

ACTIVE MOSS BIOMONITORING APPLIED TO AN INDUSTRIAL AREA IN ROMANIA: VARIATION OF ELEMENT CONTENTS WITH THE HEIGHT OF EXPOSURE SITE

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Neutron activation analysis and the moss-bag transplant technique were used to investigate the variation of element contents with the height of the exposure site of Sphagnum girgensohnii samples in the strongly polluted town of Baia Mare, Romania, according to a novel sampling design. Moss collected from the background area in Moscow region, Russia, was hanged in bags at 3 locations spread within an area of one square kilometre, and analyzed after 4 months of exposure. At each location a number of 15 samples were suspended at 6 different levels above the ground: 6, 12, 18, 24 and 30 m. A total of 35 elements were determined by NAA at IBR-2 reactor in Dubna, Russia. Discriminant Analysis allowed depicting the differences between the accumulation patterns of moss at different levels of exposure and at various locations. The concentration of only twenty four and twenty five elements of thirty five provided sufficient information to enable classification rules to be developed for identifying moss samples according with their height of exposure and location, respectively. The most discriminant elements have the F values (indicating the statistical significance in the discrimination between groups) descending in the following order: K, Rb, Sb, Cs, Zn, Cl for the location model and Ca, Cd, As, Sr, Ba, Cl for the height model.

A good agreement have been observed between the groups obtained by applying Discriminant Analysis and the origin of the samples. A small number of elements are significant for the separation of moss-bags by height in individual locations. The parameter ?variation in concentration by height? is less significant than the parameter ? variation in concentration by location?.