

# **Three Centuries of Polycyclic Aromatic Hydrocarbons and Teriterpane Records In Tebrau Strait, Malaysia; Recent Pollution Concern in a Pristine Marine Environment**

## **Abstract**

In the last century, application of fossil fuel as the primary source of energy caused environmental pollution in many countries including Malaysia. Polycyclic Aromatic Hydrocarbons (PAHs) are an important class of petroleum contamination. Two sediment cores were collected from the Tebrau Strait at the southern part of Peninsular Malaysia near the border line to Singapore, where entering into the South China Sea. The samples were sliced in certain intervals, extracted with Dichloromethane in Soxhlet apparatus, cleaned and fractionated in 2-steps column chromatography, and analyzed in Gas Chromatography - Mass Spectrometry. The results showed that PAHs input were started soon after World War II and exponentially increased from 1980 onward by 310 ng/g d. w., in comparison it was negligible and probably nature derived during 18<sup>th</sup> and 19<sup>th</sup> century. The application of compound-specific ratios and pentacyclic teriterpanes suggested the vicinity of sources that atmospherically transported to the sampling locations. They were originated from combusted oil of Southeast Asian and the Middle East, polluting urban sediment and street dusts prior to final deposition. Biomass burning appeared historically as a predominant minor background pollution of both cores. Remarkably, crankcase oil was not traced in this study while it was reported as a predominant source in Malaysia. This study suggested ocean-going ships and Singapore International Airport as the main sources of petroleum pollution in recent decades since there was insignificant rural development surrounding the studied area.