

DISTRIBUTION OF TRACE ELEMENTS IN PLANTS AND SOILS FROM CHROMITE MINERALIZATION OF BYRAPUR, HASSAN DISTRICT, KARNATAKA, SOUTHINDIA

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Abstract

Plant organs of different plant species and their corresponding substrate samples were collected from Byrapur chromite mining area of Hassan District, Karnataka. Root, stem, and leaves of *Chromolaena odorata*, *Sopubia delphiniifolia*, *Tephroisa purpurea*, *Pavetta indica*, *Prosopis juliflora* and their soil samples were analyzed for mineral elements viz., Ba, Sr, Mn, B, Cu, Zn, Pb, Ni, Co, Cr, Mo, Cd, Sn, Zr, and As, and the biological absorption co-efficient (BAC) was calculated. The roots of *P. indica* show the unusually high concentration of 413 ppm of Zn. Similarly, the leaves of *T. purpurea* show unusually high concentration of 75 ppm of Co and these plant species may be considered as accumulator plants. The biological absorption coefficient (BAC) is used to characterize the absorption of chemical elements by plants from their substrate. The BAC is the ratio of the concentration of an element in plant ash to that of its substrate. The BAC values for the roots of *P.indica* for Pb (BAC 7.66) and leaf of *C. odorata* for B (BAC 2.68) is found to be significantly high. The results show the presence and/or absence of certain elements in plants and soils, which can be explained on the basis of biogeochemical cycling of elements, exclusion mechanisms, and bioavailability. Such plant species may be useful in reclamation and revegetation of adversely affected mining environments; and further these investigations are also useful in biogeochemical orientation surveys. Further, this study has given greater scope on the plant-soil relationship in the mining area and their significance in environmental studies.

Keywords: Biological absorption coefficient, Byrapur, Accumulator plants, Chromite mine.