



February 26, 2008

Mr. Stephen L. Pattison
Assistant Secretary
Department of the Environment
1800 Washington Boulevard
Baltimore, MD 21230

Dear Mr. Pattison:

ACAA (the American Coal Ash Association) is pleased to provide comments pertaining to the Proposed Regulations Related to Coal Combustion Byproduct Management; COMAR 26.04.10 and COMAR 26.21.04.

Background - ACAA and its members support the management and use of *coal combustion products* – or CCPs (the preferred industry term which emphasizes value) in ways that are environmentally responsible, technically sound, commercially competitive and supportive of a more sustainable global community. Our 119 members represent companies and organizations that produce, market, use, study, transport and provide information on CCPs in the United States.

Terminology - For the purpose of our comments, we will use the industry-preferred term CCPs instead of CCB. CCPs include fly ash, bottom ash, boiler slag, flue gas desulfurization materials (including FGD gypsum, spray dryer materials and fluidized bed combustion ash) and cenospheres. These various products are used in highway construction, gypsum board manufacturing, agriculture, mining, soil remediation and amendments, concrete and concrete products, cement manufacturing, as aggregates and numerous other applications. Since they exhibit characteristics that are similar to natural or manufactured materials, CCPs are often substituted for these other materials. The use of CCPs helps conserve resources, reduces greenhouse gas emissions and eliminates the need for landfill space and impoundments.

MDE Proposed Regulations and House Bill 388 - ACAA attended the hearing on House Bill 388 on February 13 where you addressed the House Environmental Committee about the proposed regulations. At this same hearing, a number of citizens and officials from Anne Arundel County spoke about the need for House Bill 388 in response to the situation at the Gambrills site. We believe the situation at Gambrills created a very difficult situation for both the county and the state. Regulations governing disposal and beneficial use are needed to ensure that this situation does not happen again in the future. The Gambrills ash site was a very large scale non-coal mine reclamation project. It is important to separate the very large quantities of ash that were placed at Gambrills from the typical quantities of CCPs used in other beneficial applications. A very large project using CCPs for a structural fill, for example, might be 100,000 to 300,000 tons, whereas operations that involve millions of tons of CCPs can involve very different

considerations. MDE's proposed regulations requiring a liner and leachate collection system for non-coal surface mines will prevent recurrence of similar situations. We believe that MDE's proposed regulations on disposal and use in mine reclamation combined with future regulation or guidance associated with beneficial use of CCP makes House Bill 388 unnecessary.

Beneficial Use is Widespread - In 2006, nearly 43% of the total of 124,795,124 tons of estimated CCPs generated was used in more than fifteen application categories. This includes in the use of concrete and concrete products, the production of portland cement, as flowable fill materials, in structural fills and embankments, for road base and soil modifications as well as in mining, agricultural and other construction activities. These applications have enabled contractors, end-users and project owners to reduce the consumption of virgin materials, helped reduce greenhouse gas emissions and eliminated the need for new landfill space.

Beneficial Use is Justified and Technically Supported - ACAA strongly believes that the use of CCPs in numerous proven applications is not "disposal" as suggested by some groups. Such a definition is contrary to the facts demonstrated by analysis, research, testing and successful construction and remediation activities. For example, in mining and highway construction, CCPs have for many years been used in lieu of other commercial products such as dirt, sand, gravel, aggregate, portland cement and lime. CCPs exhibit many of the same physical and chemical characteristics of these materials that they are replacing. The US EPA has evaluated CCPs extensively in the last twenty-five years and continues to affirm they are not hazardous to the public or to the environment when properly managed and used.¹

Many Standards are Available - There are a significant number of industry-developed comprehensive standards for CCP use that address engineering properties, testing procedures, design considerations (including geological, hydrological and environmental investigations) and construction techniques. These specifications detail protections to the environment and the public as well as specifying quality, technical performance and other criteria. For example ASTM International has developed several standards and guideline documents that provide technical information on the use of CCPs in structural fills, embankments and mining activities. These standards include ASTM E2277-03 "Standard Guide for Design and Construction of Coal Ash Structural Fills;" ASTM E2243-02 "Standard Guide for Use of Coal Combustion Products (CCPs) for Surface Mine Reclamation: Re-contouring and Highwall Reclamation;" ASTM E2278-04 "Standard Guide for the Use of Coal Combustion Products (CCPs) for Surface Mine Reclamation: Revegetation and Mitigation of Acid Mine Drainage;" and ASTM D5759-95(2005) "Standard Guide for Characterization of Coal Fly Ash and Clean Coal Combustion Fly Ash for Potential Use." Additionally, there are many other similar technical documents issued by ASTM International that address the use of CCPs in aggregate and concrete.

Other Technical Experience - Furthermore, the Federal Highway Administration (FHWA), the Department of Energy (DOE), The Electric Power Research Institute (EPRI), the Recycled Materials Resource Center (RMRC), the Turner-Fairbank Technical Center and the American Association of State Highway and Transportation Officials (AASHTO) have supported research, conducted studies, provided training and issued technical guidance covering the use of these

¹ Federal Register. "Regulatory Determination on Wastes from the Combustion of Fossil Fuels; Final Rule." May 22, 2000.

same CCPs in highway construction and road work. Monitoring of many highway and road construction projects across the nation has not identified environmental problems resulting from the use of CCPs. In a recent document prepared by Dr. Jeffery S. Melton, Research Assistant Professor in the Civil Engineering Department at the University of New Hampshire working with the Recycled Materials Resource Center, he concludes:

Studies and research conducted or supported by Electric Power Research Institute, government agencies, and universities indicate that the beneficial uses of coal combustion products in highway construction have not been shown to present significant risks to human health or the environment. But, as with many other common substances, precautions and sound management practices should be applied when using coal ash in unencapsulated uses.²

Case Studies and Research - Professor Melton's advice to use sound management practices and to evaluate the specific project conditions is the norm, not the exception in construction projects. In 1986, EPRI produced the "Fly Ash Design Manual for Road and Site Applications."³ This document provides technical and environmental considerations to engineers, contractors and highway authorities on the use of CCPs in structural fills, highway embankments and land reclamation. The manual states "A compacted embankment, properly drained and provided with adequate surface treatment, should represent no danger, either in the short-term or long-term, to the surrounding ground and surface waters." The technical guidance in this manual and other sources is much more preferable than a blanket proposal to prohibit the use of CCPs in structural fills, embankments and unconsolidated road base. Subsequent to the issuance of this document, EPRI issued detailed technical reports on projects in Georgia, Delaware, Pennsylvania, Kansas and Michigan.⁴

Research conducted by the University of Wisconsin-Madison has further evaluated the use of CCPs in fly ash beneath pavement structures. Pan lysimeters installed beneath roadways constructed with fly ash and ash-soil mixtures validate estimates of leachates that may occur in the field. Leaching models also used in these studies can provide accurate and predictable data for designers planning to use CCPs.⁵ Such data allows designers to predict potential environmental impact prior to construction.

² Melton, Jeffery S. "Material Fact Sheet: Coal Combustion Products." Prepared for the Industrial Resources Council. Under development and to be released in February 2008.

³ Electric Power Research Institute. "Fly Ash Design Manual for Road and Site Applications Volume 1: Dry or Conditioned Placement." CS-4419, Volume 1, Research Project 2422-2. Electric Power Research Institute. Palo Alto, CA. Interim Report February 1986.

⁴ EPRI Reports GS-1675 (February 1989); GS-6481 (August 1989); GS-6431 (June 1989); GS-6460 (September 1989); and GS-6155 (January 1989).

⁵ ACAA Educational Foundation. "Soil Stabilization and Pavement Recycling with Self-Cementing Coal Fly Ash." Aurora, CO. January, 2008.

Agency Support - Federal and state agencies routinely approve CCPs for use in road base, structural fills, embankments and other pavement structures. They do so because there are well established technical practices that address CCP impact on the environment. Some states further define the use of CCPs under their own codes and regulations, further substantiating the beneficial value that CCPs can offer. Our association has compiled an extensive listing of standards, regulations, guidelines and other documents that pertain to the beneficial use of CCPs in many applications.⁶ States like Virginia and Pennsylvania have beneficial use regulations that may be of interest to you, as well. Excavating, extracting, processing and transporting virgin materials to a job site expends more energy and emits more greenhouse gases than to load and transport CCPs from a local power plant.

Mine Reclamation - For use in mining, the Office of Surface Mining, ASTM International, a number of universities and the DOE have supported research and demonstration projects that have proven that when properly managed and placed, the beneficial use of CCPs can significantly improve conditions at active and abandoned mining sites. An extensive listing of references pertaining to these numerous mining examples has been prepared by ACAA. The DOE-funded Combustion By-Products Recycling Consortium (CBRC) has issued a number of project reports concerning the use of CCPs in mining and other applications that demonstrate their safe and effective use.⁷ The state of Pennsylvania has documented many cases where CCPs have significantly improved abandoned mine sites within the Commonwealth. Pennsylvania's positive experience with CCPs is fully described in its 2004 publication "Coal Ash Beneficial use in Mine Reclamation and Mine Drainage Remediation in Pennsylvania."⁸

In July 2007, the Clean Air Task Force (CATF) released a report critical of Pennsylvania's experience using CCPs in mine reclamation activities.⁹ The Pennsylvania Department of Environmental Protection (PADEP) responded to the CATF report in a paper titled "Response to Clean Air Task Force Report "Impacts on Water Quality from Placement of Coal Combustion Waste in Pennsylvania Coal Mines.""¹⁰ In their response, the PADEP pointed out that erroneous assumptions and outlying data were used by CATF to criticize Pennsylvania's beneficial use program for CCPs in mine reclamation. The misinterpretation of data to protest technically and environmentally responsible processes is not in the best interest of this nation. We do not

⁶ ACAA. "Compilation of Regulations, Standards, Guidelines, Websites and Other References Pertinent to Coal Combustion Products (CCPs)." Revised February 2007.

⁷ West Virginia University - <http://www.nrcce.wvu.edu/programs/cbrc/index.cfm>

⁸Penn State University, Materials Research Institute. "Coal Ash Beneficial Use in Mine Reclamation and Mine Drainage Remediation in Pennsylvania." The Pennsylvania Department of Environmental Protection. Harrisburg, PA. 2004.

⁹ Clean Air Task Force. "Impact of Water Quality from Placement of Coal Combustion Waste in Pennsylvania Mines." July 2007.

¹⁰ Pennsylvania Department of Environmental Protection. "Response to Clean Air Task Force Report 'Impact of Water Quality from Placement of Coal Combustion Waste in Pennsylvania Mines'." November 9, 2007.

consider beneficial use of CCPs in mining applications as described by ASTM International guidance or by the Pennsylvania document to be disposal as claimed by some groups. Maryland's proposed regulations on the use of CCPs in mining applications are both thorough and appropriate.

Private/Public Partnerships - In 2003, the US EPA, DOE, FHWA and the CCP industry formed the Coal Combustion Products Partnership. C²P² is a nation-wide effort to help promote the beneficial use of coal combustion products and the environmental benefits that result from their use. This partnership has established a goal of 50% utilization of CCPs by the year 2011, a goal that was mutually agreed upon by the EPA, industry, the Department of Energy, the Utility Solid Waste Activities Group and the Federal Highway Administration. Information about the partnership is found at the C²P² website (which also contains numerous case studies (<http://www.epa.gov/epaoswer/osw/conserv/c2p2/index.htm>)). The website provides technical and environmental information about using CCPs in ways that conserve natural resources, reduce the need for landfills or disposal facilities and that can reduce greenhouse gas emissions. Case studies and documents describing CCP applications are available to interested parties. C²P² partners include producers, marketers, end-users and researchers whose experiences with CCPs further demonstrate the value that these materials can offer.

Furthermore, the Maryland State Highway Administration is an active member of the Green Highways Partnership (GHP) which is a voluntary, public/private initiative that is beginning to dramatically change our nation's transportation infrastructure. The GHP website contains more detail (<http://www.greenhighways.org/>). Through concepts such as *integrated planning and regulatory flexibility* the GHP seeks to incorporate *environmental streamlining and stewardship* into all aspects of the highway lifecycle. The GHP believes active cooperation and regulatory progressiveness are critical in moving beyond current practices. A goal of the Partnership is to ensure that sustainability becomes the driving force behind infrastructure development. House Bill 388 would eliminate the use of fly ash and other CCPs in soil improvement and soil conditioning, and it is unclear whether or not it would be allowed as a structural building material for road base, embankments, etc. These uses are common engineering practices that are addressed by technical standards and specifications, in which environmental impact is considered. Since the use of byproducts instead of virgin or manufactured materials is a sustainable practice, there is a net reduction of the environmental impact on the community by this reuse and recycling.

Federally Funded Research - As has been stated above, DOE has funded many beneficial use studies for CCPs, reports of which are documented on the website for the Combustion Byproducts Recycling Consortium (<http://www.wri.nrcce.wvu.edu/programs/cbrc/>). The Recycled Materials Resource Center (<http://www.rmrc.unh.edu/>) has available numerous reports concerning the use of CCPs in highway construction, again demonstrating that no adverse impact is seen when used properly. In particular, the RMRC issued the *User Guidelines for Waste and Byproduct Materials in Pavement Construction* in 1998 which not only addresses CCPs but other materials and their environmental impact as well.¹¹ EPRI has conducted and evaluated many

¹¹ Recycled Materials Resources Center. "User Guidelines for Waste and Byproduct Materials in Pavement Construction." Turner Fairbank Highway Research Center.
<http://www.tfhrcc.gov/hnr20/recycle/waste/begin.htm>

projects using CCPs in highway embankments, fill and construction that again demonstrate there is no adverse impact when these materials are evaluated against site conditions and designed to achieve specific performance objectives. All this documented research reinforces our position that to prohibit the use of CCPs as fill, including minefill, unconsolidated road base and structural fill would not be a sound decision. Some groups ignore the body of data available that demonstrates using CCPs in these applications is both technically and environmentally sound and provides greater benefit to the environment than disposal.

Conclusion - ACAA members believe that the proposed Maryland beneficial use regulations provide clarification and sound guidance for the use of CCPs. We believe this proposed regulation is much less confusing than the proposed Maryland House Bill 388. Years of actual field experience have shown that the benefits of using CCPs in lieu of other materials have had a positive impact on the environment, are technically sound and economically attractive. Engineering and environmental professionals within private sector, federal and state agencies have seen the many values of using CCPs. To limit future use based on misperceptions of activist groups or citizens who lack factual information would not benefit Maryland. The use of CCPs (in conjunction with good engineering judgment and the need to conserve natural resources) can provide many benefits to the public without environmental risk.

Should you have any questions about this submittal or should you need contact information for subject matter experts from academia, the regulatory community, research or industry on the beneficial use of CCPs, we are available to provide this or additional information.

Thank you,



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