ILLINOIS DEPARTMENT OF MINES AND MINERALS

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Director

PROTECTING OUR RESOURCES

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Land Reclamation Division Memorandum No. 92-11

TO: All Coal Staff
Land Reclamation Division

FROM: Fred K. Bowman, Supervisor
Land Reclamation Division

DATE: November 4, 1992

RE: Attached Memorandum 92-11 IDMM-LRD/IEPA Permitting Guidelines for the Disposal of Coal Combustion Waste

Attached are updated guidelines for the permitting and disposal of coal combustion wastes at coal mine sites. This memorandum will replace IDMM/LRD Memorandum 90-5.

The guidelines have been co-written with the Illinois Environmental Protection Agency; an application following these guidelines will satisfy both agencies although some requirements are not necessarily in IDMM regulations.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
and
ILLINOIS DEPARTMENT OF MINES AND MINERALS (92-11)

October 27, 1992

Re: Storage or Disposal of Coal Combustion Waste at Permitted Facilities

Dear Sirs:

Attached please find updated guidelines for the preparation of permit applications for the disposal of coal combustion wastes at coal mine facilities. In an effort to make the permitting process more efficient, site and material characterization requirements have been agreed on by both the Illinois Environmental Protection Agency (IEPA) and the Illinois Department of Mines and Minerals (IDMM) and are presented herein.

If you have any questions, do not hesitate to contact the Mine Pollution Control Program (MPCP) of IEPA at 217/785-0748 or the Land Reclamation Division of IDMM at 217/782-4970.

Sincerely,

James B. Park
Chief
Bureau of Water, IEPA

Ronald E. Morse
Director, IDMM

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LAND RECLAMATION DIV.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
and
ILLINOIS DEPARTMENT OF MINES AND MINERALS

Storage or Disposal of Coal Combustion Waste
at Permitted Facilities

November, 1992

This correspondence is intended to update and summarize the Illinois Environmental Protection Agency (IEPA or Agency) and the Illinois Department of Mines and Minerals (IDMM or Department) permit requirements for the disposal of coal combustion waste(s) as generally outlined in Section 21(r) of the Environmental Protection Act (Act). More specifically, attention is given to material characterization and site studies necessary to allow for disposal of such wastes at a given coal mine facility operation under NPDES and Subtitle D permits issued by IEPA and the appropriate permit(s) issued by the IDMM pursuant to the Surface Coal Mining Land Conservation and Reclamation Act and the Permanent Program rules and regulations.

Section 3.76 of the Act defines "coal combustion waste" as, "any of the following materials generated as a result of the combustion of coal or of coal in combination with no more than 20 percent of tire derived fuel and wood by weight of the materials combusted: (1) fly ash; (2) bottom ash; (3) flue gas desulfurization byproducts."

Section 21(r) of the Act then outlines the circumstances under which IEPA will, "allow the storage or disposal of coal combustion wastes." Sections 21(r)(1) and 21(r)(2) are not regulated directly by the Mine Pollution Control Program (MPCP) of IEPA or IDMM, but are noted for completeness.

Section 21(r)(1) of the Act states that coal combustion waste may be stored or disposed of at a permitted/approved site or facility in accordance with the Subtitle G regulations administered by the Bureau of Land within IEPA.

Section 21(r)(2) of the Act states that coal combustion waste may be stored or disposed of at an abandoned coal mine site that is a reclamation project sponsored by the Abandoned Mined Lands Reclamation Council (AMLRC) in accordance with the Abandoned Mined Lands and Water Reclamation Act. Such disposal activities are coordinated between the AMLRC and the IEPA through the working relationship between AMLRC staff and the MPCP as the Director's designated representative serving on the Council.

Section 21(r)(3) of the Act is the focus of this guidance regarding disposal of coal combustion waste at an active coal mine facility subject to operating permits required by IEPA and IDMM. An owner or operator of a permitted facility who agrees to accept coal combustion waste for storage or disposal can gain approval for such

activity by incorporating plans in the initial facility application or by making a separate demonstration anytime thereafter as detailed below. Separate approval from IEPA and IDMM is needed to implement each coal combustion waste storage or disposal plan.

Section 21(r)(3)(i) of the Act allows for storage or disposal of coal combustion waste at an active coal mine facility if this activity is provided for in the approved refuse disposal plan under the existing National Pollutant Discharge Elimination System (NPDES) and/or Subtitle D permits. General procedures for the revision of a refuse disposal plan (to include coal combustion waste disposal activities) are contained in 35 IAC Section 405.106 of the Illinois Pollution Control Board's (Board's) regulations.

Alternatively, Section 21(r)(3)(ii) of the Act allows for storage or disposal of coal combustion waste at an active coal mine facility if the owner or operator demonstrates to the satisfaction of IEPA and IDMM that <u>all</u> of the following four provisions can be achieved; and further agrees to operate the facility in accordance with the separate approvals given by IEPA and IDMM.

It should be noted that IEPA and IDMM may be applied to jointly through IDMM permit applications and significant permit revisions which undergo public notice procedures, as IEPA will receive those proposals directly. However, IEPA must be applied to separately in the case of insignificant permit revisions and incidental boundary revisions which are submitted to IDMM.

The first provision of the proposal requires demonstration that, "the disposal area will be covered in a manner that will support continuous vegetation." In most cases the approved reclamation plan in the IDMM permit will be adequate for this purpose. However, any modifications to soil grading or covering and/or amendment, seeding and mulching activities related specifically to a disposal area should be detailed to support this continuous vegetation requirement. This includes special attention given to operation and maintenance activities for a disposal area. Modifications of the approved reclamation plan will require subsequent approval by IEPA and IDMM.

The second provision of the proposal requires demonstration that, "the facility will be adequately protected from wind and water erosion." The disposal plan proposal should therefore include the following elements for a selected site:

- IEPA requires an accurate topographic map showing the proposed limits of the disposal area with preliminary design details, and enough of the surrounding area of the facility to evaluate potential wind and surface water effects.

- A detailed description of storage (if applicable), handling and waste placement operations, including planned operation

and maintenance (O & M) activities for the disposal area. This discussion should include details on waste composition for disposal by outlining if a particular coal combustion waste will be disposed of separately in a monofill or in combination with other coal combustion wastes and/or mine refuse. Similarly, details should be provided on the volume of wastes estimated to be disposed and the operational procedures to be followed in the field to place and compact that material in a controlled manner. If co-disposal is planned, the proposal should address the mixing, handling and/or sequence for placement of the various wastes involved.

- IEPA requires operational procedures to minimize wind erosion of coal combustion waste during transport, storage and handling activities as well as after initial placement in the disposal area. The goal of this program should be no visible emissions of coal combustion waste resulting from the disposal operation.

- IEPA requires "good mining practice" erosion control measures such as diversions to minimize surface water from coming into contact with coal combustion waste in the storage and/or disposal area. This plan should also include adequate protection against erosion of waste materials from direct precipitation. Surface water runoff from the storage and/or disposal area may be addressed under provision four.

The third provision of the proposal requires demonstration that, "the pH will be maintained so as to prevent excessive leaching of metal ions." To evaluate the potential for leaching of inorganic contaminants from the coal combustion waste or mixtures proposed for disposal, the following chemical analyses shall be conducted using laboratory methods currently recognized in the regulatory program. All of these tests must be run on a <u>representative</u> sample of the waste mixture based on the disposal plan proposed. Details on the formulation of this representative sample for testing purposes should be addressed.

Appropriate laboratory analyses on the slurry paste shall include:

pH
Alkalinity ($CaCo_3$ Equivalent)
Acidity ($CaCo_3$ Equivalent)
TDS

The Toxicity Characteristics Leaching Procedure (TCLP) shall be conducted for the following:

Arsenic	Chromium	Lead	Selenium
Barium	Cobalt	Manganese	Silver
Boron	Copper	Mercury	Phenol
Cadmium	Iron	Nickel	Zinc

Nitrate

An appropriate leaching procedure shall be conducted for the following:

Chloride	Cyanide	Fluoride	Sulfate

Appropriate leaching procedures for sodium, molybdenum and/or other constituents may be specified by IDMM if cover variances are sought or coal combustion waste is proposed as a soil amendment.

The fourth and last provision of the proposal requires demonstration that, "adequate containment or other measures will be provided to protect surface water and groundwater from contamination at levels prohibited by this Act, the Illinois Groundwater Protection Act, or regulations adopted pursuant thereto."

Surface water controls were initially discussed in provision two of these proposal requirements with the focus on controlled "clean" water diversion and discharge. Discussion in this section of the proposal should focus on the collection, conveyance, monitoring and discharge of surface water runoff contacting coal combustion waste or mixtures placed in the disposal area. The proposal may include pretreatment and/or treatment plans prior to discharge from the facility, depending on the quality of the waste or mixture being disposed.

Discussion of the hydrogeology of the disposal area should utilize existing local information and facility data where possible and include boring logs for geological purposes and/or for monitoring/production well installation in the vicinity of the disposal area. A <u>summary</u> of all groundwater monitoring data (to include data required by IDMM) for wells in the vicinity of the disposal area should be submitted and incorporated in the discussion of existing conditions. It should be stressed that the completeness of this data package is critical to timely evaluation of the proposed area for disposal activities. This groundwater data is being requested in this "stand-alone" proposal because IEPA may

not be receiving routine compliance information unless it has been specifically requested for a given facility. Finally, the details of all engineering containment or other control measures being proposed for a given situation should be presented in conceptual form, with supporting justification of the protectiveness they provide.

Approval by IEPA and/or IDMM for each specific demonstration proposal may be conditional, as determined by the Agency and/or the Department after discussions with the owner or operator. For instance, IEPA/IDMM may require additional groundwater monitoring parameters to be added to those in the approved monitoring plan based on the potential for leaching as determined by waste mixture testing. IEPA/IDMM will initially require quarterly sampling, prescribed analysis and reporting on <u>each</u> coal combustion waste source approved for disposal, to establish baseline waste characteristics and source variability. If a coal combustion waste is approved to be mixed with other wastes, then the representative mixture should also be analyzed quarterly. Once baseline waste characteristics are consistently established, the owner or operator may approach IEPA/IDMM for approval for modifications to their monitoring plan. Finally, any changes in the coal combustion waste source material or mixture (either by a waste supplier or by the mine facility), from that initially approved by IEPA/IDMM, requires notification and submittal of chemical analyses of the alternative waste source material or mixture and approval by IEPA/IDMM <u>prior</u> to any changes in actual disposal operations.