

E1-13: Measurements of chalk-dust concentrations in classroom environments

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Pollution due to the dust of chalk used for educational purposes is becoming a health hazard for children as well as for teachers.

This project was carried out to investigate the spreading of chalk dust, concentration profiles and the size dependence of the particles of chalk dust in a university lecture room environment. An attempt has been made to investigate the variation of concentration of the dust with time as well as the distance from the blackboard. The average size of the dust particles present in the air as well as the average size of deposited dust during given period of time intervals were determined.

It was found that the dust concentration rises up to about $220\mu\text{g}^{-3}$ within 1 h, at a location 2m away from the blackboard and 3/4m above the floor level, when the ceiling fans were in operation leading to an inhalation of approximately $3.6 \times 10^{-3}\text{g}$ of chalk dust in a 1 h lecture. In still air the corresponding concentration rises only up to about $130\mu\text{g}^{-3}$ leading to an inhalation of approximately $2.1 \times 10^{-3}\text{g}$ of chalk in 1 h. The average size of dust particles in the air is found to be $4\mu\text{m}$ and average size of deposited dust is found to vary from $15\mu\text{m}$ to $8\mu\text{m}$ for a 1h period.