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Partition, sources and risk assessment of polycyclic aromatic hydrocarbons in water, sediment, and soil from the middle reach of Huai River

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The distribution of 16 priority polycyclic aromatic hydrocarbons (PAHs) in water, sediment and soil samples from the middle reach of Huai River were analyzed by a gas chromatograph-mass spectrometer (GC-MS). The total concentration of Σ 16PAHs ranged from 783.83 to 1475 ng/L in water, 552.48 to 1199.57 ng/g dw. (dry weight) in sediment, and from 498.85 to 1322.83 ng/g dw. in soil. The spatial distributions of Σ 16PAHs revealed that PAHs contamination in water, sediment, and soil from the middle reach of Huai River were at the midpoint of the global ranges. Along the vertical profiles of water column, higher Σ 16PAHs levels were seen in surface and bottom layers. The PAHs distribution in each depth of water column is found to be controlled by organic carbon, but the correlations between PAHs and organic carbon were not observed in sediment and soil. We observed that no correlations existed between particulate-water partition coefficient (Kow) and organic carbon between water and sediment system. The principal component analysis suggests that coal combustion and refined petroleum products combustion were the primary PAHs contributors in the studied water, sediment, and soil. The risk assessment of PAHs indicated that PAHs contamination in sediment-soil system might list as middle levels, but high ecological risk of PAHs in water column.

Biography

Jiamei Zhang has completed her PhD from University of Science and Technology of China (USTC) and City University of Hong Kong, and Postdoctoral studies from USTC. She is the Assistant Professor at the Hefei institutes of Physical science, Chinese Academy of Science. She has published more than 10 papers in reputed journals as the first and other authors.

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