

Phytoremediation: An Ecological Solution to Heavy-Metal-Polluted Soil

Authors : Nasreen Jeelani, Huining Shi ,Di An, Lu Xia, Shuqing An

Abstract : Heavy metals contamination in aquatic ecosystem is a major environmental problem since its accumulation along the food chain pose public health risk. The concentration of heavy metals (Cd, Cr, Cu, Ni, Pb and Zn) in soil and plants species collected from different streams of Suoxu River, China was investigated. This aim was to define the level of pollutants in Suoxu River, find which plant species exhibits the greatest accumulation and to evaluate whether these species could be useful for phytoremediation. While total soil Cd, Cr, Cu, Ni, Pb, and Zn concentrations varied, respectively, from 0.09 to 0.23 , 58.6 to 98, 9.72 to 80.5, 15.3 to 41, 15.2 to 27.3 and 35 to 156 (mg·kg⁻¹), those in plants ranged from 0.035 to 0.49, 2.91 to 75.6, 4.79 to 32.4, 1.27 to 16.1, 0.62 to 10.2, 18.9 to 84.6 (mg·kg⁻¹), respectively. Based on BCFs and TFs values, most of the studied species have potential for phytostabilization. The plants with most effective in the accumulation of metals in shoots are *Phragmites australis* (TF=2.29) and *Iris tectorum* (TF =2.07) for Pb. While *Chenopodium album*, (BCF =3.55), *Ranunculus sceleratus*, (BCF= 3.0), *Polygonum hydropiper* (BCF =2.46) for Cd and *Iris tectorum* (BCF=2.0) for Cu was suitable for phytostabilization. Among the plant species screened for Cd, Cr, Cu, Ni, Pb and Zn, most of the species were efficient to take up more than one heavy metal in roots. Our study showed that the native plant species growing on contaminated sites may have the potential uses for phytoremediation.

Keywords : heavy metals, huaihe river catchments, sediment, plants

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