Use of Stabilized FGD Materials in the Construction of Low Permeability Liners

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ABSTRACT

The objective of this research program was to establish field-verified time-dependent relationships for the performance of liners constructed from stabilized FGD by-products. The project objective was accomplished with a coordinated program of testing and analyzing small-scale laboratory specimens under controlled conditions, medium-scale text pads, and a full-scale pond facility.

The work completed to date on this program over the last 6 years, including the construction and monitoring of a full-scale FGD lined facility (capacity of one million gallons), shows that stabilized FGD materials can be used as low permeability liners in the construction of water and manure holding ponds. Actual permeability coefficients in the range of 10^{-7} cm/sec can be obtained in the field by properly compacting lime and fly ash enriched stabilized FGD materials. Leachate from the FGD material meets Ohio's non-toxic criteria for coal combustion by-products, and for most potential contaminants the national primary and secondary drinking water standards are also met. The low permeability non-toxic FGD material investigated in this study poses very minimal risks, if any, for groundwater contamination. Cost estimates for FGD liners compared favorably with clay liners for varying haul distances.

Although the specific uses directly addressed by this work include liners for surface impoundments, the results presented in this study are also useful in other applications including design of covers and liners for landfills, and seepage cutoff walls and trenches.