

PRIMARY COMPREHENSIVE ASSESSMENT OF HEAVY METALS RISK IN THE SEDIMENT OF LAKE KOYCEGIZ

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Heavy metal pollution due to chemical contamination has been high on the world agenda in recent years. Unlike organic contamination, metallic one cannot be broken chemically or biologically. Therefore, heavy metals become threatening living things in the long run by transforming into different forms when they enter the food chain. In recent years, although there have been many studies on heavy metal pollution, very little research has been done on the basis of heavy metal fractions. Yet, studies through the determination of just total heavy metal concentrations can be only used as a global index in terms of heavy metal pollution. But they do not provide information about the toxicity, bioavailability, and resources of heavy metals. Chemical fractions of heavy metals need to be explored in order to obtain this information. In this study, five stations were selected in Köyceğiz Lake and sediment samples were collected by Eckmann Grab twice in November 2011, January and April 2012. These samples chemical fractions of heavy metals and physico-chemical parameters were analyzed in sediment samples. Chemical fractions of eight heavy metals (Fe, Mn, Ni, Cu, Cd, Cr, Pb, Zn) was studied using three stage extraction procedure proposed by the Community Bureau of Reference (BCR) and metal concentrations were determined by ICP-AES. The data were evaluated both total metal and metal fraction concentrations by using fuzzy comprehensive assessment. The risk assessment was made base on total metal concentrations almost all metals pose a risk. However, only exchangeable fractions are taken for assessment that showed Pb was determined major pollutant and hazardous metal in Köyceğiz Lake.