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Characterization of sediment toxicity in Newport Bay

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ABSTRACT

Studies of the Newport Bay have identified extensive sediment toxicity and chemical contamination, but the cause of the toxicity has not been determined. The objective of this study was to use various toxicity identification evaluation (TIE) methods to characterize the cause of sediment toxicity. The TIEs were conducted on samples of whole sediment and pore water using amphipod survival and sea urchin fertilization toxicity tests. Tests were conducted using sediment from two locations: a sediment deposition basin in the upper bay, which is influenced by urban runoff; and Rhine Channel in the lower bay, which is surrounded by marina, residential, and industrial uses. The TIE results indicate that multiple sources of toxicity are present in Newport Bay. Toxicity in sediments from the upper bay is associated primarily with unidentified organic compounds, possibly pesticides in current domestic or agricultural use. Sediment toxicity in the Rhine Channel appears to be caused by multiple factors, including metals. The interpretation of the data from this study was limited by variable results between test species and the relative lack of contaminantspecific TIE methods for whole sediments. Development and validation of additional whole-sediment TIE methods is needed in order to facilitate the use of TIEs for guiding environmental management actions.

Full Text

ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/AnnualReports/2003_04AnnualReport/ar13-greenstein_139-148.pdf