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Dynamics of metal ions in suspended sediments in Hugli estuary, India and its importance towards sustainable monitoring program

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Metal contamination in a river has often been assessed based on total metal ion concentrations without relating them with the amount of suspended solids. This approach masks lot of important dynamics of metal ions in water. This is first time in India, a study has been undertaken to present how the level of metal ions in river water is influenced by suspended solids in response to spatial and seasonal conditions in Hugli estuary, India and to focus necessity of harmonizing science and policy. This study presented extent of metal pollution and distribution pattern over the stations, seasons, tides and depth. Major fraction of metal ions is associated with suspended sediments and discharges into the largest alluvial fan, Bengal fan, in the world. Enrichment factors indicated that major source of metal contamination is large influx of sediment due to strong natural activities and moderate anthropogenic activities over the years. Strong seasonal change, variable tidal energy level and irregular estuarine geometry play crucial role in maintaining metal concentrations in water column. This study established the importance of evaluating metallic composition of TSS to address the environmental issues of the estuarine system related to metal contamination and better understanding on the elemental composition of estuarine suspended sediment together with indication of associated fluxes. The monitoring of TSS and its composition would be less costly and more easily measured surrogate to assess metal contamination in river. Findings of this study raise important questions regarding the need for new paradigm for environmental monitoring and assessment towards sustainable water quality management.

Biography

D P Mukherjee has completed his PhD in Environment Pollution and its Control from Burdwan University. Then he joined Central Pollution Control Board (Central Regulatory Authority), India in 1983 as a Scientist. He has developed his expertise in monitoring of water and air, environmental laboratory management, implementation of QA/QC, implementation of cleaner technology as well as validation and interpretation of monitoring data using different statistical tools. He is the guide of MPhill and PhD students. Recently, he took volunteer retirement from CPCB to carry out research work independently related to formulation of policy for framing prudent water/air quality management practice. He has published more than 20 papers in reputed journals and has been serving as Technical advisor to Envirotech Instrument Pvt. Ltd., New Delhi.

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