

THE TAP BALLS SOLUTION ALONG THE COAST
OF KUALA TERENGGANU

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THE TAR BALLS POLLUTION ALONG THE COAST OF
KUALA TERENGGANU

By

Johnson Koh Ching Chern

Research Report submitted in partial fulfillment of
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LIST OF ABBREVIATIONS

Wt	--	weight
TB	--	tar balls
BR	--	Batu Rakit
KB	--	KUSTEM Beach
TK	--	Teluk Ketapang
DCM	--	Dichloromethane
DDT	--	Dichloro Dipheny Trichloroethane
%	--	Percentages
g	--	gram
mg	--	milligram
ng	--	nanogram
mL	--	mili Liter
μL	--	micro Liter
g.m^{-1}	--	gram per meter strip
ppm	--	part per million
[C]	--	concentration

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ABSTRAK

Kebanyakan bebola tar dilaporkan sebagai satu penunjuk kepada impak pencemaran minyak. Sebahagian negeri Terengganu disempadani dengan garisan pantai sepanjang 244 kilometer dan inilah menyebabkan pantai Terengganu terdedah kepada pencemaran bebola tar. Kajian ini dijalankan sebanyak 5 kali dalam tempoh May 2003 hingga Januari 2004. Kawasan kajian ini dikunjungi 2 bulan sekali untuk mengutip bebola tar yang mendap di atas pantai. Kajian ini merupakan satu kajian yang berlanjutan untuk pengawasan taburan bebola tar di pantai Batu Rakit, pantai KUSTEM dan pantai Teluk Ketapang. Selain itu, saiz bebola tar juga direkodkan. Kajian kuantitatif dan kualitatif terhadap hidrokarbon dalam bebola tar juga dilakukan dalam projek ini. Dalam kajian ini didapati bebola tar yang mendap di atas ketiga-tiga pantai ini, hanya satu kawasan pantai yang bebas terhadap pencemaran bebola tar iaitu pada bulan September 2003 dan November 2003 di stesyen KUSTEM. Pada penyampelan yang selainya, bebola tar adalah melebihi piawai yang ditetapkan oleh UNEP (1992). Purata kepekatan pada Januari di Batu Rakit mencecah $518.00\text{g}\cdot\text{m}^{-1}$, Pantai KUSTEM hanya mendap $88.35\text{g}\cdot\text{m}^{-1}$ dan pantai Teluk Ketapang mencatatkan nilai yang terendah iaitu $16.00\text{g}\cdot\text{m}^{-1}$. Keputusan ini telah menunjukkan bebola tar telah mengalami pelbagai proses iklim seperti pemeruapan, pemelarutan dan foto kimia. Baki yang tinggal adalah hidrokarbon yang mengandungi elemen karsinogenik atau mutagenic terhadap kesihatan manusia. Berdasarkan analisis keputusan ini, menunjukkan pantai Terengganu adalah dicemari oleh bebola tar.

ABSTRACT

Tar balls are frequently used as an indicator of oil pollution. Terengganu is partly bounded by 244 kilometers length coastline. Thus the coast of Terengganu will be strongly affected by the tar balls pollution. Five sampling trips were established for this study between May 2003 and January 2004. The study areas were visited once in two months for collected the tar balls deposited on the beach. This study is a continuous study of the previous project on monitoring tar balls distribution along the beach of Batu Rakit, KUSTEM beach and Teluk Ketapang beach, as well as on the size distribution of the tar balls. The quantitative and qualitative of hydrocarbons constitution of tar balls are also being done in this study. From the study on the tar balls deposition on the 3 beaches, only KUSTEM station was free with tar balls pollution in September 2003 and November 2003. In other sampling time, the weight of tar balls exceeded the standard set by UNEP (1992). The tar balls mean concentration in January at Batu Rakit beach was $518.00\text{g}\cdot\text{m}^{-1}$, KUSTEM beach was deposited $88.35\text{g}\cdot\text{m}^{-1}$ and the Teluk Ketapang was $16.00\text{g}\cdot\text{m}^{-1}$ which was the lowest compared to other. The results show that tar balls have undergone various weathering process such as evaporation, dissolution and photo oxidation before end up on the beach. The residual remains are mainly hydrocarbon compounds and some contain the carcinogenic or mutagenic compounds which are harmful to human. The study shows that Terengganu beach is polluted with tar balls.