

Mercury contamination in the estuaries and coastal sediments of the Strait of Malacca

ABSTRACT

Sediment is a great indicator for assessing coastal mercury contamination. This work profiled the magnitude of mercury pollution in the tropical estuaries and coastal sediments of the Strait of Malacca. Mercury was extracted through the ultrasound-assisted mercury extraction method and analyzed using the flow injection mercury system. The mean concentration of mercury in the sediment samples was 61.43 ± 23.25 g/kg, ranging from 16.55 ± 0.61 to 114.02 ± 1.54 g/kg. Geoaccumulation index revealed that a total of 13 % of sampling sites were moderately enriched with mercury. The northern part of the Strait of Malacca had the highest mean mercury (Hg) concentration (76.36 ± 27.25 g/kg), followed by the southern (64.59 ± 16.09 g/kg) and central (39.33 ± 12.91 g/kg) parts. Sediment mercury concentration in the current study was lower than other regions like Japan, China, Indian, east Mediterranean, and Taiwan. When compared to the Canadian interim marine and freshwater sediment, China's soil interim environmental guidelines, mercury contamination in the Strait of Malacca was found to be below these permissible limits. Sediment organic matter content was found to have significant correlation with sediment mercury concentration. This study could provide the latest benchmark of mercury pollution and prove beneficial to future pollution studies in relation to monitoring works in tropical estuaries and coastal sediments.

Keyword: Estuaries; Coastal sediment; Geoaccumulation index; Mercury analyzer; Mercury contamination; Strait of Malacca