

Water Pollution

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ABSTRACT : Water is a critical resource in the lives of people who both benefit from its use and who are harmed by its misuse and unpredictability (flooding, droughts, salinity, acidity, and degraded quality). Water is a finite and vulnerable resource. Consequently, consumption of polluted water puts lives and livelihoods at risk because water has no substitute. There are many ways in which water intended for human consumption can get polluted. These include wastes from industries like mining and construction, food processing, radioactive wastes from power generating industries, domestic and agricultural wastes and by various microbiological agents. Nowadays, water is being purified by various methods but research is being conducted to look for more reliable and cheaper methods that can purify water at an affordable cost. Various techniques have been developed like utilizing rechargeable polymer beads, seeds of Moringa Oleifera tree, aerobic granular sludge technology, resin based treatment and two-pronged water treatment technology.

KEYWORDS : Water Pollution. Wastes. Water Treatment. New Techniques. Pure Water

Nature has provided everything for our need but not for our greed.¹

INTRODUCTION

Water is the most common liquid on earth. It covers about 71.4% of the earth. For life there is necessity of water however some studies suggest that by 2025 more than half the people around the world will not have enough water.²

WATER POLLUTION

"Pollution" means which affects the ecological system by any means, such contamination of water or such alteration of the physical, chemical or biological properties of water or such discharge of any sewage or trade effluent or of any other liquid, gaseous or solid substance into water (whether directly or indirectly) as may or is likely to, create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms.³

In today's scenario we have to face several types of pollution – air pollution, water pollution, noise pollution etc. but the pollution that affects the lives and health at the largest number is water pollution.

Water pollution is one of the greatest crises which are facing by the country. The largest source of the sewage water without treatment, as also water coming from pesticides – ridden fields and chemical waste producing by small and big industries.

But over 80% of the country's water resources have polluted up to a large extent. In India, many water polluted bodies around which lives in large numbers of population.

Ganga and Yamuna are the most polluted rivers in India. In fact a major chunk of the country's waste is produced in cities and towns which are around the banks of rivers.

WHAT IS WATER POLLUTION

Water pollution is the blend of such substances which are present in lakes, rivers, ponds, underground sea water that invalidates water for the use by humans, flora and fauna which affects the whole world as water is the basis of life.

CAUSES OF WATER POLLUTION

The biggest cause of water pollution is urbanization which is taken place at a fast and unbridled pace. In past, the rate of urbanization has grown so fast that left an worst and bad impression on water resources of the country, which results on environmental issues on a long term basis. These include the lack of water supply, water pollution and problems with regards to its storage.

The disposal and treatment of polluted water is a huge issue today. Many cities and town near the rivers facing these issues. In these areas, disposal of sewage water is a big problem. For domestic as well as industrial work the water of river, lakes, ponds, canals etc. are used. In most cases the treatment of water is very little and in this way it contaminates 80% of fresh water flowing on the surface of the land, this polluted the water which is passing through the surface poisons the underground water. Approx. as per the estimation 16,662 million liters of contaminated water is daily produced in towns and 1 million population in India.

The major causes of water pollution arising in India are as follow:-

1. Industrial waste and its inadequate disposal.
2. Acid rain
3. Global warming
4. Improper methods of cultivation in agriculture
5. Decline in the water quality of rivers through the plants
6. Social and religious rituals, such as floating dead bodies in the water, bathing, littering
7. The oil spills from ships
8. Inadequate sewage water treatment

¹* Mahatma Gandhi

² encyclopedia

³ Water (Prevention and Control of Pollution) Act, 1974, sec 2(e)

9. Eutrophication(the depletion of oxygen in a water body, which kills aquatic animals)⁴

REASONS FOR WATER POLLUTION –

Chemical waste: - Industries are the main sources of water pollution. The chemical waste which comes from industries and factories is directly accumulated on rivers and ponds. The chemical wastes which are comes from industries and factories are highly toxic which makes water more poisonous which leads to the death of living creatures in water bodies. After drinking this toxic water many animals die and many people falls sick.

Garbage: - Other than factories, there are many factors responsible for water pollution. Thousands tons of trash flowing out of our cities and villages find their way in rivers. Chemical fertilizers and drugs are used for farming also. The water sources are getting severely undetermined.

Contamination of sea water: - The fusion of polluted rivers into the sea aggravates water pollution. Due to accidents, fuel of vessels spills into the sea which spreads far away in the sea and makes a layer on the sea level because of this countless living creatures die in the water.⁵

Effects of water pollution in India

- Water pollution has worst effect on life around the water resource, which is even somewhat polluted and polluted water proves harmful to crops also as it depletes the fertility of the land. It overall affects the agriculture and country.
- It also affects the marine life if sea is polluted.
- The biggest cause of the decline in water quality is water pollution. If living being intake polluted water, it causes many diseases to them.
- In India water pollution is one of the main cause of the low level health, in urban and rural areas.
- Due to polluted water many diseases such as vomiting, jaundice, diarrhea, tuberculosis, and cholera may occur.
- 80% of patients in India suffering from the disorder of stomach have fallen sick due to drinking of polluted water.

MEASURES TAKEN BY CENTRAL AND STATE BOARD FOR CONTROLLING WATER POLLUTION:-

Constitution of Central Board

(1) The Central Government shall, with effect from such date (being a date not later than six months of the commencement of this Act in the States of Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Rajasthan, Tripura and West Bengal and in the Union territories) as it may, by notification in the Official Gazette, appoint, constitute a Central Board to be called the Central Pollution Control Board to exercise the powers conferred on and perform the functions assigned to that Board under this Act.

(2) The Central Board shall consist of the following members, namely:-

- (a) a full-time chairman, being a person having special knowledge or practical experience in respect of matters relating to environmental protection or a person having knowledge and experience in administering institutions dealing with the matters aforesaid, to be nominated by the Central Government;
- (b) such number of official, not exceeding five to be nominated by the Central Government to represent that Government;
- (c) such number of persons, not exceeding five, to be nominated by the Central Government, from amongst the members of the State Boards, of whom not exceeding two shall be from those referred to in clause (c) of sub-section (2) of section 4;
- (d) such number of non-officials, not exceeding three to be nominated by the Central Government, to represent the interests of agriculture, fishery or industry or trade or any other interest which, in the opinion of the Central Government, ought to be represented;
- (e) two persons to represent the companies or corporations owned, controlled or managed by the Central Government, to be nominated by that Government;
- (f) a full-time member-secretary, possessing qualifications, knowledge and experience of scientific, engineering or management aspects as pollution control, to be appointed by the Central Government.

(3) The Central Board shall be a body corporate with the name aforesaid having perpetual succession and a common seal with power, subject to the provisions of this Act, to acquire, hold and dispose of property and to contract, and may, by the aforesaid name, sue or be sued.⁶

Constitution of State Boards.

(1) The State Government shall with effect from such date as it may, by notification in the Official Gazette, appoint, constitute a State Pollution Control Board, under such name as may be specified in the notification, to exercise the powers conferred on and perform the functions assigned to that Board under this Act.

⁴ www.Indiacelebrating .com

⁵ www.Indiacelebrating .com

⁶ Sec 3, water(prevention and control of pollution act, 1974)

(2) A State Board shall consist of the following members namely:-

(a) a chairman, being a person having special knowledge or practical experience in respect of matter relating to environmental protection or a person having knowledge and experience in administering institutions dealing with the matters aforesaid, to be nominated by the State Government :

Provided that the chairman may be either whole-time or part-time as the State Government may think fit;

(b) such number of officials, not exceeding five, to be nominated by the State Government to represent that Government;

(c) such number of persons, not exceeding five, to be nominated by the State Government from amongst the members of the local authorities functioning within the State;

(d) such number of non-officials not exceeding three, to be nominated by the State Government to represent the interests of agriculture, fishery or industry or trade or any other interest which, in the opinion of the State Government, thought to be represented;

(e) two persons to represent the companies or corporations owned, controlled or managed by the State Government, to be nominated by that Government;

(f) a full-time member-secretary, possessing qualifications, knowledge and experience of scientific, engineering or management aspects of pollution control, to be appointed by the State Government.

(3) Every State Board shall be a body corporate with the name specified by the State Government in the notification under sub-section (1), having perpetual succession and a common seal with power, subject to the provisions of this Act, to acquire, hold and dispose of property and to contract, and may, by the said name, sue or be sued.

(4) Notwithstanding anything contained in this section, no State Board shall be constituted for a Union territory and in relation to a Union territory, the Central Board shall exercise the powers and perform the functions of a State Board for that Union territory:

Provided that in relation to any Union territory the Central Board may delegate all or any of its powers and functions under this sub-section to such person or body of persons as the Central Government may specify.⁷

Different Ways to Prevent Water Pollution:-

Water Pollution refer to the presence of harmful substances or pollutants in water bodies. It happens when untreated wastes and pollutants are discharged into water bodies. As a result, the water of sea, rivers, lakes, ponds, reservoir, and ground-water get polluted.

Prevention of Water Pollution

1. Sewage treatments: The household water should be treated properly so that they become environmentally safe. Adequate care should be taken to ensure that effective sewage treatment process is in place and that contaminated water does not get mixed with the environment. In order to prevent water pollution, human and animal excreta should be prevented from mixing with its sources. Construction of pit toilet and proper sewage treatments can offer some solution to this problem.

2. Prevent river water to get polluted: The flowing water of the river cannot be cleaned easily by natural process. Since, a large number of external substances are discharged into the water, the river water becomes polluted. This may cause diseases to the people using river water. Thus, every effort should be made to prevent the river water to get contaminated. People should not be allowed to throw wastes into the river water. Further, effective urban runoff (discharge of polluted storm water into river) mitigation system such as retention basins, infiltration basins, etc. should be in place.

3. Treatment of wastes before discharge: Factories are expected to treat its effluent wastes prior to discharge. Toxic material must be treated chemically and converted into harmless materials. If possible, factories should try to recycle the treated water.

4. Strict adherence to water laws: Laws and legislation relating to pollution should be strictly followed by all. People should be made aware that adherence to water laws are in their own interest.

5. Treatment of drainage water: In cities, a huge amount of water is put into drains every day. The water that flows through the city drainage system should be properly treated. Harmful pollutants be removed, before they are introduced into reservoirs. If this water allowed going into water reservoirs without treatment, it will pollute them.

6. Treatment plants: Big cities and towns usually have effluent treatment plants. These plants filter out undisclosed materials. Chemical treatment is also given to separate out unwanted dissolved chemicals. The treated water is either allowed to go into the water reservoirs or reused in houses. Occasionally, the treated water is used for farming if the fields to be irrigated lie in the vicinity of the water treatment plants.

7. Keep the pond water clean and safe: Washing, bathing of cattle in the pond that is used by human should not be done. Washing of dirty clothes and bathing of cattle make the pond water dirty and unsuitable for human use. If these ponds are continually misused, then it may lead of severe consequences.

8. Routine cleaning: Ponds, lakes and wells meant for human use should be routinely cleaned and treated, so that it remains fit for human use. It is an essential step that should not be avoided. A system of regular testing of pond and lake water can be introduced to ensure the safety of the water.

9. Don't pour insecticides in sinks and toilets: Never pour household insecticides, medicines, etc. down the sink, drain or toilet. At homes, people often throw wastes and old medicines into the bathroom toilet. This practice is discouraged for the reason that the chemical compounds of medicines, insecticides, etc., when mixed with other chemicals, may result in formation of harmful substances.

10. Self-hygiene: Self hygiene must be maintained and drinking water must not be polluted. Drinking water should be kept under cover in a clean place. One should not put his hands into the drinking water containers. Also, the practice of cleaning the drinking water reservoirs on a regular basis need to be strictly followed. The water meant for drinking should be purified prior to

⁷ Sec 4, water(prevention and control of pollution act, 1974)

use. In the absence of good water purifier, it is recommended to drink boiled water. This is also important to prevent water borne diseases.

11. Sanitation: Sanitation system must be improved. The benefits of cleanliness on human health need to be understood. Human contact with hazardous materials should be prevented. After using the toilet, one should always use the flush and wash their hands with soap and water.

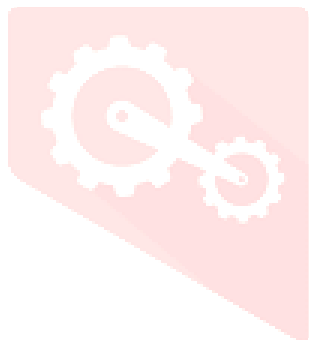
12. Public Awareness: Common public should be aware about the effect of water pollution. Voluntary organization should go door-to-door to educate the people about environmental problems. They should perform street plays for creating awareness about the environment. They should run environmental education centers. Students can impart health education to enable people to prevent water pollution.

13. Reduce the use of water as coolant by large industries and power plants: Massive quantity of water is being used as coolant by industries and power plants. Very often, these water are discharged in water bodies without prior treatment. Very often unnaturally hot or cool water is released into the natural water bodies. This causes sudden change in the temperature of the water is known as “thermal shock”, and it disturbs the water inhabitants badly. The water ecosystem can be saved from thermal pollution, if the water used as coolant is reused by the industries and not discharged into these natural water bodies.

14. Effective waste water management system: The municipalities of most urban cities should have robust waste water management system to minimize the risk of urban pollutants being introduced into the rivers. Tests should be in place to check the proper functioning of these systems.⁸

CONCLUSION:-

Today the water pollution becomes a terrible problem as mentioned above. Our government should quickly take steps to address the problem of water pollution. Due to ever increasing industrialization, urbanization, this precious resource is continuously under stress. There are multiple dimensions to water quality and its deterioration. Water pollution is rendering much of the available water unsafe for consumption. The pressure of increasing population, loss of forest cover, untreated effluent discharge from industries and municipalities, use of non-biodegradable pesticides/ fungicides/ herbicides/insecticides, use of chemical fertilizers instead of organic manures, etc. are causing water pollution. Moreover, there are numerous water borne diseases like cholera, diarrhea, dysentery etc. which are transmitted by drinking contaminated water. There are various new water purification techniques which have come up to purify water for example by using rechargeable polymer beads, using the seeds of *Maringa oleifera* tree, purifying water by using aerobic granular sludge technology etc. Research is being conducted all over the world to develop more and more techniques which can generate pure water at low cost. All these techniques are being developed to ensure that in near future everyone will have access to clean and pure water and that too at an affordable cost.



⁸ www.importantindia.com