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Water pollution due to dying effluents in Noyyal river, Tirupur-A case study

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Abstract: Water pollution is the introduction into fresh or ocean waters of chemical, physical, or biological material that degrades the quality of the water and affects the organisms living in it. This process ranges from simple addition of dissolved or suspended solids to discharge of the most insidious and persistent toxic pollutants (such as pesticides, heavy metals, and non degradable, bio accumulative, chemical compounds). Examples of water pollution are Mining, Agricultural Wastes and Industrial affluent such as paint, dying units etc. Dying industries are polluting Noyyalriver which is running across Tirupur, Erode and Karur districts of Tamilnadu state. Dying industries in and around Tirupur and Erode districts violating all norms prescribed by both state and central pollution control boards and releasing their effluents into Noyyalriver without any treatment. The water fromNoyyalriver is stored in Orathuppalayam Dam which is one of the largest polluted dam in India. The several reportssay that the total dissolved solids (TDS) is close to 2000 ppm and the water stored in the dam is not fit any purpose including irrigation.

Keywords: Water pollution, dying effluents,Noyyal river.

Noyyal River

The Noyyal River rises from the Vellingiri hills in the Western Ghats in Tamil Nadu, southeastern India and drains into the Cauvery River¹. The river's basin is 180 km (110 mi) long and 25 km (16 mi) wide and covers a total area of 3,500 km² (1,400 sq mi). Cultivated land in the basin amounts to 1,800 km² (690 sq mi) while the population density is 120 people per km² (311/mi²) in the countryside, and 1000 people per km² (2590/mi²) in the cities. The area is known for its scanty rainfall and the development of the Noyyal River Tanks System to hold any overflow from the rains plus the water of the Northeast and Southwest monsoon season was ecologically important. The 173 km (107 mi) long tributary of the cauvery River filled 32 tanks.

These interconnecting tanks held the water flowing from the Noyyal.^[1] The "Noyyal" is a sacred river in Tamilhistory. Its original name was Kanchinadi but changed later to the name of the place where it drains into the Cauvery River in 1750 A.D.The Noyyal village is situated at the banks of Noyyal and Cauvery (Ponni) Rivers where they both merge. The river has 23 check dams. Most are located between Kooduthurai and Tirupur, 52 km east of Coimbatore city. Decades ago, it irrigated 3,550 square kilometres (1,370 sq mi). Noyyalrevival over 40 km (25 mi) will enable irrigation of 165 km² (64 sq mi), according to Siruthuli⁵.

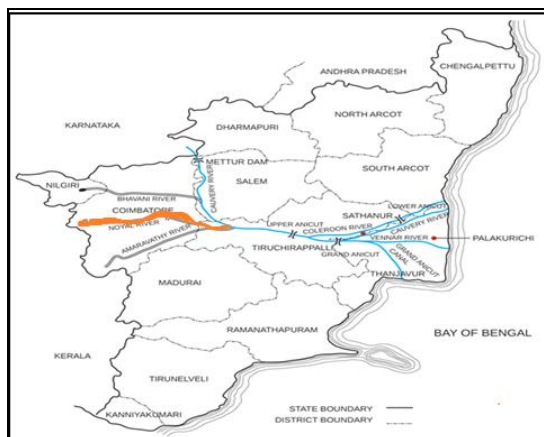


Fig. 1 Noyyal River passing thorough Tirupur, Erode and Karur districts

Pollution in Noyyal River

A critical issue is the pollution of the rivers Noyyal and Nallaru originating and flowing in the Kongu region. The river flows with natural antibiotic minerals². The entire Orathuppalayam Dam has become a tank holding effluent and releases water after every rainfall, effectively polluting the down river villages in the Tirupur and Karur district. However from 2004 onwards, efforts by local volunteer organization Siruthuli⁵ have been trying to conserve the water resource. After several petitions from 2003 to 2011, dyeing and bleaching units were ordered closed on the river until zero liquid discharge status was achieved. Noyyal contains two major dam Orathuppalayam (Near Chennimalai, Tirupur District) and Aathuppalayam Dam (Near Vellakoil in Karur district) commissioned in the aim of irrigating about 20,000 acres of land in Tirupur and Karur districts. As of now Orathuppalayam dam stands decommissioned and acting as effluent tank for the Tirupur textile units.

Industrial effluents have already compromised agriculture in this basin by grossly polluting both the groundwater and the river. Today, the Noyyal that gives life to the arid Tirupur region is also said to be a dead river. The Noyyal, being a seasonal river with a peak flow only during monsoon plays reluctant host the rest of the year to untreated sewage and industrial effluents from Coimbatore and Tirupur, the two main cities in its basin. Tirupur's textile industry uses bleaching liquids, soda ash, caustic soda, sulphuric acid, hydrochloric acid, sodium peroxide, and various dyes and chemicals for its dyeing and bleaching processes. Other harmful substances include a number of dyes, many based on benzidine structures or heavy metals, both known to be toxic." Most of these chemicals are not retained in the finished hosiery goods, but are discharged as wastewater. The wastewater is acidic, smells terrible and contains dissolved solids, which increase the biological and chemical oxygen demand in water. With no freshwater available for dilution the groundwater from Coimbatore and Tiruppur is no longer suited for irrigation.

The effects of this pollution are becoming evident. Coconut cultivation has slumped because of the high saline-sodium nature waste that hardens irrigation water. In addition, about 1500 tonnes of colouring agents are used each year, one-fifth of which is flushed into water amounting to one ton per day. Local groundwater has become brackish and considerably harder over the past 10-15 years.

Government Action

According to the Water (Prevention and Control of Pollution) Act of 1974, every industry is required to get consent to discharge its effluents. However, the same Act also empowers state governments to exempt any region or area from the provisions of the Act. Thus, an exempt industry does not have to either bother with effluent discharge standards or apply for a license. This special status was granted to Tirupur in order to promote its textile units. The results of the PSB's greed-driven largesse can be seen floating as scum on the Noyyal. Moreover, the appointment of the chairpersons of the state pollution control board (PCB) is a political one. So, when any government wishes to turn a blind eye to a polluting industry, it can ensure of compliance from the PCB. Tirupur is a case in point. In its eagerness to promote the textile industry, the Tamil Nadu government conveniently overlooked all the damage its actions would cause to the area's groundwater, to the Noyyal, and to agriculture in the region. Since then on protests by the people the industry and the government have only been passing the buck to each other as the reason for the delay in the measures for pollution control. Finally pressure from the civil society and judicial intervention led the TNPCB to insist on effluent treatment facilities in Tirupur. As a result 424 dyeing units have constructed ETPs and 288 dyeing units are connected to

8 CETPs in Tirupur. Sadly, neither the Tirupur industry nor the state government has considered changing either the production process itself or the raw materials. The industry has opposed the 'polluter pays' principle on the grounds that the foreign exchange they earn and the employment their industry generates is enough to warrant a high level of subsidies. The 'polluter pays' principle, upheld by the Supreme Court, implies that in the case of pollution, a party either bears the full cost of its activities or else shuts shop. In both the Bhavani and the Noyyal basins, the state has responded to the pollution crisis at the eleventh hour. While the state pollution control board's belated actions and a vigilant civil society may still save the two rivers, several questions arise from this tangle. Can a state's industrial policy ignore other sections of society? Should a pollution control board act only after the civil society has pointed out the results of its inadequacies? While there is some hope in the Bhavani basin, answers are wanting in the Noyyal basin. It is three years since the Madras High Court ordered the closure of all dyeing and bleaching units in the Tirupur knitwear cluster for polluting the Noyyalriver, but the pollution menace continues.

The order was passed on January 28, 2011 on a petition moved by farmers that the units did not adhere to the directions of the Supreme Court and High Court to comply with Zero Liquid Discharge (ZLD) norms in effluent treatment. Though there have been some efforts by the dyeing sector to improve the effluent treatment method after the court order, the pollution has been largely continuing. The discharge is still a cause for concern to farmers in the command areas of the Noyyalriver and other waterbodies like Nanajarayan tank in Tirupur, among others. In the last three years, the Tamil Nadu Pollution Control Board unearthed over 300 units involved in illegal operations and discharging of untreated effluents into the waterbodies and open grounds, polluting the groundwater table in Tirupur and its immediate suburbs. The court, while pronouncing the closure order, had directed that Common Effluent Treatment Plants (CETPs)/Individual Effluent Treatment Plants (IETPs) be permitted to operate only if they achieved ZLD norms.

Now, 18 CETPs, covering around 350 dyeing units, were in operation under trial basis apart from 52 individual plants functioning in Tirupur. Farmers affected by the pollution question how and why could the trial run of commercial operations go on for more than two years now. "With polluted effluents continuing to be seen in waterbodies and the TNPCB detecting illegal units every now and then, there is doubt over the genuineness of the trial run," K.C.M. Balasubramaniam, a farmer and retired agriculture economist from Tamil Nadu Agricultural University, pointed out. K. Duraisamy, farmer and secretary of Tirupur Groundwater Protection Association, termed the trial run an eyewash, as untreated effluents were still found in large quantities in open areas and streams in the surroundings of dyeing units. S. Nagarajan, president of Dyers Association of Tirupur, said the association, which is against illegal operations and also taking all efforts to ensure ZLD norms, had appealed to the Centre to widen the purview of Integrated Processing Development Scheme to cover the generation of power/upgradation in the dyeing sector and thereby, ensure cheaper power to the units.

Units discharge effluents without treating them only to reduce power cost, which is almost 50 per cent of the total operational cost in dyeing effluent treatment, he said.

The outcomes of the close-down

For a very long time, it was thought that laws in India were just on papers and not implemented. But the issue with dyeing units in Tirupur had changed the notion. Though the court order is welcomed, the blanket ban on the dyeing units is something way over the limits.

Mr A.Sakthivel, president of Tirupur Exporters Association had said in an interview with newspersons, "I cannot comment on the court order. But this would bring Tirupur to a standstill and would cause a loss of around Rs 50 crore per day to the industry. We have just come out of the yarn problem and now this has cropped up. Around 50,000 workers would be affected; exports would also take a beating because of this move." He also said in an interview in the month of February, "We have come across zero discharge as a new technology. No place in this world follows this technology. We are trying to achieve zero discharge. We have spent nearly Rs 1,200 crore for this project." Apart from the 50,000 workers who work in these dyeing units, nearly 10 lakh people will be affected indirectly who are all linked to these dyeing units. In technology terms, it is said "The chain breaks at the weakest links" and now dyeing units have become the weakest link for Tirupur' garment manufacturers and exporters.

"There is no Tirupur without dyeing factories," said N Murali, Tirupur Exporters and Manufacturers Association Vice-President and Rajshree Exports Managing Director. He said it is not possible to comply with zero-level discharge as even the ground water and well water contains some salt. There are around 5,000 units

in Tirupur engaged in various activities related to knitwear exports employing more than four lakh workers. The city is host to a number of knitwear exporting firms. This is a crucial time for the exporting industry.

Industry is already hit by the skyrocketing prices of cotton and cotton yarn, which rose by 100% and 70% respectively leading to higher production costs and now this. Though the Central and the State governments are trying to bring the industry back on track, by sanctioning a loan of Rs 350 crore, it is not sufficient. The industry says that the actual cost of setting up common effluent treatment plants to treat the discharge from the dyeing units exceeds Rs 800 crore. Loans of Rs 600 crore were taken to set up the treatment plants. On the one hand, only Rs 150 crore out of the government grant actually reached them and on the other, the closure of the units means the loans taken may not get repaid. K Krishnan, general secretary of Tirupur Dyes & Chemicals Association claims that, "It is not an easy joke. Our accounts are in the NPA position. Once the NPA is announced, it means we will not get the Technology Upgradation Fund (TUF) subsidy on interest basis."

With dyeing units in Tirupur downing shutters, the exporters are moving to the small timers in the Erode, Perundurai area. Some have gone to Punjab, Gujarat and even Colombo for processing their goods, where the processors are demanding 100 per cent payment in advance with no guarantee on the quality of the final products. The dyeing mills are not ready to give assured delivery time and exporters are unable to confirm the final delivery dates to the overseas buyers. In most of the cases, buyers cut back the order quantity or asked the exporters to airlift the goods at their cost, which only adds to the losses of exporters.

Moreover, the industry is competing with other big players from the international arena like Bangladesh, Turkey, Sri Lanka, China, Egypt and some smaller countries. The big exporters were pulling up their contacts in other parts of the country to organise their dyeing activities, and the worst affected lots are small and medium sized companies. Most of units are already losing out due to the loan they are getting from private financiers and strict bank policies in the last two years. A solution has to be found out soon or else other favoured players will grab the opportunities. India is already not in that list due to the duty advantage they get from countries like Bangladesh.

However, the problem of degradation should be addressed soon. There are many litany of woes from the farmers and other villagers residing on the banks of the Noyyal River basin. One such thought-provoking account is this: "I had a huge farm in the banks of the river. Now that's totally gone as the river is fit for nothing. Neither is it fit for drinking nor for animals. Over 600 people have died because of cancer in the area because of the pollution," said Kandasamy, petitioner. "It is high time we think about bringing a strong fail-proof solution to end the problem of environmental degradation. It also shows the irresponsibility of the Textile Industries. I know clearly that there would be a lot of objections to this, but still that's the truth."

Steps taken to solve the issue

"Initially when the problem surfaced again in the year 2005, with knowledge inputs from Anna University⁴ and IIT, Chennai, RO system and Multiple evaporators were installed at more than Rs 1,200 crore. With 80% cleaned through RO and 15% through multiple evaporators, the remaining 5% is the trouble here. Moreover the evaporators started failing lately and hence ZLD could not be achieved. In 2011, there was a fresh suggestion from NIFT-TEA, to use eco-green evaporator used in Germany, instead of the failed mechanical evaporators to treat the RO rejects.

The only permanent solution to the problem could be the Marine Discharge Project but that too should be done with proper regulations put forth by the Pollutions Control Department. The Tirupur Exporters Association (TEA) has sought government help to set up a marine discharge project⁶ with an overall estimated investment of Rs 1,000 crore to solve the dye effluent problem clouding the textile industry. Once the marine discharge project is implemented, the whole textile belt of Tirupur, Perundurai, Erode, Pallipalayam and Karur will get benefit out of it," he added.

Mr A Sakthivel pointed out that the Union Ministry of Science and Technology has agreed to extend a support of up to Rs 5 crore to carry out environment impact and social assessment study for the project through the National Institute of Oceanography. Mr A Sakthivel said financial situation of the industry is bad due to closure of dyeing units and increase in inputs costs. Banks have to come forward and extend supporting measures like foreign currency denominated loan at 2% over LIBOR to knitwear export sector, extension of 2% interest subvention facility to knitwear garment sector across the board and availability of pre-shipment and post-shipment export credit in rupee at base rate to help the industry come out of the situation. He also said no

accounts should be made NPA. A suitable restructuring of bad loans should be done to bring back the units into normal course of activity.

Before the Tirupur dyeing units become dyeing units with zero production and crippling debts, it is up to the Government to bring in financial and other needed support to put the most precious exporting community in this Knit City back on rails.

Effect of Pollution due to dying effluents:

Land has turned barren though there's water aplenty. And it can't even quench their thirst. If this was the pathetic story so far of the villages along the Noyyalriver, the worst has befallen downstream in the boomtown of Tirupur - infertility is staring the villagers in the face³.

Fishes floating along the river because of discharge of toxic industrial waste and attendant loss of agriculture is now passé. What rattles the villagers more is the increasing rate of infertility among men and women and its social consequences.

Not surprisingly, there is a surge in the rural populace approaching fertility clinics which have mushroomed in Erode, Tirupur, Karur and Coimbatore districts. There are about 30 hospitals in Erode and Tirupur - the worst affected by water pollution because of effluent discharge from dyeing and bleaching units. We are witnessing a significant rise in the number of men and women coming for infertility treatment from the areas next to the Noyyal. Environmental degradation is a major cause of this,' DrNirmalaSadasivam, a specialist in IVF treatment, said. We were taken aback when 210 couples were found with fertility disorder at a medical camp as late as 2009 in Karur. All of them were from the villages downstream,' the doctor added, claiming that the sperm count in the region had come down to 40 million from the earlier 120 million. Urging the government to make efforts to reclaim the land and the river, she disclosed '30 to 40 couples visit our hospital daily'.

Dr S. Dhanabagiyam, another popular IVF specialist in Tirupur, carried out a study of the region. Her research revealed that an alarming 80 per cent of impotence cases were a result of water pollution. 'High water contamination,' she said, 'reduces sperm count, while in women it creates ovarian complications and hormonal changes, leading to loss of oestrogen as well as abortions.' Her hospital was recently in the news for the birth of 26 babies on a single day to couples treated for infertility from all over India. A visit to these villages downstream Noyyal found many elders lamenting about the growing incidence of impotence.

'Our youth are shunned in the marriage market. Word about impotence in these areas has spread. There is growing apprehension about sterility coupled with worry over the loss of livelihood. Our women too face this problem as the frequency of conception has come down drastically,' T. C. Duraisamy, 56, former panchayat president of Thammareddypalayam, a fertile village now desertified, bemoaned. The villagers initially believed the problem was confined to cattle. 'As a boy, I saw our milch animals, especially cows, yielding a minimum of 10 calves. It is not the case nowadays and has had a cascading effect on the local economy. Most farmers have taken to making charcoal,' he said.

Farmer-turned-shepherd NachimuthuGounder, 52, also complained: 'First the land turned barren and then it (water pollution) caught up with the cattle. Now, we've become the victims.' The malaise is not confined to a few areas but is prevalent in over 71 revenue villages with a population of nearly 2 lakh spread across the three districts of Tirupur, Karur and Erode, through which the Noyyalriver passes.

A detailed study by an academic had revealed in 2003 that water pollution had given rise to over 60 per cent of ailments such as skin diseases, respiratory problems and gastritis. 'Infertility accounts for 40 per cent of health disorders in the pollution- hit villages. We have been pressing the government to carry out a scientific study. We are tired of submitting petitions from the district collector to the CM. But nothing has happened,' said V. Ramasamy, adviser to the Noyyal farmers' forum which took up the over-a-decade-long legal battle against the polluting industries. The irony, however, is that the residents of most villages are turning to Tirupur for employment. 'It is a classic case of the victim turning to the perpetrator for succour,' Ramasamy added. Farming and allied activities were thriving in these villages, surrounded by coconut and mango groves, barely two decades ago. Even now they have electric pump-sets for their wells but nothing grows with the water. If at all anything is grown, it is maize and that too when the rain comes.

After the Madras High Court directive in November 2010, effluent discharge from the dyeing and bleaching units, numbering over 700 in Tirupur, had almost come to an end.'But the level of water pollution has not come down and there is no effort to resolve the problem,' Ramasamy said. According to a recent study, 2,300-2,500 total dissoluble solids (TDS) still make up the water. If the number crosses 500, the water becomes unfit for drinking and above 1,500 TDS, it can't be used for farming, he pointed out. Despite pollution plaguing the region for over a decade, the government has not conducted any study on health disorders. The affected districts have no data on the spurt in certain diseases.

'We will certainly look into the demand for a health survey. Proactive steps would be initiated and if any work has been carried out earlier, it will be given thrust,' was all that mentioned at the time by then Erode collector V.K. Shanmugham.

Conclusion

The central pollution control board in coordinating with state board is planning to dump all dying effluents into deep sea through pipe line from Tirupur and working out the cost analysis. Our state government may possibly involve in feasible studies and may allot funds for the proposal which may a permanent solution for both the people of Tirupur area and manufacturers of garments.

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