

REDSOIL - CHEMICAL CHARACTERISTICS AND GEOCHEMISTRY
IN SEDIMENTS OF CHUKA-KEAMPAH RIVER SYSTEM IN
TERENGGANU

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FACULTY OF SCIENCE AND TECHNOLOGY
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2005

**PHYSICO-CHEMICAL CHARACTERISTICS AND GEOCHEMISTRY IN
SEDIMENTS OF CHUKAI-KEMAMAN RIVER SYSTEM IN TERRENGGANU**

BY

MOHAMAD RAZIF BIN ZAIDI

**A Project report submitted in partial fulfillment of
the requirements for the degree of
Bachelor of Science
(Marine Science)**

**FACULTY OF SCIENCE AND TECHNOLOGY
UNIVERSITY COLLEGE OF SCIENCE AND TECHNOLOGY
MALAYSIA
2005**

This project report should be cited as follows:

Zaidi. M. R. 2005. Physico-chemical Characteristics And Geochemistry In Sediments Of Chukai-Kemaman River System In Terengganu. Undergraduate Thesis, Bachelor of Science (Marine Science). Faculty of Science and Technology Malaysia, University College of Science and Technology. 135pp

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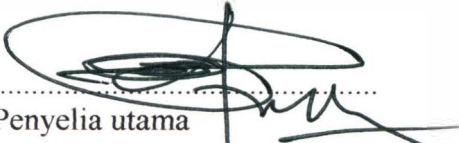
Program: Sarjana Muda Sains – Sains Samudera

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Tajuk Projek Penyelidikan: Physico-Chemical Characteristics And Geochemistry In Sediments Of Chukai-Kemaman River System In Terengganu.

Dengan ini disahkan bahawa saya (Penyelia) telah menyemak laporan projek ini dan

- i. Semua pembetulan yang disarankan oleh pemeriksa-pemeriksa telah dibuat,
- ii. Laporan ini telah mengikut format yang diberikan dalam Garis Panduan Projek Penyelidikan Tahun Akhir, Fakulti Sains dan teknologi, KUSTEM, 2003.


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DEDICATION:

THIS THESIS IS DEDICATED TO MY PARENTS, BROTHERS AND SISTERS AND
ALSO TO MY DEAREST. THANK YOU FOR ALL OF YOUR SUPPORTS AND
ENCOURAGEMENTS.

ACKNOWLEDGEMENTS

In the Name of Allah, the Merciful and the Compassionate, my gratitude is immeasurable for His blessings upon me. Special thanks to my beloved father, Zaidi bin Bujang and my beloved mother, Jawawiah binti Tahir who continuously prays for my success and never fails to offer encouragement and motivation to inspire me.

Sincere thanks and appreciation is also expressed to Assoc. Prof. Dr. Kamaruzzaman bin Yunus for his invaluable guidance, advice, suggestions and constructive criticisms throughout my final year project. Not forgetting all the laboratory assistants in Oceanography Laboratory; En. Kamari, En. Kamarun, En. Raja, En. Rosli, En. Adnan and En. Sulaiman for their help during the samplings and laboratory sessions. Special appreciation is also expressed to Mr. Willie, Mr. Waq, Mr. Karthiq and Mr. Ong for their assistance and advices on some technical aspects.

My deepest gratitude must definitely go to my “Nur” and “Guidance” (Nur Hidayah binti Mohd Daud) for her blessings and prayers; I was able to get the strength and inspirations; special thanks for undying supports that you given me thus far. I also appreciate my coursemate of Bachelor of Degree Marine Science 2002-2005 especially to Nanthini, Syaliendran, Yatie, Donz, Zaini and everyone involved in my project that I did not state above, I really appreciate for all your helps and thoughts throughout my project.

MOHAMAD RAZIF BIN ZAIDI

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ABSTRACT

The concentrations of heavy metals such as Li, Al, Mn, Co, Cu and Cr were determined in the studied sediments from Chukai-Kemaman River System. The relationship of heavy metals content with sediment particles, organic carbon content and physico-chemical characteristics were studied. The average concentration of heavy metals are $680.27 \pm 227.52 \mu\text{gg}^{-1}$ for Li, $7.62 \pm 5.11 \%$ for Al, $212.71 \pm 74.79 \mu\text{gg}^{-1}$ for Mn, $100.55 \pm 17.89 \mu\text{gg}^{-1}$ for Co, $79.80 \pm 48.64 \mu\text{gg}^{-1}$ for Cu and $274.96 \pm 139.60 \mu\text{gg}^{-1}$ for Cr . Furthermore, Mn and Co showed the lowest EFs values ($\text{EFs} < 1$) which were reflected by mobilization of these elements in correlation with Al and indicate that the elements in the sediment was originated predominantly from crustal material or terigenous in origin. For the other elements such as Cu and Cr with an average Enrichment Factors ranged from 1.496 ± 0.498 to 1.305 ± 0.975 indicate that the elements were derived from the additional of crustal origin which were responsible for a portion of the concentrations of heavy metals in the studied sediments There was a negative correlation ($R = 0.0081$) between the organic carbon content and mean size particles in the studied sediments. The profiles of temperature, pH and salinity in Chukai-Kemaman River System were also presented.

ABSTRAK

Kepekatan logam berat seperti Li, Al, Mn, Co, Cu dan Cr telah ditentukan di dalam sedimen yang dikaji daripada Sistem Sungai Chukai Kemaman. Perhubungan antara kandungan logam berat dengan partikel sedimen, kandungan karbon organik dan karekteristik fiziko-kimia telah dikaji. Purata kepekatan logam berat seperti $.27 \pm 227.52 \mu\text{gg}^{-1}$ untuk Li, $7.62 \pm 5.11 \%$ untuk Al, $212.71 \pm 74.79 \mu\text{gg}^{-1}$ untuk Mn, $100.55 \pm 17.89 \mu\text{gg}^{-1}$ untuk Co, $79.80 \pm 48.64 \mu\text{gg}^{-1}$ untuk Cu and $274.96 \pm 139.60 \mu\text{gg}^{-1}$ untuk Cr. Selain itu, Mn dan Co menunjukkan nilai EF yang terendah ($EF < 1$) yang mana pergerakan elemen-elemen ini mempunyai korelasi dengan Al dan menunjukkan yang elemen-elemen di dalam sedimen berasal daripada bahan kerak atau asalan dari terigenous. Bagi elemen-elemen lain seperti Cu dan Cr dengan purata Faktor Pengkayaan (EF) berjulat antara 1.496 ± 0.498 ke 1.305 ± 0.975 menunjukkan yang elemen-elemen datangnya daripada pertambahan asalan kerak dimana bertanggungjawab dalam kepekatan logam berat di dalam sedimen yang dikaji. Terdapat korelasi negatif ($R = 0.0081$) antara kandungan karbon organik dengan saiz min partikel di dalam sedimen yang dikaji. Profail-profail suhu, pH dan saliniti dalam Sistem Sungai Chukai-Kemaman juga ditunjukkan.