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The State of Coal Ash Regulation in North Carolina

Coal Combustion Residuals – An Overview

Coal Combustion Residuals (CCRs), commonly referred to as coal ash, are the waste left over when coal power plants and other facilities burn coal to produce electricity. Generally speaking, CCRs refer to any type of materials leftover from this process. The two most common types of CCRs are fly ash and bottom ash: fly ash is the byproduct of burning finely ground coal in a boiler; and bottom ash forms in furnaces that use pulverized coal. Both fly ash and bottom ash can be used for so called “beneficial use” in a wide variety of applications. CCRs contain several toxic substances including arsenic, selenium, cadmium, lead, and mercury to name a few; despite this they are relatively unregulated.¹

In December of 2008, in Harriman, Tennessee, over a billion gallons of coal ash sludge burst through the dam of a waste pond located directly above the Emory River. The waste covered 300 acres; the sludge also poisoned the Emory and Clinch Rivers, killed fish, contaminated surrounding natural resources, and created enormous and largely unaccounted costs to both public health and property, including residential areas.² Spurred by this catastrophe and new research, the Environmental Protection Agency (EPA) is taking steps to regulate the disposal of coal ash under the Resource Conservation and Recovery Act (RCRA), the federal law under which the disposal of all hazardous wastes (liquids and solids) are regulated. The EPA has proposed two approaches to regulate CCRs, one under Subtitle C of RCRA, and the other under Subtitle D, and is awaiting public input before moving forward.³

This memo will examine why Coal Ash regulation is such a pressing issue, especially in North Carolina, and make recommendations concerning the EPA proposals. In addition the memo makes recommendations for issues not addressed by the EPA proposals, holes where the EPA could initiate additional rulemaking procedures, or in the alternative, the State could fill the regulatory gap. This memo references several reports released by different organizations, pertaining to various aspects of coal ash regulation, and attempts to provide a brief overview of the issues. For more information on any aspect of this memo please refer to the specific reports which are cited throughout the memo and listed for reference on page seven.

¹ Environmental Protection Agency, *Coal Combustion Residuals*, available at <http://www.epa.gov/osw/nonhaz/industrial/special/fossil/coalashletter.htm> (last updated Aug. 19, 2010).

² Earthjustice, *Kingston Coal Ash Disaster: The First Year*, available at <http://www.earthjustice.org/features/campaigns/kingston-coal-ash-disaster-the-first-year> (last visited Aug. 19, 2010).

³ Environmental Protection Agency, *Coal Combustion Residuals - Proposed Rule*, available at <http://www.epa.gov/epawaste/nonhaz/industrial/special/fossil/ccr-rule/index.htm> (last updated Aug. 19, 2010).

Coal Ash Regulation Needed Specifically in North Carolina

North Carolina's present state with respect to coal ash regulation is a perfect example of why national regulation of coal ash as a "hazardous waste" is a necessary strong first step, but even the most stringent of the current EPA proposals would leave many danger areas unchecked. Regulation of the sites themselves, as well as the "beneficial use" of CCRs, is needed in North Carolina to adequately protect public health and the environment.

The Need for Regulation of Coal Ash Pond Sites in North Carolina

The need for regulation of coal ash ponds in North Carolina is easily evident. The EPA recently "identified a total of 431 units managing slurried CCRs at 162 facilities...Forty-nine (49) of these units at 30 different locations have been assigned a high hazard potential rating, using the criteria developed by the National Dam Safety Program."⁴ The high hazard rating "indicates that a failure will probably cause loss of human life."⁵ Of the 49 high hazard sites identified nationally, 12 of the units are located in North Carolina.⁶ In addition, Duke and Progress Energy recently tested groundwater surrounding coal ash ponds for contamination. Of the 13 tested ponds, all 13 were found to violate NC groundwater standards. A report by *Appalachian Voices* and the *Upper Watauga Riverkeeper* summarized the contamination:

Water sample results from ground water monitoring wells surrounding 13 coal ash ponds operated by Progress and Duke Energy were analyzed. A total of 681 exceedences were found for arsenic, boron, cadmium, chloride, iron, lead, magnesium, pH, and total dissolved solids. The level of exceedences ranged from 1.1 to 380 times higher than the NC ground water standard.⁷

In addition to the data provided by the monitoring described above, the lack of additional monitoring outside the 250-500 ft "compliance boundary" is a serious risk to public health of the citizens of North Carolina:

Detailed analysis of the monitoring data clearly indicates that pollutants are leaching from NC coal ash basins and contaminating groundwater. NC law does not require the power companies to clean up the toxic pollutants until it extends far beyond the boundary of the coal ash pond and reaches an arbitrarily identified "compliance boundary".⁸

⁴ Environmental Protection Agency, *Fact Sheet: Coal Combustion Residues (CCR) - Surface Impoundments with High Hazard Potential Ratings*, available at:

<http://www.epa.gov/osw/nonhaz/industrial/special/fossil/ccrs-fs/> (last visited Sep. 8, 2010). [hereinafter EPA]

⁵ *Id.*

⁶ *Id.*

⁷ *Appalachian Voices and Upper Watauga Riverkeeper, North Carolina Coal Ash Pond Groundwater Contamination Analysis*, October 6, 2009, 1 available at:

http://appvoices.org/resources/AV_Report_on_NC_Coal_Ash_Pond_Violation_Analysis_Oct_2009.pdf (last visited Aug. 19, 2010). [hereinafter *Appalachian Voices*]

⁸ *Id.* at 3.

For instance, Duke Energy provided the State with no data beyond the “compliance boundary”, because they are not required to monitor there; thus they have no reported violations outside the compliance boundary and are not required to conduct any corrective action.⁹ The *Appalachian Voices* and the *Upper Watauga Riverkeeper* report analyzed the violations in conjunction with existing State law, concluding that “[i]n the absence of strong federal regulation classifying coal ash as a hazardous waste, NC groundwater law is not adequate to address the pollution problems that currently exist at coal ash ponds around the State.”¹⁰

The Need for Regulation of Coal Ash “Beneficial Uses” in North Carolina

Both of the EPA proposals exempt “beneficial use” of CCRs from regulation, however, this certainly does not mean that no issues are present or that regulations should not be considered on the Federal or State level. Some beneficial uses may be appropriate, such as methods that fully encapsulate the coal ash, e.g., within the crystalline matrix of concrete, however regulations should govern “beneficial uses” and exempt safe methodologies.¹¹

One of the most prevalent “beneficial uses” of coal ash is as structural fill used for land development etc. According to a recent report by the *North Carolina Chapter of the Sierra Club* there are 75 structural fill sites in 21 counties in North Carolina.¹² These sites and existing governing regulations, or lack thereof, present a myriad of problems to the environment and public health of North Carolina citizens. Inadequate enforcement of property deed recording laws make it impossible to tell if structural fill has been used on a property.¹³ In addition, testing requirements of the coal ash itself are minimal.¹⁴ Thus sites using structural fill that have been shown to potentially have groundwater and surface water contamination can be passed to new property owners without disclosure or knowledge of the threat, much less clean up.

Another issue presented by allowing the use of structural fill is the creation of sham landfills. Sham landfills exist when excavation occurs at a site in order to allow for the disposal of more coal ash. For example, the J.S. Turner Lumber Yard site in Halifax County was excavated to a depth of 40 feet; the stated purpose of the structural fill was to raise the elevation of the lumber yard and the submitted plans showed no excavation.¹⁵ Excavation for burial of CCRs at construction sites, which is not expressly prohibited by State rules, is an especially dangerous practice because “the greater depth would provide much more capacity for storage of coal ash, creating a de-facto landfill with no liner or monitoring

⁹ *Id.* at 2.

¹⁰ *Id.* at 2.

¹¹ Southern Alliance for Clean Energy, Press Release, *SACE Statement on EPA’s Coal Ash Proposal*, May 4, 2010 available at http://www.cleanenergy.org/index.php?/Press-Update.html?form_id=8&item_id=173 (last visited Aug. 19 2010). [hereinafter SACE]

¹² Sierra Club-North Carolina State Chapter, *Unlined Landfills?: The Story of Coal Ash in our Back Yard*, 5, April 7, 2010 available at http://nc.sierraclub.org/work/docs/FINAL_coal_ash_report.pdf (last visited Aug. 19 2010). [hereinafter Sierra Club]

¹³ *Id.* at 5-6.

¹⁴ *Id.* at 5.

¹⁵ *Id.* at 7-8.

requirement and a threat to groundwater.”¹⁶ Structural fill is essentially an entirely unregulated method to dispose of coal ash. Currently regulations require no groundwater monitoring, regular inspections, permits, or liners, and the stated beneficial use can change without the opportunity for the state stop a project.¹⁷

North Carolina Case Studies Exemplifying the Need for Regulation

A recent study released by the *Environmental Integrity Project* and *Earthjustice* identified “31 coal combustion waste sites that are known to have contaminated groundwater, wetlands, creeks or rivers in 14 states.”¹⁸ At 15 of these sites the contamination had migrated offsite and 14 of the remaining 16 sites did not have off site monitoring available.¹⁹ Five of the 31 sites were located in North Carolina, again emphasizing the disproportionate weight of the problem in the State in comparison to the rest of the country. An additional follow up study was by released by the *Environmental Integrity Project*, *Earthjustice*, and the *Sierra Club* on August 26, 2010. This report identifies another 39 damage cases from coal combustion waste including the Dan River Steam Station in North Carolina.²⁰ It is useful to examine a few of these cases in detail to exemplify the problems caused by the coal ash regulatory void.

Sutton Steam Plant, Progress Energy – Wilmington, NC

Constructed in 1949, the Sutton Plant is a 600MW coal plant with two coal ash ponds encompassing 135 acres.²¹ Groundwater monitoring at the plant detected levels of arsenic, boron, iron and manganese exceeding state guidelines; in the case of arsenic, concentrations were measured at 29 times the federal primary Maximum Contaminant Level (MCL).²² The Sutton Plant “manages the *only* coal ash impoundment in North Carolina that has monitoring wells beyond the compliance boundary that are not upgradient or considered background.”²³ Since the contamination has been monitored at least 500ft from the impoundment, the North Carolina Department of Environment and Natural Resources (DENR) has issued a notice of violation and requested corrective action. Had such monitoring not been conducted, as is the case at the other 12 tested impoundments in the State, no action would have been taken despite the fact that contamination existed outside the “compliance boundary.”

¹⁶ *Id.* at 8.

¹⁷ Sierra Club at 9-11.

¹⁸ Earthjustice and Environmental Integrity Project, *Out of Control: Mounting Damages from Coal Ash Waste Sites*, iv, Feb. 24, 2010, available at <http://earthjustice.openissue.com/sites/default/files/library/reports/ej-eipreportout-of-control-final.pdf> (last visited Aug. 19, 2010) [hereinafter Earthjustice]

¹⁹ *Id.*

²⁰ Earthjustice, Environmental Integrity Project, and Sierra Club, *In Harm's Way: Lack Of Federal Coal Ash Regulations Endangers Americans And Their Environment*, vi, Aug. 26, 2010, available at http://www.environmentalintegrity.org/news_reports/documents/INHARMSWAY_FINAL2.pdf (last visited Aug. 30, 2010)

²¹ *Id.* at 38.

²² *Id.* at 37.

²³ *Id.* [emphasis added]

Lee Steam Plant, Progress Energy – Goldsboro, NC

Constructed in 1951, the Lee Plant is a 397MW coal plant with one unlined impoundment encompassing 143 acres.²⁴ Groundwater monitoring at the plant detected levels of arsenic, boron, iron, lead, and manganese exceeding state guidelines; in the case of arsenic, concentrations were measured at 44 times the federal primary MCL and lead concentrations measured at 3 times the primary MCL in underlying groundwater.²⁵ While the concentrations found onsite for arsenic and lead at the Lee Plant exceed those at the Sutton Plant, no corrective action has been taken, despite the fact that “downgradient wells show contamination migrating towards neighboring properties.”²⁶ Since no off site monitoring exists to establish if the contamination has crossed the property line, DENR has not required a corrective action nor does DENR have any plans to take action to eliminate the source contamination.²⁷

Swift Creek Structural Fill Site, ReUse Technology Inc./Full Circle Solutions Inc. – Rocky Mount, NC

This 25 acre structural fill site is an example of the need to further regulate “beneficial uses.” CCRs were “placed directly above a shallow water table and into a wetland and into groundwater, contaminating off-site ground water and causing off-site coal ash dust impact to adjacent property.”²⁸ Despite the fact that DENR established in 1995 that CCRs were placed within one foot of the seasonal high groundwater table and determined in 2001 that coal ash had been placed into a wetland on-site, it was not until 2004, some 13 years after coal ash was first placed at the site that groundwater sampling was conducted.²⁹ Concentrations of arsenic, lead and sulfate were found in groundwater on site exceeding state groundwater standards and federal primary and secondary MCLs.³⁰ A notice of violation was issued in 2002 for failing to follow the original plan for waste placement, a compliance order was issued in 2006 and a \$4,000.00 penalty assessed and corrective action was taken in 2008.³¹

Recommendations

It is evident that CCRs pose a significant threat to North Carolina citizen’s public health and the environment; this is evidenced by the following: the EPA has identified 12 sites where a failure would likely result in death;³² all 13 of North Carolina’s tested coal ash impoundments have groundwater contamination;³³ and “beneficial uses” have been shown to be anything but in most circumstances.³⁴ Additionally, no coal ash specific State regulations currently exist to place heavy metal limitations in NPDES permits for these facilities and ensure that waste water is not disposed of through direct pipe discharges into the State’s rivers without any treatment. In spite of these glaring facts, and the recent

²⁴ Earthjustice at 41.

²⁵ *Id.* at 40.

²⁶ *Id.* at 40.

²⁷ *Id.*

²⁸ *Id.* at 46.

²⁹ Earthjustice at 47.

³⁰ *Id.*

³¹ *Id.* at 48.

³² EPA, *supra* note 4.

³³ Appalachian Voices, *supra* note 7 at 1.

³⁴ Sierra Club, *supra* note 12.

disaster in neighboring Tennessee, recent attempts to regulate coal ash on the State level, including monitoring and permitting requirements, have been stymied by industry; in fact industry was even successful in suppressing the issue from simply being studied when it was brought up during the 2009 North Carolina legislative session.³⁵ With the lack of State action in mind, the recent proposals by the EPA to regulate CCRs on the federal level become even more important.

Of the two EPA proposals, regulation under RCRA Subtitle C is highly preferred to regulation under Subtitle D. Subtitle C regulation provides a cradle to grave regulation that includes mandatory state regulations and federal enforcement authority that are essential to protecting the environment and public health. In contrast, Subtitle D regulation only establishes self-implementing guidelines and is enforceable solely through post-event citizen suits. It is evident from the detailed history of the industry that self-implementation does not work. While the EPA proposal to define CCRs as a “special waste” under Subtitle C is preferred to regulation under Subtitle D, given the contaminants contained in CCRs and the examples provided above it would be more appropriate to define CCRs as “hazardous waste” under Subtitle C of RCRA.

Both of the EPA proposals exempt “beneficial use” from any regulation under RCRA. However, future State and Federal regulations should require ash disposal in lined landfills while discontinuing the practice of coal ash use in land development. In addition, groundwater monitoring requirements should be established on and off site, as well as clean up requirements, oversight of closed sites and property deed recording requirements.³⁶ The current proposal under Subtitle C is a step in the right direction.

For more information regarding this document please contact Dan Conrad, Policy Analyst, North Carolina Conservation Network at dan@ncconservationnetwork.org

³⁵ See Increase Public Safety for Coal Ash Disposal, H1354, N.C. Gen. Ass. (2009) available at <http://www.ncga.state.nc.us/Sessions/2009/Bills/House/PDF/H1354v1.pdf> (last visited Aug. 19, 2010) (the bill introduced in the 2009 legislative session did not pass and was not considered during the 2010 legislative session). See also The Studies Act of 2009, H945, N.C. Gen. Ass. (2009) available at <http://www.ncga.state.nc.us/Sessions/2009/Bills/House/PDF/H945v7.pdf> (last visited Aug. 19, 2010) (despite efforts to include a study of coal ash regulation in N.C. the bill passed with the coal ash language removed).

³⁶ Sierra Club at 12.

For more detailed information on topics concerning Coal Ash Regulation in North Carolina please consult the following resources:

Coal Combustion Residuals - Proposed Rule, Environmental Protection Agency, available at: <http://www.epa.gov/epawaste/nonhaz/industrial/special/fossil/ccr-rule/index.htm>

North Carolina Coal Ash Pond Groundwater Contamination Analysis, Appalachian Voices and Upper Watauga Riverkeeper, available at: http://appvoices.org/resources/AV_Report_on_NC_Coal_Ash_Pond_Violation_Analysis_Oct_2009.pdf

Out of Control: Mounting Damages from Coal Ash Waste Sites, Earthjustice and Environmental Integrity Project, available at: <http://earthjustice.openissue.com/sites/default/files/library/reports/ej-eipreportout-of-control-final.pdf>

In Harm's Way: Lack Of Federal Coal Ash Regulations Endangers Americans And Their Environment, Earthjustice, Environmental Integrity Project, and Sierra Club, available at: http://www.environmentalintegrity.org/news_reports/documents/INHARMSWAY_FINAL2.pdf

Learn About Details: EPA's New Coal Ash Rules, Southern Alliance for Clean Energy, available at: http://www.cleanenergy.org/index.php?/Learn-About-Detail.html?form_id=52&item_id=90

Unlined Landfills?: The Story of Coal Ash in our Back Yard, Sierra Club-North Carolina State Chapter, available at http://nc.sierraclub.org/work/docs/FINAL_coal_ash_report.pdf