

THE EFFECT OF DUMPING SUSPENDED SOLIDS AT SEA ON CHLOROPHYLL A CONCENTRATIONS AND PRIMARY PRODUCTION VALUES

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ABSTRACT

The hydrodynamics of a plume of suspended solids, produced from the offshore dredging operations in Bang Tao region, is related to patterns of tidal flow. This relationship exists up to 5 km downstream of the dumping. The distribution of suspended solids in the water column is stratified into three layers, a high concentration of solids being found in the upper 5 m of water, and in the layer above the substrate, with a lower concentration of solids in the layer between. The presence of suspended solids in the water column reduces the transmittance of light energy at depth. The finer particles absorb light and also cause considerable scattering. Light attenuation occurs at all wavelengths but is critical in the shorter wavelength range (400-550 nm) which containing high energy used by photosynthetic organisms. This effect leads to a reduction in chlorophyll a concentration and hence a decrease in primary production particularly in the light sensitive nanophytoplankton (size < 30 nm) fraction. The macrophytoplankton (size > 30 nm) fraction does not respond as rapidly as nanophytoplankton does.