Mineralogical and geochemical characteristics of Makirina Bay surficial sediments (Central Adriatic)

[a]Komar D, [a]Vrhovnik P, [a]Dolenec T, [a]Dolenec M, [a]Rogan Šmuc N

Contamination of coastal sediments with toxic elements is widespread and induces a long-term risk to ecosystem health. Makirina Bay represents a restricted shallow-marine ecosystem located in the Central Adriatic area. The surficial sediment from Makirina Bay is treated as an important source of healing mud used for different therapeutic purposes. Therefore, the mineralogical composition and distribution features of toxic elements (Ag, As, Cd, Cu, Mo, Ni, Pb, Sb and Zn) in Makirina Bay surficial sediments were evaluated. The granulometric features and mineralogical composition of Makirina surficial sediments showed more or less similar results to those from the Central Adriatic area. The sediments deposited in Makirina Bay area are mostly poorly sorted clayey-sandy silts. The mineral composition of investigated sediments is characterised with high quantities of dolomite, calcite, aragonite and quartz in all investigated samples, followed by pyrite, halite, coesite, magnesite and diopside. The toxic elements concentrations are ranging from: Ag (4.79 to 9.40 µg/g), As (11.61 to 18.91 µg/g), Cd (8.11 to 15.17 µg/g), Cu (21.11 to 74 µg/g), Mo (5.46 to 47.01 µg/g), Ni (47.11 to 111.63 µg/g), Pb (22.70 to 41.57 µg/g), Sb (34.86 to 51.87 µg/g) and Zn (35.07 to 70.29 µg/g). Toxic element contamination of Makirina Bay surficial sediments was also assessed using geoaccumulation index, contamination factor and contamination degree. The results of the applied indexs confirmed a low to moderate contamination status for Makirina coastal sediments. Taking into account the results of toxic element concentrations present in the surficial sediments, the more detailed studies on toxic element mobility are necessary prior actual use in various therapeutic treatment.

[a] *Faculty of Natural Sciences and Engineering, Department of Geology, University of Ljubljana,Aškerčeva 12, 1000 Ljubljana, Slovenia (nastja.rogan@guest.arnes.si) (komar.darja@gmail.com)*