GEOCHEMISTRY AND SEDIMENTOLOGICAL CHARACTERISTICS IN SEDIMENT OF PAKA AND DUNGUN RIVERS

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GEOCHEMICAL AND SEDIMENTOLOGICAL CHARACTERISTICS IN SEDIMENT OF PAKA AND DUNGUN RIVERS

BY

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A Project report submitted in partial fulfillment of
the requirements for the degree of
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PENGAKUAN DAN PENGESAHAN LAPORAN
PROJEK PENYELIDIKAN I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:
Geochemistry and Sedimentological Characteristics in Sediment of Paka and Dungun Rivers.
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Nor Hazren bin Hassim, Bachelor of Marine Science (2005).

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LIST OF ABBREVIATIONS

° C	degree Celsius
Ø	phi
µm	micrometer
gcm^{-3}	gram per centimeter cube
mL	milliliter
L	Liter
mg/L	milligram per liter
ng/L	nanogram per liter
µg/L	microgram per liter
ppm	part per million
st.	station
Al	Aluminium
Cd	Cadmium
Cr	Cromium
Cu	Copper
Fe	Iron
Pb	Lead
Mn	Manganese
Zn	Zinc
ICP-OES	Inductively Coupled Plasma - Optical Emission Spectrofotometer
EDTA	Ethylene Diamine Tetra Acetic Acid

ABSTRACT

Particle size, organic carbon and heavy metals for sediment obtained from both rivers with differential streaming systems. Physical parameters show an increase of temperature will decrease pH, salinity and dissolved oxygen. The particle mean size of Paka River is 0.385 ± 0.63 Ø and -0.056 ± 0.84 Ø for particle of Dungun River. Average calculated organic carbon content shows 1.3951 ± 0.811 % and 1.8370 ± 0.733 % for Paka and Dungun River respectively. Average trace metals concentration as detected via ICP-OES for Mn is 221.37 ppm, 1.98 ppm of Fe, 4.91 ppm Al, 90.12 ppm of Cr, 22.48 ppm of Co and 24.59 ppm Cu for Paka River. Dungun River sediment consist of Mn with 350.42 ppm, Fe with 2.00 ppm, 4.26 ppm of Al, 81.40 ppm Cr, 25.51 ppm Co and 13.60 ppm Cu. Correlation between particle size and organic carbon exhibited low correlation due to r values of 0.317 and 0.200 respectively. Heavy metals against particle mean size has shown moderately correlation, low correlation with exceptional for Co element of Paka River sediment and Dungun River exhibited mostly almost negligible relationship upon particle mean size with exceptional for Fe and Al that has low correlation with samples mean size and moderate correlation for Cu. Dungun River exhibited almost negligible relationship upon organic carbon and some metals are correlated to organic carbon in Paka River. Due to normalization and enrichment factors (EFs), heavy metals found are higher in Dungun River than Paka River but not a serious problem and the high value might have derived from the same pollution sources and consider anthropogenic input.

ABSTRAK

Saiz partikel, organik karbon dan logam berat bagi sediment yang diperolehi daripada kedua-dua batang sungai yang mempunyai sistem saliran yang berlainan. Parameter fizikal menunjukkan suhu meningkat dengan penurunan pH, oksigen terlarut dan kemasinan. Min saiz partkel dari Sungai Paka adalah 0.385 ± 0.63 Ø dan -0.056 ± 0.84 Ø untuk partikel Sungai Dungun. Purata peratusan kandungan karbon organik menunjukkan Sungai Paka dan Dungun adalah 1.3951 ± 0.811% 1.8370 ± 0.733%. Purata kepekatan logam yang dikesan oleh ICP-OES logam Mn dengan 221.37 ppm, 1.98 ppm Fe, 4.91 ppm Al, 90.12 ppm Cr, 22.48 ppm Co dan 24.59 ppm Cu untuk Sungai Paka. Sediment Sungai Dungun mengandungi Mn sebanyak 350.42 ppm, 2.00 ppm Fe, 4.26 ppm Al, 81.40 ppm Cr, 25.51 ppm Co dan 13.60 ppm Cu. Korelasi di antara saiz partikel dan organik karbon mempamerkan nilai korelasi yang rendah berdasarkan nilai r masing-masing sebayak 0.317 dan 0.200. Logam berat melawan min saiz partikel menunjukkan korelasi yang sederhana dan rendah dengan pengecualian untuk Co dari Sungai Paka manakala Sungai Dungun tiada korelasi dengan pengecualian untuk Fe dan Al yang menunjukkan korelasi yang rendah dengan min saiz sampel dan korelasi yang sederhana untuk Cu. Berdasarkan normalisasi dan faktor pengkayaan, logam berat yang dijumpai di Sungai Dungun adalah lebih tinggi dan mungkin disebabkan oleh sumber antropogenik daripada aktiviti manusia dan ia bukanlah masalah yang serius.