

# CHLORINATED HYDROCARBONS IN MUSSELS AND SEDIMENTS FROM THE MIDDLE ADRIATIC COASTAL WATERS

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## Abstract

Mussels and sediments from the Middle Adriatic coastal waters were analysed in order to assess the present level of contamination by chlorinated hydrocarbons. The concentrations of PCBs and DDTs were generally higher in mussels than in sediments at all locations. Moreover, higher PCBs concentration, both in mussels and sediments, reflected the prevailing influence of industrial sources of contamination over agricultural ones. In conclusion, the obtained data indicated a low level of contamination of the Middle Adriatic coastal area.

*Keywords : Chlorinated Hydrocarbons, Mollusca, Sediments, Adriatic Sea.*

## Introduction

Chlorinated hydrocarbons are one of the most widespread, persistent and dangerous pollutants of the marine ecosystem [1]. Coastal zones and estuaries, particularly areas near urban and industrial centres are exposed to the largest concentrations of these contaminants. Due to hydrophobic nature and very low water solubility, chlorinated hydrocarbons tend to accumulate in suspended materials and sediments, and in fatty tissues of marine organisms.

## Materials and methods

Mussels (*Mytilus galloprovincialis*) and surface sediments (0-2 cm) were collected from 5 stations, with different hydrographical and environmental conditions, at the Middle Adriatic coastal area (Fig. 1). PCB congeners (28, 52, 101, 118, 138, 153) and DDTs compounds (p,p'-DDE, p,p'-DDD, p,p'-DDT) were determined according to UNEP [2]. Procedural blanks, calibration and internal standards, and referent IAEA marine materials were run routinely during the analytical programme.

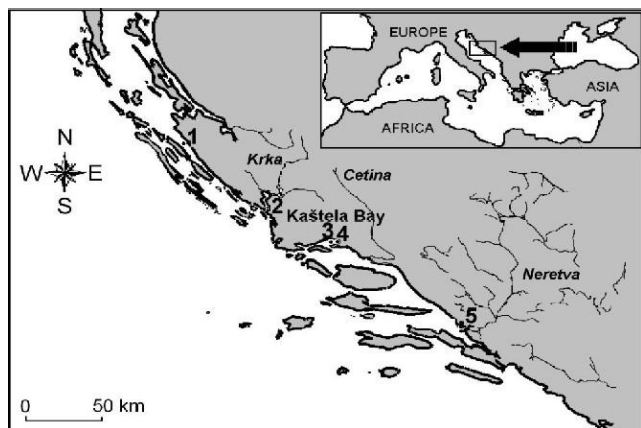


Fig. 1. Investigated area with sampling stations.

## Results and discussion

PCBs and DDTs values were higher in mussels than in sediments at all stations. Average PCBs concentration was 27.3 ng/g dry wt (mussels) and 17.3 ng/g dry wt (sediments), with the highest values observed at the Kastela Bay (Fig. 2). This Bay, a relatively densely populated area with significant industrial and maritime transport activities, is a recipient of untreated/or partially treated urban and industrial wastewaters. The lowest PCBs value was observed at the Neretva mouth (station 5), showing no significant riverine and urban inputs of these contaminants. In all samples, PCB congener's profile dominated by PCB 138 and 153, reflecting their highest persistence among the PCB congeners [3].

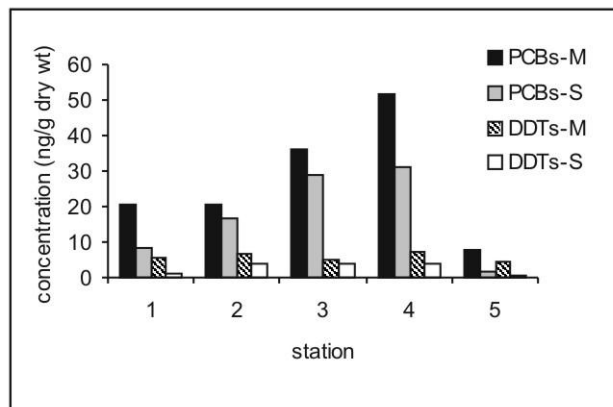


Fig. 2. Distribution of PCBs and DDTs concentrations in mussels (M) and sediments (S) along the Middle Adriatic coastal area.

DDTs values were lower than PCBs ones, indicating the predominance of industrial sources over agricultural ones at the entire study area. Average DDT concentration was 5.9 ng/g dry wt (mussels) and 2.6 ng/g dry wt (sediments), with prevalent DDE portion, suggesting the lack of recent inputs of DDT. Kastela Bay (station 4) and the station 5 presented again the most and the least contaminated station, respectively. The comparison of PCBs and DDTs values with those published for similar locations in the Mediterranean Sea indicated a low level of contamination of the studied area [4]. Moreover, the obtained results showed that the accumulation of PCBs and DDTs depends not only on local pollution sources, but also on environmental characteristics as well as on biological factors of the organism and/or geochemical characteristics of the sediment.

## References

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