

ATOMIC AND NUCLEAR SPECTROMETRIC METHODS WITH HIGH SENSITIVITY APPLIED IN THE STUDY OF ENVIRONMENTAL POLLUTION WITH HEAVY METALS: SYNTHESIS

Ion V. POPESCU¹, Gheorghe Valerica CIMPOCA^{1,2}, Claudia STIHI³,
Cristiana RADULESCU⁴, Elena Daniela CHELARESCU⁵,
Ioana Daniela DULAMA⁶, Gabriel DIMA⁷

Abstract. *The paper contains a synthesis of results obtained in the study of environmental pollution with heavy metals by application of Atomic and Nuclear Analysis Methods (MAN) in combination with the biomonitoring technique using bioindicators: mosses and lichens, edible wild mushrooms and their substrate and surface waters. Samples were collected from different geographic areas of Romania. Analyses of heavy metals (Cr, Mn, Fe, Ni, Cu, Zn, Cd, Se, Pb) by MAN from the samples of moss and lichens, edible wild mushrooms (and their substrate) and surface waters were performed. Concentration values of heavy metals in moss and lichens, determined by MAN, were statistically interpreted and distribution maps were made. Analysis of edible wild mushrooms samples are resulted in a higher accumulation of Fe, Cu and Zn in the their substrate. In order to characterize the quality of surface waters (Olt and Potop Rivers), quality indicators (pH, electrical conductivity, salinity, turbidity and TDS) were determined. The statistical interpretation led to a linear correlation between TDS and conductivity and total hardness and conductivity. Concentrations of heavy metals in surface water samples obtained by MAN were compared to the maximum permissible limits.*

Keywords: environmental pollution, methods, heavy metals, moss, lichens, wild mushrooms, water

¹Professors, PhD, Valahia University of Targoviste (UVT), Academy of Romanian Scientists, Multidisciplinary Research Institute for Science and Technology of UVT (ICSTM-UVT), ivpopes@yahoo.com.

²valcimpoca@yahoo.com.

³Associate Professor, PhD, Valahia University of Targoviste, ICSTM-UVT, cstih@yahoo.com.

⁴Professor, PhD, Valahia University of Targoviste, UVT (ICSTM-UVT). radulescucristiana@yahoo.com.

⁵Scientific researcher, Academy of Romanian Scientists, dana_chelarescu@yahoo.com.

⁶Scientific researcher, ICSTM-UVT, dulama_id@yahoo.com.

⁷University lecturer, PhD, Valahia University of Targoviste (UVT), gabriel.dima@valahia.ro.