

Chapter 5

Conclusion

CHAPTER V: CONCLUSIONS

Petrogenic hydrocarbons were detected in all the environmental samples collected from Kuala Selangor and Kuala Sepetang as evidenced by the spectrofluorometric measurements. The petroleum hydrocarbon levels in water for both sites ranged from 30.82 $\mu\text{g/L}$ to 92.59 $\mu\text{g/L}$ Seligi crude oil equivalents. Petroleum hydrocarbon levels in sediment at all stations from both sites were found to be less than 50 $\mu\text{g/g}$. On average, the petrogenic hydrocarbon levels in water samples from Kuala Selangor was higher (66.04 $\mu\text{g/L}$) compared to that of Kuala Sepetang (53.35 $\mu\text{g/L}$), but for sediment samples, Kuala Sepetang exhibited higher level (30.37 $\mu\text{g/g}$) compared to that of Kuala Selangor (12.49 $\mu\text{g/g}$). The average levels of petrogenic hydrocarbons in cockle tissue from both sites were very similar.

Based in the criteria established by the FAO, for which levels below 2.5 mg/L in water are considered to be unpolluted, the waters in Kuala Selangor and Kuala Sepetang are regarded as unpolluted. Similarly, concentrations of petrogenic hydrocarbons in sediment samples were also indicative of an unpolluted environment as they were well below the level of 100 $\mu\text{g/g}$, as proposed by Marchand et. al. (1982).

The calculated CPI values indicated pollution from petrogenic sources in the water column, while those estimated from sediment and cockle samples reflected the predominance of biogenic hydrocarbon in these matrices.

There does not appear to be any correlation between the hydrocarbon levels in water and sediment with those in cockle. While the accumulation of hydrocarbons in sediment is a slow and gradual process which takes a long time to be significantly observed, the level of hydrocarbons in water is subjected to a considerable fluctuation and influenced by the rate of discharges.

The present study also clearly demonstrated the uptake of petrogenic hydrocarbons when cockles were exposed to WSF prepared from crude oil and refined oil. The cockle also

observed to excrete the hydrocarbons when placed in clean water. The extent of depuration was observed to be relatively slow as only about 20 percent of the hydrocarbons were found to be eliminated after 12 days in clean water.