

Polycyclic aromatic hydrocarbons and n-alkanes in suspended particulate matter and sediments from the Langat River, peninsular Malaysia

ABSTRACT

The Langat River basin has seen rapid developments in industrialization, urbanization and dramatic population increases during the past two decades. The composition and sources of polycyclic aromatic hydrocarbons (PAHs) and aliphatic hydrocarbon (n-alkanes) concentrations were determined in surface sediments (SS) and suspended particulate matter (SPM) collected from six locations in the Langat River. The total n-alkanes concentrations (6HC) ranged from 5900 to 23000 Pg/g in SPM and 1700 to 8600 Pg/g in SS samples. Total PAHs concentrations varied from 306 to 7968 ng/g in SPM and 558 to 980 ng/g in SS. PAHs and n-alkanes were dominated by higher molecular weight compounds in SS and low-medium molecular weight compounds in SPM. Carbon preference index (CPI) values for n-alkanes in ranges C₂₅₋₃₃, C₁₅₋₃₅ and C₂₅₋₃₅ varied from 0.95 to 2.49 in SS and close to unity in SPM. The CPIs values indicated multiple n-alkanes sources (petrogenic and natural). PAHs isomer pairs ratios indicated multiple (petrogenic and pyrogenic) with predominance of pyrogenic PAH sources. Analysis of the possible source of PAHs and n-alkanes indicated a complicated, combined PAHs and n-alkanes source in the Langat River.

Keyword: CPI; Perylene; PAHs isomer pairs ratios; Suspended particulate matter; Surface sediment