

## Reclamation of Soils Affected by Brass Industry using Lime Incorporation

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Farmers have abandoned the crop-growing lands because of significantly low crop productivity due to soil contamination with toxic trace elements (PTEs) by the wastewater disposal of the brass industry in Pilimathalawa. A preliminary assessment of soil and water was done to assess the basic soil properties and the level of contamination. The soil pH was acidic ( $6.00 \pm 0.4$ ) and highly contaminated with PTEs. The concentration of Cu was  $12,548 \pm 1,280$  mg/kg, Zn was  $3,993 \pm 1,395$  mg/kg, Cd was  $0.72 \pm 0.46$  mg/kg, and Pb was  $392 \pm 280$  mg/kg. The objective of the study was to assess the effectiveness of incorporating lime in reclaiming and increasing the crop productivity of the land. A field study was conducted with lime incorporated and control treatments in randomized complete block design with four blocks. Beans (*Phaseolus vulgaris*) were grown in the plots. Bean pods were produced only in lime-added treatments and were analyzed for the concentration of PTEs. *Ludwigia peruviana* plant (Diya Milla) was analyzed for trace elements to assess its use in phytoremediation. Liming increased soil pH ( $8.48 \pm 0.33$ ) significantly ( $P < 0.05$ ). All the growth parameters of bean plants are significantly higher ( $P < 0.05$ ) in lime-added treatment than control. The intake of Cu, Zn, and Cd via consumption of beans was lower than what is allowed by the CODEX safe limits. The Pb intake by consumption of beans was similar to the CODEX safe limits indicating potential health hazards. *Ludwigia peruviana* has the potential to be used in phytoremediation of Cu, Zn, and Cd, but not Pb in the considered contaminated soil. Liming showed potential to increase crop productivity, but many crop types should be assessed for PTEs concentrations to assess the health risk of consuming the crops growing in the considered contaminated soil.

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