

Monitoring of Respirable Dust Among Workers at Furniture Factory in Selangor

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Structured Abstract

Background: Exposure to respirable dust in the furniture manufacturing industry presents many types of health hazards to its workers, where the main source of respirable dust in the furniture industry is wood dust. Exposure to high concentrations of respirable dust can lead to serious health effects. This research aims to evaluate the concentration of respirable dust exposed among workers and compare the concentration of respirable dust exposed to workers in a furniture factory with acceptable permissible exposure limit (PEL).

Methods: The research was conducted at a furniture factory in Kota Kemuning, Selangor. The method that was used is NMAM 0600, using a GilAir Plus air sampling pump with 5 microns of polyvinyl chloride (PVC) filter paper. The sampling was collected from one worker in sanding operator and two workers from CNC machine operators. The questionnaire was distributed, to determine the potential health effects associated with respirable dust among workers. One-sample t-test in SPSS was used to compare the concentration of respirable dust exposed to workers in a furniture factory with PEL.

Results: The results showed that 1.5 mg/m³ for sampling point 1 and 0.6 mg/m³ for both sampling points 2 and 3, which is below the USECHH regulation threshold limit of 3 mg/m³ for respirable dust. The majority of the workers, 67%, reported sneezing and coughing, while 50% experienced chest pain and 17% experienced symptoms such as blocked chest, pain in the lungs, and asthma. No workers have had allergic reactions to the dust or experienced pneumonia while working. One-sample t-test shows a statistically significant difference between PEL of USECHH Regulation and the concentration of respirable dust, with the p-value being 0.020 below the significance threshold level of 0.05.

Conclusion: In conclusion, the values obtained were below the threshold limits set by USECHH Regulations (3 mg/m³). Based on the conducted questionnaires, the potential health effects associated with respirable dust among workers in a furniture factory were identified. The results indicated a statistically significant difference between PEL of USECHH Regulation and the concentration of respirable dust, showing that the sample mean was below the PEL.

Keywords: Respirable Dust, Furniture Factory, Permissible Exposure Limit (PEL)

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