

Baseline distributions and sources of polycyclic aromatic hydrocarbons (PAHs) in the surface sediments from the Prai and Malacca Rivers, Peninsular Malaysia

ABSTRACT

In this study, the surface sediments of the Malacca and Prai Rivers were analyzed to identify the distributions, and sources of Polycyclic Aromatic Hydrocarbons (PAHs). The total PAH concentrations varied from 716 to 1210 and 1102 to 7938 ng g⁻¹ dw in the sediments of the Malacca and Prai Rivers, respectively. The PAH concentrations can be classified as moderate and high level of pollution in the sediments of the Malacca and Prai Rivers, respectively. The comparison of PAHs with the Sediment Quality Guidelines (SQGs) indicates that the PAHs in the sediments of the Malacca and Prai Rivers may have the potential to cause adverse toxicity effects on the sampled ecosystems. The diagnostic ratios of individual PAHs indicate both petrogenic- and pyrogenic-origin PAHs with dominance of pyrogenic source in both rivers. These findings demonstrate that the environmental regulations in Malaysia have effectively reduced the input of petrogenic petroleum hydrocarbons into rivers.

Keyword: Polycyclic aromatic hydrocarbons (PAHs); Pollution sources; Pyrogenic; Malacca River; Prai River; Malaysia