

UNIVERSITI TEKNOLOGI MARA

**VOLATILE ORGANIC COMPOUND EXPOSURE
AMONG CAR PAINTING WORKERS AT A CAR
MANUFACTURING INDUSTRY**

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**Project paper submitted in partial fulfillment of the requirements
for the Degree of
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Declaration by Student

Project entitled Volatile Organic Compound Exposure among Car Painting Workers at a Car Manufacturing Industry 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. Ahmad Razali bin Ishak as Project Supervisor and Mr. Hashim bin Ahmad as Co-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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In the name of Allah, The Most Gracious, The Most Merciful.

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Abstract

Volatile Organic Compound Exposure among Car Painting Workers at a Car Manufacturing Industry

Mohd Nor Farhan bin Mohd Basri

Introduction: Volatile Organic Compounds (VOCs) are a large group of carbon-based chemicals that easily evaporate into environment. It boiling point usually from 50 to 250°C, and therefore evaporates readily. VOCs in the indoor environment originated from furnishings, furniture and carpet adhesives, building materials, cosmetics, cleaning agent, fungi, tobacco smoke, solvent based paint and fuel combustion. Short exposure to high level of solvent vapors can cause temporary dizziness, lengthy or repeated exposure can irritate the eyes, lung and nervous system. Some VOCs can act as agent for cancer (EPA, 2009). **Methodology:** This study will be conducting at the Hicom Automotive Manufacturing in Pekan, Pahang. 40 workers of the company will be selected as the target group, while the other 40 workers who are not exposed to VOC will be taken as control group. Environmental sampling will be done at the car painting shops (exposed group) and main office (non-exposed group), while spirometry test and questionnaire will be given for the workers as respondents. The data collected will be analyzed by using Statistical Package for the Social Sciences (SPSS) Version 17.0. **Result:** According to this study, it can conclude that highest age range of workers that are exposed toward VOCs is 28 to 32 years old (n=10). Workers who are exposed toward VOCs are significantly showing the symptoms of VOCs contamination with p-value 0.01 (< 0.05). Out of 40 respondents of exposed group, 29 of them admit that the symptoms were appearing after 1 year period of work. Lung function test that have been carried out to all 80 respondents' shows the significant mean different in force vital capacity (FVC), force expiratory volume in one second (FEV1), and FEV1/FVC ratio. **Conclusion:** All hypotheses of this study are accepted since the p-value shows there have a significant association of VOCs exposure toward lung function performance. According to the finding, there have a mean different of FVC of exposed and unexposed group since it p-value of FVC is significant; 0.023. It is followed by FEV1; 0.023 and FEV1/FVC ratio; 0.034.

Keyword: Volatile Organic Compounds (VOCs), Lung Function Test, FVC, FEV1, FEV1/FVC