

# EXPOSURE ASSESSMENT OF SPECIFIC CHEMICAL COMPONENTS AT STREET, URBAN AND REGIONAL SITES IN FOUR EUROPEAN LOCATIONS OF THE ESCAPE STUDY

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**Background/Aim:** The ESCAPE study is a large EU-funded study on long-term health effects of outdoor air pollution. In 21 European locations the study adds air pollution exposure assessment to health data available from European cohort studies. The goal of the present study was assessment of PM<sub>2.5</sub> specific components and oxidative potential in four European locations to test hypotheses about the effect of these components on health.

**Methods:** In four ESCAPE locations (The Netherlands, Oslo, Barcelona, Munich/Augsburg): (nitro/oxy-)PAH, hopanes/steranes, levoglucosan, EC/OC and oxidative potential were measured. This is in addition to NO<sub>x</sub>, PM<sub>2.5</sub> and PM<sub>10</sub> mass and reflectance, and metals measured at all ESCAPE locations. Three two-week average samples were taken at 20–40 street, urban and regional background sites in each study area. A T60A20 filter was used for the GC/MS measurement of (nitro/oxy-)PAH and hopanes/steranes. A quartz filter was used for thermal-optical EC/OC determination, GC/MS levoglucosan analysis and DTT assay. For each site the annual average was calculated using continuous measurements at one background site as a reference.

**Results:** We will present an analysis of the temporal and spatial variability of concentrations including the correlation with 'standard' components (PM<sub>2.5</sub>, soot, NO<sub>2</sub>) for four study areas. The Dutch results showed that for most components the concentrations at the street locations were highest. However, levoglucosan has comparable concentrations in street and regional background locations. Spatial correlations between components were investigated. PAH's sum correlates high with levoglucosan ( $r=0.85$ ) and moderate but significant with PM<sub>2.5</sub> ( $r=0.721$ ). Hopanes/steranes sum correlates moderately with soot ( $r=0.694$ ), NO<sub>x</sub> ( $r=0.656$ ) and EC ( $r=0.635$ ).

**Conclusions:** The results of chemical composition show different correlations between measured components. It indicates that the chemical components may also have other sources than motorized traffic, including wood combustion. This could potentially help to correlate the health effects to specific components and/or their origin.