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A MORE RATIONAL METHOD FOR SAMPLING OF AIRBORNE FIBROGENIC DUST IN EPIDEMIOLOGY OF PNEUMOCONIOSES

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Abstract:

Current sampling instruments of respirable dust (RD) may over estimate the inhaled dose by up to 400% depending on the size distribution of airborne dust. This limitation and the practice of assigning a single value for RD to all jobs regardless of the level of activity are incompatible with the advances in occupational epidemiology. A new dust sampler designed to estimate pulmonary deposition (PD) was developed to alleviate these limitations. The device consists of a 10 mm diameter microscope cover slip. Estimation of PD is obtained by selecting the appropriate air flow rate and diameter of impactor so that the combined performance will simulate the bell shaped curves of PD at various respiratory frequencies and tidal volumes. To obtain better matching of PD, this configuration was selected, rather than two impactors in series, (impactors have sharp cut-off curves). A cyclone can also collect large amounts of the sampler wax evaluated using monodispersed aerosols 1.1, 2.7, 4.7, 9.8, μm and geometric standard deviations 1.2. The results indicate that PD is estimated very closely by the new sampler.

Keywords:

[Respirable dust](#) , [Pneumoconioses](#) , [Impactor](#) , [Occupational Health](#)

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