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i korišćenje zemljišta i deponija, Beograd
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ZEMLJIŠTE 2015
INTEGRISANI SKUP
II SAVETOVANJE
sa međunarodnim učešćem
PLANIRANJE I UPRAVLJANJE ZEMLJIŠTEM
U FUNKCIJI ODRŽIVOG RAZVOJA
I
V KONFERENCIJA
sa međunarodnim učešćem
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Izdavač
Cobal Blue d.o.o.

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PHYTOREMEDIATION POTENTIAL OF WHITE POPLAR (Populus alba L.) ON FLY ASH DEPOSITS AT THE NIKOLA TESLA - A THERMOELECTRIC POWER PLANT ('TENT A'), OBRENOVAC, SERBIA

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ABSTRACT

This study focused on examining the phytoremediation potential of a naturally colonized species, white poplar (Populus alba L.), on fly ash (FA) deposits. The research was undertaken at the fly ash deposit site of the 'Nikola Tesla A' thermoelectric power plant ('TENT A') in Obrenovac, formed on fertile agricultural land, 30 km south-west of Belgrade, on the right bank of the River Sava. The total As, B, Cu, Se, Cr and Ni content in the ash from an ash pond weathered for 11 years, which had been naturally colonized from the surrounding habitats by the examined species, was found to be elevated, falling in a range higher than the average values for plants. Analysis of the root and leaf tissues of the white poplar showed that concentrations of As were between 5.22-5.04 μg g^{-1}, B between 11.81-137.45 μg g^{-1}, Cu between 3.98- 8.34 μg g^{-1}, Se between 0.98-3.30 μg g^{-1}, Cr between 1.47-0.67 μg g^{-1}, and Ni between 2.71-4.73 μg g^{-1} respectively, i.e. As and B concentrations in leaves fell within the toxic range, Cu and Ni fell within the normal range, while Se and Cr was in a range higher than the average concentrations of these elements in plant tissues. The bioconcentration factor (BCF) in the roots and leaves, for all the chemical elements studied, apart from B in leaves, was less than 1, while the translocation factor (TF) for all the chemical elements studied apart from Cr was greater than 1. The results of this research showed that white poplar on the fly ash deposits of 'TENT A' exhibited poor phytostabilization potential, making this woody species highly unsuitable for the phytoremediation of this, or any other habitat, characterized by high As and B concentrations.

Keywords: degraded habitat, fly ash, remediation, Populus alba