

## Fine particles present in indoor air

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These present results of investigations of concentrations and size distributions of fine particles suspended in the air of a room for storing books (room A) and in a room for conserving books (room B), both of which are located in a new air-conditioned building. Investigations of the particle parameters were also done for atmospheric air surrounding of the building. Mass or number aerosol concentration and particle size distribution in the air were measured with an optical particle counter (GRIMM Dust Monitor model 1.108), a photometer (DUST-TRAK model 8520, TSI) and a condensation particle counter (P-TRAK model 8525, TSI).

It was found that most particles suspended in the rooms (A and B) and in atmospheric air were smaller than 10  $\mu\text{m}$  (GRIMM results). The number concentration of particles from the 10–20 $\mu\text{m}$  size range was not higher than 0.03% of the concentration of >0.3–20 $\mu\text{m}$  particles. The concentration of particles from the >0.3–1 $\mu\text{m}$  range in indoor air accounted for 99% and in outdoor air for 98% of the concentration of particles from the >0.3–10  $\mu\text{m}$  range. Concentrations of particles from the ranges >0.3–1 $\mu\text{m}$  and >0.3–10 $\mu\text{m}$  were 3.6 times lower in room A (the room for storing books) and 1.9 times lower in room B (room for conserving books) than in atmospheric air.

The results obtained with DUST-TRAK and P-TRAK showed the same tendency as the GRIMM results. Mass concentrations of particles sized 0.1 to 10  $\mu\text{m}$  (DUST-TRAK results) were 2.9 times lower in room A and 1.6 times lower in room B than in atmospheric air. Number concentrations of particles sized 0.02 to 1  $\mu\text{m}$  (P-TRAK results) were 3.4 times lower in room A and 1.5 times lower in room B than in atmospheric air.

From a comparison of number concentrations determined with GRIMM (particles from the >0.3–1 $\mu\text{m}$  range) and P-TRAK (particles sized 0.02–1 $\mu\text{m}$ ) it follows that very much particles suspended in the air in the rooms (A, B) and in atmospheric air had diameters smaller than 0.3 $\mu\text{m}$ . The number concentrations obtained with P-TRAK were about 400 times higher than those obtained with GRIMM.

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