

COMPARISON OF VOLATILE ORGANIC COMPOUNDS IN A REGULATED AND A NONREGULATED CITY ATMOSPHERE

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Volatile organic compounds (VOC) are of concern due to their adverse effects on human health and tropospheric ozone formation. Nose level measurements of 109 speciated VOCs were performed for the first time along a busy urban street in Ankara, Turkey in the summer of 2003. The sampling was conducted at consecutive 4-hour intervals over a 24-hour period for one week. Samples were collected onto cartridges packed with Tenax TA and Carbopack B resins. Analysis was performed by thermal desorption, followed by gas chromatography coupled to a mass selective detector (GC/MSD). Time resolved data provided information on ambient levels of hydrocarbons ranging from C5 to C12. Toluene, m-, p- and o-xylene, benzene and ethyl benzene were the most abundant species followed by paraffins. Diurnal variation was observed with the highest concentrations in the morning and evening rush hours. Motor vehicle emissions, as expected, was the most important source affecting temporal variations in observed concentrations of VOCs. Preliminary results were also compared with those measured at Ottawa, Canada during the summer of 2000. Two cities had similar characteristic in emission sources. In both cities industrial emissions were negligible and motor vehicles were the major sources for VOCs in summer. The comparison of the two cities demonstrated the influence of emission control strategies on the ambient levels of VOCs and differences in the vehicle fleet characteristics in the two cities. Regulatory emissions control has been well adopted in Ottawa for over a decade whereas Turkey currently lacks of emission control regulations for VOCs.