CONCENTRATION OF HEAVY METAL (COPPER, ZINC AND CADMIUM) IN *Corbicula fluminea* COLLECTED FROM TERENGGANU RIVER

CHE KU SURIATI BINTI CHE KU SIDEK

FACULTY OF MARITIME STUDIES AND MARINE SCIENCE
UNIVERSITI MALAYSIA TERENGGANU
2008

Concentration of heavy metal (cooper, zinc and cadmium) in Corbicula fluminea collected from Terengganu river / Che Ku Suriati Che Ku Sidek.

	1100061780	

Lihat sebelah

CONCENTRATION OF HEAVY METAL (COPPER, ZINC AND CADMIUM) IN *CORBICULA FLUMINEA* COLLECTED FROM TERENGGANU RIVER

By
CHE KU SURIATI BINTI CHE KU SIDEK

Research Report submitted in partial fulfillment of the requirements for the degree of Bachelor of Science (Marine Science)

Department of Marine Science
Faculty of Maritime Studies and Marine Science
UNIVERSITI MALAYSIA TERENGGANU
2008

This project report should be cited as:

CkSuriati, Cks. 2008. Concentration of Heavy Metal (Copper, Zinc and Cadmium) in Etak (*Corbicula fluminea*) collected from the Terengganu River. Undergraduate thesis, Bachelor of Science in Marine Science, Faculty of Maritime Study and Marine Science. University Malaysia Terengganu. 67p.

JABATAN SAINS MARIN
FAKULTI PENGAJIAN MARITIM DAN SAINS MARIN
UNIVERSITI MALAYSIA TERENGGANU

PENGAKUAN DAN PENGESAHAN LAPORAN
PROJEK PENYELIDIKAN I DAN II

Adalah ini diakui bahawa laporan penyelidikan bertajuk:

Concentration of Heavy Metal (Copper, Zinc and Cadmium) in *Corbicula fluminea* collected from the Terengganu River oleh **Che Ku Suriati Che Ku Sidek**, No.Matrik **UK12193** telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Marin sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah Sarjana Muda Sains (Sains Samudera), Fakulti Pengajian Maritim dan Sains Marin, Universiti Malaysia Terengganu.

Disahkan oleh:

.....

Penyelia Utama

Nama: DR. HING LEE SIANG
Penyelaras Program
Sarjana Muda Sains (Sains Samudera)
Jabatan Sains Marin
Fakulti Pengajian Maritim dan Sains Marin
Universiti Malaysia Terengganu
(UMT)

Cop Rasmi: Tarikh: 11/5/08

.....

Penyelia Kedua

Nama: PROF. DR. NOOR AZHAR MOHAMED SHAZILI
Pengarah
Institut Oseanografi
Universiti Malaysia Terengganu
21030 Kuala Terengganu, Terengganu.

Cop Rasmi: Tarikh: 4/5/08

.....

Ketua Jabatan Sains Marin

Nama: DR. RAZAK ZAKARIYA
Ketua Jabatan Sains Marin
Fakulti Pengajian Maritim dan Sains Marin
Universiti Malaysia Terengganu
(UMT)

Cop Rasmi: Tarikh: 11/5/08

ACKNOWLEGEMENT

Alhamdulillah. In the name of Allah and bless of Him, I have finished my final year project on concentration of heavy metal. Throughout of a year doing this project, I have faced a lot of problems and challenges which taught me that a winner never quit.

Firstly, I would like to thank to my supervisor, Dr. Hing Lee Siang, for giving me the valuable ideas and constructive comments. Also, Prof Dr. Noor Azhar Mohamed Shazili, my co-supervisor for supporting me to ensure my project successfully done.

My special appreciation to my mother, (Mek Ani Mohamad) uncle (Zaid Mohamad) and my beloved family who helped me a lot when collect the sample during the sampling and their continuous support, understanding, love and bless. Also, special thanks to laboratory assistant, En. Sulaiman, En. Raja and En. Kamari because were helped me in preparation equipment to do my laboratory analysis.

I would also like to thanks En. Joseph for spending his precious time to assist me was using the ICPMS although he was very busy.

Lastly, very thankful to Siti Aminah Mohamad, my auntie for giving me tips, advice and sharing the ideas in doing this project and also, my beloved friends, who helped me to realize this project. Thank you so much.

TABLE OF CONTENTS

LIST OF TABLE

LIST OF FIGURES

LIST OF FORMULA

LIST OF ABBREVIATIONS

ICPMS	-	Inductively Coupled Plasma-Mass Spectrometry
cm	-	centimeter
g	-	gram
µg	-	microgram
wt	-	weight
ml	-	milliliter
Cu	-	Copper
Cd	-	Cadmium
Zn	-	Zinc
H_2NO_3	-	nitric acid
H_2O_2	-	hydrogen peroxide
Ppm	-	part per thousand
$P<0.05$	-	significant differences
$P>0.05$	-	no significant differences
ANOVA	-	analysis of variance
df	-	degree of freedom
SS	-	sum of square
MS	-	mean of square
SD	-	standard deviation
µg/g	-	microgram per gram
Asian clam	-	*Corbicula fluminea*

LIST OF APPENDICES

Concentration of Heavy Metal (Copper, Zinc and Cadmium) In *Corbicula fluminea* Collected From Terengganu River

ABSTRACT

This study was conducted at Terengganu River were the specific location for sampling station is Pulau Manis River, Rengas River and Pulau Rusa River. The aim for this study is to determine and compare the concentration of heavy metal (Cu, Cd and Zinc) in *Corbicula fluminea* and sediment collected from three stations at Terengganu River and determines the concentration of Cu, Cd and Zinc in different of size of *C.fluminea*. *C.fluminea* was collected by hand while the sediment was collected using plastic spatula that it was rinse with 5% nitric acid. Samples were brought back to laboratory and store in refrigerator for further analysis. Three separation size were been done in *C.fluminea* (large, medium and small) to analysis their heavy metal concentration at different size. The samples were dried and digested to detect the heavy metal concentration (Cu, Cd and Zn), using Inductively Coupled Plasma-Mass Spectrometry or ICPMS. The result showed that *C.fluminea* has high concentration of Zinc (19.0397 $\pm$ 4.09 µg/g to 22.1605 $\pm$ 4.88 µg/g) than other metals and higher concentration of Zinc also had been detected in the sediment. The concentration of Zinc in sediment is 0.9204 $\pm$ 4.09 µg/g to 4.4090 $\pm$ 6.98 µg/g depend the location of the station. From the ANOVA analysis, copper had been found to have significant differences between sizes. However, both samples (*C.fluminea* and sediment) showed low concentration of cadmium that accumulates.