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OCCURRENCE AND SOURCES OF POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN DRAINAGE CHANNEL SEDIMENTS IN VOJVODINA (SERBIA)

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Abstract

A drainage channel network in Vojvodina, Serbia, made for collection and transition of (sub)surface waters from waterlogged arable land areas, is exposed to diffuse and/or point contamination sources. Over time, the channel network has accumulated sediment material containing potentially harmful organic substances such as polycyclic aromatic hydrocarbons (PAHs). In this study, the concentration of 16 environmentally relevant PAH substances from 42 sampling points in drainage channel sediments was analysed. Excessive (>10 mg/kg) total concentration of PAHs, i.e. potentially harmful from the ecological perspective, was detected in 24% of analysed channel sediment samples, with 17% of samples containing 10-40 mg PAHs/kg, and 7% more than 40 mg PAHs/kg. At specific channel locations, increased concentrations (>13 mg/kg) of certain carcinogenic PAHs were also confirmed, representing up to 95% of total PAHs concentration. Assessment of PAHs sources suggests their predominantly pyrolytic and mixed origin. One of the main sources of increased PAH concentrations in analysed sediments can be attributed to combustion and direct discharging of different untreated effluents and wastewaters from industrial facilities and/or municipal areas.

Key words: drainage channels, PAHs, pollution, sediments

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