

**DISTRIBUTION OF HYDROCARBONS IN WATER AND SEDIMENT OF
SETIU LAGOON**

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

**Department of Marine Science
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UNIVERSITI MALAYSIA TERENGGANU
2007**

1100054069

This project should be cited as:

Norliana, M. R. 2007. Distribution of Hydrocarbons in Water and Sediment of Setiu Lagoon. Project report of Bachelor of Science (Marine Biology). Faculty of Maritime Study and Marine Science. Universiti Malaysia Terengganu. 102p.

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**JABATAN SAINS MARIN
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**PENGAKUAN DAN PENGESAHAN
LAPORAN PROJEK PENYELIDIKAN I DAN II**

Adalah ini diakui dan disahkan bahawa laporan penyelidik bertajuk:

DISTRIBUTION OF HYDROCARBONS IN WATER AND SEDIMENT OF SETIU
LAGOON

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telah diperiksa dan semua pembedaan yang disarankan telah dilakukan. Laporan ini
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ACKNOWLEDGEMENTS

First and always, praise to God to all the kindness and love that I get so I can finally finish my writing. And my sincere gratitude and thanks to my supervisor, Professor Dr. Law Ah Theem for his guidance, advice, supervision and time spend in this study, thanks a lot. I am very appreciating for the entire helping and knowledge from him.

The warmest thanks and appreciate to Prof. Dr. Law master student for help, support and teaching me lots of things especially to Yong Jaw Chuen and also not forget to Chua Lai Fatt and Yew Wooi Meng. I am also thankful to the entire lab assistant at Oceanography lab, especially to En. Sulaiman and En. Raja for their helps and guidance.

I am very grateful to my beloved parents for their love and support in my life. My appreciation also to my best friends that I ever had, students Biology Marine, thanks you for your helps and support especially to Zulikha, Hidayah, Siti Fatimah and Samantha. Thanks you all...

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ABBREVIATIONS

°C	= degree Celsius
%	= percentage
α	= alpha
g	= gram
m	= meter
ml	= milliliter
μg	= microgram
nm	= nanometer
ppt	= part per thousand
ppm	= part per million
ppb	= part per billion
g/L	= gram per liter
mg/kg	= milligram per kilogram
mg/L	= milligram per liter
μg/ml	= microgram per milliliter
μg/L	= microgram per liter
WSF	= Water soluble fraction
P	= possibility

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ABSTRAK

Analisa jumlah kepekatan hidrokarbon di dalam air dan sediment telah dijalankan untuk mengetahui tahap pencemaran minyak hidrokarbon di dalam air dan sediment di Lagun Setiu di Terengganu. Masalah ini di timbulkan memandangkan pembangunan yang pantas dalam aktiviti akuakultur yang turut sama meningkatkan aktiviti bot di kawasan ini sebagai pengangkutan utama, selain daripada aktiviti yang telah sedia ada di kawasan ini seperti aktiviti pembuatan bot dan bot menangkap ikan yang dilengkapi dengan tempat tidur (Noor Azhar *et al.*, 2003). Kajian ini telah dijalankan semasa Monsun Barat Daya (13 Spetember), peralihan monsun (12 Oktober) dan Monsun Timur Laut (14 Disember) dalam tahun 2006 untuk menentukan kesan musim monsun terhadap tahap pencemaran minyak hidrokarbon di Lagun Setiu. Data untuk parameter hidrologi seperti saliniti, pH, dan suhu turut diambil dan direkodkan. Jumlah hidrokarbon di dalam air dan sedimen ditentukan dengan menggunakan kaedah pengekstrakkan.

Keputusan kajian menunjukkan Lagun Setiu telah dicemari oleh hidrokarbon pada tahap yang sederhana. Jumlah purata hidrokarbon di dalam air adalah 175.68 ppb manakala dalam sediment pula adalah 289.8 mg/kg. Keputusan menunjukkan tidak ada perbezaan yang nyata dalam kepekatan hidrokarbon dalam air pada setiap stesen ($P>0.05$), tetapi menunjukkan perbezaan yang nyata pada setiap masa penyampelan ($P<0.05$). Untuk paras hidrokarbon dalam sedimen, tidak ada perbezaan yang nyata antara stesen ($P>0.05$) dan juga pada masa penyampelan sample sediment ($P>0.05$). Kajian ini telah menunjukkan bahawa musim monsun boleh memainkan peranan yang penting dalam memberi kesan kepada kepekatan hidrokarbon di kawasan Lagun Setiu.

ABSTRACT

Analysis of total hydrocarbons in water and sediment was done in order to investigate the level of oil pollution in water and sediment of Setiu Lagoon in Terengganu. This concern was highlight due to the immense development in aquaculture activity that has led to the increase of boat activity as a primary transportation in this area besides of existing activities such as boat building and fishing boat berthing facilities. This study was conducted during Southwest Monsoon (13 September), Inter-Monsoon (12 October) and Northwest Monsoon (14 December) in year 2006 to determine the effects of monsoon seasons on oil pollution in the Setiu Lagoon. Data for hydrological parameter such as salinity, pH and temperature were also recorded. The total of hydrocarbons both in water and sediment were determined using the standard extraction method.

The results showed that Setiu Lagoon was moderately polluted by hydrocarbons. The mean total hydrocarbons concentration in the water was 175.68 ppb while mean for total hydrocarbons content in the sediment was 289.8 mg/kg. There was no significant different of hydrocarbon level in water among stations ($P>0.05$), but there was a significant different of hydrocarbon level in water between the sampling periods ($P<0.05$). For hydrocarbon level in sediment, there was no significant different among stations, ($P>0.05$) and for the sampling periods, there was also no significant different of hydrocarbon level ($P>0.05$). This study demonstrated that monsoons season can play an important role in affecting the concentrations of hydrocarbons in the Setiu Lagoon.