

TRACE METALS IN THE ŠIBENIK AQUATORIUM
 P-3 "SEDIMENT CONCENTRATIONS OF Zn, Cd, Pb, Cu AND Hg
 ANALYZED IN THE 1983/84 PERIOD

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Summary. The preliminary results of distribution of Zn, Cd, Pb, Cu and Hg in sediments from the Krka river estuary and Kornati Islands are correlated with location and with grain size of sediments and corresponds to unpolluted area with exception at the station near the waste-water outflow.

Résumé. Les résultats préliminaires sur la distribution du Zn, Cd, Pb, Cu et Hg dans les sédiments de l'estuaire de la rivière Krka et de l'archipel des Kornati sont corrélés avec la zone et la dimension des grains de sédiment. Les données correspondent à une zone non-polluée à l'exception de la station proche de l'effluent des eaux de rejet.

The concentrations of Zn, Cd, Pb, Cu and Hg in composite sample of sediments from the Šibenik aquatorium during 1983 and 1984 has been determined. The Table 1 presents the average concentration of metals from October 1983, February, May and July 1984.

All sediment samples were taken directly by a scuba diver with a simple plexy-glass tube. Under-water samples was protected by polyethylene bags against contamination.

Subsamples collected in October 1983 from the locations studied were fractionated by 75-150 μm , 150-75 μm , 300-150 μm , 1000-300 μm and 1000 μm pore size sieves. The water taken from the layer above the sediment was used for the sieving procedure.

The air dried sediment samples (about 2g) were decomposed by the mixture of HClO_4 (5 ml), HNO_3 (20 ml) and HF (10 ml) in the closed Teflon crucible at the temperature of about 160°C.

The concentrations of Cd, Pb and Cu by ETAAS using Perkin-Elmer AAS-Model 3030 (with HGA 400 and AS-1), Zn by FAACS using Perkin-Elmer AAS-Model 5000 (with AS-50), and Hg by cold-vapour technique using Perkin-Elmer-Model 410, were determined.

Metal contents in the upper 2 cm of the sediment layer were analyzed.

Table 1 The average metal concentration in sediments of the Šibenik aquatorium (mg/kg and Hg μ g/kg) at different locations

	Zn	Cd	Pb	Cu	Hg
E - 1	30.6	0.48	3.4	8.6	6.1
E - 2	61.0	0.61	29.4	25.3	300.0
E - 3	100.9	0.50	31.8	21.2	268.0
E - 4	105.0	0.31	26.7	14.4	243.0
E - 5	69.6	0.51	22.4	30.0	143.0
C - 2	11.3	0.13	8.6	4.9	49.0
C - 1	9.0	0.13	7.0	3.6	24.0
R - 1	6.1	0.16	6.1	3.3	11.0
R - 2	8.2	0.12	6.9	4.3	12.5
C - 3	86.9	0.37	43.23	64.5	155.3

The highest concentration of trace metals are bounded in the smallest sediment particle fraction. The distribution of the trace metal concentration in sediments is very pronounced along the transect from the River Krka falls (E-1) to the Kornati Islands (R), correlated with the grain-size of the sediment and their mineralogical constitution. The results obtained correspond to the unpolluted marine and estuarine sediments. However, the elevated trace metals concentrations (except Cd) at the station C-3 could be easily explained by the anthropogenic influence because this station is located near the industrial wastewater and domestic sewage outflow.

The distribution of the metal concentrations with a specific emphasis on the location and the nature of the trace metal will be discussed in detail.