

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
OFFICE OF THE ASSISTANT SECRETARY FOR
REGISTRATION AND PROFESSIONAL STANDARDS

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DISTRIBUTION OF TOTAL DISSOLVED PHOSPHORUS AND
ORTHOPHOSPHATES IN SETIU LAGOON, TERENGGANU, SOUTH CHINA SEA

By

LIM SIN CHIEH

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**JABATAN SAINS MARIN
FAKULTI PENGAJIAN MARITIM DAN SAINS MARIN
UNIVERSITI MALAYSIA TERENGGANU**

**PENGAKUAN DAN PENGESAHAN LAPORAN
PROJEK PENYELIDIKAN I DAN II**

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:

Distribution of Total Dissolved Phosphorus and Orthophosphates in Setiu Lagoon, Terengganu, oleh **Lim Sin Chieh**, No. Matrik **UK 10441** telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Marin sebagai memenuhi sebahagian daripada keperluan memperoleh Ijazah Sarjana Muda Sains (Sains Samudera), Fakulti Pengajian Maritim dan Sains Marin, Universiti Terengganu Malaysia.

Disahkan oleh:

Penyelia Utama

Nama: **PROF. DR. LAW AH THEEM**

Pensyarah

Cop Rasmi: **Jabatan Sains Marin
Fakulti Pengajian Maritim dan Sains Marin
Kolej Universiti Sains dan Teknologi Malaysia
(KUSTEM)**

Tarikh: **24.4.07**

Ketua Jabatan Sains Marin

Nama: **DR. RAZAK ZAKARIYA**

Ketua Jabatan Sains Marin

Cop Rasmi: **Fakulti Pengajian Maritim dan Sains Marin
Universiti Malaysia Terengganu
(UMT)**

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LIST OF ABBREVIATIONS

%	-	percentage
°C	-	degree centigrade
ppm	-	part per million
ppt or ‰	-	part per thousand
mg/L	-	milligram per liter
mm/day	-	millimeter per day
μM	-	micromolarity
μg-at P.L ⁻¹	-	microgram atom phosphorus per liter
μg-at N.L ⁻¹	-	microgram atom nitrogen per liter
cm	-	centimeter
g	-	gram
mg	-	milligram
kg	-	kilogram
L	-	liter
mL	-	milliliter
M	-	molarity
N	-	normality
TN	-	total nitrogen
TP	-	total phosphorus
P	-	phosphorus
TA	-	total alkalinity
Ave.	-	average
w/v	-	weight per volume

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ABSTRAK

Kajian projek ini tertumpu kepada taburan nitrogen dan fosforus semasa Southwest monsoon, Inter-monsoon, dan Northeast monsoon. Kajian sebanyak 3 kali telah dilakukan dari September hingga Disember, 2006. Sebanyak 14 stesen telah dipilih dan dikategorikan sebagai kawasan lagun dan sample air telah diambil pada kedalaman pertengahan disebabkan kecetekan air lagun. Pada persampelan pertama telah dijalankan pada 13 September 2006. Purata kepekatan jumlah orthofosfat dan jumlah fosforus adalah $2.42 \pm 0.61 \mu\text{M}$ dan $11.29 \pm 3.15 \mu\text{M}$. Persampelan kedua pula telah dijalankan pada 12 Oktober 2006. Purata kepekatan jumlah orthofosfat dan jumlah fosforus adalah $1.17 \pm 0.52 \mu\text{M}$ dan $7.07 \pm 4.73 \mu\text{M}$. Pada persampelan ketiga pula telah dijalankan pada 14 Disember 2006. Purata kepekatan jumlah orthofosfat dan jumlah fosforus adalah $0.98 \pm 0.44 \mu\text{M}$ dan $4.07 \pm 1.41 \mu\text{M}$. Statistik analisis menyatakan bahawa orthofosfat ($p=0.052$) dan jumlah fosfat ($p=0.230$) tidak menunjukkan perbezaan yang ketara ($p>0.05$) di antara stesen. Orthofosfat ($p=0.000$), dan jumlah fosfat ($p=0.001$) menunjukkan perbezaan yang ketara ($p<0.05$) di antara persampelan pertama, persampelan kedua dan persampelan ketiga. Secara umumnya, kepekatan nitrogen di lagun Setiu, Terengganu adalah lebih tinggi daripada kepekatan fosforus bagi ketiga-tiga persampelan. Kepekatan fosforus menurun dari Southwest monsoon ke Inter-monsoon serta ke Northeast monsoon. Nisbah N:P bagi persampelan pertama ialah 5:1 dan nisbah N:P bagi persampelan yang kedua ialah 9:1 serta nisbah bagi persampelan ketiga ialah 19:1. Purata nisbah N:P bagi persampelan di Lagun Setiu adalah 11:1.

ABSTRACT

This study is mainly aimed to study the distribution of phosphorus during Southwest monsoon, Inter-monsoon, and Northeast monsoon. The sampling stations were visited three times from September to December 2006. Fourteen sampling stations were established and the water samplers of these stations were taken at mid-depth due to the shallowness of lagoon area. The first sampling was carried out on 13 September 2006. The mean values of orthophosphate and total phosphorus during first sampling were $2.42 \pm 0.61\mu\text{M}$ and $11.29 \pm 3.15\mu\text{M}$ respectively. The second sampling was conducted on the 12 October 2006. The mean values of orthophosphate and total phosphorus during second sampling were $1.17 \pm 0.52\mu\text{M}$ and $7.07 \pm 4.73\mu\text{M}$ respectively. The third sampling was carried out on 14 December 2006. In general, the mean values of orthophosphate and total phosphorus during third sampling were $0.98 \pm 0.44 \mu\text{M}$ and $4.07 \pm 1.41\mu\text{M}$ respectively. The statistic analysis had suggested that the orthophosphate ($p= 0.052$) and total phosphorus ($p= 0.230$) had no significant difference ($p>0.05$) among stations. Orthophosphate ($p= 0.000$), and total phosphorus ($p= 0.001$) indicated a significant difference ($p<0.05$) among the first, second and third samplings. Generally, the nitrogen concentration in Setiu Lagoon, Terengganu was higher than the phosphorus concentration throughout this study. The phosphorus value had decreasing from the Southwest monsoon to Inter-Northeast monsoon and then to the Northeast monsoon season. The N:P ratio for the first, second and third samplings were 5:1, 9:1, and 19:1 respectively. The mean N:P ratio of in Setiu Lagoon was 11:1.