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# ENVIRONMENTAL IMPACT AND RISK ASSESSMENT OF THE MAIN POLLUTION SOURCES FROM THE ROMANIAN BLACK SEA COAST

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## Abstract

The environmental impact assessment (EIA) is a compulsory evaluation instrument for environmental management and decision making processes and applies to different phases of activities (plans, programmes, projects and /or existing production or services), because it measures the natural and anthropogenic activities effects upon the environment. These impacts may affect the cultural richness, biodiversity, social-economic conditions and human health as well as the ecosystem equilibrium.
The aim of this study was to evaluate the environmental impact generated by the heavy metal pollution from the main sources located in the southern area of the Romanian Black Sea coast. Various pollution sources that discharge contaminated effluents were considered for the impact and risk assessment with concern to water and sediments. The main sources analyzed were the effluents of wastewater treatment plants (4 treatment plants of SC RAJA Constanta) and the effluents of a refinery. The methods applied in order to assess the impact of pollution sources with heavy metals were *Rapid Impact Assessment Matrix* (RIAM) and *Integrated Environmental Impact and Risk* approach.
Environmental indicators used for impact quantification were correlated considering the concentrations of heavy metals from the effluents (generated by the 5 pollution sources), marine water and sediments.
The results obtained in this study provide a general image for the heavy metal pollution caused by considered anthropogenic activities on the Romanian Black Sea Coast. The results showed that the analyzed pollution sources do not have a significant negative impact generated by the heavy metal pollution. However, the presence of other pollution sources should not be overlooked because the ecosystem equilibrium must be maintained even if the concentrations of the heavy metals are below the maximum allowed values.

*Key words:* Black Sea, heavy metals, impact assessment, pollution sources, risk assessment

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