PARTICULATE ORGANIC MATTER IN KANEOHE BAY, OAHU, HAWAII

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ABSTRACT

During the 3-month period from March through May 1970, a study of particulate organic matter was undertaken in Kaneohe Bay. The Bay was divided into two basins on the basis of circulation and topography and eight stations along the length of the Bay were sampled at 5-meter intervals. Particulate organic carbon concentrations varied temporally, ranging at the sewer outfall from a high of 686 µg/l to a low of 121 µg/l. Concentrations were constant with depth and decreased with increasing distance from the sewer outfall. Particulate nitrogen displayed the same trends as particulate organic carbon, ranging in concentration from 117 µg/l to 27 µg/l at the outfall.

Total organic carbon concentrations showed similar trends, decreasing from 1.6 to 0.7 mg C/l, except at Station 2. At Station 2, high surface productivity, probably caused by increased dissolved organic concentrations, resulted in a total organic carbon concentration of 2.6 mg/l.

A carbon budget was calculated for the southern basin. Circulation and primary production were determined to be important factors in the high organic carbon concentrations in the Bay; sewage discharge and runoff were secondary sources. Sewage discharge is indirectly an important source of Bay carbon as the effluent's high nutrient content results in high productivity.

The residence time for organic carbon in the southern basin was calculated to be 5 days.