Measurement of wood dust particle size by optical microscopy technique and long-term effect on sawmill workers: A random study

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Abstract

Objective: Sawmill workers are exposed to wood dust particles of different sizes, and they cause different respiratory effects depending on the size,physical, and chemical nature of the dust particle and also it is related to the duration of exposure.Introduction: Many studies are done in concern with respiratory effects of wood dust exposure and its toxicity on sawmill workers. Only few studieshave been done regarding measurement of particle size. Hence, this study has been undertaken. To measure the size of wood dust particle of sawmillsto which the workers are exposed to and also to study significance to the duration of exposure to different sizes of wood dust and effect on long-termexposure.Methods: Random samples collected from three different places of different sawmills where there is maximum production and exposure of wooddust. The samples were analyzed and particle was measured using optical microscopy technique. 50 healthy participants from these mills wereassessed for chest expansion in cm and compared against years of wood dust exposure.Results and Conclusion: Overall, it is observed that percentage distribution of size of wood dust particles: 45.9% <0.1 μm, 23.3% 2.5-10,22.3% 0.1-2.5 μm, and 8.5% >10 μm. It may be concluded that occupational hazards are directly proportional to the size of the particle and durationof exposure to wood dust particles. Chest expansion in cm was also found reduced with the increase in the years of exposure to wood dust.Keywords: Sawmill workers, Wood dust, Optical microscopy, Chest expansion.