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Organic Pollution of Waters and Sediments in the Middle and Lower Valley of the Medjerda, Tunisia

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Abstract : The persistent organic pollutants (POPs) in aquatic environments are one of the most worrying problems for environmental sustainability and human health because of their carcinogenic and toxic characteristics. Human anthropogenic actions (wastewater discharges, agricultural and industrial activities) without prior treatment are the main cause of this organic pollution. Oued Madjerda is considered the most important river in Tunisia, hence the importance of assessing the level of organic pollution of water and sediments, taking into account the anthropogenic stress exerted on this river. Water and sediment samples were taken from the middle and lower valley of the Medjerda to determine the state of contamination by 7PCBs, priority 15PAHs, and pesticides. The analysis was performed by gas chromatography (GC) and liquid phase coupled to HPLC MS-MS mass spectroscopy. The results showed that for the waters, the total PAH and PCB contents vary respectively from 0.0023 to 7.72 mg/l and from 0.0001 to 0.179 mg/l. In surface sediments 0 to 15 cm, 7PCB levels vary from 1,112 to 110,062 µg/kg-1. In this study, we tried to determine the concentration of 96 pesticides in surface sediments; analyzes showed the presence of Buprofezin, propamocarb-HCl, hexaconazole, flutriafol, quinalphos, and tebufenpyrad with concentrations varying from 1.06 to 2.388 µg/kg-1. The pace of the spatial variation confirms the impact of wastewater discharged on the quality of water and sediments despite the perennial aspect of the river.

Keywords : Wadi Madjerda, organic pollution, water and sediments surface, anthropics stress
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