SCDS-UDJG 2019, Galați, 13-14 June 2019

ASSESSING THE CONTAMINATION LEVEL AND ECOLOGICAL RISK OF HEAVY METALS IN THE LOWER DANUBE SEDIMENT BY USING DIFFERENT POLLUTION INDICES

Valentina Călmuc[a,*], Cătălina Iticescu[a], Cătălina Țopa[a], Mihaela Timofti[a], Lucian P. Georgescu[a], Maxim Arseni[a], Mădălina Călmuc[a], Adrian Roșu[a]

[a]"Dunarea de Jos" University of Galati, European Center of Excellence for the Environment, Faculty of Sciences and Environment, 111 Domneasca Street, 800201, Galati, Romania

[*]Corresponding author: valentinacalmuc@yahoo.ro

Abstract

This paper presents a study on the assessment of the heavy metal content in the Lower Danube surface sediment. The main aim of the present article is to determine the potential risks of heavy metals in the sediment, by calculating the Potential Ecological Risk Index (RI) and to evaluate the contribution of anthropogenic activities on the level of heavy metal contamination in surface sediment by using different indices such as: Geoaccumulation Index (Igeo), Contamination Factor (CF), and Pollution Load Index (PLI). In order to reach this aim, only 5 heavy metals (Cr, Ni, Zn, Pb, Cu) out of the 15 metals determined in the sediment samples were taken into account. RI, Igeo, CF and PLI indices were calculated by using the results obtained in two different time periods, namely November 2018 and March 2019, based on the X-ray fluorescence (XRF) technique. Although the results of this study demonstrate the presence of high concentrations in Ni and Cr, the ecological risk is insignificant because these metals have a low toxicity factor.

Keywords: surface sediment, Lower Danube, Potential Ecological Risk Index, Geoaccumulation Index, Contamination Factor, Pollution Load Index.