

Cycling of trace metal and chlorinated hydrocarbon wastes in the Southern California Bight

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ABSTRACT

Trace metals and chlorinated hydrocarbons are two important types of wastes released to the marine ecosystem off southern California. Municipal wastewater discharge is the dominant route of entry for most of the metals investigated. However, the use of vessel antifouling paints, primers, and corrosion-preventing anodes apparently can cause order of magnitude increases in metals levels for both harbor waters and mussels. Invertebrates living near highly contaminated sediments around a major coastal municipal outfall concentrate certain metals up to ten times natural levels; in contrast, little abnormal uptake was measured in several species of fish from this region. In the past, municipal wastewater has also been the dominant source of chlorinated hydrocarbons to the Bight; however, between 1972 and 1975 these emissions decreased by an order of magnitude, and dry aerial fallout is now an equivalent input route. Despite these reductions, DDT and PCB levels in the highly-contaminated sediments and flatfish from the largest outfall zone decreased by only about a factor of 1.5 during the same period. This indicates that release of these synthetic organics to nearshore marine sediments can lead to persistent contamination of coastal ecosystems. Harbor mussels collected near sites of vessel activity in 1974 and 1977 were also contaminated by PCB's, containing up to twenty times the concentration found in coastal specimens.

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