



Spatial distribution of heavy metals in surface soil, plant and mushroom beside high-frequency road

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One of the undesirable aspects of urbanization process is the introduction of potentially harmful pollutants into environment. Urban soils are often contaminated by metals deriving from industry, transportation and other human activities. In this study, concentration of heavy metals were investigated in roadside surface soil, linden tree bark (*Tilia* sp.), mushroom *Schizophyllum commune* and dust samples collected at different distances (0.2 – 200 m) from main high-frequency road. The samples were microwave digested in accordance to US EPA 3051 method and analyzed by flame (Cd, Cu, Co, Fe, Ni, Mn, Pb and Zn), graphite furnace (Cr) and cold vapor (Hg) atomic absorption spectrometry. The results of the analysis were used to determine major sources and distribution of heavy metals pollution. The obtained results showed significant decrease of traffic-related metals (Fe, Zn, Pb, Ni, Cu and Cd) in soil samples with increasing distance from road edge. In order to assess possible pollution, heavy metal contents in soil were compared with the National legislation and Netherlands soil quality standards. Also, elevated concentrations of traffic-related metals, especially Pb and Cr in analyzed tree bark, mushroom and dust samples, indicate the obvious roadside contamination whose primary contributors appear to be vehicular local traffic. In addition, Index of Bioaccumulation (IBA) was calculated in order to estimate plant and mushroom ability of heavy metals accumulation. Assessment of statistical differences among samples was performed by one-way analysis of variance (ANOVA) and Tukey honestly significant difference (HSD) test. Moreover, Principal Component Analysis (PCA) was performed on the heavy metals content allowed a meaningful classification of the samples according to the main sources of pollution.