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Distribution and mass inventory of total dichlorodiphenyldichloroethylene in the water column of the Southern California Bight

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ABSTRACT

A large-scale survey on the area and depth stratified distribution of dichlorodiphenyltrichloroethane (DDT, mainly *p,p'*- and *o,p'*- dichlorodiphenyldichloroethylene (DDE)) contamination in the water column of the Southern California Bight (SCB) was conducted in 2003-2004 using a solid-phase microextraction-based sampling technique. Dissolved phase DDEs were clearly widespread, with the central SCB containing the highest levels, and the Palos Verdes Shelf sediments have remained the dominant source of DDT compounds to the SCB. The *p,p'*- and *o,p'*-DDE concentrations ranged from <0.073 to 2.6 ng/L and from <0.043 to 0.26 ng/L, respectively, clearly exhibiting elevated with respect to measured values from across the globe. DDEs were hypothesized to have been transported from the historically contaminated zone on the Palos Verdes Shelf to other areas via a repeated process of contaminated sediment resuspension/deposition and short-range advection. Total mass inventories were estimated at 14 and 0.86 kg for *p,p'*- and *o,p'*-DDE, respectively, for the sampled area, resulting in *p,p'*- and *o,p'*-DDE mass inventories for the entire SCB of 230 and 14 kg, respectively. Furthermore, total fluxes of *p,p'*-DDE were estimated to be in the range of 0.8 to 2.3 metric tons per year. These results suggest that the SCB has been and continues to be a significant source of DDT contamination to the global oceans.

Full Text

ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/AnnualReports/2005_06AnnualReport/AR0506_107-116.pdf