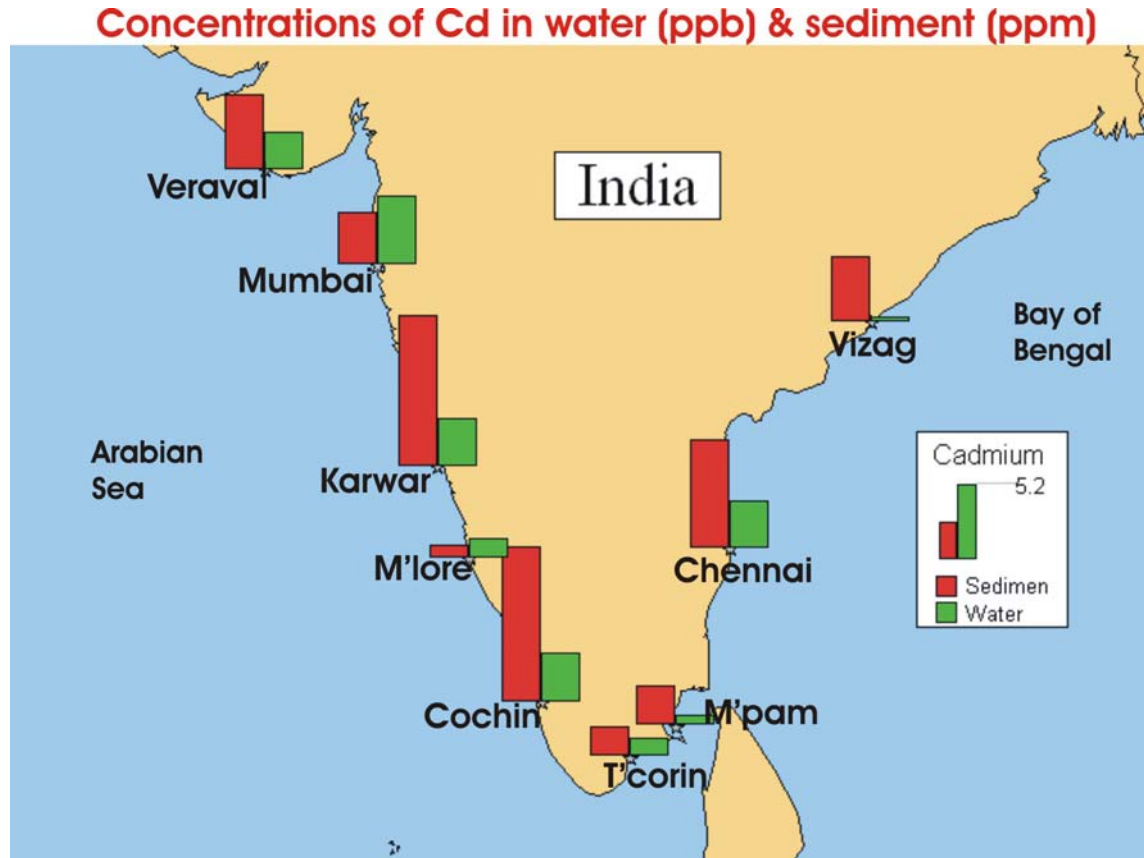


## **PROJECT TITLE: Monitoring environmental contaminants from coastal waters with reference to bioaccumulation and biomagnification in fishes**

The main objective of the project is to assess the environmental impact of anthropogenic activities along the coastal waters of India and to monitor levels of heavy metals and its bioaccumulation in biota. The important observations are:

- Trace metal concentrations in sediment samples collected from estuarine and inshore region off Cochin, were within the permissible limits. Concentrations of Cd was relatively high in sediment samples collected from the hotspots in Edayar, Varapuzha, Chitrapuzha and Champakkara in the Vembanad Lake. Concentration of Zn was also relatively high in sediment of Edayar.
- Environmental monitoring in the inshore waters off Mangalore receiving the effluent from industries like the fertilizer plant, iron ore processing plant, dyes and pigment processing plant and an oil refinery were carried out. Generally, the observed parameters were within the permissible limits.
- Environmental monitoring in the Tuticorin Bay which receives the effluents from the M/s. Tuticorin Thermal Power Plant (TTPP) and in the lagoon which receives the effluents from M/s. Dharangadhare Chemical Works Ltd., (DCW) and M/s. Plastic Resins and Chemical Ltd., were continuously monitored. Relatively high concentrations of lead were observed in seawater, sediment and bivalves collected from these hotspots in Tuticorin.
- Cadmium concentrations were relatively high in cephalopod samples when compared to fish samples collected from Veraval. Generally, the observed metal concentrations in the samples were within the safe limits.
- Seawater and sediment samples collected from locations close to industrialized areas in Mumbai, Cochin, Chennai, Tuticorin and Veraval were relatively contaminated with toxic trace metals such as cadmium, lead, zinc and copper (Fig). Toxic metal concentrations in sediment were 1,700 - 4,500 times higher when compared to the concentrations observed in seawater.
- Toxic metal concentrations in most of the commercially important fishes were within the safe limits. Toxic metal bioaccumulation in fish liver tissue was nearly 1.4 – 3.6 times higher when compared to the muscle tissue.

- In case of cadmium, highest Bioconcentration factors (BCFs) of 4,060 was observed in cephalopods while for Cu highest value of 157 was observed in prawn. Highest BCF of 4,934 for Pb was observed in cephalopods.



Cadmium concentrations detected in water and sediment samples collected from the coastal waters of India.