HEAVY METAL DISTRIBUTION IN DIFFERENT SIZE FRACTION OF SEDIMENT FROM KEMAMAN NEARSHORE ENVIRONMENT

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HEAVY METAL DISTRIBUTION IN DIFFERENT SIZE FRACTION OF SEDIMENT FROM KEMAMAN NEARSHORE ENVIRONMENT

By

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JABATAN SAINS MARIN
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LIST OF ABBREVIATIONS / SYMBOLS

SYMBOLS	MEANING
°C	Degree Celsius
%	Percent
Ø	Phi
µm	micrometer/ micron
µm/L	micrometer per litre
gcm^{-3}	gram per centimeter cube
mL	milliliter
µg/g	microgram per gram
ppm	part per million
HNO_3	Nitric Acid
HCl	Hydrochloric Acid
H_2O_2	Hydrogen Peroxide
HF	Hydrofluoric Acid
Cd	Cadmium
Cu	Copper
Pb	Lead
Zn	Zinc
EDTA	Ethylene Diamine Tetraacetic Acid
ICP-MS	Inductively Coupled Plasma Mass Spectrometry

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ABSTRACT

Sediment collected from 8 stations which located at Kemaman nearshore area were analyzed for Cd, Cu, Zn, Pb and Fe concentration according to sediment fraction size of 40μm, 63 μm, 90μm, 125μm, 250μm and 500μm and grain size. Samples were collected using Smith Mcintyre and analyzed using ICPMS. The range for concentrations of metals were (0.036μg/g to 0.143μg/g) for Cd, (1.17μg/g to 12.35μg/g) for Cu, (42.55μg/g to 131.54μg/g) for Zn, (13.63μg/g to 36.78μg/g) for Pb and (3.21% to 7.69%) for Fe. The statistical analysis of Pearson Correlation proved that there is significant relationship between metal concentration and size fraction of sediment. The concentration of Cd, Cu, Zn, Pb and Fe increased with the increase of sediment fraction size. From normalization generally metal concentration in the sediment was much influenced by natural process. Sediment ranged from coarse sand to finer sand according to the distance from the shore. Skewness value for all stations is negative. Besides sediment range from poorly sorted to moderately sorted. The data obtained provides a better understanding as well as proper monitoring of pollution level in South China Sea.

ABSTRAK

Sedimen diambil dari 8 stesen yang terletak di kawasan pesisir laut Kemaman untuk dianalisis logam berat seperti kepekatan Cd, Cu, Zn, Pb, Fe berdasarkan saiz fraksi sedimen iaitu 40μm, 63 μm, 90μm, 125μm, 250μm and 500μm. Sampel diambil menggunakan pencekau Smith Mcintyre dan dianalisis menggunakan ICPMS. JUlat untuk kepekatan logam adalah (0.036μg/g hingga 0.143μg/g) bagi Cd, (1.17μg/g hingga 12.35μg/g) bagi Cu, (42.55μg/g hingga 131.54μg/g) bagi Zn, (13.63μg/g hingga 36.78μg/g) bagi Pb dan (3.21% hingga 7.69%) bagi Fe. Analisis statistik kolerasi Pearson membuktikan terdapatnya perkaitan antara kepekatan logam berat dengan saiz fraksi sediment. Daripada penormalan secara umumnya kepekatan logam didalam sediment dipengaruhi oleh proses semulajadi. Julat min saiz bagi sediment adalah antara pasir kasar hingga pasir halus bergantung kepada jarak stesen daripada kawasan pantai. Manakala kepencongan bagi setiap stesen adalah negatif. Disamping itu julat penyisih adalah antara tidak sempurna hingga sederhana sempurna. Data yang diperolehi menerangkan dengan lebih jelas tentang tahap pencemaran serta kaedah pemantauan yang lebih berkesan di kawasan Laut China Selatan.