

UNIVERSITI TEKNOLOGI MARA

**CADMIUM AND LEAD CONTENT IN RICE GRAIN AT
KEDAH AREAS AND POTENTIAL HEALTH RISK**

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**Project paper submitted in partial fulfilment of the requirements for
the degree of**

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Declaration by Student

Project entitled Cadmium and Lead Content in Rice Grain at Kedah Areas and Potential Health Risk 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. This project was done under the guidance of Associate Professor Madya Hazilia bt Hussain as Project Supervisor and Mr. Mohd Izwan b Masngut 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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Abstract

Cadmium And Lead Content In Rice Grain At Kedah Areas And Potential Health Risk

Syazwan Bt Ab Khalid

Introduction: This study was carried out to determine the cadmium (Cd) and lead (Pb) contents in *Oryza sativa* rice at paddy field at Kedah areas. The result for this study will be used to estimate the potential health risks to consumers. For respondents, there were divide into two group which are farmer group (n=30) and consumer group (n=45). They were selected based on inclusive criteria; understands the questionnaires given, Malaysian citizen and people who eat rice. **Methodology:** It is a cross sectional study design. The respondents, which are farmers were selected by purposive sampling from the study location where rice sample was collected. While consumer group were selected by simple random sampling as anyone has an equal chance of being included in the study. Oven was use to heat the sample after rinse with deionized water. For analysis of heavy metals, Atomic Absorption Spectrometer model Perkin Elmer was used to detect cadmium and lead content in rice grains. Questionnaire was used to determine the frequency of fertilizers applied by farmer and to assess frequency of daily rice intake among consumer group randomly. **Result:** One-Way ANOVA test for this study is significant ($p < 0.001$) to suggest that at least concentration of cadmium and lead for one pair among the sampling location were significantly different. The mean concentration of cadmium at Kampung Kubang Jawi is 0.0074 mg/L while mean concentration for rice grain at both Kampung Pida Empat and Kampung Teluk Jawa are 0.00 mg/L. Mean concentration of lead at Kampung Kubang Jawi is 0.04 mg/L while mean concentration for rice grain at both Kampung Pida Empat and Kampung Teluk Jawa are 0.02 mg/L and 0.001 mg/L. **Conclusion:** Low level of cadmium and lead in rice cannot guaranteed that rice we are taking is safe to eat. Government should create a policy or give an encouragement scheme to the farmer in order to promote them safely cultivate their rice paddy.

Keywords: heavy metal, lead, cadmium, fertilizer, rice