FIRST STEPS IN EVALUATING THE ROLE OF WIND-BLOWN DUST IN MOSS BIOMONITORING

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An important task of environmental protection is to monitor the composition of atmospheric precipitation, since potentially toxic elements are quite stable and can adversely affect human health. Low cost and applicability of the moss biomonitoring method for studying the deposition of trace elements over large areas is an adequate alternative to traditional monitoring methods, but there is a need to evaluate the role of wind-blown dust and/or soil pollution in areas dominated by mineral soils. This problem is common for both countries, the Republic of Moldova and Georgia.

In order to investigate the influence of the local geochemistry on the spatial integration of trace elements in biomonitors, as well as to determine the effectiveness of the biomonitoring method in the assessment of the quality of atmospheric air in areas with different physical and geographical conditions, moss samples were collected in the agricultural and mountainous regions of Georgia. *Hypnum cupressiforme* was chosen as the biomonitor species for this study, as it was already used in the 2020 moss survey conducted in the Republic of Moldova.

All samples were cleaned from extraneous impurities, and only green part of the moss was used for analysis. Concentrations of 15 elements, including As, Al, Ba, Cd, Co, Cr, Cu, Fe, Mn, Ni, Pb, S, Sr, V, and Zn were determined by the inductively coupled plasma atomic emission spectroscopy (ICP-AES), and the Hg concentration was determined using direct mercury analyzer (DMA-80 Milestone).

To reveal any associations of chemical elements and characterize the sources of elements detected in the samples, multivariate statistics was applied. The results were compared with the 2020 moss survey conducted in the Republic of Moldova.

The obtained results might be useful for biomonitoring studies in areas with different physical and geographical conditions.

Keywords: moss biomonitoring, Air pollution, Trace elements, ICP-AES, DMA-80.