

Testimony of Mark SquillaceProfessor of Law and Director, Natural Resources Law Center
University of Colorado School of Law**Before the U.S. House of Representatives
Subcommittee on Energy and Mineral Resources
of the House Committee on Natural Resources****10 June 2008**

The Honorable James Costa
Chairman, Subcommittee on Energy and Mineral Resources
House Committee on Natural Resources
Washington, DC 20515

Dear Congressman Costa:

Thank you for the opportunity to appear before the Subcommittee on Energy and Mineral Resources of the House Committee on Natural Resources. The subcommittee has called this hearing to address the question: “How Should the Federal Government Address the Health and Environmental Risks of Coal Combustion Waste?” Implicit in this question is the concern that coal combustion wastes may contain toxic constituents that pose long-term damage to water supplies and the resources that depend on them.

I have spent most of my professional career working on mining issues, with a particular emphasis on coal mining. I was also a member of the National Research Council (NRC) Committee that was called upon recently to study the disposal of coal combustion residues (CCRs) in coal mines as part of the mine reclamation process. That effort was especially relevant to the question posed by the committee.

I have two recommendations that respond to the question posed by the subcommittee. First and foremost, federal policy should treat the *disposal* of coal combustion residues — whether in coal mines, impoundments or landfills — as the option of last resort. Whenever possible, CCRs should be used for secondary beneficial purposes, and such use should be promoted through incentives for secondary use as well as disincentives for disposal. The NRC Committee recommended that secondary use of CCRs be “strongly encouraged.” I would go further and argue that disposal of CCRs in coal mines, landfills, and impoundments should not be authorized unless and until the producer demonstrates a substantial and good faith effort to make the CCRs available for secondary use.

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In establishing a presumption in favor of secondary use, it will become important to be clear that disposal of CCRs in a coal mine, in an impoundment, or in a landfill does not qualify. While it may be true in some cases that CCRs can neutralize toxic materials at a disposal site, this fact alone should not be used to justify a beneficial secondary use claim. Beneficial, secondary uses must be new uses of the CCRs that allow the user to avoid the use of some other substitute material. Second, where disposal is allowed, federal standards should be established to ensure that the disposal of CCRs does not cause environmental damage.

Before expanding on these recommendations, let me raise an issue about nomenclature. At the outset, federal policy should avoid accepting the characterization of coal combustion residues as “waste” materials. Calling them wastes suggests that they are something for disposal. In fact, most of these wastes have high values for other purposes. I have used the term “residues” which was the term settled on by the National Research Council Committee on which I served. The Office of Surface Mining has used the term “by-products,” and the EPA, simply “products.” Whatever term is used, it is important that federal policy recognizes that, for the most part, they are not wastes and that disposal of these materials in mines, impoundments and landfills should be discouraged.

Federal Policy Should Discourage Disposal

CCRs come from various sources at coal-fired power plants. The majority — about 57 percent — comes from fly ash, which is the chief residue from burning finely crushed coal, and which is collected in baghouses and from electrostatic precipitators. Flue gas desulfurization (FGD) material is a residue from the wet and dry scrubbers typically used for reducing SO₂ emissions. FGD materials comprise about 24 percent of the CCRs produced at these plants. Bottom ash is a coarser residue that falls out of the boiler and makes up about 16 percent of CCRs. Finally, boiler slag is a molten form of bottom ash that comes from certain types of furnaces. Boiler slag particles have a smooth, granular surface that are uniform in size. About 3 percent of CCRs are in the form of boiler slag.

CCRs are widely recognized as suitable for a range of beneficial uses. For example, fly ash has cementitious properties that can be used in the production of cement and other construction activities, and is also suitable for use in the production of cement, especially in lightweight concrete products. FGD materials are essentially gypsum (calcium sulfates and sulfites), which is the principle material in the manufacture of wallboard. FGD materials are also used in the production of cement.

Much is being done to promote the secondary use of these and other CCRs. The Coal Combustion Products Partnership (C²P²) program, which is a cooperative effort that includes

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the U.S. Environmental Protection Agency (EPA), the American Coal Ash Association, (ACAA), the Utility Solid Waste Activities Group (USWAG), the U.S. Department of Energy (DOE), the Federal Highway Administration (FHWA), and the U.S. Department of Agriculture (USDA), does a good job of promoting the Secondary use of coal combustion residues in beneficial applications. *See:*

<http://www.epa.gov/epaoswer/osw/consERVE/c2p2/index.htm>

The most recent statistics show increasing use of CCRs for beneficial purposes, but much more can still be done. For example, the ACAA estimates that almost 45 percent of the 72.4 million tons of fly ash produced in 2006 (about 32,423,569 tons) was used in 12 of 15 applications that they tracked. This was a 5 percent increase over the previous year. FGD gypsum production in 2006 was about 12.1 million tons, and of that about 79 percent (or 9,561,489 tons) was used, primarily on the production of wallboard and similar products. This is up 2.5 percent over that of 2005. Bottom ash production was about 18.6 million tons of which 45 percent (or about 8,378,494 tons) was used. This was up 4.5 percent from that of 2005. About 2 million tons of boiler slag was produced in 2006 of which 83 percent (or 1,690,999 tons) was used. This was down from the estimated usage of 96.6 percent in 2005. Boiler slag is used primarily in blasting grit and as roofing granules. Because boiler slag comes from older style cyclone furnaces, boiler slag production is expected to decline as these furnaces are retired.

While the economic incentives for secondary use of CCRs are generally strong, there remains a great deal of CCR disposal that would not likely occur if the true cost of disposal were factored into such decisions. Among the external costs that are unaccounted for in CCR disposal are the societal and economic costs of mining virgin materials, including the carbon footprint from such activities, and the environmental costs and associated risks that result from CCR disposal. While a complete accounting of these costs should be made, these external costs are sufficiently obvious to warrant the immediate imposition of incentives for secondary use and disincentives for disposal of CCRs. This might, for example, include a modest tax on CCR disposal, the proceeds from which could be used to promote secondary use of CCRs. A \$0.10/ton tax on the nearly 53 million tons of CCRs that were disposed of in 2006 would yield revenues of \$5.3 million, and this money could be used to help establish markets for CCRs or to otherwise incent CCR producers to make secondary use of these materials.

In addition, and as suggested previously, federal and state policies and laws should encourage beneficial secondary use of CCRs by demanding that CCR producers demonstrate a substantial and good faith effort to make the CCRs available for secondary use. This should include an analysis of the suitability of the particular CCRs that are being produced for

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secondary uses, the relevant markets that might exist for those CCRs, and the efforts that have been made to market those CCRs to interested parties. Federal and state policy could promote these markets by establishing minimum CCR content (or CCR preference standards) for road building materials in Federal Aid Highway projects.

Even as secondary use is encouraged, some CCR disposal will certainly continue, especially in the short term. Because CCRs may contain toxic constituents, the NRC Committee concluded that enforceable federal standards should be established when CCRs are disposed of in coal mines. Logically, the need for such standards applies to CCR disposal in impoundments and landfills as well. The establishment and implementation of these standards is important not only to protect the environment and public health, but also because strict standards will themselves promote the beneficial secondary use of CCRs. Notably, in Wisconsin, which has one of the best programs in the country for managing CCR disposal, 85 percent of CCRs were beneficially used in 2004 as compared with only 35 percent nationally. Coal Combustion Waste Management at Landfill and Surface Impoundments, 1194-2004, DOE/PI-0004 (April, 2006)

Among the issues to be resolved regarding federal CCR disposal standards are the questions of which federal agencies should be primarily responsible for managing CCRs, and what standards should be imposed. Once again, the NRC Committee lays out a useful roadmap for answering these questions. The EPA is the federal agency most closely associated with managing waste disposal so it makes sense that the EPA will be significantly involved in this process. Nonetheless, the NRC Committee was focused on CCR disposal at coal mines during the reclamation process, and coal mining reclamation is under the jurisdiction of the federal Office of Surface Mining. Given these overlapping roles, the NRC Committee wisely recognized that coordination between the Office of Surface Mining and the EPA was needed. The Office of Surface Mining will not be involved in CCR disposal in impoundments and landfills, but it makes good sense that mine disposal standards would be consistent with standards for impoundments and landfills. Thus, it is critically important that the EPA be closely involved with the Office of Surface Mining in developing standards for CCR disposal in mines, and that EPA use those standards as a template for federal standards for impoundments and landfills, if Congress grants EPA the authority to promulgate such standards.

As for regulatory standards, the NRC Committee lays out a sensible outline for such standards. Drawing on the Committee's recommendation, Congress should pass appropriate legislation to enforce that the following standards should be implemented at all landfills, impoundments, and mines that are subject to CCR disposal:

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1. **CCR and Site Characterization.** Both the disposal site and the CCR materials must be assessed and characterized to determine their potential for promoting leaching of toxic materials on their own and once they are combined at the site.
2. **Site-Specific Management Plans and Performance Standards.** A specific plan must be developed for the disposal at the particular site, and site-specific standards must be established that assure the protection of the environment and public health. Generally, sites should be designed to minimize the flow of water through CCRs so as to minimize the potential for leaching toxic materials.
3. **Monitoring and Bonding.** Given the uncertainties and risks associated with CCR disposal, the placement of a suitable number of monitoring wells should be required with special attention to wells that are down-gradient from the CCR disposal area. An adequate bond or other financial assurance should also be required to assure that the regulatory agency can cover the costs of remedial action, should such action become necessary.
4. **Public Participation.** The public has a strong interest in assuring the disposal of CCRs does not adversely affect the environment or public health. Thus, any CCR disposal proposal should be explicitly made subject to an environmental assessment process with the opportunity for robust engagement of the public on issues of concern.

While much of what I have recommended to the committee can be accomplished without legislation, legislative direction could be very helpful in clarifying federal policy and especially in promoting the beneficial secondary use of CCRs. For this reason, I look forward to an ongoing dialogue with the Committee and its staff as it considers whether legislative action may be necessary or appropriate.

Thank you for opportunity to present these views to the Committee. I welcome your comments and questions.

Sincerely,



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