

## **ROPME MUSSEL WATCH PROGRAMME**

**2014**

### **ORGANIC CONTAMINANTS SCREENING**

#### **SUMMARY AND CONCLUSIONS**

Although the RSA has always been regarded as a heavily polluted water body with respect to oil, the present Mussel Watch results from the six countries surveyed in 2014 indicates that oil pollution is only a problem in some limited areas of the RSA. Extremely high concentrations of combustion-derived PAHs were found in the sediment from Askar, Bahrain (BAH-5) and the pearl oysters from Jubail, Saudi Arabia (KSA-2-1) which warrants the on-going monitoring of these chronically polluted sites. Likewise, a continued watch on certain sites of Oman and I.R. Iran, e.g. Mina Al Fahal and Qeshm Island should be maintained in order to follow any changes in the degree and type of oil contamination. Similar to the sediments, high concentrations of petroleum hydrocarbons were also measured in pearl oysters from Jubail in Saudi Arabia (KSA-2-1), and rock oysters from Mina Al Fahal (OMAN-2) and Qeshm Island in I.R. Iran (IRAN-4-1). These specific sites merit intensive monitoring. Nevertheless, the continued general monitoring of hydrocarbon contamination within the RSA is certainly recommended, owing to the enormous oil production and the large number of oil tankers transiting through the region.

Except for the oysters from Jubail, Saudi Arabia (KSA-2-1), Qeshm Island (IRAN-4-1) and Mina Al Fahal (OMAN-2), the levels of PHs in various bivalve species were comparable to the concentrations observed in relatively unpolluted areas elsewhere in the world. Approximately twenty-three years after the greatest oil spill in the RSA, PH concentrations in biota have decreased to values reported before the 1991 Gulf War.

The spatial distribution of various organochlorinated compounds was investigated in the RSA and the Sea of Oman, based on marine bivalves and coastal sediment collected in Bahrain, I.R. Iran, Iraq, Oman, Saudi Arabia and the United Arab Emirates during 2014. Several organochlorinated contaminants from agricultural (e.g. DDT and its breakdown products, Lindane, Endrin, Dieldrin, Endosulfan) and industrial (PCBs) sources were measured. Sediment burdens for all compounds, were extremely low by global standards, but exhibited some relative increased concentrations compared to the previous surveys in Bushehr, I.R. Iran

and Umm Al-Quwain in UAE. Except for the high concentrations of DDTs in rock oysters from I.R. Iran, the organochlorinated compounds contents reported in the present study fell in the lower range of those reported as global comparators and probably reflect atmospheric contamination of the area rather than the influence of coastal discharges. Additional studies should be carried out to monitor the levels of DDTs in more edible biota from the ROPME Sea Area, and in particular from I.R. Iran, where the concentration levels of pp'DDT in bivalves decreased substantially in Dayer (IRAN-2-1) but increased in Bushehr (IRAN-2), which may indicate relatively recent usage inputs of DDT in the region. These results contribute to the sparse regional database for organochlorinated compounds in the marine environment. Moreover, they can be used and integrated in the contaminant's data base for studying temporal trends. Whereas the levels, albeit relatively low, of  $\Sigma$  DDTs in the rock oysters from the Sea of Oman have remained uniform, there has been an irregular but generally decreasing trend in concentrations of  $\Sigma$  PCBs during the last two decades, followed by some relative increase in the 2011 that remained quite uniform in 2014.