

POLYCYCLIC AROMATIC HYDROCARBONS (PAHS) IN THE NEARSHORE SUPERFICIAL SEDIMENT OF BOUISMAIL'S BAY (ALGERIA)

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The stability of the sedimentary phase and its important role in the accumulation of chemicals makes it interesting for monitoring purposes of PAHs. In order to check their concentrations, twenty six stations were sampled in the Bouismail's bay (fig. 1) during the summer 1992. This bay is surrounded by small touristic and/or urban settlements where agriculture is the main activity. Four marinas and fishing ports are present in the area and three important rivers discharge their waters in the bay : Mazafran, Nador and Beni-messous.

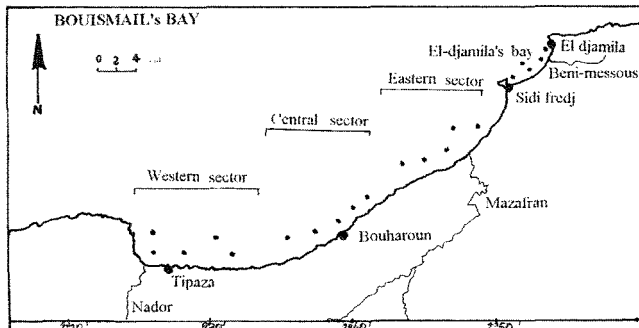


Fig. 1: Bouismail's bay : sampling stations

Sediments were collected with a Van-Veen grab and stored in glass flasks at - 18°C. The analysis was held using UVSF according to the IOC (1982) protocole. Results are expressed in µg/g dry weight (chrysene equivalents). Intercalibration exercises were carried out on a lyophilised material coded SDK 1 (IAEA, Monaco). In order to estimate the percentage of PAHs in accordance with the number of aromatic rings, the synchronous spectra technique, as described by LLYOD (1971), is used. The data in table 1 are given by having divided Bouismail's bay into three major sectors. Following a decreased PAHs concentrations diagram : western, central and eastern sectors; El-djamila's bay can be integrated into what we defined as the eastern sector. Standard deviations are high : this is due to the heterogenous distribution of PAHs in each sector. Petroleum products inputs are important at all stations : 2, 3 and 4 rings PAHs are present in elevated proportions (> 70 %); diagenic and / or pyrolytic compounds are also present in all samples : they range from 12 to 34 %.

SECTOR		PAHs µg/g	2 rings (%)	3-4 rings (%)	5 & + rings (%)
El djamilia Bay. n = 5	range	0.11 - 1.18	23.6 - 33.4	27.5 - 47.8	12.7 - 22
	mean	0.72	30.7	40.1	18.8
	S D	0.49	2.9	7.5	3.7
Eastern sector n = 5	range	0.26 - 1.24	21.9 - 38.5	30.4 - 45.2	14.6 - 32.1
	mean	0.69	33.3	37.8	19.1
	S D	0.39	6.8	5.3	7.3
Central sector n = 5	range	0.46 - 3.06	17.2 - 30.2	35.4 - 45.2	21.1 - 34.3
	mean	1.46	25.5	41.4	26.4
	S D	0.99	5.4	3.4	4.8
Western sector n = 5	range	0.72 - 4.23	32.1 - 40.2	37.0 - 45.2	11.7 - 21.2
	mean	2.22	36.1	40.8	16.3
	S D	1.37	3.6	3.3	3.6
Sidi fredj port n = 2	range	8.6	49.2	28.9	14.2
	mean	13	19.7	51	24.1
Bouharoun port n = 2	range	3.9	33.1	41.3	21.5
	mean	8.7	47.9	24.4	12.9
El djamilia port n = 1	range	3.4	35.8	39.4	16.6
Tipaza port n = 1	range	7.8	21.5	40.5	34.1

Table 1 : PAHs concentrations in the superficial sediment of Bouismail's bay.

Harbour levels appear high : these particular sites are influenced by touristic and fishing activities which increase during the summer.

A part from the ports, the arithmetic means indicate that Bouismail's bay is only moderately polluted in comparison with other regions of the Algerian coastline, where PAHs concentrations range from 1.2 to 36 (µg/g) in Algiers' bay, and from 1.9 to 28.8 (µg/g) in Arzew's gulf (SELLALI *et al.*, 1993). Compared with data given for Habibas islands (0.087 µg/g), a site considered as a reference sector (SELLALI *et al.*, 1992), the studied area appears to be contaminated by PAHs.

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