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Distribution of Contaminants in the NY/NJ Harbor Area*

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The NY/NJ Harbor is part of a complex estuarine system that includes the Passaic, Hackensack Rivers and Newark Bay. Sediments in this region are widely contaminated by inorganic and organic pollutants that include heavy metals, PAHs, PCBs, dioxins, and furans that have deleterious environmental effects. For example, sediment cores collected in the lower Hudson River estuary for heavy metal analysis show that anthropogenic metal contaminants are present mostly in the marginal areas at depths of >10 cm. Sediment samples taken from the Newark Bay and Passaic River show high concentrations of PAHs, which could be associated with historical discharges or accidental spills from industrial facilities. The “hot spots” found in this area suggest that the urban source input such as municipal sewage and wastewater are the important sources of these contaminants to the harbor. A trend of Ag concentration with ²¹⁰Pb activity in the lower Hudson River estuary suggests a history of contamination with time. In order to spatially characterize contamination from point and non point sources, we use the visualization tool such as Geographic Information Systems (GIS), to map both surface sediment contaminants and integrated core sediments, producing a predictive model that enhances the validating and characterization of the fate and transport of the pollutants. Results are further analyzed, to: 1) determine the nature and extent of pollution in the system, 2) characterize various pollutants and identifying their probable source, 3) determine highly concentrated “hot spots” of specific contaminants, and 4) assessing their potential environmental impact.

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