UNIVERSITI TEKNOLOGI MARA

# VOLATILE ORGANIC COMPOUNDS (VOCS) EMISSION FROM INDOOR STORAGE OF FOOD WASTE AND ITS POTENTIAL HEALTH RISK TO HOUSEHOLD

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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

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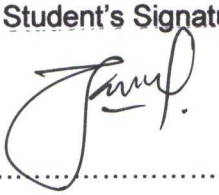
**Declaration by Student**

Project entitled "Volatile Organic Compounds (VOCs) Emission from Indoor Storage of Food Waste and Its Potential Health Risk to Household" 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. Hashim Bin Ahmad as Project Supervisor and Pn. Siti Rohana Binti Mohd Yatim 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).

Student's Signature:



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## ABSTRACT

**Volatile Organic Compounds (VOCs) Emission from Indoor Storage of Food Waste and Its Potential Health Risk to Household**

**Nurul Jannah Binti Md Shukor**

Human daily live activities cannot avoid from generating waste. The development of Malaysia's total populations along with the economic growth, business activities and consumption rate, will accelerate the daily generation and volume rate of municipal solid waste (MSW). The Malaysia's MSW composition contains a significantly high amount of food waste which is mainly being disposed at the landfills. Prior to the waste collection, the waste are normally stored indoor. As a result, it produce unpleasant odour. The unpleasant odour released from the food waste are containing hazardous fume such as VOCs. As these food wastes are stored indoors, it may result potential health effects to be exposed to the household. This study is important to measure the level of VOCs emission from indoor storage of food waste. It leads to a need for identification and quantification of VOCs emitted during the waste decomposition process. Hence, to assess the potential health risk to the household due to the exposure to the VOCs emission. Food waste decomposition process was conducted for 14days in this study by using food waste model. The food waste samples were kept in temperature 20°C and 30°C. VOCs emissions from both samples were collected at different stages of decomposition which is at day 0, day 1, day 3, day 5, day 7, day 10, day 12 and day 14. Hence, it were analysed by using TD-GC/MS. From the finding of this study, various VOCs were released during decomposition of food waste. Compounds produced were influenced by the time, temperature and also the physico-chemical characteristics of the compounds. Dimethyl disulfide is the compound that is most abundant being released in this study. The potential health risk represented by hazard ratio, HR of being exposed to the inhalation of this compound to household is $1.6 \times 10^{11}$. Therefore, it is very hazardous to the household health since the negligible risk was HR equal to or less than 1.0.



*Keywords: Food waste, Household, Potential health risk, Volatile Organic Compounds (VOCs)*