



INTRODUCTION

WATER FOR LIFE

➤ **Background**

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Background

Conservation and sustainable utilization of natural resources is the need of present day society. It is essential from future generation point of view. Moreover it is essential for ecological balance. Among the natural resources water is very important because fresh water availability is very low on our planet. There are number of threats to water and water bodies. On one side we observe that the human is polluting the water bodies at very faster rate, while number of villages are conserving through different suitable techniques. Generation of quantitative data to evaluate the quality of water is primary step towards conservation of these resources. In present investigation the physico-chemical, biological and ecological characteristics of four water bodies are studied. From this point of view present work is undertaken on the lentic water bodies of Jotiba.

Global status

Global water consumption is rising quickly and water availability is likely to become one of the most pressing resource issues of 21st century. One third of the population lives in countries already experienced moderate to high water stress and that number could raise to two third by 2025 without serious water conservation measures (World Resources, 1999).

Developed and developing countries are suffering from different forms of water pollution. Developed countries, which have water pollution problem due to industrial proliferation and modernized agricultural technologies, are now on the way of combating the problems through their improved technologies, of wastewater treatment. But, developing countries, with limited financial resources, lack of technical knowledge, and with weak implementation of environmental policies, are still facing severe problems (Sah *et al.*, 2000). In most of the developing countries, water in many rivers receive a heavy flux of sewage, industrial effluents, domestic and agricultural wastes which consist of substances varying from simple nutrients to highly toxic hazardous chemicals. These substances cause deleterious effects on aquatic organisms.

Approximately 1.4 billion cubic kilometers of water is fresh and suitable for human use on earth. (World resources, 1986). India is blessed with an extensive wealth of water resources, consisting of numerous lakes and reservoirs. Inland aquaculture resources covers about 3 million hecters of natural lakes and 2.0 million hecters of constructed reservoirs (Benjamin *et al.*, 1996). India has totally 67,429 wetlands, covering an area of about 4.1 million hectares [Ministry of Environment and Forests (MoEF), 1990]. Out of these, 2,175 are natural and 65,254, man made. The Directory of Indian Wetlands published by WWF and Asian Wetland Bureau in 1995 records 147 sites as important of which 68 are protected under the National Protected Area Network by the Wildlife Protection Act of 1972. State-wise distribution of wetlands in India shows that the state Maharashtra have 49 natural wetlands covering the area of 21,675 ha while manmade wetlands are 1,004 covering the area of about 2,79,025 ha (<http://ces.iisc.ernet.in/energy/TR86/intro.htm>).

According to the IUCN, fresh water ecosystems have lost a greater proportion of their species and habitat than ecosystem on land or in the ocean. In addition, they are probably in greater danger of further losses from dams, pollution, overfishing and other threats. In extent, freshwater ecosystems are quite limited, covering less area of the earth's surface. Yet they are highly diverse and contain a disproportionately large number of the world's species (World Resources, 1999).

Water, the most vital resource for all kinds of life on this planet is also the resource adversely affected both qualitatively and quantitatively by all kinds of human activities on land, in air or on water. Today the quantity and quality of available water is gradually decreasing, all over the country. According to the Ministry of Water Resources, the water shortage in India will become more pervasive by 2025 and would severely stress human and economic development. So the management of water is Crucial for further economic protection of human health and its lifestyle (Lomte, 2003).

Water from surface source provides sustenance to plants and animals and constitutes the habitat for aquatic organisms and meet importance of agricultural and industrial need (Prasad and Gaur, 1992).

India has achieved significant development of water resources and drinking water infrastructure since independence in 1947. Upto between 69 to 74% of rural and 91 to 93% of urban population is 'covered' by installed water supply capacity. However, there are some problems in the water supply sector, which include those related to transmission and distribution, water quality, unequal distribution within the city, and unaccounted for water (Pangare *et al.*, 2004).

It is essential to observe that population growth and dependency on natural resources are inseparable phenomena. Due to rapid industrialization and intensive practicing of chemicals inputs in agriculture, the sustainability of life support system is very badly affected today. Usually rural areas are endowed with agrochemical pollution. Urban areas are endowed with all sorts of pollution, due to rapid industrialization, sewage water production and creation of large quantity of solid wastes (Sunder, 2004).

Though the defilement of water as a result of human activities is a phenomenon as old as hills in increasing industrialization, urbanization and developmental activities and consequent pollution of water has brought a veritable water crisis. (Trivedi and Goel, 1986). The poor quality of water is more due to contamination than due to natural inferiority of the source (Gibbons, 1984). Rapid industrialization and urbanization in India, particularly in last three to four decades resulted in unprecedented rapid growth in generation of a variety of waste. Central Pollution Control Board (CPCB) reported in 1995 that out of 8,432 large and small industries in India on 59% had adequate and operating effluent treatment plants (ETP). Even though the main source of water pollution are domestic waste industrial effluent and agricultural runoff about 75 % wastewater produced is from domestic sector. For which the sewage treatment facilities are more inadequate in most of the cities and almost absent in rural area. .

Water quality continues to deteriorate in our country even after enforcement of Water Prevention and Pollution Act (1974). Various sources of fresh water such as rivers, streams, ground water sources and surface water have been continuously polluted by people of India.

It was estimated in 1975 that every year 2 million deaths occur in India due to water borne diseases and more than 50 million persons are partially incapacitated annually by these ailments. The problem has also been highlighted in 1976 UN Conference on Human Settlements (HABITAT) where it was resolved that the safe water supply and waste disposal should receive priority from Government and International agencies with a view to achieve the largest of serving all the population (Trivedy *et al.*,1984).

According to Finance and Statistics Report, Govt. of Maharashtra in 1998 several deaths have occurred by waterborne diseases in Akola district. In India 80% on infectious diseases are waterborne and 50% of the deaths among children are attributed to diarrhoeal diseases. The most common waterborne infectious diseases are typhoid, cholera and shigellosis. Viral associated diarrhoea and infectious hepatitis (WHO 1984).

In India, many epidemics arises from religious and sacred place located at the banks of river like Ganga and Yamuna (Sharma and Agarwal, 1999). Some activities like holy bath by thousands of people in the sacred water bodies have direct and immediate adverse effect on public health. This is because a large population of the country still use water without any treatment directly from natural sources like tanks and rivers for drinking or other uses. Therefore in India, where epidemic outbreak is a routine phenomenon in many cities having religious place. It becomes necessary to routinely assess water quality from these specific areas. Study of chemical characteristics of drinking water from temple has been studied by Singanan and Rao (1995).

Better management of water resources is the key to mitigating water scarcities in the future and avoiding the further damage. Testing of water quality on a regular basis is an important part of maintaining a safe and reliable source. The test results allow to properly addressing the specific problems of a water supply. This will help ensure that the water source is being properly protected from potential contamination and that appropriate treatment is selected and operating properly.

There is a growing concern on environmental protection. It is attributed to the fact that the growing population and its increase in the use and misuse of resources adversely affect the resiliency of natural ecosystem particularly the effects of environmental pollution. Hence, we need sustainable development which aims at improving the welfare of human beings by protecting the source of raw materials used for human needs and ensuring that the sinks of human wastes are not exceeded with a view to prevent harm to mankind (Sunder, 2004).

Consumption of natural resources by modern industrial economics remains very high in the range of 45 to 85 metric ton per person annually when all materials (including soil erosion mining waste and other ancillary materials) are counted. It currently requires about 300 kg of natural resources to generate US\$ 100 of income in the worlds most abundant economics, this represents a massive scale of environmental alteration (World Resources, 1999).

The environment quality and degradation of ecological balance with technology, population explosion has created innumerable ecological problems including environmental pollution (Philips, 1964). Over exploitation of natural resources results in pollution. Pollution is an undesirable change in physical, chemical and biological characteristic of land, air and water that will waste or deteriorate raw material resources (Odum, 1971).