"Sources and fluxes of selected microelements in a Central Bohemian forest ecosystem with granitic bedrock"

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The contribution presents the results of the monitoring of biogeochemical fluxes of selected minor and trace elements which has been in operation in the Nature State Reserve " Voděradské bučiny", situated approx. 30 km SE from Prague, Czech Republic. Aim of the study is to evaluate and compare the significance of the abiotic, biotic and anthropogenic mobilization factors of As, Be, Cd, Cu, Mn, Pb, Sr, and Zn in the environment. Monitoring of the principal fluxes of matter proceeds in a small (0.77 km^2) forested catchment "Lesní potok", with beech (Fagus sylvatica L.) and spruce (Picea abies L. Karst) being the dominant tree species.

Values of the concentration and the deposition intensity (expressed in $\mu g. m^{-2} \cdot day^{-1}$) of the elements in bulk atmospheric precipitation and in beech / spruce throughfall have been collected and evaluated since May, 1989, and May, 1993 respectively. Trends in the bulk precipitation of Pb reflect the considerable changes in vehicular road traffic and the steady growth of consumption of the lead - free gasoline. Significant annual fluctuations have been found in the beech throughfall concentration of Mn which affect also the composition of the precipitation on an open place. The predominantly metabolic Mn in througfall is mobilized from the tree assimilation organs through the ion - exchange for H^+ of the acid precipitation, mostly in the time preceding the autumn litterfall.

Metabolic uptake of the essential elements through the root system of the forest trees significantly affects in some cases the distribution of elements throughout the soil profile and it may accelerate their exogenous cycle, as it was observed chiefly in Mn, but also in Sr and Zn. The intensive fluxes of these elements in throughfall and stemflow are then reflected in the lateral and vertical variations of their content in the soil profiles, too.

Considerably increased content of the lithogenic Be in surface water of the catchment has been attributed to its mobilization through the acid atmospheric precipitation. The monitoring of the chemical composition and $[H^+]$ of the surface discharge which continues since 1985 has revealed the growing deficit of the main neutralizing cations which is then reflected in the gradual lowering of the surface water pH and in the growing concentration of several cations, above all in Al and Be.

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