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Different Risk Factors Involved In Water Pollution

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Abstract

Water pollution is a very important problem of the 21st century. Due to water pollution, pure water is becoming less secure day by day. The biggest cause of water pollution is industrialization and the increase in population. Due to the consumption of polluted water, people are getting infected. Water covers about 70% of the Earth's surface. Safe drinking water is a basic need for all humans. In this regard, about 80% of diseases are water-borne. The industrialization, discharge of domestic waste, population growth, excessive use of pesticides, fertilizers and leakage from water tanks are major sources of water pollution. These wastes have negative effects on human health. Different chemicals have different effects depending on their locations and kinds. Bacterial, parasitic and viral diseases like typhoid, cholera, encephalitis, poliomyelitis, hepatitis, skin infection and gastrointestinal are spreading through polluted water. Healthy ecosystems rely on a complex web of animals, plants, bacteria, and fungi, all of which interact, directly or indirectly, with each other. Chemicals and heavy metals from industrial and municipal wastewater contaminate waterways as well. These contaminants are toxic to aquatic life, most often reducing an organism's life span. While plants and animals need these nutrients to grow, they have become a major pollutant due to farm waste and fertilizer runoff. Groundwater can also spread contamination far from the original polluting source as it seeps into streams, lakes, and oceans. It is recommended to examine the water quality on a regular basis to avoid its destructive effects on human health. Domestic and agricultural waste should not be disposed of without treatment. Properly dispose of chemical cleaners, oils, and non-biodegradable items to keep them from ending up down the drain.

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Introduction

Water is the chemical substance that is necessary for every living organism for its survival on Earth. To perform a different kind of function, water is essential for every cell of the body to perform a normal function. Approximately 71% of the Earth's surface is covered with water, mostly in oceans and other large water bodies, and with 1.6% of water below ground in water level and 0.001% in the air as clouds, vapour and precipitation (Arlen *et al.*, 2000). Availability of freshwater is a gift from nature to control the main important part of the world economy. Sufficient supplies of water are necessary for human consumption, the agriculture industry as well as diversion. Ironically, sometimes, natural or added contaminations rob us of the gift and make us confront a lot more challenging world. It is a known fact that freshwater is an important necessity for our health (Elimelech, 2006).

Water frequently moves through a cycle of evaporation or transpiration (evapotranspiration), precipitation, and runoff, typically reaching the ocean. Winds carry water vapour over land at a similar rate as runoff into the ocean. Overland, passing and transpiration come up the precipitation over land. Some observers have calculated that by 2025 quite 1/2 the globe population are facing water-based vulnerability, a state of affairs that has been known as a water crisis by the United Nations (Kulshreshtha, 1998). A recent report suggests that by 2030, in some developing regions of the globe, water demand can exceed five hundredths (Liu *et al.*, 2011). Pure water doesn't occur in nature. Pollution is any undesirable amendment within the state of water, contaminated with harmful substances. It's the second most vital environmental issue next to pollution. Any amendment within the physical, chemical and biological properties of water that features a harmful impact on living things is termed as 'water pollution' (WHO, 1997).

Water contamination may be a common downside to any or all over the world. These could also be earth science or anthropogenetic (John and Mark, 2003). High levels of contaminants in beverages square measure rarely to cause acute health effects. In fact, it depends on individual condition and mode of contact with the body (Liu *et al.*, 2011). As a result of unwanted human activities, pollution may be a growing hazard in several developing countries. An additional serious side of water pollution is caused by acts and industrial enterprise. There are different micro-biological agents that hold bacteria, protozoa and viruses, which might together cause pollution and will cause different water-borne diseases. Chemical pollution of surface water will produce health risks; as a result of such waterways, a square measure usually used directly as beverage sources or connected with shallow wells used for the beverage. Additionally, waterways have vital roles for laundry or cleanup, fishing and fish farming. Another major supply of beverage is groundwater, which regularly has low concentrations of pathogens as a result of the water being filtered through underground layers of sand, clay, or rocks. However, toxic chemicals like arsenic and halide may be dissolved from the soil or rock layers into groundwater (Park, 2009).

Causes of water pollution

Chemical waste from factories is typically dropped into rivers and lakes or directly into the bottom. Chemicals that kill insects, called pesticides, are applied to farms enter groundwater and surface water, generally, in the large amount. Leaks from below-ground storage vehicle for liquids like petrol they go directly into below water. Once a waste material enters a water, it's tough to eliminate it. Some pollutants break down slowly into non-dangerous chemicals. Once the input of pollution is stopped, the waste material step by step travels downstream and is replaced by uncontaminated water. As the waste material travels downstream, it's diluted by the addition of water.

This causes the concentration of the waste material to decrease. Typically the concentration becomes low enough for the water to be judged safe to be used, however, the waste material remains there (Ebenstein, 2008).

Effects of domestic Sewage on water

It is estimated that seventy-five to the eightieth pollution is caused by domestic waste. Waste from the industries like sugar, textile, electroplating, pesticides, pulp and the paper square measure was polluting the water (Kamble, 2014). Fighting off the world's population is facing threats to water security (Owa, 2013). A large amount of domestic waste is drained into the stream and most of the waste is untreated. Domestic waste contains toxicants, solid waste, plastic litters and microorganism contaminants and these deadly materials cause pollution. Completely different industrial effluent that's drained into the stream while not treated is that the major reason behind pollution (Kamble, 2014). Venturesome material discharged from the industries is chargeable for surface water and spring water contamination. Stuff depends upon the character of industries. Deadly metals enter into water and reduce the standard of water (Ho *et al*., 2012).

Population effects on water pollution

The increasing population is making several problems; however, it conjointly plays a negative role in polluting the water (Ho *et al*., 2012) and increasing population results in an increase in solid waste generation (Jabeen *et al*., 2011). Liquid and solid waste are carried out in rivers. Water is additionally contaminated by human waste material.

In contaminated water, a huge range of bacterium also is found that is harmful to human health (Desai and SmtVanitaben, 2014).

Urbanization effects on water pollution

Urbanization will cause several infectious diseases such as overcrowding, unhealthful conditions, unsafe potable square measure major health problems in urban areas. One-quarter of the urban population is liable to malady (Kamble, 2014).

Pesticides effects on water pollution

Chemical containing pesticides are directly polluting the water and have an effect on the standard of water. If pesticides square measure excess in quantity or are poorly managed, then it might be venturesome for the agriculture system (Yonglongt *et al*., 2015). Fertilizers square measure employed in the soil different chemicals leached into soil polluting the water, eubacteria square measure wealthy in contaminated water and excess phosphate flee results in eutrophication. Residues of chemicals combine with stream water because of flooding, serious downfall, excess irrigation and enter within the organic phenomenon.

These chemicals square measure deadly for living organisms and plenty of vegetables and fruits square measure contaminated with these chemicals (Khurana and Sen, 2008). Trace amounts of pharmaceutical in water conjointly cause pollution and it's dangerous to human health (Ebenstein, 2008).

Effects of pollution on human health

Disease-causing microorganisms are called pathogens and these pathogens are spreading diseases directly among humans. Some pathogens are worldwide. Some are found in well-defined spaces (Kamble, 2014). Several water-borne diseases are spreading from man to man (Halder and Islam, 2015). Serious rain and floods are associated with extreme weather and making completely different diseases for developed and developing countries (Ahmad *et al*., 2014). 100% of the population depends on food and vegetables that are growing in contaminated water (Corcoran *et al*., 2010). Several water-borne infectious diseases are connected with dirty pollution of water sources and lead to the fecal-oral route of infection (Nel and Markotter, 2009). Health risk related to impure water includes completely different diseases like disease, cancer, Unconstipated sickness, disorder and upset (Ullah *et al*., 2014). Element chemicals are liable for cancer and infant syndrome (Krishnan and Indu, 2006). Mortality because of cancer is higher in rural areas than urban areas as a result of urban inhabitants using treated water for drinking, whereas rural individuals don't have the facility of treated water and use unprocessed water. Poor individuals are at a larger risk of sickness

because of improper sanitation, hygiene and water (Jabeen *et al.*, 2011). Contaminated water has giant negative effects on those ladies who are exposed to chemicals throughout pregnancy; it ends up in the accumulated rate of low birth weight. As a result, vertebrate health is affected (Currie *et al.*, 2013). Poor quality water destroys crop production and infects our food that is risky for aquatic life and human life (Khan and Ghouri, 2011). Pollutants disturb the organic phenomenon (Halder and Islam, 2015) and serious metals, particularly iron, affect the system of fish. Associate iron clogs into fish gills and it's fatal to fishes; once these fishes are devoured by humans, ends up in the foremost health issue (Ahmed *et al.*, 2013). Metal contaminated water ends up in hair loss, liver disease, nephropathy and neural disorder (Salem *et al.*, 2000).

Diseases causes due to contaminated water

Contamination of water is the best description of the disease. The most important microbial diseases transmitted through water are infectious disease, food poisoning and bacillary dysentery. These diseases are primarily transmitted through water and food contaminated with body waste of infected patients. However, the presence of unhealthy microorganism in water is infrequent and the isolation of those microorganisms isn't easy (Alrumman *et al.*, 2016).

Viral diseases caused by contaminated water

Hepatitis could be an infectious agent disease caused by contaminated water and infects the liver. Acute anterior poliomyelitis infectious disease virus is liable for poliomyelitis (Ballester and Sunyer, 2000).

Bacterial diseases caused by contaminated water

Diseases spread through water in which water acts as a passive carrier for the infecting pathogens. These diseases also depend on sanitation Cholera, Typhoid, Bacillary dysentery, Infectious hepatitis, Leptospirosis, Giardiasis, Gastroenteritis, etc. *Salmonella typhi* pathogens are passed in the feces and urine and people become infected after eating food or drinking beverages that have been handled by a person who is infected or by drinking water that has been contaminated by sewage containing the bacteria. Once the bacteria enter the person's body, they multiply and spread from the intestines into the bloodstream. Even after recovery from typhoid or paratyphoid, a small number of individuals continue to carry the bacteria. Cholera behaves slightly differently. In warm regions, the serogroups that cause epidemic cholera are endemic in freshwater zooplankton (Colwell *et al.*, 2003) and outbreaks occur in a regular seasonal pattern in developing regions in association with poverty and poor sanitation. The disease is characterized by devastating watery diarrhoea which leads to rapid dehydration and death occurs in 50–70% of untreated patients (Faruque *et al.*, 1998).

Parasitic diseases caused by contaminated water

Diseases are spread by vectors and insects that live in or close to water. Stagnant ponds of water provide the breeding place for disease-spreading vectors such as mosquitoes, flies and insects. Yellow fever, Dengue fever, Encephalitis, Malaria, Filariasis all by mosquitoes, Sleeping sickness (flys), etc. Water-based diseases are caused by infecting agents spread by contact with or ingestion of water. Water supports an essential part of the life cycle of infecting agents such as aquatic snails. Water-washed diseases: diseases caused by the lack of adequate quantity of water for proper maintenance of personal hygiene. Some are also dependent on poor sanitation. Scabies, Trachoma (eye-infection), Leprosy, Conjunctivitis, Salmonellosis, Ascariasis, Trichuriasis, Hookworm, Amoebic dysentery, Paratyphoid fever, etc. (White *et al.*, 1972).

Cryptosporidiosis is a parasitic intestinal disease caused by the cryptosporidium and rhizopod is a member of protozoan, which is caused by amebiasis and affects stomach lining. Infection happens once the cyst is found in contaminated water and it's enclosed. Protozoa infection is caused by flagellated protozoan lamblia. Flagellated protozoan is immune to wintry temperature and disinfectant. Generally, it's called travelers' sickness (Andersson and Fenger, 2003).

Conclusion

It is recommended that there should be a proper waste disposal system and waste should be treated before entering the river. Educational and awareness programs should be organized to control pollution. To treat industrial wastes, there should be special industrial waste treatment plants in every industry. Toxic pesticides and Herbicides should be replaced with nontoxic ones, or Pesticides should be replaced with biological control. Boil or filter drinking water to eliminate disease-causing bacteria. Conducting the epidemiological study in the areas close to contaminated water bodies will help to assess the effects of polluted water on the health of consumers. To reduce the risk of suffering from a wide range of unhealthy conditions, it's important that you always have access to clean and pure water. As for the environment, clean water is absolutely essential to make sure that the entire ocean ecosystem remains relatively healthy. This may help to prevent water shortages and reduce the amount of contaminated water that needs treatment.

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