UNIVERSITI TEKNOLOGI MARA

WOOD DUST (PM 2.5) EXPOSURE AMONG PARTICLEBOARD INDUSTRY WORKERS AND HEALTH EFFECT (LUNG DISEASE)

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Project Paper Submitted In Partial Fulfilment of the Requirements
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Declaration by Student

Project entitled "*Wood Dust (PM 2.5) Exposure among Particleboard Industry Workers and Health Effect (Lung Disease)*" is a presentation of my original research work. Wherever contributions of others are involved, every effort is made to indicate this clearly, with due reference to the literature, and acknowledgement of collaborative research and discussions. The project was done under the guidance of Mr Chua Say Tiong as Project Supervisor and Mr Nasaruddin bin Abd Rahman as Co-supervisor. It has been submitted to the Faculty of Health Sciences in partial fulfilment of the requirement for the Degree of Bachelor in Environmental Health and Safety (Hons).

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All praises and thanks be to Allah (S.W.T), who has guided us to this, never could we have found guidance, were it not that Allah had guided us!(Q7:43)

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ABSTRACT

Wood Dust (PM 2.5) Exposure among Particleboard Industry Workers and Health Effect (Lung Disease)

Fizari Bin Rosli

Thousands of Malaysian people work with wood every day. Exposure to wood dust is common in many industries. For example, working at furniture or cabinet-making shop, construction, logging, a sawmill, a paper mill, or a plant that makes plywood, and industries of particleboard, or fiberboard. This study will show the relation between the dust concentrations exposed to workers in particleboard industry, and health effect among workers. From this study, the result could show the amount of exposure, and the health effect risk.

Referred standard methods that used in these studies; parameters that measured include dust concentration in air, inhalable dust amount, and lung function effectiveness. Environmental monitoring used EVM 7 air monitoring devise to measure dust concentration in the air or work place while Gilien air sampling pump used to measure the inhalable dust amount. Vitalograph spirometer used as lung function test device. Photograph recorded using digital camera as a prove of study.

Results showed that the average value of particulate matter 2.5 (Location 1 = 17.3 $\mu g/m^3$, Location 2 = 46.0 $\mu g/m^3$, Location 3 = 40.0 $\mu g/m^3$, Location 4 = 37.7 $\mu g/m^3$, Location 5 = 70.9 $\mu g/m^3$) are above of EPA Pollutant Standard Index (PSI) as an air pollution standard. After retrieve the post-reading of filter disks (N=30) weight, the result deduct with initial result and there is several violation of 8-hour TWA exposure that limited by OSH(USECHH)Reg. 2000 for the total of wood dust inhaled. Lung function test (N=30) done for vital capacity (VC), force vital capacity (FVC), and forced expiratory volume after 1 second (FEV1). Correlation of FVC percentage with FEV1 percentage will show the lung disease risk and the result significant.

From the result, dust concentration at the study areas are high and there are lung disease risk detected from the lung function test. From data analysis, also show there are association between lung function efficiency with the location of study. Therefore, there is significant correlation between dust concentration and exposure with health effect.

Keywords: wood dust, dust exposure, particleboard