discharge, alkalis, detergents and large number of germs of diseases and eggs of parasites. Every city should compulsorily have sewage treatment plants.

#### **CONCLUSION:**

Thus, I would like to conclude that pollution of any type especially water pollution is caused due to irresponsible, inhuman and indifferent attitude of peoples of the world. I am of the opinion that pollution is not in environment, it is caused by human beings. If we try to be a bit philanthropist all the prevailing problems can be eradicated.

Defective thinking and self centeredness cause pollution and dangerous effects excess. We the people by globe must join our hands together to combat this menace. The developed countries of the world should not remain aloof from the growing hazards. On the contrary they should probe into the matter and try to reach a sustainable measure to keep all living organisms on earth safe and sound. It's the duty of each humanitarian to stretch a helping hand to eradicate pollution of water from our earth.

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