

Monitoring Vegetation Adaptability and Survival on Co-disposed Industrial Waste Materials with Coarse-Ash from a Coal Gasification Plant

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Disposal of waste activated sludge has become a tremendous challenge and a costly process. Alternative methods of disposal or rather utilization is preferred and is being investigated. In addition to the vast amounts of sludge being produced, coarse ash from a coal gasification plant is also produced in large quantities. In order to rehabilitate this coarse ash heap, capping with an extremely expensive engineered soil cap is required to minimize the infiltration of water into and through the ash heap. Initial fieldwork has highlighted interesting results regarding the handling and application of sludge and other products, to the coarse ash. The initial fieldwork has entailed a screening trial, focussed on the establishment, survival and adaptability of various grass and tree species. This program is at an early stage and will concentrate on using vegetation to minimise water infiltration into the ash heap, as there are concerns that water percolating through the coarse ash may lead to the contamination of surface and groundwater resources. Coarse ash was treated with materials such as sludge (10% solids), sludge (1% solids), fine ash and inorganic fertilizer. To date, preliminary observations are very promising. The different substrates were analysed and the establishment success of the vegetation and initial dry matter production of the grasses were also measured. A general approach is followed initially because we are working with an unknown system, to determine which species are adapted to the specific substrates and climate. This will facilitate future in depth studies of water and nutrient balances within the co-disposed sludge / coarse ash heap.

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