

Thesis Title Dissolved Petroleum Hydrocarbon in the Chao Phraya
River, Bang Prakong River, Tha-Chin River and the
Upper Gulf of Thailand

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ABSTRACT

The analysis of dissolved petroleum hydrocarbons in the Chao Phraya river, Bang Prakong river, Tha-Chin river and the Upper Gulf of Thailand during rainy season (September-December) and summer season (March-April) in 1983-1984 was performed by using Gas Chromatography, Gas Chromatography/Mass Spectrometry (GC, GC/MS) and Spectrofluorometric techniques. For each season the water samples of Chao Phraya river were collected from twenty stations, while that of Bang Prakong and Tha-Chin river were from twelve stations and twenty-five stations from the Upper Gulf of Thailand.

From the results of GC and GC/MS, it was possible to conclude that the compounds presence in the samples of Chao Phraya river, Bang Prakong river, Tha-Chin river and Upper Gulf of Thailand were mainly straight chain aliphatic hydrocarbons of $C_{15}-C_{32}$.

By using spectrofluorometric techniques; the concentrations of petroleum hydrocarbon in the Chao Phraya river, Bang Prakong river, Tha-Chin river and the Upper Gulf of Thailand in rainy season were found to be between 0.190-0.431, 0.056-0.406, 0.260-0.550 and 0.172-0.886 $\mu\text{g/L}$ respectively. While in summer season the concentrations changed to be 0.514-0.799 $\mu\text{g/L}$ for Chao Phraya river; 0.318-0.678 $\mu\text{g/L}$ for Bang Prakong river and 0.337-0.435 g/L for Tha-Chin river. Comparison of the concentration found between the rivers and Upper Gulf of Thailand during rainy season showed no statistically significant difference but during summer season the differences were well pronounced. The concentration of petroleum hydrocarbons found in the same rivers of different season showed statistically significant difference. The amount found from Chao Phraya river and Bang Prakong river showed significant difference at the level of .01 while that of Tha-Chin river was at the level of .05

Studies of dissolved petroleum hydrocarbons in the water samples were investigated using Gravimetric Method, Partition Infrared Method and Spectrofluorometric Method. It was concluded that each technique was appropriate for each particular compound sought for. From the experiment performed, n-hexane was found to be superior solvent compared to carbon tetrachloride for extraction recommended in Spectrofluorometric Method.