

ROPME/IAEA 2011
RECONSTRUCTION OF OIL POLLUTION HISTORY
IN THE ROPME SEA AREA

SUMMARY AND CONCLUSION

Among the 4 different sediment cores from the RSA, the superficial sediment of station 25 and in particular its S8 were heavily polluted, indicating a high contamination of degraded crude oil. By using diagnostic biomarkers ratios, the maximum concentration found at about 12–13 cm deep of station 25 was similar to the Kuwait reference crude oil which was spilled during the 1991 War. However, sediment dating would be needed to confirm this hypothesis. Moderately contaminated sections were also found in station 58, and in particular sections 4 and 9 showed substantial chronic contamination typical of degraded light bunker oil, with chemical diagnostic parameters similar to the Light Arabian crude oil. High concentrations of derived oil-PAHs were also found in the mid sections of station.

Interestingly, all of the other superficial samples did not exhibit important signs of oil pollution, since bacterial n-alkanes dominated over the small amounts of fossil PAHs. These substantial decreases in sedimentary levels of TPH and PAHs between 2001 and 2006, particularly in stations 1 and 58, which could be partially attributed to improvements in emission controls and to the continuous substitution of oil fuels by liquefied gases. The PAH distribution and concentration ratios were consistent with a petrogenic source of PAHs, and with a high proportion of alkylated PAHs. No apparent pyrogenic PAHs sources were observed, probably because the residual oil swamped out the low-level pyrogenic PAHs.