Guidance On Disposal of Coal Combustion Byproducts

In the Western United States

When OSM Western Region is the Regulatory Authority

Office of Surface Mining

Western Region

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Coal combustion byproducts (CCBs) are produced when coal is burned, primarily by electrical generating facilities. CCBs from power plants consist of four large-volume waste streams—fly ash, bottom ash, boiler slag, and flue gas emission control waste. Most CCBs are disposed in large-volume landfills. Generally, CCB disposal operations are regulated under State solid waste management programs. In 1993 the Environmental Protection Agency (EPA) made a final regulatory determination that CCBs are exempt from regulation as hazardous wastes under Subtitle C of the Resource Conservation and Recovery Act (RCRA, 58 FR 42466, August 9, 1993). In its regulatory determination, EPA concluded that the State industrial solid waste management programs implemented under Subtitle D of RCRA were adequate regulatory controls for managing the disposal of CCBs.

Surface coal mines have been identified and used as disposal sites for CCBs. The Surface Mining Control and Reclamation Act (SMCRA) did not contemplate the disposal of solid wastes in a coal mine, other than wastes generated by coal mining operations (i.e., coal processing waste, noncoal mine waste, underground development waste, and spoil). The only reference to CCBs in OSM's regulations is at 30 CFR ' 817.41(h)(2)(iii) and (v), which specifies "fly ash" and "flue-gas desulfurization sludge" as two of the seven allowable types of discharges into an underground coal mine. However, as noted by OSM's Acting Director in 1996, CCB disposal at a mine site is not precluded so long as such disposal is consistent with the environmental protection standards of SMCRA, its implementing regulations, and Federal and State solid waste disposal requirements.

Because SMCRA and the implementing regulations do not contain specific requirements that address CCB disposal at coal mines, OSM Western Region developed this guidance for CCB disposal operations at coal mines where OSM Western Region is the regulatory authority.

Applicable Requirements and Regulatory Mechanisms

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CCB disposal at coal mines is a solid waste disposal operation. CCB disposal during coal mining and reclamation operations is a joint use of the land (i.e., coal mining and solid waste disposal). The State or Tribal solid waste regulatory authority would regulate CCB disposal operations in accordance with the State or Tribal solid waste management program, and OSM Western Region would regulate the disposal operations to ensure compliance with the requirements of SMCRA and the regulatory program. CCBs are an *industrial solid waste* pursuant to EPA's definition at 40 CFR ' 258.2, and, pursuant to 40 CFR ' 258.1(b), disposal of CCBs at coal mines is subject to the criteria contained in 40 CFR Part 257, *Criteria for Classification of Solid Waste Disposal Facilities and Practices*. The area of land or an excavation (e.g., coal mine pits and ramps) into which wastes are placed for permanent disposal is a *landfill* as defined by EPA at 40 CFR ' 257.2.

Under Subtitle D of RCRA, EPA is required to determine if a State has developed an adequate solid waste management program to ensure that landfill facilities comply with the criteria at 40 CFR Part 258. EPA-approved State solid waste management programs may use alternative, more flexible design standards for landfills than those found in EPA's criteria.

In December 1996, the U.S. Court of Appeals decided that EPA cannot approve solid waste management programs of Indian Tribes, as it can for States (Backcountry Against Dumps v. EPA, U.S. App D.C., 1996, Case No. 95-1343). In the decision, the Court noted that an Indian Tribe may create and enforce its own solid waste management plan under its sovereign authority to govern its own affairs and went on to note that the only difference between Tribes and States with approved plans is that a landfill on Indian lands must comply with the design standards of EPA's regulations. The Court also noted that EPA's regulations are self-implementing, which means that landfill owners and operators must comply with EPA's criteria with or without the oversight of a solid waste regulatory authority.

Scope of Guidance

This guidance applies to CCB disposal operations being conducted concurrently with surface coal mining and reclamation operations on lands where OSM Western Region is the regulatory authority under SMCRA (i.e., on Indian lands, in States with Federal programs, and on Federal lands in States without a Cooperative Agreement). This document provides guidance to ensure that CCB disposal at surface coal mines will comply with the requirements of SMCRA and the applicable regulatory program promulgated under SMCRA.

While this guidance focuses on CCB disposal, the concepts may be applicable to disposal of other types of imported materials in coal mines during surface coal mining and reclamation operations.

States use many differing methods and requirements for regulating solid waste disposal activities, including CCB disposal operations. Most States have developed policies for coordinating the regulatory activities associated with CCB disposal at coal mines between State agencies. Because of the broad differences between States (and on Indian lands) in the requirements and methods for

regulating CCB disposal operations at coal mines, this guidance document should not be used as a "national model" for regulating CCB disposal at coal mines.

Guidance Objectives and Strategies

Objective 1 - CCB disposal operations will not cause a violation of, or create a variance from, the reclamation and environmental protection performance standards of SMCRA and the applicable SMCRA regulatory program.

Strategy 1.1 - ***CCB disposal operations should comply with the backfilling and grading performance standards at 30 CFR ' 816.102.*** CCB disposal is usually conducted with the backfilling activities and is handled in the same manner as spoil. Except as noted below in Strategies 1.2 and 1.3, backfilling and grading performance standards at 30 CFR ' 816.102 should be applicable to the CCB disposal operations, particularly 30 CFR ' 816.102(f) if the CCBs are determined to be toxic-forming.

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

Strategy 1.3 - ***CCBs should not be disposed in mined-out areas if spoil would be displaced and disposed as excess spoil.*** CCB disposal should be allowed only where disposal capacity would be available after all spoil is returned to the mined-out area. CCBs should not displace spoil that otherwise would be returned to the mined-out area. In accordance with 30 CFR ' 816.102(b), all spoil, except excess spoil, must be returned to the mined-out area. Excess spoil includes only that spoil that is not needed to restore AOC [48 FR 23358, May 24, 1983]. Excess spoil disposal areas should not be created, or enlarged, to provide capacity for disposal of CCBs. In a decision concerning the creation of excess spoil, the IBLA noted, "There is nothing ‘automatic’ about the privilege to treat spoil as ‘excess’." [Pacific Coast Coal v. OSM, 118 IBLA 83, Case No. IBLA 91-121, 1991]

Strategy 1.4 - ***CCB disposal operations should be conducted to minimize disturbance to the hydrologic balance within the permit and adjacent areas, to prevent material damage to the hydrologic balance outside the permit area, to assure the protection and replacement of water rights, and to support the approved postmining land uses.*** The potential for ground water pollution is singularly the greatest environmental concern of CCB disposal at mine sites. CCB disposal should be subject to the permitting requirements of 30 CFR ' 780.21(f) to determine the probable hydrologic consequences, and in particular, the finding at 30 CFR ' 780.21(f)(3)(ii) whether toxic-forming materials are present in the CCBs that could result in the contamination of surface or ground water supplies. CCB disposal also should be subject to the hydrologic balance protection standards at 30 CFR ' 816.41, particularly 30 CFR ' 816.41(f) if the CCBs are found to be toxic-forming.

Strategy 1.5 - ***The timing of CCB disposal operations should be based on completion of all mining and reclamation operations in accordance with contemporaneous reclamation performance standards.*** CCB disposal as monofills in final pits and ramps could delay final reclamation for a considerable time (possibly many years) depending on the disposal rate. The timing of disposal, backfilling, and final grading of CCB disposal areas should be clearly identified in the permit application and considered in the permitting decision**.**

Objective 2 - CCB disposal operations must conform to applicable State, Tribal, or local solid waste disposal laws and regulations, in addition to the SMCRA regulatory program.

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

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

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

Objective 3 - CCB disposal operations must be approved in a SMCRA permit application in conformance with the permitting requirements of the applicable SMCRA regulatory program before the disposal operations may begin.

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

Strategy 3.2 - ***The permit application should contain, for each area where CCBs would be disposed, a copy of the written consent of the surface owner for CCB disposal; a copy of the conveyance that expressly grants or reserves the right to dispose of CCBs; or if the conveyance does not expressly grant the right to dispose of CCBs, documentation that under applicable State or Tribal law, the applicant has the legal authority to dispose of CCBs—***In conformance with the purpose of SMCRA at Section 102(b) to assure that the rights of surface landowners are fully protected, the applicant must demonstrate "right-of-entry" for CCB disposal operations.

Strategy 3.3 - ***CCB disposal sites should be specifically designated, described, and identified on a map.*** 30 CFR ' 780.11(b)(4) requires a narrative explaining the construction and use of waste disposal areas. The requirements for m aps and plans at 30 CFR ' 780.14(b)(8) require that waste disposal facilities be shown on a map.

Strategy 3.4 - ***A CCB disposal plan should be included in the Reclamation and Operation Plan required under 30 CFR Part 780.*** CCB disposal operations would be an integral part of the surface coal mining and reclamation operations approved in the permit application, and a CCB disposal plan should be included in the permit application. The backfilling and grading performance standards should be used for evaluating the proposed CCB disposal plan. The plan should:

Identify the source and components (e.g., fly ash, bottom ash, scrubber sludge) of the CCBs.

Describe the physical and chemical properties of the CCBs to determine whether acid-forming or toxic-forming materials are present in accordance with 30 CFR ' 780.21(f)(3)(ii).

Include data and analysis used to determine the physical and chemical properties of CCBs, cover requirements and, if needed, treatment or encapsulation requirements for the disposal of the CCBs in accordance with 30 CFR ' 816.41(f).

Identify and describe the location of designated CCB disposal areas, the volume and disposal rate of CCBs in each area, and the anticipated or actual starting and ending dates of disposal activities in each designated disposal area.

Describe the plans and procedures to transport, handle, place, treat, if necessary, and bury CCBs. The plans and procedures should include the routes, methods and equipment to be used to transport the CCBs on the mine site; the method of placement; any special handling procedures to be employed (e.g., mixing with spoil, cell construction practices); the depth of cover to be placed over the buried CCBs; the type, amount, and source of the nontoxic and noncombustible materials that would be used to cover and, if applicable, encapsulate, or isolate, the materials; and the methods and specifications for treating the materials, if applicable.

Describe how the disposal measures to be employed would effectively avoid acid or toxic drainage, control the impact on surface water and ground water, and minimize adverse effects on plant growth and the postmining land use in accordance with 30 CFR " 780.21(f) and (h), and 816.41(f).

Describe the effect of CCB disposal on achieving the approximate original contour.

Describe the timing and schedule of CCB disposal, backfilling, and final grading of CCB disposal areas.

Include the names of persons or organizations that collected and analyzed the data and information contained in the disposal plan, the dates of the collection and analysis, and description of the methodology used to collect and analyze the information.

Strategy 3.5 - ***The fugitive dust control practices in the air pollution control plan should specifically address the CCB disposal operations, including fugitive dust control during transport and placement of the CCBs within the permit area.*** Fly ash, usually the major component of CCBs, is very powdery and very susceptible to wind erosion. The fugitive dust control plan required at 30 CFR 780.15(a)(2) or (b)(2) should include the practices to control fugitive dust control during transport and placement of CCBs.

Strategy 3.6 - ***The probable hydrologic consequences analysis and hydrologic reclamation plan in the permit application, and the Cumulative Hydrologic Impact Assessment prepared by OSM, should specifically address the CCB disposal operations, including the probability of adverse impacts on the hydrologic balance, contamination of surface or ground water supplies, and the time for manifestation of impacts to surface or ground water supplies.*** CCB disposal may increase the potential for ground water pollution. The probable hydrologic consequences analysis contained in the

permit application should specifically address the CCB disposal operations. Ground water monitoring plans should specifically analyze and assess monitoring needs around CCB disposal areas and consider the length of time for the manifestation of any effects of disposed CCBs on ground water resources. CCBs should be regularly sampled and tested throughout the disposal period to assure consistency with the materials tested for permit issuance and plan approval.

Objective 4 - CCB disposal operations will be conducted only as described in the approved permit application and in accordance with the applicable performance standards.

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

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

Objective 5 - CCB disposal areas will be fully reclaimed in accordance with the applicable performance standards and the approved permit application.

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