

Sustainability of inland ash disposal facilities as salt sinks.

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Vast quantities of CCB's are produced by Eskom and Sasol. The majority of the ash produced is disposed of by landfill. The properties of the ash in storage are influenced by several factors. Inorganic effluents of various strengths and ionic composition are also generated at Sasol and Eskom coal processing facilities. Water treatment processes include desalination, ion exchange regeneration, evaporators, crystallisers and cooling systems, which generate saline effluents and crystalline salts, which require handling and disposal. In addition, ash in contact with water produces a saline alkaline leachate that requires handling and safe disposal.

Sasol and Eskom coal processing facilities are located in water short, sensitive catchments where water reuse and recycling is mandatory. The handling and disposal of saline effluents under such constraints remains a complex issue.

The disposal of saline effluents into ash systems may be sustainable and environmentally benign. Therefore an Eskom/Sasol co-operative research initiative was initiated, which focuses particularly on treatment or stabilization of hypersaline solutions, high salt load streams, brine and inorganic sludges. Sustainability should be evaluated with regard to impacts on ground water and surface stream contamination, water balance control issues and salt sink capacity.

A fundamental understanding of ash and ash/water chemical interactions is a key area requiring further investigation. Physical, chemical and microbiological variables. The research question addresses whether it is possible to achieve attenuation of applied inorganic constituents on fly ash and how this affects the mineralogy, chemistry and microbiology of the ash and underlying soils.

The expected outcome of the study is a philosophy and strategy on the sustainable management and disposal of salts and an understanding the risks involved.

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