ATMOSPHERIC PARTICLE SIZE DISTRIBUTIONS FOR SOURCE APPORTIONMENT IN DRESDEN, SAXONY

H. Gerwig[1], E. Brüggemann[2], T Gnauk[2], K. Müller[2], A. Plewka[2], H. Herrmann[2]

[1]*Section 22 Regional Air Pollution Control, Climate Change, LFUG - Saxon State Agency for Environment and Geology, Dresden, Germany*

[2]*Department of Atmospheric Chemistry, Leibniz – Institute for Tropospheric Research, Leipzig, Germany*

Epidemiologists have indications on the negative health effects of finer, finest and ultra fine particles. Size distributions and chemical composition of ultrafine (10 nm) up to coarse particles (10 µm) by analysing the different size fractions are the starting point for calculations about source apportionments in an urban environment. Berner low-pressure and Micro Orifice Uniform Deposit Impactors (MOUDI) were used 8 times on weekdays and one time on a weekend. Sampling took 24 h for Berner (0.05 - 10µm EAD, mass, EC, OC, ions, elements, PAH, organic acids, alkanes) and usually 96 h for MOUDI (0.01 - 18µm, mass, EC, OC, ions). Samples of PM10 and PM2.5 (mass, EC, OC, ions, 11 elements, PAH) were collected for 24-h periods, 11 August 2003 until 6 June 2004 every second week for 7 days. The same sampling settings were used, from 9 until 29 February (winter) at a station of urban background. Additional parameters: NO, NO2, BTX, CO, Soot, wind direction, wind speed, temperature, humidity, global radiation. The numbers of automatic counting of vehicles of nearby streets and additional meteorological information was used as well. The urban traffic measuring station is located in Dresden near a crossing with a traffic load of about 55,000 vehicles per day. The sample inlets were about 4 m apart from the kerb and 3.5 m above ground. The station of urban background was located about 400 m to north-east and at least 100 m away from streets with less than 5,000 vehicles per day.