

THE DISTRIBUTION OF HEAVY METALS AND SEDIMENT
CHARACTERISTICS IN WAKANG, ISAN AND MERANG RIVERS,
TERENGGANU

FOR PARTIAL BT BY SHE WAN

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

2005

**THE DISTRIBUTION OF HEAVY METALS AND SEDIMENT
CHARACTERISTICS IN MARANG, IBAI AND MERANG RIVERS,
TERENGGANU**

BY

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ABSTRAK

Satu kajian mengenai taburan elemen-elemen kimia di Sungai Marang, Ibai dan Merang, Terengganu. Nilai purata bagi kepekatan logam Al bagi Sungai Marang ialah 4.525 ± 3.22 $\mu\text{g/g}$, kepekatan Mn ialah 2.11 ± 123.75 $\mu\text{g/g}$, kepekatan Co 85.84 ± 11.16 $\mu\text{g/g}$, kepekatan Cu 74.789 ± 29.7 $\mu\text{g/g}$ dan kepekatan Cr ialah 155.87 ± 45.47 $\mu\text{g/g}$. Bagi Sungai Ibai pula, kepekatan Al ialah 4.91 ± 2.45 $\mu\text{g/g}$, kepekatan Mn ialah 273.4711 ± 218.81 $\mu\text{g/g}$, kepekatan Co 91.04 ± 21.34 $\mu\text{g/g}$, kepekatan Cu 121.94 ± 187.65 $\mu\text{g/g}$ dan kepekatan Cr ialah 143.80 ± 37.99 $\mu\text{g/g}$. Manakala Sungai Merang pula berkepekatan Al dengan 1.15 ± 1.51 $\mu\text{g/g}$, kepekatan Mn ialah 116.69 ± 124.59 $\mu\text{g/g}$, kepekatan Co 88.74 ± 17.01 $\mu\text{g/g}$, kepekatan Cu 85.45 ± 81.24 $\mu\text{g/g}$ dan kepekatan Cr ialah 95.96 ± 26.28 $\mu\text{g/g}$. Normalisasi Al terhadap Mn, Co, Cu dan Cr menunjukkan taburan elemen-elemen kimia dalam ketiga-tiga sungai adalah berasal daripada sumber antropogenik iaitu daripada aktiviti manusia. Ini dapat dibuktikan daripada nilai EF yang diperolehi. Parameter fizikal menunjukkan perubahan yang sedikit di antara stations. Sedimen Ibai didapati lebih halus dari sedimen Marang dan Merang. Purata min saiz ialah 1.84 ± 0.78 , $\emptyset 0.88 \pm 0.69$ \emptyset dan $1.249 \pm 0.47\emptyset$. Purata kandungan organik bagi Marang, Ibai dan Merang ialah 1.90 ± 0.11 , 1.92 ± 0.09 dan 1.97 ± 0.11 . Perhubungan antara min saiz partikel dan karbon organik bagi ketiga-tiga sungai ini adalah sangat lemah dan boleh diabaikan.

ABSTRACT

A study on the distribution of Al, Mn, Co, Cu Cr around Marang, Ibai and Merang rivers of Terengganu were determined. The average concentration of Al from Marang sediment is $4.525 \pm 3.22\%$, for Mn $2.11 \pm 123.75 \mu\text{g/g}$, for Co $85.84 \pm 11.16 \mu\text{g/g}$, for Cu $74.789 \pm 29.7 \mu\text{g/g}$ and for Cr is $155.87 \pm 45.47 \mu\text{g/g}$. For Ibai sediment, Al concentration is $4.91 \pm 2.45\%$, Mn is $273.4711 \pm 218.81 \mu\text{g/g}$, Co $91.04 \pm 21.34 \mu\text{g/g}$, Cu $121.94 \pm 187.65 \mu\text{g/g}$ and Cr is $143.80 \pm 37.99 \mu\text{g/g}$. Meanwhile, the Merang sediment for Al is $1.15 \pm 1.51 \mu\text{g/g}$, Mn is $116.69 \pm 124.59 \mu\text{g/g}$, Co $88.74 \pm 17.01 \mu\text{g/g}$, Cu $85.45 \pm 81.24 \mu\text{g/g}$ and Cr is $95.96 \pm 26.28 \mu\text{g/g}$. The normalization of Al against Mn, Co, Cu and Cr showed that the distribution of these chemical element from the sediment were greatly affected by anthropogenic effects. This can be proven by EF value obtained. Physical parameter showed minor difference amongst stations. Sediments size from Ibai were smaller compared to Marang and Merang. The mean average of the particle size is 1.84 ± 0.78 , $\emptyset 0.88 \pm 0.69 \emptyset$ and $1.249 \pm 0.47\emptyset$. The average organic content for Marang, Ibai and Merang is 1.90 ± 0.11 , 1.92 ± 0.09 dan 1.97 ± 0.11 . The relationship between mean size and organic carbon for all three rivers are so weak and negligible.