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A STUDY ON MAJOR SOURCES OF WATER POLLUTION IN INDIA

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ABSTRACT

Water organization's program in India provides safe drinking water and adequate sanitation facilities to the families living in rural and urban Indian communities in 11 states and one Union Territory (UT) - Andhra Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, Bihar, Chhattisgarh, Orissa, West Bengal, Assam, Tamil Nadu and Pondicherry (UT). Water.org offers both grant and Water. Credit programs in India. Although access to drinking water has improved, the World Bank estimates that 21 per cent of communicable diseases in India are related to unsafe water. In India, diarrhoea alone causes more than 1,600 deaths daily—the same as if eight 200-person jumbo-jets crashed to the ground each day.

Key words: Sanitation, diarrhoea, Credit programs.

INTRODUCTION

India's huge and growing population is putting a severe strain on all of the country's natural resources. Most water sources are contaminated by sewage and agricultural runoff. India has made progress in the supply of safe water to its people, but gross disparity in coverage exists across the country. Although access to drinking water has improved, the World Bank estimates that 21 per cent of communicable diseases in India are related to unsafe water. In India, diarrhea alone causes more than 1,600 deaths daily—the same as if eight 200-person jumbo-jets crashed to the ground each day. Hygiene practices also continue to be a problem in India. Latrine usage is extremely poor in rural areas of the country; only 14 per cent of the rural population has access to a latrine. Hand washing is also very low, increasing the spread of disease. In order to decrease the amount of disease spread through drinking-water, latrine usage and hygiene must be improved simultaneously.

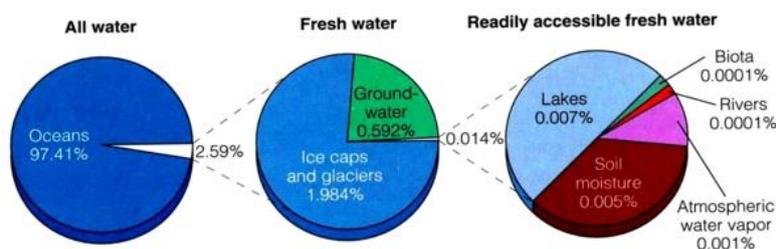


Figure 1: STATUS OF WATER IN THE WORLD

80% OF INDIA'S SURFACE WATER POLLUTED

Even as India is making headlines with its rising air pollution levels, the water in the country may not be any better. An alarming 80 per cent of India's surface water is polluted. About 75-80 per cent of water pollution by volume is from domestic sewerage, while untreated sewerage flowing into water bodies including rivers have almost doubled in recent years. This in turn is leading to increasing burden of vector borne diseases, cholera, dysentery, jaundice and diarrhea etc. Water pollution is found to be a major cause for poor nutritional standards and development in children also.

Between 1991 and 2008, flow of untreated sewerage has doubled from around 12,000 million litres per day to 24,000 million litres per day in Class I and II towns. The database defines Class I towns as those with a population of more than 1 lakh, whereas towns with population ranging between 50,000 to 1 lakh are classified as Class II.

Inadequate sanitation facilities, poor septage management and a near absence of sanitation and waste water policy framework are primary reasons responsible for the groundwater and surface water pollution in the country.

NEED FOR THE STUDY:

Water pollution is one of the biggest threats to the environment today. There are several sources of water pollution ranging from sewage and fertilizers to soil erosion. The impact of water pollution on wildlife and their natural habitat can be immense. While it may seem like preventing water pollution can be an overwhelming subject to tackle, there are also a number of things that the average person can do to help stop water pollution.

OBJECTIVES OF THE STUDY:

- To examine the sources of water pollution in India.
- To study the problems of water pollution.
- To offer suitable solutions to minimize the water pollution.

METHODOLOGY OF THE STUDY

The study purely based on secondary data only. The researchers have collected information from different text books, journals, magazines and websites.

MAJOR CAUSES OF WATER POLLUTION IN INDIA

There are several causes of water pollution in India. The main causes are briefly described as under:

1. Urbanisation:

Rapid urbanisation in India during the recent decades has given rise to a number of environmental problems such as water supply, wastewater generation and its collection, treatment and disposal. Many towns and cities which came up on the banks of rivers have not given a proper thought to problem of wastewater, sewerage, etc.

In urban areas, water is tapped for domestic and industrial use from rivers, streams, lakes, ponds, wells, etc. Nearly 80 per cent of the water supplied for domestic use passes out as wastewater. In most cases, this wastewater is let out untreated and causes large scale pollution of the surface water.

Municipal water treatment facilities in India, at present, do not remove traces of heavy metals. Given the fact that heavily polluted rivers are the major sources of municipal water for most towns and cities along their courses it is believed that every consumer has been, over the years, exposed to unknown quantities of pollutants in water they have consumed. To add to this, Indian towns and cities have grown in an unplanned manner due to rapid population growth.

Facilities for running water have been provided in many towns and even in some villages during the last couples of decades. This has resulted in the use of flush-latrines and much larger use of water in home for bathing, washing of clothes, utensils etc., and generating large quantities of wastewater. Use of soaps and

detergents and amounts of various food materials going to sink have also grown considerably with improved life standards. But sewerage has lagged far behind water supply.

Situation in big cities is worsened by migration of poor people from the surrounding rural areas. These people migrate to the cities in search of livelihood. According to an estimate by CPCB, only about 40-50 per cent of the population of the major cities like Delhi, Mumbai, Kolkata, Chennai and Bangalore are served by sewer systems. Even where there sewers exist, they often leak or overflow, releasing their contents to storm-water or other surface drains or percolate in to the soil to reach ground water. Very often uncollected and untreated sewerage water reaches the streams thereby polluting their water.

2. Industries:

Most Indian rivers and other sources of fresh water are polluted by industrial wastes or effluents. All these industrial wastes are toxic to life forms that consume this water. The total wastewater generated from all major industrial sources is 83,048 Mld which includes 66,700 Mid of cooling water generated from thermal power plants. Out of remaining 16,348 mid of wastewater, thermal power plants generate another 7,275 Mid as boiler blow down water and overflow from ash ponds. Engineering industries comprise the second largest generator of wastewater in terms of volume. Under this category the major polluting industries are electroplating units.

The other significant contributors of wastewater are paper mills, steel plants, textile and sugar industries. The major contributors of pollution in terms of organic load are distilleries followed by paper mills. Figure 9.8 shows the volume of wastewater from different industries in India.

Both large scale industries and small scale industries contribute their share of water pollution. While many large scale industries claim to have installed costly treatment and disposal equipments, these are often not in proper working order. Several examples can be cited, such as oil wastes present in the storm-water channel along Haldia Refinery and ammonia pollution in ground water around a urea factory of Kanpur and a natural spring close to Zuari Agro Urea plant in Goa.

Small scale and cottage industries cause no less water pollution than the large scale industries. There are about 3 million small scale and cottage industrial units in India. These units neither have, nor can they afford appropriate sanitation and/or pollutant disposal systems, and yet have not hasistated in adopting highly polluting production technologies such as chrome, tanning of leather, use of azo-dyes in fabrics, use of cadmium in ornaments and silver-ware, electroplating with cyanide baths, production of dye-intermediates and other refractory and toxic chemicals, etc.

Their solid wastes and sludges get scattered around or dumped in unlined pits and effluents flow to streams through storm- drains or stagnate in depressions to percolate, leach or get washed-off during the next rainy season. This is the story of many industrial areas and urban centres in the country.

3. Agricultural runoff and improper agricultural practices:

Traces of fertilizers and pesticides are wasted into the nearest water-bodies at the onset of the monsoons or whenever there are heavy showers. As the point of entry of such agricultural inputs is diffused throughout the river basin, they are termed as non-point sources of pollution. Although irrigation has increased considerably in the country, little precious has been done to tackle the problem of the high salinity return water.

This is the situation in Punjab and Haryana. In Haryana, the 40 km long drain No. 8 pours 250,000 kg/day of chlorides into the Yamuna to raise the chloride concentration in the river from 32 mg per litre just upstream of the drain confluence to 150 mg per litre just downstream of it. And most of these chlorides are from agricultural return flows.

Flood-plain cultivation is another significant contributor to water pollution. Fertilizers and pesticides used in these tracts of land are bound to be washed into rivers during the monsoons.

4. Withdrawal of Water:

Indian rivers, particularly the Himalayan Rivers, have plenty of water in their upper course. They are, however, starved of water when they enter the plain area. Irrigation canals whisk away clean water soon after the rivers reach the plains, denying water to flow in the river downstream. What flows into the river is water trickling in from small insignificant streams and drains carrying untreated sewage and effluents. The river-turned drain flow downstream with little or no fresh water unless a large river augments the depleted flows.

As the quantity of fresh water in the river is negligibly small, pollution—either from urban and rural areas, industries or even natural forms of pollution—cannot get diluted and its ill effects are not reduced. The Yamuna has almost no water at Tajewala in Haryana where the Eastern Yamuna Canal and the Western Yamuna Canal abstract all the water for irrigation.

Similarly, the Upper Ganga Canal and the Lower Ganga Canal have left the Ganga downstream almost dry. When the Yamuna and the Ganga flow past Delhi and Kanpur respectively, they are turned into stinking sewers. Therefore, it is essential that a minimum level of flow of water must be maintained in the river.

In simple terms a non-existent river cannot be cleaned. In case of the Ganga between Bijnore and Kanpur, the river is just a small stream. In case of the Yamuna, from Delhi till the point where the Chambal joins, the river is just a trickle. Other rivers like Sabarmati are almost devoid of water.”

The Yamuna is dying a slow death in Delhi. In fact it is a dead river as it flows past Delhi. This river is relatively less polluted when it enters Delhi at Wazirabad barrage, but a mere 100 metres downstream the barrage, the river receives untreated sewage and industrial waste. The committee on minimum flows in the Yamuna indicates that if the minimum flows requirement in Delhi is met, that would suffice for the entire course of the river. The maintenance of minimum flows, to sustain river ecology through its course as well as its confluences, is a recent awakening which requires serious thought. This policy must be pursued vigorously so that river pollution is kept at certain permissible limit.

5. Religious and Social Practices:

Religious faith and social practices also add to pollution of our river waters. Carcasses of cattle and other animals are disposed in the rivers. Dead bodies are cremated on the river banks. Partially burnt bodies are also flung into the river. All this is done as a matter of religious faith and in keeping with ancient rituals. These practices pollute the river water and adversely affect the water quality.

Mass bathing in a river during religious festivals is another environmentally harmful practice. Studies have revealed that the biochemical oxygen demand (BOD) goes up drastically when thousands of people simultaneously take a ‘holy dip’. Religious practices also demand that offerings from a puja be immersed in a river. It is now common to see people immersing offerings in plastic bags. Plastic bags are very dangerous and further add to the pollution load of the river.

MAJOR FINDINGS OF THE STUDY

1. Nearly 17 million urban households, accounting for over 20 per cent of total 79 million urban households, lack adequate sanitation.
2. Most of the sewerage treatment plants are performing under their capacity as these utilities do not have enough money to run full capacity.
3. Estimates show there were 269 sewage treatment plants across the country, with 211 in Class I cities, 31 in Class II towns, and 27 in other smaller towns.
4. Sanitation was not prioritized until the early 1990s and became an important policy concern only around 2008.

SUGGESTIONS OF THE STUDY

Based on the study, the following are a few suggestions of the study:

1. With access to improved sanitation facilities, a vast majority relies on on-site sanitation systems, such as septic tanks and pit latrines. Today, these septic tanks and pit latrines have become a major contributor to groundwater and surface water pollution in many cities in the country.
2. Focusing on the problem of septage management, which is one of the most immediately implementable solutions to address urban waste water.
3. There is an urgent need to focus on infrastructure as well as enforcement.
4. Urban sanitation will be allotted focused attention at the national level.

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