

INTERCOMPARISON OF THE CONTENT OF SOME HEAVY METALS IN THE SEA WATER  
OBTAINED BY DIFFERENT ANALYTICAL METHODS

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ABSTRACT

*Results of measurements of the content of ionic Zn, Pb, Cd and Cu in the sea water samples from the Split-Mt. Gargano transect were compared with the data obtained recently by different analytical methods.*

*The obtained distribution confirms that the coastal area is more polluted than the open sea due to uncontrolled human influence along the coast.*

RÉSUMÉ

*On a comparé les résultats des investigations sur la teneur en formes ioniques des métaux lourds (Zn, Pb, Cd et Cu) dans les échantillons d'eau marine prélevés sur le profil Split-Monte Gargano, avec les données récentes obtenues par des méthodes analytiques différentes. Ces comparaisons ont prouvé que la pollution de la zone littorale de la mer par les métaux lourds mentionnés est considérablement plus élevée que celle des eaux de haute mer, à cause de l'influence anthropogène sur l'écosystème.*

During three year period (1975-1978) more than two hundred sea water samples were analysed for ionic zinc, cadmium, lead and copper content. These metals were chosen as representative of the metals assumed to be harmful to the aquatic environment.

All the measurements were performed by adapted ASV method.

RESULTS AND DISCUSSION

Mean levels of studied metals were calculated from this large number of data and compared to the most recent data from this area obtained by a variety of methods. The obtained data for the area as a whole range within already known limits of values for the Adriatic waters (Zn - 10 µg/l, Cd - 0.02-0.2 µg/l, Pb - 0.2-4 µg/l and Cu - 1 µg/l, Branica, 1978).(1).

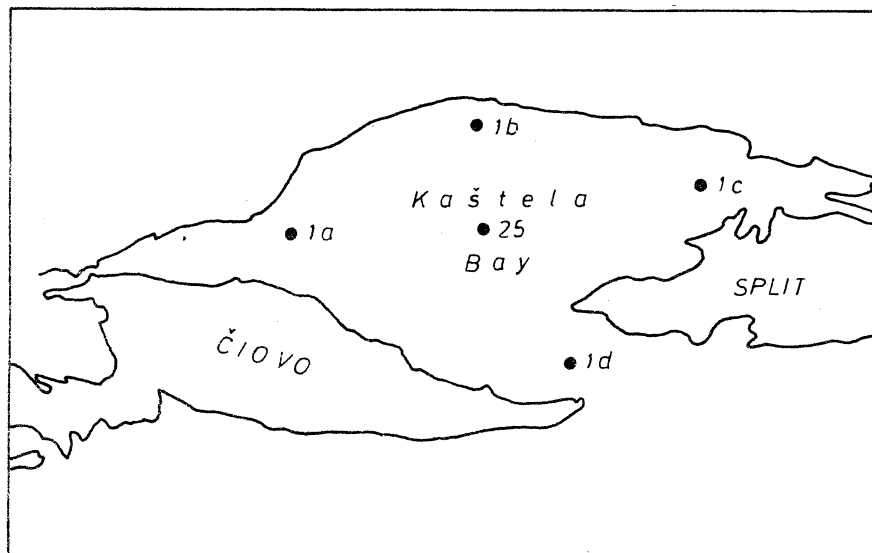
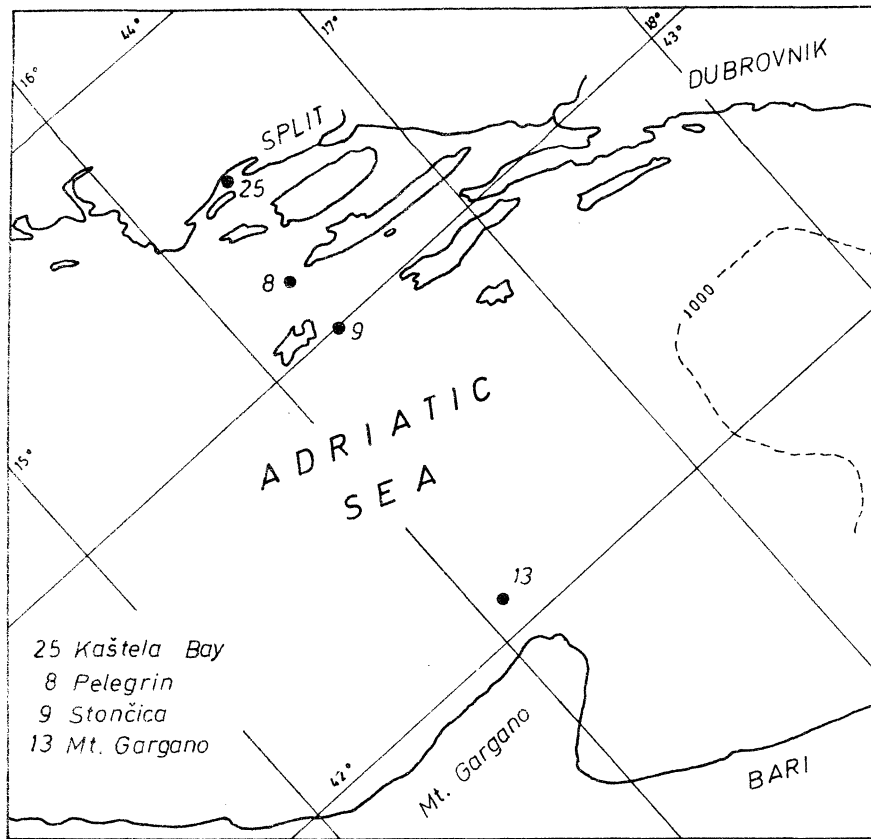


Fig.1. Study area

Table 1. Mean levels of heavy metals in the sea water column in the coastal area (Station 25) and open sea (Station 9) obtained by different analytical methods ( $\mu\text{g/l sw}$ )

Stations	Metal	Adapted ASV-10R(3) 1975-78	AAS-10R 1977-78(2)	AAS-1JS* 1982	ASV-CIM-1RB 1983(4)
25 Coastal area	Zn	11.23	8.06-10.36	6.80	0.24 * *
	Cd	0.23	0.26- 0.54	0.08	0.004
	Pb	3.95	0.020-0.103	5.60	1.12
	Cu	1.03	1.89-2.81	5.61	0.62
9 Open sea	Zn	7.08	8.82	-	1.66***
	Cd	0.15	0.21	0.05	0.017
	Pb	2.15	0.019	3.30	0.47
	Cu	0.84	-	2.70	0.61

\* unpublished data

\*\* Station in coastal area (Šibenik)

\*\*\* Station in open sea (Kornati)

However, the comparison of our values with those of other authors obtained by other analytical methods (Table 1) showed significantly lower concentrations of almost all the metals, particularly Zn and Cd. Pb values, however, show rather large ranges.

This is, on the one side, due to the improvement of analytical techniques (instrumentation) and to the improvement of sampling and analytical treatment of samples, on the other.

Modern analytical methods have caused the situation that the values of some heavy metals are found to be smaller than those obtained about 10 years ago for about an order of magnitude. Therefore, the selection of the best, most easily reproducible method is now still the subject of a number of discussions at different scientific meetings.

#### REFERENCES:

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