

ANALYSIS OF INDOOR FINE DUST

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In recent years the interest in fine dust from 2,5 µm aerodynamic particle size to ultra fine dust of several nanometers has grown fast. The outdoor air in Europe and other developed countries is monitored quite frequently, but only little is known about fine dust exposition indoors, its origin, particle size distribution and elemental load. In a number of studies fine dust exposure was analyzed in more than 100 flats and offices in Hamburg and Berlin (Germany). Particles were monitored size segregated for several hours. The profiles showed that coarse and fine dust emissions are linked to human activity. Ultra fine dust is related to cooking and candle burning. A phenomenon of black stains “fogging” in flats (only no smoker flats were analyzed) occurring during the heating season could be linked to a higher fine dust occurrence. From the results of this study a theory about genesis of the “fogging” phenomenon including condensation of semi volatile organic compounds and ultra fine dust was proposed. The TXRF analysis of the elemental load of indoor particles collected with a Berner impactor (lowest particle cut off 15 nm) didn't show any noticeable contaminants.

As copy machines and laser printers are often suspected to emit toxic aerosol, this aspect was studied more closely. Therefore, a test chamber was installed and different designs of printers were studied for particle exhaust over time and elemental load. For the elemental analysis aerosols were collected in three size classes with the Berner impactor and analyzed using TXRF. The results show that particle exhaust varies drastically according to the type of the printer. Traces of the toner could be found in the ambient air of the test chamber.