



Impact of industrial effluents and sewage on river Thamirabarani and it's concerns

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Abstract

The present study deals with the Impact of industrial effluents and sewage on river Thamirabarani. Water samples were collected from 5 different river and canal stations such as Melapalayam canal, Palayam canal, Kottur canal, Kandiyapperi canal, Vannarpet and different chemical parameters such as colour, pH, dissolved solids and microbial study of the samples were analysed. The tests showed that the samples of Melapalayam is more polluted in all parameters. Fluoride was found normal in all sites. TDS and Turbidity in Melapalayam canal, Palayam canal and kandiyaperi canal found more. Sites I, II and III are highly bacteriologically contaminated. It was concluded that the samples of river water were polluted mostly and associated with industrial effluent and sewage discharge.

Key words: Thamirabarani, Water quality, Polluted water.

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INTRODUCTION

Water is essential for the survival of the world. Good and safe drinking water is becoming a rare commodity. Rivers play a significant role because they not only serve the purpose of water supply for domestic, industrial, agricultural and power generation but also utilized for the disposal of sewage and industrial waste and therefore put under tremendous pressure due to human activities.

In the last few decades, pressure has been increasing and greater emphasis on the deterioration of the quality of Indian Rivers. Most of the rivers have been unmindfully used for the disposal of domestic and industrial effluents far beyond their assimilative capacities and have been rendered grossly polluted.

According to an estimate, about 80% of the total population in India is deprived of pure and safe drinking water. A recent study revealed that there were 1,53,000 villages in India, which had infected water supply. 90% of total drinking water is severely polluted. Ganga is the most polluted river in the world. Other Indian rivers include Damodhar, Hooghly, Kulu which have almost the same story to reveal.

In South India, river "Thamirabarani" serves as the principle source of water for drinking and agriculture purposes, with increasing number of industries and pollutions especially in the lower reaches, concern over the water quality of the river began to be strongly felt.

Thamirabarani, one of the perennial rivers in Tamil Nadu, originates from Pothigai hills on the Eastern slopes of the Western Ghats and drains its water into the Bay of Bengal at Punnakayal of Gulf of Mannar. The total area is 5969 sq.km.

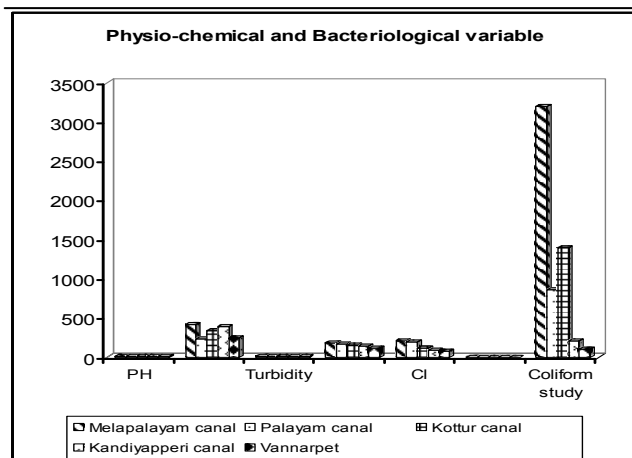
With the arrival of industries, workshops, hospitals and hotels on the river banks and canals the water is getting contaminated with the effluent discharges from these. Industrial waste water comprises 8-16% (Chaudhari 1982). Tamirabarani on its banks has a number of industrial units including pulp and paper, textile, state transport corporation workshops, photographic industries and other small scale industries. The waste liquids from textile mills comprises mainly of dye stuff, sulphates, sulphide, copper, zinc, lead, phenolics and wastes from the manufacture of pulp and paper contains sulphides, chlorides, lingo cellulose wastes, mercaptans, mercury etc. canals also highly polluted by sewage disposal from theater, hotels, houses and municipal sewage. The pollutants that are concerned to the ecosystems are those that do not degrade and those that resist to bio-degradation and are found to enter the aquatic and human systems. (Murugesan, 1999).

MATERIALS AND METHODS

The water quality parameters decide the potability of water water samples are taken from five different sites in the month November 2008. 2 litre of water sample was collected in polythene bottles and carried to the laboratory, where physio-chemical parameters were analysed as per standard methods (Manivasakam *et al* 1996). The parameters selected for analysis were pH, TDS, hardness, chloride, nitrate, phosphate, Co₂ and DO. Bacteriological study faecal coliform study was analysed. (Papen *et al* 1998).

Table 1

S.No.	Place	Physio-chemical and Bacteriological variable						Coliform study
		pH	TDS	Turbidity	TH	Cl	F	
1	Melapallayam	8.05	422	10	178	212	0.4	3200
2	Palayam canal	7.57	229	7	164	201	0.2	860
3	Kottur canal	7.35	345	9	162	112	0.2	1400
4	Kandiapperi canal	7.89	392	10	140	94	0.15	212
5	Vannarpet	7.93	245	10	120	75	0.2	110



RESULTS AND DISCUSSION

It is evident that the water quality is altered due to the entry of sewage and other domestic wastes into the aquatic system. The pH value is measured as 8.05, 7.57, 7.35, 7.89 and 7.93 respectively. The pH value of sites I and II are more. There were great differences in the values of TDS. It was found as 422 in site I and 229 in site II and 345 in site III and 392 in site IV and 245 in site V. More amount of TDS found in site I and III. Turbidity showed great differences. In site I, it was 10 and in II 7 and in IV 9 and in VI 10 and in V 10. The turbidity was recorded maximum value in almost all sites except II. Total hardness was recorded as 178, 164, 162, 140, 120 respectively. It sites I, II, III it was recorded maximum against 200 control.

Presence of Chloride was a great significance. It was 212, 201, 112, 94 and 75 respectively. In Melapalayam and Palayam kalvai the chloride showed variations. In all five sites the presence of Fluoride was in control found below minimum level.

Bacteriological faecal coliform study showed that 3200, 860, 1400, 544 and 460 found per 100 ml of sample respectively. According to this value water samples taken from Melapalayam and Kottur canal are highly bacteriologically contaminated, which were not potable.

Control Measures

- The effluents from the existing units should be monitored regularly and allowed to discharge into the river only after satisfactory clean up treatment.
- Underground drainage system is built within municipal limits and sewage treatment plants of adequate capacity installed at chosen locations.

- Only treated water with permitted quality should be allowed into the river somewhere downstream after municipal limits.
- Domestic sewage is also treated and the waste water will be used as a bio-fertilizer which will be alternative source of income, treated waste water can be used for irrigation.
- Microbial disinfectants should be employed in the water resources.

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