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SCREENING OF BTEX IN THE METROPOLITAN AREA OF PORTO

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ABSTRACT

Greater Porto is the second biggest urban area in Portugal, integrating nine municipalities. With around 1.3 million inhabitants, 12% of the Portuguese population, the conurbation has the highest density in the country (997 inhabitants per km²), nine times the national average. Air pollutants like BTEX (benzene, toluene, xylenes and ethyl benzene) have been the focus of several recent studies due to the adverse health effects, including cancer, associated with their exposure. The most common sources of exposure to BTEX compounds are from breathing contaminated air, particularly in areas of heavy motor vehicle traffic and petrol stations, and through cigarette smoke. In the last years, several efforts have been done in order to improve the network of air quality stations. However, BTEX are only monitored in a scarce number of sites. In the scope of a national scientific project, CLICURB, one of the main tasks is to contribute to a better understanding of the levels and distribution of BTEX in the urban area of Porto. To achieve this objective, BTEX measurements with passive sampling tubes were programmed. Two field campaigns were performed in which 20 VOC passive tubes from Gradko were distributed over an area of 400 km². This communication presents the results and distribution of BTEX concentrations in the urban area of Porto and critical areas of BTEX exposures are identified. Benzene/toluene ratio was usually lower than one which revealed the contribution of traffic emissions in the urban area. However along the studied area there are some sites showing a reverse pattern that point out to the contribution of other emission sources like the Porto Airport, the Leixões Harbour and industrial activities. The benzene and the toluene concentrations ranged from less than 0,5 ppb up to 3 ppb. This work was supported by National Funds through FCT within project CLICURB-EXCL/AAG-MAA/0383/2012.



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