

# Assessment of heavy metal contamination of soils and plants in and around open cast mines of Sukinda, India

■ S.S. PANDA AND N.K. DHAL

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**ABSTRACT :** Mining activities generate huge amount of wastes with extremely high concentrations of heavy metal that have adverse effects on ecosystems and human health. Metal contamination extended several kilometers away from the mine sites probably by wind and water. Native vegetation was directly affected by the pollution. Hence, understanding the dynamic of metals in soil and plants is essential for ecosystem management and risk assessment. The present study was designed to assess the toxic metals viz., lead (Pb), cadmium (Cd), nickel (Ni) and chromium (Cr) present in the soil and plant samples of 18 plant species collected from nearby areas Sukinda chromite mining zone. Samples of soil and plants were collected from six different sites and were analyzed for pH, EC, Cr, Cd, Pb and Ni by pH meter, conductivity meter and atomic absorption spectrophotometer, respectively. Soil pH was slightly acidic in nature and varied from 5.5 to 6.4. Total heavy metal concentrations in soils were in the order of Cr > Ni > Pb > Cd. Cr and Ni exceed the critical limit value of WHO specified standard. Accumulation of metals in the plant species and in their organs varies, e.g. accumulation of heavy metal was higher in stem as compared to leaf. *Ailanthus excelea* Roxb. has highest capability for accumulating Cr in the shoot part as compared to other collected plants. The plants can ideally be used as the possible application in agricultural reconnaissance surveys, reclamation and revegetation of adversely affected mining environment.

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Author for correspondence :

**S.S. PANDA**

Department of  
Environment and  
Sustainability, CSIR-  
Institute of Minerals and  
Materials Technology,  
BHUBANESWAR (ODISHA)  
INDIA

Email: swati.sucharita8  
@gmail.com

See end of the article for  
**Coopted authors'**