



919 Eighteenth Street NW, Suite 650
Washington, D.C. 20006
p: 202-296-8800 f: 202-296-8822
www.environmentalintegrity.org

February 20, 2008

VIA CERTIFIED MAIL AND ELECTRONIC MAIL

Mr. Stephen Pattison, Assistant Secretary
Office of the Secretary
Maryland Department of the Environment
1800 Washington Blvd, Ste. 720
Baltimore, MD 21230-1720

**RE: PROPOSED REGULATIONS TO MANAGE THE DISPOSAL OF COAL
COMBUSTION WASTE**

We appreciate the opportunity to respond to the Maryland Department of the Environment's ("MDE") proposal to regulate the generation, storage, and disposal of coal combustion waste ("CCW"). The following comments are submitted on behalf of the Environmental Integrity Project, a nonpartisan, nonprofit environmental group that advocates for more effective enforcement of environmental laws.

Maryland's proposed regulations are a significant step forward, and especially welcome in a state that is already paying the price for the careless disposal of fly ash, bottom ash, and other CCW. This summer, groundwater monitoring revealed that heavy metals are leaching from Constellation Energy's "Gambrills" disposal site in Anne Arundel County, and contaminating nearby drinking wells. The Faulkner disposal site in Charles County has degraded both groundwater and surface water according to Mirant's own monitoring data, and it may take as long as forty years to reverse the damage caused by the unregulated dumping of CCW at the site.

Maryland's proposal would vary regulations according to the type of CCW disposal, or the characteristics of the waste. For example, an ordinary disposal site would be subject to industrial landfill standards at Md. Code Regs. 26.04.07.19 to .20; different standards would apply to CCW used to "reclaim" abandoned "noncoal" mines; and the application of "alkaline coal combustion byproducts" (ACCBs) to reduce acid runoff would apparently qualify for expedited review and approval.

The state could simplify and strengthen the proposed regulations by clearly defining minimum standards that would apply to *all* types of CCW disposal, while adding special provisions as needed to address variations in disposal or reclamation practices. The proposal should also take into account the findings and recommendations of the National

Research Council's ("NRC") 2006 report, "Managing Coal Combustion Residues in Mines." Our specific comments follow:

I. MDE's proposed regulations should establish enforceable standards for the disposal of CCW waste in surface coal mining and reclamation operations and in abandoned coal mines.

MDE's proposed regulations require persons who wish to utilize CCW in coal mine reclamation projects or in abandoned coal mines to submit certain information regarding the proposed project to the state for review. However, the regulations do not establish minimum standards for CCW disposal in coal mines, apparently assuming that the actual requirements will be identified by the state on a site-specific basis. While recognizing that some flexibility will be needed to tailor permits to site-specific conditions, the proposed rules need to define minimum criteria that all sites must meet. Otherwise, the state risks repeating the haphazard permitting that clearly proved inadequate at the Gambrills and Faulkner sites.

While the NRC report noted the importance of site-specific standards, it assumed these standards would be developed against clearly defined and enforceable criteria for CCW minefill projects. NRC noted that,

"[management] plans should be developed in compliance with enforceable standards for using CCRs¹ in minefilling."²

As discussed further below, the NRC report includes specific recommendations that should be used to define the minimum criteria for CCW minefill and disposal projects.

Recommendation:

MDE's regulations should set forth minimum standards that permit applicants must comply with in order to dispose of CCW in surface coal mining and reclamation operations and in abandoned coal mines. In addition, MDE should specifically allow for more stringent regulation in areas that are environmentally sensitive or where ground or surface water contamination is likely.

¹ The National Research Council chose to use the term CCRs, or coal combustion residues, instead of CCW in its report "to avoid implying that these materials are destined for particular fates." Comm. On Mine Placement of Coal Combustion Wastes et al., Nat'l Research Council of the Nat'l Academies, *Managing Coal Combustion Residues in Mines 3* (2006), available at http://www.nap.edu/catalog.php?record_id=11592. However, CCW is the more commonly used term for the waste generated from coal combustion, and Congress uses the term CCW to refer to this material as well. *Id.* at 2.

² *Id.* at 7.

II. MDE should not assume that the use of alkaline-based coal combustion waste for “mine reclamation” is safe.

The use of alkaline-based CCW to reclaim abandoned coal mines (“minefills”) may not be as beneficial as Maryland assumes in its proposed regulations. In its 2006 report on CCW, NRC pointed out that,

“[o]f the three methods currently available for disposal of CCRs (surface impoundments, landfilling and minefilling), comparatively little is known about the potential for minefilling to degrade the quality of groundwater and/or surface waters, particularly over longer time periods. Additionally, there are insufficient data on the contamination of water supplies by placement of CCR’s in coal mines, making human risk assessments difficult.”³

What is known about minefilling is not reassuring. The NRC report warns that, “There are a substantial percentage of cases where the acid neutralization potential has been overestimated, especially with static tests.”⁴ While not a coal-mine reclamation project, the Faulkner site in Charles County pumps groundwater over a series of alkaline pits in an effort to reduce the acidity of water discharged from the site. Although discharge reports indicate that these treatment cells increase pH, the treatment system has had little impact on groundwater or nearby surface waters, which remain highly contaminated. A 2006 evaluation by Maryland’s Department of Natural Resources found that these alkaline treatment cells are not effective at reducing sulfates, which can contribute to acidity and the presence of certain heavy metals like cadmium and selenium.

The National Research report noted that metals like selenium and arsenic mobilize under pH neutral circumstances, and warned that “acid neutralization will not reduce the mobility of all contaminants of concern from the CCR.”⁵

In Pennsylvania, where minefilling is widespread, monitoring by the Clean Air Task Force showed high levels of acid runoff and metal contamination in surface and groundwater below minefills that had been treated with CCW. The evidence suggests that mobilization of these contaminants can increase over time.

Recommendation:

Maryland should not establish a regulatory presumption that the use of alkaline based coal combustion waste is an effective method of neutralizing acid based runoff from abandoned coal mines. At a minimum, any proposed regulation of this practice should address the specific concerns and recommendations identified in the NRC 2006 report.

³ *Id.* at 4.

⁴ *Id.* at 137.

⁵ *Id.* at 79.

III. All forms of CCW disposal—including landfilling—should be subject to the same stringent criteria for protecting human health and the environment.

Maryland proposes to regulate disposal at non-mining sites under the state's industrial landfill rules. However, industrial landfill standards do not require leachate collection systems, liners, or groundwater monitoring. These standards are vague, and are too weak to safely deal with the disposal of huge volumes of toxic CCW produced daily by coal-fired power plants. The 2006 NRC report warns that,

*"[t]he EPA has identified numerous cases of water contamination related to CCR landfills and surface impoundments that, in many cases, have caused considerable environmental damage. In some landfill settings, groundwater has been degraded to the point that drinking water standards were exceeded off-site."*⁶

Recommendation:

MDE's proposal provides no evidence that current industrial landfill regulations are adequate to address potential threats from the disposal of toxic CCW. CCW disposal in landfills should require liners, leachate recovery and treatment systems, extensive monitoring of ground and surface water, and bonds to cover long-term monitoring and remediation costs.

IV. The disposal of CCW should require a permit.

While regulations provide the essential legal framework, decisions to authorize CCW disposal will require thorough evaluation of potential sites, including the subsurface flow of groundwater; proximity to drinking water wells, rivers, and streams; the potential reaction between CCW and local soils; and many other factors. Local communities will be asked to accept the placement of millions of tons of waste in their neighborhoods, and to live with the risk that acids and toxic metals from that waste may escape into their environment.

These are exactly the kinds of decisions that ought to be made with the full participation of those most affected. The very first page of the NRC report notes that use of coal combustion waste for reclamation may prove beneficial if properly regulated, but only if "the regulatory process for issuing permits includes clear provisions for public involvement."⁷

Recommendation:

All forms of CCW disposal, including the use of CCW to reclaim abandoned or active coal mines, should require a permit. The regulations should provide opportunity for notice and comment regarding draft permit conditions, and a public hearing if requested.

⁶ *Id.* at 4.

⁷ *Id.* at 1-2.

MDE should be required to respond to any comments, and the public should be provided the opportunity to contest the permit through the administrative process.⁸

V. Toxic metals may leach from coal combustion wastes over long periods of time; MDE should not rely on static methods for testing leaching potential.

MDE proposes to rely on EPA's "TCLP" test to evaluate the potential for toxic metals to leak from the CCW. But NRC cautions that the static TCLP method may not be accurate enough to mimic the behavior of CCW under real-world conditions, or accurately reflect the potential for long-term release of contaminants.⁹

*"Current characterization practice relies heavily on laboratory leaching tests, in particular the TCLP, to evaluate the potential hazards of CCR placement in mines. These tests do not use leaching solutions that are representative of the large range of geochemical conditions likely to be encountered in mines, and they may greatly underestimate the actual leaching that will occur."*¹⁰

Recommendation:

MDE should adopt NRC's recommendations to develop and require more effective methods for measuring the long term leaching potential of CCW.

VI. MDE's proposal should address potential surface water contamination from CCW disposal.

MDE's proposal does not adequately address the potential for surface water contamination from CCW disposal, which may result from hydrogeological connections to polluted groundwater, or from the direct discharge of leachate into rivers and streams. While the proposal requires the collection and treatment of leachate at non-coal mining sites, they do not establish standards for treatment or discharge.

The NRC report identified the Faulkner site as an example of the significant environmental damage caused by CCW disposal.¹¹ The Faulkner disposal site continues to discharge sulfates and heavy metals from leachate treatment pits into Bowling creek, and Mirant's own monitoring data demonstrate that these discharges have degraded water quality. The discharges from these wastewater pits have never been permitted, and in some cases (e.g., selenium and arsenic) exceed aquatic toxicity criteria under the Clean Water Act, or maximum contaminant levels under the Safe Drinking Act.

⁸ See 40 C.F.R. § 25.4 (setting forth the minimum requirements for public participation under the Resource Conservation and Recovery Act for the issuance of permits to dispose of hazardous waste).

⁹ *Id.* at 151.

¹⁰ *Id.*

¹¹ *Id.* at 85.

Recommendation:

MDE's proposed regulations should close potential loopholes and:

- Require the permit applicant to identify the potential for surface water contamination, whether through direct discharge or hydrogeological connection;
- Prohibit any discharges to surface water (including through hydrogeological connection) without a Clean Water Act permit for all CCW disposal and reclamation sites;
- Specify standards for the treatment of leachate prior to its discharge to either groundwater or surface water, and prohibit any discharge in excess of Clean Water Act or Safe Drinking Water Act standards; and
- Require monitoring of downstream surface water and sediment, as well as groundwater, on at least a monthly basis for pH, sulfates, and all metals known to leach from coal combustion waste.

VII. MDE's proposal should require effective monitoring of minefills and CCW disposal sites.

MDE's proposal should establish clear criteria for determining the placement, frequency, and duration of monitoring at proposed CCW disposal sites. The NRC 2006 report was highly critical of the lack of monitoring at CCW minefill sites across the United States.¹²

"Based on its reviews of CCR post-placement monitoring at many sites visited during the course of this study, the committee concludes that the number of monitoring wells, the spatial coverage of wells, and the duration of monitoring at CCR minefills are generally insufficient to accurately assess the migration of contaminants."¹³

Recommendations:

While recognizing that monitoring may be affected by the site characteristics, MDE should establish standards that can be used to determine the adequacy of monitoring. At a minimum:

- Monitoring should be adequate to characterize the background levels of contamination, estimate the direction and speed of groundwater flow, and expose any hydrogeological connections to surface water. Surface water monitoring should be required for any rivers and streams within reasonable proximity of the disposal site.

¹² *Id.* at 8.

¹³ *Id.*

- Monitoring should be able to detect contaminants at levels well below the human health and aquatic toxicity standards, and should be required at least once a month during disposal operations.
- As recommended by the NRC, monitors should be placed where they can provide early warning of potential contamination.
- Some contaminants may mobilize from CCW over long periods of time. For that reason, monitoring should be conducted for at least ten years after the closure of a CCW disposal site, and for longer periods of time if significant contamination is found.

VIII. MDE regulations should require bonds sufficient to cover long-term monitoring and remediation costs.

The risks associated with CCW disposal may not become apparent for many years; once metals or other pollutants contaminate groundwater or surface water, it may take years to contain and minimize the damage. Maryland's Department of Natural Resources has estimated that it will take decades to restore the natural pH of waters contaminated with acid runoff from the Faulkner site.

The NRC report cautions that hydrogeology is not an exact science, and "it may take many years before groundwater contamination from CCR mine disposal reaches downgradient monitoring wells."¹⁴ While NRC was unable to reach consensus on the appropriate length of time for monitoring and liability, the report concluded that "the presence of high contaminant levels in many CCR leachates may create human health and ecological concerns at or near some mine sites over the long term."¹⁵

Recommendations:

- Permit applicants should be required to assume the cost of long-term monitoring, and to post a bond to cover the potential costs of remediation. MDE has proposed releasing the bond at mine reclamation sites five years after closure. The time period for post-closure liability needs to be extended, given that contamination from CCW sites may spread slowly over long periods of time.
- The proposed regulations should clearly state that generators of CCW—and not just the owners or operators of landfills or mining reclamation sites—are responsible for cleanup. As the Faulkner and Gambrills sites demonstrate, remediation of contaminated groundwater can be extremely expensive, and if generators are not required to assume this liability, the state's taxpayers may ultimately have to bear the costs.

¹⁴ *Id.* at 78.

¹⁵ *Id.* at 4.

IX. MDE's proposal should establish penalties for the failure to comply with permit conditions and require monitoring of air emissions at CCW disposal sites.

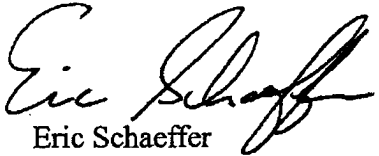
The NRC report stressed the importance of making permit conditions enforceable. The report concluded that,

"Where violations of permit requirements or performance standards occur, authority for appropriate penalties or corrective actions must be available to mitigate the damage and prevent future violations."¹⁶

MDE also needs to establish air monitoring protocols for CCW disposal sites, as fugitive dust from fly ash and other combustion residues can be both dangerous and annoying to nearby communities.

Thank you for considering our comments.

Sincerely,



Eric Schaeffer
Executive Director
Environmental Integrity Project
1920 L Street NW, Suite 800
Washington, DC 20036
(202) 296-8800

¹⁶ Id. at 181.