

Mercury and Chromium in organisms of the coastal marine area between Po Delta and Ravenna Harbour

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Samples of marine sediments and organisms were collected in March 1990 from the coastal area of the northern Adriatic Sea between Po River Delta and Ravenna Harbour (Fig. 1). In this area, influenced by Po River waters (BARALE *et al.*, 1986), a high deposition of fine materials takes place at a depth higher than 10 m, especially in winter (BORTOLUZZI *et al.*, 1984). Dredging materials from Ravenna Harbour are disposed in a rectangular dumping site (Fig. 1).

Table 1 shows the Hg and Cr contents in the superficial sediments of the studied area (GIANI *et al.*, 1992). Hg and Cr decrease from Delta Po southwards. The maximum Hg concentration is in the harbour-zone due to general pollution of the channel harbour and surrounded salt marshes caused by chemical plants (MISEROCCHI *et al.*, 1990).

The organisms collected were classified, weighed and their length measured. Muscle tissue of specimens of *Gobius niger jozo* (n=10), *Squilla mantis* (n=7) and soft tissue pools (1-8) of specimens of *Ostrea edulis* (n=17), *Crassostrea gigas* (n=45) and *Natica millepunctata* (n=8) caught in the different zones were digested in teflon bombs with nitric acid by a microwave digester. Hg was determined by CVAAS after reduction by SnCl₂ and Cr analysis was performed by GFAAS (Fig.1 and Fig. 2). The recoveries with respect to MA-A-2(TM) reference material were 100% for total Hg and 88% for total Cr.

Mercury. Hg values are low. There are no differences between the Hg levels in the same species caught in the different zones. *S. mantis* and *C. gigas* seemed to be the better Hg-concentrating species. In *G. niger jozo* Hg increases with the total length but the values are five-fold lower than those reported by other authors for the same area and about *S. mantis* and *N. millepunctata* our data are lower than the ones too (CIUSA and GIACCIO, 1984). In *O. edulis* and *C. gigas* Hg concentrations are generally lower than the ones found in the Venezia lagoon (PERDICARO, 1989).

Chromium. The Cr literature data are often not sufficient and not comparable. Fig. 1 shows higher Cr concentration in the bivalves and a gradual decrease from the specimens of the A-zone towards B and P-zone. This observation and the apparent Cr concentration decrease with the total length of the *S. mantis* need further research.

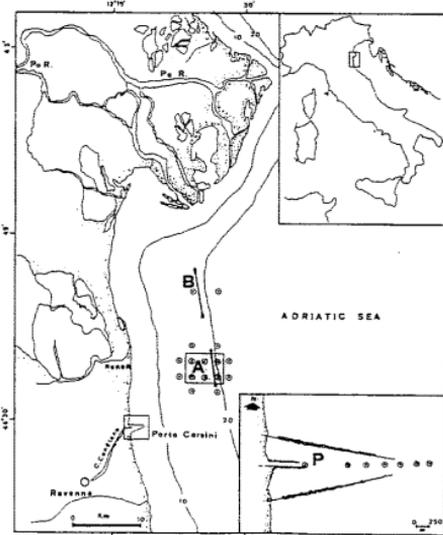


Fig. 1 - Study area and sampling stations

(A : dumping-zone ; B : Po-delta-zone ; P : harbour-zone ; ⊙ : sediments ; → : organisms).

Table 1 - Hg and Cr concentrations (µg/g d.w.) in surface sediments.

Zone	N° of samples	Hg		Cr	
		Range	Av. ± S.D.	Range	Av. ± S.D.
A	14	0.130-0.460	0.278 ± 0.102	123-162	135 ± 14
B	2	0.380-0.508	0.444 ± 0.064	161-171	166 ± 5
C	6	0.120-1.932	0.607 ± 0.653	92-124	113 ± 15

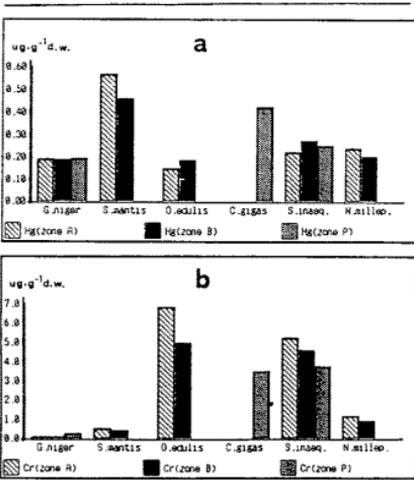


Fig. 2 - Hg average concentration (a) and Cr average concentration (b) in some species caught in the different zones.

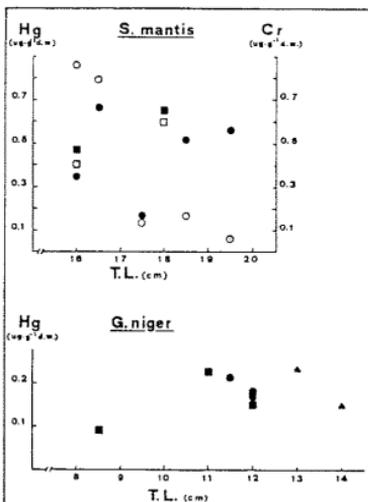


Fig. 3 - Hg and Cr contents versus Total Length (T.L.). Zone A: Hg (■) and Cr (□). Zone B: Hg (●) and Cr (○). Zone P: Hg (▲).

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