



## **Distributions of Polycyclic Aromatic Hydrocarbons in Surface Water and Bed Sediments of El Rahawy Area, Egypt**

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**Abstract:** Twelve polycyclic aromatic hydrocarbons (PAHs) were simultaneously measured in two surface water samples and sediments of El Rahawy drain; Nile river-Egypt in January 2010 by using gas chromatography and flame ionization detector (GC-FID). It was observed that the total of PAHs concentrations ranged from 3.39 to 5.70  $\mu\text{g/L}$  in surface water and was found in range between 7.01 to 9.71 ng/g dry weight in bed sediment. The composition pattern of PAHs by ring form in water and sediment were surveyed. Higher PAH concentrations were observed in sediments than in surface water. Four and five-ring PAHs were mostly dominated in surface waters and sediments. Compared with historical data, the PAH levels in bed sediment has increased, and this was further confirmed by the increasing trend of PAHs in bed sediment. Naphthalene, pyrene, chrysene and benzo(a)pyrene were the most abundant in PAH composition pattern at El Rahawy drain. The data from the study signified that the main source of PAHs in water and sediment samples from El Rahawy drain is originated from the pyrogenic and petrogenic source. Significant positive correlations between partition coefficient in surface sediment to that in water ( $K_{oc}$ ) of PAH and their octanol/water partition coefficients ( $K_{ow}$ ) were observed, suggesting that  $K_{oc}$  of PAHs in sediment/water of drain may be predicted by the corresponding  $K_{ow}$ .

**Keywords:** *Polycyclic aromatic hydrocarbons, Surface water, Bed sediment, Petrogenic, Pyrolytic*

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