



AQUATIC DETERIORATION AND WATER POLLUTION

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ABSTRACT

It is well recognised that water contamination is becoming a major global issue in the twenty-first century. Pure water is becoming less scarce every day due to water contamination. The existence of life is one of the aquatic environment's most distinctive benefits, and the biodiversity of life is one of its most unique characteristics. Water contamination has a detrimental impact on biodiversity for a variety of reasons. Any human action has a significant impact on the biological diversity of the world. The invasion of foreign species, overexploitation, flow modification, climate change, and aquatic biodiversity are the six dangers. Aquatic life's vital habitats can be destroyed by contaminated water. Toxins can be transported up the food chain by pollutants, which can eliminate a portion of the chain and lead to the overgrowth of other organisms.

Keywords: Aquatic Ecosystem, Water Quality Evaluation, Agro-Industrial Effluent, And Pollution Ecology.

INTRODUCTION

Water pollution is India's biggest issue when compared to air and land pollution. The most promising environmental issue facing India is the availability and quality of freshwater resources. Four main factors have contributed to the pollution of most of our water bodies, including ponds, lakes, streams, rivers, seas, and oceans: (i) a geometric growth in pollution along with (ii) increased urbanisation, (iii) industrialisation, and (iv) agricultural development. These had a significant effect on India's water supply and quality. Numerous human activities result in the release of different contaminants into aquatic habitats, endangering human health and degrading the ecosystem by making water bodies unfit (Abowel and Sikoki 2005: Ekubo and Abowel 2011). Numerous contaminants and their blatantly harmful effects can be found

in aquatic environments (Hampet et al. 2015). Radioactive elements (radon, caesium, and strontium) and metals (cadmium, mercury, and lead) are among the chemicals that reach aquatic ecosystems. Agrochemicals (fertilisers and pesticides), industrial solvents and volatile organic compounds (tri- and tetrachloroethylene, chlorofluoro carbon, benzene, xylene, formaldehyde), household products (paints, detergents, and cleaners), personal care items, microplastics, antibiotics, and a wide range of prescription drugs (Hampel et al. 2005).

Because water is used in a variety of industrial processes and is released or discharged starting from industry and urban growth, aquatic ecosystems, especially the freshwater ecosystem, are vulnerable to more contamination compared to other environments (Demiak et al. 2006, Fernandes et al. 2007).

DEGRADATION FACTOR AND REPERCUSSIONS

Human health is at risk, ecosystem functioning is diminished, and socioeconomic development is impeded by water degradation. Every day, two million tonnes of sewage, industrial, and agricultural waste are dumped into waterways worldwide. About 44% of home waste water is untreated and does not meet the necessary standards before being dumped into bodies of water. Approximately 80% of all household and industrial waste water worldwide is discharged into water resources untreated, which has negative consequences.

The Ganga River is the world's most polluted river, and 80% of India's water resources are deemed to be contaminated. Widespread sewage dumping into the river, which 400 million people rely on for household use, is a result of the population's constant growth and ongoing human pressure.

AQUATIC ECOSYSTEM CONTAMINATION CAUSED BY HUMAN ACTIVITY:

Human settlements industries and agriculture are the main sources of water pollution table 1.1. In most developed nation agriculture is the major factor in the degradation of water ecosystem.

Table: Sources and routes of pollutants released into aquatic environments (NEST 1991): Mateo-Sagasta et al. (2017)

Pollution	Source	Route
Waste that requires oxygen (organic pollutants)	Human and animal waste, including that from wood pulp mills and canneries, as well as domestic sewage	thrown, disposed of, or discharged into rivers, streams, gutters, or drains where runoff may carry them into bodies of water.

Pollution	Source	Route
Agents of infection and disease	Human and animal waste from domestic sewage	Washing, swimming, or working on irrigated land and in rice fields
Nitrate, phosphate, and other plant nutrients	Ash, detergent, and fertilised agricultural land	Runoff from farms that have been fertilised
Herbicides, insecticides, and pesticides	Chemicals, both organic and inorganic	Pesticide runoff from agricultural areas
Industrial wastewater that contains mercury, cadmium, dyes, and DDT	Factories that produce textiles, distilleries, pulp and paper mills, fertiliser plants, chemical and related industries, food and beverage and tobacco industries, soap, detergent, and confections	Human excretions
Additional solid waste	metals, synthetic fibres made of plastic, etc.	Human dumping as a result of inadequate waste disposal management
Petroleum-based goods	Drill cutting, drilling mud, unintentional releases of crude oil, and refinery effluent, which includes phenol, cyanide sulphide, oil and grease, and suspended solids	Oil pipelines and the exploration, processing, transportation, storage, and marketing of petroleum

Water pollution's effects on aquatic ecosystems

Here, we'll examine a few direct and indirect effects.

Fish suffering physical injury: Fish and other aquatic organisms can be directly harmed by contaminants such as heavy metals, oil, spills, and pesticides. These harmful compounds can be consumed by fish, which can result in abnormalities such gill damage, fin and tail rats, and reproductive issues.

Depletion of oxygen: Reduced oxygen levels are one of the more subtle effects of water pollution. Excessive algal development can be encouraged by some contaminants, such as phosphorus and nitrogen, which are frequently found in agricultural runoff. Because they

absorb enormous amounts of oxygen, the algae become much more dangerous as they die and break down. By doing this, they produce "dead zones" where the lack of oxygen can smother fish and their existence.

The Breakdown of Habits: Pollution can kill marine life directly as well as indirectly by harming their surroundings. Certain pollutants can encourage the growth of bacteria, algae, and fungus. These have the potential to supplant and hinder the growth of more naturally occurring plants that are essential to the survival of marine life. Similar to this, the presence of massive algae or moss mats is problematic in and of itself since it prevents sunlight and some nutrients that are necessary for life from reaching fish and plants.

The issue with plastic: Perhaps the most common pollution you hear about is plastic, and for good reason. Oil and natural gas facilities are used as raw materials. Not only that, but practically every kind of consumer plastic has dangerous chemical compounds that improve flexibility and durability. This plastic garbage actually attracts other toxins when it is out at sea, so when animals consume it, they are exposed to a dose of contaminants. For aquatic animals, plastic frequently appears and smells like food. Additionally, it draws biological life and algae, which makes it appear even more alluring to unwary animals. It goes without saying that marine species suffer when they consume plastic.

CONCLUSION

Human activity is primarily to blame for the destruction of the aquatic ecology. Water pollution is mostly caused by increased industrialisation and urbanisation. Water contamination is largely caused by human activity, including the disposal of household, industrial, and solid waste. The globe is very concerned about water pollution. In order to lessen aquatic ecosystem contamination, environmental education is crucial. One of the biggest issues affecting freshwater and marine environments is aquatic pollution. Along with other relevant organisms, it has a detrimental effect on human health.

Among other ecosystems, the freshwater ecosystem is regarded as one of the world's most endangered due to its living biota. Climate change, overexploitation, water pollution, habitat degradation, flow modification, and the invasion of exotic species are the six threats to freshwater biodiversity. A foundation for the strategic and scientifically sound conservation of biodiversity is provided by systematic conservation planning.

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