

IMPACTS OF SUBTITLE C REGULATION OF COAL COMBUSTION BYPRODUCTS

USEPA is evaluating options for developing federal regulations for coal combustion byproducts ("CCBs"), including fly ash, bottom ash, boiler slag, and flue gas desulfurization solids (including synthetic gypsum). One option under consideration is regulating CCBs through some type of Subtitle C regime. This would most likely involve regulating CCBs as a listed hazardous waste (since CCBs rarely exhibit a hazardous waste characteristic). This paper identifies certain of the regulatory/practical implications for electric utilities associated with the regulation of CCBs as hazardous waste.

Potential Regulatory/Practical Implications

Limited Beneficial Use of CCBs: While any hazardous waste regime for CCBs would likely include an exclusion for CCBs that are beneficially used, USEPA reportedly would limit any exclusion from hazardous waste regulation for only those CCB beneficial uses that involve the full encapsulation of the CCBs into a finished product. Other existing beneficial uses, including involving land application and other unconfined uses (e.g., structural fill, agricultural use and soil amendment), would likely not enjoy this exclusion and could be subject to hazardous waste regulation like any other CCBs that are disposed of. This would result in greater volumes of CCBs having to be managed and disposed of pursuant to Subtitle C hazardous waste regulation.

RCRA Compliance Dilemmas for Utility Facilities Managing Listed CCBs: While any Subtitle C regime for CCBs would likely focus on the design and performance standards for CCB landfills and impoundments, the collateral regulatory and practical consequences of listing CCBs as a hazardous waste would extend well beyond CCB disposal units to upstream and downstream operations. Certain of these implications are discussed below.

De Minimis CCB Releases: Due to the design features of power plant operations and the volume and nature of CCBs, certain *de minimis* volumes of CCBs are inevitably released during normal power generation and subsequent CCB handling operations. This can involve, for example, (1) permitted fugitive emissions from emission control equipment during the combustion of coal, (2) releases from processes related CCB collection systems, such as transporting fly ash into hoppers for storage prior to disposal or beneficial use, or loading into trucks or rail cars for transport, (3) releases of CCBs from trucks or other conveyor systems while being transported to landfills or impoundments, (4) releases of CCBs in the form of fugitive dust from disposal units, and (5) CCBs left in covered barges and other transport devices used to transport CCBs from the plants to market locations.

Because CCBs would be a listed hazardous waste, the *de minimis* release of CCBs in the above circumstances would constitute improper hazardous waste disposal and subject power plant facility owners/operators to the specter of a perpetual state of RCRA non-compliance. Similarly, any accidental release of CCBs during handling operations would be viewed as illegal hazardous waste disposal, subjecting the facility owner/operator to immediate RCRA liability (e.g., the accidental spillage or release of CCBs prior to loading onto a truck for

disposal or for off-site beneficial use). Because CCBs would be a listed hazardous waste, facility owners/operators would be required under EPA's "mixture rule" (i.e., any solid waste mixed with a listed hazardous waste must be managed as a listed hazardous waste) to clean up the released or spilled material and manage all associated debris containing any CCBs as listed hazardous waste. And any water from ash dewatering operations would remain a listed hazardous waste under EPA's "derived-from" rule (i.e., any solid waste, including liquids, derived from a listed hazardous waste remains a listed hazardous waste).

Upstream Collection/Management Units: The generation, collection and handling of CCBs prior to their placement in a disposal unit involves a series of upstream CCB management/storage units whose regulatory status also would pose serious compliance concerns under a Subtitle C regime. These intermediate baghouses, precipitators, scrubbers, hoppers, containers, sumps, and related conveyance devices would be viewed as "hazardous waste" tanks, containers or "miscellaneous units" and would be subject to applicable hazardous waste design standards, including secondary containment requirements for tank systems. Retrofitting this array of existing upstream management units to meet Subtitle C standards would prove impractical in many cases and would expose power plant operations to serious compliance concerns.

Disposal Capacity Shortfalls & Off-Site Disposal Concerns: A combination of factors associated with the Subtitle C regulation of CCBs will likely result in a shortfall in on-site CCB disposal capacity, causing more CCBs having to be shipped off-site for disposal in commercial Subtitle C facilities.

First, if USEPA mandates the closure of CCB surface impoundments (see discussion below), a significant portion of existing CCB disposal capacity will be eliminated. Second, a percentage of the remaining CCB landfills not currently designed, permitted or authorized to operate under a Subtitle C regime will likely close due to the cost or impracticality of meeting new Subtitle C performance standards. Compounding the reduction in disposal capacity is that utilities will have greater volumes of CCBs to dispose of. This is because certain CCB beneficial uses will be prohibited and the remaining beneficial uses will likely be subject to new regulatory conditions, making these remaining options less attractive to CCB producers and end-users. Therefore, utilities will be disposing of greater volumes of CCBs, as opposed to beneficially using these materials. It is reasonable to assume that some power plants would be forced to shut down temporarily, and in some cases permanently, due to the lack of economically viable CCB disposal alternatives.

The combination of above factors will result in CCB disposal capacity shortfalls, requiring utilities to either attempt to expand existing on-site disposal capacity (assuming space is available and the facility is able to successfully complete an increasingly contentious multi-year permitting process for what would now be a hazardous waste disposal site) and/or send CCBs off-site for Subtitle C disposal. Off-site disposal would trigger RCRA's transportation and hazardous waste manifest rules, as well as the attendant potential adverse impacts associated with transporting large volumes of materials long distances for disposal in what are often out-of-state commercial Subtitle C disposal facilities.

It is difficult to predict at this stage the amount of CCBs that would have to be shipped off-site for disposal due to the resulting short-fall in on-site disposal capacity under a Subtitle C

program. The volume, however, would be significant and would likely result in CCBs becoming one of the largest (if not the largest) categories of RCRA hazardous waste being disposed of in commercial Subtitle C facilities. Aside from the disposal costs associated with this option (estimated to be in the range of between \$250 and \$450 per ton), there could also be a significant short-fall in the capacity of existing *commercial* hazardous waste disposal facilities to accommodate the large volumes of CCBs that would be entering the Subtitle C system. The significant increase in demand for existing Subtitle C commercial disposal capacity would increase disposal costs for all hazardous waste generators, not just electric utilities, and likely create disposal shortfalls for all generators due to the volume of CCBs that would need to utilize the available commercial Subtitle C disposal capacity.

RCRA Permitting and Generator Obligations: Power plants managing CCBs would have to undergo RCRA's permitting process, including the re-permitting of plants that already have state Subtitle D permits. Permitting obligations would not be limited to landfills and impoundments, but would likely extend to upstream units that manage CCBs prior to final disposal, including sumps, hoppers, containers, conveyance systems and other miscellaneous units. Permitted facilities will also be subject to applicable RCRA hazardous waste preparedness and prevention and general facility standards, training requirements, unit specific closure, post-closure and financial assurance requirements as well as hazardous waste contingency plan and emergency procedure requirements. *See e.g.*, 40 C.F.R. Part 264, Subparts B-D, G-H. Further, facilities obtaining RCRA permits for CCB land disposal units would be subject to RCRA facility-wide corrective action, which would require environmental assessment and remediation of *any* solid waste management units at the facility, including closed units and units used to manage *any* solid waste.

In addition, power plants would be classified as RCRA large quantity generators and would be subject to applicable generator requirements, including hazardous waste biennial reporting and hazardous waste manifest rules for off-site shipments (*see e.g.*, 40 C.F.R. Part 262).

Excavation/Demolition of Past CCB Beneficial Uses: Because CCBs would be listed hazardous waste, any active management of CCBs that have been beneficially used – *e.g.*, the excavation of existing CCB structural fill projects – could constitute the generation of a hazardous waste. This would subject the owner/operator of the excavation project to regulation as a hazardous waste generator and would trigger hazardous waste storage requirements for intermediate staging operations, as well as requiring any excavated CCBs to be transported to a Subtitle C landfill.

In addition, other discarded products manufactured with CCBs could be subject to hazardous waste regulation. For example, roofing materials removed as part of demolition projects would have to be characterized to evaluate if any of the shingle granules are comprised of boiler slag (a common CCB beneficial use practice). If so, the roofing material would be subject to applicable hazardous waste generation, storage and disposal requirements. The demolition of structures containing drywall made with FGD gypsum would present the same Subtitle C compliance dilemma. The demolished drywall would be characterized as a "discarded" material and could, based on the presence of a listed hazardous waste in the discarded material (*i.e.*, FGD gypsum), be regulated as a hazardous waste.

Leachate Management/Zero Discharge: Because leachate collected from CCB management units would be derived in part from a listed hazardous waste, the leachate would have to be collected, stored and disposed of as a hazardous waste pursuant to EPA's hazardous waste "derived from rule" (*i.e.*, any solid waste derived from a listed waste is a listed hazardous waste). This would effectively mean that power plants would become "zero discharge" facilities for CCB contact water.

Regulatory Barriers to Site Remediation: Designation of CCBs as a hazardous waste would complicate and discourage remediation of sites containing CCBs. As EPA knows well, the designation of any material as a hazardous waste creates significant barriers to entities interested in conducting site remediation. Any CCB residue remaining on buildings, equipment or land, or in on-site disposal units would represent a regulatory and financial liability that would pose significant barriers to the clean-up, sale and redevelopment of these sites.

Increased Tort Exposure: While not regulatory in nature, the designation of CCBs as a hazardous waste will almost certainly increase the toxic tort exposure to power plants generating and managing CCBs. The designation of CCBs as a federal hazardous waste will provide "technical" evidence to toxic tort lawyers that CCBs are *per se* dangerous and pose a health threat to power plant employees. Further, FGD gypsum now used as feedstock in the manufacturing of drywall for installation in residential and commercial structures will be viewed by consumers as a product containing a hazardous waste (the same view would likely apply to virtually all end-use products containing CCBs used in commercial and/or residential settings). This will increase the exposure of utilities to toxic tort and related product liability and "failure to warn" lawsuits for CCBs that are beneficially used, which in turn will create another disincentive for CCB beneficial uses. Utilities may not want to risk this liability and would choose to dispose of CCBs rather than introducing into commerce a material that could otherwise be beneficially used.

Surface Impoundment Phase-Out: In addition to the above potential implications resulting from Subtitle C regulation of CCBs, USEPA also is considering requiring a mandatory phase-out of all CCB surface impoundments, which could be included in either a Subtitle D or Subtitle C regulation. This would require a conversion from wet to dry handling of CCBs by the entire electric utility industry. Based on a ten-year phase out period, the total costs for this requirement alone are estimated to be in the range of \$39 billion. Annualized over 20 years, this represents a cost of approximately \$2.5 billion per year. These costs were calculated under a Subtitle D scenario; the costs would be substantially higher under a Subtitle C regulatory program.