



## **Trace element distribution in the water and sediments of certain storage lakes from the Jijia catchment, (Romania)**

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The present study aims at investigating the concentrations and distribution levels of a series of trace elements in water and sediment samples collected from six storage lakes located in the Jijia catchment – NE of Romania. The lakes are multi-purpose water reservoirs, three of them being mainly used as a source of municipal drinking water, or for fishing, irrigation for the farms in the area, protection against floods and the regulation of river flows. By contrast, agricultural wastes, fertilizers, raw sewage effluents and road runoff constitute the predominant anthropogenic sources, which supply the lakes in question with Cd, Cu, Pb and Zn. The present study was conducted on a series of 63 sediment samples and 18 water samples, collected from the same locations, in order to establish the distribution levels of certain trace elements from the water through sediments. Sediment cores were collected from two sections across each lake by means of a motor boat, using a system that consists of a graduated sampling tube (0.9 m in length and 72.5 mm in diameter) made of Plexiglas (Eijkelkamp sample tube guide). Prior to the analyses, the samples were air-dried, ground and homogenized using an agate mortar, oven-dried at 50 °C for 6 days and then sieved through 63  $\mu\text{m}$  sieves. The sediment and water samples were subjected to a digestion technique with concentrated nitric acid using a microwave oven (Berghof type), and analyzed for the following elements: Pb, Zn, Cu, Cd, Cr and Ni. The total concentration of the elements was measured through atomic absorption spectrometry (AAS) with an RSD of < 10 % from solutions. The vertical distribution of most elements in the cores examined could be characterized as relatively uniform, with higher concentrations for those collected from the lakes which are more influenced by anthropogenic factors, compared to those situated in forested areas. The lake-water quality characteristics were below the recommended drinking water standards imposed by the current legislation (MMGA Ord. No. 161/16.02.2006 - Normative regarding the classification of surface waters in order to establish the ecological status of water bodies, which combines European and Romanian provisions), with the exception of copper (with very high concentrations in all the water samples), lead and cadmium.

Keywords: AAS, Jijia catchment (Romania), lake water, sediment core, trace elements