

Minefill Practices for Coal Combustion Residue (CCR)¹

Facilitated Stakeholders Meeting

May 19 & 20, 2003

U.S. EPA East Building, Room 1153

Washington, D.C.

Session 1: Welcome and Opening Remarks

Truett Degeare of the United States Environmental Protection Agency (U.S. EPA) welcomed participants to the meeting and provided information about the facilities on the U.S. EPA campus. Greg Conrad of the Interstate Mining Compact Commission (IMCC) convened the meeting and described the preceding series of meetings conducted by IMCC on minefill management practices. These meetings included state and tribal mining regulators, U.S. EPA, and other federal agencies. The purpose of the previous meetings was to ensure that the regulators had a better understanding of each others' regulatory programs before inviting other stakeholders to the table. All materials from the previous meetings are available on U.S. EPA's web site at <http://www.epa.gov/epaoswer/other/fossil/index.htm>. Mr. Conrad expressed the hope that all attendees at this meeting have had the opportunity to review those materials, so that there is a common level of understanding.

Connie Lewis, Senior Partner, Meridian Institute, served as meeting facilitator. She discussed the agenda and ground rules for the meeting. This meeting is intended to be an interactive and participatory meeting, not a hearing. She explained that summary notes on the meeting proceedings will be published, but there will be no detailed transcript.² These meeting notes will not attribute specific comments to individual attendees, only identify the affiliation of the attendee making the comment. Attachment 1 to these meeting notes is copy of the agenda. The following is a summary of the ground rules suggested by Ms. Lewis:

- Seek to understand first. Listen first and then craft your response. Be open to new ideas and ways of integrating other people's perspectives with your own.
- Offer insights and information that will explain your perspective.
- Challenge facts and ideas, not people.
- Understand and respect the balance in the agenda for presentation and discussions.
- Be succinct. Be novel (i.e., don't be repetitive). Don't kill the facilitator if she thanks you for your eloquent presentation/comment and then cuts you off.

¹ Throughout this meeting, speakers used various terms to refer to the solid materials generated as a result of the combustion of coal, including: coal combustion residue, coal combustion waste, coal combustion byproducts, coal combustion products, power plant waste, and coal ash. For ease of presentation, these notes use the abbreviation "CCR" throughout, except in cases where the speaker was making a point regarding distinctions between the terms used.

² Because these meeting notes are summary in nature, not a transcript, they are intended to reflect the discussion, but may not fully represent the positions of the various parties.

- “New” damage cases, if any, will be noted and possible follow up actions will be identified, but there should not be an expectation that they will be discussed in detail.
- Let others know that you understand their problems/issues. Think about underlying interests. Try to craft suggestions that address problems while protecting everyone’s interests.

All of the meeting attendees briefly identified themselves. Attachment 2 to these meeting notes is a list of the meeting attendees.

Session 2: Federal Regulatory Background on SMCRA and RCRA Statutes

United States Environmental Protection Agency (U.S. EPA)

Several representatives of the U.S. EPA presented background information on their regulatory determination efforts for CCR. The first representative provided an overview of the federal Resource Conservation and Recovery Act (RCRA) as applicable to CCR:

- CCRs are “Bevill” wastes, meaning they were singled out by Congress under RCRA as high-volume, low-hazard wastes. U.S. EPA is required by the statute to study these wastes and determine the regulatory regime appropriate for them (e.g., under Subtitle C or Subtitle D of RCRA).
- U.S. EPA has a great deal of discretion to determine the appropriate regulatory regime for CCRs. The Agency can distinguish not only among wastes, but also by waste management practices.
- Subtitle C is a complex, cradle-to-grave program for hazardous wastes.
- A finding of hazard is not sufficient to trigger Subtitle C regulation; U.S. EPA also must consider costs and the applicable regulations of other agencies.
- Subtitle D is not federally enforceable by EPA; it is enforceable by citizen suit only. There is no federal permit scheme under Subtitle D.

The second U.S. EPA representative provided a history of the Agency’s regulatory determinations on CCR:

- U.S. EPA is required to consider eight specific factors in making its Bevill determinations (e.g., sources and volumes of materials, present disposal and utilization, potential danger to human health and the environment, documented cases of damage to human health and the environment, alternative disposal methods, costs, impact on use of coal and other fossil fuels, current and potential utilization, current state and federal regulations).
- U.S. EPA’s 1999 Report to Congress (RTC) on Wastes from the Combustion of Fossil Fuels covered more than mine placement of CCR. It also considered landfills and surface impoundments managing CCR and wastes from the combustion of oil and natural gas.

- The RTC concluded that there was insufficient information to adequately assess the risk of CCR when placed in mines. Therefore, the RTC made no tentative decision on this particular practice. U.S. EPA's focus in the RTC was on risk posed by mine placement to ground water and surface water. A specific concern stated in the RTC was with direct contact between CCR placed in mines and the water table. The potential for risk from mine placement made Subtitle C a possibility.
- In the RTC, U.S. EPA solicited comments on mine placement. Specifically, the Agency asked commenters to identify practices that are universally poor, provide case studies of mine placement, and identify modeling tools that might be able to simulate CCR placement in mines.
- The purpose of the May 2000 Regulatory Determination that followed the RTC was to indicate whether the Agency planned to regulate CCR and at what level. For mine placement, the Regulatory Determination announced that regulation under Subtitle C was not warranted. Instead, U.S. EPA was considering either national rules under Subtitle D, regulation under the Surface Mining Control and Reclamation Act (SMCRA) (after adequate consultation with the Department of Interior), or some combination of the two. The Regulatory Determination found that Subtitle C would inhibit the use of CCR in reclaiming active and abandoned mine sites (as well as other beneficial uses).
- Among the other findings of the Regulatory Determination were the following: 30 to 33% of CCRs go to beneficial uses (including mine placement); there were no damage cases that EPA could attribute to CCR placement in coal mines and, in particular, no cases identified involving damage to surface or groundwater from CCR coal mine placement; and EPA considers mine placement of CCR to be an appropriate use if subject to adequate regulation and appropriate management practices.
- More recently, U.S. EPA has announced a Resource Conservation Challenge (RCC) program to promote the use, reuse, and recycling of wastes. The RCC includes an initiative, called the Coal Combustion Partnership Program (or "C2P2"), to encourage the beneficial use of CCR, with the exception of mine placement. After the Agency's decision making process for mine placement of CCR is finished, this practice may be included in the C2P2 program.
- U.S. EPA's current schedule is to issue a proposed rule on CCR management in June 2004 and a final rule in July 2005.

There were two questions for this U.S. EPA representative:

Question: Is there any chance that there will be no new rules under either RCRA or SMCRA?

Answer: U.S. EPA is not required by law to issue new regulations, but it is unlikely the Agency will do nothing.

Question: Does the schedule noted above apply only to mine placement or to disposal as well?

Answer: The proposed rule will address all CCRs, whether disposed or placed in mines.

The final U.S. EPA representative described the Agency's information collection efforts since the May 2000 Regulatory Determination:

- U.S. EPA has developed a cooperative working relationship with stakeholders.
- U.S. EPA has conducted site visits to collect information on minefill operations and practices. These site visits and interviews with state regulators covered nine states and the Navajo Nation.
- U.S. EPA has developed a compendium of state and federal regulatory programs, verified the accuracy of the information in this compendium, analyzed regulatory elements, and identified regulatory concerns.
- The Agency has worked closely with the Office of Surface Mining (OSM) in the Department of Interior to understand their regulatory program and decision making process.
- The Agency has worked closely with OSM and the Department of Energy (DOE) to develop an industry profile and review those agencies' research in this area.
- The Agency has worked with environmental groups to identify minefill damage cases and understand their regulatory concerns.
- The Agency has worked, through IMCC, with state mining regulatory agencies to understand their regulations, identify minefill damage cases, and access their files to gather information. An important part of this last effort has been the series of meetings that began in May 2001 with other state and federal regulators, as described at the outset of this meeting. As noted, all information from these meetings is available on U.S. EPA's web site (<http://www.epa.gov/epaoswer/other/fossil/index.htm>).
- As a result of these efforts, U.S. EPA has developed a number of work products:
 - A document entitled *Regulation and Policy Concerning Mine Placement of Coal Combustion Wastes in Selected States*, which provides detailed information on state regulations.
 - A document entitled *Mine Placement of Coal Combustion Waste: State Program Elements Analysis*, which summarizes the state regulatory program information in tabular form.
 - A discussion document summarizing some of U.S. EPA's regulatory concerns with mine placement of CCR.
 - A discussion guide that was used in U.S. EPA's interviews with state regulators.
 - Reports documenting each of U.S. EPA's state and site visits.

Office of Surface Mining (OSM)

Two representatives from OSM provided background on the SMCRA regulatory program. The first representative provided the following overview:

- OSM is one of eight bureaus within the Department of Interior and is responsible for the regulation of coal mining.

- SMCRA Title V is regulatory, while Title IV is the abandoned mine lands program. The statute was passed into law in 1977. Major purposes of SMCRA that are relevant to the mine placement of CCRs are: to protect the rights of coal field citizens, to protect the environment, and to prevent mining where reclamation is not possible. The overall goal of SMCRA is to balance protection of the environment and agriculture with the need for energy.
- OSM's role is to assist states in establishing a SMCRA regulatory program. Most states that have coal production have primacy, meaning they have the authority to regulate coal mining and OSM has an oversight role. State programs must be no less stringent than the federal statute.
- The SMCRA regulatory program is performance-standard based and does not incorporate design standards. The program recognizes that geology varies across the country and within states. Therefore, the controls placed on a specific mine reclamation project are permit-specific. Toxic materials must be contained and the permit application must contain a detailed description of measures required to protect the environment. Placement of CCR is controlled based on what it is and where you want to put it. The SMCRA program also requires compliance with other federal laws (e.g., the Clean Water Act).
- Placement of CCR is an example of how SMCRA and RCRA work effectively together at the state level. Examples of successful beneficial uses include: alkaline addition, construction material for containment of coal refuse, and subsidence control.
- Differences among individual state SMCRA programs result from the types of industry regulated, the types of local environmental conditions, the number of years of experience with CCR placement, and the degree of consultation with state solid waste programs.
- Extensive information on OSM's SMCRA program can be found on the OSM web site at www.osmre.gov.

The second OSM representative provided details on the SMCRA approach to CCR permitting, monitoring, and bond release:

- OSM has been working with CCR placement since the early 1990s.
- It should be noted that U.S. EPA's umbrella is much larger than OSM's. U.S. EPA is looking at placement at mines that are regulated by SMCRA and mines that are not regulated by SMCRA.
- Under SMCRA, ground-water monitoring is permit-specific. It is based on the extensive baseline data required, the operator's probable hydrologic consequences (PHC) determination, the regulator's cumulative hydrologic impact analysis (CHIA) on each permit, and the site- and CCR-specific monitoring plan.
- Well design and deployment are permit-specific based on the required baseline data; the PHC, CHIA, and operations plan data; and well design considerations from OSM's guidance document. Monitoring parameters and frequency also are site-specific based on the same considerations.

- In terms of duration, monitoring must continue until phase III bond release and all applicable laws and reclamation goals are met (at least 5-10 years).
- SMCRA performance standards include, but are not limited to, the following: minimize disturbance, prevent material damage, protect or replace water rights, and support post-mining land use. SMCRA sites also must comply with all applicable state and federal laws.
- In terms of prohibitions and location restrictions, SMCRA permits cannot be approved until the regulatory authority finds that the project will result in no damage to the hydrologic balance.
- A fugitive dust control plan is required for all mines.
- SMCRA requires that a permit cannot be issued until the regulatory authority makes a finding that the project will result in no risk.
- A track record of 25 years of SMCRA without a damage case and 20 years of experience with CCR placement in coal mines suggest that it is not reasonable to expect harmful contaminants from CCR placement.
- As of 2001, CCR placement was occurring at 1% of approximately 9,650 mine sites in 21 states. According to the Anthracite Region Independent Power Producers Association (ARIPPA), 5.1 million tons of fluidized bed combustion (FBC) material was placed in mines in 1999. According to the American Coal Ash Association (ACAA), 1.5 million tons of non-FBC material was placed in mines in 2001.

Department of Energy (DOE)

A representative of DOE discussed the Department's experience with CCR mine placement.

- The representative stated that she has three areas of responsibility, as follows: increase utilization of CCRs to 50% by 2010, examine the environmental impacts of disposal and utilization of CCRs, and examine the effect of mercury control on byproduct characteristics.
- DOE and other agencies have spent a lot of money researching CCR utilization, including at mine sites. To date, DOE has not found any problems with the use of CCRs for fill at mine sites.

Session 3: Presentations by Stakeholder Groups

Environmental Interest Groups

Several representatives and members of environmental interest groups gave presentations on their concerns with mine placement of CCRs. The first environmental interest group representative made the following statements:

- SMCRA was a law written and passed by citizens. The law is, essentially, a promise to coal field citizens. That promise has gone largely unfulfilled, particularly in the last 20 years, because this nation is not regulating the coal mining industry properly.
- In northwestern New Mexico, over 20 years ago, at the San Juan power plant, the representative examined compliance records and found evidence of pollution from CCR being dumped into the San Juan Mine. Coal field citizens do not want to be sacrificed for the sake of coal mining.
- A lot has been said about PHC and CHIA. These provisions of SMCRA are not being enforced on the federal level or at the state level. Environmental groups have had to bring lawsuits to get states like West Virginia to complete CHIAs. Other states have done CHIAs at a cursory level (for example, covering the entire western half of Kentucky).
- There is a disconnect between the theory and the practice of regulation under SMCRA. As a result, there is mistrust of regulatory agencies that have not regulated, and mistrust of utilities and coal companies.

The second environmental interest group representative made the following statements:

- In Pines, Indiana, there are 390 families, every one of them concerned with what has happened as a result of disposal of more than one million tons of CCR into a landfill in their community.
- The representative has to buy drinking water at the store because his well is contaminated with manganese and boron. His property values have dropped because of the contamination and the source is CCR.
- In a public meeting, U.S. EPA and the Indiana Department of Environmental Management (IDEM) would not drink the local water.
- There are only 2 choices: to leave a legacy of unsafe water, or to be remembered as the generation that protected drinking water.
- The Pines is only the tip of the iceberg if more stringent regulations are not passed.

The third environmental interest group representative made the following statements:

- Blue, Texas, is located east of Austin and just a few miles from Alcoa's mine, power plant, and aluminum smelter. Citizens there are trying to prevent the expansion of the lignite mine and the extraction and sale of groundwater outside the area. In addition, Alcoa wants to continue dumping of CCR from their power plant and others in the mine. This practice is being encouraged by overzealous regulators and is a case in point for the need for additional regulation.
- Citizens only recently became aware of Alcoa's practices at their older Sandow strip mine. The environmental group found records of Clean Air Act violations in State files from 15 years ago and was able to reach a compliance agreement. There seems to be a

trend away from this type of citizen enforceability, particularly in Texas. U.S. EPA needs to step in and reverse that trend. Citizens don't want CCR placed in the new mine.

- As part of a contested case hearing, neighbors found thallium and dioxin in soil at the old plant at 100x the permissible levels and also found thallium in ground water. In response, Texas regulators did their own tests, but didn't test for thallium or dioxin. The citizens fear without adequate regulation, Alcoa will continue to run roughshod over the rights of citizens as the quid pro quo for providing jobs.

The fourth environmental interest group representative made the following statements:

- The representative's farm is located in West Virginia with a coal cleaning plant on one side and a mine on the other. From 1981 to 1990, he faced continuous harassment from the coal company to buy his farm so that the company could strip mine there.
- The company transports coal from the mine to the cleaning plant and pumps gob back to the mine for use as fill. Then they started bringing in fly ash mixed with liquid gob in trucks. The trucks often had no tarps or ripped tarps. Fly ash would end up 4 inches deep on the road. They were grading it off the road into the creek and washing it into the creek with water trucks. In May 1990, all of the fish in the creek died, but the neighbors blamed it on the coal refuse.
- OSM did write a few 10-day notices, but the state regulators couldn't do anything because the fly ash spills weren't on a permitted area and the Department of Transportation couldn't do anything because they had a maintenance agreement with the coal company.
- The representative observed the company's fly ash unloading operation. Workers were handling the ash with no masks. He took a sample of the ash and it burned his hands.
- The representative believes they were using the fly ash to try and run people off, not to dispose of it in the mine. They were bringing the fly ash because they wanted to build a big landfill and needed to buy his farm to do it.
- The representative is concerned that breathing the fly ash and refuse will have an effect on his health and his family's health.
- Without strong regulation, the coal company will continue to use fly ash to run people off or at least continue to handle it improperly.

The fifth environmental interest group representative made the following statements:

- The representative is not opposed to coal mining, but is concerned that the coal companies want to bring the fly ash back to turn the mine pit into a big dump. Under this scenario the power plant saves money, the coal company makes money, and local people get hurt. CCR contains toxics such as arsenic, cadmium, and chromium. These toxics cause kidney disease, cancer, and deformities in children. Because of concerns about these toxics, the representative had to spend \$330 to have his drinking water tested.
- Many citizens are afraid to complain because they rely on the coal companies for their jobs or home and farm leases. People's homes are being shaken from blasting, so they

are afraid if they sign petitions the coal company won't pay to fix their homes. At least one local farmer was concerned about his drinking water, signed a petition, then the coal company wouldn't renew his lease.

- In Indiana, the Governor and the State regulators want to give these people all these permits to dump CCR. Someone has to do something or there will be hundreds of thousands of people with problems 30 years from now. Regulation is needed because CCR will certainly get into the water. It won't cost the coal companies very much to set up modern liners.

The sixth environmental interest group representative made the following statements:

- The representative has been the subject of intimidation by the coal company. In trying to make the coal company be accountable in her community, the representative has had the lug nuts on her tires loosened and others have been threatened.
- Being on the historic registry would not protect the building in which the meeting is being held from the effects of mining, particularly subsidence, in Pennsylvania. The Pennsylvania Department of Environmental Protection (PADEP) says coal mining does not devalue property. That statement doesn't pass the laugh test, and neither does dumping fly ash in the mines. Agencies should not risk the health of the children because they don't have the courage to regulate this industry.
- A company approached the local citizens to remove acid-forming gob, but in exchange they would have to accept alkaline fly ash. They argued that the fly ash is better than what is there now. The issue is one of environmental justice; the same communities exploited by the coal industry for years bear the burden of CCR placement in mines. These communities should not have to exchange one type of waste (coal refuse) for another (CCR) that is more alkaline, but contains more pernicious contaminants.
- It is unconscionable that these wastes continue to be dumped in our neighborhoods. CCR contains arsenic, cadmium, hexavalent chromium, mercury, and lead. These constituents are toxic and cause all kinds of health effects. Chromium three is in coal and gob, but becomes chromium six when the coal is burned, so fly ash contains highly toxic chromium six.
- Citizens cannot accept voluntary guidelines and self-regulation. These wastes won't change their characteristics because regulators ignore them. They won't change their characteristics because there is such a large quantity that regulators can't deal with it.

The seventh environmental interest group representative made the following statements:

- The representative was hired to perform a risk assessment by a rancher who lives near the San Juan Generating Station and BHP Coal Mine. The rancher blames the power plant and mine for the death of 1,400 sheep.
- The Shumway Arroyo flows from the area of the plant and the mine onto the rancher's property and contains 5,000 to 6,000 ppm TDS and 2,000 to 4,000 ppm sulfate. This

contamination has caused health problems in his sheep by interfering with copper metabolism.

- The supposition is that because it is dry in New Mexico, it should be safe to put fly ash there. But, because of the power plant, there is lots of water in this location. Probably, if they hadn't co-located the power plant and the mine, it wouldn't be as big a problem.
- Regulators insist that this area has always been polluted, but, from examining a 1962 aerial photo, it is clear this is not the case. The plant and mine were built in 1979. They started pumping water out of the river into a reservoir. They mined through the Arroyo into the bedrock and diverted it. They also had direct discharge into the Arroyo. As a result, they have created a perennial stream from an ephemeral one. The outcome is a boron plume into the fertile valley.
- As a result of these concerns, the State forced the power plant to go to zero discharge, but the contamination continues.
- The mine operator argues that they just added water to a saline environment and are not the source of the contamination. If that were the case, the worst levels would not be observed closest to the power plant and mine. There are continued increasing sulfate levels in the well closest to the mine.

There was a question for this environmental interest group representative:

Question: If the power plant went to zero discharge, where is the water coming from?

Answer: We think they are adding water to the coal refuse piles.

The eighth environmental interest group representative made the following statements:

- Mercury legislation is moving forward. Among these efforts are: the utility maximum achievable control technology (MACT) standard, which could reduce utility mercury emissions 90%; the President's Clear Skies Initiative, which could reduce mercury emissions 70%; and the Clean Power Act, which could result in a 90% reduction.
- The technology applied to achieve these reductions will probably be activated carbon upstream of the electrostatic precipitator (ESP). This technology will result in large increases in waste volume, as well as in mercury concentration. The expected increase in fly ash mercury concentration will be from 0.29 ppm to 0.66 ppm.
- The fate of mercury in CCR is largely unknown. Some of the uncertainties include microbial mobilization and the effect of activated carbon on mercury solubility in water.
- Similarly, the fate and transport of mercury in minefill applications is largely unknown. Additional field data is needed in this area.
- Additional study also is needed on the impacts of mine mouth FBC plants burning gob. These plants efficiently capture mercury and waste coal has an order of magnitude higher mercury to begin with.

- There are other potential impacts of clean air legislation. The utility MACT could include or result in capture of additional metals or additional acid gas scrubbing. The Clear Skies Initiative covers NO_x and SO_x as well.
- The Utility Solid Waste Activities Group (USWAG) has estimated 45 to 65 million additional tons of CCR will be generated as a result of clean air legislation from additional capture and reduced beneficial use. An additional concern is that if re-burning carbon is necessary to make waste marketable, then the mercury may be re-released.

The ninth environmental interest group representative made the following statements:

- The representative came to this meeting from central Texas for two reasons: (1) our water is precious, and (2) regulations for CCR are not protective.
- An example of inadequate regulation is in Texas. The existing and new Alcoa lignite mines northwest of Austin will be reclaimed using CCR, but characterization and monitoring have been inadequate. In spite of the inadequate monitoring, environmental groups have data that shows problems: 1,000 mg/L sulfate, 1 to 2 mg/L boron, TDS, arsenic detected in 25% of samples, and selenium detected in 9%. Concern extends beyond primary drinking water standards: TDS, iron, sodium, manganese, boron, arsenic, selenium, and sulfate all are high in water samples, making the water unuseable.
- Regulators count on mixing to dilute these contaminants, but, during the dry months, local lakes receive inflows that exceed discharge limits.
- At the lignite mines, they dewater the overburden, but they also depressurize the aquifer and generate aquifer water, which is mixed with mine discharge. As a result, it looks like low concentrations. In the future, San Antonio may depend on that water.
- Texas refuses to require discharge limits for all pollutants of concern or sufficient monitoring or other controls. If U.S. EPA doesn't do something, it is unlikely that the citizens of Texas will be able to do anything to solve this problem.

The tenth environmental interest group representative made the following statements:

- The ground rules for this meeting assume that different people have different experiences with CCR. This assumption is accurate, because, in the representative's experience, statements that there are no damage cases or problems with mine placement of CCR are dramatically wrong.
- State agencies, instead of being skeptical about the legitimacy of mine placement as a beneficial use, seem to be actively promoting it. It makes no more sense to put CCR in an unlined hole than to build a ski mountain in Indiana.
- CCR clearly should be considered "toxic forming" under the SMCRA definition. With one exception, CCRs should be treated as such and contained. The exception is that there is the potential to use some of these wastes in a field study to abate acid mine drainage (AMD). That application might be a legitimate beneficial use.

- The PADEP leads people to believe that the use of CCR to abate AMD is one of the basic elements of their program. The representative, however, examined 10 such cases of this application in Pennsylvania and was not able to find any that clearly demonstrated the effectiveness of this practice. Two of the sites showed improvement. At one of these sites, however, the improvement was in the “upgradient” monitoring locations, suggesting poor site characterization. At the other site, there was steep decline before placement began, suggesting that acid production was already declining. After placement, the rates of improvement dropped off. Therefore, there is the possibility that placement may have interfered with other remediation efforts or natural processes.
- In Pennsylvania, the AMD program, which pays coal companies to remediate streams, does not require AMD abatement to occur. It is only necessary that the sites not get worse.
- Also, the Pennsylvania program is a “cookie cutter” program. While SMCRA regulators argue that these programs rely on a site-specific approach, the stated goal of the Pennsylvania program is to use “standard language” to issue permits more efficiently.
- At the AMD sites examined, the scale of the problem is not necessarily related to the scale of the solution. Two of the sites were undergoing active corrective action, apparently because not enough alkaline material was being placed. Another site had much more CCR being placed than one would expect. The site generated 11 gallons per minute of AMD and millions of tons of CCR were being placed. The water at this site has not improved, constituents have exceeded trigger levels, and then the trigger levels were done away with. The impact of placement was only a 0.5 drop in pH. There have to be better uses for these tons of alkaline material, particularly if they are not successfully remediating 11 gallons per minute worth of impact.

The eleventh environmental interest group representative made the following statements:

- Citizens at mine disposal sites are not being afforded the same protections as citizens living around landfills. The representative compared Indiana landfill safeguards to Indiana minefill safeguards. Weaknesses in the State’s minefill program include: (1) allowing placement of CCR in ground water; (2) no long-term monitoring; (3) no remediation; (4) focus on minimization, not avoidance, of contamination; and (5) replacement of wells, not protection.
- There is a lack of basic safeguards in Indiana’s mine disposal program under SMCRA. The program allows disposal in direct contact with ground water and there is no monitoring after bond release. The SMCRA program focuses on minimizing, rather than preventing, pollution. This focus reflects the underlying assumption that mines will always pollute and some level of contamination is acceptable. The program relies on replacement of wells, which reduces property values, and there is no requirement for remediation.

- An example of the inadequate controls in the Indiana program is the Farmersburg mine. The population near the site is completely reliant on ground water, yet disposal of CCR is permitted in direct contact with ground water and there is only one monitoring well.
- There is an assumption in every single Indiana mine placement permit that underlying fire clay will act as a “natural liner.” This “natural liner” does not function as a liner and does not prevent ground-water contact with CCR. Because the fireclay is merely a horizontal layer, it cannot isolate the CCR.
- Indiana’s mine permits refuse to acknowledge drinking water supplies, with statements such as “no reliable source of drinking water in the area.” The Pride mine permit acknowledges drinking water users between mine and river, but these wells are discounted as not good quality.
- Indiana refuses to consider requiring placement above the water table, even though other states (such as Pennsylvania and Kentucky) have this requirement in their regulations.
- In Indiana, ground water is not protected in proximity to waste disposal area; the standards don’t apply within 300 feet of the disposal area.
- The duration of monitoring is insufficient. It doesn’t continue until a point when ground water has recharged and begun flowing out of the mine again. Despite a court decision in one case that monitoring must continue through this time, Indiana has refused to put this requirement in other permits.
- The number of monitoring wells is generally inadequate. At one site, there are three wells for a 2,662 acre area. Wells are placed outside the direction of ground-water flow and away from the direction of drinking water users. At one site, Indiana has refused to draw a potentiometric map of ground water because they allege there is no drinking water use in the area.
- Indiana uses the American Society for Testing and Materials (ASTM) method to characterize waste. This method is not reliable. A comparison of these characterization data for the Universal site to data for actual flows out of ash makes this clear. Disposal operations should not be approved based on theory and assumptions about dilution, dispersal, and attenuation.
- There are 70 cases of contamination, including death, deformities, and reproductive problems in plants and animals, and polluted drinking water wells in Indiana, Pennsylvania, Wisconsin, and Virginia. These damages from landfills and surface impoundments are relevant to the potential for damage from mine placement sites.

The twelfth environmental interest group representative made the following statements:

- Other meeting attendees should not take the statements of the environmental interest groups as a personal attack. While there may be disagreement on the issues, the environmental interest groups believe you are all sincerely trying to do your jobs.
- The lack of enforcement of SMCRA has subverted its purposes. The program allows damage to wells as long as they can be replaced. Even with this reliance on replacement,

- it takes a landowner with a good lawyer to receive a remedy. This approach is the opposite of that under RCRA, which relies on prevention.
- OSM has never defined “material damage,” which is the key term for determining appropriate permit conditions.
 - Under SMCRA, “toxic-forming material” is defined as earth materials or waste which, if acted upon by air, water, weathering, or microbiological processes, are likely to produce chemical or physical conditions in soils or water that are detrimental to biota or uses of water. The concept is a broad one, and the short-term leaching pH from CCR clearly demonstrates that this material fits the definition. SMCRA and state regulators, however, agree with utilities that leachate is no more toxic than native soils. The leachate tests used to demonstrate this are designed to determine whether a waste is hazardous under RCRA and they are not appropriate for determining whether a material is “toxic-forming” under SMCRA. For example, these tests do not consider TDS, cobalt, or thallium. As a result, regulators are grossly misleading the public and mixing apples and oranges on this issue. The upshot is that they are not interested in enforcing the “toxic-forming” definition.
 - While SMCRA regulators argue that the program relies on site-specific information, they don’t attempt to collect adequate information to characterize sites. Alkaline addition is permitted all over Pennsylvania without acid-base accounting. New Mexico regulators claim there is no ground water under sites. At the San Juan site, this statement is based on results from two lysimeters nowhere near the drainage where damage has occurred. Environmental groups have seen no minefill permit anywhere that discussed geochemical interaction between ash, spoil, and ground water based on site-specific data.
 - All of the permits rely on the same useless announcement that CCR is not hazardous waste and, therefore, not a problem. There are no liners, few, if any, barriers, and few placement restrictions. Even Pennsylvania’s regulations rely on the “regional water table,” which is not defined.
 - Bond amounts under SMCRA don’t consider value of water supplies, include no resources for monitoring or corrective action, and are not an effective substitute for financial assurance. For minefill, there should be a corrective-action set-aside fund to provide resources to fix problems.
 - There is insufficient monitoring for the size of the sites and quantities of waste. Wells that exist are not designed to detect the impact of ash. There are orders of magnitude fewer wells than would be required by RCRA sites.
 - SMCRA regulatory programs should have developed basic safeguards. CCR should not be dumped into highly unstablized strip mines. Even if this practice continues, water taken directly from ash should be useable if it’s going to support post-mining land use under SMCRA. In order to prevent drilling water wells directly into deposits of CCR, there should be permanent records of where CCR is placed.
 - Mine placement of CCR must stop until there are federally enforceable safeguards, and there is citizen standing to compel enforcement of these safeguards. It may be necessary

to declare CCR a contingent hazardous waste under RCRA to achieve this outcome. Such a determination would encourage legitimate beneficial use.

The thirteenth environmental interest group representative made the following statements:

- There is a common theme in all of the citizen presentations: there is a failure of state and federal regulators to investigate and monitor this waste. A clear example can be found in a recent RCRA inspection report for the Four Corners power plant in New Mexico, which found that there was a problem with waste management, but no action was taken because the regulators “do not regulate power plant waste.” Where problems have occurred, citizen groups have had to come and take action.
- There is a relatively simple solution. The solution is not Subtitle D regulations or modifications to SMCRA regulations, but contingent Subtitle C regulation. This approach gives federal government effective oversight and enforcement powers.
- Contingent Subtitle C regulation is justified because of: the magnitude of the threat, the poor track record of state regulation of mine disposal to date, the uniform state opposition to federal standards, the need for consistency nationwide, and the need for strong preventive measures.
- The determination, however, should be delayed until after promulgation of new mercury standards, until U.S. EPA’s risk modeling is complete, and until all data gaps in U.S. EPA’s determination are closed (e.g., the impact of the new arsenic standard).
- A contingent Subtitle C regulation should be similar to that for cement kiln dust. It would provide for federal inspections and state Subtitle C inspections, federal enforcement, funding to state programs, and tailored regulations. U.S. EPA is capable of designing these regulations to address regional differences. Properly managed CCR would be excluded
- The program should be implemented by U.S. EPA and state waste management agencies, with a focus on prevention. These agencies should coordinate with mining regulators, but take the lead role. Funding for state agencies is essential.

Industry Stakeholders

Several representatives of industry gave presentations in defense of mine placement of CCRs. The first industry representative made the following statements:

- Members of the coal mining industry both beneficially use and dispose CCRs in mine settings.
- Mine placement sites vary in geology, climate, and hydrology. These variations demand flexibility. A one size fits all regulation simply is not going to work. States have continued to modify their regulatory programs, demonstrating their flexibility.
- The industry’s placement practices are environmentally responsible and protective and existing regulations function well. Mine placement of CCRs lessens the risk of AMD and

prevents subsidence. The practice conserves resources such as landfill space. U.S. EPA's approach since May 2000 has recognized these benefits in emphasizing the need to increase and not decrease the beneficial use of CCR as minefill.

- The industry will respond in writing regarding alleged damage at mine sites, but reiterated that EPA and DOE efforts to date have not identified any problems associated with the placement of CCR in mines. Regarding specifically the Farmersberg site, no ash has been disposed there to date. There is only a pending permit application.
- Mine placement of CCR is extensively regulated under the Clean Air Act, Clean Water Act, OSM's program, and state regulatory programs.
- U.S. EPA's consultation with OSM and states over the last months has been absolutely necessary. U.S. EPA needed to consider the extent of existing rules.

The second industry representative made the following statements:

- The representative's mining company currently is beneficially using CCR by injecting alkaline lime sludge and flue gas desulfurization (FGD) material for AMD abatement in underground coal mines.
- Prior to applying CCRs, the company was employing metal hydroxide underground injection. This practice increased pH from 2.9 to 4.8. After CCR injection, the company has observed infiltrating water with a pH of 2.9 but mine pool water has beneficially increased to a pH of 6. The practice also has resulted in beneficial reductions in iron.
- Long term goals of the project are to neutralize the mine pool, reduce ground-water contact with pyrites, utilize the mine voids, and reduce the landfill area needed for CCR disposal.

There was a question for this industry representative:

Question: How long will ground-water monitoring continue at this site?

Answer: Monitoring is a requirement of our SMCRA permit, so it will continue until 5 years after bond release.

The third industry representative made the following statements:

- The utility industry has assisted in the development of U.S. EPA's Industrial Subtitle D guidelines. The industry has worked for 20 years on the safe beneficial use of CCRs as minefill. The industry has cooperated with U.S. EPA, OSM, and numerous state agencies on mine placement of CCR as a beneficial use.
- The industry applauds U.S. EPA's work on the recent intergovernmental consultation and the Agency's efforts to keep all stakeholders informed. The record from this consultation reflects an unbiased approach by both federal and state regulators. U.S. EPA has properly refrained from making a determination until input from all stakeholders could be considered.

- The substantial efforts of state, federal, and tribal agencies have demonstrated that minefilling CCRs is safe and adequately controlled.
- While there have been many loose allegations of mine placement damage cases over the past several years, none of these allegations has been shown to be a “proven damage case” as defined by U.S. EPA under Bevill amendment standards. Under this standard, “proven damage cases” must demonstrate that damage can be attributed to the presence of CCR at the mine site. Not a single minefill case has been shown to meet this standard.
- The intergovernmental team site visits conducted over the past two years at a variety of minefill site locations around the country confirm the absence of any proven damage case associated with CCR placement in mines. EPA's record also demonstrates that the existence of sites with AMD should not weigh against minefilling. To the contrary, CCR is effective in remediating AMD and stabilizing mine sites. Therefore, the key observation from the government's work to date is that CCR is part of the solution to, not the cause of, contamination at mine sites.
- ASTM has issued a standard that supports the use of CCR. The issuance of these standards is consistent with government conclusions that minefilling is safe.
- The government's work over the last few years directly rebukes allegation that SMCRA is insufficient. The side-by-side comparison prepared by OSM shows how SMCRA imposes key regulatory requirements and performance standards. OSM in partnership with the states has been doing an outstanding job. There is no justification for supplanting the existing regulatory regime with a new set of regulations and another regulatory agency.
- New burdensome federal regulation of mine placement is unnecessary and would be counter-productive to efforts to promote environmental protection and encourage the beneficial use of coal ash.

The fourth industry representative made the following statements:

- Minefilling has been occurring for years. Early uses of CCR were to control spontaneous combustion of mine refuse and prevent subsidence.
- Even prior to the passage of SMCRA, U.S. EPA worked with the State of Pennsylvania to study the use of FGD material for AMD control.
- Pennsylvania's remining program for sites with preexisting pollution discharges is based on Pennsylvania's laws governing mining and water quality. These amendments passed with no dissenting votes. Similar amendment was made to the Federal Clean Water Act. The program has been very successful. Pennsylvania's regulatory program has been effective for over 15 years. EPA has recently promulgated regulations on their version of the program for remining sites with preexisting pollution discharges. The Best Management Practices (BMP) approach was to a large extent based on Pennsylvania's successes. EPA's guidance document on this matter indicated that CCRs may be appropriate for use as a BMP in a mine drainage abatement program.

- FBC products, in particular, are put to productive use. The Council of Industrial Boiler Owners (CIBO) FBC report concluded that states adequately regulate CCR, including mine placement.
- State programs have been effective, particularly in coordinating between mine regulatory and solid waste programs. It might be reasonable to issue additional guidance as problems are identified. Any such approach should consider regional differences in coal quality and CCR quality. U.S. EPA's Industrial Subtitle D guidance would be a good start.
- CCRs are a critical component for continued mine reclamation and abandoned mine land remediation. Mine placement of CCRs has resulted in environmental improvements and is an important tool for state mining and reclamation programs.
- The industry is prepared to work with U.S. EPA, state agencies, and OSM if they should move forward with rulemaking.

The fifth industry representative made the following statements:

- In Pennsylvania's coal fields, most mining occurred prior to the passage of SMCRA in 1977 and left environmental problems. The State has 250,000 or more acres affected by abandoned mine land problems and the estimated cost of reclamation will be \$15 billion. There are mountains of refuse piles, which are a serious source of AMD and represent the largest non-point pollution source in Pennsylvania. The State has 2,500 miles of streams and rivers affected by AMD. They estimate the State has several billion tons of coal refuse, and the refuse piles catch on fire from time to time. There are stagnant economies in these areas, which have been left behind environmentally and economically. At the current rate of funding from federal sources, it will take over 600 years to clean up the problem.
- An important means to clean up coal refuse piles and create economic growth is to burn the refuse for energy. Combustion in a circulating fluidized bed is the only economic use for the coal refuse material. This combustion practice also produces alkaline ash that is perfect for mine reclamation. FBC material is not used in underground mines, only surface mines and strip pits. The fluidized bed combustors of Pennsylvania remove and use 7.5 million tons per year of coal refuse, and generate 5 million tons of CCR. They have removed a total of 85 million tons of coal refuse from the environment. Nearly all of ash generated has been used for reclamation, resulting in 3,300 acres reclaimed.
- The fluidized bed combustors are not utility, rate-based plants; they are independent power producers. As their power purchase agreements expire, these plants will have difficulty competing. They cannot pass through costs of future potential regulation of mine placement. Moreover, contrary to the environmental interest group testimony at this meeting, other citizen watershed groups want these plants in their areas to clean up refuse. Due to transport costs, refuse more than 90 miles from the plant is not economically useable. Even existing regulations make it expensive to permit and not worth it for small refuse piles.

The sixth industry representative made the following statements:

- The ARIPPA report submitted to U.S. EPA, as part of comments on the regulatory determination, answers questions about FBC ash, about mercury concentrations, and about the net benefit of ash in minefilling.
- The report included a literature search of over 200 articles, sampling results for ash and refuse at two power plants that had mercury stack tests, and an examination of all of the regulatory data from Pennsylvania at 14 sites around the State.
- The conclusions of the report were as follows:
 - Waste coal fuel is enriched in arsenic, mercury, nickel, chromium, and cadmium. These constituents are highly mobile during weathering and pyrite acid generation.
 - FBC ash is alkaline, and under alkaline conditions these constituents are not mobile.
 - Data from Pennsylvania show 0 of 221 waste samples display any risk factors (e.g., exceed the State's characterization standards).
 - 334 water samples at points on or adjacent to ash areas did not exceed MCLs at any point representative of ash drainage (as opposed to coal refuse drainage).
 - There were some exceedences at sampling points affected by both refuse and ash, but these exceedences did not recur.
 - There were lots of exceedences from refuse and data from these sampling points showed greater average concentrations. For example, arsenic was 25 times greater and cadmium 4 times greater.
 - Elemental mercury emissions from ash were compared to OSHA and NIOSH exposure standards. The study found no detectable mercury concentrations on fresh ash, active ash placement areas, or reclaimed areas, but found one detectable measurement located on an active coal refuse area.
- Under the Pennsylvania regulatory program, operators are required to rigorously characterize hydrologic and geologic environments to select sampling points. This characterization receives extensive review from regulators. Sampling is required four times per year: three times for indicator parameters and one time for all parameters.

There were several questions for this industry representative:

Question: Did the study examine things like TDS, chloride, manganese, and sulfate?

Answer: No. It considered only the hazardous trace metal constituents.

Question: Are you aware of the study from West Virginia University that shows AMD constituents decrease with time naturally?

Answer: I have not seen that study specifically, but have seen others that show this occurs at certain specific sites.

Question: Where did the ash samples come from? Were any cores from old placement areas?

Answer: Samples were taken as generated, as loaded for transport, from recently placed/unweathered ash, and from pits dug into ash placed several years ago.

State Governments

Several representatives of state regulatory agencies gave presentations regarding their programs for mine placement of CCRs. The first state agency representative made the following statements:

- State representatives will not be doing individual presentations on the details of their regulatory programs or repeating information that is available on the U.S. EPA web site from previous meetings. Meeting attendees are encouraged, however, to review these materials, especially the four working documents prepared by the state regulators. Instead, the state representatives will talk about regulatory realities.
- It is at the state regulatory level where the balancing act is performed between environmental protection and a healthy mining industry. Regardless of the substance of U.S. EPA's regulatory determination, it will be up to the states to implement these programs.

The second state agency representative made the following statements:

- States and state government associations have told U.S. EPA not to prohibit minefilling or create additional regulations covering CCRs.
- States have adequate programs. These programs apply many of the same requirements to mine placement as they do to landfills. These requirements include waste characterization, ground-water monitoring, and preventing ground-water contact.
- States have indicated a willingness to work with U.S. EPA and have done so.
- States will continue to implement their programs. They have been implementing RCRA Subtitle D for years, and are best qualified to regulate mine placement of CCR.–
- States are supportive of U.S. EPA's Industrial Subtitle D guidance.

The third state agency representative made the following statements:

- In order to solve problems, agencies have to identify the right problems and make sure they are really associated with CCR placement in mines.
- Regarding the Texas problems involving the Alcoa site mentioned by an environmental interest group representative in an earlier presentation, several factual corrections need to be made. First, the water permitting program is responsible for dealing with these issues. The water program is separate from the one that regulates disposal of CCR. Moreover, the thallium levels observed have been determined to be a lab error. The dioxin levels observed are 1,000 times lower than residential cleanup standards.

- The belief that there are no beneficial uses of CCR is incorrect. There are lots of uses for CCR in addition to mine placement, including concrete, artificial reefs, wall board, cement, and road construction materials. CCR is a widely and effectively used material in commerce.

The fourth state agency representative made the following statements:

- The representative disagrees with the characterization of mine placement by environmental interest groups as unregulated dumping. Mine placement requires site-specific regulatory approval as well as CCR source-specific approval. Permit applicants must determine geology and hydrogeology and characterize waste from each source. Pennsylvania requires monthly or more frequent inspections of mine sites.
- An earlier environmental interest group presentation noted a Pennsylvania site with only two monitoring points. At this site, this monitoring scheme is appropriate because all the water ends up at a single discharge.
- Pennsylvania's ground-water contact restriction applies to regional ground water because that ground water is the important ground water.
- Monitoring is required for water that goes into the site and water that goes out, although sometimes Pennsylvania does not require upgradient monitoring because of pre-existing contamination.
- Contrary to assertions made by an environmental interest group representative, it is not true that AMD sites will clean themselves up. For example, the Jeddo Tunnel has been producing AMD since the 1890s.
- Beneficial use of CCR has been effective. For example, it has been effective in controlling and containing AMD, and as a soil substitute or additive. Often, CCR is needed to fill open pits, which present an immediate hazard for people falling in. State agencies have learned from sites where placement didn't work and have taken corrective action.

The fifth state agency representative made the following statements:

- South Carolina is primarily non-coal producing. The State applies industrial waste regulations to CCR mine placement. These regulations establish several classes of industrial waste depending on the characteristics of the waste. These classes determine whether a waste is useable or how it may be necessary to dispose the waste. Ongoing waste characterization is required.
- South Carolina is aware of concerns about mercury concentrations and, therefore, includes mercury among the constituents required in waste characterization.

The sixth state agency representative made the following statements:

- Previous environmental interest group presentations mentioned a number of problems and perceived problems, some of which the representative has knowledge and some of which he doesn't.
- At the Pines site, there is a problem, but the entire cause of the problem is uncertain. Although it is pretty certain that coal ash is involved, it is not a mine site and other wastes also are present. The disposal site is located on sand in a different environment than a coal mine.
- At the Farmersburg site, the coal company removed the area near the community from its permit application based on the State agency's recommendation to err on the side of caution. Ground-water flow from the remaining area is away from the community.
- Many people educated in this issue don't see things the same way. U.S. EPA has been to Indiana at least twice. The State agency has provided them with maps, data, and extensive information so that they can interpret things the correct way.

The seventh state agency representative made the following statements:

- In North Dakota, the Department of Health manages environmental programs and works closely with the Public Service Commission, which regulates mining. The State regulates CCR as a solid waste, even though about 80% of it goes into facilities within the mines.
- Siting is one of the most critical elements in managing materials. While not all areas within mine sites are well suited for placement, many of the sites permitted within former mine sites in North Dakota are some of the best sites available in the state. Also, about two thirds of the State's municipal solid waste (MSW) landfills are located in former mines.
- With regard to waste characterization, the Toxicity Characteristic Leaching Procedure (TCLP) was developed for MSW landfills and is not appropriate for ash, particularly in a mine. For this reason, North Dakota requires other testing protocols, including 18-hour and 30-day leaching tests. The 30-day tests go way beyond anything U.S. EPA requires. Many states require more frequent characterization than would ever be considered under RCRA.
- RCRA design standards are not necessarily more protective over the long term; landfills in general are not a panacea. Liners are not necessarily a solution in overcoming all site deficiencies, because they can leak. Leachate collection is not necessarily appropriate, because dry ash soaks up water. . Disposal site owner/operators, faced with expensive design requirements fill their facilities deeper and higher, often more than 200 feet, resulting in steeper closure slopes (3 or 4 to one slopes are common) that are more prone to erosion and long-term environmental consequences. The minimum RCRA closure standards are 2 feet of final cover, consisting of an 18-inch barrier layer overlain with 6 inches of topsoil. 6 inches of topsoil is inadequate for plant growth. From a soils and vegetation perspective, the RCRA closure standards are not adequate and may result in eventual exposure of waste at many sites. SMCRA mine reclamation standards call for gentler slopes with at least 4 feet of cover, including replacement of both topsoil and

subsoil along with adequate revegetation. SMCRA reclamation standards are in many ways superior to RCRA closure standards for long-term site stability, which is essential to environmental protection.

- Many states already require mine placement in 2-foot lifts with regular soil cover, which is a good operational procedure to minimize infiltration of rainfall into the material.
- RCRA promotes recycling and mine placement is recycling, particularly where used to prevent subsidence or AMD situations. Use of CCR in minefill for AMD control also saves a significant amount of money in transaction costs associated with landfilling. Use of CCR in place of virgin lime in AMD control saves resources and prevents significant greenhouse gas emissions.
- From the various state meetings on minefill practices, it is evident that the state mine regulatory programs, EPA, and OSM have common goals in protecting the environment. Mine regulatory staff have a good background in mine site geology, ground water, soils, and plant science. OSM provides state programs with adequate funding and training, whereas EPA provides no funding to states under Subtitle D.

The eighth state agency representative made the following statements:

- The representative explained one of the four working documents prepared by the state regulators. This document is a matrix showing the extensive regulatory provisions applicable in two states in the categories of concern.
- Illinois has ground-water protection standards that are applied to mine sites.

The first representative then made the following concluding statements:

- Extensive federal oversight as under Subtitle C has never worked and U.S. EPA can't afford it. In addition, such an approach has the potential to create an unfunded federal mandate. If states can't do it, the federal government won't be able to do it either because of funding.
- SMCRA is a citizen's document, which means citizens sometimes have to jump into the fray. If state agencies aren't being responsive, that's another issue, but it was always intended for citizens to take an active role under SMCRA.
- If U.S. EPA issues regulations, there still may need to be changes to state laws and regulations to implement these regulations. That process will present another opportunity for all stakeholders to have input.

Session 4: Focused Discussion on Issues

Some of the issues listed in the agenda were combined, so that all topics could be covered in the remaining time.

Waste Characterization/Impact of New Clean Air Act Requirements

- A utility industry representative disagreed with the suggestion that U.S. EPA's rulemaking should be delayed until the impact of new mercury requirements is certain. The suggestion that ongoing waste characterization will capture any changes and allow a regulatory response is more reasonable.
- The utility industry representative also refuted the prediction that mercury concentrations would rise from 0.29 ppm to 0.66 ppm in fly ash and from 0.32 ppm to 0.85 ppm in FGD material. This prediction is based on an assumption that all utilities would only use activated carbon for mercury reduction. This is simply not the case. In fact, there would not be enough activated carbon available for such widespread use. Nevertheless, even if everyone employed activated carbon, and those predicted numbers were right, the concentration of mercury in the leachate would still be orders of magnitude below the hazardous waste toxicity characteristic threshold for mercury.
- An environmental interest group representative responded that they are less concerned about the hazardous waste threshold, because U.S. EPA has already determined that CCR is not appropriate for Subtitle C. Environmental groups are more concerned about what CCR is going to do in the disposal environment.
- The environmental interest group representative also stated that, where the data are available, there is not a good correspondence between leach test results and actual observed leachate concentrations from minefills. As an analogy, no regulatory agency is going to allow a coal company to use TCLP to predict how coal refuse will react. Some have suggested a test for mine spoil (the humidity cell test) that is a good predictor, but no one has mentioned that for ash. There is no valid parallel test that would allow prediction for CCR.
- An OSM representative stated that, based on his experience, experts have consistently advocated from a science perspective that there are weaknesses in all of the leachate tests available. No one leaching test is best. Unfortunately, there is no consensus among scientists about what a good test would be. Not one that is applicable, at least, for all environments. More research in this area is needed to come up with tests for the specific environments.
- An industry representative noted that U.S. EPA's Industrial Subtitle D guidance has a whole chapter on risk characterization of waste streams and different tests. It is a very complex issue. The representative is not sure that a test is necessarily trying to predict actual leachate concentrations, but rather is predicting the impact on the environment.

- A U.S. EPA representative stated there are three points at which accurate characterization is needed: concentration in the whole waste, concentration after leaching into the vadose zone, and concentration at the receptor. Characterization at the first and last point can be done empirically. TCLP is useless for characterizing concentrations at the second point. Also, this intermediate measure isn't as important if accurate measurements are available at the first and last point.
- An environmental interest group representative asked if it is true that Pennsylvania has moved away from TCLP.
- A state agency representative responded that Pennsylvania requires the TCLP only to determine if the waste is hazardous and has moved to the Synthetic Precipitation Leaching Procedure (SPLP).
- The environmental interest group representative asked whether U.S. EPA believes the SPLP is as ineffective as TCLP.
- A U.S. EPA representative responded that it is a close race between the two tests.
- Another environmental interest group representative was pleased to hear that TCLP isn't adequate for this purpose, because it appears that everyone agrees. She was disappointed, however, that regulators continue to hide behind it. They should not rely on TCLP results to avoid safeguards.
- A utility industry representative stated that the Electric Power Research Institute (EPRI) has two research projects relevant to these issues this year and both are co-funded by DOE. The first is a \$1.5 million study that examines the impact of new Clean Air Act requirements on the leaching characteristics of ash and includes the development of lab tests. The second looks at field leachates, for which EPRI is going to collect additional data from about 25 sites, including data on various chemical species. The purpose will be to bridge the gap between field leachate and testing.
- A state agency representative agreed with the U.S. EPA representative that whole waste characterization and receptor monitoring are more important than an intermediate measure of leachate. This approach is a basic tenet of SMCRA. He agreed that TCLP is not appropriate, but noted that, at least in Illinois, TCLP is mandated, so the State will continue to use it until a better test is developed.
- An environmental interest group representative argued that the intermediate step cannot be ignored. One cannot look only at whole waste and monitoring; without the intermediate, one doesn't know how to interpret the observation at the end point and cannot do a projection.

- Another environmental interest group representative asked if U.S. EPA was prepared to provide feedback on the Agency's plans to resolve issues surrounding waste characterization.
- A U.S. EPA representative stated that, under the MRAM project, they have back-calculated from monitoring values. The Agency has a much more robust database this time around. The question may still remain, however, if the data covers a long enough term.
- Another U.S. EPA representative stated that the Agency has been working on leach tests for years. He doesn't know if there will be a definite answer any time soon, particularly given that the appropriateness of a given test varies depending on site characteristics. The Agency is working on it and will have improved knowledge over time, but the timing of a final answer remains uncertain.
- The U.S. EPA representative also stated that he is hesitant to postpone this rulemaking waiting for the final outcome of new Clean Air Act requirements. He will continue to urge proceeding with the rulemaking, then revisiting it if needed.

Placement in Ground Water, Barriers, and Liners

- A state regulatory agency representative stated that placement in ground water is prohibited by Pennsylvania's regulations. The State, however, does have three demonstration sites where placement in ground water has occurred. They are primarily undertaking those demonstration projects for reasons of safety, such as preventing people from falling and drowning.
- The state representative also stated that the appropriateness of a liner depends on the quality of the ash. Not all ash is acceptable for mine placement. This ash must be disposed in a landfill, which, in Pennsylvania, must be lined. Other ash is acceptable for mine placement.
- An environmental interest group representative asked whether Pennsylvania's projects with placement in ground water are only done for safety reasons.
- The state representative responded that, while the regulations prohibit ground-water contact, the State also has a provision for demonstration permits, under which ground-water contact may be allowed. Pennsylvania will issue a demonstration permit for safety reasons and also only under controlled circumstances.

- Another environmental interest group representative asked how Pennsylvania defines the “regionally significant” ground water table for purposes of its regulatory requirement. The interest group reviewed a Pennsylvania permit that acknowledged placement in the local water table, but outside of the regional groundwater table. The local water table is the one that’s going to affect streams.
- The state representative responded that, without the regulations at hand, he could not answer this question. He noted that Pennsylvania has both perched and regional aquifers.
- Another environmental interest group representative asked if the three demonstration sites are coal mines and if they were pre-SMCRA sites.
- The state representative responded that the demonstration sites are two coal mines and one limestone mine. They were mined before SMCRA.
- Another state agency representative stated that, when determining whether a liner is appropriate, it is important to consider the purpose of the project. In a waste management (RCRA) setting, the purpose is to prevent leachate migration. In Superfund, the purpose is to clean up the site. A lot of mine sites are more like Superfund sites.
- An environmental interest group representative stated that there is a blurring of the line with mine sites. Some sites are more like disposal. Putting waste in a mine just for the purpose of having a place to put it should not be considered beneficial use.
- Another environmental interest group representative stated that people’s wells have been destroyed. For example, at the Cassville site, 12 private drinking water wells were contaminated. The State required the operator to close the site. This solution, however, constitutes closing the barn door after the horse is out.
- Another environmental interest group representative stated that, not only are states not following Pennsylvania’s lead with regard to waste isolation, many of them don’t have any barrier or isolation requirements. Many states have no requirements for liners or barriers and allow direct contact with ground water. Even if a liner is only 18 inches thick, it is still better than having direct contact.
- Another environmental interest group representative noted that U.S. EPA’s RTC requested information on universally unsound practices and mentioned that ground-water contact might be one of those practices. The representative asked if U.S. EPA has decided if this practice is unsound and if restrictions on ground-water contact might be included in the regulations.

- A U.S. EPA representative answered that, in dealing with landfills in the past, direct ground-water contact has been something the Agency has tried to avoid. The Agency also observed disposal in sand and gravel pits directly in ground water in damage cases. These were the reasons for U.S. EPA's concern with this practice. U.S. EPA has asked the states for more information about their experience in this area, and needs to further examine the responses to that. There appears, however, to be different geology around coal mine sites.
- A state agency representative stated that, at the Pennsylvania sites where ground-water contact has been allowed, there were no downgradient uses of the water. U.S. EPA may want to allow placement below the water table in such circumstances.

Ground-water Monitoring

- The meeting facilitator noted that there are two issues with regard to ground-water monitoring: (1) well placement and number, and (2) monitoring duration.
- An environmental interest group representative stated that the answer should be straightforward. Monitoring should be required anywhere the leachate may migrate and at a time that it is possible for leachate to get there. The issue is a wide variety of perceptions about what is appropriate.
- A U.S. EPA representative stated that the question is one of certainty. At one end of the spectrum, there are sites where placement clearly is a bad idea. At the other, there may be sites where placement is a good idea. In the middle, no one is sure. This middle group might constitute a very large number of sites. The middle group of the sites is where monitoring is needed most extensively and for the longest time.
- An environmental interest group representative stated that, for example, the site in New Mexico looked like a good one, with only 6 inches of rain annually. Early monitoring results were good; the contamination did not get bad until much later. If someone made a decision to walk away from monitoring based on the early data, it would cause a problem.
- An OSM representative stated that all of us would be better served by a few long-term monitoring sites studied carefully using good science, than by a requirement that everyone do more monitoring.
- An environmental interest group representative responded that careful study would be good from a scientific standpoint. However, in Indiana, for example, people are completely reliant on ground-water resources. To rely on a few test sites while large scale dumping is going on would be irresponsible. Monitoring is a very basic safeguard that should be expected of any site.

- Another environmental interest group representative stated that there were monitoring wells around the Pines site, but nobody told the citizens until people started complaining and the drinking water was unusable. Water from that site goes into the Indiana Dunes National Lakeshore and then into Lake Michigan. Millions of people rely on that water, so agencies should not roll the dice on contaminating it.
- Another environmental interest group representative stated that it makes no sense to put waste on a site with a connection to ground water and not monitor. Monitoring should be required at every site. Also, in Texas, there are karst aquifers, so there is no assurance of connectivity between a monitoring well and the affected water. One thing that's not used often enough is vadose zone monitoring. Perhaps U.S. EPA should consider that approach.
- Another environmental interest group representative stated that long-term ground-water monitoring would not be some special requirement for mine disposal sites. It would just be putting mines on equal footing with landfills.
- A state agency representative responded that CCRs are not hazardous wastes or landfill materials, so it is not appropriate to approach mine placement operations with the mind set that they are landfill situations.
- An environmental interest group representative responded that CCR is clearly hazardous because it has affected his drinking water wells. The representative argued that it makes no sense to put CCR in ground water and not monitor.
- Another environmental interest group representative stated that, at the Pines site, more benign waste than that currently being minefilled resulted in unuseable drinking water.
- An industry representative asked whether any other waste was present at the Pines site.
- The environmental interest group representative responded that there was one allegation that there was once one other waste there and that allegation has been proven wrong. The representative stated that it is coal ash there and anyone who doesn't understand that should go there and look.
- Another environmental interest group representative asserted that U.S. EPA has investigated and concluded the contamination is from the CCR. The site, however, still is not being counted as a proven damage case. In any case, U.S. EPA should acknowledge that states are not doing long-term ground-water monitoring under SMCRA, but they should be.

Corrective Action

- The meeting facilitator noted that there are three components to this issue: (1) who is responsible, (2) how much, and (3) how do you know when you are done.
- An environmental interest group representative commented that the conclusion of the ARIPPA report that there are no exceedences of MCLs in Pennsylvania is incorrect. His group randomly selected 10 sites and found some exceeding trigger levels. In addition, the trigger levels are too high and will allow degradation of ground water beyond that already resulting from AMD. The trigger levels have been set at 25 times the MCL.
- A state agency representative responded that the levels cited are not trigger levels, they are waste characteristic levels above which the ash is not approved for placement. Trigger levels are much lower. The site in corrective action had one exceedence and it resulted from coal refuse. The pH went down, which is how the State concluded the coal refuse was the source. The metals are coming from remining of the coal refuse, not the ash. Also, while the concentration went up, the flow went down. The appropriate test is of loading, not concentration.
- The environmental interest group representative responded that the levels cited are trigger levels, because the permit says trigger level is either baseline or 25 times the MCL, whichever is higher.
- Another environmental interest group representative responded that, while overall site loading went down, in hydrologic unit 1, there was increased loading. He stated that it may not be possible to determine the source of contamination. To generalize, however, he suggested expanding corrective action beyond comparing monitoring wells to some arbitrary number. Corrective action should be applied to sites that aren't behaving as expected. This approach fits the SMCRA PHC concept. The responsible parties should modify their understanding of the site until they know what is going on.
- A state agency representative agreed with this approach and stated his belief that this is the approach Pennsylvania is taking at the site in question.
- An OSM representative agreed that the SMCRA process should work this way and stated that it does, in fact, work this way.
- The environmental interest group representative agreed that the SMCRA process should work this way, but disagreed that it does.
- A state agency representative stated that, under SMCRA, responsibility for corrective action belongs with the permittee, which is the same approach as under RCRA.

- An environmental interest group representative responded that no corrective action is taking place because permits have no enforceable corrective action levels that can be enforced by citizens. Furthermore, the burden is on citizens because agencies are asleep at the switch.
- Another environmental interest group representative stated that citizens would be able to compel compliance under RCRA Subtitle D. Enforcement, however, would be better under a contingent Subtitle C determination, because U.S. EPA would then have enforcement authority, as well. At the Pines site, for example, it was difficult for the federal authorities to come in under Subtitle D.
- An OSM representative responded that, under SMCRA, citizens have the right to call for federal inspections and enforcement.
- An environmental interest group representative responded that, while citizens have the right to sue under SMCRA, because terms like “minimize disturbance” are undefined means, they have to spend significant time and resources in court to seek protection.
- Another environmental interest group representative stated that because of the open dumping provision of RCRA, it is easier for citizens to make a case in court under RCRA than under SMCRA.
- A state agency representative commented that if the Pines site is an industrial Subtitle D landfill, not a mine site, then Congress did not intend federal enforcement authority there. Also, that situation is not germane to the minefill situation.
- An environmental interest group representative responded that it makes no difference whether it was a landfill or a mine that destroyed his well. He wants some federal authority to take action, because it takes too much effort to get a response from state regulators.

Financial Assurance, Post-closure Care, Post-closure Restrictions

- An industry representative stated that these provisions are very straightforward in SMCRA regulations; who is responsible and how long are well defined. Post-closure care can go on forever if the permittee doesn’t meet the permit conditions or other state and federal laws. State nuisance laws are recourse to citizens if they don’t have regulatory buy-in.
- An environmental interest group representative stated that, if waste is going to continue to be dumped in mines, bonding has to be improved.

- Another environmental interest group representative stated that they are currently suing state and federal regulators because bonding amounts have been inadequate to prevent an operator from forfeiting the bond when problems occur.
- A state agency representative indicated that states have been aware for some time now that there are concerns with bonding when long-term treatment (e.g., for AMD) is occurring. CCR placement represents a similar situation where long-term care doesn't fit well within the SMCRA bonding scheme. Some possible solutions the states have considered include: separating the land reclamation portion of the bond from the water protection portion, better positioning for state agencies in bankruptcy proceedings (i.e., giving states a priming lien), and dedicated trust funds. This concern applies not only in the coal sector, but also in the non-coal sector. There is no easy solution, but the solution may be not to use the bonds for these purposes.
- Another state agency representative stated that there are similar problems under RCRA with certain financial assurance mechanisms.
- An environmental interest group representative stated that the bonding task force referenced by the state agency representative, was inspired in part by the practice of re-mining acid producing sites. Resolving that issue will be a hard fight. Also, the representative noted that SMCRA applies only to the surface effects of surface mines. The representative asserted that the Department of Interior has perverted interpretations to the point where subsidence doesn't even count as a surface effect.
- Another environmental interest group representative was pleased that someone is working on this issue, but noted that one permittee solved the problem by expanding the permit site so much that there was no discharge.
- An industry representative stated that surety companies are refusing to provide economical sureties to mines.
- With regard to post-closure restrictions, an environmental interest group representative pointed out that an ash monofill could have unuseable water internal to it (e.g., at the Universal site). Even assuming there is no migration off-site and good revegetation, there could still be a 2-mile long, 200-feet deep unuseable aquifer. Under this scenario, there needs to be some mechanism to let people know it is there and some kind of post-closure use restriction would be appropriate. A deed restriction would be one mechanism, but there could be others.
- Another environmental interest group representative agreed strongly. Post-closure restrictions are another area where there is no equivalency between RCRA and SMCRA.

With respect to financial assurance, the representative appreciates that there are problems with RCRA mechanisms, but they are nowhere near as complicated as the problems under SMCRA.

Effectiveness in Treating AMD

- An environmental interest group representative stated that all these issues have overlap. Concerns about the effectiveness of AMD treatment relate to monitoring and bonding. All of these “beneficial use” projects need long-term monitoring. If monitoring only goes through revegetation, it is not possible to draw conclusions about success. Without long-term monitoring, it is only a presumption that these projects are having a beneficial effect. Bonds shouldn’t be released until it is clear there is no ground water impact, meaning monitoring is needed for the long term.
- Another environmental interest group representative stated that, since U.S. EPA is promoting beneficial use, there need to be some standards applied to verify that a project is really a beneficial use. Otherwise there is a loophole where sites can say they are using CCR in part for AMD remediation and escape regulation.
- An OSM representative agreed that there needs to be cooperation to advance the science of AMD abatement and treatment. OSM is currently working with West Virginia University, Penn State, and others in this area.
- An environmental interest group representative encouraged the states to examine the ash, as well as the spoil, as research proceeds. There seems to be a presumption that high alkalinity or high pH ash is going to be an effective neutralizer in the long term. If there is highly oxidized sulfur, it may consume some of what is assumed to be alkalinity. There are some ashes that are acid producers.
- The OSM representative agreed with the previous statement.
- An environmental interest group representative stated that he had just attended the surface mine drainage symposium, where lots of information on AMD remediation was presented. He stated that none of the papers at the symposium advocated use of CCR as a neutralizing agent. He reported that one primary presenter said there are liabilities that come with CCR use that can be avoided using other methods. He argued that the presumption that applying large quantities of CCR is the only solution to AMD is wrong.

Regulatory System

- The meeting facilitator requested that participants discuss the characteristics of an effective regulatory system for mine placement of CCR, divorcing themselves from a SMCRA or RCRA perspective.
- An environmental interest group representative made the general comment that there is citizen frustration with the current regulatory system. This concern may sound state-specific, but it is important that U.S. EPA appreciate that it is present. The frustration has two sources: the industry friendliness of state agencies and the presence of multiple state agencies. If PHC and CHIA are supposed to address CCR issues, state solid waste agencies should review them. But the solid waste agencies, in looking at water permits, often don't even know these analyses exist. This frustration has to be addressed in any new regulatory system. Citizens don't have the money to protect themselves. Regulatory agencies need to help us protect ourselves, instead of giving us the runaround. It doesn't need to be an adversarial system, but it is.
- An industry representative responded that the burden of proof is on the permit applicant in hearings before independent fact finders. There are multiple levels of appeals available to citizens. The perception that industry has captured agencies is untrue.
- An environmental interest group representative stated that the regulatory system must deal with CCR as a waste, not a byproduct. The representative argued that beneficial use is being used to subvert the system. Some of the reasons people cannot agree on the risks of mine placement include:
 - No one likes the tests used to characterize waste.
 - Monitoring and characterization need to consider more than the 8 RCRA metals. It is not necessary for a toxic metal to be present to render water unuseable (e.g., sulfate).
 - The presumption that mine sites are already contaminated.
- A state agency representative stated that a complicating factor is that even under one federal agency, there can be separate regulations. When there are two or more agencies, it is easier to have one agency with oversight and the other(s) cooperating. She disagreed that a material is always a waste – our society throws too many things away. She agreed that it's not sufficient to rely on a TCLP test alone. It is necessary to know more about a given material than whether or not it is hazardous. It is necessary to know its pedigree and its expected behavior.
- An environmental interest group representative responded that, even if a given material can be recycled, if it is thrown in a trash can it is a waste. Environmental groups are not opposed to reuse of CCR (e.g., in concrete). The "use" of CCR at mine sites, however, is

just dumping. There is a mine in Indiana that was purchased by a utility for the sole purpose of disposal. No coal was mined there after they bought it. Under those conditions, regulations are needed that focus on the prevention of damage.

- Another environmental interest group representative had assumed that regulatory agencies were doing the best they could to help her, but recently found out otherwise. The participation process is crucial. In a recent contested case hearing, her State's attorney treated the representative as a hostile witness, while at the same time espousing all of Alcoa's awards. If U.S. EPA believes states are doing their job, they need to realize the process is flawed. Environmental groups have been pursuing every legal remedy they can, but all doors have been shut on them. She argued that state regulators spend hours, days, or weeks on the phone with permit applicants, but ignore citizens. This is true no matter how much research citizens do, assuming they can even find records at the state agencies.
- Another environmental interest group representative stated her concern that, regardless of arguments about SMCRA versus RCRA, CCR mine placement is going to end up regulated by CERCLA. That's happening at the Pines site. Environmental groups are proposing a contingent Subtitle C determination not because they want federal regulators to take over, but because they want federal regulators to oversee state programs and have enforcement ability. Also, environmental groups should have been involved in earlier IMCC meetings. The decision process would be further along if this had been the case.
- A state agency representative stated that meeting participants need to realize that not all ash is appropriate for mine placement and not all mines are appropriate for receiving ash. Mine sites need ground-water monitoring, corrective action, financial assurance, and procedures to demonstrate the effectiveness of AMD treatment. These should be elements of the regulatory program. Having said that, states still need flexibility to address site-specific and regional variations.
- An environmental interest group representative was surprised not to hear meaningful public participation among the elements mentioned by the state representative. For example, in a recent public meeting, after two hours of testimony, the public was told that the agency had issued the permit in the morning, prior to the meeting. In addition, in another case, the state agency required citizens to comment on the "administratively complete" application, but the public meeting was held before the complete application was submitted. Cases like these do not constitute meaningful public participation.
- The state agency representative agreed with the previous comment that meaningful public participation also should be a regulatory program element.

- Another environmental interest group representative stated that, if any material were being diverted to try beneficial use, there would be a roomful of citizens in support. The representative asserted that mine placement of CCR hasn't been demonstrated to be beneficial, because there are no public interest groups at this meeting supporting it.

Session 5: Recap of Issues and Discussion of Future Stakeholder Involvement

A representative of U.S. EPA made the following statements:

- The dialog at this meeting has been extremely valuable.
- Environmental interest groups will be meeting with the Assistant Administrator for the Office of Solid Waste and Emergency Response at U.S. EPA tomorrow. The representative expects that other groups will meet with the Assistant Administrator in the future.
- Before determining the next steps, the U.S. EPA representatives at this meeting will need to have feedback from their senior management.
- Given the available funding, U.S. EPA is not going to be able to bring everyone together again as in this meeting. The Agency hopes, however, to continue to have input from all stakeholders through other means of dialog.
- In developing the Industrial Subtitle D guidance, U.S. EPA went through a similar process involving many stakeholder groups. That process took six years, but the representative believes that everyone was pleased with the results.
- In consulting with their senior management, the U.S. EPA representatives at this meeting will not be advocating the perspective of any one of the parties represented here, but will present all of the issues raised by all of the groups.

Session 6: Assessment of Meeting and Closing Remarks

- An environmental interest group representative thanked the meeting facilitator for her effort.
- Another environmental interest group representative thanked U.S. EPA for assisting citizens to attend the meeting.
- An industry representative stated his appreciation for the opportunity to have all stakeholders interact.
- An environmental interest group representative suggested that, if U.S. EPA does not have funding to bring citizens together again in Washington, D.C., the Agency could go to the citizens in regional meetings.

- A state agency representative thanked the attendees for their patience in waiting for this meeting. He stated his belief that the time the states spent with their federal partners, because of what it produced to inform the debate (e.g., the materials on the U.S. EPA web site), helped this session be more productive.