DISTRIBUTION OF PETROLEUM HYDROCARBON IN THE COASTAL WATERS OFF PORT DICKSON, STRAITS OF MALACCA.

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ABSTRACT

The distribution of petroleum hydrocarbons in water and sediment in the coastal waters between 1 to 5 km from the coast of Port Dickson were studied from 21st to 22nd June 1988. 12 sampling stations were chosen for this study. Statistical analysis showed that there was no significant differences in salinity, pH and temperature in the water at all the stations. This indicated that the coastal waters in Port Dickson area were well mixed during the period of study.

The overall mean total petroleum hydrocarbon levels in the surface water and bottom layer water were 63.23 ppb and 56.61 ppb respectively. Statistical analysis showed there were significant differences of hydrocarbon levels in seawater among stations. The test also indicated that there were no significant differences in hydrocarbon levels between the surface water and the bottom layer water. Another statistical analysis indicated that there was a significant difference in the total hydrocarbon levels in seawater with the distance away from the coast.

The overall mean hydrocarbon content in the surface sediment was 63.76 mg/kg dry sediment. Statistical test indicated that there was a significant difference of hydrocarbon contents in the sediment among the stations. There was a significant difference in hydrocarbon contents of the sediment with distance away from shore.

The results indicated that the present study area was slightly polluted with petroleum hydrocarbon. The total petroleum hydrocarbon level in the present study area was lower than those detected in the coastal waters off Terengganu and in the coastal waters off Sarawak. However the level was higher than that found in the south-western portion of the South China Sea, from Kuantan to Pulau Tioman.

Chromatogram analysis showned that the hydrocarbons in the sediments composed mainly of the heavy fractions of the oil.

ABSTRAK

Taburan hidrokarbon minyak di dalam air dan enapan di perairan 1 hingga 5 km dari pantai Port Dickson telah diselidik dari 21hb hingga 22hb Jun 1988. Sebanyak 12 stesen kajian dipilih di dalam kawasan ini. Ujian statistik menunjukkan tiada perbezaan yang bererti untuk saliniti, pH dan suhu dalam air laut di semua stesen kajian. Ini menunjukkan bahawa air laut di seluruh kawasan perairan Port Dickson adalah dicampur dengan sempurna dalam tempoh masa kajian ini.

Keseluruhan min hidrokarbon minyak di lapisan air permukaan dan lapisan air dasar masing-masing ialah 63.23 ppb dan 56.61 ppb. Ujian statistik menunjukkan ada perbezaan yang bererti untuk paras hidrokarbon dalam air laut di antara stesen. Ujian itu juga menunjukkan tiada perbezaan yang bererti untuk paras hidrokarbon antara lapisan air permukaan dan lapisan air dasar. Satu lagi ujian statistik menunjukkan terdapat perbezaan yang bererti untuk paras hidrokarbon antara jarak stesen dari pantai.

Keseluruhan min hidrokarbon minyak bagi lapisan permukaan enapan ialah 63.76 mg/kg enapan kering. Ujian statistik menunjukkan terdapat perbezaan yang bererti untuk kandungan hidrokarbon dalam enapan antara stesen. Ujian statistik yang satu lagi menunjukkan terdapat perbezaan yang bererti untuk kandungan hidrokarbon dalam enapan antara jarak stesen dari pantai.

Keputusan kajian ini menerangkan bahawa kawasan kajian ini telah dicemari sedikit oleh hidrokarbon minyak. Kepekatan hidrokarbon minyak adalah lebih rendah dari yang telah didapati di persisiran Kuala Terengganu dan persisiran Sarawak. Akan tetapi kepekatan ini adalah lebih tinggi dari yang dijunpai di bahagian barat daya Laut China Selatan, dari Kuantan hingga ke Pulau Tioman.

Analisa kromatogram menunjukkan bahawa hidrokarbon dalam enapan mengandungi kebanyakan pecahan berat dari minyak.