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Eloor, an Industrial Hub or Ecological Graveyard?

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ABSTRACT

Eloor is a small island located in the Ernakulam district of Kerala. It is one of the major manufacturing belts in Kerala. Although it provides numerous jobs to the people, it has been prone to environmental degradation due to unchecked industrialization. This research paper critically examines Eloor as an archetype of industrial pollution, in the background of India's regulatory and environmental governance failures. Once a rural area, Eloor transformed into a toxic hotspot with more than 350 industries, including government-owned giants like FACT and Hindustan Insecticides Limited (HIL). An ecological graveyard, Eloor houses these industries. This study, through a multidisciplinary approach-inclusion of environmental reports, and firsthand interviews, further discloses systemic failures in pollution control, accountability from corporates, and policy-mandated enforcement.

Alarming levels of Persistent Organic Pollutants (POPs), such as DDT and endosulfan, were found in models, along with contaminants such as heavy metals like mercury and cadmium, ending up in the Periyar River and other ecosystems. Findings from Greenpeace investigations (1999, 2002) indicate that effluents persistently discharge industrial wastes into surrounding environments and their bioaccumulation. All these regulations are despite India ratifying the Stockholm Convention. The health impacts of such exposure, including respiratory diseases, congenital malformations, and increased incidence of recurrent ecological disasters such as mass fish mortality, are corroborated in the interviews elicited among the surrounding people and workforces in industries.

Eloor becomes the epitome of the struggle between economic growth and ecological sustainability. It demands urgent reforms in the system. Eloor is, thus, a global industrial hub cautionary tale highlighting the need for integrating ecological resilience into development paradigms.

Keywords*: Industrial Pollution, Environmental Degradation, Toxic Hotspot, Persistent Organic Pollutants, Bio Magnification.*

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I. INTRODUCTION

Eloor, known as one of the toxic hotspots in the world, started as a normal village with its residents living a simple life through agriculture and fish farming. The industrialization in this area started around the 19th century, later this place was also given the nickname of 'udyogamandal', meaning a place for employment. Currently, there are approximately 350 industries in this area, and most of them don't even follow the safety protocols set by the pollution control board. Periyar, an ever-flowing river, once the heart of the town, is now contaminated with untreated industrial effluents, some of which are very toxic to humankind, including DDT and endosulfan. Till now, there have been numerous fish kill news due to this. Long back, the residents were dependent on agriculture and traditional fishing, but now, since the water level has been polluted, that has stopped. The living organism is exposed to these contaminants, and the concentration of these toxicants rises in the food chain as they enter the higher strata. This phenomenon is also known as biomagnification. High levels of carcinogens have also been found in the air. But in the end, there's some hope left for Eloor, Residents have been fighting against this pollution; they demand stricter laws and monitoring.

II. THE BEGINNING

Everything started with FACT, the Fertilizers and Chemicals Travancore Limited, one of the largest fertilizer companies in India. It was established in the year 1943, but it only started production in 1947. In the beginning, it was a private company, but by 1962, it became a public sector company.[3] Currently, FACT is under the control of the Department of Fertilizers, Ministry of Chemicals and Fertilizers, Government of India. The establishment of this company changed the fate of Eloor.

By 1950s, there was a boom in the growth of industries producing pesticides, rare earth elements, petrochemicals, etc. One such company that emerged was HIL, India, aka; Hindustan Insecticides Limited. In 1954, the United Nations Children's Fund (UNICEF) gave a plant for the production of Dichlorodiphenyltrichloroethane (DDT) to the Government of India to help combat malaria.[4]This company has three manufacturing units, one at Eloor (Ernakulam), Rasayani (Mumbai), and Bathinda (Punjab). But, the company's unit in Eloor was only established in the year 1958. Eloor passed all the criteria HIL was looking for, availability of water, a nearby railway station, fire stations, and less population. In response to growing

[3]About FACT, The Fertilizers And Chemicals Travancore Limited (Mar. 20, 2025), https://fact.co.in/home/Dynamicpages?MenuId=10 (last visited Mar. 20, 2025).

[4] M. Suchitra, A Toxic Hotspot on the River Periyar in Kerala: Corporate Crimes in God's Own Country, in Water Conflicts in India 143-149 (2020).

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agricultural demand, HIL diversified its operations to include the production of agrochemicals and seeds. Subsequently, the company also started producing fertilizers.

In 1970, Eloor saw its first recorded massive fish kills. It had rained heavily that time, and in the morning, when people gathered, they saw hundreds of fishes floating in the river body.[5] Its belly was bloated. Many locals took this fish home and cooked it. Later, these people had severe health issues and were rushed to the hospital. By this time, they knew that something was off with the water. Unfortunately, they were true, it was found out that the industries were dumping untreated effluents in the river. During this time, a pH test was taken, and it was found that the water was acidic, 4.8 on the pH scale (from the surface water) and 6.9 on the pH scale (at the bottom).[6]

The next news that caught everyone's attention was in the year 1990. The Kuzhikandam Creek fire. This creek is one of the infamous tributaries of the Periyar River. It starts in Eloor, near the HIL company, and flows into the Periyar River, which then connects to Vembanad Lake (Kayal). The industries near this creek have been dumping pollutants for quite sometime now. As stated earlier, the main reason that the creek caught on fire was due to the presence of toxic substances toluene, a highly flammable liquid. This chemical doesn't dissolve in water. Excessive exposure to the said chemical can result in as much as brain injury, severe injury to organs, and death. The locals say that this chemical was released from the HIL industry.

III. GREENPEACE ORGANIZATION

Greenpeace is an independent organization committed to environmental conservation, It was founded in the year 1971.[7] There was a nuclear testing in Alaska by the U.S., so their initial aim was to oppose this. Later on, this organization gained momentum and became famous. Currently, they operate in more than 55 countries.

(A) 1999 Report

This group then got involved in the Eloor matter. They came to this place in the year 1999 and conducted an in-depth study. Their main study was related to the HIL company and how they discharged effluents to the Kuzhikandam creek and all the resulting impacts in that area. A total of six samples were collected from the vicinity of Kuzhikandam Creek and the HIL site. The

[5] C. Vijayakumar, How to Kill a River: A Handy Guide, in WHY DO PEOPLE DENY ENVIRONMENTAL 11 (2019).
[6] V.K. Pillai, Water Quality Studies in the Cochin Estuarine System Need for Continuous Monitoring (Paper Presented at the Seminar on Water Quality Status of Kerala, Cochin, June 27, 1990).
[7] R. Eyerman & A. Jamison, Environmental knowledge as an organizational weapon: the case of Greenpeace, 28 Soc. Sci. Info. 99 (1989).

reports are as follows: Sample 1 was collected upstream from the HIL plant itself. The results indicated that organic compounds, non-chlorinated aliphatic compounds, and phenolic compounds were present.[8] This compound is one of the components in crude oil and refined oil chemicals. They also found chemicals found in soaps, plastics, rubber, paint, etc., but since there was a presence of numerous chemicals, it was difficult for them to find the origin.

Another sample, which was collected downstream of HIL and Merchem Ltd, had the worst contamination of all.[9] The sample found heavy doses of organic compounds like DDT and several DDT metabolites, endosulfan, etc. The sediment and water samples collected from the vicinity of HIL shows the strong presence of pesticides. Greenpeace was of the opinion that this was from HIL, itself since they are known to produce pesticides. There was a presence of chlorine and sulfur compounds, which is a byproduct of pesticide plants. The issue here is that all these chemicals are toxic and even life-threatening when combined. These chemicals are also carcinogens, meaning they can cause cancer. The other sample taken from the wetlands near the HIL plant, had the highest level of dangerous chemicals, like DDT. A point to note here is that DDT is partially banned in India. DDT is not used in agriculture, but it is used for vector control (malaria), in permitted levels as specified in the Stockholm Convention. DDT is also exported from India to few countries that have a mosquito issue. The collected samples were also given for testing to check the presence of heavy metals. Greenpeace tested for 9 main metals, few of them being mercury, chromium, zinc, and cadmium. Again, two samples were taken, one from the creek and another from the wetland near HIL.

The creek's samples contained the highest metal content, It is more than the normal levels, and the element Cadmium was constantly seen in the samples.[10] The other sample had metal traces (more than average), here, mostly mercury stood out. But the other metals, cadmium and zinc, were above the permitted levels. An interesting point to note here is that these metals couldn't be linked with any factory, including HIL.

The main culprit in all these samples is pesticides and not metals. Metals cause problems, but not more than the pesticides like DDT and endosulfan, and we already learnt that the hard way, from the endosulfan tragedy that occurred in Kasargod, Kerala. The company, Plantation Corporation of Kerala, sprayed endosulfan in cashew cultivating land, to control the pests for

[8] GREENPEACE RESEARCH LABORATORIES, DEP'T OF BIOLOGICAL SCIS., UNIV. OF EXETER, TOXIC HOTSPOTS: A GREENPEACE INVESTIGATION OF HINDUSTAN INSECTICIDES LTD UDYOGMANDAL INDUSTRIAL ESTATE, KERALA 6 (Technical Note 06/99, 1999).
[9] Id.
[10] GREENPEACE, TOXIC HOTSPOTS, a 13.

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around 20 years, and this turned out to be a catastrophe.[11]

To conclude this report from Greenpeace. They were of the opinion that HIL was the culprit behind all this pollution. This report of 1999 is a warning for us that pollution is alarming and that we must stop the authorities from contaminating the environment and apply the polluters principle by holding the polluters responsible.

(B) 2002 report

Cut to 3 years later, Greenpeace came to Eloor again, at the same site that they had tested in 1999. Their report on pollution from Hindustan Insecticides Limited (HIL) and other Kerala factories is an elaborate follow-up to its 1999 investigation on persistent organic pollutants (POPs) and heavy metal contamination of the industries in Eloor. The investigation aimed to determine whether environmental conditions had improved and to trace the spatial distribution of contaminants by testing the creek water. The findings are as follows:

Just like in 1999, they collected six samples again, from critical locations around HIL and other factories, IT02067, Effluents from an outlet located in FACT upstream from HIL.[12]

IT02068: Sediment from Kuzhikandam creek, directly downstream of HIL's discharge points. IT02069: Sediment from Unthi Thodu, downstream of the Amman Thuruth bridge.IT02070: Sediment from Panachi Thodu, a low-flow creek ending into agricultural fields.

IT02074: Sediment from Unthi Thodu, near Undhipalam.

IT02066: Sediment from the confluence of Unthi Thodu and the Periyar River.

(C) Organic Contaminants

After a thorough analysis, they found the occurrence of chlorinated compounds, particularly the DDT isomers. The sediment sample IT02068, taken exactly downstream from HIL, contained 105 organic compounds, 66 of which could be reliably identified. Among these were 14 compounds concerning DDT, which proves that technical DDT is discharging.

Hexachlorocyclohexanes (HCHs), including one type of HCH, lindane, are probable by-products from the earlier production of pesticides. Chlorinated benzenes, hexachlorobutadiene, and low-chlorinated PCBs, which are confirmed compounds from organochlorines manufacturing.

[11] KM Sreekumar & K D Prathapan, An Evidence-based Inquiry into the Endosulfan Tragedy in Kasaragod, Kerala, 56 Econ. & Pol. Wkly. 45 (2021).
[12] R. STRINGER, I. LABUNSKA & K. BRIGDEN, POLLUTION FROM HINDUSTAN INSECTICIDES LTD. AND OTHER FACTORIES IN KERALA, INDIA: A FOLLOW-UP STUDY Technical Note 05/03 (Greenpeace Research Laboratories, Univ. of Exeter UK, 2003)

The downstream samples (IT02069, IT02074, IT02066) demonstrated a gradient in the direction of decreasing organic pollutants but still contained between 10 and 16 DDT-related compounds. Most notably, the sample at the confluence with the Periyar River, IT02066, contained DDT, indicating that contaminants had reached the river's shores. Panachi Thodu (IT02070) was the least contaminated, with only trace DDT metabolites, because stagnant water hinders the movement of pollutants.

Endosulfan, another HIL product, had been detected in 1999 but was not present in the 2002 samples, except for endosulfan ether, its metabolite, found in IT02074. Such infrequent discharges or losses due to degradation of earlier residues explain this situation. No information shows that HIL used HCHs as part of its official product list, suggesting historical contamination by past production cycles.

(D) Heavy Metal Contamination

Metal analysis indicated high levels of pollution, exceeding background levels by as much as 54 times: Mercury (Hg): Maximum in IT02074 (5.4 mg/kg) and IT02066 (2.0 mg/kg); associated with phosphate ore processing at FACT, Copper (Cu), zinc (Zn): Maximum levels in IT02074 (292 mg/kg Cu; 1,419 mg/kg Zn) and IT02066 (119 mg/kg Cu; 872 mg/kg Zn). Lead (Pb), Chromium (Cr), Cadmium (Cd): Concentrations were high in all samples except for IT02070, with IT02074 showing 356 mg/kg Pb and 467 mg/kg Cr.[13]

The profile of metal contamination matches the 1999 data from FACT's effluent channel (IT9011), suggesting that the primary source for such contamination has been phosphate fertilizer production. Irregular gradients (higher downstream) imply that this might have been a result of either intermittent discharges or inputs from several factories, including Merchem (zinc compounds) and Indian Rare Earths (rare earth processing).

(E) Toxicological and Ecological Implications

It reiterates in the report that persistent organochlorines and bio-accumulative metals pose a dual threat: DDT and metabolites, Responsible for endocrine disruptor roles, cancers, and transgenerational reproductive effects in humans. Mercury and lead cause damage to the brain, and cadmium and chromium cause cancer. Copper and zinc, under normal conditions, are essential but are otherwise damaging to ecosystems at elevated concentrations. With the entry into Periyar, contaminants threaten both the marine ecosystem and human health through their consumption of fish. As previously reported, Indian rivers now account for a greater share of

[13] GREENPEACE, POLLUTION FROM HINDUSTAN INSECTICIDES LTD., at 18.

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DDT and HCH loads in ocean water than Indian rivers, thus contributing to the already major global burden on POPs.

The above-mentioned study claims that there has been no improvement since 1999, even with the continuing DDT production at HIL and the discharge of metals by FACT. The main recommendations to be forwarded include the following: Elimination of DDT as per the Stockholm Convention, Strict regulation of industrial waste from FACT, Remediation of sediments polluted, and monitoring food chains. Thus, the report clearly puts India in context as a considerable global source of POPs and recommends action to be taken immediately to minimize the long-term effects on the environment and public health.

IV. STOCKHOLM CONVENTION ON PERSISTENT ORGANIC POLLUTANTS (POPS)

An international treaty that safeguards human beings and the environment from Persistent Organic Pollutants (POPs), adopted in 2001 and enacted in 2004.[14] These toxic chemicals linger in the environment for decades, bioaccumulate in living organisms, and are distributed through air and water, causing catastrophic damage to ecosystems and human life. POPs have been associated with tumors, reproductive abnormalities, immune system dysfunction, and developmental disorders in children.

The Convention initially targeted the "Dirty Dozen," which included insecticides like DDT, aldrin, etc., along with industrial byproducts such as dioxins. As of 2024, the Convention covers a total of 31 POPs, with a review process ongoing to bring in new substances, such as chlorpyrifos and flame retardants. Major provisions demand that member states discontinue production, take care of stockpiles, and employ best practices for minimizing unintentional releases (e.g., from waste incineration).

(A) India and Stockholm Convention

Stockholm Convention was ratified by India in the year 2006, aligning its domestic policies with international mandates while negotiating certain exemptions concerning its critical needs. In one such case, India was granted the exemption of the use of DDT for malaria vector control while banning its use for any agricultural activity. In India, HIL is the only company that makes DDT.

(B) Legislative and Regulatory Measures

Regulation of POPs Rules (2018): Under the Environment (Protection) Act, 1986, India prohibited the manufacture, trade, and import/export of 7 POPs, including hexabromobiphenyl

[14] Stockholm Convention on Persistent Organic Pollutants, art. 1, May 22, 2001.

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and pentachlorobenzene, which were already regulated internationally. Insecticides Act (1968): This act bans most POP pesticides listed under the Convention, such as aldrin and chlordane, although there are challenges in enforcing compliance. National Implementation Plan (NIP): Submitted in 2011, India's NIP describes the strategies to phase out POPs, promote alternatives, and manage contaminated sites. However, the NIP has not captured 16 newer POPs added to the Convention post-2011.

V. CHALLENGES IN IMPLEMENTATION

DDT Dilemma: Despite restrictions, DDT residues continue to exist in India's environment due to historical agricultural uses and ongoing vector control programs.[15] DDT has been evaluated in food chains and human breast milk, which raises concerns about long-term health impacts.

Industrial and E-Waste: Poor management of industrial waste and e-waste leads to unintentional releases of POPs, namely dioxins, from burning plastics.

Resistance to New Listings: India opposed the listing of chlorpyrifos (a widely used pesticide) and flame retardants such as dechlorane plus under the Convention, along the lines of economic impacts on agriculture and industry. This shows the tension between global environmental goals and local priorities.

Recent Developments: India ratified seven further POPs, including hexachlorobutadiene and hexabromocyclododecane, in 2020. The Cabinet has placed the decision in the hands of the Ministries of External Affairs, so that future ratifications may proceed with appropriate expediency. This is expected to strengthen India's access to Global Environment Facility (GEF) funding for POP management and updates under the NIP.

India has initiated various remediation projects in chemical hotspots such as Eloor in Kerala, where decades of pesticide production by Hindustan Insecticides Ltd have contaminated the DDT and endosulfan in the river Periyar. In similar manner, Vapi and Surat in Gujarat are facing challenges of legacy POPs in chemical manufacturing zones, thereby requiring site-specific cleanup strategies.

India's cooperation with the Stockholm Convention represents a balancing act between international commitments and socio-economic realities. Although such progressive policies as the POPs Rules and NIP show compliance, the gaps in enforcement, resistance to newer listings of POPs, and legacy contamination point to the further need for environmental governance with

[15] P. Mohapatra, A critical review of effectiveness of the regulations in India on designated persistent organic pollutants (POPs) in the Stockholm convention, in Persistent Organic Pollutants 181-200 (2021).

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strong institutional support and public awareness. The Convention continues to play a fundamental role in steering India toward sustainable chemical management.

(A) Interview

The voices of those who have inhabited and worked within Eloor's industrial landscape shed the most illuminating slants onto the region's multifaceted environmental crisis. To document firsthand accounts of pollution, its governance failures, and community resilience, semi-structured interviews were conducted with a former employee and a current employee of Fertilizers and Chemicals Travancore Ltd (FACT), the largest public-sector fertilizer company in Kerala. The identities of both interviewees have been anonymized for reasons of their own security. One an engineer, the other a manager, their tenure in FACT coincided with the critical years of Eloor's industrialization from 1969-2024. They provided extremely rare insight into the operational dynamics of government-owned industries, difficulties of local communities due to socio-economic dependencies, and an acute abrogation of environmental protective mechanisms.

In contextualizing the quantitative data gathered through environmental audits with these qualitative testimonies, this research sheds light on Eloor's crisis: how corporate indifference, governmental inertia, and community disempowerment collude to sustain ecological destruction. The witness testimonies have not only corroborated scientific outcomes but have highlighted the immediate necessity for establishing participatory governance that places the afflicted community at the center of decision-making and tactics for pollution alleviation.

Interview 1

1Q: Please share your experiences at FACT and observations about pollution in Eloor?

Ans) I worked as a manager at FACT, a government company, from 1969 till my retirement. During my stay, residents of Eloor were not informed of the pollutants introduced from adjacent factories most of the time. The obvious pollutant was sulfur dioxide (SO_2). Quite a few of them developed respiratory problems, including children below 13 years of age suffering from asthma. Even doctors advised me to evacuate because of my child's breathing problems.[16]

2Q: What were the major contributors to pollution in Eloor?

Ans) Though FACT established a waste treatment plant funded by the state at hundreds of crores for themselves and an independent pollution control board for the same purpose, all of these do not bind the smaller factories, which exhaust untreated effluents directly into water bodies. The

[16] Interview with Name Withheld by Kalyani Menon M (Mar. 15, 2025).

imbalance worsens the air quality of Eloor with polluting emissions from the Edayar industrial region (less than 50km away).

3Q: Any specific incident of environmental pollution that you remember?

Ans) Six months ago, there was a mass fish death. The whole stretch of water over 10 km had dead fish floating on it. The water went low in oxygen, and pH became unbalanced, thanks to the untreated waste. Despite all these protestations and compensation requests from the affected people, the Kerala Pollution Control Board hardly took any action. Such incidents usually peak during monsoon.

4Q: What part does Kuzhikandam Creek play in this pollution?

Ans) The Kuzhikandam Creek drains into the Periyar River with effluents untreated from HIL Company. Travancore Cochin Chemicals (TCC) is a government company, they make caustic soda, releases mercury in their production process.

5Q: What trends have been noted over the past years?

Ans) Yes, People have realized pollution affects health, and Pollution Control Boards have closed down several polluting factories. However, the water is still unsafe, skin rashes occur while swimming, and radioactive elements have also been detected.

6Q: Do factories still bypass regulations?

Ans) Absolutely, most factories dump untreated waste out of the public eye through hidden underwater pipes. Although some factories are closed, the illegal businesses continue.

7Q: What is the biggest lesson from this pollution crisis in Eloor?

Ans) A Responsible and dedicated provision of funds by the government is critical. Progress is possible, as shown by FACT's infrastructure. However, smaller factories need stricter monitoring. Public awareness has driven change, but the fight for clean air and water continues.

Interview 2

1Q: As a FACT contractor, how was living and working in Eloor for you?

Ans) Being a former resident and contractor engineer in FACT, I felt an unpredictably unusual physical discomfort after leaving Eloor, where I spent my days inured to the painful, polluted air. An unfortunate yet alarming trend in the late 90s was that asthma was affecting the children in these areas. Just six months ago, one such ecological catastrophe bore witness through yet

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another massive fish kill.[17]

2Q: How effective is the PCB in addressing these issues?

Ans) Though PCB has made some improvements during the present decades and did take actions like closing down violators, their efforts are not consistent. For instance, it issued closure notices to the bone powder factories that were polluting with malfunctioning biofilters, but it was only in 2024 that it further escalated the sanction by terminating the power supply through the KSEB.

3Q: Can you give us a description of pollution hotspots like Kuzhikandam Creek?

Ans) The Kuzhikandam Creek remains one of the most polluted locations where the odor of untreated effluents is strong. The site remains under threat as illegal dumping practices are still being exercised, despite protests, the same issue persists.

4Q: Can you recall which companies contribute the most to the pollution?

Ans) Hindustan Insecticides Ltd. (HIL), It reduced production by 90% with only 5-6 employees. Cochin Minerals and Rutile Ltd. (CMRL), ironically, this company has received several "Excellence Awards" from the PCB.

Bone Powder Factories: The industries operated illegally, discharging unfiltered smoke around 2-3 AM, making it difficult to breathe.

5Q: Is there some improvement visible today?

Ans) Yes, but there are still some hurdles left behind. PCB's actions, such as cutting electricity for violations, are a good sign of progress, while pollution spikes at night are also an indication of enforcement lapses, along with secret dumping.

6Q: Can you share any final comments on the pollution crisis at Eloor.

Ans) Incremental changes have happened due to awareness and protests, yet some major structural problems, such as corporate negligence and casual oversight, continue. Awards to polluters like CMRL illustrate the contradictions surrounding governance and stress the urgency for a transparent and accountable one.

VI. Conclusion

For decades, the Eloor locality has been subject to severe environmental degradation and catastrophic air and water pollution. The Periyar River, which, or rather, used to be the lifeline

[17] Interview with Name Withheld by Kalyani Menon M (Mar. 16, 2025).

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to many, now flows with nothing but toxic effluents from more than three hundred industries that include government-owned giants such as FACT, Hindustan Insecticides Limited (HIL), and Cochin Minerals and Rutile Limited (CMRL). Most of the industries are classified under "red" for the hazardous waste they inflict on the environment and have released untreated chemicals, exceeding permissible limits: sulfur dioxide (SO_2), mercury, arsenic, cadmium, and hexavalent chromium.

The human cost of this pollution is staggering. Residents suffer from respiratory illnesses, skin diseases, and congenital disorders. Fish kills leave the livelihood of local people devastated, oxygen depletion and inhospitable pH imbalances turn the river into a death trap for aquatic life. Directives from the NGT (National Green Tribunal) and protests by various organizations such as Periyar Malineekarana Virudha Samithi have fallen flat on the ground. Often, the PCB (Pollution Control Board) of Kerala has been accused of complicity with the industries in trivializing the levels of contamination and manipulating data to protect the polluters.

Eloor epitomizes the urgent need for environmental governance. International conventions like Stockholm build a framework within which regulation can function, their success, however, depends on local enforcement and local corporate accountability. But this local situation exemplifies how environmental and social justice meet the underprivileged in their community alone face the brunt of ecological harm without having a say in decision-making processes. There is a need for more integrative methods going forward, including advanced waste treatment technologies, empowerment at the grassroots level, and transparent communication between governments, industries, and global environmental bodies.

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VII. REFERENCES

- How a pristine Kerala Island transformed into world's top toxic spot, The News Minute (Jan. 28, 2020), https://www.thenewsminute.com/kerala/how-pristine-kerala-island-transformed-world-s-top-toxic-spot-116980 (last visited Apr. 20, 2025).
- How three major rivers in Kerala are struggling with pollution and the efforts to revive them, The Hindu, https://www.thehindu.com/life-and-style/how-three-major-rivers-in-kerala-are-struggling-with-pollution-and-the-efforts-to-revive-them/article67972541.ece (last visited Apr. 20, 2025).
- TNN, Eloor Residents Suffer from Severe Smog, Dust, and Odor Issues Amid Industrial Pollution, Times of India (Oct. 22, 2024), https://timesofindia.indiatimes.com/city/kochi/eloor-residents-suffer-from-severe-smog-dust-and-odor-issues-amid-industrial-pollution/articleshow/114475953.cms (last visited Apr. 20, 2025).
- Ground Report | Eloor: A gas chamber in God's Own Country?, The South First, https://thesouthfirst.com/kerala/ground-report-eloor-a-gas-chamber-in-gods-own-country/ (last visited Apr. 20, 2025).
- Associated Press, Kochi, Residents Try To Save A River In Kerala's Eloor, Officials Deny Problems, Outlook India (Apr. 11, 2023), https://www.outlookindia.com/national/residents-try-to-save-a-river-in-kerala-s-eloor-officials-deny-problems-news-277499 (last visited Apr. 20, 2025).
- Kiran Narayanan, Eloor residents cry foul as pollution in Periyar hits an all-time high, New Indian Express (July 12, 2019). https://www.newindianexpress.com/states/kerala/2019/Jul/12/eloor-residents-cry-foul-as-pollution-in-periyar-hits-an-all-time-high-2002798.html (last visited Apr. 23, 2025).

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