



**"Gheorghe Asachi" Technical University of Iasi, Romania**



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## **STUDY OF HEAVY METAL POLLUTION AND BIOACCUMULATION IN THE BLACK SEA LIVING ENVIRONMENT**

**Oana Jitar<sup>1</sup>, Carmen Teodosiu<sup>1\*</sup>, Mircea Nicoara<sup>2</sup>, Gabriel Plavan<sup>2</sup>**

<sup>1</sup>"Gheorghe Asachi" Technical University of Iasi, Department of Environmental Engineering and Management,  
73 Prof. Dr. Docent D. Mangeron Street, 700050, Iasi, Romania

<sup>2</sup>"Alexandru Ioan Cuza" University of Iasi, Faculty of Biology, Department of Biology, 700506, Iasi, Romania

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### **Abstract**

The Black Sea is seriously affected by a large range of pollutants, despite severe laws regarding the protection of sea ecosystems. Heavy metals are among the most important xenobiotics from the environment, presenting also toxicity for humans.

The studies upon heavy metals have proven that the sediments have the highest concentrations and they can release metals back to water and this fact represents a risk for the humans and aquatic ecosystem life.

The use of aquatic organisms like bioindicators for heavy metal pollution is common in actual studies, the algae and molluscs being the most used indicators. These are biofilter organisms that retain small particles from the water, so that the presence of pollutants in mussels' tissues indicates a contamination of the marine environment. This study provides information upon heavy metals pollution and their bioaccumulation mechanisms in the aquatic organisms living in the Black Sea.

Determination of heavy metals from the tissues of mussels from the Black Sea is very important because in the seawater are discharged the effluents with various concentrations of pollutants. Determination of heavy metals concentrations ( $\text{Cd}^{2+}$ ,  $\text{Fe}^{2+}/\text{Fe}^{3+}$ ,  $\text{Cr}^{3+}/\text{Cr}^{6+}$ ,  $\text{Cu}^{2+}$ ,  $\text{Ni}^{2+}$ ,  $\text{Pb}^{2+}$ ,  $\text{Zn}^{2+}$ ) realised in 2010 showed that the maximum limits were exceeded in water and sediments for Cadmium, in water for Iron, Zinc, and in fish for Cadmium and Lead. Other results of the researches showed that the Black Sea was loaded with  $\text{Cd}^{2+}$ ,  $\text{Co}^{2+}$ ,  $\text{Cu}^{2+}$  and  $\text{Ni}^{2+}$ , as compared to other regional seas.

**Key words:** bioaccumulation, Black Sea ecosystems, heavy metal pollution, marine organisms

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\* Author to whom all correspondence should be addressed: E-mail: [cteo@ch.tuiasi.ro](mailto:cteo@ch.tuiasi.ro)