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EXPOSURE TO DUST AND ENDOTOXIN IN TEXTILE PROCESSING WORKERS

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10.1136/oemed-2011-100382.303

Objectives Cotton textile workers are highly exposed to organic dust. Inhalation of cotton-based particulate has been associated with respiratory symptoms and impaired lung function. This cross-sectional study was conducted to measure personal exposure to inhalable dust and endotoxin in the textile industry in Nepal.

Methods The study was conducted in four sectors (garment making, carpet making, weaving, and recycling) of the textile industry in Kathmandu, Nepal. Personal exposures to inhalable dust and airborne endotoxin were measured during a full-shift for 114 workers.

Results Geometric mean (GM) personal exposures to cotton dust and endotoxin were 0.81 mg/m³ and 2160 EU/m³ respectively. 18% (n = 20) of the workers sampled exceeded UK workplace exposure limit (WEL) for cotton dust (2.5 mg/m³). The GM of endotoxin exposure was more than 20-fold higher than the Dutch health-based guidance value of 90 EU/m³. Dust and endotoxin exposures were lowest in the garment sector and highest in the recycling sector. There was a statistically significant correlation between inhalable dust concentrations and endotoxin concentrations (r=0.37; p<0.001).

Conclusions Inhalable dust concentrations in this study are similar to those from previous studies in cotton-processing workers in other countries. However, endotoxin exposure concentrations are many times higher than the Dutch proposed health-based exposure limit. Health and safety surveillance with advice from occupational hygienists is recommended to reduce exposure to dust and endotoxin within the textile processing industry in Nepal.