

Suwat Chunharat 2015: Effects of Petroleum Hydrocarbon Contamination in Map Ta Phut Industrial Estate, Rayong Province. Doctor of Philosophy (Marine Science), Major Field: Marine Science, Department of Marine Science. Thesis Advisor: Assistant Professor Jintana Salaenoi, Ph.D. 196 pages.

Effects of the contamination of petroleum hydrocarbons in seawater, sediment and marine organisms during the northeast monsoon season (May 2009 and May 2011) and the southwest monsoon season (October 2009 and August 2010), and determination of toxicity test of various concentrations of petroleum hydrocarbons on marine organisms in Map Ta Phut Industrial Estate, Rayong Province were investigated. The average of petroleum hydrocarbons content in seawater samples (20 stations), was 2.17 ± 0.54 (0.21 - 12.07) $\mu\text{g/l}$ (chrysene equivalents). PAHs average content in the sediments was shown at $1,133.87 \pm 426.29$ ng/g dry weight became to the moderate-high level of pollution ($> 100 - 5000$ ng/g dry weight) and low level in ecological risk of the contamination to PAHs in the sediments. Majority of PAHs distributions were fluoranthene, benzo(k)fluoranthene, pyrene, chrysene and benzo(b)fluoranthene and originally indicated that PAHs came from pyrogenic sources. PAHs deposited in marine organisms were average $1,029.16 \pm 502.90$ ng/g dry weight. LC_{50} of phenanthrene, fluoranthene and SDS on *Artemia* sp. at 24 hours were equal to 0.654, 6.620 and 3.612 mg/l, respectively. LC_{50} at 96 hours of shrimp were 0.323 ± 0.094 , 0.193 ± 0.169 and 0.262 ± 0.228 mg/l, while LC_{50} at 96 hours of sea bass were 2.125 ± 0.157 , 3.018 ± 0.729 and 2.987 ± 0.176 mg/l, respectively.

The study also found that contamination of petroleum hydrocarbons in seawater, sediments and marine organisms in Map Ta Phut Industrial Estate were still shown in low levels comparing to the acute toxicity of the substances PAHs on marine organisms. The total of petroleum hydrocarbons was currently no effects to marine organisms. But in recent years, it may be accumulated in marine organisms until caused chronic toxicity and exposed the high risk to the environment.

Student's signature

Thesis Advisor's signature