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THE POTENTIAL IMPACT OF LANDFILL ON THE NEAR VICINITY WITH THE USE OF HEAVY-METAL ACCUMULATOR PLANTS

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Abstract

This study was conducted to screen plants growing on potentially contaminated areas of landfill body and nearest surrounding to determine their potential for metal accumulation. In addition, enrichment coefficient (***EC***) for plant/soil system, correlation and principal component analysis were used for determining the environmental contamination from landfill in terms of heavy metal accumulation. The examined plant samples meet the stated requirements. The highest values in samples 1 - 8 reached Fe (491 – 191 000 mg/kg DM), the second values were Mn (35.1 – 342 mg/kg DM) and the third was Zn (26.9 – 145 mg/kg DM). The highest concentrations of Co, Cd, Cr, Cu, Fe, Mn, Ni, Pb and Zn were observed (in order) in plant samples 4, 2 and 1, i.e. plants collected in the vicinity of the landfill. The examined soil samples meet the stated requirements. The highest values in samples 1 - 8 reached Fe (23 300 to 63 400 mg/kg DM), the second were recorded for Mn (527-908 mg/kg DM) and the third was Zn (83.0 - 519 mg/kg DM). The highest concentrations of Co, Cd, Cr, Cu, Fe, Mn, Ni, Pb and Zn were observed (in order) in soil samples 7, 2 and 5. ***EC*** was calculated for all 8 sampling points. The highest degree of accumulation was observed for Cd in all 8 sampling points. In contrast, the lowest concentration of all the examined heavy metals was determined for Cd in plant and soil samples.

Key words: enrichment coefficient, landfill, metal accumulation, *Tanacetum vulgare* L., waste

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