Contamination of water in India: An Outline

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Abstract---This paper outlines the Water pollution in India an overview. Water pollution is the contamination of water bodies this form of environmental degradation occurs when pollutants are directly or indirectly discharged into water bodies without adequate treatment to remove harmful compounds. Water pollution is any chemical, physical or biological change in the quality of water that hurts any living thing that drinks or uses or lives (in) it. When humans drink polluted water it often has serious effects on their health. It is usually caused by human activities. Different human sources add to the pollution of water. Water contains many compounds. A few of these compounds are calcium and carbonate.

Keywords---contamination, environmental degradation, harmful effect, water pollution.

Introduction

Water pollution is the contamination of water bodies this form of environmental degradation occurs when pollutants are directly or indirectly discharged into water bodies without adequate treatment to remove harmful compounds. 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 (Gilcreas, 1966). When humans drink polluted water it often has serious effects on their health. It is usually caused by human activities. Different human sources add to the pollution of water. Water contains many compounds. A few of these compounds are calcium and carbonate (Harikishore & Lee, 2012).

Objectives

- To under the concept of water pollution.
- To study the impact of water pollution in Tamil Nadu.

Methodology

Being explanatory research, this study is based on secondary data from journals, articles, newspapers, and magazines. Considering the objective of the study descriptive type of research is adopted (Zutshi et al., 1977).

Surface water pollution

Surface Water Pollution When pollutants enter a stream, river, or lake these give rise to surface water pollution. Natural and Anthropogenic Sources:

- Point and Non-point Sources
- Surface water pollution has a number of sources.

These can categorize as:

- Point and Non-point Sources The well-defined sources that emit pollutants or effluents directly into different water bodies of freshwater are called point sources. Domestic and industrial wastes are examples of this type (Bhalla et al., 1999). The point sources of pollution can be effectively checked. On the other hand, the non-point sources of water pollution are scattered or spread over large areas. These types of sources deliver pollutants indirectly through environmental changes and account for the majority of the contaminants in streams and lakes (Coase, 1960). For example, the contaminated water that runs off from agriculture farms, construction sites, abandoned mines, enters streams and lakes. It is quite difficult to control non-point sources (Oswald, 1991).
- Natural and Anthropogenic Sources As mentioned earlier, an increase in the concentration of naturally occurring substances is also termed pollution (Kirchner et al., 1997). The sources of such an increase are called natural sources. Siltation (which includes soil, sand and mineral particles) is one such natural source. It is a common natural phenomenon, which occurs in most water bodies. Indiscriminate deforestation makes (Oswald et al., 1994).
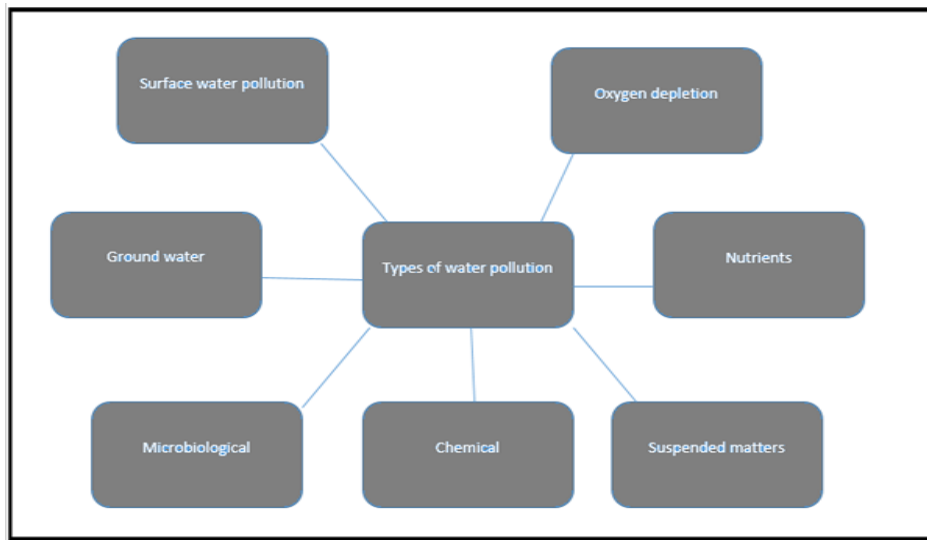
Figure 1. Types of water pollution

Surface water pollution

Surface water pollution is the pollution of an aquatic system that is above the ground such as lakes, streams, and rivers.

Oxygen depletion

It is a phenomenon that occurs in the aquatic environment as a dissolved agent in water.

Ground water pollution

Groundwater is one of the important sources of water for irrigation purposes. Groundwater contamination occurs when man-made products such as gasoline, oil, road salts, and chemicals get into the groundwater and cause it to become unsafe and unfit for human use (Dean & McMullen, 2007; Wan et al., 2019).

Some control measures

Waste water generated by household activity, industries or garbage landfills is called sewage which is classified as municipal water pollution (López-Pacheco et al., 2019; Vilela et al., 2018). Sewage contains solid matter in the form of suspended colloidal and dissolved organic matter, detergent, mineral matter, nutrients, and gases. Sewage is one of the major causes of water-borne diseases and therefore the treatment of sewage is one of the important tasks (Green et al., 1995). For a long time treatment of municipal waste in the form of sewage involved mainly of the removal of suspended solids, oxygen demanding materials, and harmful bacteria. Now the disposal of the solid residue from sewage has been improved by applying municipal treatment processes (Green et al., 1995).

The treatment of this wastewater is carried out in the following three stages:

- Primary treatment
- Secondary treatment

Primary treatment

When the wastewater is to be dumped off into a river or flowing steam, the treatment is carried out by sedimentation, coagulation and filtration. This is known as primary treatment (Hasan et al., 2019; Haggi et al., 2004).

Secondary treatment

The water after primary treatment is not fit for drinking purposes and has to undergo further treatment. This is done through secondary or biological treatment. A commonly used method is to allow polluted water to spread over a large bed of stones and gravel so that the growth of different microorganisms needing nutrients and oxygen is encouraged (Archana et al., 2016; Thyagaraju, 2016).

Tertiary treatment

The tertiary treatment is actually disinfecting water. Chlorine is the most commonly used disinfectant used for killing bacteria. However, chlorine also reacts with traces of organic matter present in water and forms undesirable chlorinated hydrocarbons (toxic and potentially carcinogenic) (Evans et al., 2019; Han et al., 2016).

Conclusion

There is an urgent need to create awareness for pressing environmental problems and to develop solutions in close cooperation between science, governments, industry, and other relevant stakeholders.

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