

Assessment of surface water quality in the Malaysian coastal waters by using multivariate analyses.

Abstract

Coastal water samples were collected from 20 sampling sites in the southern part of Peninsular Malaysia. Seven physico-chemical parameters were measured directly in-situ while water samples were collected and analysed for 6 dissolved trace metal concentrations. The surface water (0-20 cm) physico-chemical parameters including temperature, salinity, dissolved oxygen (DO), pH, total dissolved solids (TDS), specific conductance (SpC) and turbidity while the dissolved trace metals were Cd, Cu, Fe, Ni, Pb and Zn. The ranges for the physico-chemical parameters were 28.07-35.6°C for temperature, 0.18-32.42 ppt for salinity, 2.20-12.03 mg/L for DO, 5.50-8.53 for pH, 0.24-31.65 mg/L for TDS, 368-49452 μ /cm for SpC and 0-262 NTU for turbidity while the dissolved metals (mg/L) were 0.013-0.147 for Cd, 0.024-0.143 for Cu, 0.266-2.873 for Fe, 0.027-0.651 for Ni, 0.018-0.377 for Pb and 0.032-0.099 for Zn. Based on multivariate analysis (including correlation, cluster and principal component analyses), the polluted sites were found at Kg. Pasir Puteh and Tg. Kupang while Ni and Pb were identified as two major dissolved metals of high variation in the coastal waters. Therefore, water quality monitoring and control of release of untreated anthropogenic wastes into rivers and coastal waters are strongly needed.

Keyword: Dissolved trace metals; Physico-chemical properties; Water quality.