

Proceedings of

**OFFICE OF SURFACE MINING
COAL COMBUSTION BY-PRODUCT
GOVERNMENT/REGULATORY
PANEL DISCUSSION**

**UNIVERSITY OF KENTUCKY
CENTER FOR APPLIED ENERGY RESEARCH
INTERNATIONAL ASH UTILIZATION SYMPOSIUM**

Lexington, Kentucky
October 21, 2003



Edited by:
Kimery C. Vories

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UNIVERSITY OF KENTUCKY
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Proceedings of Office of Surface Mining
Coal Combustion By-Product Government/Regulatory Panel:
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INTRODUCTION

Daniel Wheeler
Illinois Department of Commerce and Economic Opportunity
Office of Coal Development
Springfield, Illinois

Good morning. My name is Dan Wheeler and I will be serving as the moderator for the Government/Regulatory panel. I would like to set the stage for what your expectations should be for this event. The format of the technical interactive panel is have each speaker provide an 8-10 minute summary talk of the status of efforts by, or perspective of, their organization concerning CCB landfilling, mine site placement, or product use related to potential rulemaking by the U.S. Environmental Protection Agency.

This will be followed by a 30 minute interactive discussion for the remainder of the session with questions from the audience directed to the entire panel of speakers. The Office of Surface Mining is recording the talks and discussions for later inclusion in a post forum publication that will be available on its Website and Technology Transfer CD.

THE COAL COMBUSTION PRODUCT PROGRAM (C2P2)

John Glenn
U.S. Environmental Protection Agency (EPA)
Office of Solid Waste
Washington, D.C.

Status of EPA Rulemaking

As a way of updating you on the status of the fossil fuel rulemaking by EPA, this rulemaking has been divided into two parts. The first part is to publish the proposed rule in July 2004 and the final rule in August 2005 for the Electric Utilities and Independent Power Producers when Coal Combustion Wastes are disposed in landfills and impoundments. The second part is to publish the proposed rule in mid 2005 and the final rule in the third quarter of 2006 for non power producers and mine filling.

Purpose of the C2P2 Program

The purpose of the C2P2 Program is to increase the beneficial use of coal combustion products and to reduce the amount of the materials that are land disposed. It is an industry/government partnership. It is a joint initiative between EPA, the Department of Energy (DOE), the Utility Solid Waste Activity Group (USWAG), and the American Coal Ash Association (ACAA). We are also trying to get the U.S. Department of Transportation to also become a partner in this program. Such a partnership is new to EPA as it is not done that often. Our current administrator, Marianne Horinko, started a resource conservation challenge program in order to put the concept of resource conservation and recovery back into the Resource Conservation and Recovery Act (RCRA). The Act is about 30 years old and has dealt very little with resource conservation and recovery. Most of the efforts so far have been toward waste disposal. EPA is currently trying to move away from waste disposal.

Production Trends of Coal Combustion Products

We use about a billion tons of coal in this country and produce about 100 million tons of coal ash of which we are beneficially using only about 30 million tons. Historically, as we increase the tons of coal burned, we have also increased the tons of ash that have been beneficially used. There is, however, this constant gap between the tons of ash produced and the tons that are beneficially used, currently about 70 million tons. In 2001, we created 107 million tons of coal combustion products of which 34.7 million tons or 32 percent were put to beneficial use. I use the term products because in the C2P2 program we are promoting the idea that these materials should be used as products. On average, Europe creates far fewer CCPs yet beneficially uses about 56 percent. This is the direction that we would like to go in the U.S. The industry goals when we started set two goals that is very ambitious and will be very difficult to achieve. The first is increase the use of coal ash in concrete by 43 percent from 14 million short tons to 2001 to 20 million short tons in 2010. The second is to increase the beneficial use of CCPs from 32 percent in 2001 to 42 percent in 2008. These are the goals that the partners of C2P2 will be working on.

Environmental Benefits of C2P2

What are the environmental benefits for EPA? EPA is not normally in the business of trying to change markets or market driven behavior unless it creates wastes. Where the cost of doing business isn't internalized by the market but externalized. In this case, the reason that EPA is involved is that we want to reduce the emission of greenhouse gases. We want to consume less land fill space and decrease the need for virgin materials. For every ton of coal ash used in concrete and grout to replace Portland cement, it reduces greenhouse gas production by 0.9 tons.

What does EPA bring to the partnership? EPA brings its credibility into the process by saying the EPA promotes the use of these materials. We are also going to have a recognition program that will increase the networking opportunities for everyone including the Federal agencies and the private sector. The focus of the C2P2 program is on the markets with the greatest potential for growth. In this case, ACAA and other marketers have identified concrete for buildings, roads, road beds, and embankments as the largest areas for growth. In the first year we focused our efforts on developing environmental information and promoting the beneficial use of CCPs for road building. In our second, we will continue with this effort as we have barely scratched the surface. I had no idea how difficult it would be to get informational materials out of EPA. We are also expanding out efforts in to promoting the use of these materials into building products and building materials like roofing tiles, building blocks, and concrete.

EPA Publications

EPA has two units working on this effort, the Municipal Waste Reduction Branch that is working on the development of green books. One green book is for highway construction and one is for building applications. In the green books, we talk about the environmental benefits of using coal combustion products and environmental issues associated with using them. We want to make sure that these materials are used in an appropriate and environmentally beneficial manner. We think that these publications will go a long way and making the State agencies and the general public understand how to use coal ash appropriately. In the Industrial and Extractive Waste Branch, are conducting barrier breaking activities that will strive to break down institutional and informational barriers for the use of these materials. The public needs to see that EPA has taken the beneficial use these materials very seriously. They are trying to develop case studies for the use of these materials. Anyone who has a good case study should contact me at (703) 308-0215.

John Glenn is the coordinator of the Challenge Activities of the C2P2 Program in the Municipal Waste Reduction Branch at the Office of Solid Waste in EPA.

REGIONAL ENVIRONMENTAL CONCERNS WITH DISPOSAL OF COAL COMBUSTION WASTES (CCW) AT MINES

Tom FitzGerald
Kentucky Resources Council, Inc.
Frankfort, Kentucky

Background

In the interests of full disclosure, I am Director of a nonprofit environmental advocacy organization, the Kentucky Resources Council, which has for 20 years provided legal and technical assistance without charge to low-income individuals and communities on air, waste, water, and resource extraction issues. I joke that no one calls us when they're having a good day, and because of that, my perspective tends to be somewhat jaundiced. In mining and coal waste disposal matters, KRC represents people living downhill, downwind and downstream.

Before presenting in brief my concerns, let me apologize that I will not be able to stay for questions – the state Public Service Commission has scheduled a siting hearing on a proposed coal-fired merchant power plant this morning, and I am obligated to be there.

Lisa Evans will present a national perspective on coal combustion waste issues – I have been asked to give the regional perspective concerning the regulation of disposal and beneficial reuse of coal combustion wastes. My perspective, from 31 years of mining-related advocacy on behalf of communities and injured homeowners, and from 23 years as an attorney representing injured parties in a number of coal waste-related cases, is straightforward and simple.

If you want to encourage reuse of coal combustion wastes then you should embrace uniform, comprehensive and appropriate standards for the characterization and management of coal combustion wastes for reuse and disposal.

USEPA must cease its flirtation with issuing guidance and instead assert regulatory authority over the disposal of coal combustion wastes and over beneficial reuse of such wastes, developing minimum standards for the states to adopt in order to level the playing field. EPA must take the lead since it, rather than OSM is the appropriate agency to develop national minimum standards and assure state implementation of standards for disposal and other land application of coal combustion wastes in mine pits and backfill.

EPA MUST LIVE UP TO ITS COMMITMENT TO REGULATE CCW

In the absence of EPA stepping in and completing the commitment it made some years ago to avoid Subtitle C hazardous waste regulation by assuring proper application of Subtitle D solid waste regulations to coal combustion wastes, we have had, among the very competitive coal producing States, a very predictable one-downsmanship in the area of environmental quality and environmental protection when it comes to the management of these wastes. The under-regulation of CCW, particularly of the beneficial use of these wastes, is a problem. In Kentucky, where we have a fairly decent regulatory framework for the regulation of co-disposal of coal

waste at mine sites, we have, as do many of the States, a superficial "drive-by" permitting of coal combustion waste beneficial reuse. The potential toxicity and the fate and transport of constituents of concern is not given the sort of attention that it should have in light of the intended end uses and disposal or beneficial reuse of these materials.

Why embrace comprehensive regulation of CCW beneficial reuse and disposal? The lack of comprehensive regulation engenders a suspicion from the host communities. For example, we had a situation where one of the major industrial entities in Jefferson County had been disposing its boiler waste (a CCW) by delivering the ash to a company who commingled the ash with spent concrete waste and disposed of the mixture in a dry cavern in Louisville, where it was being used to elevate the floor of the former mine for document storage. The coal company who was supplying the fuel underbid that process in order to secure market share. The coal company was trying to offer a package of selling the coal and providing the service of hauling the ash back – a situation not atypical in this current market. In order to make the contract viable, the coal company proposed to dispose of the CCW as roadbed material at a farm in a nearby county and to use the material for agricultural application. The use of this material for agriculture is one area where EPA had expressed significant concern in its recent analysis because of the levels of arsenic. In this instance, we were fortunate that the county had zoning and planning powers and denied the application. The material is now going back into the cavern where it is properly managed in terms of the fate and transport potential of the constituents of concern in the waste.

As Jeff Stant and Lisa Evans will address, sufficient evidence exists of contamination from disposal of coal combustion wastes to warrant promulgation by EPA of national management standards.

The uneven and inadequate state regulation of disposal of coal combustion wastes, including a failure of states to require adequate background characterization of geologic and hydrogeologic conditions relative to the disposal of these wastes, and the haphazard characterization of the fate and transport of these wastes under proposed disposal and "reuse" conditions, is the inevitable product of the failure of USEPA to establish a federal "floor" of regulation of coal combustion wastes.

The problem is that the short-term interests of those that are managing or disposing of the wastes are not necessarily consistent with the long term interests of either the host communities or the generators of these materials. It is of interest to note that, when we were negotiating Kentucky's bill on this issue, most of the in-State utilities had no desire to let the coal mining industry manage their wastes. They said they would manage their wastes and the long term liabilities connected with them in contained facilities or on-site rather than allow them to be commingled with backfill materials at coal mines.

FEDERAL REGULATION NEEDED INSTEAD OF GUIDELINES

Unfortunately I have to depart from the position of the Jeff Conrad and the Interstate Mining Compact Commission that guidelines at the national level rather than regulations are an appropriate solution. The failure of EPA to promulgate regulations establishing minimum standards for coal combustion waste disposal, including "beneficial" uses of coal combustion

wastes and the disposal of coal combustion wastes at mine sites, and the proposal to instead issue "guidance" raises a number of concerns.

First, a lack of federal minimum standards results in uneven state standards and under-regulation of wastes that typically exceed drinking water standards for a number of metals. Kentucky, for example, has more rigorous standard for mine filling, but extremely weak controls on beneficial reuse and disposal in "ash ponds." The lack of federal minimum standards has and will continue to result in one-downsmanship and a "race to the bottom" among the coal states, as companies desirous of securing market share from the purchaser of the lion's share of their output, the utility industry, offer to backhaul and dispose of coal combustion wastes as a package deal;

Second, issuance of national guidance is insufficient to assure proper management of these wastes, since many states have "no more stringent" provisions that would prevent states from extending regulatory authority over disposal of the wastes to incorporate federal guidance, since states can adopt and impose only those standards that have been adopted by regulation at the federal level. Also, some states cannot under state law impose substantive requirements based on "policies."

Third, the lack of minimum standards penalizes utilities who manage wastes under higher standards relative to their brethren who allow disposal of coal wastes by the coal industry either for "beneficial" uses or as mine fill.

Fourth, the lack of standards heightens conflicts between host communities and the utility and coal industry due to concerns with under-regulation of the coal combustion wastes relative to their potential to leach metals and other constituents at levels posing environmental or health risks.

Finally, the failure of EPA to assert federal leadership in establishing up-front baseline standards for management of the disposal of coal combustion wastes invites significant judicial intrusion into the field, and implicates the disposers, transporters and generators in a web of liability that is as open-ended as are the state management programs themselves.

THE ROLE OF EPA AND SMCRA

With respect to disposal of coal combustion wastes in mining areas, KRC must respectfully part ways with Kimery, who by now is *wondering why he invited me*. *KRC believes that SMCRA is not the appropriate vehicle for management of co-disposal at coal mines*. OSM's authority under SMCRA is not sufficient, standing alone to manage coal mine co-disposal, and was not intended to supplant EPA's responsibility under RCRA for management of such wastes.

Disposal of coal combustion wastes is of particular concern at coal mines. The available evidence suggests that disposal of coal combustion wastes in mine pits or other workings may be of particular concern, due to a number of factors: the increase in surface area available for leaching of elements resulting from fracturing of overburden and confining layers; higher total dissolved solids levels in mine spoils that compete for sorption sites on solids with toxic elements released from the buried ash; direct communication between surface and underground

mine workings and aquifers through stress-relief fracture systems and subsidence-induced fracture flow; the dependence of residents of coal-bearing regions on private, groundwater supplies and the significant potential for contamination of those supplies; and the presence of site conditions conducive to creation of acid or toxic-forming material that can solubilize constituents of concern from the waste.

The information concerning the leaching potential of these wastes, the vulnerability of coalfield groundwater resources, and the documented cases of damage are sufficient to allow for immediate action by USEPA and control such wastes where co-disposed in coal mines. Coal combustion wastes containing leachable metals at levels well above accepted drinking water standards for safe potability of water, yet are in some states being placed indiscriminately in unlined backfills of coal mining operations in direct communication with groundwaters, and without proper characterization, isolation, management, closure, financial responsibility, monitoring and post-closure corrective action requirements attendant to such wastes.

It must be acknowledged and understood that the "driver" concerning the disposal of coal combustion wastes backhauled and disposed of in mine workings (including both underground mine voids and more commonly, in surface mine backfills or spoil/mine waste fills) is *not* the inherently preferential beneficial attributes of the wastes relative to other backfill materials, or the lack of alternative locations available to utilities and non-utility customers for coal combustion waste disposal. It is the coal industry seeking to improve its position by offering backhauling and disposal as a "service" or incentive in order to attract buyers for their coal in an increasingly competitive marketplace.

Many areas in which mining occurs are those in which individuals and small community water systems rely on groundwater for domestic and other beneficial uses, including irrigation, livestock, commercial and institutional uses. The dependence of residents of coal-bearing regions on private, groundwater supplies and the significant potential for contamination of those supplies due to groundwater regimes characterized by highly transmissive secondary (fracture) permeability make the supplies highly vulnerable to contamination and disruption from mining.

Potential impact on utility consumers of passed-through costs of future remediation of areas where such wastes are under regulated and disposal contaminates land or water resources.

What is needed to properly regulate CCW disposal at mines? Such controls should include a prohibition on open-end dumping of coal combustion wastes in mine backfill, characterization of the waste, a requirement for controlled placement in a discrete, properly engineered and lined land disposal facility, groundwater monitoring, leachate collection, closure and post-closure care, and financial responsibility.

When EPA determined that issuance of regulations under Subtitle C of RCRA was not necessary to adequately manage the environmental risks associated with disposal of coal combustion wastes, it premised that determination on the assumption that the environmental performance standards and protections of Subtitle D would be extended to the management of that industrial waste stream.

EPA's failure to implement that commitment and to promulgate regulations establishing minimum standards for characterization and management of the waste streams associated with combustion of coal has had significant adverse environmental consequences; consequences which will continue absent fulfillment of that commitment by EPA.

My experience in litigating cases involving coal combustion waste management, both in disposal at mine sites, and disposal through so-called "beneficial uses," has convinced me that national standards and accountability to adopt, administer and enforce those standards under RCRA is essential to assure that the wastes are managed to prevent environmental and public health impacts. The Surface Mining Control and Reclamation Act of 1977 is not the appropriate vehicle to regulate these wastes. SMCRA was neither intended nor designed to handle these materials. You would need a significant overhaul of SMCRA in the way you characterize and manage CCW in order to make this program fit.

A number of provisions of SMCRA are implicated in any proposal for disposal of CCW at a mine site. For example, no CCW can lawfully be placed in a location where it would displace spoil and cause more material to be disposed of in a hollow fill, because such additional spoil displacement would violate the requirement that all spoil generated by the mine be returned to the mined area except excess spoil.

Additionally, the requirement for contemporaneous reclamation would be offended by any delay in reclamation associated with disposal of coal combustion wastes in active mining and reclamation areas. Placement of coal combustion wastes in backfill without proper barriers to prevent migration to groundwater and to prevent saturation of the waste from infiltration of rainfall or groundwater would also violate provisions of the law addressing protection of the hydrologic balance and prevention of off-site damage, through isolation of acid- or toxic-forming materials from surface or groundwater.

Congress did not direct that SMCRA take the lead in disposal of CCW, they directed EPA to take the lead. SMCRA's mandates are supplemental to but are not designed to supplant RCRA and EPA's role in standard-setting. Current SMCRA regulations do not fully address issues of proper characterization of, and long-term management of CCWs, and would need modification to fully account for the use of the mined area for waste disposal.

SMCRA does not contain a requirement that the chemical, physical, and radiological characteristics of the non-coal wastes be assessed, or the fate and transport mechanics of those wastes;

The groundwater monitoring requirements are not designed to identify the presence of and migration of constituents of concern from disposal areas; and do not test for the full panoply of constituents needed to assess the presence of CCW constituents. The groundwater system in many coal fields is particularly vulnerable to contamination because of the high transmissivity of the fracture-dominated aquifer system, and because of the high degree of interconnection of aquifers through subsidence-induced deformation of strata above underground coal seams.

The duration of monitoring and bonding for coal mines is far too short relative to the timeframe needed to demonstrate that the disposed wastes have been properly isolated to prevent off-site contamination.

Issues concerning right-of-entry and responsibility for contamination could be complex since SMCRA's enforcement, insurance, bonding and right-of-entry provisions are focused on mining regulation.

To satisfy the surface coal mining regulatory program obligations under federal and state law of protecting the hydrologic balance on and off the mine site, a broad array of metals and any other constituents identified through chemical characterization of the composition of the coal combustion waste, would need to be imposed as monitoring parameters for on-going groundwater and surface water monitoring. Each of the 17 potentially toxic elements are commonly present in CCW: aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, molybdenum, nickel, selenium, vanadium, and zinc, other metals present, radionuclides, and in the case of fluidized bed combustion (FBC) wastes, volatile and semi-volatile elements would need to be assessed.

The placement of groundwater monitoring wells would need to be sufficient to detect leachate generation and movement off-site at the bench elevation and through fracture systems, for strip mine bench disposal, and along and below the seam for pit disposal. Monitoring parameters and well location must be altered to detect contamination at the waste boundary, necessitating continuous monitoring wells along the area where the waste is disposed. Blending of mine wastes with spoil constitutes open dumping that is prohibited under state and federal law.

Disposal of coal combustion waste on a mine site, where a part of a surface coal mining operation, would need to be subject to **all** of the procedural protections, including demonstration of the right to enter and conduct such disposal activities, and all enforcement procedures of the federal Act and state regulatory program attach.

Long term site maintenance and groundwater monitoring after mining bond release would need to be addressed.

Separate approval by the landowner and local government for disposal of the material. No CCW should be allowed on an active Title V permit absent public notice and a public comment period. There is a concern that CCW disposal is added to a mine permit by minor modification, and OSM could clarify that, at a minimum, inclusion of non-coal waste disposal of any kind on a mine site is a major modification.

Finally, financial responsibility requirements would need to be addressed, since the performance bond guarantees only reclamation under Title V and is neither calculated nor liable for on of off-site damage and reclamation needed to address the CCW disposal. Separate bonding, insurance, and long-term financial responsibility is needed.

In sum, the placement of uncontrolled and unconsolidated deposits of coal combustion waste in mine backfills, valley or hollow fills, or underground mine voids, is irresponsible. The

groundwater system in many coal fields is particularly vulnerable to contamination because of the high transmissivity of the fracture-dominated aquifer system, and because of the high degree of interconnection of aquifers through subsidence-induced deformation of strata above underground coal seams. Ample hydrologic evidence is available to suggest that further co-disposal of coal combustion wastes should be prohibited pending development of sufficient standards for the characterization, management, placement and monitoring of such disposal and that EPA should move promptly to develop such standards.

A program developed under RCRA Section 3004(x) should, among other things, provide for: separation and proper disposal of other fossil fuel-related wastes, such as FBC wastes, that may contain residual unburned organics not associated with typical coal ash. Greater scrutiny is warranted for FBC waste, which as noted in the Boulding Report presents a higher potential for leaching elements of concern; and wastes generated through the firing of hazardous waste fuels and waste oils with or without coal, and those which are fired or co-fired with waste tires and refuse-derived fuel. Each of these categories adds constituents to the combustion process which may significantly increase the hazards of improper disposal of the waste, including a range of products of incomplete combustion of chlorinated and other synthetic organic compounds that warrant extensive analysis, characterization and careful management beyond that necessary for coal combustion waste.

Clarification should also be provided that coal combustion wastes do not include utility wastes such as metal and boiler cleaning wastes, nor other wastes generated from power plants beyond those directly resulting from combustion of coal and control of emissions from the combustion process.

All coal combustion wastes to be screened for radionuclides and managed as low-level radioactive wastes in accordance with the applicable state and federal laws, where those wastes exhibit activity that is above background levels. Coal combustion waste which contains elevated radionuclides is properly classified as technologically-enhanced low-level radioactive waste.

No disposal should be allowed absent the complete characterization of the waste stream(s) proposed for land disposal, and assurance that the engineering design of the disposal facility will assure compliance with the environmental performance standards (including no contamination of aquifers above drinking water standards and no increase in groundwater of any constituents above background levels of those contaminants). Whenever possible the chemical and physical composition of the actual waste stream that will be produced by the combustion process at the utility from which the waste will be generated, should be used for testing.

In order to properly design a facility for disposal of coal combustion waste, the full extent of the characteristics of the waste must be known, and the leachate potential must be established by use of appropriate modeling of the disposal site, the amount of rainfall infiltration, the pH of the waste and associated materials through which the rainfall will pass, and a hydrogeologic investigation into the location, extent, and characteristics of the surface and groundwater systems at the site.

Groundwater monitoring must be sufficient to allow for prompt detection of leachate migration at the waste site (and not the mine) boundary. Monitoring parameters and well locations must be such that they are appropriate to the area in which the waste is disposed.

Finally, blending of mine wastes with spoil in the backfill, rather than controlled placement of the wastes in a designed facility should be treated as prohibited open dumping.

CONCLUSION

I end where I began. If you want to encourage the beneficial reuse of CCW, make sure that the characterization is sufficient to address the long term concerns of leaching and mobility of organic and inorganic materials from the waste. In particular, as the composition of the waste changes when we impose stricter controls on airborne emissions, we will of necessity change the composition and potentially increase leachate toxicities. The best way to improve the beneficial utilization is to approve adequate comprehensive safeguards so that we will not be undercut in the market place by those more interested in short term economic gain rather than the long term public interest.

Tom FitzGerald is the Director of the Kentucky Resources Council, Inc. a non-profit environmental advocacy organization providing free legal, strategic, and policy assistance to individuals, organizations, and communities concerning environmental quality and resource extraction issues. He holds numerous appointments on State and National environmental advisory organizations. He holds a Juris Doctor degree from the University of Kentucky, College of Law, is an adjunct professor of energy and environmental law at the University of Louisville, Brandeis School of Law, and has authored numerous articles on the citizen perspective of environmental issues related to coal mining and reclamation.

POWER PLANT WASTE (PPW) MINE FILLING: AN ENVIRONMENTAL PERSPECTIVE

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Clean Air Task Force
Marblehead, Massachusetts

Abstract

The United States Environmental Protection Agency (EPA) is developing a draft rule to regulate power plant waste (PPW) disposal and use in coal mines. PPW mine filling is expected to increase greatly as a result of changes in combustion technology and the emergence of more mine mouth coal-fired power plants. Both changes are promoted by new energy policies emerging from Congress and the Federal government under the Bush Administration. In addition, several States are aggressively pursuing PPW mine filling as a solution to acid mine drainage and as a means of reclaiming active and abandoned mines.

Consequently, there is a critical need to determine whether mine filling is a beneficial practice or primarily a means of inexpensive disposal for power plant wastes that may substantially worsen the very water quality problems that the wastes are intended to address. Citizens and environmental organizations assert that data from several mines where PPW has been disposed indicate that contamination of mine waters by metals and other pollutants exceeds levels previously caused by acid mine drainage (AMD). They are concerned that safeguards at most PPW mine fills are too lax to prevent a worsening pollution problem from coal ash disposal.

The presentation will discuss (1) the Clean Air Task Force's examination of mine fill permits and its evaluation of the adequacy of safeguards imposed by State regulators; (2) the impacts to ground and surface waters discovered from the examination of permitted PPW disposal in mines and (3) the policy implications of these findings for EPA's upcoming rulemaking on PPW mine filling.

The Safe Reuse of Power Plant Wastes

First, I would like to agree with John Glenn from EPA in terms of the importance of safely recycling power plant waste. The environmental community firmly supports safe recycling of waste materials. It conserves resources and avoids the filling up of land fill space. But, we do have some concerns about reuse. Sometimes, beneficial reuses are not beneficial when they present a threat to human health and the environment. Part of our concern is the wealth of unanswered questions related to the reuse of PPW. The central question to all of us should be which of the reuse options are truly beneficial? I believe that all the stake holders should be in agreement that the reuses of PPW should be environmentally responsible. I believe a problem exists that there has been an over emphasis on the barriers to reuse. There has been too much emphasis by industry and regulators on the names of these materials and on public perceptions based on terminology and what impact this has on the marketing of these materials. The two most important problems are the lack of data on environmental impacts and the lack of

consistency among the States when environmental impacts are known. The States have agreed that these are concerns. At the State solid waste managers meeting in 2000, they were asked what is the most common barrier to the beneficial use determination process; they answered “the largest barrier is the lack of good information to use in evaluating the risk to human health and the environment and the next largest barrier is to get companies to provide adequate information.” The Clean Air Task Force would agree with this assessment.

One of the primary concerns that we have is a concern that was identified by EPA in 2000 in its regulatory determination related to PPW. EPA identified as problematic uses those uses that continue to be promoted in the absence of any serious scientific consideration by Federal and State agencies. These include mine filling, agricultural amendments, snow and ice removal, and blasting grit. I know that there is progress being made on the mine filling issue and we are happy to see this. We had a great meeting in September which is a great step toward a serious evaluation but there is much more work to be done particularly about the agricultural amendments, snow and ice removal, and blasting grit. We do not see as much progress in that area. Other environmental concerns are that the States often have inadequate guidelines or regulations for beneficial use and or they fail to enforce the guidelines or regulations. Third, there is a paucity of data on environmental impacts. The data that does exist tends to focus on the results of TCLP analysis. There seems to be wide spread agreement that the TCLP procedure is not applicable and not useful in this context. Field data is essential. There is no substitute for data collected in the field. The level of risk or contamination that is acceptable differs among the stake holders. Finally, when environmental risks are known, regulatory agencies are slow to prohibit dangerous uses or institute regulatory controls.

Groundwater Contamination at Pines Indiana

I would like to speak briefly about the town of Pines Indiana because this is one reason why the Clean Air Task Force is concerned about the beneficial use of coal combustion waste. The situation in this small town in northern Indiana is that you have two sources of contamination to ground water. One is an unlined landfill and the other is the road base and other fill that PPW was using around the town. The residents of Pines rely exclusively on ground water as its source of drinking water. This water has been contaminated with high levels of arsenic, lead, boron, manganese, and molybdenum. The town now qualifies for listing on the superfund National Pollution List (NPL). It is a Resource Conservation and Recover Act (RCRA) proven damage case. EPA has recently entered into an administrative consent order with responsible parties to supply municipal drinking water to the residents. This case raises the question of the safety of using power plant waste for the purpose of fill, structural fill, and road base and it does it quite dramatically.

Solutions and Recommendations

Both the Clean Air Task Force and the Kentucky Resources Council think that the answer to this problem is Federal uniformity in order to promote the beneficial use of power plant waste while protecting human health and the environment. We are asking for assistance at the Federal level to develop tools to predict long term performance, to set specific numeric thresholds for hazardous constituents, including the eight RCRA metals and as well as the common constituents

of boron, manganese, and molybdenum. We would like Federal help to establish: (1) site location and set-back restrictions to water supplies, surface waters, and wetlands; (2) restrictions based on depth to ground water; (3) handling and storage requirements including turn over requirements to discourage speculative accumulation; and (4) require periodic follow-up and monitoring. Lastly, we need to set strict controls or prohibitions on the use of power plant waste as fill.

I would hope that there is agreement among the stakeholders that we need Federal uniformity because I think that this uniformity will help many of the stakeholders. Federal uniformity would improve environmental protection and also expand the markets for the safe reuse of these wastes. If, dumping and disposal through structural fill and perhaps the mine filling situation is allowed throughout the U.S., as is currently happening in the guise of beneficial use, then that is going to be taking up the market for what is truly a safe beneficial use.

Let me tell you why this is important in my home State of Massachusetts. In Freetown Massachusetts there was a structural fill that was going on in a sand and gravel quarry. The townspeople were up in arms that this quarry was going to be filled with 100s of thousands of tons of coal combustion waste. The State of Massachusetts does not regulate structural fills. They are exempted from any type of regulation. There were down gradient water users from this quarry. The town already had a leaking land fill that contained power plant waste because it is very near the largest coal burning power plant in the State. One woman organized a referendum where at a town meeting they voted out all uses of coal combustion waste within the town limits. In the absence of Federal or State regulation, this was the only way they felt they could protect their community. Four other towns in Massachusetts have developed similar ordinances. I don't think that this is the way to approach the problem. As an environmentalist, we believe there are safe ways to reuse coal combustion waste but the solution is through Federal uniformity. This could involve the creative use of Federal regulations that would have procurement guidelines which would promote safe uses. Perhaps this could include requirements for new power plants that a certain percentage of their wastes would go to safe beneficial uses.

Lisa Evans is an environmental attorney and legal consultant for the Clean Air Task Force. Currently she is the Project Director of the Power Plant Waste Project for the Clean Air Task Force. The Clean Air Task Force is a national environmental project whose mission is to tighten State and Federal regulations to reduce smog, soot, haze, acid rain, toxic pollution and climate change. She previously worked as an Assistant EPA Regional Counsel in Region I as well as an attorney for the Massachusetts Department of Environmental Management. She is also the author of six non-fiction books on nature and national parks. She holds a J.D. from the University of California, Berkeley and a B.A. from Cornell University. She is a founding member of two Massachusetts non-profit environmental organizations on whose boards she currently serves.

THE UTILITY INDUSTRY PERSPECTIVE REGARDING COAL COMBUSTION PRODUCT (CCP) MANAGEMENT AND REGULATION

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Abstract

Following extensive and comprehensive study, the U.S. Environmental Protection Agency (EPA) has twice, in August 1993 and May 2000, declared that coal combustion products (CCPs) do not warrant regulation as hazardous waste. As part of its Report to Congress, issued in 1988 and 1999, and in their 1993 and 2000 Regulatory Determinations, EPA noted the soundness of utility industry management of CCPs and a strengthening of State regulation of CCPs. Utility management practices will continue to improve and State regulatory programs will become more robust in the coming years. Rather than investing limited resources in the development of non-hazardous waste regulations for CCPs under the Resource Conservation and Recovery Act (RCRA) Subtitle D that would duplicate and overlay existing State programs, EPA should defer to State regulatory controls to ensure that CCPs are managed in an environmentally protective manner. EPA's role in addressing the mine placement of CCPs should be similarly limited in light of existing comprehensive State programs addressing this practice, operating under the authority of the Office of Surface Mining and in conjunction with State environmental authorities. The Agency will continue to play a pivotal role, however, in supporting the expansion of beneficial use of CCPs, by establishing additional comprehensive procurement guidelines and reducing or eliminating barriers to CCP utilization.

Regulatory Background

I will primarily be talking about mine placement, but I will also address disposal and utilization aspects that were touched on by earlier speakers. EPA was given the responsibility by congress, under the Beville amendment, to look at the nature of and manner in which CCPs were being managed and regulated at the State level in order to determine whether or not the materials should or should not be regulated as a hazardous waste under Subtitle C of RCRA. We have had two regulatory determinations.

In 1993, EPA, based on the evidence and the data they had assembled over a 13 year period, determined that high volume wastes do not warrant regulation under Subtitle C. In this regulatory determination, the agency made its first statement that they encouraged the utilization of the coal combustion wastes. We have been building on this statement and are now perhaps seeing the culmination of EPA's commitment to beneficial use. We now have great vision and hope for the C2P2 program as elaborated by John Glenn earlier that will increase the use of these materials rather than waste them so that they must be managed in landfills.

In 2000, there was another regulatory determination where EPA looked all of the coal combustion wastes including remaining wastes, co-managed wastes, wastes from gas and oil combustion, and the combustion of coal by non utility generators, and said that these wastes did not warrant regulation as hazardous wastes. EPA also said that there should be no Federal regulation of these materials when they are beneficially reused. EPA did not find any damage cases from CCP utilization. They also did not find any damage cases from mine placement although they did want to study that further and engage in rulemaking on a separate schedule. EPA said that they view SMCRA as being designed to address the environmental risks associated with coal mines. If we are talking about the placement of CCPs at coal mine sites, then EPA said they feel that the Surface Mining Control and Reclamation Act (SMCRA) is the right vehicle. They also said that they may want to develop some regulations under subtitle D or RCRA or modify SMCRA for mine filling applications. They did single out mine placement where they needed to do more work. They also raised questions concerning the use of coal combustion products in agricultural applications.

There is a real argument from the State perspective where the States drew a line in the sand that questioned EPA's authority to develop national regulations under subtitle D of RCRA for anything except municipal solid waste. We have heard a call for a uniform Federally enforceable standard, however, the only construct we have for that is under Subtitle C of RCRA or a contingent Subtitle C regulation such that, unless you manage it in a specific manner, it will be regulated as a hazardous waste. Since EPA has said that these materials do not warrant regulation under Subtitle C, the States have articulated that EPA may not have the authority to go beyond municipal solid waste under Subtitle D of RCRA.

Even so, EPA is looking at what it can do to fill some perceived gaps in environmental protection. I think that EPA has done a good job to gather the facts on mine placement to find out and hear from all of the stakeholders and determine what the real facts and issues are. The bottom line is that there are no damage cases from placement of these materials at coal mines. There have been some instances where these materials have been placed at un-engineered facilities, like sand and gravel pits, where they may have been some concerns with past practices. I think that a lot of the damage cases that people talk about are really past practices prior to when the State programs became as robust as they currently are. The environmental damage that we are seeing at mine sites relates to acid mine drainage, stability, and safety issues. We would view placement of CCPs at mine sites to be a part of the solution to address those environmental situations, not as a part of the problem.

I think you will hear from Greg Conrad about the robustness of SMCRA and the application of SMCRA authority and waste authority by the States in insuring that the mine placement of CCPs are done in an appropriate manner that is protective of human health and the environment. Our bottom line with this whole issue is that the CCP mine placement does result in some environmental benefits and that there are no proven environmental damage cases from placement at coal mines. We really see a new Federal

regulatory scheme as being duplicative of efforts and really unnecessary given where the States are with their waste and reclamation programs. We feel that Federal resources would be better spent supporting beneficial use of these resources.

Beneficial Use

EPA said that they did not want to place any unnecessary barriers on beneficial use. In 1992, the U.S. Department of Energy (DOE) studied the barriers to the increased use of coal combustion products and issued a report where they classified these barriers under the headings of regulatory, institutional, legal, and technical. In 1998, DOE revisited that study to see whether anything had changed and found that these same barriers still existed. There is still a lot of work to do to reduce or eliminate these barriers. Speaking on behalf of the Utility Solid Waste Activity Group, we are pleased to see that EPA has recognized that RCRA is not just about management of waste disposal but it really is about the recovery and use of resources.

James Roewer is the Executive Director of the Utility Solid Waste Activities Group (USWAG), where he is responsible for overall program management, including the addressing of solid and hazardous waste, and toxic substance issues on behalf of the utility industry. He serves as the Chairman of ASTM Subcommittee E50.03 on Pollution Prevention/Beneficial Use, and as a member of the Steering Committee of the Combustion Byproducts Research Consortium. He has served as Senior Environmental Manager in the Energy Policy Department of the National Rural Electric Cooperative Association (NRECA); Environmental Scientist in the Natural Resources Section of EEI; Manager, State and Local Government Relations with the American Society of Mechanical Engineers; and Research Assistant with the Science Unit of the Illinois Legislative Research Service. He holds a Masters of Science in Environmental Science from the School of Public and Environmental Affairs at Indiana University, and a B.A. in Biology from Wittenberg University.

COAL COMBUSTION PRODUCTS (CCPs) OPPORTUNITIES FOR BENEFICIAL USE

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Abstract

Annually, more than 128 million tons of coal ash, or coal combustion products (CCPs), are produced by coal-fired power plants in the United States. Approximately one-third of this material is used in many beneficial ways, such as a substitute for Portland cement in concrete, in asphalt paving, in soil stabilization, and in structural fills. Coal combustion products can be used in numerous other applications. There is a need to increase its use.

Using CCPs has several environmentally sound benefits, including: the reduction of green house gases; the conservation of natural resources; and a decrease in the need for new landfill space. However, to increase usage, actual or perceived barriers to CCP use need to be addressed. These barriers include limitations by regulatory agencies or engineering specifications that may not be warranted. Often times, these limits are not based on technical requirements but instead are present because of a lack of knowledge of the CCP or its intended use.

The initiative by the U.S. Environmental Protection Agency (EPA), the Coal Combustion Products Partnership (C2P2), is an effort to clarify the misconceptions about CCPs and to provide information about their use, specifically in highway construction activities. More than 100 organizations have joined to support C2P2, which will disseminate information and encourage increased use by Federal and State agencies. Workshops will be conducted to provide users and specifiers sound technical and environmental information.

Background

As long as there is an expectation in this country that when you go to the light switch you will receive something to power your computer, refrigerator, and stove, there will be a need for electric generation. In the U.S., coal is one of the sources of energy for this electricity that accounts for about half of that electrical generation. This should remain relatively constant in the near term. We do not think that nuclear energy is an option that many utilities are pursuing at this point in time. Wind and solar generation have their limitations. So, as long as we are as large a country as we are, and consuming the quantity of energy that we do, we will have to deal with coal fueled electrical generation.

The American Coal Ash Association

The American Coal Ash Association promotes the beneficial use of Coal Combustion Products. Our member companies and stakeholders believe that you can manage CCPs safely, economically, competitively, and without concern to public health and the environment. We

believe that part of our mission is to enhance public awareness by providing information to the general public, to people within our own industry, State regulators, and end users. We do this to help them understand that there are materials, provided through the generation electricity from coal, that do have value in commerce. As stated earlier, it is a way to cut down on the emission of green house gases, to conserve natural resources, and to prevent the disposal of materials that could otherwise be used instead of mining virgin materials.

Utilization of CCPs

The utilization rate of these materials is roughly between 30 and 35 percent, yet 60 to 65 percent or 80 million tons go into disposal each year. This means there is an opportunity to increase the beneficial use of these materials. We applaud the EPA for taking a very positive look at beneficial utilization. C2P2 partnerships are very positive ways to identify barriers or perceived barriers and attempt to reduce these barriers through public outreach and improving the educational awareness about these materials. If this is successful, we can take advantage of a large volume of resources that would otherwise be thrown away. Through the publication of informational booklets and workshops in next year, C2P2 supporters will communicate about the positive aspects of CCPs. The utility industry is very upbeat about the future trend.

CCP Research

The Department of Energy (DOE) has been very supportive of CCPs. DOE has funded millions of dollars of research on CCP utilization and related activities. This research has included a number of novel ideas and unusual ways to turn these materials into positive products. DOE is not alone in CCP research. Private industry and universities have worked together to identify issues; conduct laboratory and field-testing evaluate results, and in some cases, pursue patents for new technology. The electric utility industry does not put as much money into research today as was done in the past. Economics drive the industry and even though the industry just does not have extra dollars to promote research, companies are creative about forming partnerships to leverage limited dollars for research. These collaborative relationships have enabled firms and universities to develop new opportunities for CCPs and have made data available to support their use in many ways.

Conclusion

I would like to close with the thought that we as an industry have a number of challenges ahead. Proposed regulations related to capture of mercury from the air emissions from coal fueled electrical generation could have an undefined impact on the use of CCPs. Much research has been done on the impact of mercury on coal ash, but more is needed. There is some excellent data available that indicates that mercury capture technologies will not create a new menace. There are a variety of technologies that may allow continued use of CCPs in traditional applications, including in concrete, without risk. The mercury capture technologies selected by a utility may impact that company's handling of CCPs. It could potentially impact whether or not that utility could use its CCPs as a marketable product. There will not be one technology that will fit all situations. We will need to consider site-by-site and State-by-State flexibility in this process.

Working together as an industry, in collaborative partnership with regulatory agencies, universities, end-users and other will help resolve challenging issues in a way that will be positive, economically competitive, and environmentally sound. These partnerships will be on a regional, national and international level. There still are many opportunities to improve utilization and increase the beneficial use of CCPs nationally and globally.

Dave Goss is the Executive Director of the American Coal Ash Association. ACAA is an industry trade group that serves as a focal point for information about coal combustion product (CCP) utilization. ACAA works with members, stake holders and interested parties to better understand the beneficial uses for CCPs and to help address questions from government, State and local agencies or the general public. He worked in the utility industry for 22 years prior to joining ACAA. He holds a BA in History from the University of Denver and a Masters in Public Administration from the University of Oklahoma. He serves on the ASTM Subcommittee E50.03 on Pollution Prevention/Beneficial Use and was formerly the National Steering Committee Chair for the Combustion Byproducts Recycling Consortium (CBRC) that is funded through the Department of Energy.

**U.S. DEPARTMENT OF ENERGY
COAL COMBUSTION BY-PRODUCT (CCB) RESEARCH TRENDS**

Lynn Brickett
National Energy Technology Laboratory
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Pittsburgh, Pennsylvania

DOE Research Goals

The U.S. Department of Energy (DOE) has set a goal for increasing utilization of coal combustion by-products by 50 percent by 2010. Based on other talks you have heard from DOE at this meeting, you have learned that this country will continue to use coal and increase the use of coal to produce electricity for the foreseeable future. Don't be fooled by all you hear about the installation of natural gas power generation capacity, there are serious issues related to the supply of natural gas. There is no problem with utilities producing electricity with natural gas, however, when they can't get the gas to the gas turbines, that is a problem. From all of the analysis that DOE has done, it really looks like the use of coal for electricity will continue for at least the next 20 years. DOE expects that the current production of 120 million tons of CCBs will continue to increase in proportion to the increased use of coal.

The Effect of the Clean Air Act on Research Trends

I would like to talk about the effect of the Clean Air Act and other pollution control regulations on by-products. DOE is the largest funding source for research in coal combustion by-products. I am pleased to report that we have finally gotten research on CCBs to the demonstration stage. DOE has several projects in the demonstration stage that are multi-million dollar projects. I am responsible for research and development funding for CCBs in DOE. Currently, the funding available for research and development in DOE is \$25 million annually. More than half of that goes to Mercury control. After NOx control and SOx control research is funded, there is very little left for research on CCBs.

Electric utilities are expected to install many more scrubbers on existing coal fire power plants that will dramatically increase the quantity of Flue Gas Desulfurization (FGD) material produced in the near future. However, we are currently using very little of this by-product and really need to find more ways to use the material as more is produced in the future. DOE is very interested in researchers who would develop novel ways to use this material.

I am very concerned with the amount of ammonia and nitrogen that could come from leachate from ash that is produced by an SCR or an SNCR unit or conditioned ash. This ammonia will be released into a nearby receiving stream. This will result in the power plant not being able to stay within the limits of Total Maximum Daily Load (TMDL) for that water body. At the moment, an SCR unit is the only way we have to remove

nitrogen from the air emissions at a power plant. DOE is currently investing significant funding to research better methods to control the removal of NO_x from flue gas. We also need research into better ways to beneficiate ammoniated ash otherwise this will be a problem to water quality in receiving streams.

Finally, concerning the control of Mercury in flue gas, we have heard from Dave Goss with ACAA that this should not be a problem. I am not sure that we can say that yet. There is some data that would indicate that there are no problems, but I think it also shows that we really need more research. My future research plans involve putting out a research solicitation for independent organizations to test the by-products from the large mercury control tests we are currently conducting. We are concerned with the results of our tests last year because we had the same company that was doing the demonstration conduct the tests. This will be done to independently verify our results.

Conclusion

DOE has accepted a huge challenge in setting the goals it has for increasing use of CCBs. Although panels like this are useful, I don't think we are working together as much as we should.

Lynn Brickett is a project manager at DOE's National Energy Technology Laboratory (NETL). She is the technical point of contact for the by-products research funded by NETL. Additionally, she manages projects in the areas of terrestrial carbon capture and mercury control from power plants. Previously, Lynn conducted research on coal utilization by-products and in-situ bioremediation of metal contaminated soils. Prior to working for DOE, Ms. Brickett worked for the Bureau of Mines for 6 years where she ran the microbiological laboratory and conducted research in the areas of bioleaching of copper ores, bio-oxidation of gold ores, bio-toxicity of solid wastes and abatement strategies for Acid Mine Drainage. She holds a M.S. in Environmental Science and Management and a B.S. in Environmental Science.

STATE PERSPECTIVE ON MINE PLACEMENT OF COAL COMBUSTION BY-PRODUCTS

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Abstract

Since May of 2001, the Interstate Mining Compact Commission (IMCC) has sponsored a series of meetings between the States/Federal government, including representatives from the Environmental Protection Agency, the Office of Surface Mining, and the Department of Energy, to discuss potential adjustments to existing State regulatory programs relating to the placement of coal combustion by-products (CCBs) into surface and underground mines. Over the past several years, the States have had the opportunity to learn from one another about their existing regulatory approaches. Discussions have focused on the various operational, environmental, and economic issues associated with the practice of placing CCBs in mines, including how States can adjust or improve current regulatory practices and examine the impacts of various Federal regulatory proposals on the implementation of existing State programs. This presentation will report on the progress of State/Federal discussions concerning placement of CCBs in mines including the regulatory requirements under the Surface Mining Control and Reclamation Act (SMCRA) and the Resource Conservation and Recovery Act (RCRA) that attend mine placement of CCBs. The States believe that, pursuant to their regulatory programs under SMCRA and/or RCRA, they currently and historically have managed the placement of CCBs at mine sites in a safe, environmentally protective manner. There are no significant gaps in regulatory coverage and the States continually seek to improve and upgrade their programs where new requirements are identified through program benchmarking and/or Federal oversight. In the final analysis, the placement of CCBs at mine sites amounts to a beneficial use that generally enhances the environment and, in every case, is comprehensively and effectively regulated by the States.

Background

My objective today is to provide you with an overview from the States' viewpoint about where we are in the regulatory development process and, more specifically, about our on-going State/Federal initiative to inform one another about our existing regulatory approaches and what the future might hold.

Following EPA's publication of its Notice of Regulatory Determination on Wastes from the Combustion of Fossil Fuels in May of 2000 (65 FR 32214), the member States of the Interstate Mining Compact Commission (a multi-State governmental organization representing the natural resource and environmental protection interests of its 20 member States) suggested to both EPA and the Office of Surface Mining (OSM) that an intergovernmental forum would serve as a valuable mechanism to initiate discussions between State and Federal governments concerning next steps pursuant to the regulatory determination. This suggestion followed on the heels of a

resolution adopted by IMCC in May of 2000 affirming the appropriateness and effectiveness of State regulations and policies for the safe handling, recycling, beneficial use and placement of coal combustion by-products and supporting the management of CCB's without the application of Federal RCRA subtitle C requirements. The IMCC States were particularly focused on EPA's finding that, although coal combustion by-products (CCB's) (or coal combustion wastes (CCW)) did not warrant regulation under subtitle C of the Resource Conservation and Recovery Act (RCRA) as "hazardous waste," the agency had determined that national regulations under subtitle D of RCRA are warranted when these wastes are disposed in landfills or surface impoundments, and that regulations under subtitle D and/or possible modifications to existing regulations established under the Surface Mining Control and Reclamation Act (SMCRA) are warranted when these materials are used as fill in surface or underground mines. IMCC was especially concerned about the latter "mine placement" aspects of the determination given the significant interplay between approved State regulatory programs under SMCRA and any potential adjustments to the national SMCRA regulations (which serve as a template for State regulatory programs).

State/Federal Intergovernmental Forums

Both EPA and OSM saw the value of proceeding in this manner and the first intergovernmental forum on mine placement of CCB's was held on May 15 and 16 of 2001 in St. Louis, Missouri. The forum was open to all States, not just IMCC member States, and also involved tribal government representatives. Other Federal participants included the U.S. Geological Survey and U.S. Department of Energy. The forum began with several presentations from EPA, OSM, and State representatives regarding current mine placement practices and regulatory programs. These presentations also allowed attendees to hear about current issues and problems being encountered in the mine placement of CCB's in anticipation of the potential development of a new regulatory approach by EPA. One of the key objectives of the forum was to engage State and Federal representatives affected by a potential mine placement rule in an open discussion about current challenges being encountered in the field – identifying potential regulatory gaps, anticipating potential inter-agency jurisdictional conflicts, and discussing implementation concerns associated with any new rule. A key outcome of the forum was the establishment of an on-going dialogue among the States, Tribes and Federal representatives concerning the various operational, environmental and economic issues associated with the practice of mine placement of CCB's. A copy of the notes from the meeting can be found at EPA's website:

www.epa.gov/epaoswer/other/fossil/index.htm.

The intergovernmental forum was initially followed by a meeting of the States and Tribes that took place on August 13 and 14, 2001 in St. Louis. Among the issues discussed were: characterization methods and tests for CCB's; placement requirements; use of liners; closure requirements; site characterization and volume restrictions; definition of beneficial use versus classic disposal; the need for Federal regulations, guidelines or policies; and which Federal agency should take the lead: EPA or OSM. The outcome of this meeting was the development of a draft discussion outline that contains the basic position of the States/Tribes concerning the regulation of CCB placement at mine sites. The outline has served as the basis for continuing discussions with EPA and OSM regarding the need for national regulations given the adequacy of existing State and Tribal regulatory programs. A copy of the outline is available on EPA's

website. The outline addresses categories of coal ash management; coal ash management principles for beneficial use; coal ash regulatory principles for beneficial use; disposal/placement at mine sites other than beneficial use; and conclusions. Among the conclusions drawn by the States were the following:

- approved beneficial use determinations by the States preclude the need for further waste regulation by EPA or OSM
- experience at the State level in implementing existing State and Federal laws substantiates the adequacy of the existing regulatory structure
- comprehensive Federal regulations will be difficult to implement from a nationwide perspective due to differences in regional geology, climate, ash composition and other factors; and
- State data and information supports these conclusions and are available for review.

Throughout the discussions on mine placement of CCB's, the States and Tribes have attempted to reflect the input and positions of the various departments and/or agencies within each State that have jurisdiction over this matter. This often includes the mining regulatory agencies within the Departments of Natural Resources or Environmental Protection; the solid waste regulatory agencies within the Departments of Environmental Protection or Environmental Quality or the Departments of Health; and the water quality regulatory agencies within the Departments of Environmental Protection or Environmental Quality. IMCC has also coordinated its efforts with the Association of State and Territorial Solid Waste Management Officials (ASTSWMO), which has been active for many years on this issue and has been working on guidelines for non-hazardous industrial waste management that may serve as a model for potential guidance in the CCB mine placement arena.

In preparation for the second State/Federal dialogue, the States requested that EPA make available for State and Tribal review two draft documents that the agency had been developing: "Regulation and Policy Concerning Mine Placement of Coal Combustion Waste in 26 States" and "Mine Placement of Coal Combustion Waste – State Program Elements Analysis." Copies of both draft documents were provided to the States in November of 2001 and are available from EPA. These documents provide a detailed overview of State regulations and policy (under both mining and solid waste programs) concerning CCB mine placement, with an emphasis on coal mines. The reports summarize the elements of existing State programs that are applicable to CCB mine placement, including administrative program elements (i.e. permitting and public participation); planning and enforcement program elements (i.e. reclamation plans, site characterization and restrictions, and special requirements related to acid mine drainage); waste characterization and monitoring program elements (i.e. required chemical analyses, ground water and surface water monitoring); design and operational program elements (i.e. groundwater table restrictions, compaction, interim cover, fugitive dust controls, and erosion/surface runoff controls); and closure and post-closure program elements (i.e. final cover, revegetation, financial assurance/bonding, and post-closure site utilization restrictions).

These reports by EPA are dynamic documents and their accuracy and completeness will change as States continue to provide information to the agency concerning current State regulatory program requirements. Since the initial release of the reports, several of the States, including some that were not represented in the early drafts of the reports, have provided updates,

clarifications and new information to EPA in an effort to improve the nature and usefulness of the reports. In addition, EPA is incorporating changes to the reports based on site visits and interviews that the agency is conducting in various States. In the final analysis, the States and Tribes are hopeful that these reports will assist all of the parties to the discussion in determining what the agreed-upon program elements should be for the regulation of mine placement of CCB's and how effectively the States and Tribes are currently implementing those elements. The need for additional national guidance or regulation should emerge from our continuing discussion of these reports.

The second State/Tribal/Federal meeting took place on November 14 and 15, 2001, in San Antonio, Texas. Among the topics discussed at the meeting were: an explanation and status report on EPA's Minefill Risk Assessment/Modeling (MRAM) Project and its relationship to EPA's Coal Ash Regulatory Program; a presentation on the State of Illinois' Data Management System for Mine Placement Activities; Review and Discussion of EPA's Draft Reports mentioned above; an overview of EPA's program of site visits and interviews with individual State agencies that regulate mine placement of CCB's; and review and discussion of the States' outline on coal ash management, including the topics of use of coal ash (beneficial use versus disposal); principles for beneficial use of coal ash; the effectiveness of existing State regulatory programs (both coal and noncoal); and interagency cooperation and coordination – both within the States and within the Federal government. A copy of the meeting notes is available at EPA's website, noted above.

The third meeting of State/Tribal/Federal government representatives was held April 15 and 16, 2002, in Golden, Colorado in conjunction with OSM's technical interactive forum on "Coal Combustion By-Products and Western Coal Mines." At that meeting, representatives received updates on the MRAM project; on EPA's State program reports; and on EPA's site visits. The State of Indiana provided an overview of its CCB database and how the State is using this data to effectively monitor and regulate mine placement of CCB's. EPA and OSM presented more detailed responses to the States' outline on coal ash management, which were helpful in informing the on-going debate and clarifying EPA's and OSM's positions and concerns. Finally, and perhaps most valuable to our on-going discussions, the participants spent time reviewing EPA's minefill regulatory concerns, primarily from a RCRA perspective. This discussion was most promising in terms of bridging the gap between how the States currently operate under their respective SMCRA and RCRA programs and what EPA is anticipating based on its understanding of those RCRA elements that it believes should be applicable to mine placement of CCB's. As the States attempt to continue informing the debate on these issues, we anticipate building on the good work that EPA has undertaken to date in its two state regulatory program reports and the valuable efforts OSM has made to articulate the SMCRA regulations that apply to CCB's. We have also focused on providing an analysis of what the states could do to supplement the current permitting information and data that we collect and analyze as part of our SMCRA or other non-coal programs by specifically addressing those RCRA elements that appear to be different or that require additional information or approaches.

Over the course of the State/Federal discussions, the States/Tribes have consistently articulated the following concerns to EPA and OSM, several of which remain to be addressed or resolved

within the context of continuing State/Tribal/Federal government debate:

- SMCRA appears to serve as an adequate and effective baseline for any type of regulatory analysis concerning mine placement of CCB's. In this regard, we see the SMCRA permit serving as the platform for CCB mine placement at coal mines. For non-coal mines, we believe that the existing State permitting framework, which is often RCRA-based, is adequate.
- it is essential to examine the effectiveness and comprehensiveness of existing State/Tribal programs before adding additional regulatory requirements.
- there is a need to coordinate among all applicable statutes/regulations that impact the regulation of mine placement of CCB's, including SMCRA, RCRA, the Clean Water Act and the Safe Drinking Water Act. There is a sense that many of the necessary regulatory requirements are already in place in the context of these statutes and their respective regulatory programs.
- there is an absolute need for flexibility to accommodate differences among the States related to geology, climate, ash characterization and agency operation.
- there needs to be consideration given to both coal and noncoal sites and the differences between them (possibly a segmented approach).

As an overall objective in the area of regulating mine placement of CCB's, the States are hoping to strike a balance between existing State regulatory program requirements and any gaps that may be defined and justified. To date, although there are differences among the States in the way they regulate mine placement of CCB's (in terms of sharing jurisdiction among several State agencies; relying primarily on the SMCRA program for mine placement at coal mines; and differentiating between beneficial use and classic disposal), there has been little evidence of major gaps that require filling through new national regulations under either SMCRA or RCRA. And in those States that do not have well defined programs for mine placement of CCB's, it is usually because they have not had to deal with its beneficial use or disposal within their borders. Even in those States, a comparison of their programs with States who actively regulate mine placement of CCB's demonstrates that most, if not all, of the program elements are in place and would likely operate effectively when needed.

The few areas within State programs that have been shown to need some degree of shoring up can best be addressed through intergovernmental discussions, such as are occurring at the present time. Through a benchmarking type of approach, States can identify areas in their programs that would benefit from fine tuning and this can be accomplished by patterning these areas after other State programs. If and when specific regulatory gaps are found to exist in a significant majority of State programs, then it would be appropriate to consider national guidance from EPA and/or OSM. However, all of EPA's program analyses to date do not yet justify the need for such guidance, and OSM has stated on numerous occasions that it believes State programs are adequate (at least as far as SMCRA programs for CCB mine placement at coal mines are concerned). Interestingly, in those States without SMCRA regulatory programs (i.e. the non-coal States), their solid waste programs tend to play a more active role from a regulatory perspective and these States have structured their RCRA programs to address mine placement of CCB's from coal mines that is used beneficially or disposed of within their borders.

The most recent State/Federal meeting occurred on October 29 and 30, 2002 in Williamsburg,

Virginia. This followed a States-only meeting which had been held in July in Reston, Virginia at which a working group of States spent two days discussing EPA's regulatory concerns document. The States agreed that the best response would be to address four key areas that capture the essence of the debate. To this end, the States prepared four draft working documents, copies of which are on EPA's website. They address several components of the minefill program. The first document is a regulatory matrix that attempts to capture the minimum SMCRA and RCRA regulatory components applicable to mine placement of CCBs at mine sites. While the States had originally contemplated including examples of State regulations as well, it is difficult to match up the exact State regulation numbers with both the SMCRA and RCRA citations, so it was decided this would be too cumbersome and unproductive, particularly without a detailed explanation of the interrelationship between the State and Federal programs. However, each State stands prepared to provide this analysis, and both Illinois and South Carolina have examples of how their respective SMCRA and RCRA program line up with their Federal counterparts. The second document is a table that lists the various beneficial uses of CCBs, both in terms of use, applicable industrial standards, environmental and practical benefits, and the applicable "regulatory safety net" (which consists of state and federal requirements that are potentially applicable to each beneficial use). The third working draft is a narrative and diagram description of applicable jurisdictional authorities with respect to CCBs placement and utilization at active and abandoned coal and noncoal sites. This document is intended to serve as a summary of the states' understanding of overall jurisdictional authorities and requirements. The fourth document is a summary description of the applicability and impact of minefill regulations associated with abandoned mine land projects and sites.

All of these documents are interrelated and should be read together. They not only respond to EPA's regulatory concerns document, but compliment the analysis that OSM has done in response to those same concerns. Furthermore, and most importantly, the States assert that these working draft documents provide the case for why existing State regulatory programs under both SMCRA and RCRA are adequate and comprehensive enough to insure the appropriate regulation of minefilling practices where CCR is used. Any expanded jurisdictional or regulatory authority proposed by EPA or OSM should be based on a thorough review and response to these documents.

Facilitated Stakeholders Meeting

Our most recent undertaking was the sponsorship of a facilitated stakeholders meeting on May 19 and 20 of this year in Washington, DC. Many of the groups represented on the panel here today were present at that meeting and provided overviews of their perspectives and concerns with regard to minefilling practices. A copy of the summary meeting notes from this meeting is available on EPA's website. From the States' perspective, we believe this was a productive sharing of information and further informed the debate about the need for Federal regulation in the area of minefilling. We believe that the information presented at the meeting supports our view that the States are doing an effective job of regulating in this area and that the need for additional or supplemental Federal regulation has not been adequately demonstrated. The meeting also provided an opportunity to focus on the handful of issues that may require additional enhancements in some State regulatory programs such as post-closure care and financial guarantees, each of which can be addressed at the State level without expansive new

federal rules. In many instances, it is not so much a matter of the States not having regulations to address these issues, but rather tailoring existing regulations to account for some of the nuances that attend concerns associated with minefilling, such as long-term treatment or care.

Looking to the Future

What does the future hold? From the States' perspective, we are hopeful that EPA and OSM will now move forward expeditiously with a jointly-developed position on the need for additional Federal regulation of minefill practices for coal combustion by-products. We believe that all of the information required by the two agencies to make this decision is in hand and that they are well poised to render that decision. As part of that decision, we anticipate that EPA and OSM may appropriately recommend that the States continue their on-going efforts to work cooperatively with both agencies to assess the effectiveness of their respective regulatory programs and make appropriate adjustments. Furthermore, we anticipate that the States will continue their benchmarking initiatives, which provide for the analyses and comparison of State program elements with the overall objective of enhancing their respective programs through the adoption of lessons learned during program implementation and the incorporation of innovative approaches. In the end, we believe that our citizenry and the environment will be well served by State regulatory programs that fully comply with applicable Federal laws and that reflect the results of the laboratories of invention inherent in State primacy. We also believe that an effective regulatory regime for the mine placement of coal combustion by-products will insure that there are effective and safe alternatives to classic land disposal while enhancing the reclamation of both active and abandoned mined lands.

Greg Conrad is the Executive Director of the Interstate Mining Compact Commission (IMCC), a multi-State governmental organization representing 20 mineral producing States, since 1988. He is responsible for overseeing issues of importance to the States in the legislative and regulatory arenas. Prior to joining IMCC, Greg served for nine years as senior counsel with the American Mining Congress, which is now part of the National Mining Association. Greg has spoken and presented papers at conferences hosted by such organizations as the Eastern Mineral Law Foundation, the Conference of Government Mining Attorneys, the Colorado School of Mines, the Office of Surface Mining, the National Mining Association, the Environmental Law Institute and State government groups. He has written extensively on mining issues for professional journals and magazines. Greg holds degrees from Michigan State University in business administration and from the University of Detroit, School of Law.

TEXAS REGULATIONS PROVIDE FOR BENEFICIAL REUSE OF COAL COMBUSTION ASH (CCA)

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Abstract

Historically, industrial wastes have been dealt with via disposal (e.g., landfilling, deep well injection, incineration, etc.). Early regulatory efforts were focused on the proper disposal of wastes. In recent years, the Commission has looked for alternative ways to manage wastes. The result has been an increased emphasis on source reduction, reuse, and recycling.

Beginning in 1995, the agency granted case-by-case exemptions from the definition of solid waste (DOSW) for materials applied to the land or used in products applied to the land provided they posed no significant threat to human health and the environment and were “co-products.” In 2001, the Commission formally amended its rules to add a self-implementing exemption to the DOSW for such activities if they met specific criteria (e.g., legitimate market, protected from loss, quality of the product is not degraded by substitution, use is “ordinary,” not burned for energy recovery, use is “as generated” w/o treatment or reclamation, no increased risk to human health or environment or waters in the State). Examples – CCA used in concrete, concrete products, cement/fly ash blends, lightweight and concrete aggregate, soil cement, road construction materials, blasting grit, roofing material, insulation material, wall board/sheet rock, mineral filler, masonry, waste stabilization, and solidification.

Under State law, DOSW does not include man-made solid materials used as fill to make land suitable for the construction of surface improvements. Therefore, Class 3 CCA used as minefill under these conditions does not trigger waste regulations.

The Texas Regulatory Approach to Disposal and Reuse of CCBs

I have been asked to talk about the Texas regulatory approach in terms of wastes and the reuse of materials. In order to really understand how this is regulated in Texas, you would need to start with the definitions of solid waste. Since this would require at least a one hour lecture, I will sidestep that process and make two points. First, just because a material is generated at an industrial site doesn't necessarily make it a waste. Second, Texas has a very robust waste characterization requirement. The Texas laws and regulations are available on the Internet.

The key law concerning solid waste in Texas is “Texas Health and Safety Code Chapter 361.” The key regulations on industrial and hazardous wastes can be found in Title 30 Texas Administrative Code Chapter 335. With respect to the waste characterization requirements, if you generate municipal, hazardous, or industrial wastes in the State of Texas you are obligated to decide whether or not it is a hazardous waste as defined by the Federal regulations or if you have a Class I, II, or III industrial solid waste. Class I is the category under hazardous wastes that we are most concerned about if they are mismanaged. Class III tends to be inert. Class II are those

wastes not defined as Class I or III. Understanding that fly ash can vary depending upon where it is generated in the combustion process, most of the ash in Texas tends to fall into Class II or III when it is disposed. The differences between Class II and III fly ashes tends to be that Class II will leach more total dissolved solids and select metals than Class III.

Historically, Texas has managed wastes through disposal. As a result, we have focused most of our regulations on wastes and waste management. In the mid to late 1990s, we began to look for alternatives to waste disposal. We have been looking for opportunities to reduce waste streams at the source and have the ability to reuse and recycle these materials. It is going to be difficult to reduce the volume of fly ash at the source. Texas gets 50 percent of its electricity from coal. In addition, air conditioning in Texas is not a luxury. When you look at the heat related deaths without power versus the cold related deaths you will understand why.

With respect to the reuse opportunities that we began in the 1990s, the agency began an industry wide project where we had the industry come in with all of their data which was then technically analyzed. We looked at the characteristics of the materials and looked for opportunities for reutilization. That led to the development of criteria that we have subsequently codified into our definitions of solid waste. These represent exemptions from the solid waste definition. These criteria include: the material must have a legitimate market either for the material as is or as it exists as a product; the material must be protected from loss as you would any important ingredient or raw material; the quality of the product can not be degraded by the use of the material; it must be an ordinary use; the use must be without treatment or without reclamation; it can be used as a product or as it is used to produce a product; it must not present an increased risk to the human health or the environment as it is applied to the land; the material may not be burned for energy recovery; no more than 25 percent of the material may be accumulated in any one year unless you have a silo and it is protected from loss, in which case you can go for 2 years. Some of the products that have come out of this project are concrete, concrete products, cement/fly ash blends, lightweight and concrete aggregate, soil cement, road construction materials, blasting grit, roofing material, insulation material, wall board/sheet rock, artificial reefs, mineral filler, masonry, waste stabilization, and solidification.

There is another nuance to Texas law in that our Class III materials are basically inert. Under this law, soil, dirt, rock, sand and other man-made inert solid materials used to fill land, if the objective of the fill is to make the land suitable for the construction of surface improvements, is not considered a solid waste. Therefore, the building of a road with Class III materials is an activity that is not regulated as a solid waste activity. In fact, our Texas Department of Transportation has developed specifications in particular for the use of coal ash in road construction.

Susan Ferguson manages the Policy Section of the Policy and Regulations Division of the Texas Commission on Environmental Quality. Her responsibilities include developing the implementation strategy for and tracking progress on bills passed by the Texas Legislature, coordinating position letters on national issues, managing the Commissioner's Work Sessions (where staff may discuss and receive guidance on specific policy issues) and participating in environmental issues at a national level. Susi has worked for the Commission and its

predecessor agencies for over 25 years. She began as an inspector in the Texas Water Quality Board's district office in Orange, Texas, in 1976 and has worked her way up in the ranks. She has an extensive knowledge of the State and Federal environmental regulations and has worked for the Commission in a variety of areas including inspection, enforcement, superfund, financial assurance, program support, management of the hazardous and industrial solid waste program and the development of environmental policies and regulations. She maintains a close working relationship with her counterparts at the Environmental Protection Agency and other State agencies. She has worked on several Federal Advisory Committees concerning environmental matters in general and is a nationally recognized expert on hazardous waste topics in particular. She holds a B.S. in Biology from Baylor University in Waco, Texas.

THE SURFACE MINING CONTROL AND RECLAMATION ACT: A RESPONSE TO CONCERNS ABOUT PLACEMENT OF COAL COMBUSTION BY-PRODUCTS (CCBs) AT COAL MINE SITES

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Abstract

The U.S. DOI, Office of Surface Mining (OSM) was created in 1977 as part of the Surface Mining Control and Reclamation Act (SMCRA) to provide minimum levels of protection concerning public health, safety, and the environment and balance this with the need for a viable U.S. coal supply. Currently, there are less than 2 percent of the CCBs that are produced in the U.S. that are placed back at less than 2 percent of the coal mine sites where they originated. Most of the uses to date have been extensively researched. This research indicates that the placement of these materials on the mine site usually results in a beneficial impact to human health and the environment when it is used to mitigate other existing potential mining hazards. It can also be used to improve the economics of mining when used as a non-toxic fill within the spoil area prior to grading and final reclamation.

This paper will attempt to provide a response to criticism that SMCRA programs are not adequate to protect public health and the environment when CCBs are placed at a SMCRA permitted mine site.

Background

The Office of Surface Mining has a very specific area of responsibility that I will speak to concerning the use of Coal Combustion By-Products which is when these materials are placed at a mine site 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.

There are two organizations that keep track of the volume of CCBs that being placed at mine sites. According to the American Coal Ash Association survey (representing 65% of the U.S. coal ash production); in 2001 the total production of these materials was 107 million metric tons of non FBC material. Of that total, 31 percent was recycled as commercial products and 1.55 million metric tons or 1.4 percent was placed at mines sites. The remaining 72.3 million metric tons or 69 percent was placed in surface impoundments of landfills under the control of the electric utility industry. According to the Anthracite Region Industrial Power Producer Association 100% of its 5.1 million tons per year of Fluidized Bed Combustion Ash is used to

reclaim abandoned mine lands (total of 3,400 acres in Pennsylvania) while eliminating 88 million tons of acid coal refuse. Concerning the location of CCB placement at coal mine sites, there was a survey done in 2001 by Dr. Ishwar Murarka where he found that about 1 percent, or 100 out of the approximately 9650 coal mine sites, were using CCB placement in 17 of the 26 coal mining States.

Comparison of RCRA to SMCRA

Over the last few years, OSM has been having extensive discussions with EPA on what the requirements of the Resources Conservation and Recovery Act (RCRA) are in comparison the requirements of SMCRA in terms of protecting the public health and the environment related to land placement of CCBs. We have done side-by-sides and other comparisons of the different regulatory programs. Based on these comparisons, we can say that SMCRA is very different from RCRA. RCRA is very prescriptive and design oriented. The goal is for all land fills to look and perform in a very similar manner. SMCRA on the other hand is performance based. SMCRA prohibits the pollution of the air and the water and requires the restoration of the land capability and the vegetation for its intended uses. The goal is for the land and water to be useful for the same uses after mining and reclamation as it was capable of prior to mining. As a part of the SMCRA program, each individual State is expected to come up with a specific regulatory program that is sensitive to the unique geology, geography, climate, soils, vegetation, and mining and reclamation techniques that are found in that State that will achieve the same levels of protection of the public health and environment as provided by SMCRA.

It is important to keep in mind that there are no exemptions from any of the performance standards of SMCRA concerning CCB placement at coal mines. Every SMCRA mining permit requires extensive documentation and analysis of the existing natural resources at the mine site. Specific mining and reclamation plans are required that must meet minimum levels of environmental protection. Monitoring must be based on the site specific conditions. Final reclamation liability can only be released based on the achievement of all of the required performance standards.

Conclusion

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 coal mine sites 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 mine sites. It is my assessment of the 20+ years of research on the subject to date that the placement of these materials on SMCRA mine sites 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. To date, I am unaware of any scientific evidence of any damage to public health or the environment due to placement of CCBs at SMCRA mine sites. Based on the side-by-side comparison of the regulatory protections provided by SMCRA in comparison to RCRA it is my assessment that when SMCRA is properly applied and enforced it is adequate to protect the

public health and the environment. Any additional Federal regulation of CCB placement at SMCRA mine sites, however, should be based on sound scientific evidence that the existing regulatory framework is not adequate.

Kimery Vories is a Natural Resource Specialist with the Office of Surface Mining since 1987. He is chairperson of several multi-agency, multi-interest group steering committees that hold forums, publish proceedings, and manage Internet Websites on mining and reclamation issues related to the technical aspects of Coal Combustion By-Products, Prime Farmland Reclamation, Bat Conservation and Mining, and Reforestation. He has been professionally employed in coal mining and reclamation since 1979 with over 40 related professional publications. He serves on: (1) the National Steering Committee for the Combustion By-Products Recycling Consortium; and (2) the Technical Program Committee of the International Ash Utilization Symposium at the University of Kentucky. He holds a BA & MA in Biology/Geology from Western State College of Colorado with an additional 3 years Post MA Graduate work in Ecology and Reclamation at the University of Massachusetts and Colorado State University.

APPENDIX 1: RECORDED DISCUSSIONS

Edited by
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The following are the edited discussions that took place during the panel discussion. The actual comments have been edited to translate the verbal discussion into a format that more effectively and efficiently communicates the information exchange into a written format. A topical outline has been developed to aid in accessing the information brought out in the discussions. The topic of each question is shown in alphabetical order in **bold**.

GOVERNMENT/REGULATORY PANEL DISCUSSION TOPICS

DISCUSSION TOPICS

Best Leachate Tests for CCBs
Climate Change Agreement
Consensus Standards to Protect Public Health
Evidence of Groundwater Contamination at Freetown, MA
Permitting Requirements
Potential Damage Case at New Mexico Mine Mouth Power Plant
State Regulatory Gaps

INTERACTIVE DISCUSSION

Question: (**Best Leachate Tests for CCBs**) There has been a long and vigorous debate on what the best test or tests would be to characterize potential leachate from CCBs. Does anyone on the panel have any idea on what the best test or tests might be?

Answer: The one area that most everyone is in agreement on is that the TCLP is not a good test for this purpose.

Answer: The TCLP is a test that was designed for sanitary land fill co-disposal. If you have site where acetic acid is going to come in contact with the CCBs being placed at the site then the TCLP would be appropriate.

Answer: For the Texas solid waste program, we use a series of tests. It is not a single evaluation. We do use TCLP for hazardous waste determinations and to look at another 140 parameters and where they fall out on our Class I scenario. We look at elements of ignitability and corrosivity. For Class III inert, we use a seven day distilled water test to give us an idea of what would happen in a more neutral condition. It is the combination of these different evaluations that helps us characterize those materials.

Comment: I do not think it is an appropriate question to ask whether or not TCLP is the right or

wrong test. The first question should be what is the purpose of the test? If you are talking about placement of CCBs in mines your purpose and the tests that are appropriate are different than placement in a landfill. Characterization tests have to be appropriate both for the material being tested and the hydrogeologic setting in which it is being placed.

Question: (Climate Change Agreement) Why is the U.S. not a signatory to the Kyoto Climate Change Agreement?

Answer: The current administration came out two years ago with the Climate Change Initiative. The premise of this initiative is for the U.S. to reduce their emissions of CO₂ on a voluntary basis. DOE has a \$50 million a year program to control emissions of CO₂ from power plants. In the U.S., most of our power from coal comes from pulverized coal boilers that make it very difficult to capture CO₂. In the future, it looks like the best way to capture CO₂ is from coal gasifiers. There are only two working facilities of this type in the country. There is a presidential initiative at DOE called Future Gen that is a \$10 billion program to build the first U.S. coal burning power plant that will be completely emission free, including CO₂. The CO₂ would be captured at the plant and stored geologically. My personal opinion is that the U.S. is a long ways away from CO₂ control. We are currently concerned with what the control of Mercury is going to do to the cost of electricity. In my opinion, the cost of controlling CO₂ will make Mercury control look easy.

Answer: The Utility Industry has responded to the President's challenge to develop voluntary initiatives to help address green house gas emissions, not just CO₂. The industry is involved with sequestration projects with trees as well as supporting research on geologic sequestration. Some utilities are involved in the Chicago Climate Exchange that is trading on a commodity basis for CO₂ reductions. Another voluntary effort is the C2P2 program initiated by EPA that promotes the marketing of more CCPs in order to reduce the production of green house gases.

Answer: One of the things that EPA is looking into is how to use more CCPs in concrete so that we can reduce the energy it takes to produce Portland cement.

Answer: I would like to respond to USWAG's comments concerning voluntary controls. Voluntary controls of CO₂ emissions and control of power plant waste have been proposed both by the administration and industry. It is my position that there will be harm to human health and the environment related to both issues until the Federal government steps up to plate.

Answer: The cost effective technology does not yet exist to control CO₂ emission.

Question: (Consensus Standards to Protect Public Health) Concerning setbacks and construction fills being within the ground water table, how would consensus standards like recent ASTM standards for using coal ash in structural fills address public concerns for protecting human health?

Answer: EPA has articulated that they don't want to put in place any regulations that would affect beneficial use of CCPs except for possibly mine placement. There are ASTM standards for the use of CCPs in structural fills that contains within in it a lot of engineering and analytical

requirements as well as placement requirements. I am not sure if there are specific requirements for setbacks. I know that there is general language with regard to protecting ground water and surface water or as a mine placement for AMD or subsidence control. Other standards are being developed by ASTM that would be consistent with State regulations and would not lead to environmental degradation.

Answer: Given the serious contamination that the Clean Air Task Force found in Pines Indiana, there is a lack of data on whether the application of CCW in structural fill and roads has caused other damage that we don't know about. I would like to see better data on such sites that has been done by the Federal or State governments. As to whether or not standards by ASTM would be sufficient in relation to placement of CCW in contact with ground water, it is my position that we need Federal regulations to cover that due to the damage cases we have already seen. Additional guidelines would not be sufficient.

Question: (Evidence of Groundwater Contamination at Freetown, MA) Concerning the Copecut Site land fill in Freetown Massachusetts illustrated in the talk by the Clean Air Task Force, the owner of the site had written approval from the Massachusetts DEP to use it as a structural fill site. In that plan, it outlined how it was to be filled and that buildings would be built on the site. There were ground water monitoring wells placed at the site and the data I have seen shows no indication of any impact to ground water. What data for that site warranted stopping the placement of coal ash at that site?

Answer: In Freetown Massachusetts, there were two sites of concern to the community. One was a monofill of CCW and the other was the Copecut Road sand and gravel pit. The monitoring wells from the monofill site showed groundwater contamination that would have made any drinking water wells down gradient from the second site undrinkable, although I do not remember for which parameters. If the ground water monitoring at the Copecut site did not show contamination now, it could be for two reasons. One, I do not know what the quantity of waste that was placed there prior to the site being shut down. The second and more important reason is that at all of the sites we have looked at it takes many years for the contamination to leach out of the PPW and show up in the monitoring wells. Just because no contamination has shown up within two years of placement is not an indication to me that no contamination will take place or that the residents of Freetown did the wrong thing by making a prohibition to use this material as fill. Massachusetts regulators have their hands tied because they do not have the authority to place restrictions on a structural fill. The Massachusetts Department of Environmental Protection and the Governor are backing an amendment to the statute to place certain conditions on structural fill that would prohibit the placement of PPW in contact with ground water.

Question: (Permitting Requirements) There are a few new mine mouth power plants being built this decade. What specific plans will the power plants have to submit regarding CCP utilization? Are there special requirements they will have to meet?

Answer: If they are going to place the CCBs that are generated at the power plant back at the mine site, they will have to come up with a specific reclamation plan, analyze the specific materials being placed at the mine site in terms of its suitability for where and how it is being

placed in terms of its potential to impact the hydrogeology and incorporate this information in the SMCRA permit application. They will have to submit a detailed Probable Hydrologic Consequences analysis. The State regulatory authority will have to complete a comprehensive Cumulative Hydrologic Impact Assessment. They will have to provide adequate assurances that this activity will not cause a problem to ground or surface water or cause a problem with the post-mining land use or vegetation.

Answer: In Illinois, the permittee would also have to get joint approval with Illinois EPA.

Question: (Potential Damage Case at New Mexico Mine Mouth Power Plant) The Clean Air Task Force has presented evidence of a damage case at the San Juan coal mine in New Mexico. I would like to know if OSM is familiar with this case and whether or not it would be considered a damage case?

Answer: At this point, OSM has not been given adequate data as to the nature or location of the concern so that we could adequately investigate this, assuming that the concern has been identified as the responsibility of a SMCRA mine site.

Questions: (State Regulatory Gaps) Greg Conrad has mentioned that he feels there are very few regulatory gaps in existing State programs. It takes a long time for many mine sites to re-saturate and these materials are sometimes placed in contact with the ground water. The States and Federal regulatory authorities have admitted that the RCRA TCLP leachate method is not adequate to characterize the potential for a CCB to produce toxic leachate at a mine site. Wouldn't you consider the lack of long term monitoring, corrective action, accurate leachate prediction tests, and financial assurance requirements similar to what is found in RCRA a regulatory gap requiring strong Federal oversight?

Answer: The States have identified all the areas you have mentioned and discussed and analyzed them at length. The leachate tests that are currently being used are an area we have been investigating. We realize that more effective test methods may be available that would be more effective. Looking at the areas of closure and post closure care, long term treatment, impacts, and bonding or financial assurance we find unique challenges in terms of matching SMCRA and RCRA requirements. In our discussions with EPA, this would likely be an area where some of the States may need to bolster their programs. We do agree, however, that the regulatory framework is already in place in order to address these areas in existing State programs under SMCRA in the coal States and under RCRA in the non-coal States. IMCC has been trying to get a handle on just how much more the States need to do. We know that bonding is a particular challenge. Reclamation bonding does not fit long term treatment well. The bonding requirements under SMCRA were never intended to cover a long term treatment. IMCC is looking at other mechanisms that could be used to handle long term treatment scenarios.