

AIR QUALITY AT ROADSIDE AND URBAN CENTRE LOCATIONS IN LEICESTER

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This paper presents the results of a comprehensive statistical analysis of roadside and urban background air quality data in Leicester as a part of an ongoing study on reducing urban pollution exposure from road transport (RUPERT). The main aim of this project is to develop a new modelling framework for NO₂, CO and particulate matters to simulate personal exposures of different population groups across a city, and to assess the impact of roadside concentrations on these exposures. This is achieved by modelling the frequency distribution of personal exposures as a function of urban background and roadside concentrations under different traffic conditions. A comprehensive statistical analysis of roadside and urban background data has been completed for this project. Roadside air quality is monitored at 13 locations within Leicester city using roadside pollution monitors (RPM). Data collected every minute throughout each day of year 2001 forms the basic dataset for the research. Urban background air quality data comes from the Leicester AURN (Automated Urban and Rural Network) station classified as an 'Urban Centre' monitoring site. RPM and AURN data have been averaged for 15 minutes and analysed for temporal and seasonal variability including diurnal, day-of-week and seasonal concentration distributions. As a result of an in-depth analysis roadside concentrations are predicted using empirically derived relationships and statistical models. These data from the basis of enhanced exposure and health models to better inform traffic management and policy decisions that aim to reduce traffic related air pollutant emissions.