



WATER POLLUTION AND ASSOCIATED HEALTH EFFECTS- THE GLOBAL ENVIRONMENTAL ISSUES

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Abstract:

Water is an essential resource for human survival. With the increase of water consumption, water quality is facing severe challenges. Industrialization, agricultural production, and urban life have resulted in the degradation and pollution of the environment, adversely affecting the water bodies necessary for life, ultimately affecting human health and sustainable social development. Globally, an estimated 80% of industrial and municipal wastewater is discharged into the environment without any prior treatment, with adverse effects on human health and ecosystems. This proportion is higher in the least developed countries, where sanitation and wastewater treatment facilities are severely lacking.

Key words- Industrialization, agricultural, pollution, environment, wastewater treatment

Introduction:

Water pollution occurs when unwanted materials enter in to water, changes the quality of water Alrumman et al., (2016) and harmful to environment and human health Briggs, (2003). Water is an important natural resource used for drinking and other developmental purposes in our lives Bibi et al. (2016). Safe drinking water is necessary for human health all over the world. Being a universal solvent, water is a major source of infection. According to world health organization (WHO) 80% diseases are water borne. Drinking water in various countries does not meet WHO standards Khan et al., (2013). 3.1% deaths occur due to the unhygienic and poor quality of water Pawari & Gawande, (2015).

Discharge of domestic and industrial effluent wastes, leakage from water tanks, marine dumping, radioactive waste and atmospheric deposition are major causes of water



pollution. Heavy metals that disposed off and industrial waste can accumulate in lakes and river, proving harmful to humans and animals.

Toxins in industrial waste are the major cause of immune suppression, reproductive failure and acute poisoning. Infectious diseases, like cholera, typhoid fever Juneja & Chauhdary (2013) and other diseases gastroenteritis, diarrhea, vomiting, skin and kidney problem are spreading through polluted water Khan & Ghouri (2011). Human health is affected by the direct damage of plants and animal nutrition. Water pollutants are killing sea weeds, mollusks, marine birds, fishes, crustaceans and other sea organisms that serve as food for human. Insecticides like DDT concentration is increasing along the food chain. These insecticides are harmful for humans Owa (2013). The various toxic chemicals, may be released into aquatic ecosystems without adequate treatment, they will cause water pollution (Chowdhary et al., 2020). Arsenic, cadmium, and chromium are vital pollutants discharged in wastewater, and the industrial sector is a significant contributor to harmful pollutants (Chen et al., 2019). With the acceleration of urbanization, wastewater from industrial production has gradually increased (Wu et al., 2020).

Water pollution is closely related to agriculture and the pesticides, nitrogen fertilizers and organic farm wastes from agriculture are significant causes of water pollution. Agricultural activities will contaminate the water with nitrates, phosphorus, pesticides, soil sediments, salts and pathogens (Parris, 2011). Furthermore, agriculture has severely damaged all freshwater systems in their pristine state (Moss, 2008). Pesticides have an adverse impact on health through drinking water. In parallel with China rapid economic growth, industrialization and urbanization, underinvestment in basic water supply and treatment facilities has led to water pollution, increased incidence of infectious and parasitic diseases. Various human activities will directly affect water quality, including urbanization, population growth, industrial production, climate change, and other factors (Halder and Islam, 2015) and religious activities (Dwivedi et al., 2018).

Improper disposal of solid waste, sand, and gravel is also one reason for decreasing water quality (Ustaoğlu et al., 2020). In this present article we will try to discuss some negative impacts on humans caused by water pollution. Now days this problem becomes a global burning issues surface as well as ground water sources. These sources are highly polluted by variety of factors; following are the major key factors responsible for pollution.



- 1- Domestic sewage
- 2- Industrial
- 3- Population growth
- 4- Pesticides and fertilizers
- 5- Plastics and polythene bags
- 6- Urbanization

Waste from the industries like, sugar, textile, electroplating, pesticides, pulp and paper are polluting the water Kamble (2014). Polluted river have intolerable smell and contains less flora and fauna. 80% of the world's population is facing threats to water security Owa (2013). Hazardous material discharged from the industries is responsible for surface water and ground water contamination and toxic metals enter in to water and reduced the quality of water Ho et al., (2012). Increasing population leads to increase in solid waste generation Jabeen et al. (2011). Solid and liquid waste is discharged in to rivers. Water is also contaminated by human excreta. In contaminated water, a large number of bacteria are also found which is harmful for human health Desai and Vanitaben (2014).

Material and Methods: In this article the study has recorded rigorous survey and analyzed the existing literature on environmental risk and impact of water pollution in respect of ecological, social and health boundaries.

1.1 Effects on human health: There is a greater association between pollution and health problem. Many waterborne infectious diseases are linked with fecal pollution of water sources and results in fecal-oral route of infection Nel & Markotter (2009). Health risk associated with polluted water includes different diseases such as respiratory disease, cancer, diarrheal, neurological and cardiovascular disease Ullah et al. (2014). Nitrogenous chemicals are responsible for cancer and blue baby syndrome Krishnan & Indu (2006). Poor people are at greater risk of disease due to improper sanitation, hygiene and water supply Desai and Vanitaben (2014). Contaminated water has large negative effects in those women who are exposed to chemicals during pregnancy; it leads to the increased rate of low birth weight as a result fetal health is affected Currie et al., (2013).

Poor quality water destroys the crop production and infects our food which is hazardous for aquatic life and human life Khan & Ghouri (2011). Pollutants disturb the food chain Halder, et al., (2015) and heavy metals, especially iron affects the respiratory system of fishes. An iron clog in to fish gills and it is lethal to fishes, when these fishes are eaten by

human leads to the major health issue Ahmed et al. (2013). Metal contaminated water leads to hair loss, liver cirrhosis, renal failure Salem et al., (2000) and neural disorder Chowdhury et al., (2015).

1.2 Viral infection: Hepatitis is a viral disease caused by contaminated water and infects the liver called Jaundice. Gastroenteritis is caused by different viruses including rotaviruses, adenoviruses, calciviruses and Norwalk virus. Symptoms of gastroenteritis are vomiting, headache and fever. Symptoms appear 1 to 2 days after infecting. Sickness can be dangerous. Encephalitis is spread by bite of infected Culex mosquito, lays their eggs in contaminated water. The symptoms are headache, high fever, muscle stiffness, convulsions however in severe. Poliomyelitis is causes poliomyelitis and the symptoms are sore throat, fever, nausea, constipation and diarrhea and sometimes paralysis. Vaccine is available for this disease. (<http://www.in.gov/isdh/22963.htm>)

1.3 Parasitic diseases: Many parasitic diseases are to be responsible to infect animals and humans. The Cryptosporidiosis is caused by the *cryptosporidium parvum* and symptoms are diarrhea, loose or watery bowls, stomach cramps and upset stomach Amoebiasis is caused by the *Entamoeba histolytica* and affects stomach lining. Symptoms are fever, chills and watery diarrhea. According to (WHO), diarrheal cases are about 4 billion and results in 2.2 million deaths Andersson & Fenger (2003).

1.4 Risk of Cancer: The impact of drinking water pollutants on cancer is complex. Epidemiological studies have shown that drinking water contaminants, chlorinated by-products, nitrates, arsenic, and radionuclides, are associated with cancer in humans (Cantor, 1997). Pb, U, F- and no₃- are the main groundwater pollutants and one of the potential causes of cancer (Kaur et al., 2021). In addition, many other water pollutants are also considered carcinogenic, including herbicides and pesticides, and fertilizers that contain and release nitrates (Marmot et al., 2007).

Conclusion:

Water pollution is a global issue and is facing burning problem of polluted water. Major sources of water pollution are discharge of domestic and agriculture wastes, population growth, excessive use of pesticides and fertilizers and urbanization. Many diseases are spreading through polluted water and affecting human health. Waste should be treated before entering in to river. Educational and awareness programs should be organized to control the pollution. Also this study is based on the systematically analyzed the effects of



water pollution on human health from the perspective of different diseases, Based on this, future research can strengthen research at medical and pathological levels.

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