Trace metals bioaccumulation ability of selected freshwater bivalve shells

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Living organisms frequently reflect the deterioration scale of the environment in which they occur. Freshwater mollusks have long been the subject of ecotoxicology and environmental monitoring studies, mainly investigating for trace metal concentrations in their soft tissues. There are also some reports mollusks' shells are probably able to bioaccumulate some elements, although studies have not given a clear and passable answer to this issue so far.

Complete shells of three bivalve species (*Unio pictorum*, *Anodonta anatina*, *Dreissena polymorpha*) were sampled from water reservoir "Pogoria II" located on the Upper Silesian Anthropogenic Lake District (southern Poland). The shells were tested by means of the following methods to determine the metal content and their distribution in different shell layers: Atomic Absorption Spectrometry, Inductively Coupled Plasma – Mass Spectrometry and Energy-dispersive X-ray spectroscopy. In addition to naturally-occurring elements in a shell (e.g. Ca, Na, Mg, S), high content of elements such as Mn, Sr, Ba has been detected. Every tested shell showed such increase, although differences in the accumulation of elements between species are clearly demonstrated.

The results were compared with the content of trace elements present in the water and mud medium to determine a correlation between the degree of accumulation in bivalve shells.