



POLLUTION STATUS OF PERENNIAL RIVER TAMIRAPARANI WITH SPECIAL REFERENCE TO SEWAGE MIXING AND COLIFORM BACTERIA

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ABSTRACT

River plays a significant role because they not only serve the purpose of water supply for domestic, industrial and agricultural and power generation but are also utilized for the disposal of sewage and industrial wastes and therefore, it is put under tremendous pressure due to human activities. In the last few decades, there has been increasingly greater emphasis on the deterioration of the quality of Indian rivers. Most of the rivers have unmindfully used for the disposal of domestic and industrial wastes. This paper deals with the study of pollution status of perennial river Tamiraparani with special reference to sewage mixing and coliform bacteria.

Key words: Pollution, Sewage, Water quality

INTRODUCTION

In Southern India, River Tamiraparani serves as the principal source of water for Ambasumudram, Vikramasingapuram, Cheranmahadevi, Tirunelveli, Sankarankovil, Alankulam, Tenkasi and most of the villages of Thoothukudi District and Tamil Nadu. With increasing number of industries and population especially in the lower reaches, concern over the quality of the river began to be strongly felt. River Tamiraparani in the Southern Peninsula of India is a typical receiving water body of both point and non point discharges. In recent years, an increasing awareness has been expressed in many countries about the impact of human activities on water resources and the adequacy of the quantity and quality of water for meeting human livelihood, well being and to assess environmental goals.

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Tamiraparani river

The river Tamiraparani is one of the few perennial rivers of the Southern Peninsular India. The main river originates on the eastern slopes of the Western Ghats at an altitude of 2000 m, travels about 125 km in the hills and plains, draining an area of 5369 km².

Hydrology of tamiraparani river

The Southern part of the peninsular India is influenced by two monsoons: the southwest monsoon that originates from the Arabian sea, blows across the west coast, influences mostly the upper part of this basin. The north-east monsoon that originates in the Bay of Bengal, blows across the east coast that covers the entire basin. The south-west monsoon season prevails during June to August while the north east monsoon season follows from September to December. The post monsoon season has a brief winter (January–February) and the summer follows afterwards, characterized by warm humid conditions. The Tamiraparani River has 6 major tributaries and they, with their yield given in brackets, are upper Tamiraparani (368 Mm³) Servalar (289 Mm³), Manimuthar (243Mm³), Chithar (119 Mm³), Pachaiyar (100 Mm³) and Gadana (55 Mm³). There are three major reservoirs in the basin. The Papanasam reservoir is the oldest and constructed across the main Tamiraparani River. The Manimuthar reservoir and Servalar reservoir were constructed on two important tributaries to the Tamiraparani River to mainly stabilize irrigation water supply. There are also eight anicuts (diversion weirs) to control water supply through irrigation channels in the main river.

The chief source of pollution is identified to be sewage constituting about 84 – 92 % of the waste water. Tamiraparani river basin on its bank has a number of industrial units including pulp and paper, textile, state transport corporation workshops, photographic industries and other small scale industries. The problem that confronts the public is the liquid waste with inorganic and organic contents. The waste liquids from textile mill comprises mainly of dye stuff, sulphates, sulphide, copper, zinc, lead, phenolics and wastes for the manufacture of paper and pulp.

Tamiraparani basin, mainstream receives the effluent from the major textile industries. Madura Coats situated on the banks at Vickramasingapuram, about 10, 400 KLD of oily waste water from the Tamil Nadu State Transport Corporation Workshop at

Papanasam add much more pollution into river. Another major industry situated on the banks at Cheranmahadevi also draws water and generate 24,450 KLD of effluent; a part of, which ultimately reaches the river. About 4871 members of small scale industries, which include 41000 numbers in Tirunelveli district and 758 in Thoothukudi district. Systematic observations were made at various points of the river basin shows that the effluents are being regularly discharged and cause serious pollution problems.

EXPERIMENTAL

Sampling points

Water samples were collected monthly from the following stations, Vikramasinghapuram, Ambasumudram, Cheranmahadevi, Kurukuthurai, Kokkirakulam, Veerakoil, Sevalaperi, Karungulam, Srivaikundam, Eral and Attoor.

It is evident that the water quality is altered due to the entry of sewage and other domestic wastes into the aquatic system. In places such as Kurukkuthurai, Kokkierakulam, Vellakoil, Srivaikundam, Eral and Attoor, where there is large input of sewage, leads the water quality quite different from rest of the sites.

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Biological quality profile of river Tamiraparani

WHO water quality standards, ICMR standards for drinking water and BIS Standard for drinking water recommend that no coliforms should be present in the drinking water. In the present study, variations in the total coliform density in the river was recorded from a minimum of 56.61 MPN/100 mL to a maximum of 494.36 MPN/100 mL. Maximum coliform density was observed in December and minimum value was observed during May.

CONCLUSION

Taking into consideration the standard tests, it can be stated that the biological quality of the river water is very poor. Moreover necessary steps can be taken to provide proper sanitation to the people in Tirunelveli and Thoothukudi districts so as to prevent

human defecation along the river banks.

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