Toxicity of cadmium and its removal by marine microalgae, Chlorella sp. / Joanne Tan Ai Yien.

TOXICITY OF CADMIUM AND ITS REMOVAL BY MARINE MICROALGAE, *Chlorella sp.*

By

Joanne Tan Ai Yien

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

Department of Marine Science
Faculty of Maritime Studies and Marine Science
UNIVERSITY TERENGGANU MALAYSIA
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PENGAKUAN DAN PENGESAHAN LAPORAN PROJEK PENYELIDIKAN I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:

Toxicity of Cadmium and Its Removal by Marine Microalgae, *Chlorella sp.* oleh **Joanne Tan Ai Yien, No. Matrik UK 10356** telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Samudera sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah Sarjana Muda Sains (Sains Samudera), Fakulti Pengajian Maritim dan Sains Marin, Universiti Terengganu Malaysia.

Disahkan oleh:

.....

Penyelia Utama

Nama: DR. HING LEE SIANG

Cop Rasmi: Coordinator
Marine Science Programme
Bachelor of Science (Marine Science)
Faculty of Maritime Studies and Marine Science
Universiti Malaysia Terengganu (UMT)
21030 Kuala Terengganu.

Tarikh: .....

.....

Penyalia Kedua

Nama: Prof. DR. NOOR AZHAR MOHAMED SHAZILI

Cop Rasmi: Director
Institute of Oceanography
Universiti Malaysia Terengganu (UMT)
21030 Kuala Terengganu, Terengganu
MALAYSIA.

Tarikh: 25/4/07

.....

Ketua Jabatan Sains Samudera

Nama: DR. RAZAK ZAKARIYA

Cop Rasmi: Ketua Jabatan Sains Marin
Fakulti Pengajian Maritim dan Sains Marin
Universiti Malaysia Terengganu
(UMT)

Tarikh: 10/5/07

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LIST OF ABBREVATIONS/ SYMBOLS

ANOVA	Analysis of variance
$CdCl_2$	Cadmium Chloride
IC_{50}	The concentration that inhibits 50% of growth.
µg/g	Microgram per gram
mg/g	Miligram per gram
ml	Milliliter
L	Liter
Lux	SI unit for illuminence
ppm	Part per million
ppt	Part per thousand
STDEV	Standard Deviation

LIST OF APPENDICES

ABSTARCT

The toxicity of cadmium on marine microalgae, *Chlorella sp.* and also the ability of *Chlorella sp.* to remove cadmium from the culture solution were studied. The experiment was carried out using batch culture technique in modified f/2 medium. The result showed that *Chlorella sp.* has relatively high tolerance towards the toxicity of cadmium, the 96hr IC_{50} obtained was 6mg/L. On the other hand, the removal of *Chlorella sp.* were consider as ineffective, although the *Chlorella sp.* cells showed significant uptake of cadmium, this may due to the low initial concentration in the cadmium spiked culture solution. From the morphology study, the cells that were exposed to the cadmium showed certain abnormalities compared to the normal cells, this may due to the disruption of physiological process of the cell by cadmium.