

DISTRIBUTION OF HYDROCARBONS AND
OIL BACTERIA IN COASTAL WATER OFF
PULAU PERHENTIAN, SOUTH CHINA SEA.

LIEW SIAN SOON

FACULTY OF SCIENCE AND TECHNOLOGY
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI
MALAYSIA

2003

1100024849

clw 1489.

LP 17 FST 7 2003

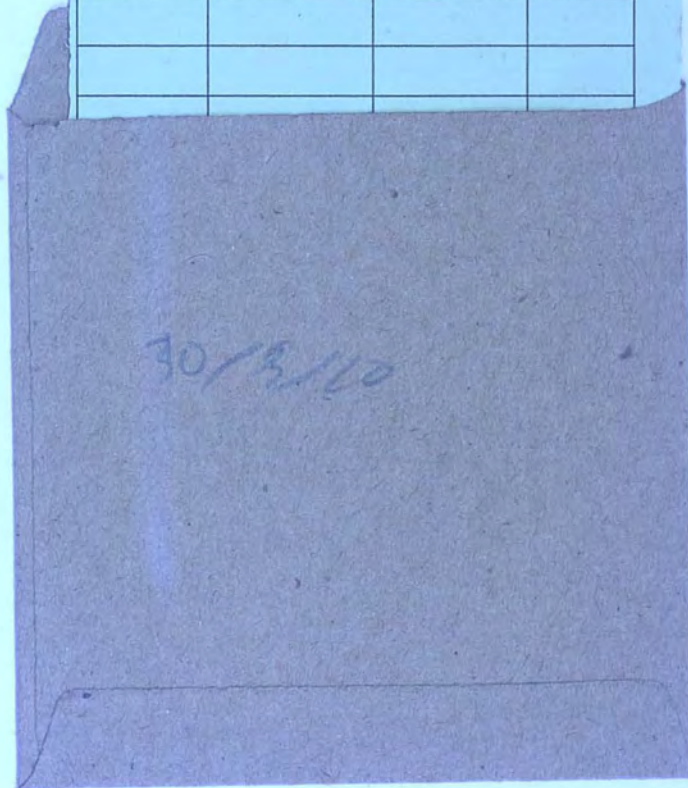


1100024849

Distribution of hydrocarbons and oil bacteria in coastal water off
Pulau Perhentian South China Sea / Liew Sian Soon.



Tarikh	Waktu Pemulangan	Nombor Ahli	Tanda tangan



4
16
11/11
2005

DISTRIBUTION OF HYDROCARBONS AND OIL BACTERIA IN
COASTAL WATER OFF PULAU PERHENTIAN,
SOUTH CHINA SEA

BY

LIEW SIAN SOON

This project report is submitted in partial fulfillment of the requirements for the
Degree of Bachelor of Science
(Marine Science)

Faculty of Science and Technology
Kolej Universiti Sains dan Teknologi Malaysia

2003

1100024849

Liew, S.S. 2003. Distribution of hydrocarbons and oil bacteria in coastal water off Pulau Perhentian, South China Sea. Undergraduate thesis, Bachelor of Science in Marine Science, Faculty of Applied Science and Technology, Kolej Universiti Sains dan Teknologi Malaysia, Terengganu. 106p.

No part of this project report may be reproduced by any mechanical, photographic, or electronic process, or in the form of phonographic recording, nor may it be stored in a retrieval system, transmitted, or otherwise copied for public or private use, without written permission from the author and the supervisor of the project.

1100024843

LP
17
FST
7
2003

ACKNOWLEDGEMENT

First and always, my sincere gratitude and thanks to my supervisor, Professor Dr. Law Ah Theem for his kindness guidance, advice, supervision and time spend in this study. I am very appreciate the entire helping and knowledge from him.

I'm very grateful to my beloved parents and sisters for their love and support in my life.

I am also very thankful to the entire lab assistant contributed to this study for their help and guidance. My appreciation also to Hii, Jong, Chin, Peithing, and all my course-mates for their helps and support. Thank you !

ABSTRAK

Kajian taburan kepekatan hidrokarbon di dalam air dan sedimen di pesisiran pantai Pulau Perhentian telah dikaji. Tambahan pula, perhubungan antara bakteria hidrokarbon dan bakteria heterotrofik dengan kepekatan minyak dalam air juga telah dikaji. Sebanyak dua kali penyampelan dijalankan pada bulan April dan September.

Min keseluruhan tahap hidrokarbon yang dikesan di dalam perairan adalah 47.59 ppb. Dengan ketaranya, tahap hidrokarbon di permukaan air adalah semakin meningkat dengan kedalaman air laut. Purata tahap hidrokarbon yang dikesan pada penyampelan pertama dan kedua masing-masing adalah 59.95 ppb dan 35.22 ppb. Tahap hidrokarbon di kawasan kajian pada waktu bukan monsun adalah lebih tinggi daripada nilai hidrokarbon yang didapati pada waktu inter-monsun. Min keseluruhan kepekatan hidrokarbon dalam sedimen adalah 4.652 dry mg/Kg. Purata kepekatan hidrokarbon yang dikesan untuk penyampelan pertama dan kedua masing-masing adalah 6.713 dry mg/Kg and 2.590 dry mg/Kg. Kepekatan hidrokarbon dalam sedimen pada kawasan pantai adalah lebih tinggi daripada dasar pada kawasan luar pantai. Bilangan taburan untuk bakteria hidrokarbon adalah pada lingkungan antara 4.0-17.0 MPN/100 ml, manakala untuk bakteria heterotrofik adalah pada lingkungan antara 3.33-1673.33 CFU/ml. Kedua-dua jenis bakteria semakin meningkat dengan peningkatan tahap hidrokarbon di dalam perairan. Demi perhubungan ini, bakteria hidrokarbon dan bakteria heterotrofik boleh digunakan sebagai penunjuk biological untuk pencemaran minyak. Hasil daripada ini, didapati kebanyakan kompoun hidrokarbon yang diperkenalkan ke persekitaran marin dalam jenis antropogenik.

ABSTRACT

A study on the distribution of hydrocarbons in water and sediment in coastal water off Pulau Perhentian was carried out. In addition, the relationships between oil-degrading bacteria and heterotrophic bacteria with oil level in water were also conducted. Two sampling trips were conducted between April and September.

The overall mean hydrocarbon level of water was 47.59 ppb. Hydrocarbon level increased with depth of sea water. The mean hydrocarbon levels in seawater were 59.95 ppb and 35.22 ppb for 1st and 2nd sampling respectively. The hydrocarbon level in the study area during off-monsoon was higher than the hydrocarbon values detected during inter-monsoon. The overall mean hydrocarbon content in sediment was 4.652 dry mg/Kg. The mean of hydrocarbon contents in sediment were 6.713 dry mg/Kg and 2.590 dry mg/Kg for 1st and 2nd sampling respectively. Hydrocarbon content in sediment was higher in near-shore area than that ground in the open water. The number of oil-degrading bacteria ranged between 4.0-17.0 MPN/100 ml and total heterotrophic bacteria count ranged between 3.33-1673.33 CFU/ml. Both bacteria counts increased when hydrocarbon level increased. Due to this correlation, oil-degrading bacteria and heterotrophic bacteria could be used as the bioindicator for oil pollution. As a result from this, most of the hydrocarbon compound was discharged from anthropogenic activities into marine environmental.