

Assessment of Persistent Organic Pollutants in Sediments

Case Study (Tripoli Harbour, Lebanon)

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Harbours can be considered as a hotspots ecosystems in coastal areas where can concentrate and release a large amount of persistent organic pollutants (POPs) generated from anthropogenic activities finally deposited in the sediment then disturbed due to the intensive maritime transport, shipping and dredging activities which lead to increase their bioavailability. However, recent studies about organic contamination are concentrated only on the northwestern part of the Mediterranean Sea and there are great lacks of information on the Eastern part. Hence, there is an urgent need to assess the organic contamination for the whole of the Mediterranean Basin. Tripoli harbour is among the most important port on the Mediterranean Sea eastern basin. In this study, the persistent organic pollutants (POPs) were monitored (28 PCBs, 16 PAHs and 18 Me-PAHs) in 15 stations of Tripoli harbour basins, which are influenced by anthropogenic activities. $\Sigma 16$ PAHs and $\Sigma 18$ Me-PAHs were detected respectively from 243 to 2965 $\mu\text{g.kg}^{-1}$ dw and from 54 to 1638 $\mu\text{g.kg}^{-1}$ dw. While $\Sigma 28$ PCBs were detected from 18 to 302 $\mu\text{g.kg}^{-1}$ dw. Among PCBs, four and six-chlorinated congeners PCBs were dominants. For the PAHs, four and five rings were dominants. For identifying pollution emission sources of PAHs, different ratios were used. Pyrogenic process related to the deposition of coal dust and the combustion of biomass and coal were the major sources of pollution. Based on Sediments Quality Guidelines, the biological adverse effects on aquatic ecosystems were expected rarely to occasionally for PAHs and PCBs contamination of Tripoli Harbour sediments.

Keywords: POPs, Sediments, Tripoli Harbour, SQGs.