

CLOSED CHLORALKALINE PLANT AS HG-POLLUTION SOURCE IN KASTELA BAY, ADRIATIC SEA (CROATIA)

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Abstract

Concentrations of gaseous mercury ($2.1 - 9.6 \mu\text{g m}^{-3}$) were measured within the former chlor-alkali plant in Kaštela Bay. This is a hazardous source of pollution and could present a serious problem for the town of Split and Jadro River. The aim of the work was to find the direction in which Hg-pollution was distributed. Soil samples were collected and total Hg concentrations were measured in soils and in sediments of Jadro River. Hg was transported in NW direction from pollution source and did not affect the source of Jadro River.

Keywords : Mercury, Pollution, Adriatic Sea.

The present work is the continuation of our earlier studies of mercury pollution in Kaštela Bay [1, 2], in which papers are experimental methods described in details. Concentrations of gaseous mercury $2.1 - 9.6 \mu\text{g m}^{-3}$ were measured within the closed chloralkaline factory in which there are neither windows nor doors. Thus the chloralkaline plant still presents a hazardous source of mercury. The concentrations measured in air about 1000 m in diameter from the pollution source were $0.015 - 0.400 \mu\text{g m}^{-3}$. Along atmospheric "lifetime" of an elemental gaseous mercury, as well as its easy transport to remote areas could present a serious problem. In vicinity is the town of Split and also Jadro River, which is a drinking water supply for Split. Polluted Kaštela Bay and Jadro River are presented in Figure 1. The aim of the work was to measure concentrations of total mercury in soil around the pollution source in the PVC factory and find out which direction was pollution distributed. From 40 soil samples taken in all directions around the pollution source it was concluded that mercury was transported from Kaštel Sućurac towards the upper part of Kaštel Gomilica in NW direction, what corresponds to the direction of Jugo wind. Concentrations of Hg in soil toward north and east from the factory are $<0.2 \mu\text{g g}^{-1}$ at the distance of 600 m. It is significant that Hg-pollution did not influence the source of Jadro River. It is a drinking water supply for the town of Split and the river flows into the eastern part of polluted Kaštela Bay. The concentrations of total mercury and of methyl-mercury were measured in three locations, both in sediments and in water. With respect to mercury, Jadro presents clean environment, what is a significant conclusion.

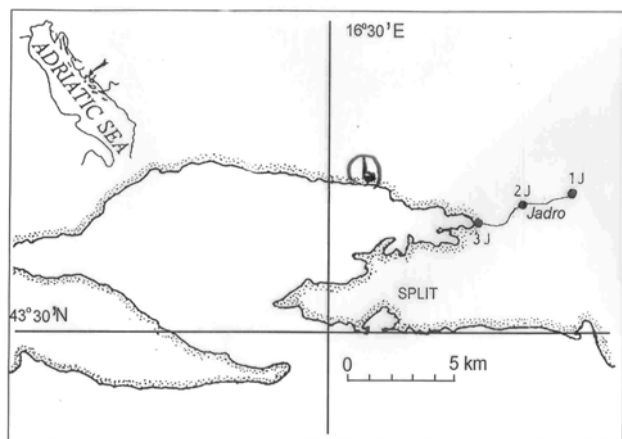


Fig. 1. Map of the study area.

References

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- 2 - Kwokal, Ž., and Branica, M., 2003: Gaseous mercury species in the polluted part of the Kaštela Bay (Eastern Adriatic coast). The 14th International Conference "Air quality - assesment and policy at local, regional and global scales", Dubrovnik, Croatia, 6-10 October 2003, pp267-272.