# Water Pollution And Management

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**Introduction:**

Water pollution is a major problem in world it is important to find solution on this problem for survivor of plants, animals, aquatic creatures and human beings on the earth.

Waste materials of Industries, Urbanization and use of chemicals in agriculture and other pollutions one main causes of water pollution Excess of dissolved chemical liquids and solids make water unsuitable for cooking and drinking purpose and for crop irrigation. The chemical present in detergents. Fertilizers and pesticides on mixing with water are harmful for aquatic plants and animals the growth of Bacteria's need a lot of oxygen so this will be fatal for aquatic creatures. The domestic waste and industrial waste should not be mixed with water it should be recycled for purification. The harmful gases and oxides get mixed with rain water and this rainwater is mixed with sources of water which causes pollution this is an different important type of water pollution. To prevent water pollution, practices such as low impact and development techniques, installation of green roofs and proper management of motor fuels and oils, pesticides, fertilizers, industrial wastes and domestic wastes, run off mitigation systems include infiltration basins, bio-retention systems, constructed wetlands and other similar devices must be adopted.

Natural phenomenon such as volcanic eruption, earthquakes, floods and storms can also make water totally unsuitable for plants and animals.

**Objectives:**

1) To study the problems of water.
2) Importance of water management
3) To show some way of water management
4) Water management for future.

**Hypothesis:**

1) Increase of water pollution
2) Water problem is one of the critical problem today.
3) Day by day the decreasing of water level.
4) Less availability of drinking water.

**Research Methodology**

This research paper is completely collected from secondary data collection like news paper, reference book, articles, internet etc.

**Cohcepts of water Pollution Management**

Management of pollutants to stop from polluting available water resources. This management is called water pollution management.

Earth contains limited amount of drinking water and day by day because of many reasons it is decreasing. And in this case pollutants from Industrial, urban, agriculture area pollutes the water so water is becoming unsuitable for drinking in this condition the solution for, protection the value of water is water pollution management.

**Types of water pollution Management.**

Water pollution can be categorized as

i] surface pollution
ii] Thermal pollution
iii] Ground water pollution
iv] Micro Scope pollution and
v] surface water pollution.

i) **Surface pollution:** leakage of oils, diesels and different petroleum products from the ship and submarines discharge on the surface of sea water causes surface pollution. This may leak in case of tilting ships or in accident of ships. As we know oil or other petroleum products doesn't mix with water but they settle on water and doesn't allow sunlight and atmospheric oxygen to pass to sea which may be fatal for living creatures in water.

ii) **Thermal Pollution:** Thermal pollution is the rise or fall in the temperature of water bodies due to human activities. Thermal pollution can cause due to chemical compositions which changes properties of water a common cause of it is use of water as coolant by power plants and industrial manufactures. Flevated temperature of water may decease oxygen level, which change food reduce species bio-diversity, run off may also cause such pollution.

iii) **Ground water pollution**: The water resources in underground levels are called as ground water. By its nature ground water aquifer are susceptible to

contamination from source that may not cause direct effect a spill or ongoing can release chemical or radionuclide contamination may not create pollution but can effect aquifer defined as "toxic plume". Analysis of groundwater may focus on soil and site present in the soil.

iv) **Microscopic Pollution**: Large sized visible and hearable particles mainly garbage fed by urban floods and by humans can cause microscopic pollution, such type of pollution can contain following contaminates: trash or garbage like dust particles, paper pieces, food wastes, plastic sheets discarded by people, the rubbish dumped on ground washed away by rain water to rivers, takes etc.

v) **Surface water Pollution**: The availability of water surface on earth due to accumulation of rain water in canals, rivers, ditches, lakes etc it can be polluted by discharges from cannels, sewage treatment, factories or city municipal rains due to sewer systems and liquid wastes from construction sites, cattle farms, over fertilizer and pesticides fed agriculture fields. Types of water pollutants and contaminates and their effects.

The Specific contaminates which cause pollution includes chemicals and pathogens which cause change in properties of water, such as elevated temperature many of the chemicals are highly concentrated which cause harmful impacts on aquatic flora and fauna Oxygen is also needed for aquatic creatures but some orthopogenic substances block way of sunlight and oxygen which is fatal for aquatic creatures. Many of these chemicals can produce water born diseases by which human and animals can become host.

a) **Pothogens:** caliform bacteria is commonly used as bacterial eradication of water pollution other micro organisms born tissues on surface water, may cause human health problems high level pathogens may result from untreated sewage this may callused by sewage plant designed with less than secondary treatment some old cities may have leaky sewage collection systems and also some many have combined sewage systems which can leak during rain storms.

b) **Chemical contaminates**: Chemical contaminates are of two types:

1. Organic Contaminates

a) Detergents.

b) Disinfection found in disinfected drinking water, such as chloroform or chlorine water.

c) Food waste includes oxygen demanding substances such as fat and Greece.

d) Insecticides and herbicides

e) Petroleum hydrocarbons, including fuels, diesel fuel, jet fuel and sited oils.

f) Volatile organic compounds such as industrial solvents.

i) Inorganic water Contaminates.

a) Heavy metals from motor vehicles and acid mine drainage.

b) Silt in runoff from construction sites, logging

c) Chemical waste as industrial by products

d) Ammounia fro food processing waste

e) Acidity caused by industry discharge.

f) Fertilizers containing nutrients nitrates and phosphates which are found in water run off from agricultural commercial.

**Effects of water Pollution:**

The water pollution is very harmful to humans, animals and water life, the effects can be catastrophic, depending on the kind of chemicals, concentrations of the pollutions and where they are polluted. Money water bodies near urban cities are highly polluted some of its effects are:

1. **Diseases:** In humans, drinking or consuming polluted water in any way has many disastrous effects on our health. It causes typhoid, cholera, hepatitis and various other diseases.
2. **Destruction of Ecosystems**: Ecosystems are extremely dynamic and respond to even small changes in the environments water pollution can cause an entire ecosystem to collapse if left unchecked.
3. **Futrophication:** Chemical in a water body, encourage the growth of algae,. These algae from a layer on top of the pond or lake, bacteria feed on this algae and this decreases amount of oxygen in water bodies effecting the aquatic life there.
4. **Effects of food chain**: Disruption in food chains happens when toxins and pollutants in the water are consumed by aquatic animals (fish, selfish, etc) which are then consumed by humans.

**Measurement of Water Pollution**

Water pollution can be analyzed through several broad categories of methods: physical, chemical and biological. Most involves collection of samples but some can conduct with samples such as depending on temperature. Government agencies and research organizations have published some methods

to facilitate the comparability of results from disparate testing events:

i) **Physical Testing:** Common physical test of water include temperature solids concentrations e.g. total suspended solids (TSS) and turbidity.

ii) **Chemical Testing:** Water samples may be examined using the principles of analytical chemistry. Many published methods are available for both organic and inorganic compounds. It induces pH Biochemical oxygen demand (BOD), chemical oxygen Demand (COD), nutrients, metals, oil and Greece, total petroleum Hydrocarbons (TPH) and

iii) **Sampling:** Many Contamination events are sharply restricted in time, most commonly in association with rain events for this reason 'grab' samples are after inadequate for fully quantifying contaminant levels. Sampling for biological testing involves collection of plants or animals from the surface water body. Depending on the type of assessment the organism may be identified or for bio surveyor and returned to the water body, or they may be dissection for bio assessment to determine toxicity.

**Management of control Pollution**

i) **Domestic Sewage:** Domestic sewage contains percent pure water, while other 0.1 percent are pollutant Domestic sewage contains a wide variety of dissolved and suspended pollutants. It also contains disease causing bacteria's treatment plant. In the U.S. most of these plants are operated by local government agencies frequently referred to as publicly owned treatment works (potw) Municipal treatment plants are designed to control conventional pollutants. BoD and suspended solids well designed and operated systems can remove go per cent or more of these pollutant some plants have additional sub systems to treat nutrient and pathogens most municipal plants are not designed to treat toxic pollutants found in industrial wastewater.

Cities and sanitary swerve over flows or combined sewer employs one or more engineering approaches to reduce discharges of untreated sewage, include Utilizing a green infrastructure approach to improve storm water management capacity throughout the system and reduce the hydraulic overloading of the treatment plant.

Repair and replacement of leaking and malfunctioning equipment

ii) **Industrial Wastewater**: Some industries produce normal domestic wastes which are easy to eat and can be treated by municipal facilities but some produce wastewater which contains high concentrations of conventional pollutants, toxic pollutants or other non conventional pollutions such as ammonia, need specialized atmen systems some of these systems can install pre treatment system which removes toxic substances and then can send to municipal system. Industries which produce large volumes wastewater have their own site treatment system. Some industries have been successful for redesigning their manufacturing process to reduce eliminate pollutants through a process called pollution prevention.

Heated water generated by power plants or manufacturing plants can be controlled with Cooling ponds, man made bodies of water designed for cooling by evaporation, convection and radiation.

Cooling tower, which transfer waste heat tu atmosphere through evaporation or heat transfer.

Congenenation, a process where waste heat is recycled for domestic or industrial heating purpose.

iii) **Agriculture Wastewater**: Nutrients (nitrogen and phosphorus) are typically applied to farmland as commercial fertilizers; animal manure; or spraying of municipal or industrial wastewater or sludge. Nutrients, irrigation- water, wildlife and atmospheric deposition, farmers can develop and implement nutrient management plans to reduce excess application of nutrients to minimize pesticide impacts, farmers may use integrated pest management (IPM) techniques to maintain control over pests, reduce reliance on chemical pesticides and protect water quality.

iv) **Construction site storm water:** Sediment from construction sites is managed by installation of erosion controls, such as mulching and hydro seeding, discharge of toxic chemicals such as motor fuels and concrete washout is prevented by use of:
Spill prevention and control plans.
Specially designed containers.

v) **Urban Runoff Storm water:** Effective control of urban runoff involves reducing the velocity and flow of storm water, as well as reducing pollutant discharges local government use a variety of storm water management techniques to reduce the effects of urban runoff these techniques called best management practices in the U.S. many focus on water quantity control while others focus on improving water quality and some perform both functions.

**Conclusion :**

Water pollution is major problem's in recent years due to the rapid urbanization huge quota

mobile transportation growing industrialization and increase of population of the living society. Day by day the original purity of the constituent of air and water of the environment are being poisoned by inter mixing of domestic garbage's and sewages Industrial wastes and automobile exhaust gases.

For safe survival of plants animals and human beings at present and in future it requires ongoing evaluation of extent of pollution management of pollution control and strict imp lamentation of water resource policies and proper storage of pure water for domestic use. Water population control Boards in every city for timely management of the pollution problem

**Reference:**

1) **Water pollution – R.N. Misra**
2) Water Pollution control Board report- 2018
3) News paper
4) Verous Internate sources
5) Environment Study – Dr. P.K. Rawat