

UNIVERSITI TEKNOLOGI MARA

**HEAVY METAL CONTAMINATION
(Cd, Cu, Pb, Zn) IN WHITE SHRIMP
(*Litopenaeus Vannamei*) ALONG
COASTAL OF KELANTAN AND ITS
POTENTIAL HEALTH RISK**

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Project submitted in fulfillment of the requirements for
the degree of
**Bachelor in Environmental Health and Safety
(Hons.)**

Faculty of Health Sciences

July 2018

DECLARATION BY STUDENT

Project entitled “Heavy Metal Contamination (Cd, Cu, Pb, Zn) in White Shrimp (*Litopenaeus Vannamei*) Along Coastal of Kelantan And Its Potential Health Risk” 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, Mr. Nasaruddin Bin Abd Rahman. 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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2014243064

950729-03-6278

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ACKNOWLEDGEMENT

In the name of Allah, The Most Gracious, The Most Merciful.

Assalamualaikum and Alhamdulillah, all praise to Allah S.W.T The Supreme Lord of the Universe. Peace and blessing to Nabi Muhammad S.A.W., all prophets and their families. I praise Allah S.W.T. for the strength and His blessings in completing my study.

Thousands of thanks and love to my father Abd Halim Bin Yusoff and my mother, Siti Rahmah Binti Mohd Noor for their support and encouragement through thick and thin of my study. My deepest gratitude and appreciation to my dearest supervisor, Mr. Nasaruddin Bin Abd Rahman who spent his time and efforts in guiding and advising from the beginning till the end of my research journey. Not to forget, I would like to thank all the lecturers in Centre of Environmental Health and Safety, Faculty of Health Sciences who always share their thoughts, knowledge and advice throughout my study in UiTM Puncak Alam. Only God can reward all of you with goodness.

My sincere thanks and appreciation goes to all the staff from the department and laboratory who gave their full cooperation and assisted me in many ways throughout my study. A special thanks to my friends from HS243 who always give me support and motivation while completing my study. May our friendship lasts forever. Lastly, I would like to thank everyone who involved directly and indirectly in this study. Thank You.

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ABSTRACT

In this study is to assess heavy metal contamination (Cd, Cu, Pb, Zn) in white shrimp (*Litopenaeus Vannamei*) along coastal of Kelantan and its potential health risk. Three location were selected to carry out this study which are Tok Bali, Tumpat and Kuala Besar. The method that used for this study is wet digestion before analyse using Atomic Absorption Spectroscopy (AAS). The result show mean concentration of the metals Pb, Zn and Cu from in shrimp from Tok Bali is 0.1750, 34.5650, 14.2050 mg/kg respectively. Concurrently, Sample Location Tumpat's Pb, Zn and Cu mean concentrations are 0.2078, 45.6350 and 13.4300 mg/kg and last for Kuala Besar's Pb, Zn and Cu mean concentration are 0.2295, 22.3000 and 11.7000 mg/kg. The *p*-value of Pb and Zn are less than 0.05 which means that the test is significant and null hypothesis is rejected. It can described that the differences in means of Pb and Zn between Tok Bali, Tumpat and Kuala Besar has significant difference. On the contrary, *p*-value for one of the variable (heavy metal Cu) is $P > 0.05$ which is 0.097. As the *p*-value exceeds 0.05, the test is not significant and null hypothesis is accepted which indicating that the data is normal. For health risk assessment (HRA), estimated daily intake (EDI), target hazard quotient (THQ) was calculated as for non-carcinogenic risk level which are Zn and Cu due to pollutant exposure. Target Hazard Quotient (THQ) values for Tok Bali, Tumpat and Kuala Besar were in same order which is $Cu > Zn$. CR values follow the order for Pb are Kuala Besar $>$ Tumpat $>$ Tok Bali. The total CR of Pb of each location is lower than range 10^{-4} to 10^{-6} of the USEPA unacceptable level.

Keywords: Heavy metals, shrimp, wet digestion, Atomic Absorption Spectroscopy Health risk assessment.