

# Session 2

## Regulatory Perspectives

Session Chairperson:

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Illinois Office of Mines and Minerals

Springfield, Illinois

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*Christina L. Archer, Howard and Howard Attorneys, Peoria, Illinois*

# U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)/ FOSSIL FUEL COMBUSTION: A HAZARDOUS WASTE DETERMINATION

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*Editor's Note: Mr. Wittner represented the Environmental Protection Agency at the meeting and had no prepared remarks. He spoke to the status of the rule making process at the time of the meeting. Due to the timing of the EPA rule making and the last minute effort by Mr. Wittner to very graciously address EPA concerns to the participants at the time of the forum, his actual remarks are not recorded in the proceedings.*

## Abstract

The Resource Conservation and Recovery Act (RCRA) section 3001(b)(3) exempts fossil fuel combustion wastes from regulation under RCRA subtitle C (Hazardous Waste), pending completion of a Report to Congress and a subsequent determination of whether such regulation is warranted. In RCRA section 8002(n), Congress directed EPA to conduct a detailed and comprehensive study based on eight study factors and submit a Report to Congress on "the adverse effects on human health and the environment, if any, of the disposal and utilization of fossil fuel combustion wastes." RCRA section 3001(b)(3)(C) then requires that EPA determine either to promulgate regulations for fossil fuel combustion wastes under subtitle C or determine that subtitle C regulation is unwarranted.

The study was conducted in two phases. Part 1 covered electric utility generated high volume coal combustion wastes managed separately (58 FR 42466, August 9, 1993). These wastes include fly ash, bottom ash, boiler slag, and flue gas desulfurization sludge. Part 2 covers all other fossil fuel wastes, including high volume wastes co-managed with associated utility wastes and wastes from combustion of oil and gas. The study factors included:

- Sources and Volumes of Material
- Present Disposal and Use Practices
- Potential Danger
- Documented Cases of Danger to Human Health and the Environment
- Alternatives to Current Disposal Methods
- Costs of Alternatives
- Impact of Alternatives on Use of Coal
- Current and Potential Use of Materials

The presentation summarizes the EPA findings based on the above study results specifically related to the use and disposal of fossil fuel combustion materials on both active and abandoned mine sites.

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<sup>1</sup>Andrew Wittner represented EPA at the meeting and had no prepared remarks. He spoke to the status of the rule making process at time of the meeting. Mr. Wittner has continuing responsibility for the risk assessment and economic analysis associated with the current fossil fuel combustion rule making. He managed both the groundwater and above ground risk analyses, the costing of risk mitigation alternatives and the industry economic analyses. Mr. Wittner has degrees from Cornell and Columbia Universities and additional post graduate study in economics, engineering, and operations research.

# **THE EVOLUTION AND DEVELOPMENT OF INDIANA'S PROGRAM TO REGULATE THE DISPOSAL OF COAL COMBUSTION MATERIALS AT SURFACE COAL MINES**

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## **Abstract**

The State of Indiana is the second largest producer of coal combustion materials (CCM) in the nation. Producing an estimated 6 to 7 million of CCMs annually, viable alternatives as to how best to deal with this material has been an issue of significant concern. With the passage of Public Law 103 in 1988, Indiana embarked upon the path of providing an alternate mechanism for the disposal of CCM. The legislature envisioned that disposal at surface coal mines presented a cost effective and environmentally protective alternative to the existing solid waste landfill approach to disposal and storage. However, since the law's passage, there has been little, if any, agreement or peace concerning the CCM disposal debate between the primary stakeholders. Since the law's passage more than ten years ago, only a very limited tonnage of CCMs produced in the State has actually been placed at mines. Despite this fact, litigation has been extensive. At the time of this writing, the Indiana Department of Natural Resources (IDNR) is attempting to finalize specific regulations for the disposal of CCMs at surface coal mines. The years spent getting to this point have been long and litigious. It is questionable whether the establishment of final rules will at long last put an end to the litigation. Probably, the new rules, when finalized, will themselves be the subject of their own litigation. This paper will discuss the evolution of this issue as it developed in Indiana. From what we know and what we have learned in the State of Indiana, others may find our experience beneficial.

## **Background**

The State of Indiana, after Texas, is the largest producer of coal combustion materials (CCM) in the nation. The quantity of CCMs produced is directly related to the fact that 98 percent of all the State's electrical generation comes from the burning of coal. Indiana's dependence on coal fired utilities for electrical production is the highest in the nation. In an attempt to level the playing field for Indiana coal operators in competition with low sulphur Western coals caused by expanding clean air limitations, the Indiana General Assembly intervened to provide legislative relief. Indiana utilities were seeking a cost-effective alternative to current methods of CCM disposal and storage just as expanded use of clean coal technologies was causing a corresponding increase in the quantity of CCMs produced. With CCM production in the State estimated at six to seven million tons annually, the question of how best to manage this issue has been no small task. More recently, it has become the subject of a considerable public policy debate within the State.

In 1988, in response to a 1987 recommendation from the Governor appointed Indiana Coal Commission, the Indiana General Assembly passed Public Law 103. An uncomplicated piece of legislation, the new law simply exempted CCM disposal from solid waste regulations administered by the Indiana Department of Environmental Management (IDEM) when disposal occurred at surface coal mines regulated by the Indiana Department of Natural Resources (IDNR) under the Surface Mining Control and Reclamation Act (SMCRA). The underlying rationale behind the switch in authority to regulate CCMs was that, for a material that with few exceptions is nonhazardous, existing solid waste requirements associated with normal landfill regulations were viewed to be excessive. The view was that disposal of CCMs in the volumes being generated was an unwise use of otherwise precious landfill space. Supporters also advanced additional arguments that massive storage cells and holding impoundments located near the power plants was not necessarily the best location for placement of these materials. Moreover, neither was it

considered a wise use of land, as the expansion of these holding cells continued to take up ever increasing amounts of otherwise productive land. In Indiana, characteristically most power plants are found in floodplain areas immediately adjacent to rivers and lakes. These alluvial areas can often be highly favorable hydrological environments to the conductance of pollutants through the groundwater. To some, disposing of CCMs seemed logical. In a hydrologic environment already disturbed by surface coal mining, the groundwater was typically highly mineralized. There also seemed to be a sort of symbiotic logic in returning these burned coal residues to their place of origin. As we have learned, this choice was not so logical or wise to others.

With the passage of Public Law 103-88 IDNR in the late 1980s and early 1990s, Indiana made several attempts at administrative rule making. None of these attempts met with any measure of success. The Natural Resources Commission (NRC), which serves as IDNR's policy making body overseeing the agency's programs, held hearings on proposed CCM disposal regulation. Unfortunately, the hearings were highly contentious. Representatives from both the coal industry and the electrical utilities claimed that the early draft versions of the rules proposed by IDNR were far too stringent. Opponents to CCM disposal at surface coal mines claimed them to be not strict enough. A review of several of these early drafts revealed that they were based largely on the State's existing solid waste disposal regulations administered by IDEM. Proponents of CCM disposal at surface coal mines argued that the intention of the law was not simply to replicate the existing solid waste rules and have it administered by another agency, but to develop a new disposal approach. It was argued that CCM disposal at mines could make maximum utility of the unique environmental setting created by the activity of surface coal mining. Moreover, it was felt that, due to the mining regulatory agency's full understanding of the surface mining environment, they would be better prepared to deal with CCM disposal at mines than a solid waste regulatory agency.

To resolve the issue, an attempt was made to get the various multi-interest stakeholders together to agree on an approach to regulate CCM disposal. As a result, a group was created among the stakeholders that agreed to have the University of North Dakota (UND) conduct a study to characterize Indiana CCMs. The group also agreed on how to conduct the study and what parameters to examine. The UND report was to serve as basis for determining what level of risk CCM presented to the environment. It was hoped that corresponding regulations could be developed commensurate to the degree of risk.

Unfortunately, the completion of the UND report itself was contentious. To a varying extent, each party used the study to declare that its case, for or against disposal at coal mines, had been proven. With the breakdown of further progress toward a solution, IDNR acted unilaterally to get the program moving. Using the UND study as support for the initiative, IDNR approached the NRC with a suggested solution that would avoid the need for drafting specific CCM disposal regulations. It was IDNR's position that current SMCRA rules regulating surface mines were by themselves adequate to accommodate CCM disposal and protect the environment. To that end, IDNR drafted "Memorandum 92-1" as a policy guidance document instructing applicants for CCM disposal what they must do to secure permit approval and comply with existing SMCRA law and regulations. After more than four years since the passage of Public Law 103-88 authorizing CCM disposal at surface mines with no end in sight to the debate, the NRC approved IDNR's Memo 92-1 as Indiana's CCM disposal program.

### **Indiana Program Requirements**

Among other requirements, the highlights of Memo 92-1 include: 1) a characterization of the disposal sites hydrogeologic setting (pre- and post-mining and disposal); 2) a qualitative and quantitative analysis of the effects of CCM placement within that setting; and 3) waste characterization determined through bulk, 18-hour, and 30-day neutral leachate analysis in compliance with ASTM (D3987-85) standards. CCMs are analyzed for 22 different constituents, including all eight RCRA metals, plus pH, potential acidity, neutralization potential, and net neutralization potential. Memo 92-1 also carries with it the proviso that any CCM leachate result that exceeded 25 percent of the limit for any RCRA element would be rejected for disposal. All sources of CCM proposed for disposal will be subject to these tests and the requirement to representatively sample and analyze each active waste stream quarterly.

Other factors considered in IDNR's review included: 1) proximity to public and private water supplies; 2) maximum possible concentrations of constituents; 3) site characteristics such as type and extent of aquifers; 4) spoil

characteristics; 5) expected influences of attenuation, dispersion, and dilution; 6) direction of groundwater flow; 7) volume proposed for disposal; and 8) baseline water quality and quantity data. Plans also are required to include: 1) provisions for handling and placement of CCM during disposal; 2) control of dust; and 3) plans for final reclamation and groundwater monitoring both during and after the completion of disposal activities through final SMCRA bond release.

## **CCM Litigation Status**

Since approval by the NRC in April 1992, IDNR has received a total of 18 permit applications for CCM disposal. Under the Memo 92-1 regulatory approach, IDNR issued its first permit in May 1994. Subsequently, of the 18 applications received, 14 have been approved, three applications were withdrawn and one is currently pending. Of the 14 approved permits, one was withdrawn after approval and eight are currently pending administrative appeals. At present, there are seven surface coal mine sites actively disposing of CCM, two of them coming online as of January 2000. One approved permit that had been actively disposing of CCMs has now officially terminated disposal. Through the last quarter of 1999, approximately 1.9 million tons of CCM have been disposed of at Indiana surface coal mines. Approximately 70 percent of all disposal or 1.34 million tons have been placed at one site, Peabody Universal Mine as permitted for disposal by PSI-Cinergy utility corporation. Disposal activities could best be described as intermittent.

Of the 14 issued permits, 11 have been subject to some form of legal challenge. All legal challenges have been filed by an umbrella environmental group, the Hoosier Environmental Council (HEC). Some challenges filed by HEC have included individually named adjacent landowners aligned with HEC as objecting parties. Only three permits of the 11 challenged have completed the administrative appeal process. There currently are no permits pending appealed to the Indiana Circuit Courts for judicial review. None of the remaining eight issued disposal permits with administrative appeals currently pending have been stayed from disposing. Therefore, all are legally eligible to accept CCM for disposal subject to the eventual conclusion of the administrative appeals. Of those eight permits only two are actively disposing of CCM.

Of the three permits that completed the administrative appeal process, the first completed the process with no changes to the permit. Active CCM disposal is currently taking place at this mine. The second permit, however, did not pass through the process unchanged and was subject to additional conditions imposed by the Administrative Law Judge (ALJ). As conditioned, the ALJ reduced the amount of CCM disposal that IDNR had approved in the permit by 75 percent. The initial permit approved the disposal of approximately 7.0 million tons of CCMs over the permit term. The IDNR approved plan proposed a 1:1 ratio of tons of coal mined to tons of CCM disposed. In limiting CCM disposal by 75 percent, or one quarter of the coal removed, the ALJ found that this ratio represented approximately the amount of CCM produced by the coal mined under the permit. The ALJ further ruled the 25 percent figure represented approximately the same amounts of RCRA elements returned to the mine site as originally present in the coal.

The ALJ further conditioned the permit to require a disclosure affidavit filed in the County Recorder's office providing a legal description of land parcels where CCM disposal occurred. An additional requirement also was imposed requiring the full recharge of groundwater, as determined by monitoring wells, before the release of final SMCRA bonds. Highly controversial, all parties appealed the ALJ's decision to the NRC, including IDNR. In administrative appeals, the NRC serves as the final arbiter in permit dispute cases. As a result of the appeal, the NRC modified the ALJ's decision by doubling the disposal limit to 50 percent of the coal mined by the permittee. This tonnage increase, however, represented a reduction of 50 percent from the original tonnage approved by IDNR. The NRC otherwise maintained all other ALJ imposed conditions on the permit.

Following the NRC's final administrative determination, both the coal operator and the Hoosier Environmental Council filed for judicial review. On September 13, 1999, the Daviess County Indiana Circuit Court ruled to uphold the NRC's decision to issue the permit, as conditioned, on all points. Of major significance, however, while upholding NRC and essentially most of the ALJ's decision, the Court found that many of the ALJ's findings were "confusing." The Court noted that while the findings of the ALJ appearing to suggest possibilities of "environmental degradation owing to CCM disposal," "... there was evidence and even other ALJ findings to the

contrary.” The Court also determined that the ALJ improperly considered some of the evidence and testimony upon which those findings were based. IDNR found the Court’s clean up of the ALJ’s contradictory findings and use of evidence extremely helpful in providing future program guidance. The Circuit Court decision was not appealed by any of the parties. Coal combustion materials are currently being disposed at the mine.

The obvious fallout due to legal challenges filed on most of Indiana’s CCM permits has been to complicate an already complex and lengthy permitting process. Since the issuance of the first permit in May 1994, Indiana has produced approximately 42 million tons of CCMs. In contrast, only about 1.9 million tons or about 4.5 percent of what has been produced has been placed at coal mines. While no projections have ever been done to estimate the tonnage expected to be returned to mines, the amount would undoubtedly be higher without the litigation. Despite the litigation, however, more practical economic factors such as 1) transportation costs related to haulage distance and handling expenses, 2) increasingly viable and profitable recycling initiatives, and 3) other disposal options, serve to inhibit CCM disposal at mines. Realistically, it is unlikely that more than two to three million tons per year would be placed at Indiana surface coal mines due to these economic limitations. Litigation and the controversy, deserved or otherwise, raised by the opponents of CCM disposal also has served as an effective constraint to disposal below levels otherwise anticipated.

### **Basis of Opposition**

The arguments brought forward by the opponents of CCM disposal have been many and varied. One of the underlying philosophies is that CCM is classified as a solid waste and is best left to the regulation of the agency responsible for solid waste disposal in the State (the Indiana Department of Environmental Management or IDEM). Opponents have argued that, based on the legal precept of “equal protection under the law,” it is not equal to have CCM disposed of in a non-mining location subject to one set of rules while disposal at coal mines is subject to a different set. They assert that this “double standard” is less protective of citizens living in the coalfields than those living near landfills.

Opponents also have made arguments that the requirements of the program itself, as expressed in Memo 92-1 as a “non-rule policy,” are not enforceable and are therefore not protective. Criticism was made that CCMs also were not being properly characterized. The leachate medium of distilled water, pursuant to ASTM standards, was improper. Testimony given at the administrative hearings by experts representing the opponents of CCM disposal advocated that TCLP was the only correct method to properly determine the degree a waste may be a danger to the environment. The CCM disposal opponents also wanted the list of constituents tested to include a quantification of radio nuclides and polyaromatic hydrocarbons (PAH) as possible mutagens and carcinogens. An article written by Alex Gabbard of the U.S. Department of Energy’s Oak Ridge National Laboratory, alleging that CCMs could be used to extract sufficient quantities of weapons grade plutonium, was touted as proof of the nuclear danger. Informational bulletins distributed by CCM disposal opponents contained such quotations from Gabbard’s article as “significant quantities of fissionable material . . .” and “potentially employable as weapon fuel by any organization so inclined.” At public hearings held on CCM disposal, citizens’ stated that they did not wish to live adjacent to “a weapons grade nuclear facility.” Others expressed fear over the potential for radioactive CCMs from “hot” Colorado coals finding their way into Indiana for disposal.

Opponents also have attacked the Indiana program under the allegation that its regulation of CCM disposal was far weaker in comparison to its neighboring states of Illinois, Kentucky, and Ohio. This allegation fed a corollary allegation that, because Indiana’s program was lax, it would inundate the State with as much as 200 millions tons of CCMs over the next five years, most coming from “out-of-State.” The argument played upon recent emotional battles fought within the State over the import of out-of-State garbage into Indiana landfills. This concern was raised despite the fact Memo 92-1 strictly limits the disposal of out-of-State CCMs to materials generated from the burning of Indiana coal. Pursuant to Memo 92-1, CCM from out-of-State sources may equal an amount no more than the tonnage of CCM generated from exported Indiana coal. As the State exports only about four million tons annually, the return of CCMs from those same out-of-State sources would not exceed one million tons at most. These facts, however, have not been sufficient to quell the specter of out-of-State CCM for some and it continues to be raised as a basis to criticize the agency.

Opponents of the Indiana disposal program frequently use the fact that program tests run on these materials produce a leachate that exceeds U.S. EPA's primary drinking water standards for a variety of one or more test constituents as proof that CCM is dangerous. Information also is distributed to the public with descriptions of how the various constituents such as lead, mercury, arsenic, cadmium, and others can affect human health and biota. They also frequently reference U.S. EPA's February 1988 "Report to Congress" as evidence of the pervasive nature of groundwater contamination from improper CCM disposal. Together CCM opponents have used these issues to justify their call for strict regulation of disposal at surface coal mines and the need for synthetic liners and leachate collection and treatment systems.

One of the observations that can be made by watching this process is that the primary entities involved not surprisingly view the issue from very different conceptual perspectives. The paradigm for some in the Indiana environmental community has been developed as a result of dealing with issues like CCM from purely a "landfill" perspective. This is not surprising considering the extensive history of these individuals in working with solid waste laws in comparison to their understanding of SMCRA and the environment found at a "typical" surface coal mine. In their view, CCM is a solid waste and as such it must be disposed of in a typical solid waste landfill. Correlating with this viewpoint is the opinion that waste materials must be maintained completely separate from the groundwater. Conversely, IDNR mine regulators view the CCM issue through their SMCRA paradigm. Knowing the post-mining groundwater environment, the nature of mine spoils, and how materials such as coal processing wastes are successfully disposed under SMCRA, the addition of CCMs has always been considered a manageable operation by IDNR. Placing CCMs in direct contact with the groundwater did not present the agency with any undue concern in many situations. The effects of 1) attenuation, 2) dispersion, 3) dilution, 4) chemical interaction, 5) the beneficial impacts of CCM mineralization within the surface mine groundwater environment, and 6) many of CCMs physical characteristics did not appear to warrant the additional costs associated with total isolation. Total isolation of a solid waste is more typically characteristic of a landfill approach. To the agency charged with administering SMCRA, a certain logical, if not an elegant symbiotic relationship, exists between coal originating from a mine and having the CCM returned to the mine. In a differing analogy, the opponents to disposal have described coal as differing from CCM as does the food you eat from the wastes you produce.

Program groundwater monitoring requirements were criticized. The number of wells was considered too few to characterize the mine's hydrologic environment and determine flow direction and too far removed from the disposal areas to detect any potential contamination. Again, in the paradigm of the landfill with many closely sited monitoring wells, no justification for anything less was acceptable. The water monitoring issue led to the criticism that the program contained no groundwater standards, nor specific requirements or plans for remediation should the groundwater become contaminated.

Despite the lack of specific remediation requirements, the lack of groundwater standards was not only true of the CCM program, but the entire State. Attempts to establish groundwater standards have been ongoing in Indiana for at least as long as the CCM disposal controversy. Defenders of the program responded that it would make no sense to establish groundwater standards for the disposal of CCM at mines when the State as a whole had no standards. Defenders also stated that they understood that the industry would be responsible for meeting whatever State wide criteria were eventually establish anyway. Coal operators argued that groundwater monitoring in mine spoils in proximity to CCM disposal areas made no sense since the two materials were very similar in constituent make up. As such it was argued that it would be difficult if not impossible to differentiate between water impacted by CCM and "typical" water found within the mine spoil. Industry also argued that it made no sense to remediate groundwater mineralized as heavily as the water found in most Indiana spoil fields.

## **State Response**

Representing the State's position, IDNR has attempted to respond to what it viewed as inaccurate or a misrepresentation of information. For the most part, the agency has attempted to provide the public an explanation of how the program worked whenever and wherever possible. As an example of some specifically debated points, such as the use of distilled water instead of TCLP to test CCM, the agency responded that TCLP was designed for municipal landfill environments, not at all representative of a mining environment. While IDNR recognized that distilled water also did not necessarily represent a mining environment, it was considered by the agency to be a

closer representation of CCM characterization and in-situ leachability than was TCLP. In one of the few areas of agreement everyone did eventually agree that TCLP is not an appropriate test for CCM placement at coal mines. Unfortunately, however, there has been no corresponding agreement on what is the best test medium or method of testing.

Concerning the issue of radio nuclides, IDNR pointed to a substantial mainstream of scientific literature that showed radioactivity from CCMs were well within background radiation levels for many commonly occurring earth materials. That the possibility of “hot” CCMs from some obscure Colorado coal seam coming to Indiana was not realistic. Moreover, IDNR has indicated that neither the Federal government nor any State that it was aware of tested for either radioactivity or PAHs.

Responding to attacks on Memo 92-1 as “non-enforceable,” IDNR pointed out that while the memo itself may not be enforceable, SMCRA regulations and specific conditions placed on the permits were enforceable and protective of the environment. The agency also responded that it never intended Memo 92-1 to do anything more than to provide guidance to operators. The purpose of the memo was to specifically inform coal operators what must be done to comply with the SMCRA regulations when disposing of CCMs and securing permit approval.

In defending the program, very often the sources of information and documents used to “prove” the soundness of the State’s CCM approach were the same sources of information and documents used by the CCM opponents to “prove” the program’s inadequacies. Not surprisingly in the public opinion arena, IDNR’s attempt to respond with facts and science have not always played well against the emotional arguments often brought forth by the opponents of CCM disposal. Clearly, the public and the press have become extremely confused over what is a highly technical matter. The fact that the positions taken by the proponents and opponents of CCM disposal and their technical experts have been so diametrically opposed only enhances this confusion. Additionally, the extremely strident opponents to CCM disposal have made significant effort to fan the flames of public fears and media concerns. When opponents describe the disposal of CCM at coal mines as the next great “unintended environmental” threat, paralleled with automobile exhaust and global warming, freon and the ozone layer, asbestos, DDT, leaded gasoline, nuclear power waste and Love Canal, the public and press become understandably alarmed. Unfortunately, government defensively proclaiming that those arguments are untrue, while expounding on the sciences of hydrogeology and groundwater chemistry, provides little solace to a fearful public.

## **The New Approach**

Beginning in January 1998, the State embarked on a new course in an attempt to bring to an end the conflict over CCM disposal at surface coal mines. It was the hope of the State’s new administration to develop a set of regulations for CCM disposal as a preferable method of regulating the activity to the current “policy” memorandum approach. To initiate this new course, a work group was formed from a cross section of the stakeholders including 1) representatives from the utility industry, 2) coal operators, 3) environmentalists, and 4) a variety of State government agencies and institutions. In preparation for these discussions, IDNR drafted a set of proposed rules specific to CCM disposal at mines. These rules were based primarily on the State of Illinois’ existing program. This approach was selected because Illinois has had a viable CCM disposal program at coal mines in operation for numerous years. Also, the Indiana environmental community acknowledged it as the type of sound program that addressed their concerns.

From January through June 1998, the Coal Combustion Disposal Work Group met in a series of nine day-long meetings with discussions covering nearly all points of a possible regulation. While the meetings themselves produced a great deal of agreement on a conceptual level, they agreed upon little as to what would make up an appropriate regulatory solution. When it came down to details, minimal agreement was achieved. Generally, the only agreements on specific regulatory issues were ones that must otherwise be considered minor. Trying to break what had become an impasse and to overcome the “public posturing” that may have been affecting the stakeholders’ willingness to work together, a form of “shuttle diplomacy” was attempted with a team representing State government. This approach involved meeting individually with each of the three primary stakeholder groups. It was hoped that individually the groups might be more willing to accept privately, what they were unwilling to

agree to in a group setting. This additional effort proved fruitless as there was too much distance between the positions of the groups.

The Work Group's unfortunate failure to agree on regulatory language in almost every area required the Indiana DNR to again impose its own judgement to develop regulations. IDNR relied on 1) its experience gained from more than ten years of data gathering while regulating CCMs; 2) its knowledge of other surface mine CCM disposal programs; 3) volumes of the latest in CCM scientific research; 4) ideas expressed as part of the Work Group process; and 5) numerous U.S.EPA reports. The result was that in November of 1998 IDNR brought before the Natural Resource Commission a new set of CCM regulations for preliminary adoption.

### **Newly Proposed CCM Rule Requirements**

Based in part on the foundation of DNR's Memo 92-1, the new regulations expand on the policy in several important respects. Although there are others, a few of the most significant differences are that the new regulations require much more testing of the CCM waste stream and establish a waste certification requirement. Each waste stream is required to undergo three separate pre-disposal tests for bulk analysis, 18-hour and 30-day leach characterization of 17 different constituents. Memo 92-1 required only one pre-disposal sample test on bulk analysis, 18-hour and 30-day leach on 25 constituents. After disposal begins, Memo 92-1 requires quarterly testing of the waste stream so long as disposal continues. The new regulation requires monthly testing the first year, quarterly the second, and one test annually thereafter.

While still limiting disposal to CCMs that are less than 25 percent of the RCRA standard and rejecting those tested that exceed that standard, the new regulation further divides acceptable CCMs into two categories: 1) those testing at less than 10 percent of the RCRA level (Class A); and 2) those more than 10 percent but less than 25 percent (Class B). These categories are important in that they relate directly to 1) the tonnage of CCM materials permissible for disposal, 2) the type of disposal allowed, and 3) the type of groundwater monitoring required. For "Class A" CCMs (less than 10% RCRA), waste volumes permitted for disposal are limited to 50 percent of the tonnage of coal produced from the mine accepting the waste. Further, "Class A" CCMs can be disposed of either in a monofill (usually in abandoned pit of an active mine with disposal thickness in excess of 10 feet) or as a continuous backfill that disposes of the CCM along with mine spoil materials as the mining pit advances. Continuous backfill CCM thicknesses are limited to no more than 10 feet. For groundwater monitoring, "Class A" CCMs may default to monitoring plans intended for compliance with SMCRA regulations. For "Class B" CCMs (greater than 10%, but less than 25% RCRA), volumes are restricted to 25 percent of the mine's coal production and can only be placed in monofills. Also, setback distances and spacing of monitoring wells in relationship to "Class B" monofills are established beyond normal SMCRA groundwater monitoring requirements. Monitoring wells placed on 750 foot centers down gradient from the monofill and are setback 300 feet from the edge of the unmined area.

In spite of a highly contentious NRC meeting, these rules were preliminarily adopted with two stated concerns by the Commission. The NRC felt that, before they could approve the rules as final, the issue of extended post-SMCRA liability had to be addressed and some form of groundwater quality standards needed to be established. In dealing with the NRC's concern over post-SMCRA liability for potential damages caused by CCM disposal, relief was provided by the Indiana State Legislature. With the passage of Public Law 63-1999, DNR was allowed to use funds available to it to replace domestic water supplies to individuals whose groundwater was contaminated by CCM after the termination of a coal mine's SMCRA liability. Resolution of the second issue relating to the establishment of groundwater standards also was an issue beyond DNR's immediate control. By statute, the only entity in the State authorized to establish groundwater standards was the Indiana Department of Environmental Management (IDEM). As described earlier, IDEM had intermittently struggled with the development of these standards for the last ten years. Fortunately, IDEM was at last getting close to adopting specific groundwater standards. With the post-SMCRA liability issue resolved and development of State wide groundwater standards imminently pending, DNR prepared to go back to the NRC with a final rule for approval.

Unfortunately on March 1, 2000, just two weeks prior to the scheduled NRC meeting, the IDEM groundwater standard rules proved not to be as imminent as hoped and the Department determined to terminate its CCM disposal rule initiative. Prior to the adoption of any future regulations, the Department will be required to start an entirely new

rule making initiative. These efforts will not begin until after the State has finalized its groundwater quality standards which are currently projected for sometime this summer, if at all.

In retrospect, the total lack of any support for the proposed rules on the part of CCM opponents, while not all together surprising, is somewhat mildly ironic. One of the major stated criticisms of the State's existing Memo 92-1 was the fact that it was a policy document and not a rule. Apart from the standpoint that the proposed CCM disposal rules was demonstrably more stringent than the Memo 92-1 policy, it was also more enforceable because it was a rule. Brushing aside the importance of establishing rules, CCM disposal opponents claimed that the new regulations would serve only to "legitimize" the activity they found objectionable. Throughout this process the opposition to CCM disposal has become more strident. The proposed rules themselves appear to have become a lightning rod for criticism. CCM opponents have made significant strides at involving the media. For its part, the media, besides finding the issue "highly technical" and "very confusing," have become caught up in the emotion of everything. For the most part, the media has repeatedly sided with CCW disposal opponents stating, "if there is any dispute over the facts, disposal should not be allowed."

### **Conclusion**

After more than twelve years, Indiana appears to have gone more than full circle in its attempt to deal with the issue of CCM disposal at surface coal mines. As of the writing of this paper, the issue of final CCM disposal regulation stands yet unresolved. Without a rule in place, Indiana will continue to rely on Memo 92-1. Whether or not we will ever obtain normalcy regarding the acceptance of CCM disposal at surface coal mines seems to be a far off prospect. In a similar paper written not quite two years ago, I stated my hope that the Work Group process would ultimately, ". . . generate[d] a program that is better than the one currently being administered." In spite of itself and what must be considered the unfortunate failure of the Work Group, I believe that we had at least drafted a better program. In that same paper, a hope was also expressed that the Work Group process, with its "broader foundation" for ideas than previous resolution efforts, would produce an ownership by the contributors to the final product. Unfortunately, this hope was too optimistic.

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# UTILITY INDUSTRY PERSPECTIVE ON MINE PLACEMENT OF COAL COMBUSTION PRODUCTS

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## Abstract

The Utility Solid Waste Activities Group (USWAG) is responsible for addressing solid and hazardous wastes on behalf of the utility industry. Over the last twenty-one years, USWAG has worked closely with US EPA on the Regulatory Determination for Fossil Fuel Combustion Wastes. One of the issues of concern, identified by EPA in Phase II of the Regulatory Determination, is the placement of coal ash in mines. The placement of CCBs in mines provides an important management option for electric utilities. Several utilities have chosen to use the material to stabilize abandoned mines and mitigate the effects of acid mine drainage and subsidence rather than manage large volumes of CCBs in surface impoundments and landfills. USWAG is vitally interested in preserving its members' options for the management of coal combustion products, including mine placement.

## Background

*The [U.S. EPA] Administrator shall, after public hearings and opportunity for comment, either determine to promulgate regulations under this subtitle [subtitle C hazardous waste] ... or determine that such regulations are unwarranted. [RCRA § 3001(b)(3)(C); 42 U.S.C. § 6921(b)(3)(C)].*

## The Bevill Amendment

The final stages of the U.S. Environmental Protection Agency's (EPA) process to reach its Phase II Bevill regulatory determination on wastes from the combustion of fossil fuels has taken an unfortunate turn away from science and the clear requirements of RCRA in favor of politics. This presentation seeks to clarify what the Bevill Amendment does and does not allow.

Quite simply, EPA is required to determine whether hazardous waste regulation is or is not warranted. Well aware of the burdens a Subtitle C determination would impose, EPA has attempted to frame such a decision as something more palatable. This would be a "Soft C" approach that is somehow not as draconian as subtitle C. RCRA § 3004(x) provides that EPA may modify a limited number of subtitle C requirements applicable to landfills and surface impoundments. It is clear that EPA can use this authority to tweek the regulations only after it has reached a determination that the wastes warrant regulation as hazardous wastes. The "hazardous waste" label would cripple efforts to expand the beneficial reuse of coal combustion products in numerous applications, including mine reclamation.

## Lead-up to the Current Political Battle: 1993 Phase I Regulatory Determination and 1999 Phase II Report to Congress

In March 1999, EPA Administrator Carol Browner transmitted the *Report to Congress on Wastes from the Combustion of Fossil Fuels*. It was the second report to Congress on these wastes and the culmination of the Phase II study of fossil fuel combustion wastes. In Phase I, EPA reached its Regulatory Determination that the "high volume" coal combustion wastes from utility coal combustion – fly ash, bottom ash, boiler slag, and flue gas desulfurization material – did not warrant regulation under subtitle C [58 Fed. Reg. 42466 (Aug. 9, 1993)]. Thus, in 1993, EPA was convinced that the wastes at issue posed limited risks and found "generally adequate State and Federal regulatory programs."

The 1999 Report to Congress built upon the ensuing research over the following five and a half years, and recommended that:

- disposal of coal-fired co-managed wastes should remain exempt from RCRA Subtitle C;
- most beneficial uses of coal-fired co-managed wastes should remain exempt from RCRA Subtitle C;
- oil combustion wastes managed in lined units do not warrant regulation under RCRA Subtitle C;
- beneficial uses of oil combustion wastes should remain exempt from RCRA Subtitle C; and
- the Subtitle C exemption for natural gas combustors should remain in effect.

Each of these recommendations rests on well-documented Agency findings tied to "real world" data that show that:

- these waters rarely exhibit the characteristics of hazardous waste;
- the trend among electric utilities is to install more environmental controls at waste management facilities, including liners, covers, and groundwater monitoring;
- there are few documented cases of proven damage to the environment caused by fossil fuel combustion wastes, and these few cases all involve older, unlined management units, most of which no longer are receiving combustion wastes, and at which there were no adverse human side effects;
- electric utility companies have achieved an outstanding record of environmental regulatory compliance, with no major enforcement cases involving solid or hazardous waste at a utility facility in the five year period between 1992 and 1997; and
- the states have developed a comprehensive body of regulations applicable to the waste management units in which utilities store and dispose of combustion wastes.

The Report left two clouds. First, EPA made no recommendation on mine placement. EPA cited no indications of environmental damage from mine placement activities, but indicated a general concern with placement of these materials in contact with the water table. EPA recognized that:

*under ideal circumstances, placement of wastes in mines should present no increased risks to human health and the environment relative to landfills. In fact, minefills could result in net environmental benefits relative to conventional landfills through avoided development of Greenfield space for UCCW disposal; improvement of disturbed mine lands through contouring, revegetation, and reduced infiltration to mine workings; and abatement of acid mine drainage through neutralization and diversion.*

[Report to Congress at 3-51.]

However, EPA identified data gaps that it intended to address and therefore did not reach a firm recommendation. Second, EPA reached a tentative conclusion that agricultural applications should be limited, possibly to the 13 parts per million arsenic standard proposed in August 1999 for cement kiln dust.

### **Comment Period**

In response to the Report to Congress, EPA received voluminous input from government agencies, academia, industry, and public interest groups. First, EPA convened a public meeting in Washington, D.C. EPA also provided a written comment period that lasted until June 14<sup>th</sup>. And then, at the request of environmental interest groups, EPA sought an amendment to the court order that controls the timing of its decision in order to reopen the comment period.

Much of the new information was provided in response to EPA's request for information on mine placement case studies. ("Case studies, when available, are preferable to modeling.") In addition, EPA and representatives of environmental interest groups participated in mine site visits in Maryland, West Virginia, and Indiana.

EPA was presented with reams of data and comments from USWAG, other industry associations, utility companies, mining companies, academia, and State and Federal regulatory agencies. USWAG's comments included an Electric Power Research Institute Mine Placement Synthesis Report that provided detailed case studies of:

1. Universal Mine, Indiana
2. Storm Strip Mine Ash Fill, West Virginia
3. Midwestern Mine, Indiana
4. Arnold Willis Mine, Indiana
5. Frazee Mine, Maryland
6. Omega Mine, West Virginia
7. Clinton County Surface Mine, Pennsylvania
8. Kempton Mine Complex, Maryland and West Virginia
9. Red Oak Mine, Oklahoma
10. Harwick Mine Complex, Pennsylvania

USAWG beseeched EPA to refer to the wealth of data and research amassed by other Federal Agencies and academia. And those institutions provided numerous, detailed, and thoughtful comments to the docket. In addition, many States provided EPA with details of their regulatory programs. Furthermore, local environmental interest and organizations in Pennsylvania submitted comments urging EPA not to erect barriers to the placement of coal ash in mines to mitigate acid mine drainage.

With the objective of sweeping Federal regulation of fossil fuel combustion by-products, the Hoosier Environmental Council and the National Citizens' Coal Law Project submitted comments, including research papers and anecdotal evidence they claimed demonstrated widespread damage from coal combustion wastes.

### **January 2000**

By the end of January 2000, EPA's Office of Solid Waste had assessed the comments submitted by the September 24<sup>th</sup> deadline and was preparing to issue the regulatory determination by the March 10<sup>th</sup> court deadline. To that end, EPA staff reported to Federal agencies including DOE, OSM, and USDA on a draft of the determination and stated that EPA intended to file publish a positive, – i.e., nonhazardous, determination on all uses except mine placement.

EPA reported that in response to public comments, most significantly those from the USDA, it had revised its agricultural use risk assessment. Only minor changes were sufficient to demonstrate that there was no significant risk from those uses, and EPA had drafted a positive determination on that issue.

For mine placement, EPA indicated simply that it intended to study the issue further but that no subtitle C determination was warranted.

### **March 2000**

Within approximately one month, EPA had changed its position 180 degrees. The publication *Inside EPA* published a draft regulatory determination dated March 5, 2000 – a negative determination for all coal combustion wastes. EPA was prepared to state definitively that Subtitle C hazardous waste regulation is warranted not only for the “remaining wastes” addressed in the Phase II study but also for the high volume utility coal combustion wastes that were addressed in the 1993 regulatory determination. Interestingly, EPA intended to recognize all beneficial uses of CCPs, except for mine placement, as desirable.

The reason for the about-face is evidently a desire by EPA senior officials to respond to environmental interest organizations' lobbying efforts. Those groups – a coalition of local groups concerned with coal ash disposal practices and national groups focused on air emissions from utilities–have openly sought uniform Federal regulation of these materials as a means to impose costs on the use of coal that might affect the financial viability of coal use.

The draft regulatory determination is intended as the first step towards a subtitle C rule making, and as such, EPA did not delineate the exact shape of the regulations it intended. However, it is clear from the March 5<sup>th</sup> draft that EPA envisions some sort of “contingent management” approach, similar to its proposed rule in August 1999 on cement kiln dust.

The exact shape of those rules is irrelevant to the profound impacts a hazardous label would have on industry and the beneficial uses EPA recognizes as desirable. If EPA were to adopt a negative determination, the message received by regulators and the marketplace would reduce to this: Fossil fuel combustion wastes are so dangerous that EPA wants to regulate them under RCRA Subtitle C. PERIOD. Supportive statement about beneficial uses would be of no use. The regulations would not be fleshed out for quite some time, perhaps years. During that period, the dense cloud over these materials would persist – an unfortunate betrayal of the many years of effort by industry, DOE, OSM, USDA, and EPA as well to reduce barriers to the beneficial reuse of these materials.

As far as the evidence to support this about face, we can only speculate based on the sketch presented in the March 5<sup>th</sup> draft. Despite urgent requests for information, EPA has not shared with us the details of its new found concerns. We do know from the March draft and statements in meetings and to the press that EPA bases its reversal of position in large part on 4 new proven damage cases allegedly resulting from coal combustion waste disposal: two in Wisconsin; one in North Dakota; and one in New York. This brings the total of “proven damage cases” from seven to eleven. Somehow eleven out of 600 coal burning utility management units is significant and warrants regulatory action, whereas 6 out of 600 was indicative of sound management practices. EPA also buffers its position by calling 19 non-proven damage cases “potential” damage cases. Most of these involve transient secondary drinking water standard exceedances with little or no impact to public drinking water. It is significant to note that not a single alleged damage case is related to mine placement! And not a single alleged damage case is related to any beneficial use practice. Just as EPA found in the March 1999 RTC, most of these cases are the results of old management practices and had been identified and corrected under State oversight, with no prodding from EPA. Indeed, these alleged “damage cases” are evidence of responsible reactions by industry and State and local regulators – suggesting that a stepped-up Federal role is unnecessary.

EPA has taken the position in meetings that it does not plan to regulate beneficial use – that it recognizes the economic and environmental benefits of increased reuse that the industry has pursued diligently over the years. The Agency somehow plans to convince the market place that on the one hand these materials are “hazardous waste” but on the other hand, they should be freely utilized. We know from DOE’s Ash Barriers Report that uncertainty over the status of these materials has impeded the development of reuse markets. Can EPA seriously believe that these uses will not be impacted severely by a negative regulatory determination?

EPA officials have also suggested that the March 5<sup>th</sup> draft represents something much less ominous than subtitle C regulation. However, the notion that a contingent hazardous waste determination is qualitatively less than a non-contingent hazardous waste determination is disingenuous. The Beville amendment quite simply calls for a determination whether subtitle C regulation is warranted or not. A result other than “not” will carry with it all of the negative baggage, regardless of the caveats, footnotes, and words of support for beneficial use that EPA might include.

## Reactions

There has been strong reaction against EPA’s about-face – seen as a rejection of the science-based recommendations of Agency staff incorporated in the *1999 Report to Congress* in favor of the political desires of upper management. Indeed, the Administrator’s technical staff reaffirmed the science-based conclusions in the Report to Congress in January 2000 meetings with other Federal agencies—after having the benefit of the newly available information submitted in comments on the Report to Congress.

There has been strong reaction from the States. At this time, we are aware of strong letters of opposition from the environmental agencies of Michigan, Wisconsin, North Dakota, North Carolina, Pennsylvania, Florida, Tennessee, Texas, Maryland, and the Association of State and Territorial Solid Waste Management Officials. As can be imagined, the March 5<sup>th</sup> draft is seen widely as a slap in the face of States with effective regulatory programs as well as an attempt to usurp the authority Congress provided to the States under the RCRA Subtitle C-Subtitle D

dichotomy. A number of prominent governors have also written the Administration. For example, Governor O'Bannon of Indiana wrote to Administrator Browner:

*"I hope your final decision will reflect experiences of coal-producing States like Indiana in dealing with coal ash, as well as the scientific data and the recommendations of your technical staff and scientists."*

Over 40 Senators, evenly split among Democrats and Republicans have written in protest of the last-minute, political reversal. For example, Senator Paul Sarbanes of Maryland wrote to Administrator Browner in support of mine placement:

*"By injecting [coal combustion product grout] into the Kempton mine passages, we can make beneficial use of the by-products as an alternative to landfilling, greatly reduce the amount of acid formed in the mines, and restore water quality."*

and

*"I would appreciate it if you would provide me with a full report on the rationale for regulating these coal combustion materials under Subtitle C and the documentation on the relative environmental impacts associated with coal combustion wastes vs the benefits of utilizing these by-products for remediating acid mine drainage."*

Dozens of Congressmen have also opposed EPA's path towards a Subtitle C determination. Congressman Rick Boucher of Virginia wrote to Administrator Browner:

*"Characterizing combustion by-products as warranting hazardous waste regulation could easily destroy much of the emerging ash marketing industry. To now declare that these materials must be regulated under the hazardous waste program, after determining that the recycling of these combustion materials into useful commercial applications is environmentally safe, is simply illogical."*

and

*"I hope that you will adopt the technically sound and scientifically based recommendations of the professional staff in the Office of Solid Waste to retain State regulation of combustion waste under Subtitle D of RCRA."*

## **OMB Review**

EPA received an extension of the March 10<sup>th</sup> deadline until April 10<sup>th</sup> so that it could have time to run its reworked draft through the interagency review process. The interagency review process, required by Executive Order 12866 and marshaled by the Office of Management and Budget represents the last and ultimate hurdle for EPA before imposing a Subtitle C determination. However, it also represents the best opportunity for experts from other Federal agencies – USDA, DOE, OSM – to block this action and hold EPA accountable for a science-based decision. The record will support only one determination – the non-hazardous determination recommended in the Report to Congress and discussed with other agency officials as recently as January 2000.

At this point, we can only hope that the results of the interagency review will prove the merit of President Clinton's Executive Order, which was designed to avoid the politicization of regulatory decisionmaking:

*"The American people deserve a regulatory system that works for them, not against them: a regulatory system that protects and improves their health, safety, environment, and well-being and improves the performance of the economy without imposing unacceptable or unreasonable costs on society; regulatory policies that recognize that the private sector and private markets are the best engine for economic growth; regulatory approaches that respect the role of State,*

*local, and tribal governments; and regulations that are effective, consistent, sensible, and understandable. We do not have such a regulatory system today."*

[Executive Order 12866.]

## Postscript

On April 25<sup>th</sup>, USWAG went to court to block what would have been EPA's fourth extension of the deadline for the final determination since publication of the Report to Congress in 1999. EPA had requested a 90 day extension of the consent decree deadline controlling the timing of the action. After business hours on April 25<sup>th</sup>, EPA Administrator Browner signed the Phase II regulatory determination for fossil fuel combustion wastes as required by the court. The second sentence of the press release stated directly, "These wastes are not being classified as hazardous wastes."

The determination appeared in the Federal Register on May 22, 2000. The official statement was that fossil fuel combustion wastes "do not warrant regulation under Subtitle C of RCRA" and retained the Bevill exemption under RCRA § 3001(b)(3)(C). [65 Fed. Reg. 32214.] Along with the non-hazardous Bevill Determination, EPA announced that it will develop national standards under RCRA Subtitle D to address coal combustion wastes disposed in landfills and surface impoundments or placed in mines. EPA provided an unqualified endorsement of all beneficial uses other than mine placement, and the Subtitle D regulations will not address those activities. In sum, EPA stated that:

*[a]fter considering all of the factors specified in RCRA Section 8002(n), we have decided . . . , that the decisive factors are trends in present disposal and utilization practices (Section 8002(n)(2)), and the current and potential utilization of the wastes (Section 8002(n)(8)), and the admonition against duplication of efforts by other Federal and State agencies.*

[Id. at 32215.]

In particular, EPA cites with approval data that demonstrates the use of liners and groundwater monitoring by the industry has increased substantially over the past 15 years. [ Id. at 32215-16.] Furthermore, EPA identifies a significant "downside" to Subtitle C regulation as influential in its decision to use Subtitle D authority – the potential for adverse impacts on beneficial use of coal combustion by-products. [Id. at 32217, 32232.] EPA explains that:

*[n]ormally, concerns about stigma are not a deciding factor in EPA's decisions under RCRA, given the central concern under the statute for protection of human health and the environment. However, given our conclusion that the Subtitle D approach here should be fully effective in protecting human health and the environment, and given the large and salutary role that beneficial reuse plays for this waste, concern over stigma is a factor supporting our decision today that Subtitle C regulation is unwarranted in light of our decision to pursue a Subtitle D approach.*

[ Id. at 32217.]

Through a future rule making, EPA will develop Subtitle D standards that apply to both coal combustion wastes – fly ash, bottom ash, boiler slag, and flue gas desulfurization material—when managed separately or when co-managed with other wastes generated during the combustion of coal.

EPA acknowledges the potential benefits of mine placement, but is concerned that an alleged lack of adequate regulatory oversight could result in damage to human health and the environment. The bases for the determination to regulate mine placement under Subtitle D include:

- The potential to present a danger to human health and the environment "under certain circumstances"; and

- Few States have comprehensive programs that specifically address the unique circumstances of mine filling.

[Id. at 32221.]

Although EPA identified no damage cases related to mine placement, it remains concerned about placement of coal combustion wastes in contact with groundwater, but offers no explanation of the nature of its concern. [ Id. at 32231.] EPA is particularly critical of State programs that lack a requirement for groundwater monitoring or lack controls or prohibitions on waste placement below the water table. “We are concerned that government oversight is necessary to ensure that mine filling is done appropriately to protect human health and the environment, particularly since mine filling is a recent, but rapidly expanding use of coal combustion wastes. Government oversight has not yet ‘caught up’ with the practice consistently across the country.” [ Id. at 32231.]

In its effort to develop non-hazardous waste regulations applicable to mine placement, EPA will consider whether RCRA Subtitle D, the Surface Mining Control and Reclamation Act (SMCRA), or a combination of the two authorities would be most effective. EPA promises to consult with the Office of Surface Mining in the Department of the Interior to assess whether SMCRA is suited to address its concerns with mine placement. [ Id. at 32215.] EPA acknowledges that SMCRA is “expressly designed to address environmental risks associated with coal mines.” [ Id. at 32217, 32232.]

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# **A CITIZEN REGULATORY PERSPECTIVE ON DISPOSAL OF COAL COMBUSTION WASTES AT THE MINE SITE**

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*Editor's Note: Due to the last minute acceptance by Mr. Stant in agreeing to speak for Tom FitzGerald, only the paper previously prepared by Mr. FitzGerald is included in the proceedings.*

## **Summary**

In summary manner, we believe that sufficient evidence exists of contamination from disposal of coal combustion wastes to warrant the development of national minimum standards concerning the characterization, storage, disposal, and reuse of these wastes. Specifically, and of particular interest to this forum, we believe that the evidence is sufficient to justify an immediate nationwide moratorium on further co-disposal of coal combustion wastes in mine voids and pits until the Office of Surface Mining (OSM) and the U.S. Environmental Protection Agency (EPA) assert regulatory authority over the disposal of coal combustion wastes in mine pits and voids and develop national minimum standards governing the co-disposal of such wastes in mine voids and backfill.

The uneven and inadequate State regulation of disposal of coal combustion wastes at mine sites is evident. The coal combustion waste stream, having been accorded by many States a legal status that is "neither fish nor fowl," neither solid nor hazardous waste but instead "special waste," has been subject to disposal without protections appropriate to the toxicity of the wastes and the potential problems from improper management. The failures regarding management of these wastes include a failure to require adequate background characterization of geologic and hydrogeologic conditions relative to the disposal of these wastes and haphazard characterization of the toxicity, fate, and transport of these wastes under proposed disposal conditions. These failure lead to disposal without adequate precautions against future pollution.

These failures are the direct and predictable result, the bitter fruit, of the failure of OSM and EPA to establish a Federal "floor" of regulation of coal combustion wastes. While EPA is in the last stages of the process of assessing whether these wastes should be managed as hazardous wastes under Subtitle C of the Resource Conservation and Recovery Act, OSM has studiously avoided exercising regulatory authority to establish minimum standards for co-disposal of coal combustion wastes at mine sites, choosing instead to stand idly by while the States engage in the "one-downsmanship" in standard setting that Congress sought to avoid in enacting the 1977 mining law.

## **EPA Report to Congress**

EPA, as I mentioned, is obligated by Section 8002(n) of RCRA to conduct a "detailed and comprehensive study . . . on the adverse effects on human health and the environment, if any, of the disposal and utilization of fly ash waste, bottom ash waste, slag waste, flue gas emission control waste, and other by-product materials generated primarily from the combustion of coal or other fossil fuels." That study is complete and EPA is scheduled to make a final recommendation soon.

The draft *Report To Congress* was of concern because it contained numerous assumptions and characterizations concerning the nature, severity, and scope of the problem of co-disposal of coal wastes at mine sites, and regarding the adequacy of State regulation of such wastes.

Among the concerns that we had regarding the draft *Report*, the Administrator's study appeared to be limited to a file review of third-party data, falling short of the "detailed and comprehensive study" of the consequences of management and disposal of material generated from the combustion of coal and other fossil fuels that Congress envisioned.

While EPA chose to rely almost entirely on data submitted by third parties to support an assessment of whether the risks associated with improper disposal warrant such effort, the draft report failed to acknowledge the full range of evidence of groundwater contamination associated with current CCW disposal practices. The Hoosier Environmental Council comments outline numerous "documented cases in which danger to human health or the environment" has been demonstrated, yet the agency has previously rejected that information because of the absence of pre-disposal background. Much of the information available regarding disposal practices may not conform to laboratory protocols, since the hodgepodge of State controls over the disposal of this waste results, in many cases, in disposal *without* proper characterization of background conditions or the waste stream for those constituents of concern present in this waste. The rejection of such information, as has been developed demonstrating contamination because of questions concerning quality control or background, is an easy but inappropriate response.

The lack of background, characterization, hydrologic, and other information regarding these past disposal activities is itself a product of uneven and inadequate State regulation of the waste stream, and speaks volumes of the need for establishment of a Federal "floor" of regulation of coal combustion wastes.

Where the EPA will go in its recommendations is unclear. It has authority to craft standards blending Subtitle C hazardous and Subtitle D solid waste standards to "take into account the special characteristics of such wastes, practical difficulties associated with implementation of such requirements, and site-specific characteristics, including but not limited to the climate, geology, hydrology, and soil chemistry at the site, so long as such modified requirements assure protection of human health and the environment." Section 3004(x). The EPA has the flexibility and discretion to adopt a program that is tailored to the specific problems associated with the "open dumping" of coal combustion wastes in mine backfill and voids, in order to assure protection of human health and the environment.

Does the co-disposal of coal combustion wastes in mining areas present heightened risks of contamination of groundwater and injury to public health that warrant assertion of EPA hazardous-waste authority over that disposal practice, and which justify OSM adopting specific standards governing such practices? We believe clearly that it does; and that, in fact, the disposal of coal combustion wastes in mine backfill constitutes, by definition, an imminent danger situation that subjects the disposal practice to suit under RCRA.

It is a fact that coal combustion wastes containing leachable metals at levels well above accepted drinking water standards for safe potability of water are 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. Such activity falls squarely within the scope of the citizen suit provision of RCRA, since the imminent and substantial endangerment language addresses the avoidance and mitigation of *potential* endangerments and does not hinge on demonstration of actual manifest harm or the presence of an emergency. *United States v. Waste Industries, Inc.*, 734 F.2d 159 (4th Cir. 1984).

The failure of EPA to date to assert jurisdiction under RCRA over this problematic waste stream, because of the mistaken assumption that the wastes are not "hazardous" in the context of open mine dumping, will create the likelihood that the regulation of the placement of such wastes and the health and environmental consequences will be driven by the courts. This court action will be in the context of citizen-initiated suits alleging imminent and substantial endangerment from such disposal due to the inadequate management of such wastes under State waste and mining programs.

The failure of EPA and OSM to assert Federal leadership in establishing up-front baseline standards concerning the disposal of coal combustion wastes invites significant judicial intrusion into the field. It also implicates the

disposers, transporters, and generators in a web of liability that is as open-ended as are the State management programs themselves.

The evidence of groundwater contamination from disposal of coal combustion wastes in situations comparable to the dumping of such wastes in mine backfill is more than sufficient to warrant Federal involvement in establishing baseline standards for coal combustion waste disposal in mining sites.

The EPA *Report* relies on probabilistic risk assessments to conclude that the target risk for regulation as a hazardous waste is not exceeded based on available data. Yet EPA has discounted the available evidence demonstrating contamination and assumes erroneously that other sites have no contamination because no data exists demonstrating contamination. In truth, many of the disposal sites have never been monitored for groundwater impacts. Surface mining permits have not contained the full gamut of monitoring parameters, including numerous metals and radio nuclides, needed to fully characterize the waste, its leachate, and its mobility in the chaotic hydrogeologic environment of an active or “reclaimed” mining operation.

What is known, concerning the potential toxicity of the leachate from coal combustion ash, suggests that a Federal floor of management standards is needed. It is a myth that there is no potential public health and environmental impact of improper management of coal combustion wastes. The 1988 EPA report to Congress concerning coal combustion wastes acknowledged the existence of potential for causing groundwater contamination among and within the categories of coal combustion waste. According to the EPA Report *Wastes from the Combustion of Coal by Electric Utility Power Plants*, EPA/530-SW-88-002: “The primary concern regarding the disposal of wastes from coal-fired power plants is the potential for waste leachate to cause groundwater contamination. Although most of the materials found in these wastes do not cause much concern (for example, over 95 percent of ash is composed of oxides of silicon, aluminum, iron, and calcium), small quantities of other constituents that could potentially damage human health and the environment may also be present. These constituents include arsenic, barium, cadmium, chromium, lead, mercury, and selenium. At certain concentrations these elements have toxic effects (*Id.*, at ES-4).”

While the findings of the EPA Report and review of industry-generated studies indicated generally that metals did not leach out of coal combustion waste at levels 100x the primary drinking water standard (i.e., characteristically hazardous by TCLP toxicity), hazardous levels of cadmium and arsenic were found in ash and sludge samples, and boiler cleaning wastes sometimes contained hazardous levels of chromium and lead. *Id.*

The literature suggests that, among other things:

1. Neither EP nor TCLP tests provide a good indication of leachability of CCW in natural disposal settings. Long-term leaching tests conducted until equilibrium has been achieved for each element of concern, using a leaching solution that approximated percolating groundwater, would give a more accurate depiction of groundwater contamination potential at a disposal site.
2. Seventeen 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.
3. Fluidized bed combustion (FBC) wastes retain volatile and semi-volatile elements in the bottom ash to a greater extent than conventional pulverized coal combustion, thus enhancing the leachability of FBC waste elements.
4. Leachates from coal power plant ash and flue gas desulfurization wastes typically exceed drinking water standards, but by a factor less than hazardous levels (i.e., 100 x DWS). The major leaching studies on CCW indicate that drinking water standards are typically exceeded by CCW ash leachate at a factor of 1.1 to 10, and often by a factor greater than 10 for one or more elements.

Other reports indicate a concern with enhanced levels of radio nuclides in coal combustion fly ash, including radium-226 and other daughters of the uranium and thorium series that pose significant long-term management challenges.

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: 1) the increase in surface area available for leaching of elements

resulting from fracturing of overburden and confining layers; 2) higher total dissolved solids levels in mine spoils that compete for sorption sites on solids with toxic elements released from the buried ash; 3) direct communication between surface and underground mine workings and aquifers through stress-relief fracture systems and subsidence-induced fracture flow; 4) the dependence of residents of coal-bearing regions on private, groundwater supplies and the significant potential for contamination of those supplies; and 5) the presence of site conditions conducive to creation of acid or toxic-forming material that can solubilize constituents of concern from the waste.

In choosing the appropriate standard for assertion of jurisdiction over the disposal of these wastes in mine workings, the appropriate endpoint for assessment should *not* be whether the waste leaches at 100 times the drinking water standards (which is the relevant TCLP characteristic of the wastes' "hazard"), but should be whether, if improperly managed, the wastes may leach into groundwater at above the drinking water standards themselves. Since the evidence shows that such leaching does occur, intervention to assure proper siting, construction, and use of barrier technology to prevent the wastes from contacting groundwater or rainfall percolation is needed.

The prior EPA Report concluded preliminarily that coal combustion waste need not be regulated under RCRA Subpart C as hazardous, but rather that the wastes should continue to be regulated under Subpart D as solid wastes. This conclusion rested on the assumption that **mitigative measures under Subpart D** such as: 1) installation of liners, 2) leachate collection systems, and 3) groundwater monitoring systems and corrective action to clean up groundwater contamination would be adequate for protecting public health and the environment. The EPA recommendation was predicated on the application of such measures to the management of coal combustion wastes. **Unfortunately, such measures are not being employed universally among the States.**

The information developed by the Hoosier Environmental Council demonstrates the wide variability among States in the caliber of the management programs for coal combustion wastes disposed of at mine sites. States have the capacity, but not the will, to properly regulate these wastes.

The *lack* of Federal standards has resulted in uneven standard setting among the States; a regulatory "one-downsmanship" in which States are unwilling to establish stronger standards that might disadvantage their coal industry relative to those standards of other States. This destructive interstate competition in environmental degradation has long been acknowledged as a problem among the coal States, particularly in those areas of the East, Midwest and West where the coalfields span a number of States. Congress enacted a national regulatory program over coal mining operations including Federal minimum performance and design standards, Federal oversight, and a Federal enforcement component **precisely** because of the inability of the States to overcome this problem.

For a number of predictable reasons – including insufficient funding and the tendency for State agencies to be protective of local industry – State enforcement has in the past, often fallen short of the vigor necessary to assure adequate protection of the environment.

[H.R. Report 95-218, 95th Cong., 1st Sess. 129 (1977).]

The draft EPA Report devotes a mere two pages to the assessment of risks associated with coal combustion waste disposal in coal mines. If the EPA believes, as it asserts, that there is insufficient information to characterize the risks, then we believe that it has a legal and moral obligation to prevent further open-dump disposal of coal combustion wastes in mine sites where the wastes will come into communication with groundwater or are placed in an uncontrolled manner, **pending** the completion of that assessment. The "current lack of sufficient information" to characterize the degree of risk from mine co-disposal is not a sufficient answer. Absent imposition of a requirement for proper monitoring of coal combustion waste disposal, such information will not be forthcoming.

## Recommendations

We believe, however, that EPA has sufficient information concerning the leaching potential of these wastes, the vulnerability of coalfield groundwater resources, and the documented cases of damage to compel immediate action by the agency to list and control such wastes where co-disposed in coal mines. Such controls should include: 1) a prohibition on open-end dumping of coal combustion wastes in mine backfill; and 2) characterization of the waste. 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. All coal combustion wastes should be screened for metals and for radio nuclides. Where

the wastes exhibit elevated radioactivity, they should be managed as technologically enhanced low-level radioactive wastes in accordance with the applicable State and Federal laws.

Site suitability should be assessed and the leachate potential must be established by use of 1) appropriate modeling of the disposal site; 2) the amount of rainfall infiltration; 3) the pH of the waste and associated materials through which the rainfall will pass; and 4) a hydrogeologic investigation into the location, extent, and characteristics of the surface and groundwater systems at the site. No disposal should be allowed absent: 1) the complete characterization of the waste stream(s) proposed for land disposal; and 2) assurance that the engineering design of the disposal facility and controlled placement in a discrete, properly engineered and lined land 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).

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 wastes are disposed.

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 with closure and post-closure care, and financial responsibility requirements.

### **Federal Regulatory Responsibility**

The EPA and OSM share responsibility over development of standards for disposal of coal combustion wastes. RCRA provides for integration of the two laws. RCRA does not provide OSM with such exclusive authority with respect to the disposal of coal *combustion* wastes in mine sites, leaving by exclusion, the primary responsibility for proper management of such wastes within the province of the Administrator. We are hopeful that EPA will properly exercise such authority in short order.

That EPA has primary responsibility, does not relieve OSM of its concurrent authority. Properly applied, a number of provisions of the Surface Mining Control and Reclamation Act of 1977 *could* be utilized to better control disposal of coal combustion wastes on mine sites. For example:

- No coal combustion waste should be placed in a mined area where it would displace soil to 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.
- The requirement for contemporaneous reclamation would arguably be violated by any delay in reclamation associated with disposal of coal combustion wastes in active mining and reclamation areas.
- The permit requirements of 30 U.S.C. 1257 and the reclamation plan requirements of 30 U.S.C. 1258, properly applied, could require characterization of the wastes and their interaction with the mined environment, and of the development of groundwater monitoring sufficient in types of parameters, appropriate in location, and sufficient in duration to detect disposal problems.
- 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 appear to 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.

OSM has fretted long enough, and should, by guidance and regulation, move promptly to control the co-disposal of coal combustion wastes.

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 OSM and the U.S. EPA to control such wastes where co-disposed in 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: 1) the increase in surface area available for leaching of elements resulting from fracturing of overburden and confining layers; 2) higher total dissolved solids levels in mine spoils that compete for sorption sites on solids with toxic elements released from the buried ash; 3) direct communication between surface and underground mine workings and aquifers through stress-relief fracture systems and subsidence-induced fracture flow; 4) the dependence of residents of coal-bearing regions on private, groundwater supplies and the significant potential for contamination of those supplies; and 5) the presence of site conditions conducive to creation of acid or toxic-forming material that can solubilize constituents of concern from the waste.

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 systems in many coalfields are particularly vulnerable to contamination because of the high transmissivity of the fracture-dominated aquifer systems and because of the high degree of interconnection of aquifers through subsidence-induced deformation of strata above underground coal seams.

## The Future

What will the future bring absent Federal intervention? To answer this, one must question why coal combustion wastes are being backhauled and disposed of in mine workings (including both underground mine voids and more commonly, in surface mine backfills or spoil/mine waste fills). It is *not* because of the 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 because the coal companies offer the backhauling and disposal as a “service” or incentive in order to attract buyers for their coal in an increasingly competitive marketplace. Absent Federal intervention in this regard, the competitive forces of the deregulated utility marketplace will continue to result in a parochial failure of the individual States to effectively control the disposal of CCW. This will increase pressure on coal companies to remain “competitive” with each other and with other coalfields across the nation, by offering the ultimate “out of sight, out of mind” solution to the generation of the coal combustion waste.

Many utilities will not allow their waste to be co-disposed in mine voids and workings, preferring to manage their liabilities associated with the waste *on-site* or in a manner more controlled than the typical mine site. Those that do allow the waste to be managed in co-disposal situations likely assume that the problems with their waste streams will be masked by the significant hydrogeologic and chemical disruptions associated with mining operations, or that the contamination will not be discovered because of lack of adequate and sufficient monitoring. In many cases, they are correct. Absent EPA and OSM intervention, such practices will be encouraged, placing those engaging in more careful, controlled disposal, at a competitive disadvantage.

## Conclusion

In sum, what is known, concerning the potential toxicity of the leachate from coal combustion ash, suggests that a general Federal floor of management standards is needed. Additionally, 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 U.S. EPA and OSM to control such wastes where co-disposed in coal mines.

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# **THE OFFICE OF SURFACE MINING'S PERSPECTIVE ON COAL COMBUSTION WASTE DISPOSAL ON NATIVE AMERICAN LANDS**

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## **Abstract**

The Office of Surface Mining Western Regional Coordinating Center (WRCC) regulates CCB disposal operations at one surface coal mine on the Navajo Reservation. Because the Surface Mining Control and Reclamation Act of 1977 (SMCRA) and the implementing regulations do not contain specific requirements for CCB disposal at coal mines, WRCC developed a guidance document to ensure that CCB disposal at surface coal mines will comply with the requirements of SMCRA and the applicable regulatory program. Most States also have developed policies for coordinating the regulation of CCB disposal at coal mines between State agencies. There are broad differences between States, as well as on Indian lands, in the requirements and methods for regulating CCB disposal operations at coal mines. The WRCC guidance is but one approach to such regulation.

## **Background**

Four years ago at the first CCB Forum, Office of Surface Mining (OSM) Acting Director Kay Henry addressed the increased interest in coal mines as disposal sites for coal combustion by-products (CCBs). She noted that neither the Surface Mining Control and Reclamation Act (SMCRA) nor OSM's regulations specifically address the use or disposal of CCBs at surface coal mines; however, she recognized that CCB use and disposal at active mine sites is not precluded so long as such disposal is conducted in accordance with the environmental protection standards of SMCRA and with applicable solid waste disposal requirements. Director Henry also recognized the challenge to State regulatory authorities to develop appropriate strategies for integrating the concerns of State solid waste programs with SMCRA programs regarding CCB disposal on permitted coal mine sites. That challenge is also shared by OSM to the extent that we are the regulatory authority on Indian lands and in States with Federal programs.

## **The BHP Navajo Mine**

Coincident with the first CCB Forum in 1996, BHP Navajo Coal Company informed OSM's Western Regional Coordinating Center (WRCC) of its intent to expand ongoing CCB disposal operations at the Navajo Mine onto lands regulated under the Indian lands permanent program. Facing a forthcoming permitting action for CCB disposal, we embarked on developing guidance for permitting and regulating disposal operations at active mines under the Indian lands program. The resulting WRCC guidance document is the subject of this presentation.

WRCC is currently completing the technical review of BHP's permit revision application to dispose of CCBs on permanent program lands at the Navajo Mine. The public comment period ends on May 30. BHP has been disposing CCBs at the Navajo Mine since 1971 under 1968 authorizations by the Navajo Nation and Secretary of the Interior Udall, and subsequently by OSM in the mid-1980s under the Initial regulatory program. BHP disposes about 1.9 million cubic yards annually and anticipates that disposal will increase to 2.6 million cubic yards per year after 2004.

## **A Federal Program Guidance Document for Permitting Coal Combustion By-Products**

Director Henry, at the 1996 forum, also noted the differing chemical and physical characteristics of CCBs, regional differences of mine sites, and the differences in regulatory requirements among the States. Our research in developing WRCC's guidance document certainly confirmed the broad differences between States (and on Indian lands) in the requirements and methods for regulating CCB disposal operations at coal mines. Accordingly, WRCC's approach to regulating CCB disposal should be regarded as but one of many approaches and one which we may modify as we work through the process.

### **Objectives and Strategies**

In developing WRCC's guidance document, we identified five objectives for regulating CCB disposal under SMCRA and applicable solid waste disposal requirements, and then formulated strategies to achieve those objectives.

#### **Objective 1**

**CCB disposal operations will not cause a violation of, or create a variance from, the reclamation and environmental protection performance standards of SMCRA and the applicable SMCRA regulatory program.**

**Strategy 1.1. *CCB disposal operations should comply with the backfilling and grading performance standards at 30 CFR § 816.102.*** CCB disposal is usually conducted with the backfilling activities and is handled in the same manner as spoil. Therefore, the backfilling and grading performance standards should be applicable to the CCB disposal operations, except as noted below in Strategies 1.2 and 1.3.

**Strategy 1.2. *The final surface configuration of the mined-out area where CCBs are disposed should achieve the approximate original contour (AOC) in accordance with 30 CFR § 816.102(a), and the AOC variances allowed at 30 CFR § 816.102(k)(3)(ii), 785.16 and 816.133(d) and the thick overburden AOC exemption allowed at 30 CFR § 816.102(k)(2) and 816.105 should not be applicable.*** CCB disposal operations should not be allowed in areas where AOC could not be achieved. The additional volume of CCBs, imported into the coal mine from an outside source, should not cause any variance or exemption from the AOC requirements.

**Strategy 1.3. *CCBs should not be disposed in mined-out areas if spoil would be displaced and disposed as excess spoil.*** CCB disposal should be allowed only where disposal capacity would be available after all spoil is returned to the mined-out area. CCBs should not displace spoil that otherwise would be returned to the mined-out area. In accordance with 30 CFR § 816.102(b), all spoil, except excess spoil, must be returned to the mined-out area. Excess spoil includes only that spoil that is not needed to restore AOC [48 FR 23358, May 24, 1983]. Excess spoil disposal areas should not be created, or enlarged, to provide capacity for disposal of CCBs. In a decision concerning the creation of excess spoil, the IBLA noted, "There is nothing 'automatic' about the privilege to treat spoil as 'excess'."

**Strategy 1.4. *CCBs should be disposed in a controlled manner in designated disposal sites in the permit area in accordance with 30 CFR § 816.89.*** CCBs are solid wastes that should be subject to the appropriate performance standards for disposal of noncoal mine wastes at 30 CFR § 816.89, which follow the solid waste disposal criteria of 40 CFR Part 257.

**Strategy 1.5. *CCB disposal operations should be conducted to minimize disturbance to the hydrologic balance within the permit and adjacent areas, to prevent material damage to the hydrologic balance outside the permit area, to assure the protection and replacement of water rights, and to support the approved postmining land uses.*** The potential for groundwater pollution is singularly the greatest environmental concern of CCB disposal at mine sites. CCB disposal should be subject to the hydrologic balance protection standards at 30 CFR § 816.41.

**Strategy 1.6. *The timing of CCB disposal operations should be based on completion of all mining and reclamation operations in accordance with contemporaneous reclamation performance standards.*** CCB disposal as monofills in final pits and ramps could delay final reclamation for a considerable time (possibly many years)

depending on the disposal rate. The timing of disposal, backfilling, and final grading of CCB disposal areas should be clearly identified in the permit application and considered in the permitting decision.

## **Objective 2**

**CCB disposal operations must conform to applicable State, Tribal, or local solid waste disposal laws and regulations, in addition to SMCRA and the SMCRA regulatory program.**

**Strategy 2.1.** *The permit application should describe the steps that have been taken to comply with applicable Federal, State, and Tribal solid waste disposal laws and regulations.*

Under 30 CFR § 780.18(b)(9), the permit application must contain a description of the steps to be taken to comply with the requirements of applicable air and water quality laws and regulations and health and safety standards.

**Strategy 2.2.** *OSM should consult with State, Tribal, and local solid waste regulatory authorities to ensure that CCB disposal operations conform to State, Tribal, or local laws and regulations governing solid waste disposal and to coordinate the review and issuance of permits.* Section 504(h) of SMCRA requires coordination of the review and issuance of permits with other Federal, State, or Tribal permit process as applicable to the proposed operation. Section 702 of SMCRA precludes it from superseding, amending, modifying, or repealing the Solid Waste Disposal Act and other environmental statutes and rules or regulations promulgated thereunder. Therefore, consultation with the solid waste regulatory authority is appropriate.

## **Objective 3**

**CCB disposal operations must be approved in a SMCRA permit application in conformance with the permitting requirements of the applicable SMCRA regulatory program before the disposal operations may begin.**

**Strategy 3.1.** *Any permit revision application proposing CCB disposal is a significant permit revision subject to the notice, public participation, and notice of decision requirements of 30 CFR § 773.13, 773.19(b)(1) and (3), and 778.21.* Federal, State, Tribal, and local agencies and the public should be notified of any revision that proposes CCB disposal operations. Public interest in the location and methods of solid waste disposal is almost always high, and the agency notifications required at 30 CFR § 773.13(a)(3) also support Objective 2, above.

**Strategy 3.2.** *The permit application or permit revision application should contain applicable information required for an alternative land use at 30 CFR § 780.23(b).* Although CCB disposal operations conducted concurrently with surface coal mining and reclamation operations would not require a postmining land use change pursuant to 30 CFR ' 816.133(c), the disposal operations would be an additional joint land use with the coal mining and reclamation operations. Similar to the postmining land use discussion required by 30 CFR § 780.23(b), the permit application should include a specific discussion of (1) the utility and capability of the land where CCBs are disposed to support a variety of alternative uses, (2) the relationship of the proposed CCB disposal operations to existing land use policies and plans, and (3) the consideration which has been given to making all of the proposed CCB disposal activities consistent with surface owner plans and applicable State and local land use plans and programs. The description should be accompanied by a copy of the comments concerning the proposed CCB disposal operations by the legal or equitable owners of record of the surface of the land where CCB disposal would occur, and the State, Tribal, and local government agencies which would have to approve or authorize the solid waste disposal operations.

**Strategy 3.3.** *The permit application should contain, for each area where CCBs would be disposed, a copy of the written consent of the surface owner for CCB disposal; a copy of the conveyance that expressly grants or reserves the right to dispose of CCBs; or if the conveyance does not expressly grant the right to dispose of CCBs, documentation that under applicable State or Tribal law, the applicant has the legal authority to dispose of CCBs.* In conformance with the purpose of SMCRA at Section 102(b) to assure that the rights of surface landowners are fully protected, the applicant must demonstrate "right-of-entry" for CCB disposal operations.

**Strategy 3.4. CCB disposal sites should be specifically designated, described, and identified on a map.** Under 30 CFR§816.89(a), noncoal mine wastes (i.e., solid wastes) must be placed in a designated portion of the permit area (see the discussion for Strategy 1.4). The requirements for maps and plans at 30 CFR§780.14(b)(8) and (11) require that waste disposal facilities be shown on a map.

**Strategy 3.5. A CCB disposal plan should be included in the Reclamation and Operation Plan required under 30 CFR Part 780.** CCB disposal operations would be an integral part of the surface coal mining and reclamation operations approved in the permit application, and a CCB disposal plan should be included in the permit application. The backfilling and grading performance standards should be used for evaluating the proposed CCB disposal plan. The plan should:

- Identify the source and components (e.g., fly ash, bottom ash, scrubber sludge) of the CCBs.
- Describe the physical and chemical properties of the CCBs.
- Include data and analysis used to determine the physical and chemical properties of CCBs, cover requirements, and, if needed, treatment or encapsulation requirements for the disposal of the CCBs.
- Identify and describe the location of designated CCB disposal areas, the volume and disposal rate of CCBs in each area, and the anticipated or actual starting and ending dates of disposal activities in each designated disposal area.
- Describe the plans and procedures to transport, handle, place, treat, if necessary, and bury CCBs. The plans and procedures should include the routes, methods and equipment to be used to transport the CCBs on the mine site; the method of placement; any special handling procedures to be employed (e.g., mixing with spoil, cell construction practices); the depth of cover to be placed over the buried CCBs; the type, amount, and source of the nontoxic and noncombustible materials that would be used to cover and, if applicable, encapsulate, or isolate, the materials; and the methods and specifications for treating the materials, if applicable.
- Describe how the disposal measures to be employed would effectively avoid acid or toxic drainage, control the impact on surface water and groundwater, and minimize adverse effects on plant growth and the postmining land use.
- Describe the effect of CCB disposal on achieving the approximate original contour.
- Describe the timing and schedule of CCB disposal, backfilling, and final grading of CCB disposal areas. Include the names of persons or organizations that collected and analyzed the data and information contained in the disposal plan, the dates of the collection and analysis, and description of the methodology used to collect and analyze the information.

**Strategy 3.6. The fugitive dust control practices in the air pollution control plan should specifically address the CCB disposal operations, including fugitive dust control during transport and placement of the CCBs within the permit area.** Fly ash, usually the major component of CCBs, is very powdery and very susceptible to wind erosion.

**Strategy 3.7. The probable hydrologic consequences analysis and hydrologic reclamation plan in the permit application, and the Cumulative Hydrologic Impact Assessment prepared by OSM, should specifically address the CCB disposal operations, including the probability of adverse impacts on the hydrologic balance, contamination of surface or groundwater supplies, and the time for manifestation of impacts to surface or groundwater supplies.** The probable hydrologic consequences analysis contained in the permit application should specifically address the CCB disposal operations. Groundwater monitoring plans should specifically analyze and assess monitoring needs around CCB disposal areas and consider the length of time for the manifestation of any effects of disposed CCBs on groundwater resources. CCBs should be regularly sampled and tested throughout the disposal period to assure consistency with the materials tested for permit issuance and plan approval.

#### **Objective 4**

**CCB disposal operations will be conducted only as described in the approved permit application and in accordance with the applicable performance standards.**

**Strategy 4.1. CCB disposal operations should be inspected and enforced by OSM in accordance with the inspection and enforcement provisions of the applicable regulatory program and 30 CFR Parts 842 through 846.** OSM inspectors should inspect the CCB disposal operations as an integral part of the surface coal mining and reclamation operations to ensure they are conducted only as described in the approved permit application and in accordance with applicable performance standards of SMCRA and the applicable SMCRA regulatory program.

Inspectors should understand and be aware of the disposal and reclamation requirements for CCB disposal areas, requirements for periodic sampling and testing of the CCBs, materials handling and compaction requirements, and disposal locations and elevations (depths) which may be critical. OSM inspectors should be trained specifically in the potential environmental, health and safety hazards and special environmental considerations of CCBs and CCB disposal operations. Some CCBs can contain high levels of toxic substances. Some CCBs can be so highly alkaline that they cause caustic burns.

## **Objective 5**

**CCB disposal areas will be fully reclaimed in accordance with the applicable performance standards and the approved permit application.**

**Strategy 5.1. The evaluation of any phase I, II, or III bond release application involving a CCB disposal area, including the determination of the amount of bond to be released, should consider whether pollution of surface and subsurface water is occurring, the probability of future occurrence of such pollution, and the estimated cost of abating such pollution.** The bond release requirements at 30 CFR § 800.40(b)(1) require evaluation of "whether pollution of surface and subsurface water is occurring, the probability of future occurrence of such pollution, and the estimated cost of abating such pollution." The period of liability provisions at 30 CFR § 800.13 are based primarily on achievement of successful revegetation, although 30 CFR § 800.13(a) also adds "or until achievement of the reclamation requirements of the Act, regulatory programs, and permit, whichever is later." Similarly, the Phase II bond release criteria at 30 CFR § 800.40(c)(2) are concerned principally with the establishment of vegetation capable of controlling erosion. Groundwater pollution, which potentially could result from CCB disposal, could take more than twenty years to manifest itself in some groundwater systems.

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# A COMPARISON OF STATE LEGAL APPROACHES TO CCB REUSE

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## Abstract

From the viewpoint of an attorney, this paper will analyze the status of reuse of CCBs in the United States and describe construction, manufacturing, engineering, and agricultural reuse applications; other barriers to reuse; and competitive market drivers of CCB reuse. In addition, the paper will summarize the Federal laws applicable to CCBs: Resource Conservation and Recovery Act (RCRA) including a description of Subtitle C (hazardous waste) and Subtitle D (solid waste); history of Subtitle C exemption for CCBs including the Bevill Exemption – temporary exemption of CCBs from Subtitle C; the 1988 EPA study on CCBs, *Bull Run Coalition v. EPA* – litigation seeking permanent rule on CCB waste status; the Final rule that CCBs will not be regulated under Subtitle C – September 2, 1993; and remaining open issues including mixed wastes and remaining wastes. In addition, State laws and rules regulating CCBs will be evaluated.

## Federal Regulation of CCBs

CCBs are regulated at the Federal level under the Resource Conservation and Recovery Act. Subtitle C of RCRA regulates hazardous wastes and Subtitle D regulates solid wastes that are then subject to State law.

A brief history of the Bevill exemption of fly ash, bottom ash, boiler slag, and flue gas desulfurization materials from regulation under Subtitle C of RCRA shows the following:

- |           |   |
|-----------|---|
| 12/1978   | EPA proposed a rule to implement Subtitle C of RCRA. EPA proposed a limited set of regulations for management of certain large volume fossil fuel wastes.   |
| 10/1980   | Congress passed the Solid Waste Disposal Act Amendments. It temporarily exempted from regulation under Subtitle C certain large volume fossil fuel wastes. Congress directed EPA to conduct a detailed and comprehensive study of fossil fuel wastes based on 8 study factors. Congress further directed that, within 6 months of filling the report, EPA must decide whether regulation under Subtitle C is warranted. |
| 1984      | RCRA is amended giving EPA the flexibility to promulgate regulations under Subtitle C that considered the unique characteristics of Fossil Fuel Combustion Wastes (FFW) and modify the Solid Waste requirements to account for special characteristics as long as health and the environment were protected.  |
| 2/1988    | EPA submits its report to Congress. EPA failed to publish the regulatory determination as required by Congress and was sued by Bull Run Coalition (an Oregon Citizen's Group) with Edison Electric Institute intervening as plaintiffs.   |
| 6/30/1992 | EPA enters a consent decree that establishes a schedule to complete the determination. The decree establishes two categories with separate schedules: (1) the 4 large volume wastes, and (2) all remaining wastes. August 2, 1993 was the deadline for the large volume wastes and April 1, 1998 for all remaining wastes.  |
| 8/9/1993  | EPA makes a regulatory determination that the 4 large volume FFWs do not warrant regulation under Subtitle C. EPA commits to a schedule to complete the report to Congress for the mixed fuels and remaining low volume wastes by March 31, 1999 and issue a regulatory determination by October 1, 1999.   |

- 3/31/1999 EPA submits a report to Congress on remaining wastes indicating that regulation under Subtitle C will not be warranted. EPA states, however, “The agency has insufficient information on managing FFW in surface and underground mines in order to assess the potential for risks associated with this practice, whether for disposal or beneficial uses such as mine reclamation.
- 2/10/2000 EPA conducts interagency briefing under OMB with OSM, USDA, and DOE.
- 3/6/2000 EPA provides a 91 page draft revision of findings that would no longer exempt CCBs from Subtitle C for disposal or mine filling.
- 3/10/2000 Court approves extension of deadline for EPA determination to April 10, 2000.
- 4/10/2000 EPA provides a draft proposed decision that departs from its findings under its March 31 Report to Congress. In this proposal, mine filling is not exempted as a beneficial use (active or inactive). For land disposal or mine filling, even large volume wastes could be subject to Subtitle C regulation unless managed properly.

### **State Regulation of CCBs**

Currently, under Subtitle D of RCRA, States may regulate CCBs. There are several ways that States may choose to approach this regulation. In order to illustrate the range of State approaches, I have chosen to look at just a few States in detail. One of the first things you need to look at in detail is how each State actually defines the specific coal combustion wastes it regulates. There was a lot of State regulatory activity concerning CCBs in the 1990s. I am looking forward with interest on how the States will respond to this new Federal regulatory determination on the subject.

States may regulate CCBs as a solid waste, on a case by case basis as hazardous waste, or as a special waste. The ways a State may do this is by statute, by generic reuse or specific reuse regulations, or by guidance and/or policy. States vary widely in how this is done. Specifically with mine applications, there are seven States that I am aware of that expressly allow by statute mine applications. There may be more States that allow this on a case by case basis. Those States that authorize mine application by law are:

- Illinois
- Indiana
- Kentucky
- Ohio
- Oklahoma
- Pennsylvania
- Virginia.

At this point, I will focus on Illinois since it is the State I am most familiar with. It is an interesting program in that it has two classifications of waste, coal combustion waste and coal combustion by-products. In Illinois, it is preferable to be classified as a coal combustion by-product. Illinois defines coal combustion waste as:

- fly ash, bottom ash, boiler slag, flue gas desulfurization material, fluidized bed combustion material; or
- coal ash combusted with fuel grade petroleum coke, other fossil fuel, both fuel grade petroleum coke and other fossil fuel; or
- fuel grade petroleum coke, other fossil fuel, or both fuel grade petroleum coke and other fossil fuel in combination with no more than 20 percent tire derived fuel or wood or other materials.

Coal combustion by-products are defined in Illinois as coal combustion wastes that:

- meet specified analytical requirements (a leach test that meets a class one groundwater standard); and
- are reused in specified applications.

Allowable CCB reuse applications in Illinois include:

- extraction/recovery of materials and compounds;
- cement and concrete;
- roof shingles (asphalt/cement);
- Illinois Department of Transportation approved applications;
- anti-skid material, athletic tracks, foot paths (bottom ash);
- pavement base, pipe bedding, foundation backfill;
- structural fill; and
- mine subsidence, mine fire control, mine sealing, and mine reclamation.

Allowable mining applications for coal combustion wastes in the State of Illinois must be associated with coal sales. Coal sales may not exceed 35 percent without Illinois Department of Mines and Minerals approval. There are no coal sales restrictions for CCBs.

In Kentucky, allowable reuse includes:

- ingredient in product;
- cement, concrete, paint, plastics;
- anti-skid material;
- structural fill;
- blasting grit;
- roofing granules; and
- disposal in active mining operation if allowed by permit (specific requirements apply).

In Ohio, regulation of CCBs is by policy rather than by statute. Allowable reuse includes:

- ingredient in product;
- stabilization agent;
- as part of a composting process;
- extraction/recovery of materials and compounds;
- anti-skid/road preparation material;
- mine subsidence stabilization, mine fire control, and mine sealing with Ohio Department of Natural Resources approval;
- additive in commercial soil blending operations;
- landfill daily cover;
- structural fill;
- pipe bedding;
- road/parking lot material; and
- beneficial uses less than 200 tons.

In Pennsylvania, allowable reuse applications by statute include:

- structural fill;
- soil substitute/additive;
- active mine reclamation;
- abandoned coal or industrial mine;
- concrete;
- extraction/recovery of materials and compounds;
- anti-skid/road preparation material;
- ingredient in product;
- mine subsidence, mine fire control, and mine sealing;
- drainage material or pipe bedding; and
- stabilized product.

In Virginia, allowable reuse applications by statute include:

- mine reclamation/mine refuse disposal;
- soil nutrient additive;
- anti-skid/road surface material;
- structural fill; and
- extraction/recovery of materials and compounds.

The following States expressly allow CCB reuse by statute but do not specifically mention mine applications:

- Alaska
- Colorado
- Iowa
- Maine
- Maryland
- Massachusetts
- Michigan
- Missouri
- Nebraska
- New Hampshire
- New Jersey
- New York
- North Carolina
- Tennessee
- Texas
- Utah
- West Virginia
- Wisconsin

A case in point is Iowa. Iowa does not specifically allow mine filling as a reuse; however, it does allow “similar cementitious use.” My law firm was involved with obtaining approval for a very large mine filling application in Iowa under that language. Massachusetts, Utah, and Nebraska have a similar provision under “other approved commercial or industrial purposes.”

States that allow reuse of CCBs in concrete applications by statute include:

- Indiana
- Iowa
- Kentucky
- Massachusetts
- Michigan
- North Carolina
- Ohio
- Pennsylvania
- South Carolina
- Virginia
- West Virginia

States that allow reuse of CCBs as aggregate include:

- Massachusetts
- Michigan

- New York
- North Carolina
- Pennsylvania
- South Carolina
  
- West Virginia
- Virginia

States that allow reuse of CCBs as structural or flowable fill include:

- Indiana
- Kentucky
- Massachusetts
- Michigan
- New York
- North Carolina
- Pennsylvania
- South Carolina
- Virginia
- West Virginia

States that allow reuse of CCBs as anti-skid materials include:

- Indiana
- Kentucky
- New York
- North Carolina
- Pennsylvania
- Virginia
- West Virginia

States that allow reuse of CCBs as road base include:

- Indiana
- Iowa
- Kentucky
- Massachusetts
- Michigan
- North Carolina
- Ohio
- Pennsylvania
- South Carolina
- Virginia
- West Virginia

In conclusion, most of the States allow beneficial reuse either by statute or by policy.

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