

Topic CCB-2

White Paper Topic: Placement of Coal Combustion By-Products (CCBs) at Coal

Mines: Documentation of Benefits/Impacts

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Date: October 21, 2005

Problem Definition:

The use and disposal of Coal Combustion By-Products (CCBs) (i.e. fly ash, bottom ash, flue gas desulfurization (FGD) material, and fluidized bed combustion (FBC) material) at coal mines has become an area of intense interest, research, activity, and controversy during the last decade. The Office of Surface Mining has a very specific area of responsibility concerning the use of Coal Combustion By-Products when these materials are placed at a mine regulated under the Surface Coal Mining and Reclamation Act of 1977. Current, beneficial mining related uses include: (1) an alkaline seal or fill material to contain acid forming materials and prevent the formation of acid mine drainage; (2) an agricultural supplement to create productive artificial soils on abandoned mine lands where native soils are not available; (3) a flowable fill that seals and stabilizes abandoned underground mines to prevent subsidence and the production of acid mine drainage; (4) a construction material for dams or other earth like materials where such materials are needed as a compact and durable base; and (5) a non-toxic, earthlike fill material for final pits and within the spoil area to reduce reclamation cost.

OSM has been extensively involved with the development and distribution of technical information related to protection of public health and the environment during the beneficial placement of CCBs at coals since 1994. Because of the complexity of the issues involved and the importance of protection of public health and the environment during surface coal mining and reclamation, OSM is very supportive of additional research into the potential environmental effects of CCB placement at coal mines. An assessment of the 20+ years of research on the subject to date would conclude that the placement of these materials on SMCRA mines usually results in a beneficial impact to human health and the environment when it is used to mitigate other existing potential mining hazards or as a non-toxic fill to reduce reclamation costs. Investigations to date have not provided any scientific evidence of any damage to public health or the environment due to placement of CCBs at SMCRA mines. Based on the side-by-side comparison of the regulatory protections provided by SMCRA in comparison to RCRA it can be concluded that when SMCRA is properly applied and enforced it is adequate to protect the public health and the environment.

Citizen environmental organizations, however, are not convinced. Most of the existing long-term data has been generated by the mine operators as part of the permit monitoring requirements. The MRAM investigation used this data but was inconclusive because none of the data sets indicated contamination by CCBs. Many of the university studies have not been long term. One of the few long-term scientific investigations under actual field conditions is that conducted by Dr. Ishwar Murarka at the Universal Mine in Indiana. Although the data would support this as a beneficial application, it is not a typical SMCRA scenario since the filling of the final pit with CCBs was conducted by the adjacent Electric Utility who acquired the site after mining was completed.

In order to verify that CCB placement on SMCRA mines is beneficial and stable long term, university type investigations, similar to the approach used by Dr. Murarka at the Universal mine, need to be conducted in worst case scenarios in the major coal regions of the U.S. where CCB placement is taking place.

Course of Action:

OSM needs to work with DOE and its Combustion By-Product Recycling Consortium to promote directed scientific investigations; similar to the approach used by Dr. Murarka at the Universal mine in Indiana, to assess worst case scenarios in the major coal regions of the U.S. where CCB placement at SMCRA mines is taking place.

Cost of Project:

\$250,000 - \$1,000,000 over several years to be funded in part by OSM and in part by DOE.

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