

# RCRA National Meeting January 15 - 18, 2002

**Annotated Agenda  
With Links to Available Presentations**

*Edited by:*  
*Larry E. Rosengrant & Anita Cummings*

# RCRA



The RCRA National Meeting was held January 15-18, 2002 in Washington, D.C. at the Hyatt Regency Capitol Hill Hotel. It provided a forum for Federal and State regulators, the regulated community, and the public to discuss RCRA-related issues.

<b>1:00 - 5:15 pm</b>	<b>Tues. Jan 15, 2002</b>	<b>Ticonderoga</b>
<b>Management of Coal Combustion Residues</b>		
EPA presented an update on the Fossil Fuel Combustion RCRA Subtitle D Waste Management Rule, Part 1 and 2. The presentation included a discussion of coal combustion waste management issues and an overview of OSW's information collection efforts currently in progress. Other stakeholders representing the federal government, states, industry, and public interest groups presented their perspectives on the issues.		
<b>Speakers:</b>	Dennis Ruddy (EPA HQ) Anthony Carrell (EPA HQ) Truett Degeare (EPA HQ) Bonnie Robinson (EPA HQ) Andy Wittner (EPA HQ) Randall Mills (DOI Office of Surface Mining)	Greg Conrad (Interstate Mining Compact Commission) Michael Menghini (Pennsylvania DEP) James Roewer (USWAG) Lisa Evans (Clean Air Task Force)
<b>Session Coordinator:</b>	Bonnie Robinson - robinson.bonnie@epa.gov	
<b>Available Presentations:</b>		
Dennis Ruddy	Management of Coal Combustion Residues ruddy.pdf - 33 KB	
Anthony Carrell	Fossil Fuel Combustion Rule Part 2: Non-Utilities carrell.pdf - 33 KB	
Truett Degeare	Overview of Coal Combustion Waste Management Issues degeare.pdf - 7 KB	
Bonnie Robinson	EPA's Coal Combustion Waste Mine Placement Information Collection Efforts robinson.pdf - 16 KB	
Andy Wittner	Mine Placement of Coal Combustion Products Data Collection and Risk Assessment wittner.pdf - 15 KB	
Randall Mills	OSM Perspective on Mine Placement of Coal Combustion Byproducts mills.pdf - 9 KB	
Greg Conrad	Update on State/Federal Discussion Concerning Mine Placement of CCW conrad.pdf - 14 KB	
Michael Menghini	A State's Perspectives on Coal Combustion Waste Mine Placement (NA)	
James Roewer	Utility Perspective on the Potential for Improving the Regulatory Climate for the Management of Coal Combustion Products roewer.pdf - 66 KB	
Lisa Evans	Response and Informal Comments (NA)	

**Note:** The files linked to these pages contain the text of presentation materials and attachments from the 2002 RCRA National Meeting primarily as submitted by the speakers. The views expressed in these presentation materials do not necessarily represent the view of the U.S. Environmental Protection Agency or the United States. In order to reduce the size of the files, some of the presentations were modified by splitting them into multiple files, removing a few images/pictures, or removing designs from slide backgrounds. Titles and authors of the presentations were not always indicated and as such, some have been interpolated based on the information in the presentation and based on records of attendance. Not all presentations that were given are indicated in this document.

# **Management of Coal Combustion Residues**

# Background

- Fossil fuel combustion wastes generation:
  - electric utilities
  - non-utilities
    - industrial
    - commercial
    - institutional
- Amounts
  - Electric Utilities - about 110 million tons/year
  - Non-utilities - about 20 million tons/year
  - 3 x the amount of total hazardous waste generation
  - about 1/2 the amount of municipal solid waste

## Background (cont'd)

- Large Volume Wastes - ash, slag, and flue desulfurization sludge
- Low Volume Wastes - e.g., coal mill rejects, water treatment residuals, boiler chemical cleaning -- afforded Bevill status when comanaged with the high volume wastes.
- Disposition
  - 35 to 40 million tons/year of CCW is beneficially re-used
  - Remaining 80 million tons/year is disposed in surface impoundments, landfills, and in mines.

# Current Waste Management Practices

<u>Fuel</u>	<u>Landfill Disposal</u>	Surface Impoundment <u>Disposal</u>	<u>Minefill</u>	Agricultural Lime <u>Substitute</u>	Other Beneficial <u>Uses *</u>
Utility Coal	XX	XX	X	X	X
Non-Utility Coal	XX	X			
Fluidized Bed Coal	X	X	XX	X	X
Petroleum Coke	XX				
Oil	XX				X

**XX – predominant practice**

\* Major beneficial uses: Coal: flowable fill, waste stabilization, cement/concrete, roofing materials, snow/ice control on roads, mine reclamation, wallboard (FGD wastes); Oil: vanadium recovery, cement/concrete.

## Beneficial Uses of Coal Combustion Wastes

- ◆ Agricultural Soil Amendment
- ◆ Road and Road Base
- ◆ Mine Reclamation
- ◆ Waste Stabilization
- ◆ Cement and Concrete
- ◆ Blasting Grit & Roof Granules
- ◆ Snow & Ice Control
- ◆ Wallboard (FGD wastes)

## **8 Study Factors Required for Bevill Studies Under RCRA 8002(N)**

1. Sources and volumes of materials generated per year.
2. Present disposal and utilization practices.
3. Potential danger, if any, to human health and the environment from the disposal and reuse of such materials.
4. Documented cases in which danger to human health or the environment from surface runoff or leachate has been proved.
5. Alternatives to current disposal methods.
6. Costs of such alternatives [disposal methods].
7. Impact of those alternatives [disposal methods] on the use of coal and other natural resources.
8. Current and potential utilization of such materials.

Note: The statute also requires a review of state and federal regulations to “avoid duplication of effort.”

## Summary of the Regulatory Determination

The fossil fuel combustion regulatory determination was issued in two parts:

- Part 1 was issued in August 1993 (58 FR 42466; 8/9/93).
  - Coverage was limited to utility coal ash that is disposed in monofills or sent to beneficial use.
  - Decision was to retain the subtitle C exemption.

## Summary of the Regulatory Determination (cont'd)

- Part 2 was issued in April 2000 (65 FR 32214, 5/22/2000).
  - Coverage was for 'remaining wastes' (comanaged and non-utility coal ash, oil, and gas combustion wastes).
  - Part 2 Decisions:
    - Retain Subtitle C exemption for both disposal and beneficial uses.
    - Develop national regulations under Subtitle D to address potential risks:
      - The wastes could pose risks to human health the environment if not properly managed and there are current gaps in basic controls that are not acceptable.

## Summary of the Regulatory Determination (cont'd)

- However, trends in waste management are improving, and subjecting wastes to subtitle C would create a stigma potentially impeding safe, beneficial uses.
- The Subtitle D rules would cover coal combustion wastes that are managed in surface impoundments, landfills, and mines.
- Decision to issue D rules applied to all coal combustion wastes (Part 1 and Part 2)

## Rationale for Retaining C Exemption

- Gas Wastes – Virtually no solid wastes generated
- Oil Wastes – Unlined impoundments were of concern. The remaining 6 unlined impoundments were either lined or closed by December 2000.
- Coal Wastes – Infrequently test characteristically hazardous. Management practices and state regulations have improved markedly in recent years. The costs to manage these wastes under Subtitle C would be very high (over \$1 billion/year)

## Goals for Improved Waste Management Practices

- More effective ground-water monitoring, which will provide information on the impact of waste management practices on ground water. (For utilities, currently 38% of impoundments and 85 % of landfills have g.w. monitoring)
- No disposal in unlined sand & gravel pits (and similar geology). Most all of the landfill damage cases involve unlined sand & gravel pits.
- Demonstration of proper design for new waste management units. For minefill, demonstration of proper placement techniques and process. (Some type of risk analysis). Use a performance standard based approach where possible.
- For new units at existing facilities, encourage the use of landfills over impoundments. (Eco-risks identified for large impoundments; landfills generally pose less potential for g.w. problems.)

## **Goals for Improved Waste Management Practices (cont'd)**

- Performance standards for fugitive dust control (largely in place for utilities; may be required for non-utilities & minefill)
- Public participation in regulatory decision-making and operational oversight (compliance).
- Encourage proper management of pyritic waste coal materials.
- Do not impede the low-risk beneficial uses of coal combustion wastes.

# Basis for Decision to Issue National D Rules for Utility Coal Combustion Wastes

## Landfills & Impoundments

- Leach samples exceed:
  - 10x the health based criterion for arsenic 86% of the time
  - 10 x a presumed arsenic MCL of 10 ug/l 14% of the time.
- Significant number of damage cases identified - 18 damage cases and another 25 potential damage cases identified.
- Eco-risks identified for large impoundments – (aluminum, arsenic, boron, cadmium, lead, mercury and selenium for a number of amphibians, mammals and birds).
- Lack of basic controls – Relatively few utility impoundments have g.w. monitoring (38%) or liners (26%). Only 57% of landfills have liners (85 % have g.w. monitoring).
- Mercury — future EPA HAPs/multi-pollutant rule for coal-burning utilities could cause 2 to 3 fold increase in coal ash mercury levels. Levels of other metals in ash may also increase.

# Existing Controls at Utility Coal Combustion Waste Management Units

## Percent of Units with Control

Control	Landfills	Surface Impoundments
Liner	57	26
Cover	94	30
Leachate Collection	43	1
G.W. Monitoring	85	38
G.W. Perf. Stds	77	48
Regulatory Permit	94	85

# D Rule Development Process

## LANDFILLS AND IMPOUNDMENTS

- Updating technical data base – identify and make use of the most recent data since the April 2000 regulatory determination.
- Regulatory options development, costing, and economics work.
- Preparing to re-run the ground-water model and conduct other risk-related work in early 2002. The g.w. model used to predict contaminant fate and transport in ground water has undergone thorough revision in response to extensive public comments received on metals partitioning
- Emphasis in partnering with the states for self-implementing rule with strong public participation requirements to assure that the public can be properly informed of waste management practices and their impacts.

# Schedule for Current D Rule Effort

## Part 1 – Utility Impoundments & Landfills

- Propose      March 2003
- Final        March 2004

## Part 2 -- Non-Utility Impoundments & Landfills and Mine Placement

- Propose      March 2003
- Final        August 2004

# Contacts

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EPA RCRA Fossil Fuels Web Site

<http://www.epa.gov/epaoswer/other/fossil/index.htm>

# Appendix

# Coverage

- **Electric Utilities** - Commercial production of electric power using fossil fuel fired steam boilers. Approx. 769 facilities consuming >80% of all fossil fuels burned (about 450 plants burn coal).
- **Industrial** - Manufacturing facilities that burn fossil fuels for process steam, heat, captive power production. > 2,500 facilities consuming about 16% of all fossil fuels burned.
- **Commercial, Institutional, and Government** - For profit operations, educational, and government facilities that produce their own heat and power from fossil fuel burning. Approx. 534 facilities consuming 3% of all fossil fuels burned.

# Waste Types

## Large Volume Wastes

- **Fly Ash**- Ash captured from stack by air pollution control devices.
- **Bottom Ash** - Ash remaining in the boiler furnace.
- **Boiler Slag** - Non-combustible minerals in coal that “melt” and fuse in the boiler furnace.
- **Flue Gas Desulfurization Sludge** - Wastes from the wet-scrubbing of stack emissions performed for removal of sulfur compounds.

## Uniquely Associated Wastes

- Coal Mill Rejects (pyrites)
- Boiler Chemical Cleaning
- Coal / Storage Pile Runoff
- Wastewater Treatment Residuals
- Floor Drains & Sumps
- Air Heater, Precipitator & Economizer Wash

# **Fossil Fuel Combustion Rule Part 2: Non-Utilities**

Anthony Carrell, U.S. EPA  
2002 RCRA National Meeting  
January 15, 2000

# Survey Responses to Date

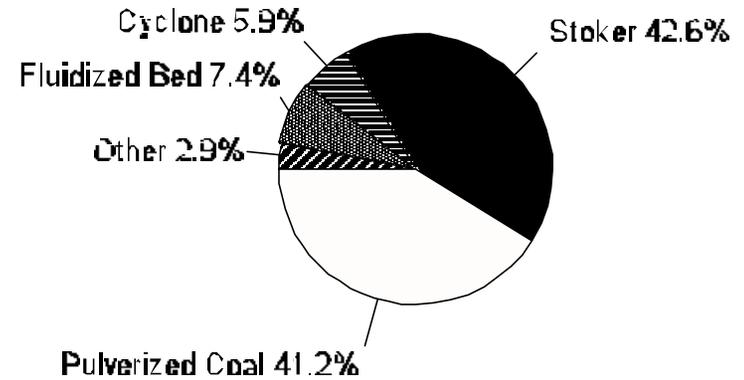
- 54 responses to date (EPA estimates a total of 841 facilities)
- Most respondents are in the paper (23 respondents) and chemical (16 respondents) manufacturing industries
- Most respondents are concentrated in the mid-atlantic (EPA Region 3 - 13 respondents), southeast (EPA Region 4 - 17 respondents), and midwest (EPA Region 5 - 17 respondents)

# Combustion Practices

- The 54 facilities reported a total of 246 combustion units
- Average = 4.6 combustion units per facility
  - Average is consistent with EPA's inventory of facilities  
(244 facilities reported a total of 1,125 combustion units for an average of 4.6)
- One facility reported 86 combustion units
  - Average drops to 3 units per facility if this facility is excluded

# Combustion Practices

Technology	Number of Facilities
Dry-Bottom Pulverized Coal Boiler	22
Wet-Bottom Pulverized Coal Boiler	6
Spreader Stoker	25
Other Stoker	4
Cyclone	4
Fluidized Bed Combustor	5
Other	2
<b>TOTAL</b>	<b>68</b>

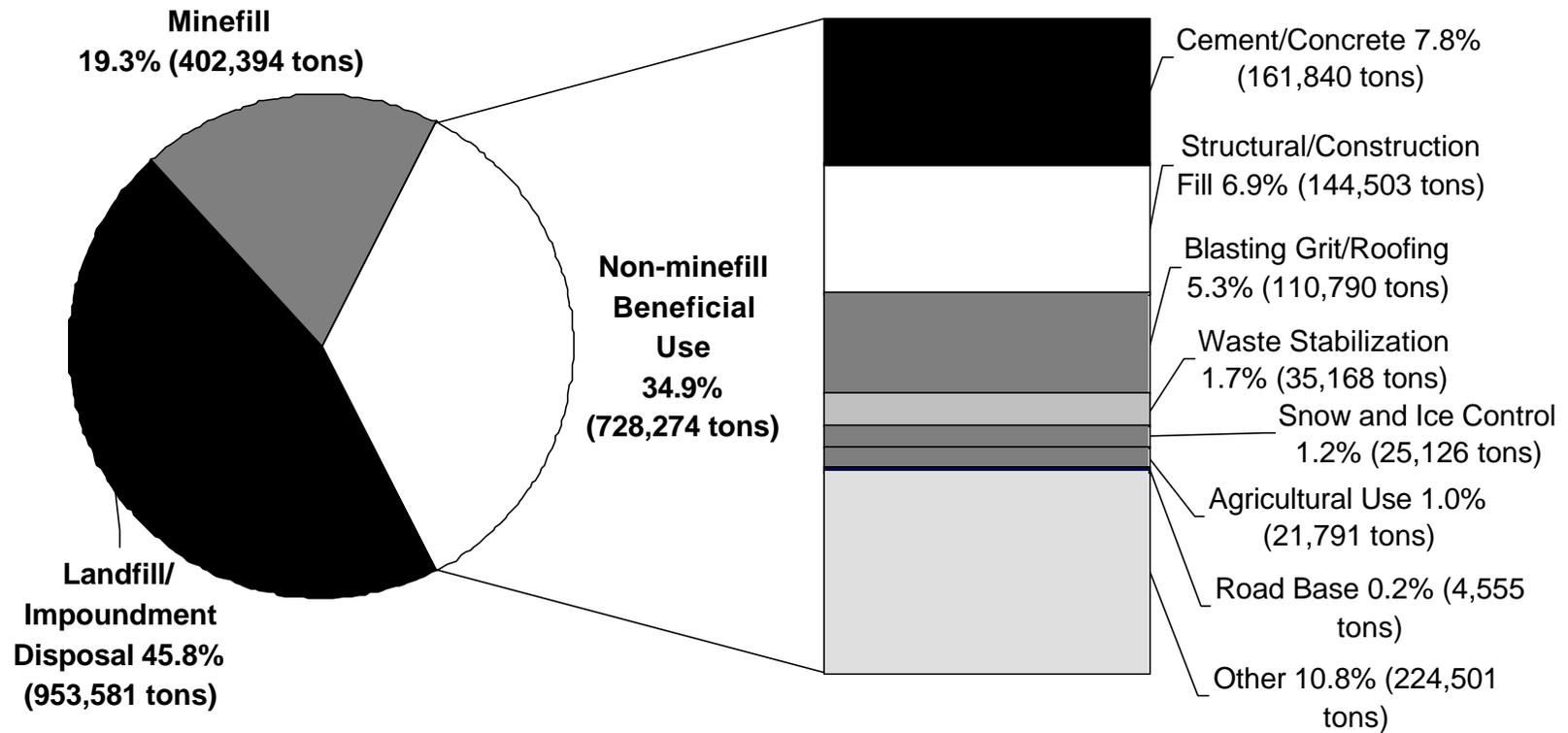


Total is greater than the number of facilities because some facilities utilize more than one combustion technology.

# Combustion Practices

- 98% of facilities utilize particulate capture equipment (e.g., electrostatic precipitator, baghouse)
- 6% of facilities utilize flue gas desulfurization equipment
- 59% of facilities practice co-combustion; the most common co-combustion fuels are:
  - S Bark, Wood Chips, or Other Wood
  - S Fuel Oil
  - S Pulp/Paper Mill Sludges
  - S Natural Gas

# Disposal and Beneficial Use by Waste Quantity



# Waste Management Practices

- The 54 facilities reported a total of 74 waste management units

<b>Unit Type</b>	<b>Active</b>	<b>Closed</b>	<b><i>Total</i></b>
Landfill	31	8	39
Surface Impoundment	25	3	28
Minefill	7	0	7
<i>Total</i>	63	11	74

- 22% of all units (active and closed) are or were used solely for interim storage
  - S 14 surface impoundments
  - S 2 landfills

# Co-management

- Co-management information was available for 71 waste management units. 41 of these (57%) co-manage coal combustion wastes with other wastes
- Wastes associated with coal combustion (e.g., boiler blowdown, deionized water regeneration wastes) make up only a small proportion of the quantity of co-managed waste
- Wastes unrelated to coal combustion make up greater than 90% of the quantity of co-managed waste. Examples include:

S Ash from Non-Coal-Fired Boilers

S Bark, Wood Waste

S POTW Sludge, WWTP Residuals

S Coal Off-tails

– Construction/Demolition Wastes

– Lime Mud

S Paper Mill Sludge

S Water Filter Plant Blowdown

S Dregs

## Liners

- Information on liners and other environmental controls was available for 64 of the 74 waste management units
- 47% of these 64 waste management units are lined

Unit Type	Active		Closed	
	# reporting data	# lined	# reporting data	# lined
Landfill	25	13 (52%)	7	3 (43%)
Surface Impoundment	23	12 (52%)	3	1 (33%)
Minefill	6	1 (17%)	0	--

# Trend in Liner Use

- Newer units are more likely to be lined

Unit Age (years old)	Landfills		Surface Impoundments	
	# reporting data	# lined	# reporting data	# lined
< 10	3	3 (100%)	2	2 (100%)
10-20	7	6 (86%)	4	3 (75%)
20-30	7	3 (43%)	7	3 (43%)
30-40	5	1 (20%)	5	4 (80%)
40-50	3	0 (0%)	4	0 (0%)
> 50	0	--	1	0 (0%)
Unknown	0	--	0	--

Table includes active waste management units only.

# Other Environmental Controls

Environmental Control	Active		Closed	
	# reporting data	# with control	# reporting data	# with control
Landfills				
Leachate Collection System	25	16 (64%)	8	3 (38%)
Dust Suppression	25	14 (56%)	8	3 (38%)
Compaction	25	13 (52%)	8	3 (38%)
Surface Run-on/Run-off Controls	25	23 (92%)	8	8 (100%)
Other	25	0 (0%)	8	0 (0%)
Surface Impoundments				
Leachate Collection System	23	0 (0%)	3	0 (0%)
Dust Suppression	23	5 (22%)	3	2 (67%)
Compaction	23	5 (22%)	3	0 (0%)
Surface Run-on/Run-off Controls	23	10 (43%)	3	2 (67%)
Other	23	2 (9%)	3	1 (33%)

# Other Environmental Controls

(Continued)

Environmental Control	Active	
	# reporting data	% with control
Minefills		
Leachate Collection System	6	1 (17%)
Dust Suppression	6	1 (17%)
Compaction	6	3 (50%)
Surface Run-on/Run-off Controls	6	3 (50%)
Other	6	0 (0%)

# Environmental Monitoring

## Groundwater Monitoring

Unit Type	Active		Closed	
	# reporting data	# with monitoring	# reporting data	# with monitoring
Landfill	25	24 (96%)	8	7 (88%)
Surface Impoundment	23	7 (30%)	3	2 (67%)
Minefill	6	2 (33%)	0	--

## Surface Water Monitoring

Unit Type	Active		Closed	
	# reporting data	# with monitoring	# reporting data	# with monitoring
Landfill	25	15 (60%)	8	3 (38%)
Surface Impoundment	23	13 (57%)	3	0 (0%)
Minefill	6	1 (17%)	0	--

# Groundwater Monitoring Locations and Performance Standards

- Of the units that conduct groundwater monitoring, nearly all monitor at both up- and downgradient locations
  - **2 landfills monitor only at downgradient locations**
  - **2 surface impoundments did not specify monitoring locations**
- Most landfills (>80%) must comply with groundwater performance standards.
- Fewer surface impoundments (~30%) have similar requirements.
- Standards are most commonly applied at the disposal unit boundary. Other points of application include: at the property line, 150 meters from the disposal unit, and 150 feet from the disposal unit.

# Regulatory Permits

- 68 of the 74 waste management units have one or more regulatory permits. The remaining units did not provide information about permits.
- Most landfills (>80%) have a waste management or landfill permit.
- Many surface impoundments (~70%) are permitted only under NPDES. Few surface impoundments (only 3) are permitted under waste management programs.

# OVERVIEW OF COAL COMBUSTION WASTE (CCW) MANAGEMENT ISSUES

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- Minefill
  - Placement of CCW in or on land from which minerals have been or are being extracted
  - Coal or non-coal mine
  - Relatively new, but increasing practice; now estimated at 11 million tons per year
  - Practice disposes of the CCW but also puts the CCW to beneficial use
- Minefill benefits
  - Improve disturbed mine lands
  - Abate acid mine drainage
  - Avoid development of greenfield CCW facilities
- Of various CCW beneficial uses, only minefill is highlighted in the Regulatory Determination for development of regulations
- Concern for potential adverse impacts on ground water
  - Possible placement into ground water
  - Subsequent inflow/outflow of ground water
- Regulatory Determination acknowledged our lack of information on practices and controls for minefill

- Complexities of Practices
  - Relatively recent practice, no long-term monitoring data
  - No documented damages, other than sand/gravel pits
  - Sites containing otherwise non-potable ground water
  - Sites not amenable to ground-water flow due to tight fireclay and cementitious nature of CCW
  - Variable, site-specific hydrogeology and CCW characteristics
  - Variety of placement practices (e.g., intermix with spoil, spread/compact as liner to isolate spoil, place in bulk)
- Complexities of Controls
  - Both federal and State controls may apply
  - For coal mines only: Surface Mining Control and Reclamation Act (SMCRA) controls apply through federal Office of Surface Mines or approved State permit programs.
  - For coal and non-coal mines: other State controls, such as solid waste permit programs
- Engaged in information collection to fill information needs on practices and controls, developing foundation for RCRA Subtitle D and/or SMCRA controls which will
  - Allow for beneficial use of CCW at mines
  - Protect against adverse impacts on ground water, both near- and long-term (i.e., post-closure)

- Provide flexibility for site-specific determinations
- Avoid disruptions to existing, protective regulatory programs

**EPA's Coal Combustion Waste  
Mine Placement Information Collection  
Efforts**

**2002 National RCRA Meeting  
January 15, 2002**

## Regulatory Determination

- Ⓒ EPA had insufficient information to adequately assess the risks associated with CCW mine placement
  
- Ⓒ EPA needed additional information on:
  - Ⓒ specific practices and controls for CCW mine placement
  - Ⓒ problems that may be inherent in this management practice
  - Ⓒ risks posed by this practice
  - Ⓒ existing state regulatory requirements
  - Ⓒ environmental monitoring data

## Goals of Information Collection Efforts

- C To develop more complete characterization of minefill practices
- C To identify best management practices for minefilling
- C To develop an updated industry profile and a baseline for current minefill management practices
  - To identify additional damage cases
- C To identify potential regulatory improvements

# Conducting Joint Information Collection Activities with Stakeholders

- C States
- C Tribes
- C Industry
- C Public interest groups
- C Other federal agencies

## States and Tribes

- Ⓒ Establish partnerships with a goal of assuring we do not duplicate or impede existing state/tribal programs that are adequately protective
- Ⓒ Developed cooperative agreement with the Interstate Mining Compact Commission to foster EPA-state interaction; to identify current state programs, regulations, and decision making processes applicable to minefilling; and to consider developing model regulations
- Ⓒ Establish a working relationship with state and tribal representatives to tap their agency expertise on minefilling, obtain assistance with damage case identification, and access files for information to develop an updated industry profile and baseline waste management practices

# Proposed CCW Mine Placement Information Collection Site Visits

- C Illinois
- C Indiana
- C Maryland
- C New York
- C North Dakota
- C Ohio
- C Pennsylvania
- C West Virginia
- C Wisconsin

To be completed by Spring 2002

Basis for Selection:

- CCW coal mine minefill activity
- Non-coal mine minefill activity (NY, WI)

# CCW Minefill Management Practices Discussion Guide

- Ⓒ Used to guide discussions with state and tribal mining regulatory authorities
- Ⓒ Inventory of current minefill management practices
  - General
  - Planning/Permitting
  - Waste Characterization
  - Site Characterization
  - Risk Assessment
  - Ground Water Monitoring
  - Surface Water Monitoring
  - Placement Practices
  - Operational Requirements/Design Requirements
  - Corrective Action
  - Financial Assurance
  - Reporting
  - Public Participation

## Other Federal Agencies

- C Working with DOI's Office of Surface Mining (OSM)
  - To identify current state programs, regulations and decision making processes applicable to minefilling
  - To determine the best statutory authority or mix of authorities for regulation of minefilling
  
- C Working with OSM and DOE
  - To develop a census and profile of minefilling operations
  - To review their more recent minefilling research projects and findings

## Public Interest Groups

- C Seek public interest groups' views and opinions on the appropriate public participation requirements and processes
- C Tap public interest groups' knowledge and information to help identify potential regulatory improvements

## EPA Working Draft Documents

- C Shared through IMCC with state and tribal mining regulatory authorities for their review and comment to EPA regarding completeness and accuracy

## Regulation and Policy Concerning CCW Mine Placement in 26 States

- C Reviews and summarizes current state regulations and policy concerning the placement of CCW in surface and underground mines in 26 states
- C States were selected based on number of coal mines
- C Examines both mining and solid waste regulatory programs and policy
- C Three parts:
  - Summary of SMCRA regulations and guidance applicable to CCW mine placement
  - Summary of state regulations pertaining to CCW mine placement
  - Table identifying key components of the state programs that differ from (e.g., are more stringent or specific to CCW than) federal SMCRA requirements
- C Focuses on 17 elements of state programs applicable to CCW mine placement

## **Elements of State Programs Applicable to CCW Mine Placement**

- C Identification of the state agency(ies) with authority for overseeing the practice
- C The placement uses allowed or authorized
- C Whether the state makes a regulatory distinction between beneficial use and disposal at mine sites
- C Pre-placement site characterization requirements
- C Siting restrictions
- C Reclamation or placement plan requirements
- C Waste characterization requirements (both before and during placement)
- C Waste characterization limits
- C Whether (and how) operators are required to address acid-base balance issue
- C Whether regulatory approval is required for a project to proceed
- C Public participation requirements
- C Ground-water monitoring requirements (both during and after placement)
- C Performance standards
- C Enforceable limits and corrective action provisions
- C Operational or placement engineering requirements
- C Performance bonding or financial assurance requirements
- C Other closure and post-closure requirements

## Mine Placement of CCW State Program Elements Analysis

- C Summarizes elements of 22 state regulatory programs applicable to placement of CCW in surface or underground mines
- C Information is summarized from the detailed analysis conducted in the 26 state report
- C Analysis is in the form of tables that identify the program elements pertaining to mine placement oversight in each state
- C Most information pertains to coal mines only; we have not yet completed research on regulatory programs for non-coal mines

# Contacts

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EPA RCRA Fossil Fuels Web Site

<http://www.epa.gov/epaoswer/other/fossil/index.htm>

15 January 2002

RCRA 2002

**Mine Placement of Coal Combustion Products (CCP's) -  
Data Collection and Risk Assessment**

**MRAM - An International and Interagency Cooperative Project**

**Abstract:**

In April 2000, the U.S. Environmental Protection Agency (EPA) issued its regulatory determination with respect to the disposal of coal combustion *byproducts*, often called *combustion products or residuals*. **(Overhead #1)** The agency determined at that time that these residuals, while showing evidence of potential for risk to both human health and the environment, did not warrant treatment as hazardous wastes but, rather, should be managed in accordance with the provisions of Subtitle D of RCRA; in effect passing enforcement authority to the States. **(Overhead #2)**

As a part of that regulatory determination, EPA also stated that it did not, at that time, have enough data on minefilling practices to be able to pass judgment on the merits and protectiveness of that practice on a nationwide basis. The practice of minefilling is a common one, and various States have their own enforcement procedures on the books. Still, the varying geochemistries and hydrologies, and the varying wastes, together with past mining practices that have in many cases seriously damaged the local environment, make the practice controversial.

With the help of many agencies, private firms, special interest groups and individuals, both in the US and Canada, EPA began in 2001 a very wide ranging data collection effort aimed at determining what is happening at mine placement sites. To date these have all been coal mining sites, but there is no reason why, in principle, these same coal combustion products might not be used at other, non-coal mining, sites scarred and damaged by mining. All would depend on the chemistries and of course on the economics of haul-back. The following have been leading players: EPA, DOE, DOI's Office of Surface Mining, the Universities of West Virginia and North Dakota, representatives of Canadian utilities, several US states and their representatives, US industry represented by USWAG and CIBO, and a number of very experienced consulting firms as noted below.

We are starting to analyze data of varying quality from some 65 sites, with knowledge of perhaps another 30-40 sites. We think, speaking only of coal mine sites, that upwards of another 500 or more sites might be candidates for this practice if protective practices may be clearly identified and the non-protective practices, where such may exist, also identified. All parties "own" these data; it is public information.

It is absolutely essential to appreciate that *perfection* is not the goal...temporal and spatial *improvement* is the goal.

## A. Study Participants (Overhead #3)

This work would not be possible without the active participation of experts from all stakeholders having interest in mineplacement of CCP's. The opinions of all those who have interest in this practice are invariably strong..most believe the practice is "beneficial", but there are instances where such placement can result in worsening potential threats to both human health and the environment. However, all involved have one common interest..to study the many possible hydro/geochemistries sufficiently unto determining just which circumstances are favorable and which are not.

From its inception, the MRAM project was envisioned by EPA as a cooperative venture. For it to achieve the objectives stated above, all stakeholders had to weigh in from the start. Despite differing views, some of which are grounded in evidence and some in intuition ("how can we possibly make this polluting situation any worse than it is"?), all parties agreed that prescriptive rules would be helpful...that these would enable constructive dialogue on expanding this practice to as many sites as risks and economics will permit. While the U.S. EPA has the lead role, the following other agencies and individuals are participating: The U.S. Departments of Energy (DOE) and Interior (DOI), the Universities of West Virginia and North Dakota, representatives from Canadian utilities and mines located in the province of Alberta, several key US states and their organized group representatives, US industry represented by USWAG and CIBO, and several experienced consulting firms including IEC, DPRA, SAIC, Ish Inc., Tetra Tech and Allison Geosciences. We are seeking to involve representatives from environmental groups as we continue our work.

## B. The MRAM project

In the late spring of 2001, EPA began the MRAM project. MRAM is the acronym for "Minefill Risk Assessment/Modeling" (**Overhead #4**). As this overhead indicates, MRAM is but one part of a broader EPA effort to collect information on minefilling practices in all of the States where this practice is allowed. What distinguishes MRAM from the other efforts is that MRAM targets quantitative waste and site specific chemical and hydrogeological data...it seeks to define and develop analytical relationships between the specific CCP's or residues placed in mine sites, on the one hand, and the on-site spoils and hydro/geo/chemistry that will determine how the disposed wastes behave over time. (The other ongoing efforts are directed at reviewing state regulations, site visits and interviews, and searching for regulatory gaps at both the federal and state level.)

Of course, chemical and other waste characteristics vary with the actual material being disposed; and equally obviously, how the material behaves will depend also on site and spoils characteristics. *So...three categories of data are being sought...(1) characteristics of the product wastes themselves, (2) site and spoils characteristics, and (3) whatever groundwater data may exist on any site where placement is occurring or has occurred.* While the study embraces both surface and deep mines, it is expected the 2002 effort will be directed primarily at surface or open pit mines.

It is important to emphasize that EPA is not engaged in a witch hunt here. EPA acknowledges the many mine placement efforts that, at least to date, are showing site improvement

either in measured contamination levels or in flow terms. But the geochemistry of these sites, while generally pretty well understood, is not documented as well as it might be for similar sites to be sought and studied. Conversely, examples where placement might not make sense exist; typically these involve inadequate pH buffering or the placement of residues in situations where existing groundwater is worsened..in effect direct loading of contaminants to groundwater or loading via increased leaching.

Complicating this are the difficulties associated with measuring effects over time and over volumetric space..measuring temporal and spatial effects. Positive effects measured short term can conceivably change dramatically as ash or site chemistries change with time; and, of course, sub surface flows, long term, are exceedingly difficult to predict. Any placement “solution” is bound to be suboptimal for those reasons. Thus we have elected, for now, to be content with a simple “have we improved things insofar as we can determine with methods we have.” We go as “long term” as we can, and ask that those who succeed us do the same.

The importance and relevance of SMCRA, the Surface Mining Control and Reclamation Act, cannot be overstated. This statute has for years been the underpinning of many coal mine reclamation projects. A special effort is being made, with the assistance of DOI’s Office of Surface Mining, to determine where SMCRA and RCRA are supportive and where gaps may exist. Together the two statutes provide the primary legal basis for whatever federal action may be taken.

*The fundamental objectives of this project are to develop and publish protocols that permit wider use of protective practices, and that explicitly discourage practices that are harmful....to document specific geochemical recipes for success or failure, to denote uncertainties, and to encourage wider usage of these residuals in mine land reclamation...for any type of mine site, coal or non coal, that might survive the analysis. (Overhead #5)*

### **C. Data and Analysis**

At the present time we are beginning to assess data sets from 69 studies covering 55 sites in 9 states and Canada. Of these, 40 are surface mines and 15 are deep mines. Certain of these data sets are far more comprehensive than others.

The initial data compilation includes mine type (surface or deep), climate designation, presence of acid mine drainage or not, placement above or below the water table, CCP type and composition, presence of cap and/or run on/run off controls, presence of liner or not, summary of groundwater data and quality, ph assessment and any contaminant exceedances over toxicity thresholds. **(Overhead #6)** From this, when the data base is completed, we expect to get a preliminary idea as to whether the site is currently presenting a problem or not. We would not, however, based solely on these data, be capable of explaining site phenomena.

We tabulate the following site characteristics: location, site dimensions, placement dates and purpose, nature of regulation and /or permitting, CCP type and additives if any, placement area and location within mine, soil/spoils characteristics, underlying stratigraphy and general topography, and, particularly, water table data. Here, we begin to seek insights particularly into the impact of key site characteristics...eg soil and spoils chemistry and the presence of water, in relation to locations of monitoring wells. **(Overhead #7)**

We also characterize the CCP's themselves. From our data to date, these wastes may contain the following: arsenic, barium, cadmium, chromium, lead, selenium, aluminum, cobalt, molybdenum, nickel, antimony, copper, mercury, zinc, silver, manganese and iron. Some of these have primary drinking water toxicity thresholds and others do not. **(Overhead #8)** Finally, we array and statistically assess groundwater monitoring data for each contaminant and each site.

At time of writing of this paper, the methodology for achieving the objectives cited above is still in development. There are undoubtedly patterns of behavior between all the variables noted, and the development of protocols enabling protective mine placement will necessitate careful study of these data sets. We may not have enough sites in our data base, and we may not have sufficient data from the sites for which we do have data. *In effect, we must ask whether we need to look further, for more sites, while at the same time we seek to narrow our cases to a sufficiently prescriptive few. We must both broaden and narrow at the same time, as the methodology itself develops.*

#### **D. Year 2002 Work Plan (Overhead #9)**

As 2002 begins, our plans include::

1. Flesh out the data sets as much as possible to be sure we have sufficient data with which to fully understand a given site.
2. Differentiate chemistries that appear promising from those that suggest problems.
3. Develop rationale for nationwide recipes
4. Identify physical and mechanical fill practices by region and geology
5. Establish basic methodology for deep mines and non-coal mines
6. Investigate economics of haulback -funding options
7. Continue the comparative RCRA/SMCRA analysis to be sure we are using both statutes to their full advantage

## OSM Perspective On Mine Placement Of Coal Combustion Byproducts

### **I. SMCRA.**

This congressional law came about to address problems specific to coal mining.

- Protection of citizen rights.
- Protection of the environment.
- Balance of environmental, agricultural and coal production for national good.
- Promote reclamation.
- Assist states to set up regulatory programs.

### **II. Byproduct Vs. Waste**

A waste often requires treatment as found in a Solid Waste Landfill.

Solid Waste Landfill Components.

- Containment
- Waste Specific Design Criteria
- Liners
- Compaction
- Siting Restrictions
- Dust Control
- Cover
- Leachate Collection
- Long Term Ground Water Monitoring
- Long Term Bonding
- Land Use Restrictions

Coal Combustion Ash is complicated first by its sheer volume. Not all ash products are alike and some can clearly fall into the waste category.

However, ash products are increasingly being utilized and can be used in economic ways. This allows Coal Combustion Byproducts (CCBs) to be characterized as potentially useful and therefore a byproduct.

### **III. Field Investigations.**

In the field (with a few notable exceptions) we have found not the construction of solid waste landfills but the use of CCBs in a manner that complements the mining and

reclamation process.

- An earthlike fill used during reclamation to save earth moving costs.
- An alkaline non-permeable seal to contain acid forming materials or isolate acid mine drainage.
- An alkaline additive to coal waste to prevent acid mine drainage.
- A construction material for containment of coal waste and or other CCBs.
- An amendment to overburden materials to improve revegetation of abandoned mine lands.
- A grout to fill underground mine voids to prevent contact with acid mine drainage and prevent subsidence.

The differences in individual State programs are not in terms of minimum environmental performance standards but in permitting guidance based on:

- Types of industry (underground vs. surface, small vs. large operators, mine mouth operations, etc.)
- Types of local environmental conditions (alkaline vs. acid, humid vs. arid, useable ground water vs. highly mineralized or non existent ground water, proximity to water table, etc.)
- Years of experience with CCB placement at mines.
- Degree of coordination with State Solid Waste program

#### **IV. SMCRA is a performance standard approach to protecting the public and the environment.**

- SMCRA based performance standards regulate the minimum levels of environmental protection.
- SMCRA allows each regulatory authority to develop local permit guidelines that establish procedures for proposing acceptable design criteria and operational practices when CCBs are to be placed on a coal mine site.
- Permitting of operations allows site specific adjustments and designs.

The key is that SMCRA establishes the minimum Federal performance standards. The States develop permitting guidelines that are specifically designed for its industry, locality, and specific uses of CCB materials. And the permittee develops a mine specific mining and reclamation plan that complies with both the SMCRA based regulations and specific State guidance.

SMCRA based regulations have successfully been applied to CCBs for mine placement by complementing the mining and reclamation process. Although CCBs were not specifically included as part of SMCRA, minimum performance standards protect the public and the environment at all SMCRA mine sites. The SMCRA based regulations apply to all materials and activities within the surface area and adjacent area of a coal mining operation. Thus, the environmental and human health and safety performance standards found in these regulations cover the placement of CCBs.

## **Update on State/Federal Discussion Concerning Mine Placement of CCW**

Following EPA's publication of its Notice of Regulatory Determination on Wastes from the Combustion of Fossil Fuels in May of 2000 (at 65 Fed. Reg. 32214), the member states of the Interstate Mining Compact Commission (a multi-state governmental organization representing the natural resource and environmental protection interests of its 20 member states) suggested to both EPA and the Office of Surface Mining (OSM) in the U.S. Department of the Interior that an intergovernmental forum would serve as a valuable mechanism to initiate discussions between state and federal governments concerning next steps pursuant to the regulatory determination. This suggestion followed on the heels of a resolution adopted by IMCC in May of 2000 affirming the appropriateness and effectiveness of state regulations and policies for the safe handling, recycling, beneficial use and placement of coal combustion by-products and supporting the management of CCBs without the application of federal RCRA subtitle C requirements. The IMCC states were particularly focused on EPA's finding that, although coal combustion by-products (CCB,s) (or coal combustion wastes (CCW)) did not warrant regulation under subtitle C of the Resource Conservation and Recovery Act (RCRA) as "hazardous waste", the agency had determined that national regulations under subtitle D of RCRA are warranted when these wastes are

disposed in landfills or surface impoundments, and the regulations under subtitle D and/or possible modifications to existing regulations established under the Surface Mining Control and Reclamation Act (SMCRA) are warranted when these materials are used as fill in surface or underground mines. IMCC was especially concerned about the latter, “mine placement” aspects of the determination given the significant interplay between approved state regulatory programs under SMCRA and any potential adjustments to the national SMCRA regulations (which serve as a template for state regulatory programs).

Both EPA and OSM saw the value of proceeding in this manner and the first intergovernmental forum on mine placement of CCW was held on May 15 and 16 in St. Louis, Missouri. The forum was open to all states, not just IMCC member states, and also involved tribal government representatives. The forum began with several presentations from EPA, OSM and state representatives that updated attendees on current mine placement practices and regulatory programs and that allowed attendees to hear about current issues and problems being encountered in the mine placement of CCWs in anticipation of the potential development of a proposed rule by EPA. One of the key objectives of the forum was to engage state and federal representatives affected by the potential proposed mine placement rule in an open

discussion about current challenges being encountered in the field, identifying potential regulatory gaps, anticipating potential inter-agency jurisdictional conflicts, and discussing implementation concerns associated with any new rule. A key outcome of the forum was the establishment of an on-going dialogue among the states and federal representatives concerning the various operational, environmental and economic issues associated with the practice of mine placement of CCW. A copy of the notes from the meeting can be found at EPA's website:

[www.epa.gov/epaoswer/other.fossil.index.htm](http://www.epa.gov/epaoswer/other.fossil.index.htm).

The intergovernmental forum was initially followed by a meeting of the states and tribes to prepare for the next federal/state dialogue. The states/tribes-only meeting took place on August 13 and 14 in St. Louis. Among the issues discussed were: characterization methods and tests for CCW; placement requirements; use of liners; closure requirements; pre-placement site characterization and volume restrictions; definition of beneficial use versus classic disposal; the need for federal regulations, guidelines or policies; and which federal agency should take the lead: EPA or OSM. The outcome of this meeting was the development of a draft discussion outline that contains the basic position of the states/tribes concerning the regulation of CCW placement at mine sites. The outline would serve as the basis

for continuing discussions with EPA and OSM regarding the need for national regulations given the adequacy of existing state and tribal regulatory programs. A copy of the outline is available from IMCC. The outline addresses categories of coal ash management; coal ash management principles for beneficial use; coal ash regulatory principles for beneficial use; disposal/placement at minesites other than beneficial use and conclusions. Among the conclusions drawn by the states were the following:

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

In preparation for the next state/federal dialogue, the states requested that

EPA make available for state review two draft documents: “Regulation and Policy Concerning Mine Placement of Coal Combustion Waste in 26 States” and “Mine Placement of Coal Combustion Waste – State Program Elements Analysis”. Copies of both draft documents were provided to the states in early November and are available from EPA.

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

noted above.

Another meeting of state/tribal/federal government representatives is scheduled for April 15 and 16 in Golden, Colorado in conjunction with OSM's technical interactive forum on "Coal Combustion By-Products and Western Coal Mines". At the next meeting, representatives will discuss updated versions of the two draft EPA reports, following the incorporation of state input resulting from the November meeting; further discussion of the states' draft discussion outline, based on continuing review and analysis by EPA and OSM; and the potential development of prototype national guidelines for beneficial use and ash characterization, based on existing state guidelines and program requirements.

In the meantime, the states/tribes have consistently articulated the following concerns to EPA and OSM, several of which remain to be addressed or resolved within the context of continuing state/tribal/federal government discussions:

- SMCRA appears to serve as an adequate and effective baseline for any type of regulatory analysis concerning mine placement of CCW
- it is essential to examine the effectiveness and comprehensiveness of existing state/tribal programs before adding additional regulatory requirements

- there is a need to coordinate among all applicable statutes/regulations that impact the regulation of mine placement of CCW, including SMCRA, RCRA, the Clean Water Act and the Safe Drinking Water Act. There is a sense that many of the necessary regulatory requirements are already in place in the context of these statutes and their respective regulatory programs.
- there is an absolute need for flexibility to accommodate differences among the states related to geology, climate, ash characterization and agency operation
- there needs to be consideration given to both coal and noncoal sites and the differences between them (possibly a segmented approach)

The states look forward to a continued effective working relationship with EPA and OSM as we seek to design an appropriate approach to the regulation of mine placement of CCW.

## **Narrative Biography of Gregory E. Conrad**

Greg Conrad is Executive Director of the Interstate Mining Compact Commission (IMCC), a multi-state governmental organization representing 20 mineral producing states. Greg has served in his position since 1988 and is responsible for overseeing several issues of importance to the states in the legislative and regulatory arenas including surface mining and reclamation, mine waste, identification and restoration of abandoned mine lands, and various environmental issues associated with mineral production such as surface and ground water quality and quantity.

Prior to joining IMCC, Greg served for nine years as senior counsel with the American Mining Congress, which is now part of the National Mining Association. While with AMC, Greg had primary staff responsibility for several coal related issues including transportation, leasing, research and development initiatives, and surface mining and reclamation.

Greg has spoken and presented papers at a variety of conferences hosted by such organizations as the Eastern Mineral Law Foundation, the Conference of Government Mining Attorneys, the Colorado School of Mines, the Office of Surface Mining, the National Mining Association, the Environmental Law Institute and various state government groups. He has written extensively on mining issues for professional journals and magazines.

Greg graduated from Michigan State University with a degree in business administration and later from the University of Detroit School of Law where he was an associate editor of the law review. He is married, has three children and resides in Chantilly, Virginia.

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**U S W A G**

## **Utility Industry Perspective on the Potential for Improving the Regulatory Climate for the Management of Coal Combustion Products**

*James R. Roewer*  
*Utility Solid Waste Activities Group, Executive Director*  
presented at  
EPA's 2002 National RCRA Meeting  
January 15, 2002

### **INTRODUCTION**

I am Jim Roewer, Executive Director of the Utility Solid Waste Activities Group - "USWAG". For those of you who are not familiar with USWAG, the organization was formed in 1978 to address solid and hazardous waste regulatory issues arising under RCRA. Its membership includes approximately 80 energy industry operating companies and associations, including the Edison Electric Institute, the National Rural Electric Cooperative Association, the American Public Power Association, and the American Gas Association. Together, USWAG members represent more than 85% of the total electric generating capacity of the U.S., and service more than 95% of the nation's consumers of electricity and over 93% of the nation's consumers of natural gas. As such, USWAG became the principal spokesperson for the utility industry throughout the Bevill study and Regulatory Determination process and was instrumental in providing data and otherwise collaborating with EPA in its longstanding effort to assess the risks from coal combustion product management. And as EPA proceeds with follow-up investigations and implementation of its non-hazardous regulatory determination we continue our productive and cooperative relationship that has now extended over 21 years.

After nine sessions on coal combustion products, I am sure you have a strong sense of where EPA is headed and what state and federal stakeholders think about EPA's plans. I would like to step back for a moment and make sure we all appreciate the background of this effort. And while I'll touch on our views of EPA's regulatory efforts, I'd like to focus on what should be our first priority -- the improvement of opportunities for the recycling or beneficial use of CCPs and therefore the reduction of volumes of these materials requiring management as waste.

### **BACKGROUND**

We all know by now that EPA published the Phase II Bevill Regulatory Determination in the *Federal Register* on May 22, 2000 (65 Fed. Reg. 32214), officially deciding that

fossil fuel combustion wastes “do not warrant regulation under Subtitle C of RCRA” and retaining the Bevill exemption under RCRA § 3001(b)(3)(C). Former Administrator Carol Browner signed that determination, which incorporated the fundamental premise that these wastes do not warrant Subtitle C regulation, which had been tested and evaluated for almost 20 years and was supported by a voluminous record. Indeed, until the final months of the debate, no one had seriously suggested that these wastes require hazardous waste regulation. EPA is to be praised for its thorough evaluation of the scientific evidence which led to the proper outcome.

It is important that we appreciate the deeper background of the Bevill Study and not let the contortions of the final few months of controversy supplant the record of almost 20 years of productive and cooperative research. First, and foremost, the Bevill Study was a cooperative and open process. As envisioned by the Bevill Amendment, USWAG -- as the representative of the utility industry -- worked cooperatively with EPA staff and the Electric Power Research Institute to design representative, site-specific studies and provide EPA with the data necessary to evaluate CCP management practices. All our data collection activities were discussed with EPA in advance, and the information provided to EPA was available to the public.

In the Regulatory Determination EPA found that

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

Nonetheless, EPA determined that follow-up action under Subtitle D was necessary in response, most significantly, to 11 damage cases that the Agency had identified and to various "gaps" in state regulatory programs.

### **Performance-Based, Gap Filling Guidance for State Programs**

In other words, EPA is concerned that various "gaps" in some state programs demonstrate that the states need assistance through Subtitle D standards to address the potential for environmental damage represented by a limited number of cases that EPA identified where management practices -- in most cases pre-RCRA management practices -- may have resulted in environmental harm. Said another way, EPA has determined that most states are adequately regulating any risks presented by CCP management, which are neither widespread nor on a scale that would warrant Subtitle C regulation.

EPA's response then should respect state regulatory authorities and address the gaps rather than prescribing a sweeping, nationally uniform program that would supplant existing state programs. It should also be performance-oriented to allow for site-specific determination of appropriate regulatory measures.

We understand that EPA is indeed pursuing a performance-oriented strategy. We trust that the implementation will provide the states a framework within which they can enhance rather than supplant programs that have served them well.

We also note that EPA is completing work on the final version of the *Voluntary Guide for Industrial Waste Management*, which is designed to assist states in improving their industrial waste management programs. The Industrial D Guide was developed through a collaborative Federal Advisory Committee Act process under the direction of ASTSWMO and EPA. USWAG participated in the process, and OSW developed the Guide with the intention that it would apply to fossil fuel combustion waste management units. Thus, the states will have available in July 2002 -- almost 2 years before the scheduled completion date for the fossil fuel combustion standards -- a tool to help them address any of the gaps that EPA may have identified particular to CCP management.

### **Mine Placement**

The majority of this afternoon's discussions have focused on mine placement of CCPs. USWAG's views are largely in line with those expressed by Greg Conrad of the Interstate Mining Compact Commission, and I will not dwell on this topic in isolation. However, I feel obliged to emphasize that EPA has not identified a single damage case attributable to placement of CCPs in an abandoned coal mine. And, as EPA acknowledged in the Regulatory Determination, the Surface Mining Reclamation and Control Act is "expressly designed to address environmental risks associated with coal mines." 65 Fed. Reg. at 32217.

### **Increasing Beneficial Use By Removing Regulatory Barriers**

I'd like to move beyond the Subtitle D regulatory issues to focus on the most fertile area for environmental achievement -- increased beneficial use of CCPs. And, of course, this issue will be influenced greatly by EPA's Subtitle D standards. One of USWAG's goals is for regulators to address beneficial use as a priority for affirmative efforts -- as RCRA envisions -- rather than as a consequence of regulatory actions focused on wastes. We are encouraged that Assistant Administrator Horinko has announced that she intends to focus on improving recycling and minimization of industrial wastes with a

new focus on the power of Subtitle D and look forward to cooperating towards this mutual goal.

More than 80% of United States energy production is derived from fossil fuel combustion, and annual combustion of roughly 900 million tons of coal accounts for more than half the electricity produced. As products of the combustion, electric utilities currently produce roughly 100 million tons per year of CCPs. The need for advancement of reuse has driven USWAG's regulatory efforts, and our member companies recycle considerable quantities of CCPs. However, the nationwide beneficial reuse rate stands at only 31%. Although we are proud that this percentage is a dramatic improvement from 1980s levels, we are not resting on our laurels. We are determined to achieve major increases in this percentage over the coming years.

EPA recognized that a Subtitle C determination would have been disastrous for marketing efforts. What has proven true is that the debate itself and the follow-on regulatory focus has been enough to cloud the markets and take away the momentum towards increased reuse. The materials that are being held up as the subject of waste regulation on the one hand are the same materials that can be put to beneficial use.

Congress was concerned with the limitations on CCP reuse and directed the Department of Energy (DOE) in the Energy Policy Act of 1992 to study the "institutional, legal, and regulatory barriers" to increased utilization of combustion byproducts and to report its findings and recommendations. DOE completed its ash barriers study in 1993 and submitted its report to Congress in 1994. DOE, *Report to Congress, Barriers to the Increased Utilization of Coal Combustion/ Desulfurization By-Products by Governmental and Commercial Sectors* (July 1994) ("Ash Barriers Report"). While the Report identified numerous institutional barriers to ash utilization, it identified the RCRA "solid waste" designation associated with ash as the "most important" regulatory barrier.

DOE noted that in the absence of special state exemptions from the definition of solid waste, the "waste" designation can trigger waste disposal permitting procedures that discourage the use of CCPs because of cost and time required to complete the approval process. This designation is also said to create "attitudinal barriers" precluding use of CCPs. DOE further identified the inconsistency in federal and state regulations for use of such CCPs as a barrier to increased usage. The Commonwealth of Pennsylvania provides an example of a proactive state that has acted to remove a significant barrier by adopting an exemption from its disposal permit requirements for beneficial use of coal ash. PA Code § 287.601(b). Other states have taken similar actions, but EPA has remained silent on this important issue.

In addition, DOE determined that the "chief legal barrier" to increased CCP use is the "potential for liability associated with use of a material designated as a waste material." Ash Barriers Report at iv. Environmental liability, therefore, is a "strong deterrent" for use of a CCP when the material is designated and regulated as a solid waste. *Id.* at 18. For example, while regulations in the area of waste stabilization vary among states, the Report recognized the viable concern of CCP producers that they may be exposed to a large liability risk if the CCPs are used for waste remediation. The report was updated

in 1999, and DOE concluded that despite significant efforts by government agencies and industry, most of the barriers identified in the 1993 report persist.

Thus we were particularly gratified by EPA's findings in the Report to Congress and Regulatory Determination regarding the environmental soundness of most forms of beneficial use of fossil fuel combustion products. Yet we are disappointed that despite the favorable findings, we still have seen no steps to translate the positive environmental findings into regulatory policy. With the positive record achieved by beneficially used utility combustion products, EPA should take the lead in promoting increased utilization of these materials by urging Federal and State regulatory agencies to view these materials as products (subject to whatever regulations might apply to competing products) and not as wastes when they are beneficially used in a manner recognized to be environmentally sound. EPA should set the example by declaring that agency rules and policies applicable to waste materials will not apply to beneficial use of CCPs.

Indeed, increased utilization of CCPs should be carefully addressed as an integral part of EPA's solid waste and air emission control strategy. Reuse of CCPs has significant potential for direct reductions of air emissions by reducing reliance on cement kilns to produce cementitious materials used in concrete. According to *Environmental Building News* (June 1999), an increase in the reuse rate of coal fly ash from 15 to 50 percent of the cement currently used in concrete could eliminate as much as 600 million metric tons of CO<sub>2</sub> emissions annually emitted by the production of cement. Furthermore, the American Coal Ash Association estimates that the energy savings from the reduction of reliance on cement kilns translates to the avoidance of 10 to 14 million tons of CO<sub>2</sub> emissions annually.

USWAG has assessed the CCP generation and management implications of one "multi-pollutant" control scenario to illustrate the need for a significant expansion of reuse. The installation of scrubbers on an additional 135,000 to 201,000 MW would increase the volume of FGD materials by 35 to 52 million tons – potentially doubling current production. Land disposal alone cannot address this tremendous increase, and reuse must be expanded both through technological developments and expanded marketing of existing CCP uses.

In conclusion, out of all of the issues discussed today, increased beneficial use of CCPs presents the biggest potential for environmental improvement. We hope that EPA will assist the industry to maximize beneficial use of CCPs and thereby, in turn, minimize disposal in landfills and surface impoundments. USWAG will step up to the plate with the Agency and together we can achieve significant increases in beneficial use and go a long way to dispel any potential concerns with disposal.