Theme 6: Marine Pollution

Estuarine Pollution - A Status Appraisal

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The rapidly developing states and coastal cities are the major victims of pollution. Many industrial pockets have developed near riverside townships. Waste water from a variety of industries and untreated sewage from townships drain into the rivers and estuaries. Therefore, these systems act as large-scale collectors and carriers of waste waters from all kinds of sources within their respective drainage basin and off load the pollutants into the sea.

The long 7000 km coastline of the Indian subcontinent is interrupted by a number of rivers and estuaries. The Indian rivers - major, medium and minor - together drain out 1645 cu. kms of runoff to the surrounding seas every year. Of this, Bay of Bengal receives 1300 cu.kms. while Arabian Sea receives only 345 cu.kms. Pollution of rivers first affects the chemical quality and then systematically destroys the community, disturbing the delicate food-web. The diverse uses of rivers are impaired due to pollution with serious implications on industry itself.

In India there are about 2921 urban centres and 576000 villages. Of the urban centres, 142 are termed as Class I (population 1,00,000 or more). Among these only 8 cities have complete sewerage and sewage treatment facilities. The rest are partially sewered or not sewered at all. The country is fast developing both agriculturally and industrially. These activities have resulted in marine water pollution problems with serious implications for the health of the nation. Some examples of riverine and estuarine pollution in India are as follows:

1. The Yamuna river, while passing through Delhi, Mathura and Agra, receives more than one million kilolitres per day of domestic and industrial effluents. In the entire Gangetic Plain, it is the river Hooghly that is subject to heavy pollution load from the industrialised and populous cities of Calcutta and Howrah. The Ganga Action Plan - a major programme for purification of the holy water of Ganges launched by Government of India on a mammoth scale (since 1985) has created some awareness among masses about river pollution in India.

2. The Periyar which is a major river feeding the Cochin backwaters receives large quantities of industrial effluents from a variety of chemical factories situated upstream.

3. The Thane Creek in Bombay which receives about 56 million litres a day of industrial effluents is another site for mercury contamination.

4. The Rushikulya river near Berhampur in Orissa is similarly exposed to mercury contamination from mercury cell chloro alkali plant since 1967. This has resulted in fish poisoning and elevated mercury concentration in water and sediments.

5. Information regarding the pollutant load entering Tapti, Narmada and Mahi is fragmentary. But it is observed that various industries located along these rivers are responsible for the deterioration of their water quality.

6. A small river Kalu, 50 km north of Bombay, flowing through the industrial towns of
Ambarnath, Ulhasnagar and Kalyan, has been a cesspool of mercury pollution. Ambravati village is the main victim of mercury poisoning.

There is an urgent need to take measures against the pollution of rivers and estuaries, if we want to reduce the adverse impact on the oceans.

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**An Endangered Marine Ecosystem: Lakshadweep**

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The Lakshadweep archipelago comprise 36 coral atolls, reefs and submerged banks in the Arabian Sea, 300-400 km off the west coast of India. This ecosystem is known to harbour a large number of species and its high diversity is comparable to tropical rain forests. A series of field surveys were conducted in the Lakshadweep in 1993-1995 to study the corals and their associated organisms. Some of these organisms have bioactive substances which are yet to be screened and identified. These coral reefs are threatened directly and indirectly due to rapidly escalating human developmental activities. The major biotic component of the ecosystem, the corals, are being damaged due to blasting and dredging activities in the lagoons besides being used for construction. Unintentional damage to corals is caused by anchor damage, reef walking and collection of octopuses, gastropods and tuna live bait. Coral cover in lagoons of inhabited islands has declined and the shoreline affected by erosion. Unavailability of sanitation and waste disposal facilities has led to unhygienic conditions on the coralline beaches.

The major living resource is the tuna, *Katsuwonus pelamis*, which forms the major fishery but is underfished. The lure of foreign exchange led to the short-lived beche-de-mer industry due to overexploitation of holothurians.

Other potential bioresources likely to be affected for similar reasons are the ornamental fishes and sea urchins. Though now legally protected, corals, holothurians, turtles and dolphins have been exploited. There is however no surveillance

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to strictly enforce the ban. For the effective management of the ecosystem, corals and associated organisms need to be periodically monitored to assess their status.

There is an urgent need to conserve this species-rich ecosystem by zoning, demarcating areas for different use. Socio-economic aspects of the islanders and alternatives / compensation for lost rights will have to be considered to regulate proper use of space and resources.