

## Chemical Partitioning of Trace Metals in Sub-Surface Sediments of Lake Acigol, Denizli, Turkey

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**Abstract :** Lake Acıgöl is one of the large saline lacustrine environment in Turkey. Eleven trace metals (Cr, Mn, Fe, Al, Co, Ni, Cu, Zn, Cd, Pb and As) in 9 surface and subsurface sediment samples from the Lake Acıgöl were analyzed with the bulk and sequential extraction analysis methods by ICP-MS to obtain the metal distribution patterns in this extreme environment. Five stepped sequential extraction technique (1- exchangeable, 2- bond to carbonates, 3- bond to iron and manganese oxides/hydroxides, 4- bond to organic matter and sulphides, and 5- residual fraction incorporated into clay and silicate mineral lattices) was used to characterize the various forms of metals in the <63 $\mu$  size sediments. The metal contents (ppm) and their percentages for each extraction step were reported and compared with the results obtained from the total digestion. Results indicate that sum of the four fraction are in good agreement with the total digestion results of Ni, Cd, As, Zn, Cu and Fe with the satisfactory recoveries (94.04-109.0%) and the method used is reliable and repeatable for these elements. It was found that there were high correlations between Fe vs. Ni loads in the fraction of F2 and F4 with  $R^2= 0,91$  and  $0,81$ , respectively. Comparison of totally 135 chemical analysis results in three sampling location and for 5 fraction between Fe-Co, Co-Ni and Fe-Ni element couples were presented elevated correlations with  $R^2=0,98$ ,  $0,92$  and  $0,91$ , respectively.

**Keywords :** Lake Acigol, sequencial extraction, recent lake sediment, geochemical speciation of heavy metals

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