



Source apportionment modelling of non-methane volatile organic compound emissions in Wuppertal, Germany and Wroclaw, Poland

A. Niedojadlo, K.H. Becker, R. Kurtenbach, P. Wiesen

Institute of Physical Chemistry, University of Wuppertal, Germany (niedan@uni-wuppertal.de / Phone: ++49-202-4392513)

An assessment of the contribution from different emission sources to the observed NMVOC concentrations in Wuppertal, Germany and Wroclaw, Poland was attempted with the Chemical Mass Balance (CMB) modelling technique. Two emission source categories were investigated, namely road traffic and solvent use. The emission profiles required by the CMB model of both investigated sources were recalculated from the concentration profiles measured at sites representative either for traffic or for solvent use in Wuppertal and Wroclaw. Apportionment analysis was performed for both cities, for several receptor points located down-wind from the city centre, in residential areas, in dense traffic areas and in industrial areas.

The outcomes of the CMB analysis with the application of source profiles and receptor concentrations obtained from the city measurements for Wuppertal as well as for Wroclaw, showed that traffic emission rather than solvent use determines the ambient NMVOC composition. In both cities the contribution of traffic emission was dominant at all investigated points located down-wind from the city centre, with a relative contribution on average of about 90%. At dense traffic areas the traffic emission was still responsible for almost 100% of the NMVOC concentrations. A significant influence of solvent emissions could only be observed in close vicinity of solvent factories, where the impact of the investigated solvent sources amounted up to 80% of the measured NMVOC concentrations.