



Measurements of traffic-induced abrasion particles in a Swiss city

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Particle emissions from road traffic can be divided into two basic categories: i) emissions due to fuel combustion, ii) emissions due to abrasion and mechanical wear of the brakes, the engine, the tires, and the road surface. The three-year project APART was focused on the latter, and measurements took place mainly in the city of Zurich, Switzerland. Several campaigns on and in the vicinity of roads with different traffic characteristics were performed between 2006 and 2008, covering different seasons and weather conditions. Air-borne, deposited and re-suspended particles were collected at fixed locations and with a mobile laboratory, and subsequently chemically analyzed.

Vehicle abrasion particles consisted mainly of Fe, Cu, Mo, Sn, Sb and Ba. Road dust samples were composed mainly of organic and elemental carbon and some crustal elements (Si, Ca, Fe, Al, K, Mg), with traces of Cu, Zn, Ba, and Ti. The transport distance of the particles was investigated with aerodynamic particle sizer (APS) measurements at varying distances from a freeway. Furthermore the dependence of re-suspension on traffic density was investigated.

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