



“Gheorghe Asachi” Technical University of Iasi, Romania



MULTIVARIATE STATISTICAL METHODS FOR DETERMINING THE DEPOSITION OF CHEMICAL ELEMENTS IN THE AIR IN THE POREČE REGION, NORTH MACEDONIA

Trajče Stafilov^{1*}, Robert Šajn², Maja Ocevska³, Claudiu Tănăselia⁴

¹Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss Cyri and Methodius University,
Arhimedova 5, 1001 Skopje, Republic of Macedonia

²Geological Survey of Slovenia, Dimičeva ul. 14, 1000 Ljubljana, Slovenia

³TE-TO AD Skopje, 1000 Skopje, North Macedonia

⁴INCDO-INOE 2000 Research Institute for Analytical Instrumentation (ICIA), Cluj-Napoca, Romania

Abstract

A study was conducted to investigate air deposition and explore the distribution of potentially toxic elements (PTEs) in the region of Poreče, North Macedonia, using moss samples as biomonitors for air pollution. The distribution of 48 elements was detected in 36 moss samples collected in the study region. The moss samples were analysed after microwave digestion using inductively coupled plasma – atomic emission and mass spectrometry. It has been determined that the presence of some potentially toxic elements in the air in the study area was only influenced by lithogenic origin. R-mode factor analysis was used to identify and characterise the elemental associations. Three factors were separated from the group of macroelements determined by ICP-AES: Factor 1 (Fe, Al, Cr, V, Li, Ba, Ni, and Sr), F2 (P, K, and Cu), and F3 (Pb, Zn, Mg, and Ca). The data obtained and the distribution maps of the association of the elements and for each element analysed indicate a lithogenic occurrence of the elements and low concentrations of potentially toxic elements in the study area.

Key words: moss, potentially toxic elements, Poreče, North Macedonia, ICP-MS

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* Author to whom all correspondence should be addressed: e-mail: trajcest@pmf.ukim.mk; Phone: +389 70350756; Fax: +3892 3228141