

Polycyclic Aromatic Hydrocarbons in Offshore Surface Sediments of the Northern Persian Gulf, Bushehr Province

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Abstract

Polycyclic aromatic hydrocarbons (PAHs) are classified as an important category of semi-volatile and persistent organic pollutants. They cause environmental problems due to their toxicity and accumulation in sediments. In this research, offshore sediments of 19 stations in 8 transects of the Persian Gulf in Bushehr province were studied to assess the sources of PAHs. The extraction and clean up method were based on pressurized liquid extraction (PLE) with the cleanup by packed silica gel-based column. The compounds were analyzed by GC-MS. Recovery of the compounds was over 70%. The range of total 15 PAHs in sediment was from 6.5 to 35.5 ng g⁻¹ sediment dry weight. The results showed that the levels of PAHs in the sediments were in the category of low pollution sediments. The highest concentrations of PAHs have been recorded in the station number 4 and 15 near the Kharg Island (Abouzar oil field) and Golshan oilfield, respectively. The cross plots of the diagnostic ratios of PAHs have come into common use as a tool for identifying and assessing pollution emission sources. Three cross-plots for the diagnostic ratios were applied in this study. They showed that the PAHs in the area had mixed sources of pyrogenic and pyrolytic. A progressive increase in the levels of PAHs was observed compared to the ROPME Cruise in 2006 that reflected more impact of anthropogenic activities on the sediments in recent years.

Keywords: *Polycyclic Aromatic Hydrocarbons, Surface Sediment, Oil pollution, Bushehr Port, Persian Gulf.*
