

Spatial distribution and anthropogenic assessment of heavy metals in the surface sediments of Klang River.

ABSTRACT

The study was conducted to quantify the concentration and distribution of metals (Cd, Zn, Ni, Cu, Pb, and Fe) in the surface sediments and to assess the status of metal contaminations in the Klang River, Malaysia. The concentrations of metals ($\mu\text{g/g}$, Fe%, dry weight) were as follows: 0.57-2.19 $\mu\text{g/g}$ Cd; 31.89-272.33 $\mu\text{g/g}$ Zn; 5.96-24.47 $\mu\text{g/g}$ Ni; 10.57-52.87 $\mu\text{g/g}$ Cu; 24.23-64.11 $\mu\text{g/g}$ Pb and 1.56%-3.03% Fe. Sequential extraction technique (SET) showed that mean anthropogenic portions of metals were in the order of Zn (60.22%), Cu (56.01%), Cd (45.63%), Ni (42.08%), Pb (33.22%) and Fe (10.26%). The highest concentrations of metals ($p < 0.05$) were found in the stations located close to industrial parks and highly populated areas. The results of the present study showed that the effectiveness of total organic carbon (TOC) contents in controlling the distribution and enrichment of metals was a more important factor compared to grain size. The study also indicated that the control of metals pollution from direct influx of domestic wastes and insufficiently treated industrial wastes in the Klang River was an important and desirable way to minimize the detrimental effects of metals.

Keyword: Klang River; Heavy metals.