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Disease Burden Due To Water Pollution in India

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ABSTRACT

Until recently in humanity's history pollution has been considered as a global problem. Along with this growth, there has been an incredible increase in waste by-products. Pollution is typically classified per the type of pollutant by which it's caused. In general, there are ten different types of pollution, namely, pollution, deforestation, pollution due to reactive waste and radiation, climate changes, acid rains, depletion of the layer, desertification and decline of bio-diversity. Pollution is an undesirable change within the state of water, contaminated with harmful substances. This lands up in the pollution of water whereby the quality of the water deteriorates, affects aquatic ecosystems. Pollution of the water bodies disturbs the ecosystem as a full. Polluted water isn't only unsafe for drinking and other consumption purposes, but it is also unsuitable for agricultural and industrial uses. The results of pollution are detrimental to groups of individuals, plants, animals, fish and birds. Using it for drinking purpose is that the prime cause for water-borne diseases likes diarrhoea, dysentery and typhoid. This article is enlightening not only pollution and Disease burden due to pollution but also recommending the acceptable steps which should be taken in line with.

Key Words – *Disease, Groundwater, Desertification, Climate, Pollution, Diarrhoea, Environment, Atmosphere.*

INTRODUCTION

Environmental pollution is any discharge of material or energy into water, land or air that causes or may cause acute (short-term) or chronic (long-term) damage to the earth's ecological balance that lowers the quality of life. Environmental pollution might be a heavy and growing issue in both industrialized and developing countries, both in rural and concrete areas. While natural events like forest fires, release huge amounts of certain pollutants into the atmosphere, the primary explanation for pollution is human economic activities just like the generation of electricity, vehicular use, and industrial operations, mainly in urban areas. Burgeoning population, worsening air quality, polluted rivers, congested roads, and environmental managers of all countries face hazardous. Occupational and environmental problems. Pollution isn't simply the function of the number of pollutants released into the atmosphere. Other factors like topography, climate, time of day, and also the variability of pollutants and my interactions between them do determine the pollution levels. The health effects of certain air pollutants are documented in numerous studies' and high concentrations of these substances in many developing countries are known to guide to increased incidence of illness (morbidity), especially among individuals suffering from respiratory problems, and to cause premature death (mortality). Within the past these external impacts were mostly ignored but recently emphasis has been placed on the actual fact that such effects do involve an economic cost.

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WHAT IS WATER POLLUTION

The Environmental Protection Agency (EPA) also states that commonest contaminants are bacteria, mercury, phosphorus and nitrogen. These come from the foremost common sources of contaminates, that include agricultural runoff, air deposition, water diversions and channelization of streams. Pollution isn't just an issue for the India. In step with UN, 783 million people do not have access to clean water and around 2.5 billion haven't got access to adequate sanitation. Adequate sanitation helps to remain sewage and other contaminants from entering the ability. 80% of pollution in marine environment comes from the land through sources like runoff. Pollution may severely affect marine life. For example, sewage causes pathogens to grow, while organic and inorganic compounds in water can change the composition of the dear resource. Dissolved is caused by the decomposition of organic materials, like sewage introduced into the water. Warming water can even be harmful. The factitious warming of water is termed pollution. It can happen when a factory or station that's using water to cool down down its operations finally ends up discharging plight. This makes the water hold less oxygen, which could kill fish and wildlife. The sudden change of temperature within the body of water may kill fish. In step with the University of Georgia, it's estimated that around half the water withdrawn from water systems within once a year is utilized for cooling wattage plants. Clean freshwater could be a necessary ingredient for a healthy human life, but 1.1 billion people lack access to water and a pair of.4 billion don't have adequate sanitation. Water becomes polluted from toxic substances dumped or washed into streams and waterways and so the discharge of sewage and industrial waste. Betting on water flow, the water temperature quickly returns to ambient temperatures that do not harm fish." Nutrient pollution, also called eutrophication, is another kind of pollution. The algae blocks light from other plants. The plants die and their decomposition **ends up in** less oxygen within the water.

SOURCES OF WATER POLLUTION

The important sources of pollution are domestic wastes, industrial effluents and agricultural wastes. Other sources include oil spills, atmospheric deposition, marine dumping, material, warming and eutrophication. Among these, domestic waste (domestic sewage) and industrial waste generate maximum pollutants, which make their because of groundwater and surface water bodies. Depending on the origin, the sources are classified as root and non-point source. Beginning pollution discharges the harmful waste directly into water bodies, as an example, disposal through wastewater treatment plants. On the other hand, the foremost type of non-point source pollution is that the polluted run-off that drains into streams, rivers, lakes and estuaries. Runoff occurs when rainwater or irrigation water doesn't soak into the underside but rather runs off the land or developed surfaces into a body of water. As run-off flows over surfaces of streets, parking lots, yards, construction sites, farms and forests, it picks up the things in its path including fertilizers, loose soil (sediment), animal waste, leaking gas, chemicals like pesticides and herbicides, oil, grease, metals, pathogens (bacteria and viruses) and trash. This run-off then drains either on to a water body and carries with it the pollutants it's picked up.

(1) **Domestic Sewage**: Used water is wastewater. It contains organic and inorganic materials like phosphates and nitrates. Usually people dump household wastes within the nearby water source, which ends up in pollution. The number of organic wastes which can be degraded by the water bodies is measured in terms of Biological Oxygen Demand (BOD). BOD is nothing but the amount of oxygen needed by microorganisms to decompose the organic waste present within the sewage. The upper the quantity of BOD, the more the water is polluted with organic waste and therefore the other way around.

(2) **Industrial Effluents:** Waste water from the manufacturing and processing industries causes pollution. The economic effluents contain organic pollutants and other toxic chemicals. Variety of the pollutants from industrial source include lead, mercury, asbestos, nitrates, phosphates and oils. Waste water from food and chemical processing industries contribute more to pollution than the alternative industries like distillery, leather processing industries and thermal power plants.

(3) **Agricultural Waste:** Agricultural waste includes manure, slurry and sewage run-offs. The run-offs from these agricultural fields cause pollution to the nearby water sources like rivers, streams and lakes. The seepage of fertilizers and pesticides causes groundwater pollution, which is typically called leaching. Although the amount of agricultural waste is low, the results are highly significant. Nutrient pollution causes an increase within the nitrates and phosphates within the water bodies which again ends up in eutrophication.

(4) **Oil pollution:** Big spills may dominate headlines, but consumers account for the overwhelming majority of oil pollution in our seas, including oil and gasoline that drips from innumerable cars and trucks on a day to day. Moreover, nearly half the estimated 1 million lots of oil that makes its way into marine environments annually

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comes not from tanker spills but from land-based sources like factories, farms, and cities. Oil is additionally naturally released from under the seabed through fractures noted as seeps.

(5) **Radioactive substances:** Radioactive material is any pollution that emits radiation beyond what's naturally released by the environment. It's generated by uranium mining, atomic energy plants, and thus the assembly and testing of military weapons, yet as by universities and hospitals that use radioactive materials for research and medicine. Radioactive material can move the environment for thousands of years, making disposal a major challenge.

DISEASE DUE TO WATER POLLUTION AT THE GLOBAL LEVEL

Polluted water, the basis explanation for many of the water-borne diseases, is caused by human activities like rapid unplanned urbanization, industrialisation, agricultural pollutants like pesticides and insecticides, improper waste management within the urban areas. Diarrhoeal disease alone amounts to an estimated 4.1 per cent of the total Disability Adjusted Life Years (DALYs) of worldwide burden of disease and is responsible for the deaths of 1.8 million people once a year. It absolutely was estimated that 88 per cent of that burden is attributed to unsafe facility, sanitation and hygiene and is typically focused on children in developing countries.

DISEASE BURDEN DUE TO WATER POLLUTION IN INDIA

The public health impact of pollution in India is big. Type of diseases with high morbidity and mortality are wide spread within the communities specially living in unsuitable environmental conditions in urban slums and vast rural areas. The foremost diseases that are attributed to pollution and poor beverage supply are: diarrhoeal diseases, cholera, shigellosis, E. coli diarrhoea, poliomyelitis, typhoid and water borne hepatitis. Of these, diarrhoeal diseases alone causes quite 0.6 million deaths annually. In slum areas of major cities, diarrhoeal incidence is as high as 10.5 episodes per child annually. In India, the diseases caused by faeco-orally transmitted enteric pathogens account for 10 per cent of total burden of disease in India. Statistics indicate that intestinal group of diseases claim about 5 million lives and about 50 million people suffer from these diseases annually. But biological contaminants, chemical contaminants namely fluoride, arsenic and other heavy metals pose a awfully serious peril within the country. It's estimated that about 70 million people in 20 states are at risk due to excess fluoride and around 14 million people are at risk due to excess arsenic in water. Other than these, increase within the concentration of Chloride, Total Dissolved Solids (TDS), Nitrate, Iron in water is of great concern for a sustainable beverage programme. With over extraction of groundwater, the concentration of chemicals is increasing on a routine.

HEALTH EFFECTS OF WATER POLLUTION

The effects of pollution don't seem to be only devastating to people but also to animals, fish and birds. Eventually, it is a hazard to human health. Water-related diseases are infectious, spread primarily through contaminated water. Though these diseases are spread either directly or through flies or filth, water is that the chief medium within the spread of these diseases and hence they're termed as water-borne diseases. The enteric diseases are more prevalent in areas with poor sanitary conditions. Since these diseases are highly infectious, extreme care and hygiene should be maintained by people taking care of an infected patient. Hepatitis, cholera, dysentery and typhoid are the more common water-borne diseases that affect an oversized population within the tropical regions.

A large number of chemicals that either exist naturally within the land or added because of act dissolve within the water, thereby contaminating it and leading to various diseases. Exposure to polluted water can cause diarrhoea, skin irritation, respiratory problems and other diseases, betting on the pollutant that's present within the water body. Stagnant water and other untreated water provide a habitat for mosquitoes and variety of other parasites and insects that cause an oversized number of diseases especially within the tropical regions. Among these, malaria is undoubtedly the foremost cosmopolitan disease that causes more damage to human health. The health effect of variety of the water pollutants is discussed as follows:

(a) **Pesticides:** The organophosphates and so the carbonates present in pesticides affect and damage the system and will cause cancer. Variety of the pesticides contains carcinogens that exceed recommended levels.

(b) **Lead:** Lead is hazardous to health because it accumulates within the body and affects the central nervous system. Children and pregnant women are most in peril.

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(c) **Nitrates:** beverage that gets contaminated with nitrates can prove fatal especially to infants that drink formula milk because it restricts the number of oxygen that reaches the brain causing the 'blue baby' syndrome. It's also linked to alimentary tract cancers.

(d) **Petrochemicals:** Benzene and other petrochemicals can cause cancer even at low exposure levels.

(e) **Chlorinated Solvents:** These are linked to reproduction disorders and to some styles of cancer.

(f) **Arsenic:** Arsenic poisoning through water can cause liver and system damage, vascular diseases and also carcinoma.

(g) **Other Heavy Metals:** Heavy metals cause damage to the system, kidney and other metabolic disruptions.

CONCLUSION

A greatest advancement within the biological treatment of wastewater is that the utilization of membranes in bioreactors. Firstly, membranes are also used as a surface for the attachment for growth of organisms and to permit oxygen to permeate into the biofilm. An example of this will be the hollow-fiber gas-permeable membranes in wastewater treatment. The second way membranes are often used as selective barriers. Such membranes permit organic compounds in wastewater to permeate but don't transport ions into the bioreactor. An example of a material used for such membrane is rubber. Finally, membranes are going to be for biomass separation. When such membranes are used, the effluent produced is of top of the range and fewer sludge. Additionally, automated processing are going to be easily employed. The disadvantage however is that the financial enormity of the investment for initial start-up furthermore as maintenance. The availability of H_2O is greatly threatened by various human activities and of interest is pollution which successively affects the ecosystem and causes various climatic changes. While various wastewater treatment methods are being explored by industries and various treatment plants, untreated wastewater remains being discharged into the water bodies by some industries. This may function a breakthrough within the direction.

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