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ABSTRACT BOOK

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Mercury in the water column of the Gulf of Trieste is still an environmental issue: the legacy of the Idrija mine twentyfive years after its closure

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Mercury (Hg) contamination in the Gulf of Trieste (GT, northern Adriatic Sea) is due to historical mining activity at Idrija (Slovenia) and still represents an environmental issue of great concern (Covelli et al., 2001; Covelli et al., 2021). Indeed, the freshwater inputs from the Isonzo/Soča River have been identified as the main source of Hg into the GT. At the river mouth, the element was found to be mainly associated with the suspended particulate matter, especially following periods of medium-high river discharge and river plume events in the GT (Covelli et al., 2006; 2007)

The primary aim of this research is to evaluate the occurrence and distribution of both dissolved (DHg) and particulate (PHg) Hg along the water column in the northernmost sector of the GT, a shallow and sheltered embayment suitable for the accumulation of fine sediments and contaminants. In order to achieve this objective, sediment and water samples were collected at six sites which were representative of different targets, such as mussel farming and tourism activities. Moreover, different environmental conditions including unperturbed and perturbed hydrological conditions, induced by both natural and anthropogenic factors, were taken into account.

The amount of Hg in the surface sediments (0.77–6.39 µg g^{-1}) as well as the relationship between the Hg concentration and the percentage of the 2-16 µm grain size fraction from this study were found to be consistent with previous research focused on the whole Gulf, thus testifying the common origin of the sediment.

Results showed a notable variability of DHg (0.07–149 ng L^{-1}) and PHg (0.39–12.5 ng L^{-1}) depending on the interaction between riverine and meteo-marine hydrological conditions at the time of sampling. Mercury was found to be mainly partitioned in the suspended particles and elevated values of PHg were observed following periods of high discharge from the Isonzo/Soča River confirming that the river discharge may represent an important factor in regulating the amount of PHg in the GT.

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