

UNIVERSITI TEKNOLOGI MARA

**TOTAL VOLATILE ORGANIC COMPOUNDS (TVOCs)
IN WOOD BASED MANUFACTURERS IN SHAH
ALAM AREA AND THE ASSOCIATED HEALTH
EFFECTS**

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**Project paper submitted in partial fulfillment of the requirements
for the degree Of**

Bachelor in Environmental Health and Safety (Hons.)

FACULTY OF HEALTH SCIENCES

JULY 2013

Declaration by Student

Project entitled "Total Volatile Organic Compounds (TVOCs) in wood based manufacturers in Shah Alam area and the associated health effects" is a presentation of my original research work. Wherever contribution of others 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 guidance of DR. K. Subramanian MCIEH, PJK, IH as Project supervisor. It has been submitted to the Faculty of Health sciences in partial fulfillment of the requirement for the degree of bachelor in Environmental Health and safety (Hons.).

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Date: 19/7/2013

ACKNOWLEDGEMENTS

Bismillahirrahmanirrahim. First of all, I would like to express my gratitude to Allah S.W.T for His blessing and allowing me to complete this final year project.

My higher appreciation goes to the Project Supervisor, DR. K. Subramaniam, MCIEH, PJK, for giving my guidance and inspiration until the ideas can be generated to complete papers and all the lecturers for their advices and suggestions in this study.

I would also like to express my gratitude to laboratory staffs of Faculty of health Sciences UiTm, Mr. Azwat, Mr. Erdzuam and Madam Maziah for his help with air sample analysis. Apart from that, I would like to express my appreciation to the Ms.Murni Amirrah Binti Aminuddin, Master Student for helping me on this project and last but not least to Madam Rohaizat, MBSA with the cooperation given from them.

My gratitude is also dedicated to my father, Zulkifli Bin Ariffin and my mother, Normah Binti Ibrahim as well as members of my family that have encouraged, love and support me. To all who were involved in the completion of this project, I sincerely thank all of you. Hope you receive the due rewards for all that have given and done.

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ABSTRACT

Total Volatile Organic Compounds (TVOCs) in Wood Based Manufacturers in Shah Alam area and the Associated Health Effects

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Purpose: To determine Total Volatile Organic Compounds (TVOCs) in wood based manufacturers and the associated health effects.

Method: Sample taken at each factory in Shah Alam area in accordance to the Industry Code of Practice in Indoor Air Quality 2010. The study design used was Cross-sectional study. The sampling method for Total Volatile Organic Compounds (TVOCs) used direct measurement with Gas Alert Micro 5 PID and method for lung function will be based on standard operation procedure (SOP) developed by Environmental Health and Safety of UiTM and adopted to meet criteria from "ATS/ERS" series task Force: Standardisation of Lung Function Testing. The Questionnaire (adapted from European community respiratory health survey II) were distributed to workers of wood based industry (n=24).

Result: This cross-sectional study was conducted in Shah Alam area in wood based manufacturing factories (n=8) where micro-environmental sampling was conducted for total volatile organic compounds (TVOCs) with 0.13 ± 0.179 ppm. Air flow was measured in each factories (n=8) and found that air flow within acceptable range 0.275 ± 0.281 ms⁻¹. Lung function performance analysis among workers (n=24) had the following results: FVC=2.75±1.105L, FEV₁=2.56±1.08L and FEV₁/FVC=0.88±0.22L. Inferential analysis showed a weak correlation with lung function among workers for TVOCs with a weak association for lung function performance (r=-0.448) with a p-value=0.028 (p<0.05). The non parametric chi square analysis showed a result for symptoms of illness with excessive dusts a χ^2 value 4.167 and a p-value=0.04 with a significant level of p<0.05. A survey was conducted among workers (n=24) in the study factories where it was found that (n=10, 46%) were not wearing Personal Protective Equipment (PPE).

Conclusion: As an outcome of this study, Total Volatile Organic Compounds (TVOCs) was identified as a factor that contributed to the lung function performance among workers. This research requires further studies and may be baseline information in future.

Keyword: Indoor air Quality, Total Volatile Organic Compounds (TVOCs), Lung Function, excessive dust