

ARSENIC, ANTIMONY, AND SELENIUM IN OUTFALL SEDIMENTS

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Arsenic, antimony, and selenium are three potentially toxic elements that have received relatively little attention to date in wastewater investigations. Therefore, in a collaborative effort with Dr. V. P. Quinn and his colleagues at the University of California in Irvine, utilizing neutron activation analysis, we conducted a preliminary survey of the benthic distribution of these materials at the major discharge site off Palos Verdes.

We first checked the vertical distributions of these elemental concentrations in the bottom sediments by analyzing box core samples taken in July 1971 from a station to the northwest of the outfall diffusers. The concentrations in the upper (most recently deposited) layers of the core were approximately 10 times higher than those in the bottom layers, which presumably represent background levels ([Figure 1](#)).

Our second survey was aimed at determining the horizontal distribution of the three materials in the surface sediments (0 to 2 cm). For these analyses, we used box cores taken along the 100 m depth contour at distances of 0 to 12 km northwest of the outfall system. Preliminary results of this survey, which are shown in [Figure 2](#), revealed that concentrations of arsenic and antimony remain relatively high, even at some distance from the outfalls: At 12 km, arsenic concentrations were still one fourth the values at the station closest to the outfalls, and antimony levels were still onehalf the outfall values. (Selenium values are yet to be determined.)

One of the box cores in the second survey, which was made in 1973, was taken from the same station used in the initial 1971 program. In comparing the two cores, we found no significant changes with time in the arsenic or antimony concentrations.

We plan to extend such investigations to other sectors of the ecosystem, including other discharge sites. The results of this study will be reported in detail in a forthcoming technical memorandum, as well as in a scientific paper to be presented later in the year.

FIGURES

Figure 1.

Concentrations of arsenic, antimony, and selenium in a box core collected northwest of the Whites Point outfall system, July 1971.

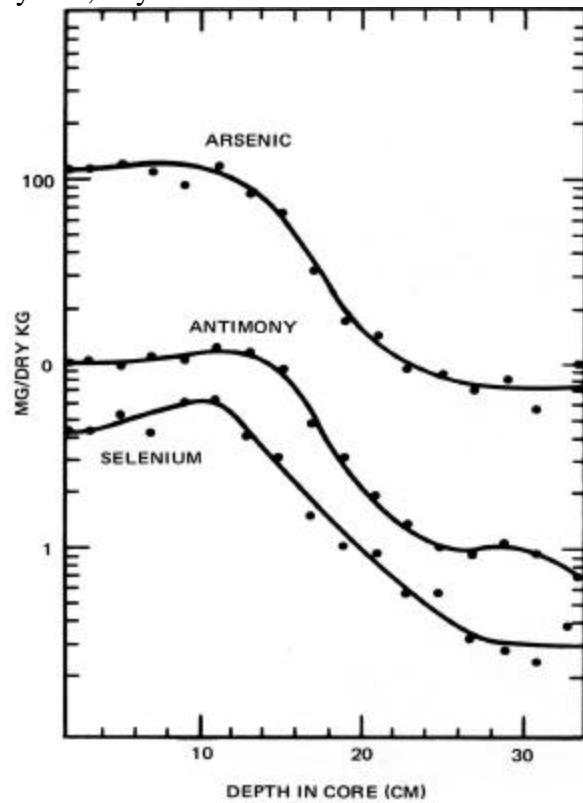


Figure 2.

Concentrations of arsenic and antimony in the surface sediments of box cores collected along the 100 m depth contour northwest of the Whites Point outfall system, August 1973.

