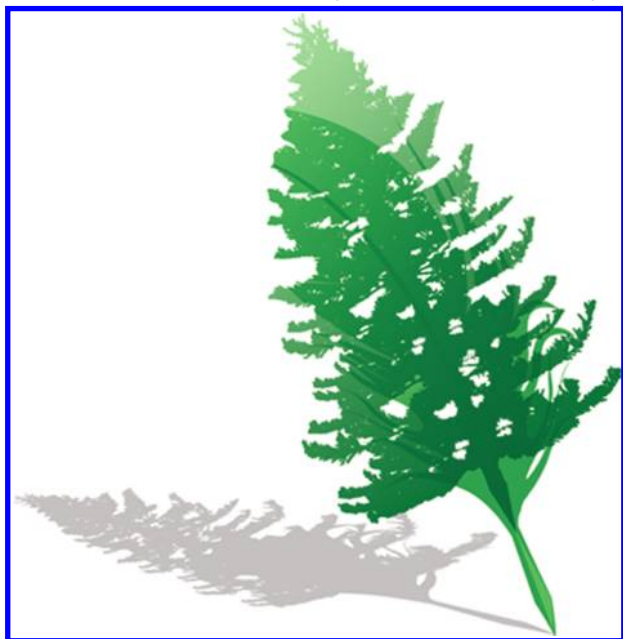


India's Pollution Nightmare: Can It Be Tackled?

Govindasamy Agoramoorthy*

Gujarat Institute of Desert Ecology, Bhuj, India and College of Environmental Sciences, Tajen University, Yanpu, Pingtung, Taiwan



The earth's expanding human population and industrial growth have been known to cause serious environmental disasters. At the end of 2011, India's population reached 1.21 billion and its economy is growing at 8.5%, the fastest after China. Due to the population pressure, India pushes ahead with aggressive industrial development. Consequently, thousands of industrial clusters nationwide produce enormous amounts of untreated toxic waste that often end up in rivers, lakes, forests, and landfills.¹ Even though India has sufficient environmental laws, weak enforcement and the lack of funds and manpower are most often the stumbling blocks for the pollution control boards. In this dismal setting, can India tackle the mushrooming toxic pollution? A closer look at the crisis facing India's environment may shed some answers.

India—the land of spirituality and philosophy—is also the land of rivers as it harbors 14 large, 44 medium, and 55 minor rivers. From the Ganges in the north to the Cauvery in the south, most devout Hindu pilgrims consider the waterways sacred since the religious texts hold that Ganges purifies the bather of sins—merely catching the sight of Narmada is said to do the same. However, India's rivers are increasingly becoming the dump sites for domestic, industrial, and agricultural wastes. For example, the river Hugli that breaks off from the Ganges and then empties into Bay of Bengal has high levels of aldrin—an organochlorine insecticide. In fact, India banned this toxic pesticide in 2003. But I wonder why it is sold widely in the market? A recent study has shown a concentration of 0.9 $\mu\text{g/L}$ of aldrin in Hugli, which is 30 times over the normal standard. This affects over 50 000 people with no health insurance; they all live along the river banks.² Yet they have to face various

types of cancer, neurological damage, Parkinson's disease, birth defects, respiratory illness, and untimely death.

According to the World Health Organization, the most polluted Indian city is Ludhiana followed by Kanpur, Delhi, Lucknow, and Indore.³ Due to the enforcement failure of the Punjab state's pollution control board to maintain green quality, Ludhiana (population 1.7 million) became the worst polluted. Four major sources, namely vehicles, thermal power plants, industries, and refineries, largely contribute to the increase in pollution. Even eco-friendly compressed natural gas produces highest rates of hazardous carbonyl emissions.⁴ India's air pollution has been blamed for its weak monsoons since the 1950s. The erratic weather patterns have created more mosquito-borne diseases and to avert it people burn mosquito repellent coils at homes. But they are not aware of the fact that the hazardous smoke emitted from a single mosquito repellent coil is equivalent to the smoke of 100 cigarettes!

To make matters worse, millions of tanneries and make-shift lead smelting camps also pump up toxic gases. Poverty-stricken people collect secondary lead from used batteries and when they smelt it in the open, large amounts of toxic dust and slag are released into the environment, affecting thousands of people. Analysis of water samples collected near the smelters has shown 430 ppb lead, which is 8 times over the tolerable limit.² Furthermore, India and its neighbor Pakistan have the highest number of tanneries in South Asia so millions are instantly exposed to chromium contamination. For example, a small town located along the Ganges supports 400 informal tanneries without treatment plants and they ultimately contaminate the river (irrigation/drinking) and land. A soil sample from that town has shown 6227.8 ppm hexavalent chromium.²

Sadly, on June 14, 2011, when India signed a billion dollar agreement with the World Bank to cleanup the river Ganges, a Hindu monk who was on hunger strike for weeks to stop illegal mining on the banks of the holy river died.⁵ But the question is why clean just one river when pollution chokes all rivers across India? When Japan financed a cleanup project for the river Yamuna in 1993, it failed miserably. If India's politicians and policymakers are serious about eradicating pollution, it is critical to clean up all rivers starting from Kashmir in the northern frontier to the southern tip of Kanyakumari. All the state governments must enforce use of pollution treatment plants along rivers to process domestic, industrial, and agricultural toxic wastes. In addition, people should be educated on the dangers of polluted rivers, tanneries, and lead recycling. The already-contaminated soil from industrial areas should be removed and buried with nonpolluted topsoil. Illegal tanneries, lead recycling, and riverside industries without treatment plants must be closed while creating alternative economic oppor-

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tunities for the affected. The Gujarat state has moved 60 000 tons of waste sludge from a tannery to a secure location and the remaining soil was treated using vermin-culture, and this model can be replicated across India.²

The government must put its money where its mouth is by allocating a budget of USD 50 billion for the next three years. Given the fact that the government alone cannot solve the pollution predicament, it is essential to reform policy so that a useful trisector partnership involving government, NGOs, and industries could be established to ease the crisis. Qualified NGOs with environmental science and technology know-how can be incorporated in the partnership to identify polluting industries, raise funds, clean up the environment, and bring awareness at local levels via outreach services before it is too late. Without it, India cannot escape from its enduring environmental nightmare.

■ AUTHOR INFORMATION

Corresponding Author

*Phone: +886-916752019; e-mail: agoram@mail.tajen.edu.tw.

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