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"Gheorghe Asachi" Technical University of Iasi, Romania

POTENTIALLY TOXIC ELEMENTS IN URBAN SOILS OF IASI (ROMANIA)

Cristian Vasilica Secu[1], Doru Toader Juravle*, Madalina Paiu[1], Dan Cristian Lesenciuc[1], Mihai Costica[2], Diana Negru[1], Iuliana Gabriela Breaban[1]

[1]*"Al.I.Cuza" University of Iasi, Faculty of Geography and Geology, 20A Bd. Carol I, 700505, Iasi, Romania*
[2]*"Al.I.Cuza" University of Iasi, Faculty of Biology, 20A Bd. Carol I, 700505, Iasi, Romania*

Abstract

Our study aims to analyse soil quality based on the concentrations of potentially toxic elements (PTEs) in natural or slightly modified anthropogenic soils, technosols and landfill deposits in Iasi. The pollution level analysis based on lognormal distribution plot allows the differentiation of elements coming from the parent material (Mo, Cd, Ni and As) of those with anthropogenic origin (Pb, Zn and Cu). *The enrichment factor (EF)* calculated based on manganese (Mn) as reference in the parent material of natural soils from the studied region indicates the following sequence: Zn in anthropogenic deposits > Cu in technosols > Cu in anthropogenic deposits > Pb in technosols > Pb anthropogenic deposits > Zn in technosols. *The temporal enrichment factor (EFt)* reflects the accumulation of Zn and Pb during the industrialization and the current period, which is different from the lower soil layer formed after the floods in 1932, which are not polluted. The correlation matrix between the total organic carbon (TOC), inclusions, Pb and Cu from bioaccumulative horizons of buried technosols indicate a powerful accumulation during the accelerated industrialization period of the city than now. The high levels of Cu concentrations are consistent with the land use changes from gardens and vineyards to build-up spaces while in the case of Pb, it corresponds to the prior usage of gasoline lead additives in the past. The algal community study highlights the associating of green algae and filamentous with anthropogenically altered soils that have variable concentrations of PTEs.

Key words: algae communities, enrichment factor, landfill waste, natural soils, technosols

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* Author to whom all correspondence should be addressed: e-mail: jdorut@yahoo.com