# CONCENTRATION OF HEAVY METALS IN SEDIMENT ANDB IVALVES OF TOK BALI MANGROVE

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# CONCENTRATION OF HEAVY METALS IN SEDIMENT AND BIVALVES OF TOK BALI MANGROVE

**By**

**Rafidah Binti Mohd. Suhaimi**

**Research Report submitted in partial fulfillment of the requirements for the degree of Bachelor of Science (Marine Science)**

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## LIST OF ABBREVIATIONS

| SYMBOL | MEANING |
|---|---|
| Pb | Lead |
| Zn | Zinc |
| Cu | Copper |
| Mn | Manganese |
| Fe | Iron |
| Cr | Chromium |
| Ba | Barium |
| Sr | Strontium |
| g | Gram |
| mL | Milliliter |
| GPS | Global Positioning System |
| μm | Micrometer |
| μg | Microgram |
| $H_2O_2$ | Hydrogen peroxide |
| ICP-MS | Inductive Couple Plasma-Mass Spectroscopy |
| $HNO_3$ | Acid Nitric |
| PSA | Particle Size Analyzer |

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## ABSTRACT

An assessment of marine contamination due to heavy metals was made in the mangrove areas based on marine bivalves and sediment collected in Tok Bali, Kelantan during 30 August 2007. Sediment samples were analyzed for sedimentological characteristic, heavy metals, and organic carbon. Whereas, the marine bivalves were analyzed for heavy metals contents. Concentrations of Mn, Cu, Zn and Sr were typically high in sediments compared to the bivalve. The average concentration of Cr, Mn, Cu, Zn, Sr, Ba and Pb in sediment is 83.767μg/g, 139.400μg/g, 11.450μg/g, 82.912μg/g, 45.170μg/g, 31.473μg/g and 35.087μg/g. The average concentration of Cr, Mn, Cu, Zn, Sr, Ba and Pb in bivalve is 2.142μg/g, 47.845μg/g, 4.670μg/g, 79.976μg/g, 34.380μg/g, 1.423μg/g, and 1.606μg/g. The percentage of organic carbon in station 1, station 2, station 3, station 4, station 5 and station 6 is 1.08%, 0.81%, 0.84%, 0.93%, 1.31% and 0.89% respectively. Result on normalization showed that all the studied elements (Cr, Mn, Cu, Zn, Sr, Ba and Pb) were derived from natural sources or terrigenous origin.

Kajian Mengenai Kandungan Logam Berat Dalam Sedimen dan Organisma (Bivalvia) di Kawasan Paya Bakau Tok Bali, Kelantan

## ABSTRAK

Kajian ini adalah untuk menilai pencemaran marin yang berlaku disebabkan oleh logam berat di kawasan paya bakau berdasarkan sampel tanah dan organisma (bivalvia) yang telah diambil di Tok Bali, Kelantan pada 30 Ogos 2007. Sampel tanah telah dianalisis dari segi kadar sedimentasi, logam berat dan juga jumlah karbon organik. Manakala bagi sampel organisma (bivalvia) pula, ujian logam berat telah dilakukan. Kandungan kepekatan bagi logam berat di dalam sampel tanah (sedimen) didapati lebih tinggi kepekatannya berbanding kandungan yang terdapat di dalam organisma (bivalvia). Purata kepekatan logam berat dalam sediment adalah 83.767μg/g bagi Cr, 139.400μg/g bagi Mn, 11.450μg/g bagi Cu, 82.912μg/g bagi Zn, 45.170μg/g bagi Sr, 31.473 bagi Ba dan 35.087μg/g bagi Pb. Purata kepekatan logam berat di dalam organisma pula adalah 2.142μg/g bagi Cr, 47.845μg/g bagi Mn, 4.670μg/g bagi Cu, 79.976μg/g bagi Zn, 34.380μg/g bagi Sr, 1.423μg/g bagi Ba, dan 1.606μg/g bagi Pb. Manakala bagi peratusan kandungan organik karbon pula ialah 1.08% (Stesen 1), 0.81% (Stesen 2), 0.84% (Stesen 3), 0.93% (Stesen 4), 1.31% (Stesen 5) and 0.89% (Stesen 6). Berdasarkan daripada ujian penormalan yang telah dilakukan didapati bahawa logam berat adalah berpunca daripada sumber semulajadi.