



1. Title

Management and Reclamation of Mining Site Soils

2. Type

Commission Symposium: Comm. 3.5-Soil degradation control, remediation, reclamation

3. Organizer(s) & Convener

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4. Rationale

Soils are essential components of the environment, the basis of terrestrial ecosystems and a crossroads for biogeochemical cycles at the biosphere-litosphere interface. Therefore, soil quality must be preserved. The anthropogenic mismanagement of mining resources could degrade and pollute the surrounding soils, the atmosphere and downstream waters. Mining, smelting and ore processing activities with remnants such as tailings, spoil heaps and waste dumps are a source of hazardous substances. Compaction and stripping destroy the soil's original structure. These deteriorated soils are easily exposed to water and wind erosion. Moreover, the acidic mine drainage enhances the mobilization of potential harmful substances, which can lead to an eventual accumulation through the food chain. This implies a serious risk for crops, livestock and human health. Therefore, the accurate knowledge of the properties and dynamics of nearby undisturbed and polluted soils is essential to make a sustainable management and reclamation.





5. Objectives

There is an increasing need to apply more suitable, affordable and innovative technologies for prevention, monitoring, risk assessment, remediation and reclamation in the context of mining site soils. Therefore, this Symposium will focus on the most recent findings and state of the art methodology. These include strategies, sources and modalities of mining and smelting pollution, exploration, risk assessment and analytical techniques. It will also cover field trials, modeling of pollutants in mines and contiguous native soils and clean-up measures (soft and low cost procedures preferably). Current management and reclamation practices will be reviewed and updated in this Symposium.

6. Description

This Symposium will provide a holistic and interdisciplinary approach applying new technologies of management and reclamation of mining site soils, with the aim of minimising soil damage degradation and pollution and enhancing the revegetation of mine sites and surrounding areas. It implies a thorough research of the mechanisms of pedogenesis in spoil and waste heaps together with methods of depollution and build-up of stable vegetation coverage. The knowledge of soil chemistry, physics, biology and ecology applied to the management and reclamation of these damaged areas will be essential. The close collaboration between engineers, soil scientists and botanists is essential. Interdisciplinary research for every case should provide the most adequate procedures: in situ immobilization, topsoil application, bioremediation, bioleaching, phytoremediation, phytostabilization and others.

We welcome theoretical and applied methodologies, experimental laboratory and field work to reclaim damaged soils in open-pit or underground mines and ore processing industries, including case studies from around the world.

