

## Study of heavy metal leaching in saline mud

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Sečovlje Salina (northern Adriatic) represents a successful model of symbiosis between the conservation of outstanding biodiversity and the cultural heritage and traditional use of the natural resources found within Sečovlje Salina Nature Park (KPSS) [1]. Apart from implementing traditional salt-making, the production of saline mud (fango) and brine are the most important saline products and factors of local wellness and spa offer. Mud properties, functions and user safety depend on their origin and composition. Heavy metals are recognized as human health and environmental contaminants and consequently, their presence/concentrations need to be evaluated according to various application forms of healing muds (peloids). There is limited data available regarding the sorption, leaching, and transport of metals in the healing muds.

Therefore the mud samples from 2013 were analysed for elemental composition (ICP-MS) and organic content (% TOC, % TN). To estimate the mobility of selected heavy metals a 5-step sequential extraction procedure was performed. The increase of brine salinity (covering the saline mud) and pH and organic matter decrease resulted in selective substitution and “incorporation” of individual elements in mud. Decreasing trend with increase of brine salinity for concentrations of elements such as Fe, Mn, Ni, Zn, Zr, K, Ti Al and Si was observed. Concentrations of investigated elements are comparable to theirs mean concentrations in surface sediments from Central Adriatic Sea [2]. The mobility potential of heavy metals in mud samples decreases in the following order: Mo>Cu>As >Pb>Ni>Zn>Cd.

[1] <http://www.kpss.si/en/the-park> [2] T. Dolenec, J. Faganeli, S. Pirc, Major, minor and trace elements in surficial sediments from the open Adriatic Sea: A Regional Geochemical Study, *Geol. Croat.* **51(1)** (1998) 59–73