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Natural remediation of mine waste-dumps – mapping the evolution of vegetation cover in distinctive geochemical environments.

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Abstract

Abandoned mine waste-dumps are focus of environmental impact, especially when there are reactive minerals, such as sulfides. From their oxidation results long lasting typical impacts, especially acid mine drainage (AMD) and contamination of soil.

Developed countries with mining tradition face, today, the need to minimize these impacts. Natural attenuation is often relevant and sometimes is enough to promote remediation. However, in the presence of abundant sulfide-rich wastes, technical intervention is generally necessary. In this context, phytoremediation has been considered appropriate, since it is a cost-effective strategy, which is a crucial expectation for abandoned mines.

The present work is focused on remediation promoted by natural vegetation of distinctive mine waste-dumps. They were analyzed with the following objectives: i) mapping cover vegetation and monitoring the success of environmental rehabilitation; ii) study the influence of geochemical and mineralogical parameters in natural colonization; iii) estimate the value of local flora for phytoremediation.

Keywords: mapping cover vegetation, natural colonization, phytoremediation, monitoring, waste-dumps