

# **Investigation Over The Liability For The Spill Oil In An Oil Leakage Accident In The North Sea Territory Of Taiwan**

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## **Abstract**

An oil leakage case took place near the north shore of Taiwan on November 10<sup>th</sup>, 2008. On the way from Singapore to Busan Harbor of Korea, a cargo freighter Morning Sun ground at the exterior bay of Shimen, Taipei County. About 100 tons of spilled heavy oil polluted over about 2 kilometers band area of the shore. It was judged to be a secondary marine oil spill case by EPA Taiwan and initiated an investigation over the damage and liability of the oil leakage case.

Within two days after the accident, we have collected oil samples from both the polluted shore area and the oil tank in the suspected leak source freighter. 493 tons of heavy oil and 64 tons of diesels were found in the freighter tank. GC/MS and biomarker matching procedure are the two key method used for the comparing of samples collected. Although the characteristic pattern exist some difference between the two samples, we found that their biomarker exhibit identical characteristic in  $m/z=123$  for diterpanes and  $m/z=191$  for tricyclic to pentacyclic terpanes biomarkers which offer a strong clue for the origination of the heavy oil found in the shore.

This is the first successful spill oil investigation case in Taiwan. Along with the emergency response remediation actions and clean up procedures taken for such marine pollution case, it is also very critical to analyze the oil sample collected on the polluted site to characterize their identities and physical or chemical properties. These information can provide not only the necessary data required for the remediation and marine life conservation works, but also for the evaluation of damage in biological, chemical and economical respects. Due to the characteristic and stable features of the representative biomarkers existing in petroleum products, we have proved the potential application in environmental forensics in this case. Future study will be focused on the application of Diagnostic Ratio in this case.

Keywords: oil spill investigation, biomarker, marine pollution, Environmental Forensics