

Vertical distribution of heavy metals and enrichment in the South China Sea sediment cores.

ABSTRACT

Forty seven sediment cores recovered from the South China Sea coasts along the east coast of Peninsular Malaysia were analysed for As, Cd, Cr, Cu, Hg, Ni, Pb and Zn using instrumental neutron activation analysis. The results indicate a homogeneous distribution except for As and Pb in all stations. Assessment of heavy metal pollution in marine sediments requires knowledge of pre-anthropogenic metal concentrations to act as a reference against which measured values can be compared. Primitive values for the cored sediments were determined from shale average metal. Various methods for calculating metal enrichment and contamination factors are reviewed in detail and a modified and more robust version of the procedure for calculating the degree of contamination is proposed. The revised procedure allows the incorporation of a flexible range of pollutants, including various organic species, and the degree of contamination is expressed as an average ratio rather than an absolute summation number. Comparative data for normalized enrichment factors and the modified degree of contamination show that the South China Sea sediments are in uncontaminated to moderately contaminated level of heavy metal contamination. Compared to obtained values the Kelantan and Pahang big rivers mouth show higher enrichment averaged across other sites.

Keyword: Heavy metals; Enrichment factor; Degree of contamination, Sediment cores pollution; South China Sea; Penisular Malaysia.