INVESTIGATION OF AIR QUALITY IN THREE TRANSDANUBIAN CITIES

Rita Rákosa, Imre Szilasi, Levente Albert

Institute for Chemistry, Faculty of Forestry, University of West Hungary
rrita@emk.nyme.hu

Air pollution is one of the most important environmental problems, which is restricted mostly to the cities. The extent of the pollution depends on geographic features (structure and quality of the surface, vegetation cover, watercourse), meteorological conditions, the size of the city (industrial activity, road network) and the urban planning policies.

The aim of this study is: to determine the diurnal, weekly variations of air pollutants NO, NO_2, CO in Sopron, Szombathely and Székesfehérvár, to determine statistical relationships of air pollutants in each city, furthermore to analyse their relation to meteorological parameters.

These air pollution measurements costitute the part of a complex, integrated urban ecological research. Our results, in combination with soil, water quality and plant health examinations, characterize the interactions between the cities and their environment. Results will be represent in thematical maps by geographical information systems.

The air quality has been monitored by a mobile air testing equipment applying diurnal sampling by methods recommended by directives (MSZ ISO 7996, MSZ 21456/5). CO concentration was measured by nondispersive infrared photometry, NO_x content by chemiluminescence (Horiba APNA-370). Measurements were performed monthly, continuously, in cyclical repetition between March 2011 and Jan 2012 at selected locations in each city. Such monitoring sites were choosen, which represent the main type of urban structure (downtown, residental area, green belt, industrial area).

The mean diurnal CO, NO and NO_2 concentrations were below the ambient air quality limit values at all sites over the entire period under review. The average diurnal variations of air pollutants showed very similar tendencies for all three cities. In general, two maximum values were obtained in the daily profiles of air pollutants during workdays, which correspond to rush hours. Correlation was established between CO and NO_x concentrations.

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