



Mid-term effects of mine soil reclamation by use of aided phytostabilization

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Abandoned tailing ponds show environmental and human health hazards by the transfer of heavy metals through erosion or leaching. To reduce these hazards, a reclamation strategy has been developed on a tailing pond based on aided phytostabilization. In 2011 marble mud and pig slurry were applied on the tailing pond surface. In spring 2012 thirteen native vegetal species were introduced. During two years (2012-2013) the evolution of different soil properties and the bioavailable fraction of the heavy metals Cd, Pb and Zn has been monitored. Results showed that pH, aggregates stability, organic carbon, nitrogen and cation exchange capacity increased with the application of the amendments and the development of vegetation, while the bioavailable fraction of the heavy metals drastically decreased (90-99%). Thus, the strategy followed resulted positive to reduce the availability of heavy metals, improving soil quality and fertility. These results are promising in areas with extractive activity of carbonated materials, since the generated wastes can be used for reclamation of soils affected with heavy metals, turning a waste into a by-product.

Key words: amendments, geochemistry, heavy metals, mining, tailing pond.

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