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An Assessment of Water and Sediment Quality of the Danube River: Polycyclic Aromatic Hydrocarbons and Trace Metals

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Abstract : Water and sediment samples from the Danube River and Moson Danube Arm (Hungary) have been collected and analyzed for contamination by 18 polycyclic aromatic hydrocarbons (PAHs) and eight trace metal(loid)s (As, Cu, Pb, Ni, Cr, Cd, Hg and Zn) in the period of 2014-2015. Moreover, the trace metal(loid) concentrations were measured in the Rába and Marcal rivers (parts of the tributary system feeding the Danube). Total PAH contents in water were found to vary from 0.016 to 0.133 µg/L and concentrations in sediments varied in the range of 0.118 mg/kg and 0.283 mg/kg. Source analysis of PAHs using diagnostic concentration ratios indicated that PAHs found in sediments were of pyrolytic origins. The dissolved trace metal and arsenic concentrations were relatively low in the surface waters. However, higher concentrations were detected in the water samples of Rába (Zn, Cu, Ni, Pb) and Marcal (As, Cu, Ni, Pb) compared to the Danube and Moson Danube. The concentrations of trace metals in sediments were higher than those found in water samples.

Keywords : surface water, sediment, PAH, trace metal
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