Rehabilitation & revegetation of mining waste-dumps by the use of industrial & domestic sewage sludges from waste-water purification plants

Fact Sheet

Project Information

Grant agreement ID: IC20970049

Funded under FP4-INCO

Start date 1 December 1997

End date 30 November 2001

Overall budget € 0

EU contribution € 0

Coordinated by Technische Universität Berlin Germany

Objective

The utilization of waste as secondary raw material is a fundamental principle of the so called sustainable development, worldwide. Prerequisite for the usage of pollutant bearing material is that a negative impact on the environment can be excluded. Waste dumps resulting from open-cast and underground mining operations constitute a serious environmental problem if they are not properly rehabilitated and revegetated. Because untreated dump-sites form a source of continuous emission of dust fumes and a source of possible groundwater pollution. One significant cost-factor of the rehabilitation results from the necessity of purchasing soils, if in situ soil...
is not available. This cost-factor could be substantially reduced by using the positive physical, chemical and biological properties of mixtures based upon industrial residues (fly ash from power stations, red mud from alumina production, flotation tailings) and sewage sludges as a fertile component. Caping the waste dumps and at the same time create a fertile substratum for revegetation can contribute to the solution of safe disposal/utilisation of industrial residues and rehabilitation of waste dumps resulting from the mining industry. Additionally the usage of these residues as secondary raw material save natural resources and avoid the demand of disposal-site volume. Sludges, especially sewage sludges and industrial waste contains a large number of different potential contaminants, which causes environmental problems. This requires a methodology to deposit the artificial top soil in place and mix it with the uppermost layer of the waste dump and to prevent the toxic components of the mixture from being leached out of the soil. As a basic research project, the research aims at developing the initial artificial top soil mixtures in the laboratory under consideration of the geogenic conditions, followed by field testing of the mixtures in designated test beds provided by industrial partner and the development of a probably coupled 3D Finite Difference-Finite Element Model model for the contaminant sorption and transport to investigate the long-term behavior. The project involves seven research partners (three universities, four industrial partners) from Germany, United Kingdom and Ukraine who will carry out research into elements that lead to the development of this integrated and probably environmentally acceptable method. Given that the laboratory test and field tests prove the safe applicability of this technique and, if the predictions of the groundwater model also indicate long term stability to the pollutant components in the mixtures, the developed technique can be considered for fullscale industrial trials in an industrial project.

Programme(s)

Topic(s)

Funding Scheme
CSC - Cost-sharing contracts

Coordinator

Technische Universität Berlin

Address
Participants (2)

Production Association PAVLOGRADUGOL
Ukraine
Address
74, Lenin Street
323000 Pavlograd

State Mining University of Ukraine
Ukraine
Address
19, Marx Avenue
320027 Dnepropetrovsk

Last update: 11 May 1998
Record number: 43712

Permalink: https://cordis.europa.eu/project/id/IC20970049

© European Union, 2021