

Carcinogenic Polycyclic Aromatic Hydrocarbons in Urban Air Particulate Matter

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Abstract : An assessment of the air quality of Győr (Hungary) was performed by determining the ambient concentrations of PM10-bound carcinogenic polycyclic aromatic hydrocarbons (cPAHs) in different seasons. A high volume sampler was used for the collection of ambient aerosol particles, and the associated cPAH compounds (benzo[a]pyrene (BaP), benzo[a]anthracene, benzofluoranthene isomers, indeno[123-cd]pyrene and dibenzo[ah]anthracene) were analyzed by a gas chromatographic method. Higher mean concentrations of total cPAHs were detected in samples collected in winter (9.62 ng/m³) and autumn (2.69 ng/m³) compared to spring (1.05 ng/m³) and summer (0.21 ng/m³). The calculated BaP toxic equivalent concentrations have also reflected that the local population appears to be exposed to significantly higher cancer risk in the heating seasons. Moreover, the concentration levels of cPAHs determined in this study were compared to other Hungarian urban sites.

Keywords : air, carcinogenic, polycyclic aromatic hydrocarbons (PAH), PM10

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