

THE SANTA BARBARA OIL SPILL: DOSAGE OF CRUDE OIL ON SHORE AND INITIAL EFFECTS ON INTERTIDAL ORGANISMS

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ABSTRACT

The quantity of oil which came ashore during the early stages of the Santa Barbara oil spill has been estimated from intertidal oil samples and aerial photographs. These methods indicate that 4,500 metric tons of crude oil was deposited on nearly 90 kilometers of coast by February 8, 1969, 11 days after the spill began. Dosages in the intertidal zone varied from 2.7 to 118.1 metric tons per kilometer. According to these estimates, the flow rate at the well was around 5,000 barrels (726 metric tons) per day. Oil continued to leak from the area at a reduced rate up to the time of this report, twenty months later. The discussion of dosage and distribution deals only with the initial pollution.

To determine the initial effects of the oil on intertidal organisms, 10 intertidal stations were surveyed from early February to June, 1969. The stations ranged in location from El Capitan State Beach north of Santa Barbara to Leo Carrillo State Beach near the Los Angeles County line. Based on pre-oil spill surveys at these same stations, the greatest negative biological change at a sample station after the spill

was the loss of 16 plant species. However, losses in species were correlated in most cases with sand movement, and may have been related to the severe storms which occurred before and during the oil spill. Although gross species changes were not correlated with oil dosage, severe damage occurred in intertidal surf grass and barnacle populations as a result of the oil pollution. Potential long term biological effects of the continuing pollution are discussed.

A full account of methods and results has appeared in the following three publications, which are available as indicated. *Santa Barbara Oil Pollution, 1969. A Study of the Biological Effects of the Oil Spill* which occurred at Santa Barbara, California in 1969. Water Pollution Control Research Series 15080 DZR 11/70., published by Federal Water Quality Administration, Department of the Interior, October, 1970; Foster, Michael, A. C. Charters and M. Neushul. 1971. The Santa Barbara Oil Spill I. Initial Quantities and Distribution of Pollutant Crude Oil. *Environ. Pollut.*, 2(2):97-113 (available from authors) and Foster, Michael, M. Neushul and R. Zingman. 1971. The Santa Barbara Oil Spill II. Initial Effects on Intertidal and Kelp Bed Organisms. *Environ. Pollut.*, 2(2):115-134. (available from authors).

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