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EVALUATION OF ENVIRONMENTAL IMPACT USING ACTIVE BIOMONITORING STUDIES OF AIR POLLUTION

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Abstract

An active biomonitoring study using Sphagnum moss peat as low-cost sorbent was conducted to assess the air quality in some areas from Dorna Basin (Romania). The sorbent exposure period occurred between May and September 2009, and four areas from Dorna Basin: Caliman, Tolovanu, Poiana Negrii and Poiana Stampei were selected for this purpose. The concentrations of some heavy metals (Pb, Cd, Cu, Mn and Fe) in the sorbent samples were used as an indicator of the level of air pollution in the studied regions. The graphite-furnace electrothermal atomic absorption spectrometry was used to determine the total concentration of heavy metals in the sorbent samples after each exposure stage (30 days). Accumulated heavy metals in the exposed Sphagnum moss peat reflect the atmospheric depositions and were used to calculate the values of enrichment factor (EF), in each case. On the basis of the enrichment factor values the environmental impact was estimated using global pollution index method (Rojanschi method). An original scale of evaluation marks was proposed for the calculation of global pollution index. The obtained results show that the active biomonitoring studies of air pollution is a simple and economical method that can be used for the assessment of environmental impact.

Key words: air pollution, active biomonitoring, environmental impact, heavy metals, Sphagnum moss peat

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