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Biogeochemical Exploration of Forests as a Basis for their Long-Term Landscape Management in the Czech Republic. Introduction of the Opening Project CZ0074

JULIE SUCHAROVÁ*), IVAN SUCHARA*), CLEMENS REIMANN**), ROGNVALD BOYD**)

Various geological, geomorphological and climatic conditions, together with the long-term effects of mainly very high deposition rates of atmospheric industrial emissions cause anomalies in element distributions in the landscape of the Czech Republic. Geological maps and figures depicting the location of highly industrialised parts of the country (so–called Black Triangles) illustrate these phenomena. Unfortunately, environmental scientists have been able to study the distribution and potential effects of only a few heavy metals in the environment. Multielement analyses of some natural media (moss, forest floor humus, soil, etc.) carried out in the Czech national and international biomonitoring campaigns revealed previously unknown areas of elevated to very high accumulation of many elements, which are potentially toxic or hazardous, in the analysed samples.
Examples are shown of isopleth maps of element concentrations in soil, forest-floor humus and feather moss in the selected hot spots (e.g., around a lead smelter, stone-mill grounding stones from a former uranium pit, centre of high deposition of lithogenic elements caused by erosion of arable soil on Carpathian flysch, bioindicated position of hot spots for deposition loads of chosen elements, etc.)
A new biogeochemical project supported by grants from the EEA and Norway has been initiated in the Czech Republic. The project is aimed at a better delineation of zones of deficiency of biologically active elements and of hot spots of hazardous element accumulation, at an evaluation of direct and synergistic impacts in such effected areas and at help in controlling and planning the long-term land use in the Czech Republic. About 36 elements will be determined in soil, humus and plant samples collected in ca. 250–280 forest stands.
There is no satisfactory knowledge of the distribution and effects of most of the elements under investigation in the landscape of the Czech Republic. Specific plant indicators of environmental contamination, mobility and accumulation of elements in the landscape will be used. Many new findings concerning the biogeochemical conditions of the Czech territory are expected. The goals, contents and potential benefits of this project are introduced.

**) Silva Tarouca Research Institute for Landscape and Ornamental Gardening, CZ-252 43 Průhonice, Czech Republic.
sucharova@vukoz.cz.
**) Norwegian Geological Survey, N-7491 Trondheim.
Reimann@ngu.no.