

## HEAVY METALS IN ANIMAL TISSUES FROM THE DUMPS AT ŠTIAVNICKÉ BANE DEPOSIT

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The locality Štiavnické Bane – Lúky nad Tonádom represents a mining country influenced by historical exploitation of Au-Ag polymetallic ores from the 14<sup>th</sup> until the 19<sup>th</sup> century. The mines were closed in 1903.

The possibility of the utilization of the higher animals as indicator of contamination depends on their stressor sensibility and on the extent of their reaction in time and area. The group of small mammals is a suitable model group for monitoring of environment toxicity (TALMAGE & WALTON, 1991) in respect of their short-living (several months). Their living space is small (maximum 1–2 hectares), so they give chance to monitor a particular locality. At all investigated localities the dominant species were *Apodemus flavicollis* (53.9%, *AFLA*), *Microtus arvalis* (24.5%, *MARV*) and *Clethrionomys glareolus* (18.2%, *CGLA*) and subordinately also *Microtus subterraneus* (*PSUB*) and the only representative of insectivorous animals, *Crocidura suaveolens*.

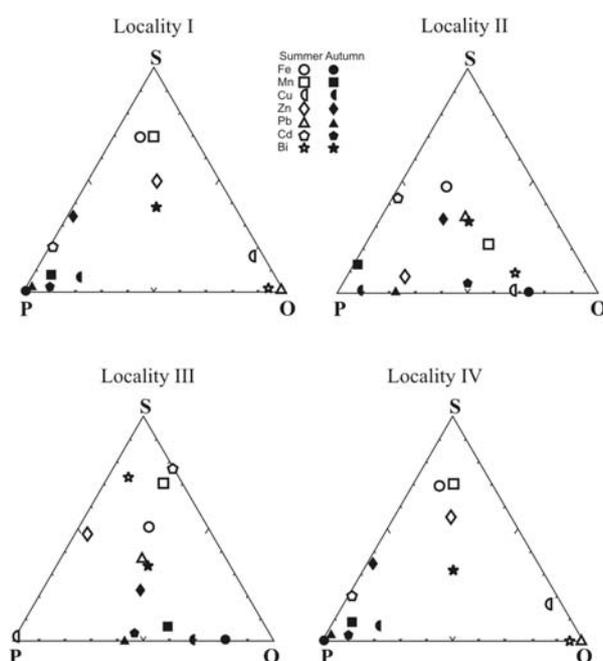
The graphic representation in differences of tissue contamination of livers, kidney and spleens of *AFLA* species at localities between the summer and autumn set of analyzed samples (Fig. 1) shows, that there is an obvious similarity between the contamination degree of the studied organs from localities I and IV. Localities at the older (II) and younger (III) dumps differ by proportional contamination of the analyzed organs. The contents of individual elements at younger

dumps from the summer and autumn set intersect and at the older dumps there is a differentiation between the summer and autumn set. It is similar to the differentiation at localities I and IV.

The exposure time – the period while the animal is exposed to the activity of stressors – plays an important role. If the organs of short-living organisms are markedly contaminated, it is very probable, that in animals with longer lifetime the contamination of internal organs will rise proportionally. Among herbivorous animals those species are present that mainly feed on the vegetal organs of plants and seeds. Higher contamination by heavy metals and toxic elements of analyzed tissues of internal organs was determined at animals having a preference for consuming vegetal organs of plants. Animals consuming predominantly the seeds show lower contamination by heavy metals. Different contamination of internal tissues was found at individual monitored elements from the summer and autumn sets of the studied rodents within the individual localities and between the localities.

### Reference

TALMAGE, S.S. & WALTON, B.T. (1991): Reviews of Environmental Contamination and Toxicology. 119: 48–99.



**Fig. 1:** Triangular plots of rate concentrations of selected elements in tissues of livers (P), kidneys (O) and spleens (S) of *Apodemus flavicollis* species from localities I – reference area; II – dump from the 17<sup>th</sup> century, III – dump Babčo (17<sup>th</sup>–18<sup>th</sup> centuries); IV – dump Wolf (18<sup>th</sup> century).