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## Water Pollution in Noyyal River Basin

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### Abstract

The effluent discharge into river Noyyal river basin was around 75,000 m<sup>3</sup> to 1,00,000 m<sup>3</sup> per day and it contains both natural and synthetic dyes, along with more than 150 chemicals, such as common salt, detergent, caustic soda and hydrogen peroxide are used to colour the textiles and the toxic wastes are contaminated the water bodies in and around the Tirupur cities and affected soil, water, air ecosystem. The possibilities of ground water contamination mainly due to the period of non-flow of the river and it shows the deteriorated quality of surface and ground water to arrest these type of contamination by the effective approach for cleaning up contaminated surface water as well as ground water through physical, chemical and biological treatment process and strongly adhere the pollution act and environmental legislations.

### Introduction

The historically important Noyyal River originates in the God Shiva, Vellingiri hills in the Western Ghats of southern India (Southeastern India) and drains into the Kaveri River and this place is a major biodiversity hotspot in India. The history behind in the river Noyyal is the way back in the tenth century BC, the Chola kings built 40 check dams and lakes to offset the low rainfall in the basin so as to make the most of this riparian ecosystem. Notwithstanding the scanty rainfall in this region, the many lakes in the upper reaches of the river basin are important habitat for rare species of birds namely pelicans and ibis. Unfortunately, rapid urbanisation of the industrial centres of Coimbatore and Tiruppur over the last couple of decades has turned the Noyyal into polluted water bodies. The canals, lakes and check dams are under critical state, and prolonged negligence by civic officials has totally destroyed the river basin, along with the canals designed to irrigate an area of 8052 hectares gradually shrinking in their capacity. The same is true of the 3,510 sq. km catchment area. The textile industries in and around Coimbatore, disposes the waste into the Noyyal River.

### Status of Water Pollution in Noyyal River Basin

The river basin is 180 km long and 25 km wide and covers a total area of 3,500 km<sup>2</sup>. Cultivated land in the basin amounts to 1,800 km<sup>2</sup> while the population density is 120 people per km<sup>2</sup> in the countryside, and 1000 people per km<sup>2</sup> in the cities. The area is known for its scanty rainfall and the development of the Noyyal River Tanks System holding any overflow from the rains plus the water in the Northeast and Southwest monsoon season been ecologically important. The 173 km long tributary of the Kaveri River filled 32 tanks.

As like the many other hazardous changes due to the lifestyle changes and change in culture, the Noyyal is also down the way to death.

The textile industrial town of Tiruppur, located 40 km down the river, has emerged as an important garments production centre during the past three decades. A centre for knitwear production, particularly summer garments, Tiruppur exports nearly 80 percent of its production. Its exports have grown from less than 2.2 million USD in 1984 to 3019 million USD in 2014. During the (1995-2004 boom period), more than 600 dyeing and bleaching units mushroomed in Tiruppur. For every kilogram of yarn production, nearly 200 litres of water is used. The daily intake of water here is about 80,000 to 1,20,000 m<sup>3</sup>. Both natural and synthetic dyes, along with more than 150 chemicals, such as common salt, detergent, caustic soda and hydrogen peroxide are used to colour the textiles.

Initially there is no effluent treatment plants, the effluents and solid waste were disposed off into the river. Thus, the effluent discharge into river Noyyal was around 75,000 m<sup>3</sup> to 1,00,000 m<sup>3</sup> per day (Senthinathan, 2004). The stretch between Tiruppur and the Orathupalayam dam became "Industrial Wastelands", due to the large-scale discharge of industrial effluents. The groundwater close to, and the water in the river, is today unfit for drinking, sanitation or even irrigation in these areas. The Noyyal River is no longer seasonal in this part; it is perennial due to huge amounts of effluent water from mostly dyeing and bleaching industries in and downstream of Tiruppur and hence, the area from Tiruppur to Orthuthupalayam dam needs special attention. Consequently, the water quality downstream, and the groundwater in the area ended up highly deteriorated. The increasing pressure from the public, intervention from judicial bodies and various governmental agencies forced the dyeing industries to ultimately consent to treat their effluents prior to discharging them into the river. While some units installed their individual plants, others subscribed to common effluent treatment plants (CETP) to collect and treat effluents from member units.

The existing CETPs largely follow conventional treatment techniques which end up producing a large quantity of solid waste, which is another serious problem. When 5,000 m<sup>3</sup> of effluents are treated, about 6,000 kg sludge is produced. The textile industrial wastes are hazardous and it is very toxic to the ecosystem and moreover, the place to dump these type of waste is a difficult task and forced risk to the living things in the environment.

To reuse and recycling of water, reverse osmosis (RO) is now generally done in Tiruppur, notwithstanding the high initial cost, running costs and power requirements. However, the issue of pre-treatment prior to RO/ ion exchange/ nano-

filtration techniques is daunting. Certain treatment plants have opted for membrane bio-reactors (MBR) and such techniques. But, till date, no cost-effective treatment has been implemented to alleviate the problem of water pollution either individually or in an integrated manner in Tiruppur. In 2013, the Madras High Court ordered the closure of all dyeing and bleaching units in the Tiruppur knitwear cluster that failed to comply with the zero liquid discharge (ZLD) requirement. Yet, the pollution in River Noyyal continued unabated.

According to Tamil Nadu Pollution Control Board (TNPCB) report, found over 300 units involved in illegal operations and discharging of untreated effluents into the water bodies. The high concentration of total dissolved solids (TDS) ranging between 6,800-9,870 mg/l in the CETP effluent (Rajeswari *et al.*, 2013). It should be noted, though, in tandem with the growth of knitwear industries, the urban population of Tiruppur has shown a 27.4 percent decadal growth (2001-2011). However, there is a substantial lack in the development of sanitation and sewage treatment facilities for the growing population. This has resulted in discharge of substantial quantities of untreated/partially treated sewage into the river.

## Conclusion

The deterioration in water quality parameters clearly evidenced that the possibilities of pollution due to industrial activities such as coffee vegetables oils, leather tanning, textiles and foundries in and around Tiruppur and Coimbatore city. The population of Coimbatore has also play a huge impact on the Noyyal River with regard to pollution and encroachment of Noyyal River basin areas. The possibilities of ground water contamination mainly due to the period of non-flow of the river and it shows the deteriorated quality of surface and ground water to arrest these type of contaminations by the effective approach for cleaning up contaminated surface water as well as ground water through physical, chemical and biological treatment process and strongly adhere the pollution act and environmental legislations.

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