

**THE SOUTHERN CALIFORNIA BIGHT REGIONAL MONITORING PROGRAM:
EXTENDING LOCAL MONITORING TO UNDERSTAND LARGE SCALE SOURCES,
FATES AND EFFECTS**

Joseph R. Gully
Los Angeles County Sanitation Districts

Kenneth Schiff
Southern California Coastal Water Research Project

Brian Edwards
US Geological Survey

Los Angeles County Sanitation District
1955 Workman Mill Rd
Whittier, CA 90601

ABSTRACT

Cumulatively, more than 1.5 billion gallons of treated wastewater are discharged to the coastal southern California Bight (SCB) each year. More than 10 times this amount is discharged from urban watersheds of the SCB in a typical wet season. However, fundamental questions exist regarding how much of the pollutants associated with these discharges remain in the SCB or are lost through transport to the open sea. To address these questions, regionwide surveys of sediment, water column, and fish tissues were conducted to determine: 1) what is the total mass of historically discharged contaminants that still reside in the SCB? and 2) what is the relative distribution of these contaminants among the different accumulation compartments in the SCB? As an example, we use the sum of the *o,p'*- and *p,p'*- isomers of DDT and its degradation products DDE and DDD in this presentation. The total mass of DDTs residing in the SCB was estimated from analysis of more than 450 sediment samples (including radio-dated core samples), more than 1000 tissue samples (including benthic and pelagic fishes), and more than 100 water column samples (using solid phase microextraction or SPME). Approximately 200 metric tons of total DDT was estimated to currently reside in the SCB, roughly 10% of what was known to be discharged since 1970 when records were first kept. The vast majority of total DDT mass was found in sediment. The highest total DDT concentrations were found near the locations of greatest discharge on the Palos Verdes Shelf, but the greatest mass occurred in the deep ocean basins where contaminated sediments are sequestered from advection to the open ocean. Less than one percent of the total DDT was found in water or tissue compartments. Although only a small fraction of the total DDT was found in the biological compartment, nearly every fish contained detectable levels of total DDT and nearly 100% of some fish populations exceeded wildlife risk thresholds. Similarly, nearly a third of the water column was estimated to exceed State water quality criteria.

KEYWORDS

Southern California, DDT, bioaccumulation