

Simultaneous immobilization of metals and arsenic in acidic polluted soils near a copper smelter in central Chile

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Introduction: Acidic and metal(oid)-rich topsoils resulted after 34 years of continuous operations of a copper smelter in the Puchuncaví valley, central Chile. Currently, large-scale remediation actions for simultaneous in situ immobilization of metals and As are needed to reduce environmental risks of polluted soils. Aided phytostabilization is a cost-effective alternative, but adequate local available soil amendments have to be identified and management options have to be defined. **Materials and methods:** Efficacy of seashell grit (SG), biosolids (B), natural zeolite (Z), and iron-activated zeolite (AZ), either alone or in mixtures, was evaluated for reducing metal (Cu and Zn) and As solubilization in polluted soils under laboratory conditions. Perennial ryegrass was used to test phytotoxicity of experimental substrates. **Results:** Soil neutralization to a pH of 6.5 with SG, with or without incorporation of AZ, significantly reduces metal (Cu and Zn) solubilization without affecting As