

**UTILIZATION OF COAL COMBUSTION BY-PRODUCTS IN MINE RECLAMATION
AND AGRICULTURE—A SUMMARY OF SELECTED U.S. DEPARTMENT OF
ENERGY PROJECTS¹**

by

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Abstract. Most solid coal combustion by-products (CCBs) such as fly ash, bottom ash, and flue gas desulfurization (FGD) sludge are currently disposed of in slurry ponds or landfills. While these practices may continue to be the most economical alternatives for some utilities, increasingly stringent environmental regulations and public opposition to new landfill construction are forcing many utilities to explore alternative uses for CCBs. Some alternative uses have proven to be very profitable, such as the sale of fly ash for use in cement and the production of wallboard from FGD sludge. However, in many cases such uses are not economically feasible because the physical or chemical characteristics of the CCBs are not suitable and/or the market price of the processed, "recycled" CCB is not competitive. Therefore, there is a need to find alternative, environmentally friendly uses for large volumes of CCBs that do not require tight quality specifications or extensive processing by the utility. To date, mine reclamation and agricultural applications appear to be the most attractive high-volume utilization methods, but the actual costs and environmental benefits of these practices need to be demonstrated and documented before the industry and regulatory agencies can accept them routinely as viable alternatives to landfilling. This paper summarizes the results of various completed and ongoing projects sponsored or cosponsored by the U.S. Department of Energy that have been directed toward the demonstration of CCB use in mine reclamation and agriculture. Important benefits of these demonstrations include the mitigation of underground mine subsidence, abatement of acid mine drainage, increased productivity from highwall mines, improvement of mine soil productivity, inexpensive substitution for agricultural lime in growth of selected crops, and increased efficiency of cattle feeding via structural stabilization of feedlots.

Additional Key Words: fluidized bed combustion ash

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