UNIVERSITI TEKNOLOGI MARA

HUMAN HEALTH RISK FROM CABBAGE AND SOIL CONTAMINATED WITH HEAVY METALS

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Project submitted in fulfillment of the requirement for Degree in Bachelor of Environmental Health and Safety (Hons.)

Faculty of Health Sciences

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Declaration by Student

Project entitled "Human Health Risk From Cabbage and Soil Contaminated with Heavy Metals– agricultural area at Monteki, Kundasang Ranau, Sabah" is a presentation of my original research work. Whenever contributions of others are involved, every effort is made to indicate this clearly, with due reference to literature, and acknowledgement of collaborative research and discussions. The project was done under the guidance of Project Supervisor Dr. Shantakumari A/P Rajan. 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

Human Health Risk From Cabbage and Soil Contaminated with Heavy Metals.

by

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Cabbage that grown in contaminated soil had the possibility of accumulating heavy metal. It became great concern to human health because heavy metal can be introduced by plant through human food chain. The study was conducted in agricultural area at Menteki, Kundasang Ranau, Sabah. There is 40 sample of cabbage and 40 sample of soil taken in four different locations for an analysis. Graphite Furnace Atomic Absorption Spectrometer (GFAAS) was used to analyze the sample using acid digestion method. SPSS version 20.0 was used for the statistical analysis. The study showed that there is an accumulation of Lead, Cadmium, Zinc and Copper in soil. Copper showed the highest concentration among the heavy metal which was located at the location A with 84.1 mg/kg. Besides, there was also an accumulation of heavy metal in cabbage except for Cadmium. However the maximum value of the heavy metal lead, copper, zinc which 0.2 mg/kg, 20 mg/kg and 43.5 mg/kg respectively not exceeding the standard limit by Malaysian Food Act (1983) and Food Regulation (1985) and WHO. There was significant difference between heavy metal in cabbage and soil between old and new farm with the p-value<0.05, p=0.001 except for the Cadmium because there was no Cd detected in cabbage. There was significant correlation different of copper and zinc between soil and cabbage at the p-value<0.01, p=0.001. Whereas no significant correlation (p-value>0.01) for lead and cadmium between soil and cabbage. Study show that there is no health risk associated with all heavy metal that accumulated in cabbage with the THQ and HI less than 1. Thus, the cabbage in the study area was safe to be consumed.

Keywords: Copper, Zinc, Lead, Cadmium, THQ, HI, GFAAS,