

## C125932 : INTER DEPARTMENT OF ENVIRONMENTAL SCIENCE

KEY WORD : BEHAVIOUR/NUTRIENTS/ESTUARY/THA-CHIN RIVER

PANYANEE PRAPONG : BEHAVIOUR OF NUTRIENTS IN THE THA-CHIN ESTUARY.

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Distribution and behaviour of nutrients (nitrogen, phosphorus, silicate) in water and sediments in the Tha Chin estuary were investigated during March, 1989 (dry season) and August, 1989 (wet season). The results indicated that degrading water quality were observed during both study periods. N : P ratios (5 : 1 and 8 : 1) indicate that phytoplankton growth has nitrogen as the limiting factor.

Dissolved nutrient and salinity relationships in the dry season indicating that ammonia, phosphate and silicate were conservative whereas that of nitrite, nitrate, organic nitrogen and organic phosphorus were non-conservative. In the wet season, however, all nutrients have shown to have conservative behaviour except for ammonia and nitrite. Particulate nutrients were found to have non-conservative behaviour in the Tha Chin estuary.

Comparisons of leachable nutrients in the sediments indicating that nitrite, nitrate, organic nitrogen and organic phosphorus were insignificantly different, both seasonally and spatially. Concentration of ammonia was found to be statistically higher during the wet season as compared to the dry season, however, phosphate was found to be statistically higher in concentration at the river mouth as compared to the upper estuary, both at the significant level of 0.1. Organic nitrogen was found to accumulate at the highest concentration in the sediments whereas phosphate was found to be higher than organic phosphorus.

Fractionation of phosphorus in the sediments indicating that most phosphorus species were not significantly different in concentration, both seasonally and spatially. However, inorganic phosphate binding with iron and aluminium was found to be statistically higher in lower estuarine sediment as compared to the upper estuarine sediment, at the significant level of 0.01. This fraction is also the major constituent of phosphorus in sediments from the Tha Chin estuary.

The release of phosphorus from estuarine sediment in anaerobic condition in the laboratory was also studied. The rate of remineralization was found to range from  $4.62-395.74 \mu\text{mol/m}^2 \cdot \text{d}$  and biological recycling ranged from  $3.26-62.88 \mu\text{mol/m}^2 \cdot \text{d}$ .