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DETERMINATION OF VOLATILE ORGANIC COMPOUNDS AND PARTICULATE MATTER LEVELS IN AN URBAN AREA FROM ROMANIA

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Abstract

As air quality becomes increasingly deteriorated in world-wide cities, air quality monitoring has extended beyond the criteria pollutants (CO, SO₂, NO_x, O₃ and PM) in order to include several toxic air pollutants such as volatile organic compounds (VOCs). In the present study it was investigated the presence of 29 VOCs and PM including PM_{2.5}, PM_{2.5-10} and PM_{>10} fractions, in an urban area from Romania. The total VOCs was higher in the urban area (176.72 - 192.54 μg/m³) than in the rural area (131.58 μg/m³). The dominant VOCs from the rural area were terpenes (23.0%), esters (21.5%) and aliphatic hydrocarbons (21.1%), while in the urban area the dominant VOCs were aldehydes/ketones (23.5 - 30.8%), aliphatic hydrocarbons (25.2 - 28.6%) and aromatic hydrocarbons (15.8 - 16.8%). The BTEX level ranged between 21.23 - 27.15 μg/m³. The level of PM_{total} was higher, almost triple, in the urban area (21.2 - 320.5 μg/m³) than in the rural area (29.2 - 117.3 μg/m³), reflecting the general level of urbanization. In the rural area the fine particles (PM_{2.5}) was the dominating fraction (91%), while in the high traffic urban area, the coarse particles (PM_{2.5-10}) was the dominating fraction (44%).

Key words: BTEX, formaldehyde, PM, urban air pollution, VOCs

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