



Water Pollution: A Threatening Alarm to The Mankind.

Dr. Kumar Kinjalk Bhardwaj

Assistant Professor, Department of Chemistry, Author College name: Govt. PG College
fatehabad, Agra, UP, 283111

Abstract

When water becomes contaminated by unexpected substances, it is considered as harmful for human and aquatic lives. This water is termed as polluted water. Various causes are responsible for polluting water. Some natural causes are mixture of biodegraded portion of animal and plants to pure water, siltation by erosion of river banks etc. Domestic wastes, industrial wastes, fertilizers etc. are man-made pollutants of water. The objective of this study is to conduct a review on water pollution. The review findings concluded that polluted river water are seriously caused for hampering of the Sustainable Development (SD) especially in the context of sustainable development, ecosystems change, sustainable livelihoods, land cover, ecosystems, environmental sensitivity, biodiversity and geodiversity as well as social and economic arena in a river basin over the world. The study has drawn Necessary recommendations & policy considerations which would be raised and highlighted for implementation by policy and decision makers throughout the study.

ISSN 2454-308X



I. Introduction

Water pollution occurs when unwanted materials enter in to water, changes the quality of water and harmful to environment and human health [1]. Water is an important natural resource used for drinking and other developmental purposes in our lives. 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. 3.1% deaths occur due to the unhygienic and poor quality of water [2]

Many of the major problems that humanity is facing in the twenty-first century are related to water quantity and/or water quality issues. These problems are going to be more aggravated in the future by climate change, resulting in higher water temperatures, melting of glaciers, and an intensification of the water cycle, with potentially more floods and droughts. With respect to human health, the most direct and most severe impact is the lack of improved sanitation, and related to it is the lack of safe drinking water, which currently affects more than a third of the people in the world[3].



When toxic substances enter lakes, streams, rivers, oceans, and other water bodies, they get dissolved or lie suspended in water or get deposited on the bed. This results in the pollution of water whereby the quality of the water deteriorates, affecting aquatic ecosystems. Pollutants can also seep down and affect the groundwater deposits. Water pollution has many sources. The most polluting of them are the city sewage and industrial waste discharged into the rivers. The facilities to treat waste water are not adequate in any city in India. Presently, only about 10% of the waste water generated is treated; the rest is discharged as it is into our water bodies. Due to this, pollutants enter groundwater, rivers, and other water bodies. Such water, which ultimately ends up in our households, is often highly contaminated and carries disease-causing microbes. Agricultural run-off, or the water from the fields that drains into rivers, is another major water pollutant as it contains fertilizers and pesticides[4].

Types of pollution

Pollution may be termed as natural pollution or artificial pollution[5].

1. *Natural pollution*: Natural pollution include pollution of the environment cause due to natural process like forest fire, volcanic eruption, natural, organic and inorganic decay, earthquake etc.
2. *Artificial pollution*: It originates due to human activities which include industrialization, deforestation, urbanization, etc.

Below table 1 show the other classification of water pollutant

Table 1: Classification according to Pollutant [6]

Thermal pollution	Chemical pollution
Radioactive pollution	Marine pollution
Noise pollution	Oil pollution
Industrial pollution	Pesticide pollution
Acid rain pollution	Soap & detergent pollution

Effects of Water Pollution

The effects of water pollution are not only devastating to people but also to animals, fish, and birds. Polluted water is unsuitable for drinking, recreation, agriculture, and industry. It diminishes the aesthetic quality of lakes and rivers. More seriously, contaminated water destroys aquatic life and reduces its reproductive ability. Eventually, it is a hazard to human health. Nobody can escape the effects of water pollution. The individual and the community



can help minimize water pollution. By simple housekeeping and management practices the amount of waste generated can be minimized[7].

II. Causes of Water Pollution

Some of the major factors which are responsible for causing water pollution or degradation can be enumerated as growing population, rapid industrialization, urbanisation, use of science and technology and modern agriculture practices[8].

Growing Population

Every year we add millions of people to the world population and our country is no exception. Now it is the second largest country of the world after China and the rate of growth still continuous alarmingly. The earth is now overcrowded and consumption habit of the people is on the rise. The growth of population gave rise to increase in wants and demands of mankind and has succeeded in creating acute problem of water pollution[9].

Industrialization

Rapid industrialization is another cause of worry as far as water pollution is concerned. Immediately after the independence, major steps were taken in our country in its stride for development in order to give its economy a big push. Industrialization was then considered the most important factor that can put the country in the path of progress. But to our utter surprise industrialization along with development brought with it a danger to the human civilization- the problem of environmental pollution[10].

Urbanization

Urbanization is also another major factor which contributes significantly towards environmental pollution. From the earlier base we noticed that generally the civilization started near the water courses. Subsequently big cities also developed just near the water courses particularly besides the big rivers. Water is considered as life and we owe a great deal to water for the sustenance of our lives[11].

Nature of Modern Technology

The nature of productive technology in recent years is closely related to the environmental crises. This factor has been largely responsible for the generation of synthetic and non biodegradable substances such as plastics, chemical nitrogen fertilizers, synthetic detergents, synthetic fibres, big cares petrochemical and other environmentally injurious industries and “disposable culture”. Thus, an environmental crisis is the inevitable result of a counter ecological pattern of productive growth[12].

Modern Agricultural Practices



Modern agricultural practices and application of new technological processes in the field of agriculture severely affect the environment. Inorganic fertilizers are being widely used now-a-days. Fertilizers like phosphates and nitrates cause wide spread damage when applied carelessly to crops. The fertilizers can be transmitted to ground water by leaching and to surface waters by natural drainage and storm run-off. In addition to fertilizers various kinds of pesticides and insecticide also applied. Almost all the pesticides those are used are toxic to human and animals[13].

III. Effects of water pollution on human health

Poor quality water destroys the crop production and infects our food which is hazardous for aquatic life and human life. Pollutants disturb the food chain 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. Metal contaminated water leads to hair loss, liver cirrhosis, renal failure and neural disorder[14] .

Viral diseases

Hepatitis is a viral disease caused by contaminated water and infects the liver. Jaundice, loss of appetite, fatigue, discomfort and high fever are symptoms of hepatitis. If it persists for a long time it may be fatal and results in death. Vaccine is available for hepatitis and by adopting good hygienic practice; one can get rid of this disease. Encephalitis is inflammatory disease spread by bite of infected mosquitoes. Culex mosquito lays their eggs in contaminated water. Most people don't show any symptoms but some symptoms are headache, high fever, muscle stiffness, convulsions however in severe cases coma and paralysis results. No vaccine is available for this disease. Poliomyelitis virus is responsible for poliomyelitis. Sore throat, fever, nausea, constipation and diarrhoea and sometimes paralysis are symptoms of poliomyelitis. Vaccine is available for this disease. Gastroenteritis is caused by different viruses including rotaviruses, adenoviruses, calci-viruses and Norwalk virus. Symptoms of gastroenteritis are vomiting, headache and fever. Symptoms appear 1 to 2 days after infecting. Sickness can be dangerous among infants, young children and disabled person[15].

Bacterial diseases

Untreated drinking water and faecal contamination of water is the major cause of diarrhoea. Campylobacter jejuni spread diarrhea 4% to 15% worldwide. Fever, abdominal pain, nausea, headache are major symptoms of diarrhoea. Good hygienic practices and use of antibiotics can prevent this disease. Disease cholera is caused by the contaminated water. Vibrio Cholera is responsible for this disease. This bacterium produces toxins in digestive tracts. The



symptoms of this disease are watery diarrhoea, nausea, vomiting and watery diarrhoea leads to dehydration and renal failure. Anti- microbial treatment is used to get rid of this disease. Shigellosis is a bacterial disease caused by Shigella bacteria. It affects the digestive tract of humans and damages the intestinal lining. Watery or bloody diarrhea, abdominal cramps, vomiting and nausea are symptoms and it can be cured with antibiotics and good hygienic practice. Salmonellosis infects the intestinal tract. Salmonella bacteria are found in contaminated water and it results in inflammation of intestine and often death occurs. Antibiotics are prescribed for this disease [16].

IV. Conclusion

As the objectives of the study to review of empirical evidence on the impact of polluted river water in the context of environmental risk as well as Ecological Risk in the river basin area over the world. In general, the review findings concluded that polluted river water are seriously caused for hampering of the Sustainable Development (SD) especially in the context of sustainable development, ecosystems change, sustainable livelihoods, land cover, ecosystems, environmental sensitivity, biodiversity and geo-diversity as well as social and economic arena in a river basin over the world.

Water pollution is a global issue and world community is facing worst results 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. Bacterial, viral and parasitic diseases are spreading through polluted water and affecting human health. It is recommended that there should be proper waste disposal system and waste should be treated before entering in to river. Educational and awareness programs should be organized to control the pollution.

Reference

- [1] A. Bashar Bhuiyan *et al.*, “The environmental risk and water pollution: A review from the river basins around the world,” *Am. J. Sustain. Agric.*, vol. 7, no. 2, pp. 126–136, 2013.
- [2] Y. Sayato, “WHO Guidelines for Drinking-Water Quality,” *Eisei kagaku*, vol. 35, no. 5, pp. 307–312, 1989, doi: 10.1248/jhs1956.35.307.
- [3] T. Oki and S. Kanae, “Global hydrological cycles and world water resources,” *Science (80-.)*, vol. 313, no. 5790, pp. 1068–1072, 2006, doi: 10.1126/science.1128845.
- [4] S. Sharma and A. Bhattacharya, “Drinking water contamination and treatment techniques,” *Appl. Water Sci.*, vol. 7, no. 3, pp. 1043–1067, 2017, doi: 10.1007/s13201-016-0455-7.



- [5] M. Huq, S. Ahmed, T. Tabassum, and R. Miah, “Analysis Of The Causes And Impacts Of Water Pollution Of Buriganga River: A Critical Study,” *Int. J. Sci. Technol. Res.*, vol. 2, no. 9, pp. 245–252, 2013.
- [6] M. M. Ghangrekar and P. Chatterjee, “Water pollutants classification and its effects on environment,” *Carbon Nanostructures*, pp. 11–26, 2018, doi: 10.1007/978-3-319-95603-9_2.
- [7] R. M. Singh and A. Gupta, “Water Pollution-Sources , Effects and Control Water Pollution-Sources , Effects and Control,” *Res. gate*, vol. 5, no. 3, pp. 1–17, 2017.
- [8] R. P. Schwarzenbach, T. Egli, T. B. Hofstetter, U. von Gunten, and B. Wehrli, “Global Water Pollution and Human Health,” *Annu. Rev. Environ. Resour.*, vol. 35, no. 1, pp. 109–136, 2010, doi: 10.1146/annurev-environ-100809-125342.
- [9] S. Philander and N. Benson, “Pollution, Water,” *Encycl. Glob. Warm. Clim. Chang.*, no. January 2008, 2012, doi: 10.4135/9781412963893.n524.
- [10] OTA, “Protecting the Nation ’ s Groundwater from Contamination — Vol . I October 1984,” vol. I, no. October, 1984.
- [11] O. Schmoll, *Protecting Groundwater for Health: Managing the Quality of Drinking-water Sources*, vol. 12. 2013.
- [12] B. Lellis, C. Z. Fávaro-Polonio, J. A. Pamphile, and J. C. Polonio, “Effects of textile dyes on health and the environment and bioremediation potential of living organisms,” *Biotechnol. Res. Innov.*, vol. 3, no. 2, pp. 275–290, 2019, doi: 10.1016/j.biori.2019.09.001.
- [13] J. Datta, “Instrumental Techniques of Environmental Analysis: A Review from Air Pollutants,” no. January, pp. 2–5, 2020, doi: 10.13140/RG.2.2.17568.12808.
- [14] R. Kelishadi, “Environmental pollution: Health effects and operational implications for pollutants removal,” *J. Environ. Public Health*, vol. 2012, no. 2, pp. 2011–2013, 2012, doi: 10.1155/2012/341637.
- [15] S. Chowdhury, A. Krause, and K. F. Zimmermann, “Arsenic Contamination of Drinking Water and Mental Health,” *SSRN Electron. J.*, no. 222, 2017, doi: 10.2139/ssrn.2811583.
- [16] A. A. Khan and M. Saleem, “Heavy metal in drinking water its effect on human health and its treatment techniques – a review,” *Int. J. Biosci.*, vol. 12, no. 4, pp. 223–240, 2018, doi: 10.12692/ijb/12.4.223-240.