

SEDIMENTOLOGICAL AND HEAVY METAL
STUDIES OF BENTHIC COASTAL SEDIMENTS

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**SEDIMENTOLOGICAL AND HEAVY METAL
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By

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**APPROVAL AND CERTIFICATION
FORM RESEARCH PROJECT I AND II**

I certify that research report entitled:

**Sedimentological And Heavy Metal Studies of Kemaman Coastal Water by
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LIST OF ABBREVIATIONS

%	percentage
Ø	phi
°C	degree Celsius
µm	micrometer
mm	millimeter
mL	milliliter
g	gram
µg.g ⁻¹	miligram per gram
Co	Cobalt
Cu	Copper
Zn	Zn
Pb	Lead
Li	Lithium
Al	Aluminium
<	less than
>	more than
ppm	part per million
ppb	part per billion
EDTA	Ethylendiamenetetra Acid
PSA	Particle Size Analyzer
ICP-MS	Inductive Coupled Plasma-Mass Spectrometry
GPS	Global Positioning System

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ABSTRACT

Sedimentological and heavy metal study was carried out in South China Sea off Kemaman Coastal Water. This study had 12 stations altogether and covering Dungun River, Port Kerteh and Kemaman River. Collection of sediment was done from 17 September 2006 until 20 September 2006. The purpose of this study was to determine the sediments characteristics, percentage of organic carbon contents and concentration of selected heavy metals. Generally, the sediments in the study area ranged from very coarse sand to fine silt and value for standard deviation is irregular. Most of the sediments in the study area were dominated by coarse sand. The range of percentage organic carbon contents ranged from 0.81 % to 1.38 % which indicates weak correlation with particle mean size. Average concentration of Co, Cu, Zn, and Pb are $7.9403 \mu\text{g.g}^{-1}$, $17.4167 \mu\text{g.g}^{-1}$, $59.2747 \mu\text{g.g}^{-1}$, and $17.9830 \mu\text{g.g}^{-1}$ respectively. All the selected metals show weak correlation with particle mean size and an organic carbon contents. Normalization and Enrichment Factor (EF) analysis shows that the metals studied (Co, Cu, Zn, and Pb) are derived from natural sources and not influence by anthropogenic sources.

ABSTRAK

Kajian ini telah dijalankan di kawasan Perairan Kemaman, Terengganu melibatkan 12 stesen meliputi Sungai Dungun, Pelabuhan Kerteh dan Sungai Kemaman. Pengumpulan sedimen telah dilakukan pada tarikh 17 September 2006 hingga 20 September 2006. Tujuan kajian ini adalah untuk mengetahui ciri-ciri sediment, kandungan karbon organik dan logam berat. Secara keseluruhannya, kajian ini menunjukkan sedimen di kawasan kajian adalah dikategorikan daripada pasir paling kasar hingga ke kelodak halus dan nilai piawai adalah tidak sekata. Sedimen yang terdapat dikawasan kajian boleh diklasifikasikan sebagai sedimen pasir kasar. Julat kandungan karbon organik pula adalah 0.81 % hingga 1.38 % dan kaitan antara kandungan karbon organik serta min saiz partikel adalah lemah. Kepekatan purata bagi logam berat terpilih iaitu Co, Cu, Zn, dan Pb pula adalah masing – masing $7.9403 \mu\text{g.g}^{-1}$, $17.4167 \mu\text{g.g}^{-1}$, $59.2747 \mu\text{g.g}^{-1}$, dan $17.9830 \mu\text{g.g}^{-1}$. Logam berat yang terpilih ini menunjukkan korelasi yang lemah antara saiz min partikel dan juga kandungan karbon organik. Penormalan dan faktor pengkayaan pula menunjukkan elemen-elemen Co, Cu, Zn, dan Pb adalah datangnya dari sumber semulajadi dan bukan dari aktiviti sumber antropogenik.