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## **POLYCYCLIC AROMATIC HYDROCARBONS IN WASTEWATER SEWERAGE SYSTEM FROM THE CLUJ-NAPOCA AREA**

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### **Abstract**

Polycyclic aromatic hydrocarbons (PAHs) are by-products of petrol transformation; a report prepared by ICON, London, United Kingdom in 2001, showed that the principal sources of polycyclic aromatic hydrocarbons in wastewater are domestic usage, storm runoff and commercial effluent. This work presents the results on 14 commonly occurring and/or highly carcinogenic PAH compounds listed as priority pollutants by the United States Environmental Protection Agency and the European Union. Wastewater samples were collected starting from October 2010 until May 2011. Results were expressed by the cumulative amount of 5 from 6 compounds listed in decision No. 2455/2001/CE of the Council of European communities (Council Directive, 1991), ranging from 0.0136 ppb in Floresti sewer to 0.0104 ppb in Cosbuc sewer or from 0.0102 ppb in Someseni sewer to 0.0036 ppb in Napoca sewer (February), being also expressed as cumulative amount of 14 from 16 compounds recommended by the USA Environmental Protection Agency which ranged from 0.5584 ppb in Floresti (February) sewer to 0.3735 ppb (February) in Cosbuc sewer or from 0.3406 ppb in Someseni (February) sewer to 0.3064 ppb (March) in Napoca sewer. The research focuses on two main objectives: to determine the concentrations of PAHs in Cluj Napoca's sewerage system (establishing the contribution of each sewer) and to determine the different potential sources of PAHs. PAHs were extracted using liquid-liquid extraction with hexane and determined by high performance liquid chromatograph with both diode array and fluorescence detection. The PAH concentration varies significantly, which may in part be due to differences in the catchments areas. The obtained data provided a general picture of PAHs sources for the sewerage system in urban area of Cluj.

*Key words:* high performance liquid chromatograph, polycyclic aromatic hydrocarbons (PAHs), sewerage system, wastewater

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