

November 19, 2010

Identification and Listing of Special Wastes; Disposal of
Coal Combustion Residuals from Electric Utilities Docket
Attention Docket ID No., EPA-HQ-RCRA-2009-0640
Environmental Protection Agency
1200 Pennsylvania Ave., NW *Mailcode:* 5305T
Washington, DC 20460

Re: Comments on the proposed rule for *Hazardous and Solid Waste Management System; Identification and Listing of Special Wastes; Disposal of Coal Combustion Residuals from Electric Utilities* (Docket ID # EPA HQ-RCRA-2009-0640)

Dear Madam/Sir:

The Association of State and Territorial Solid Waste Management Officials (ASTSWMO) offers the following comments on EPA's proposed rulemaking for the *Hazardous and Solid Waste Management System; Identification and Listing of Special Wastes: Disposal of Coal Combustion Residuals from Electric Utilities*, published in the Federal Register on June 21, 2010 (75 FR 35128).

ASTSWMO is an association representing the waste management and remediation programs of the 50 States, five Territories and the District of Columbia (States). Our membership includes State waste program experts in the management and regulation of solid and hazardous waste.

The ASTSWMO Board of Directors established the CCR Ad Hoc Workgroup in January 2009 to evaluate and respond to EPA's proposed CCR rulemaking. Given the scope of the proposed rule, the Workgroup solicited a broad review by ASTSWMO members with expertise in various aspects of the proposal. The attached comments reflect the analyses and input provided by the CCR Ad Hoc Workgroup; the Corrective Action and Permitting and Enforcement and Compliance Assurance Task Forces within ASTSWMO's Hazardous Waste Subcommittee; and the Beneficial Use and Municipal D Waste Task Forces within ASTSWMO's Solid Waste Subcommittee. In developing these comments, the Workgroup also sought input and information from State waste programs. We note that individual State or Territorial waste programs will also submit comments to EPA based on their State program perspectives and experiences in managing CCRs.

Please do not hesitate to contact me (334-271-7739) or ASTSWMO Executive Director Mary Zdanowicz (202-624-5351) if you have any questions or need any additional information.

Sincerely,



Stephen A. Cobb (AL)
ASTSWMO President

*Hazardous and Solid Waste Management System;
Identification and Listing of Special Wastes;
Disposal of Coal Combustion Residuals from Electric Utilities
(Docket ID # EPA HQ-RCRA-2009-0640)*

**Comments of the
Association of State and Territorial Solid
Waste Management Officials
(ASTSWMO)**

CCR SHOULD NOT BE REGULATED AS A HAZARDOUS WASTE

EPA proposes listing CCR as a “special waste”. The goal is to base the decision on sound science. However, the results of a review of the science that the listing is based upon are cause for concern. Specifically, the April 2010 Risk Assessment, the Damage Cases and the assumed invalidity of the Toxicity Characteristics Leaching Procedure (TCLP) are questioned below.

RISK ASSESSMENT

General comments

The Executive Summary of the draft April 2010 *Human and Ecological Risk Assessment of Coal Combustion Wastes* and the August 2007 draft that preceded it state succinctly why the results are outdated and not pertinent to the rulemaking it is used to support.

August 2007 Draft Risk Assessment:

“Composite liners, which are used in the majority of new facilities constructed after 1995, effectively reduce risks from all pathways and constituents below the risk criteria (cancer and noncancer) for both landfills and surface impoundments.”

April 2010 Draft Risk Assessment:

“These results suggest that with a higher prevalence of composite liners in new CCW disposal facilities, along with practices to prevent co-disposal of coal refuse with CCW, future national risks from onsite CCW disposal are likely to be lower than those presented in this risk assessment.”

The proposed rule would govern the regulation of CCR land disposal facilities going forward and therefore the evidence used to support the rulemaking should be based on present conditions rather than those of the past.

This and other observations about the Risk Assessment are susceptible to critique:

- As summarized in Tables ES-1 and ES-2, Composite-Lined Landfills do not exceed an excess cancer risk of the accepted risk range of 1E-04 to 1E-06 or an HQ of 1 for the Groundwater-to-Drinking Water Pathway (90th% and 50th%). EPA could write recommended standards and management practices for landfills to be composite-lined and be assured the States would continue to sufficiently regulate these units under Subtitle D.
- As summarized in Tables ES-3 and ES-4, Composite-Lined Surface Impoundments do not exceed an excess cancer risk of the accepted risk range of 1E-04 to 1E-06 or an HQ of 1 for the Groundwater-to-Drinking Water Pathway (90th% and 50th%). EPA could write recommended standards and management practices for surface impoundments to be composite-lined and be assured the States would continue to sufficiently regulate these units under Subtitle D.
- As summarized in Table ES-5, Composite-Lined Surface Impoundments do not exceed an excess cancer risk of the accepted risk range of 1E-04 to 1E-06 or an HQ of 1 for the Groundwater-to-Surface Water Pathway (90th%). EPA could write recommended standards and management practices for surface impoundments to be composite-lined and be assured the States would continue to sufficiently regulate these units under Subtitle D.
- As noted within the conclusions of the Executive Summary of the April 2010 *Human and Ecological Risk Assessment of Coal Combustion Wastes*, the results of the damage cases compiled by EPA suggest that with a higher prevalence of composite liners in the newer construction CCW disposal facilities, future national risks from on-site CCW disposal are likely to be lower than those presented in this 2010 Risk Assessment. It should be acknowledged that EPA utilized 1995 data to perform this 2010 Risk Assessment and that EPA's study of CCW chemistries and leaching behavior were not considered in the main analysis phase of this 2010 Risk Assessment. EPA could, and has for other waste units like Hazardous Waste Combustors, set recommended design standards and management practices to be followed by the States under Subtitle D.
- Although EPA based the April 2010 Risk Assessment on 1995 data, Table 1-1 shows a much higher proportion of lined facilities (both landfills and surface impoundments) than the 1995 survey revealed. Please note, of those facilities surveyed in 2004, only 3% currently had unlined landfills (down from 40% in 1995) and 0% had unlined surface impoundments (down from 68% in 1995). Statistically accounting for the great decline in unlined management practices from 1995 to 2004 lends a tremendous amount of support for even a greater decline from 2004 to 2010.
- Composite liners, as modeled in this April 2010 Risk Assessment, effectively reduce risks from all pathways and constituents to levels below an excess cancer risk range of 1E-04 to 1E-06 or an HQ of 1 for both landfills and surface impoundments.

- Although the April 2010 Risk Assessment suggests the management of CCW in unlined landfills and surface impoundments could pose potential unacceptable cancer and non-cancer risk to human health and the environment, composite liners greatly lower this probability. With a higher prevalence for composite liners in the newer CCW disposal facilities, any future risk analyses are very likely to be lower than those presented in this 2010 Risk Assessment (based on 1995 data).
- Contaminated groundwater that is transported to drinking water or discharged to surface waterbodies appears to be represented as the actual leachate concentration. No dilution and attenuation was accounted for in the concentrations. This could result in a false positive potential risk.
- The different types of liners used show a significant difference in risks to human health and the environment. The risk calculations for composite liners showed them to have no unacceptable risks. Since the data collection, many States have turned their attention to installing these protective liners for newly constructed impoundments to manage the coal combustion waste and minimize future exposure risks to human health and the environment.
- The receptor wells were randomly placed up to 1 mile downgradient from the edge of the waste management unit. This distance is likely to be greater for most scenarios. In addition, the leachate concentrations would be expected to have some dilution and attenuation by the time they reached the wells. Taking both of these factors into account could result in acceptable risks.

Response to EPA Information Request

Are there any additional data that are representative of CCR constituents in surface impoundment or landfill leachate (from literature, State files, industry or other sources) that EPA has not identified and should be used in evaluating the risks presented by the land disposal of CCRs?

ASTSWMO is not providing additional data, although its member States may do so. Rather, ASTSWMO offers comments concerning the data used in the April 2010 *Human and Ecological Risk Assessment of Coal Combustion Wastes* (Risk Assessment) which is one of the bases for revising the 2000 determination, which was based on the earlier 1999 risk assessment (1999 Risk Assessment). There is enough uncertainty about the data used in the Risk Assessment that basing a decision on it as significant as whether CCR should be managed as a hazardous waste is questionable.

The reliability of any assessment is dependent upon the quality of the data used in the analysis. The Risk Assessment relied upon data from EPA's 2002 CCW Constituent Database (Database) for the screening analysis and the full-scale risk assessment. The purpose of the Database is to

characterize the constituents in leachate from CCW landfills and surface impoundments. The Database includes the data from 50 sites and 10,000 individual samples used in the 1999 Risk Assessment, which was the basis for the 2000 Regulatory Determination. An additional 110 sites and 25,000 additional individual samples collected after the 1999 Risk Assessment have been added to the Database.

Generally, there is a greater chance of characterizing the attributes of a population when a larger number of samples of the population are analyzed. For example, a survey of voter opinions is more reliable if the survey consists of 1,000 rather than 100 respondents. On the other hand, if the survey responses are based on varying phrasing of the question, the survey results would be questionable. It would not matter how many people were surveyed if the quality of the question was flawed by rephrasing it throughout the survey.

The quality of the data in the Database that was used to characterize CCR leachate for the Risk Assessment is questionable. Furthermore, much of the information needed to evaluate the source and quality of the data, such as information about the protocols used for sampling and analysis, is unavailable. Therefore, it cannot be assumed that the characterization of CCR leachate and its risks in the 2010 Risk Assessment is better than the 1999 Risk Assessment, even though more sample data were available.

Source of the data

The additional data in the Database used for the Risk Assessment were derived from diverse sources:

- Data submitted with public comments to EPA on the *Report to Congress: Wastes from the Combustion of Fossil Fuels* (EPA, 1999) (RTC)
- Data submitted with public comments to EPA concerning the May 22, 2000, Final Regulatory Determination on Wastes from the Combustion of Fossil Fuels
- Data collected by and provided to EPA since the end of the public comment period on the Final Regulatory Determination
- Data identified from literature searches

The sources of data are listed in Attachment A-1 of the Risk Assessment. There are more than 60 data sources ranging from peer reviewed studies to a letter from an industry source transmitting laboratory results from 1991 for a single sample. It is not possible to determine how or where the sample was collected nor what QA/QC was used. See Dairyland Power Cooperative, Letter to Wisconsin Department of Natural Resources. May 22, 1991. Available in EPA docket EPA-HQ-RCRA-2003-0003 as document number EPA-HQ-RCRA-2003-0003-0111.

Quality of the Data

Not only are the sources of data diverse, but some are not accessible for review or do not provide enough information to evaluate the quality of the data. As a result, it is virtually impossible to evaluate whether the sample results were validated. Information is not accessible to determine

whether reported data was subjected to acceptable means of validating the quality of analytical results for field collected samples, such as:

- collecting and analyzing sample blanks to detect and correct for sample contamination
- duplicate samples to assess reproducibility of analytical results
- samples spiked with the constituents being analyzed to determine extraction efficiency
- instrument calibration using reference materials

The National Academy of Sciences¹ recommended that when characterizing CCR leachate characteristics “background water samples should be analyzed for a complete suite of metals and metalloids potentially associated with CCRs (i.e., Ag, Al, As, B, Ba, Be, Cd, Cr, Co, Cu, Hg, Mo, Ni, Pb, Sb, Se, Tl, U, V, Zn)”. As noted in the report, “Arsenic is a naturally occurring element present in the environment in both organic and inorganic forms.” It cannot be determined whether the sample results in the Database were corrected for background levels of constituents. This casts another shadow of uncertainty about the quality of the data used in the Risk Assessment.

Another important aspect of assuring the reliability of a data set is correcting for extreme sample results. Any outlying data (statistically higher or lower) should be identified and the final results should be adjusted accordingly. Failing to do so will skew the reported results. Eliminating outliers is particularly important when the 90th percentile values are used to establish the characteristics study subject. In this case, the concentrations of constituents, such as arsenic in CCR leachate, were based on the 90th percentile values from the data derived from the Database (see attachment A-3 in the Risk Assessment).

The constituent data from the Database that was selected for use in the Risk Assessment are listed in Attachment A-2 of the Risk Assessment. The 90th percentile concentration for each constituent was determined and is listed in Attachment A-3. The 90th percentile concentration for arsenic in leachate, for example, is 0.394 mg/l, which was derived from the 144 sites averaged leachate measurements. The number of samples collected from each site varied widely from one to 195 per site. The fewer the samples that are included, the more the confidence that the sample results are representative of the leachate at a site decreases. One quarter of the results are based on a single sample from each site. Therefore, the likelihood that a single sample point is representative of the leachate at a site cannot be evaluated. More than half of the results are based on the average of three or fewer sample points. Again, the likelihood that the results are representative is remote. In addition, the range of values is extreme – the difference between the low and high concentrations is three orders of magnitude (.001 mg/l to 1.8 mg/l).

The means by which the data used in the Risk Assessment were selected is another uncertainty. Sample selection is a critical aspect of accurately characterizing a population being studied. A proportional representation of population characteristics often requires random sampling and/or a carefully developed and executed sampling and analysis plan. As noted previously, the quality of the data source used for the Risk Assessment, the CCR Database, is questionable. Reportedly, all CCR leachate data that was submitted to EPA, regardless of the source or quality, was entered in the database. The Dairyland submission is an example – results for one sample from an unknown

source originally analyzed in 1991 using unidentified protocols. Random selection of data from the database would inevitably include worthless data. If the data were screened for quality prior to selection, it would not be a random sampling and would be biased, but no definitive criteria for such screening and selection have been presented. In either case, it does not appear based on the information provided that the data used in the Risk Assessment can be considered representative. In other words, the Risk Assessment data selection is fatally flawed.

Data forms the foundation of any study. If the quality of the foundation is not strong, that which it is supporting is weak. It is reasonable to ask whether it is appropriate to base a decision to characterize CCR as a listed waste, which has so many serious implications, on a Risk Assessment that leaves so many questions about its quality unanswered.

VALIDITY OF TCLP IN MAKING CCR DISPOSAL DECISIONS

General comments

EPA alleges that the TCLP is invalid for the evaluation of CCR. However, this view does not take into account State waste program experience that CCR rarely fails the TCLP test and, therefore, does not warrant being managed as a hazardous waste. EPA argues that the TCLP single-point pH leaching procedure does not represent the pH conditions in CCR landfills, which it asserts range from pH 5.4 to pH 12.4. Due to the alleged wide range of pH conditions in CCR landfills, EPA concludes that tests evaluating leaching potential at pH values typical of CCR disposal units should be used to determine if the CCR waste exhibits hazardous characteristics which require that the material be managed in a Subtitle C landfill. There are two bases for this stance: 1) National Academy of Science criticism of the TCLP test; and 2) landfill field leachate data from EPA and EPRI studies which established the range of pH conditions expected to be found in actual CCR disposal conditions.

In the proposal, a National Academy of Sciences (NAS) report is relied upon to support the statement that “Toxicity Characteristic Leaching Procedure (TCLP) that have generally been used may not accurately represent the performance of varying types of CCRs under **variable field conditions**” or “**actual conditions under which wastes are plausibly managed**”. The implication, and the way the proposal has been interpreted, is that “EPA states that considerable evidence has emerged indicating that the traditional test method, the Toxicity Characteristic Leaching [Procedure] (TCLP), alone is not a good indicator of the mobility of metals in CCW under **realistic disposal conditions**.”² The proposal language, while misleading, is correct. The interpretation is incorrect in a subtle but important way.

The NAS report concerns the beneficial use of coal ash in mines:

“The reliance on single-point batch leaching procedures, such as the TCLP, for prediction of CCR stability **in mine settings** has been widely criticized.”

In fact, all discussion in the report about the appropriateness of TCLP relates to the special conditions encountered in placing CCRs in mines. For example,

- TCLP does “not use leaching solutions that are representative of the large range of ***geochemical conditions likely to be encountered in mines***”
- “the committee recommends additional research to continually improve and field-validate leaching tests to ***better predict the mobilization of constituents from CCRs in mine settings***”

For the second prong of the argument -- that pH ranges from 5.4 and 12.4 in CCR landfills -- the proposal relies on two studies to suggest that conditions in CCR landfills are variable.

“Landfill field leachate data from EPA and EPRI studies were used to establish the range of pH conditions expected to be found in actual disposal. From this data set, and excluding the extreme values (below 5th percentile and above 95th percentile), a pH range of 5.4 and 12.4 was determined to represent the range of plausible management conditions (with regard to pH) for CCRs.”

The first study³ used data from the LEACH 2000 database for six landfills that were operated by coal-fired electric utility power plants. The criteria⁴ for accepting data in the database would not be considered scientific. By admission in the report, “the search for data did not attempt to employ any statistical sampling approach. That is, the data are not necessarily a representative sample by geographic region, landfill type, or any other criterion. The database simply includes all of the readily available data that met the acceptance criteria.”

The six combustion ash landfills were located in one State, which cannot be considered representative of all landfills. The quality of the data, or lack thereof, is also a problem. From the report:

“In analyzing the data, certain patterns of statistical outliers were discovered. These patterns were consistent with intermittent misreporting of analytical units. Therefore, a detailed analysis was undertaken to identify and correct data points in the data suspected of having this problem. ... Separate data tables have been included in the LEACH 2000 database representing the original and adjusted data. The data included in the combined data table in LEACH 2000 and used in this report represent the adjusted data.”

By any established scientific standard, it is completely unacceptable that a conclusion as sweeping as to characterize the conditions of hundreds of CCR landfills could be drawn from a report based on such a small data set (six coal fired power plants in one State), in which there was no “attempt to employ any statistical sampling approach,” and “which relied upon data with a pattern of statistical outliers” that was “consistent with intermittent misreporting of analytical units.” Such a conclusion would be completely unreliable.

The purpose of the second study⁵ was to characterize the speciation of various metals in leachate from coal combustion sites. The study involved samples from 29 sites located around the country. Samples of landfill leachate were collected in interstitial waters. Only 25 samples were analyzed, less than one per site. Collecting and analyzing a single site sample makes it impossible to determine if the results are reproducible and therefore representative of the site. There are many variables that can affect the collection and analysis of samples. It is essential to determine by comparison whether the sample result is an outlier or not. Beyond that, it is unlikely that a statistician would agree that results from only 29 samples should be used to draw definitive conclusions of such a grand magnitude.

The results from 53 surface impoundment samples, less than 2 per site, were the basis for establishing a pH range in CCR surface impoundments. A significant concern in this case is that so many different sampling methods were used for so few samples. Of the 53 surface impoundment samples:

- 8 samples were collected from wells screened in the coal ash
- 13 samples were collected from drive-point piezometers or push point samplers
- 3 were seep samples
- 12 leachate samples were collected from impoundments near the ash-water interface
- 14 samples were collected from sluice lines or at impoundment outfalls

A basic scientific principle is that one would not expect to obtain comparable results for samples obtained from different media, such as groundwater, outfalls, and the ash-water interface. Another factor that is not accounted for is the wide pH range of soils at the sites. At one site, the soil pH ranged from 4.8 to 8.1. Soil pH is bound to have an effect on the water samples that were collected, independent of the surface impoundments.

In summary, neither report provides a reliable scientific basis for the premise that CCR leachate pH values range from 5.4 and 12.4. That being the case, there is no basis for questioning the validity of the TCLP test or the States' cumulative experience that CCRs rarely test hazardous.

DAMAGE CASES

General comments

The “proven damage cases” are one basis for listing CCRs as “special waste”. The cases are also used to validate certain results in the risk assessment. The heavy reliance on the cases in the Regulatory Determination requires that the identification of the “proven damage cases” be sound.

In reviewing EPA’s *Coal Combustion Waste Damage Case Assessments*, July 9, 2007, (*Case Assessments*) it seems that very little evidence (which the report refers to as a “test of proof”) is required to classify damage to groundwater as a “proven damage case.”

Groundwater or surface water impacts are typically determined by geologists, scientists and engineers during groundwater investigations or review of groundwater monitoring data from the facilities. While a field inspection may lead to an investigation, it is highly unlikely that damage could be verified in a field inspection alone. Therefore, identifying a damage case based on the “conclusions of a site report by a field inspector” without more to validate the information is not a rigorous test of proof.

Another source identified as acceptable is a scientific study that contains “information on contamination of drinking water aquifer with contaminant levels which exceed drinking water standards.” But, there is no requirement that a scientific study has determined whether the contamination is due to naturally occurring metals, other potential sources of contamination or co-disposed materials. Damage cases based on such limited evidence are weak cases at best.

The *Case Assessments* also requires “documented exceedances of primary MCLs or other health-based standards measured in groundwater at sufficient distance from the waste management unit to indicate that hazardous constituents have migrated to the extent that they could cause human health concerns.” This criterion is vague enough that the site in question need not be the source of the MCL exceedance. There is no requirement that a nexus be established between the disposal unit and the contamination. Important factors need not be considered, such as other possible sources of contamination or naturally occurring levels of contaminants. Site summaries in the *Case Assessments* may not provide enough information to determine whether any of these conditions existed at the sites.

The age and nature of the disposal facilities in the 23 damage cases make them irrelevant because they do not reflect current land disposal practices to which the proposed regulations apply. Disposal “units” included five sand and gravel pits, two quarries and one lake impoundment. Half of the sites began operating in 1970 or before. At least six sites began operating in the early ‘50s. It appears that only three sites operated after 1990. Several sites were operated pre-RCRA, for example, one site was managed from 1952 to 1969. Wastes in the co-disposal facilities included: sewage sludge, tannery waste, materials from another landfill, yard sweepings, demineralizer regenerant, soil, concrete, brick and “other wastes”. These are hardly representative of the disposal units that would be regulated pursuant to the proposed rules.

In addition, there is no evidence about the quality of the data or that any assessment was made of other possible sources of contamination or naturally occurring background levels of contaminants, such as arsenic or selenium.

EPA's proven damage cases were assessed in a National Academy of Sciences⁶ report:

Many of the damage cases ... involve older legacy sites that were developed under less rigorous regulations than now exist. Many were either slurry impoundments that drained to nearby surface waters or abandoned aggregate quarries that, by their very nature, were in highly permeable geologic environments. ... For example, landfills developed before the implementation of RCRA were not subjected to requirements for covers, compaction, liners, and other characteristics ... of RCRA compliant landfills...

Other points from the NAS report:

- [EPA] did not independently investigate most damage cases
- EPA also acknowledged in the Regulatory Determination of May 22, 2000 (40 CFR Part 261) that it did not use a statistical sampling method and reviewed possible damage cases in only a subset of States
- It should be noted here that the landfills discussed in relation to damage cases are typically not the well-designed structures with covers, compaction, and other characteristics discussed in the definition of landfills..., but rather are less engineered locations used to store wastes

The value of the damage cases overall is questionable.

Response to EPA Information Request

The report of additional damage cases submitted to EPA on February 24, 2010 by the Environmental Integrity Project and Earthjustice.

Information submitted by environmental and public interest groups identifying sites as damage cases has been less than reliable. For example, only 11 out of 59 alleged cases identified by such entities in 1999 were determined to be "proven damage cases," even using the "tests of proof". Over the past year, an environmental group labeled 70 sites as "damage cases" in two reports: *Out of Control: Mounting Damages From Coal Ash Waste Sites*, Environmental Integrity Project, Earthjustice, February 24, 2010, and *In Harm's Way: Lack of Federal Coal Ash Regulations Endangers Americans And Their Environment*, Environmental Integrity Project, Earthjustice and Sierra Club, August 26, 2010. Considering that the reports identify file reviews at State environmental offices as "evidence" for their claims, it is surprising how much of the reported information is incomplete, incorrect and/or misleading based on our discussions with the State representatives. Certain patterns of errors can be gleaned from the "scientific review of each

facility's data," familiarity with the sites and their groundwater data and impacts. Some of the categories of error include:

- claims of damage made without providing pertinent information
 - monitoring well(s) not identified
 - sample date not provided
 - analytical data not provided
 - hydrogeologic data not provided to support claims of seepage
 - no data to support claims about source of disposal unit contents
 - failure to report how "at-risk" sources were identified
- assumptions made based on available, but inappropriate information
 - assumptions about groundwater flow based on a topographic map rather than a groundwater flow map based on subsurface data
- data in State files made available for review contradict claims in the reports
 - State review of the data indicate no upward trends in contaminant levels
 - historical groundwater data indicates that the facility has been and remains in compliance for a referenced parameter
 - data reported from a limited number of monitoring wells for a short interval when monitoring has been ongoing for many years and no upward trends have been established
 - results of a reported data point are an anomaly when compared to all available data
 - claims that a facility does not have an approved groundwater monitoring system when monitoring has been conducted for many years and continues
- obvious errors
 - claims that contaminants are leaking from facilities that no longer exist
 - source of data incorrectly identified as a CCR facility
 - secondary and non-health related parameters (taste, odor or appearance) reported to support damage case claim
 - well identified as source resulting in an "at-risk population" actually draws water from a deeper aquifer
- technical errors
 - report values for naturally occurring constituents
 - report data that is detected in both downgradient and upgradient wells
 - ignored findings that contamination was from another source

- status of the case inaccurately reported
 - did not report that owner/operator agreed to install additional monitoring wells
 - owner/operator initiated a groundwater investigation in response to the new regulations
 - reported that owner/operator discontinued a remedial measure that was actually ongoing

- other comments
 - expert opinion is that the report did not contain standard scientific documentation
 - information provided by State program staff was misconstrued/misrepresented
 - contacted multiple agency staff rather than establishing one point of contact

SUBTITLE C – IMPACT ON STATE PROGRAMS

Response to EPA Information Request

The potential of federal regulations to cause disruption to States' implementation of CCR regulatory programs under their own authorities, including more specifics on the potential for procedural difficulties for State programs, and measures that EPA might adopt to try to mitigate these effects.

The impact of the Subtitle C option on landfill disposal capacity and State waste program resources has been grossly underestimated. Furthermore, the impediments that some States would face are far-reaching. Implementation of the proposal would be disruptive in a variety of ways.

DISRUPTION TO STATE SUBTITLE C DISPOSAL CAPACITY

Amount of waste generated

According to EPA's National Biennial RCRA Hazardous Waste Report, in 2007 (the most recent data published), 47 million tons of hazardous waste was generated by 16,349 hazardous waste generators. In contrast, more than 130 million tons of coal ash is generated by 495 coal-fired electric power plants according to the proposal.

Amount of waste managed off-site

According to the National Biennial RCRA Hazardous Waste Report (based on 2007 Data), only 1.6 million tons of hazardous waste were disposed in off-site landfills and surface impoundments. The proposal estimates that the amount of CCR managed in landfills and surface impoundments annually by 495 coal-fired power plants is currently 75 million tons, which is 30 times more than current amounts of hazardous waste. The estimates of the amount of CCR that would be disposed in off-site hazardous waste landfills under the proposed Subtitle C option vary. An optimistic scenario, that beneficial use continues at its current rate of about 45% *and* that 70% of disposed CCR continues to be disposed on-site⁷, would result in 22 million tons of CCR disposed off-site -- *14 times more than the current rate of off-site Subtitle C disposal.*

Disposal Capacity

EPA's current projected Commercial Subtitle C Management Capacity through 2013 is 34 million tons. The estimate from a recent survey of States indicates that there is only 31 million tons of currently permitted Subtitle C disposal remaining, 3 million less than the 2013 projection. There are only 14 States in which Subtitle C landfills are located. Thus, even with the optimistic scenario for off-site disposal, the available Subtitle C capacity would be consumed in about a year and a half.

Consuming the commercial hazardous waste landfill capacity not only means that CCR would begin to pile up unmanaged at utilities, but also that the current 2 million tons of hazardous waste generated by industry and hazardous waste site remedial activities would also begin to accumulate

on-site. This could also bring a halt to Superfund cleanups that require off-site disposal of hazardous wastes as well as having a devastating impact on vital industries and facilities generating nearly half of the country's electric power.

Transportation Issues

The location of Subtitle C landfills is a problem as well. For example, the States in the Northeast Region of the country generate 23 million tons⁸ of CCR. There is only one Subtitle C facility in the Region and its remaining capacity is less than a half million tons. Using the most optimistic assumptions about the continuation of beneficial use and on-site disposal of CCR, an estimated 8 million tons would have to be transported out of the Region each year.⁹

Transportation issues associated with CCR designated as hazardous waste is another cause for concern. According to EPA's RCRA Hazardous Waste Report, 7 million tons of hazardous waste were shipped in one year by 16,258 shippers. On average, 430 tons of hazardous waste are shipped by each generator each year. Using the most optimistic assumptions, 22 million tons of CCR would be shipped by 495 coal-fired power plants, or 44,444 tons per CCR generator. The average amount of Subtitle C regulated waste shipped by coal-fired powered plants would be about 100 times greater than the average hazardous waste generator. The amount of CCR Subtitle C waste that would be shipped would be concentrated in far fewer communities compared to current shipment patterns. The impact on the communities that host the power plants, both in terms of transportation infrastructure and citizen concerns, including the potential for environmental justice and equity concerns, would be enormous.

Increasing the amount of Subtitle C waste that would have to be shipped off-site by 20 million tons and concentrating the shipments to significantly smaller geographical locations would likely mean that there would not be a sufficient number of transporters to handle the waste that must be disposed. Each State has rigorous standards for licensing hazardous waste transporters. This is yet another capacity issue, both in terms of the amount of CCR that can be transported for disposal and the drain on State resources that would be needed to license transporters to accommodate the increased transportation needs.

Transportation issues could be ameliorated by regulating CCR under Subtitle D rather than Subtitle C. The Northeast Region has approximately 1 billion tons of Subtitle D capacity compared to one half million tons of Subtitle C capacity. That is, for the conservatively estimated 8 million tons of CCR that would have to be disposed per year, there is at least 125 years of Subtitle D capacity, compared with less than 2 months of Subtitle C capacity.

SUBTITLE C PERMITTING

Subtitle D programs are 100% State funded. By contrast, Subtitle C programs are supposed to be funded by federal STAG funding with a 25% State match. The Subtitle C proposal neglects to address the requisite increase in STAG funding.

The likely impact on State regulatory programs, if EPA selects the Subtitle C option, is a serious concern. Significant efforts and resources would be needed to:

- meet permitting requirements under Subtitle C for operating units and post-closure care
- evaluate closure plans for surface impoundments required to close by specified deadlines
- provide oversight of closure of disposal units
- implement and provide oversight of financial assurance requirements for permitted facilities
- implement facility-wide corrective action requirements established by §3004(u) and §3004(v) of RCRA
- oversee and enforce ancillary hazardous waste management requirements applicable to generators of hazardous waste at facilities generating CCRs

In the Regulatory Impact Analysis for the proposed rule, EPA identified 495 electric generating stations potentially affected by the rule. EPA has estimated that 300 landfills and 584 surface impoundments are used to dispose of CCRs at these power plants, and has stated that, additionally, a small number of power plants dispose of their CCRs off-site. As noted above, even if the optimistic assumptions about the continuation of beneficial use and on-site disposal were to come to fruition, disposal capacity issues would still pose significant problems.

This implies the need for a massive permitting effort to be implemented and overseen by the States – roughly a 20% increase in the number of permitted facilities, based on information obtained from EPA’s RCRAInfo data base on 11/15/10. (The RCRAInfo “Selected Sites Count Report” with user selection criteria “National” for “Location” and “Active Status; Permit” for “Handler Universe” provides a “total handler” figure of 2,363, which includes operating treatment/storage/disposal facilities and post-closure facilities.)

The impact on individual States would be even more severe than these numbers imply, since the 495 power plants affected by the rule are not distributed evenly across the country. States with a disproportionate share of the plants (such as PA (34 plants), IN (26), OH (26), IL (25), NC (22), MI (22), MO (20), TX (19)) would face disproportionate challenges.

The validity of EPA’s assumption that, in most cases, CCRs would continue to be disposed on-site under the Subtitle C option is questionable. Many existing coal burning power plants potentially affected by this rule are located in flood plains. Federal and more stringent State specific siting requirements for hazardous waste land disposal facilities would, in many cases, significantly limit the locations where these facilities can be constructed. Hence, plans for development of regional disposal facilities/capacity may need to be seriously considered. Should such regional facilities be developed, this would, when compared with on-site management, cause a huge increase in over-the-road and rail transportation of CCRs, leading to significant increases in associated greenhouse gas generation, highway traffic safety issues and likely spillage of CCRs along haul routes, potentially leading to the type of environmental damage that the rule is intended to prevent. Community issues and concerns related to siting of and transportation of CCRs through their

communities to regional disposal facilities could also be significant. These aspects should be examined more carefully by EPA relative to the governing assumption of continuing on-site CCR management and disposal before rendering a final decision on how to regulate CCRs.

If facilities resort to more use of off-site disposal, additional State efforts would likely be required not only for permitting the off-site disposal facilities, but for permitting storage units that facilities would likely need to manage CCRs prior to shipment off-site.

EVALUATION OF CLOSURE PLANS FOR SURFACE IMPOUNDMENTS

The proposed Subtitle C option also imposes strict deadlines on closure of currently operating surface impoundments. Considerable effort would be needed on the part of States to implement this requirement for the estimated 584 surface impoundments affected by the proposal. Agency review of a closure plan for a surface impoundment entails considerable effort and specialized expertise. Funding this effort is even more problematic than funding the permitting of operating units, since timely closure would allow a facility to avoid post-closure permitting and the associated permit fees, and generator fees are not relevant for closing units managing waste that is not yet regulated as hazardous or “special” waste.

In addition, the 5-year timeline proposed for the phase-out of surface impoundments appears unrealistically short. Apart from the difficulties States would have in obtaining adequate resources to implement the requirement, obtaining replacement disposal capacity to take the place of the closed facilities would be a major challenge. The time required to develop, permit and construct new disposal sites for CCRs would be significant. The amount of disposal capacity needed could increase significantly if beneficial use of CCRs declines as a result of the stigma associated with regulation under Subtitle C.

OVERSIGHT OF CLOSURE OF SURFACE IMPOUNDMENTS

State responsibilities with respect to closing surface impoundments would not end with the approval of closure plans. Additional State resources would have to be expended in overseeing implementation of the approved closure plan, as well as oversight of the post-closure monitoring and maintenance of the closed units. For facilities that do not meet closure deadlines, additional requirements concerning post-closure permitting would take effect, requiring additional State effort. Considering the activities required, it is not unreasonable to assume that States would need additional resources at least as great as those needed to review and approve closure plans. Securing adequate funding for the effort is again problematic, with the exception of potentially having permit fees available for facilities required to obtain post-closure permits. However, permit fees would likely not be sufficient to fund the overall effort required.

IMPLEMENTATION AND OVERSIGHT OF FINANCIAL ASSURANCE REQUIREMENT

If the Subtitle C option is selected, there would be more than 495 additional facilities requiring hazardous waste permits covering active CCR management and disposal, post-closure care, and facility-wide corrective action. Each of these permits would be subject to financial assurance requirements for closure, post-closure, liability, and corrective action. Review of the

documentation that facilities must provide to demonstrate compliance would require considerable staff effort on the part of States, as would the day-to-day tracking of the permit holders' financial instruments to verify continued compliance. The sudden increase in the number of facilities required to obtain financial assurance could also have the secondary effect of driving up the cost of financial instruments for currently permitted facilities, since there would be a spike in demand for letters of credit, insurance, bonds and other acceptable instruments. There is also concern that, given the current condition of financial markets, adequate financial assurance through third parties may simply not be available at a reasonable cost to meet the increased demand.

IMPLEMENTATION OF FACILITY-WIDE CORRECTIVE ACTION

Under the Subtitle C option, EPA would impose facility-wide corrective action requirements on facilities required to obtain a RCRA permit for management of CCRs. This would impose another substantial burden on State programs that are already struggling to maintain funding for existing programs. The proposal by EPA also fails to provide an adequate analysis of the practical difficulties associated with implementation of the facility-wide corrective action for the purposes of determining whether modification of the requirement is warranted, as authorized by §3004(x) of RCRA.

The current corrective action universe consists of 3746 facilities¹⁰. Requiring facility-wide corrective action at the facilities that would be required to obtain RCRA C permits for management of CCRs would increase this universe by at least 10%. Initiation and oversight of corrective action activities at a facility are at least as resource intensive for the oversight agency as issuing an operating or post-closure permit. Corrective action is an on-going process requiring considerable oversight activity, most of which is performed by the States. This would potentially affect progress at sites currently going through the corrective action process, if States were unable to obtain resources to hire staff to implement the newly imposed mandates.

Apart from the staffing and resource issues raised by the proposal, there are technical concerns as well in implementing facility-wide corrective action for facilities managing CCRs. In the event elevated levels of hazardous constituents associated with CCRs were found at a site, it may be difficult to distinguish whether the source was a solid waste management unit, a unit managing CCRs prior to beneficial use (determined by EPA to not be a solid waste), or even a raw material storage unit. Attempts to implement corrective action under such conditions could be particularly contentious between the regulatory agency and the facility, requiring even greater agency resources than normal.

CCR Inspection and Enforcement

The proposed CCR Rule under RCRA Subtitle C would have significant impacts on the hazardous waste compliance and enforcement programs. While States have the expertise and tools available to them to evaluate the regulated universe upon implementation of the CCR under Subtitle C, compliance and enforcement programs would be facing a significant increase in the number of Treatment, Storage and Disposal Facilities (TSDs) and Large Quantity Generators (LQGs) which

would need to be inspected. These staff and program commitments would need to be addressed during the development of program agreements between the States and EPA.

Industry would experience significant issues with the storage and accumulation of CCR materials at their point of generation. Currently, disposal capacity is primarily limited to existing non-Subtitle C landfills or impoundments. As those facilities close due to new regulatory requirements, disposal would become a tremendous new challenge. Siting new hazardous waste facilities is an extremely long and arduous permitting process with uncertain outcomes. In the event industry cannot find or site alternative disposal capacities and the beneficial uses of these materials becomes more limited due to fear of liability, there may be no choice other than on-site storage which may consume available capacity at some locations. Further complicating the matter would be scenarios where materials are being speculatively stockpiled on-site for the claimed purpose of reuse under Beneficial Use Determinations, potentially circumventing the Subtitle C storage requirements. An enforcement program cannot operate effectively if there are not viable options for a facility or industry to comply.

The States have major concerns with the proposed dual regulatory scheme where CCR is a special waste when destined for disposal, but is a Bevill Exempt material when destined for reuse, as envisioned in the proposed Subtitle C option. This proposed dual regulatory scheme clearly illustrates the fundamentally flawed approach of regulating CCR as a hazardous waste for disposal while simultaneously authorizing broad exempt beneficial uses. Clearly CCR does not meet the established federal criteria defining a hazardous waste and should not be regulated as a hazardous waste.

OVERSIGHT AND ENFORCEMENT OF ANCILLARY HAZARDOUS WASTE MANAGEMENT REQUIREMENTS

EPA pays insufficient attention to State efforts that would be required to implement the additional hazardous waste management requirements that would be imposed on CCR generators and transporters under the Subtitle C option. The Subtitle C option would result in a significant increase in the LQG universe. It is not unreasonable to expect that EPA would designate this sector as a special priority for compliance evaluations, requiring significant effort on the part of States and possibly diverting State resources from more pressing priorities. The enormous volumes of waste represented by CCRs would also strain the resources of States that actively review hazardous waste manifest information, possibly requiring additional staff and/or equipment.

It is not clear that imposing these requirements on CCR generators is addressing a demonstrable problem. The principal justification that EPA uses in advocating for Subtitle C regulation involves damage cases associated with disposal. None of the cited incidents involves management of CCRs before the point of disposal. In fact, EPA's decision to maintain the exemption from being regulated as hazardous waste for CCRs that are beneficially used leads to a contradictory state of affairs where the exact same material would face radically different management standards while on-site at the point of generation up to the point of final disposition, depending on what the ultimate disposition of the material is to be.

A similar contradiction exists with respect to CCRs destined for disposal that are generated by facilities EPA has elected not to regulate under the proposal (i.e., non-investor owned and non-municipal coal burning utilities not falling under NAICS code 221112). In this case, identical materials are made subject to radically different regulatory requirements, based only on the type of generator. This contradiction is perhaps manageable for CCRs managed and disposed on-site at the generating facility; however, it would be problematic and confusing for regulators, waste managers, beneficial users, and especially the public for materials managed and disposed off-site or beneficially used.

SUBTITLE C FUNDING SHORTFALLS

Subtitle D programs are 100% State funded. By contrast, Subtitle C programs are supposed to be funded by federal STAG funding with a 25% State match.

EPA maintains, without supporting documentation, that “... most States should be able to address any [funding] shortfalls through hazardous waste generator or disposal fees.” This statement reveals an insensitivity on the part of EPA to the current fiscal climate in which States are operating. Roughly 25% of the States do not impose such fees, based on a survey conducted by the U.S. Army Corps of Engineers.¹¹

It must be noted the effect of an increased workload under the Subtitle C scenario could impact States differently depending on how agencies are organized and funded. On one end of the spectrum is a State that has the ability to use Subtitle D or Subtitle C full-time equivalent (FTE) employees interchangeably and could draw on agency resources as needed to accomplish the additional workload for a CCR Subtitle C program. In that State, waste management fees directly support the waste program. On the other end of the spectrum are States in which the situation is more distressing. These States have indicated that if the Subtitle C approach is adopted, the State would not have the resources to implement the program. Legislatures are reducing FTEs to address general fund budget shortfalls. In many States, fees go to General Revenue and are not directly used to support the program.

Even in States that impose such fees, the current political climate frequently causes “fees” to be characterized as “taxes” by small-government advocates, complicating efforts to use fees as a funding source. Even if adequate funds are available through fees, State legislatures are often reluctant to increase the size of regulatory agencies. Consequently, even in States with a dedicated funding source, the need to obtain legislative authorization to hire additional staff can be a significant barrier to implementation efforts.

An additional complication is that revenues that States obtain through fees are sometimes required by State law to be deposited in general revenue accounts rather than dedicated accounts restricted to particular purposes. There is no guarantee that such funds would be made available for implementation of a CCR regulatory program.

In some cases, the authority that States have to charge fees is limited to fees on *hazardous waste* generation or disposal. The rule proposed by EPA would regulate CCRs as a “special waste” rather than a hazardous waste, and therefore CCRs may not be subject to a hazardous waste fee. Addressing this situation could require legislative changes, which can be a difficult and uncertain proposition.

Even if classified as a “hazardous” as opposed to a “special” waste on the federal level, some States have Bevill-like exemptions under State law that currently prohibit CCRs from being classified as “hazardous waste”, thus preventing collection of fees on this material as hazardous waste unless and until those State laws are changed.

Responses to a State survey begin to quantify the amount of funding that would be needed for each proposal. Contrasting the estimated resource needs for Subtitle C versus Subtitle D programs also illustrates that the latter is a better use of resources.

Based on responses from 35 States, it is estimated that over 150 additional FTEs would be needed just for permitting. If the annual cost of one FTE for salary, fringe benefits, and overhead is approximately \$100,000, the additional personnel costs for ***Subtitle C permitting for 35 States alone could exceed \$15 million***. Additional expenditures would be needed for personnel inspecting the facilities and enforcing the permits.

There were 22 States that were able to estimate the number of FTEs for the Subtitle C option versus the Subtitle D option. The 22 States estimated that an additional 116 FTEs would be needed to process original RCRA C permit(s) (operating and/or closure – post-closure) compared to an additional 62 FTEs that would be needed to permit Subtitle D facilities. Based on these estimates¹, the Subtitle C option could cost twice as much as the Subtitle D option, \$12 million versus \$6 million respectively.

Funding for training would be needed, particularly for staff processing original installation permits for new RCRA C hazardous waste facilities. Only a few States have issued an original installation permit since 1990. Of the 38 staff that States identified as having experience processing original Subtitle C installation permits, 23 are eligible to retire in 5 years. The point is that training costs would have to be factored into STAG funding needs.

ADDITIONAL IMPEDIMENTS

EPA’s proposed rules for disposal of CCRs in hazardous waste landfills represent only one aspect of the process for approving Subtitle C facilities. Permitting hazardous waste facilities may be conditioned upon the applicant meeting additional State or local requirements or may even be prohibited.

Two States have statutory prohibitions¹² against hazardous waste landfills. In another State, permitting hazardous waste landfills is prohibited by a court injunction. In some cases, siting hazardous waste landfills may be prohibited under certain circumstances such as certain geological

conditions¹³, whether there is another hazardous waste treatment facility in the county¹⁴ or proximity to inhabited areas¹⁵.

States face a variety of hurdles that preempt conducting certain steps in the permitting process, such as technical review of an application. Requirements that precede issuance of a permit by a State environmental agency may include:

- review by legislative oversight committees
- legislative approval
- local public hearings
- approval by local and/or State siting boards or commissions
- environmental and health impact assessments
- issuance of a certificate of public necessity

State or local zoning and siting requirements can be prohibitively restrictive, so much so that one State noted, “there have been no successful attempts at siting any type of new RCRA C facility since inception of the RCRA program.” Another State concluded that “location standards would impede the permitting of CCR RCRA C facilities given current locations of power generating plants.”

Direct involvement in the decision making process by local governments and citizens may be required. For example, Massachusetts’ law¹⁶ requires the establishment of a Local Assessment Committee which shall include “four residents ... three of whom shall be residents of the area of the city or town most immediately affected by the proposed facility.” The powers of the committee on which the citizens sit include:

- negotiating the detailed terms, provisions, and conditions of a siting agreement to protect the public health, the public safety, and the environment of the host community, as well as to promote the fiscal welfare of said community through special benefits and compensation
- entering into a nonassignable contract binding upon the host community, and enforceable against said host community in any court of competent jurisdiction, by the decision to sign a siting agreement pursuant to section thirteen of this chapter

Connecticut law¹⁷ provides for an environmental justice review which must include “meaningful public participation” and “community environmental benefit agreement.” “Meaningful public participation” means (A) residents of an environmental justice community have an appropriate opportunity to participate in decisions about a proposed facility or the expansion of an existing facility that may adversely affect such residents’ environment or health; (B) the public’s participation may influence the regulatory agency’s decision; and (C) the applicant for a new or expanded permit, certificate or siting approval seeks out and facilitates the participation of those potentially affected during the regulatory process; and

“Community environmental benefit agreement” means a written agreement entered into by a municipality and an owner or developer of real property whereby the owner or developer agrees to develop real property that is to be used for any new or expanded affecting facility and to provide financial resources for the purpose of the mitigation, in whole or in part, of impacts

reasonably related to the facility, including, but not limited to, impacts on the environment, traffic, parking and noise.

While public participation is a vital aspect of the process, including citizens in the decision making process when they have a valid and vested interest would delay the process and require a significant investment of State and local government resources. There is the added concern that citizens may be unduly alarmed by the prospect of having a CCR hazardous waste facility in their community.

SUBTITLE D

The EPA proposal identifies the adequacy of State programs as a central issue in selection of an option. A common theme throughout the proposal is that the lack of “federal oversight of State programs” is a “disadvantage to any approach under RCRA Subtitle D.” The EPA proposal notes that Subtitle D is implemented by the States and “EPA may act only if the handling, storage, treatment, transportation, or disposal of such wastes may present an imminent and substantial endangerment to health or the environment (RCRA 7003).” The implication is that State Subtitle D programs are inadequate, but EPA presents no evidence to support this presumption.

Since enactment of the 1979 federal Subtitle D regulations, 40 CFR part 257 Criteria for Classification of Solid Waste Disposal Facilities and Practices has established the minimum national performance standards necessary to ensure that “no reasonable probability of adverse effects on health or the environment” would result from solid waste disposal facilities or practices. States either already had existing State requirements or voluntarily adopted rules that meet or exceed the Subtitle D national performance standards. When State regulators were recently asked whether existing State standards/regulations for non-MSW facilities are mostly compatible with or more stringent than the existing Part 257 minimum standards, 47 out of 47 States responded “yes”.

EPA’s proposal raises concerns regarding the reliance of RCRA Subtitle D on citizen suit enforcement authority given that States are not required to adopt the federal minimum standards into State regulations. EPA’s concerns should consider that a number of State programs already have enforceable State requirements that meet or exceed many of the proposed CCR federal minimum standards. Also, the history of 40 CFR part 257 demonstrates that many States would voluntarily establish compatible State regulations. Specific to a citizen suit under the CCR proposal, the proposed RCRA Subtitle D requirements are clear and unambiguous. The requirements that owners or operators of CCR disposal facilities maintain independently reviewed documentation of compliance on publically available web sites and provide notice to the State environmental agency ensures public access. These requirements establish a substantial basis for both citizens and those States without equivalent State requirements to successfully enforce under RCRA citizen suit authority. This is much improved over the existing 40 CFR part 257 Criteria for Classification of Solid Waste Disposal Facilities and Practices. Unlike the existing 40 CFR part 257 requirements, which are too ambiguous and do not require the owner or operator to document compliance, the proposed RCRA Subtitle D rules are actually useful towards developing a citizen suit.

It is presumed that State programs would not regulate CCR surface impoundments pursuant to the Subtitle D proposal. In many States, the authority to regulate surface impoundments is vested in other State agencies pursuant to statutes other than solid waste statutes. While it may be other State agencies that have enforcement authority for surface impoundments, 43 out of 44 States indicated that they coordinate with the enforcing entities to require that steps are taken to protect human health and the environment. This high level of involvement by State waste programs is

good evidence that if national waste management standards for CCR were promulgated, States would adopt those standards just as they have adopted the Part 257 standards.

Despite the concerns expressed in the proposal, the State enforcing entities in 42 out of 42 States have the authority to require remediation. The majority of State agencies noted State authority for surface impoundments include repair and maintenance during operation (43 out of 44 States) and closure (41 out of 43 States), as well as:

- impoundment design and engineering
- leachate collection
- gas collection
- groundwater and leachate monitoring
- financial assurance
- post-closure care and maintenance
- removal
- replacement of water supply

In essence, EPA should continue to build upon existing State programs through use of the Subtitle D approach. The Subtitle D approach for solid waste management has existed since 1979 without significant programmatic problems being identified by EPA. State programs meet or exceed the 40 CFR part 257 national standards for solid waste disposal facilities. In many respects, many State programs already meet or exceed much of the EPA proposed CCR national standards. Based upon the history of implementation of the solid waste program, upon adoption under Subtitle D, national CCR standards would be established quickly and nationwide, allowing States to continue enforcement under their State regulations with the ability to file citizen suits where State enforcement authority is limited. EPA should work directly with those States with limited State enforcement to support those States' voluntary enactment of authority and adoption of compatible enforceable State requirements.

ASTSWMO urges EPA to work with State programs regarding implementation of Subtitle D CCR minimum standards. The following identifies several implementation issues that should be considered as well as responses to some of EPA's specific requests for comment:

1. As currently proposed, an owner or operator of a CCR disposal facility would need to fully comply with both the self-implementing national minimum CCR disposal standards and existing State requirements. This appears to be true even if the State requirements meet or exceed the self-implementing national minimum CCR disposal standards. In such a circumstance, EPA should establish some process to address conflicts between the federal minimum standard and a more protective or regionally appropriate State standard.
2. Many States wonder if EPA would establish a mechanism by which EPA acknowledges a demonstration that a State permit program meets or exceeds the federal minimum CCR standards. Such mechanism should accommodate regionally appropriate State standards.

3. EPA should clarify that the proposed CCR regulations do not apply to any State permitted MSW landfill that has previously accepted or may accept CCR. While most CCR are currently disposed at electric utility owned CCR disposal sites, there is no prohibition against CCR being disposed in State permitted MSW landfills. A reading of the current CCR regulations under the Subtitle D approach would require that a State permitted MSW landfill that has previously disposed or may dispose of any quantity of CCR would be fully subject to duplicative requirements with the additional burden of posting documentation on a website, having an independent professional review certification, etc. EPA should facilitate this disposal option by clarifying that the proposed CCR regulations are not applicable to any State permitted MSW landfills. The suggested clarification would also help with use of State permitted MSW landfills as interim CCR disposal capacity as utilities seek to close, upgrade, or develop their own compliant CCR disposal sites.
4. When State regulators were recently asked whether there was a preference for Subtitle D or the Subtitle “D prime” option, 42 State responses showed no overall preference. States were about equally split among the choices: Subtitle D approach, Subtitle “D prime” option, and no preference.
5. EPA broadly solicits comment on the approach of relying on certifications by independent registered professional hydrologists or engineers of the adequacy of actions taken at coal-fired utilities to design and operate safe waste management systems. ASTSWMO notes that many States require certifications by appropriate registered professionals as part of permit applications, submittal of various documents, and monitoring reports. This type of requirement ensures that the owner has relied on persons with the appropriate credentials. ASTSWMO understands the value of such certifications and supports the proposed requirement.
6. EPA asks whether the Subtitle D option, if promulgated, should allow facilities to use alternative designs for new disposal units, so long as the owner or operator of a unit could obtain certification from an independent registered professional engineer or hydrologist that the alternative design would ensure that the appropriate concentration values for a set of constituents typical of CCRs would not be exceeded in the uppermost aquifer at the relevant point of compliance (i.e., 150 meters from the unit boundary downgradient from the unit, or the property boundary if the point of compliance is beyond the property boundary). ASTSWMO would support allowing facilities to use alternative designs. Such flexibility would certainly be warranted if a State required or approved design differs from the federal requirements, yet is demonstrated to provide equivalent or greater performance.
7. EPA asks whether there could be homeland security implications with the requirement to post information on an internet site and whether posting certain information on the internet may duplicate information that is already available to the public through the State. ASTSWMO would defer to the expertise of those specializing in homeland security to

identify specific information with security implications. Many States do post basic permit and facility information on State websites now.

8. EPA asks about the effectiveness of annual surface impoundment assessments in ensuring the structural integrity of CCR surface impoundments over the long term. ASTSWMO supports the requirement that an owner annually assess the structural integrity of CCR surface impoundments. General experience is that requiring owners to periodically evaluate and document the condition of their facilities (rather than rely solely on regulator inspections) provides some assurance that owners are pro-actively identifying potential issues and the need for general maintenance. This allows an owner to take preventive and corrective action when it is most easily and cost-effectively implemented.
9. EPA asks whether surface impoundment integrity should be addressed under EPA's National Pollutant Discharge Elimination System (NPDES) permit program, rather than through the development of regulations under RCRA. ASTSWMO notes that the NPDES permit program appropriately focuses on effluent discharge limits and monitoring. Facility design and structural integrity would be a significant and unrelated addition to the NPDES permit program. Any surface impoundment integrity should be linked to the facility design requirements under RCRA Subtitle D.

State dam safety authority, dam safety expertise, and associated regulatory programs are often not housed within State solid waste disposal program or water pollution programs. Likewise, State dam safety programs are not limited to disposal facilities and broadly regulate dams and levees with the guidance of several federal agencies. ASTSWMO understands that the Association of State Dam Safety Officials will be submitting comments and urges EPA to fully consider their comments, including incorporation of federal dam safety guidelines rather than MSHA dam safety guidelines.

FINANCIAL ASSURANCE

EPA broadly solicits comments on whether financial assurance should be a key program element under a subtitle D approach, if the decision is made to promulgate regulations under RCRA subtitle D.

ASTSWMO supports financial assurance as a key program element under the Subtitle D approach.

BENEFICIAL USE – GUIDANCE, NOT REGULATION

Response to EPA Information Requests

Whether it is necessary to define beneficial use better or develop detailed guidance on the beneficial use of CCRs to ensure protection of human health and the environment, including whether certain unencapsulated beneficial uses should be prohibited.

ASTSWMO objects to EPA developing regulations for the beneficial use of CCRs. EPA appears undecided whether it should use Subtitle C, Subtitle D or TSCA as the regulatory approach for beneficial use. The use of any of these regulatory options would be unnecessary and extremely burdensome on State beneficial use programs. Many States already have regulatory programs in place for reviewing beneficial use proposals and other States are in the process of developing them. Due to the variability in beneficial use proposals, States need flexibility in reviewing them and a federal regulatory program would severely hamper this process. Rather, it would be very helpful to States if EPA focused on developing guidance for the review and approval of beneficial use projects. EPA has resources and technical expertise for research and development that exceed many States' capabilities and would be able to provide great assistance if the focus were on the science of beneficial use rather than simply seeking to regulate it. This beneficial use guidance could address matters such as:

- Leaching Tests - States need more assistance deciding what leaching test protocols would be appropriate for beneficial use projects. The goal here is to develop reasonable predictors of possible environmental impacts, based on the likely exposure of CCRs if a particular beneficial use project is approved. This would help States make these decisions. EPA is already doing much helpful work along this line with the "Decision Support Tool for Materials and Waste Management" by Thorneloe, et al.
- Risk Levels - It would be helpful if EPA developed acceptable risk-based concentrations of contaminants in CCRs for various beneficial use scenarios. For example, what concentrations would be acceptable for industrial scenarios but not residential? What concentrations would be acceptable for residential use scenarios? What concentrations would be acceptable for land application of CCRs in agricultural applications?
- Guidance for Use - It would be helpful if EPA developed guidance on what uses of CCRs are acceptable and which ones would be a greater potential risk to human health and the environment. For example, is a highway ramp constructed with CCRs a greater risk than using CCRs in a highway sub-base? It may be helpful to have guidance on how to properly monitor field applications to ensure there are no significant impacts.

- Expand the Use of the Industrial Waste Management Evaluation Model - EPA has developed a very good stochastic model called the Industrial Waste Management Evaluation Model (IWEM). It is designed primarily to help evaluate the type of liner system that would be appropriate to control wastes in land application, landfills, surface impoundments and waste piles. It would be helpful if EPA expanded this model to be more useful to States in evaluating beneficial use proposals. For example, could this model be adapted for road sub-bases or road ramp applications? The model should also be modified to allow the user to set the point of compliance distance to values other than the model default of 150 meters.
- Expand and refine EPA's existing *Guide for Industrial Waste Management*. According to EPA, that Guide was designed to protect groundwater, surface water and air resources under an industrial Subtitle D-like industrial waste program. As technology develops, the guidance can be revised. It would be more efficient to revise these guidelines now rather than wait for regulations to be finalized.

If EPA determines that regulations are needed for the beneficial use of CCRs, should EPA consider removing the Bevill exemption for such uses and regulate these uses under RCRA Subtitle C, develop regulations under RCRA Subtitle D or some other statutory authority, such as under the Toxic Substances Control Act?

ASTSWMO agrees that EPA should develop recommended practices and protocols for beneficial uses. However, we strongly recommend against developing regulations for the beneficial use of CCRs. As stated previously, we believe it would be very helpful to States if EPA focused on developing guidance for the review and approval of beneficial use projects. Since the Bevill amendment, States have fine-tuned their programs and increased their scrutiny of the beneficial use of CCRs. These programs evaluate the variability in constituent concentrations, site conditions and operational procedures and ensure that appropriate regulatory controls are used. A "one-size fits all" federal regulation would compromise these efforts. It is unclear why EPA is now considering regulating CCR under Subtitle C instead of the current Subtitle D-like EPA guidelines, considering the physical and chemical characteristics of CCR present very little potential to adversely affect human health and the environment, compared to many other residual wastes.

However, if EPA decides regulations are needed for beneficial use of CCRs, then it should regulate them under Subtitle D, and not Subtitle C or TSCA. Based upon physical and chemical characteristics, CCRs are no more a threat, and more often less a threat, to human health than other Subtitle D waste streams. It is illogical (and an inefficient use of limited resources) to specifically regulate waste streams that pose less human health threat as Subtitle C waste. Rather, proper management could be accomplished under Subtitle D authority.

As noted previously, ASTSWMO recommends EPA work on developing guidance to help States with their beneficial use decisions rather than develop regulations to address use.

Basis

Based on the concentration and toxicity of constituents in CCRs from the data submitted with ASTSWMO's surveys, the beneficial use of CCRs do not warrant regulation but rather effective guidelines for the following reasons:

1. TCLP results consistently show that CCRs do not leach constituents at levels above hazardous waste criteria, therefore, CCRs should not be considered in the realm of hazardous waste.
2. Other Subtitle D waste streams may pose more threat to human health than CCRs. For example, nonferrous foundry sand typically contains total metals concentrations above action levels acceptable for industrial use. CCRs do not typically exceed industrial use action levels and often meet action levels for unrestricted use. It is illogical to specifically regulate the beneficial use of a less harmful waste stream.
3. Existing Subtitle D-like guidances exist today. It would be more efficient to update these than wait for regulations to be finalized.

Whether it is necessary to define beneficial use better or develop detailed guidance on the beneficial use of CCRs to ensure protection of human health and the environment, including whether certain unencapsulated beneficial uses should be prohibited.

ASTSWMO recommends EPA develop guidance for beneficial use rather than try to define it in a rule. Detailed guidance is preferred to provide States with flexibility in decisions and implementation.

However, it should be noted that the 2010 proposed rule documents EPA's new position against unencapsulated uses of CCRs. Regardless of EPA's decision to promulgate rules or publish a guidance document pertaining to beneficial use, EPA must clarify its 2010 statement opposing unencapsulated use.

EPA states that the use of large volumes of CCRs in sand and gravel pits or for restructuring the landscape are considered disposal, rather than beneficial use. However, these uses meet the criteria listed in Section IV, D.2, "What constitutes beneficial use?", defining legitimate beneficial uses:

1. The material use must provide a functional benefit;
2. The material substitutes for the use of a virgin material, conserving natural resources that would otherwise need to be obtained through practices, such as extraction; and
3. Where relevant product specifications or regulatory standards are available, the materials meet those specifications, and where such specifications or standards have not been established, they are not being used in excess quantities.

One can argue that the disallowance of unencapsulated uses is in conflict with the above criteria.

1. In the case of sand/gravel pits and landscaping, CCR can be argued to provide a functional benefit.
2. In the case of sand/gravel pits and landscaping, CCR can be argued to be a substitute for virgin material.
3. In the case of sand/gravel pits and landscaping, CCR constituent levels may be lower than the surrounding soil and/or meet regulatory criteria. In the case of sand/gravel pits, the issue speaks to the site-specific conditions of the placement location, rather than the composition of the CCRs.

According to ASTSWMO's survey results, 49 States frequently use volume of material used as a determination for beneficial use. The use of large quantities of CCRs without functional benefit which causes environmental harm or in "flowable fill" mixtures to fill mines or quarries without environmental benefits should not be viewed as a beneficial use, but rather as land disposal and regulated accordingly.

ASTSWMO recommends that EPA define the parameters used in declaring its categorical opposition to unencapsulated uses. For example, EPA's determination should, at a minimum, specify individual constituent concentration limits, leachate limits, and volume used as the basis for its decision. The States can consider these parameters when evaluating proposed uses on a case-by-case basis.

CHARACTERIZATION/DATA STANDARDS

Information and data on the extent to which States request and evaluate CCR characterization data prior to the beneficial use of unencapsulated CCRs.

Based on the ASTSWMO survey, 47 States either approve beneficial use of CCRs or have pending regulations to do so. State responses provide an overview of beneficial use practices. The majority of States include agricultural use, structural fill, blasting grit, road base, waste stabilization, landfill cover and soil amendments as unencapsulated uses. To a lesser extent 23 States consider roadbase, 21 consider flowable fill, and 23 consider snow and ice control as unencapsulated uses.

Some States require substantial testing of CCRs before allowing use in unencapsulated applications. This testing includes total and leaching analytical tests of the raw material and field tests to gather potential ground water and surface water impact data before approving the use. In these cases CCR is not permitted to be beneficially used unless it meets the protective criteria.

Based on the survey, at least 29 States have denied beneficial uses based on insufficient data, failing to meet State standards, location standards such as proximity to ground or surface water, and use constituting disposal rather than structural fill.

The appropriate means of characterizing beneficial uses that are both protective of human health and the environment and provide benefits. EPA is also requesting information and data demonstrating where the federal and State programs could improve on being environmentally protective and, where States have, or are developing, increasingly effective beneficial use programs.

Pennsylvania (25 PA Code Chapter 290) has recently revamped and Maryland recently proposed beneficial use regulations for CCR and provide modern examples of effective beneficial use programs.

Whether the Agency should promulgate standards allowing uses on the land, on a site-specific basis, based on site specific risk assessments, taking into consideration the composition of CCRs, their leaching potential under the range of conditions under which the CCRs would be managed, and the context in which CCRs would be applied, such as location, volume, rate of application, and proximity to water.

It is essential as part of a good beneficial use program to identify best management practices and recommendations for a variety of beneficial uses. This information could be used to develop guidance documents that would promote the consistent, safe use of CCRs. Guidance established for this purpose would be very helpful in evaluating beneficial uses. It is noted that fill projects that include only CCRs should have a more limited range of conditions than projects with mixed materials or mixed wastes.

Many States currently use risk-based standards for making decisions for beneficial use of unencapsulated CCRs. This information should be considered in guidance developed by EPA.

Examples

State A:

The cleanup target levels of Chapter 62-777, F.A.C. are health-based risk levels and are used to help the Department evaluate the risk to human health for beneficial use of CCRs. Usually any proposed project that would leach contaminants above the ground water cleanup target levels will not be allowed. Also, if the material is soil-like and the contaminants are above the soil cleanup target levels, uses in residential or commercial applications may not be allowed unless the applicant installs engineering and institutional controls to ensure that the material will not provide a human health risk.

State B and C:

Cancer risk 1×10^{-6} , background if approved by department, or otherwise based on proposed use

State D:

Those proposed projects that have parameters that exceed the State-wide standards for soil pursuant to 567—Chapter 137, would be evaluated by staff using a Cumulative Risk Calculator to assess human health risks related to direct exposure to contaminants in soil and groundwater. In addition, the base of a disposal unit shall be situated so that the base of the waste within the proposed unit is at least 5 feet above the high water table unless a greater separation is required to ensure that there will be no significant adverse effect on groundwater or surface waters or a lesser separation is unlikely to have a significant adverse effect on groundwater or surface waters.

State E:

Risk standards are included in the guidance for individual chemical cancer risk of 0.5×10^{-6} and non-cancer hazard index of 0.1 and total cancer risk of 1×10^{-5} and hazard index of 0.5.

State specific standards should also be considered based on the diversity of State geographical and environmental conditions.

It would also be helpful if EPA were to develop recommendations for land application of CCRs, as it has for biosolids.

The considerations suggested above can be incorporated into a guidance document, instead of regulations, to provide States with flexibility in final decision-making. The items listed above are all relevant and each can be discussed in greater detail within a guidance document. The guidance document can also provide added value if it presents a range of acceptable and reasonable parameters, as well as including a 'default' recommendation.

If materials characterization is required, what type of characterization is most appropriate? If the CCRs exceed the toxicity characteristic at pH levels different from the TCLP, should they be excluded from beneficial use? When are totals levels relevant?

Based on the survey responses from 34 States, it depends on the type of beneficial use as to whether material characterization should be required. For example, application rates are applicable to agricultural uses or soil amendments but not for structural fill. The majority of States already use a mechanism for materials evaluation that includes one or a combination of TCLP analysis, risk assessment, remediation levels, total analysis, background data, drinking water limits, soil leaching potential, or volume of material.

Totals data, leachability data, and bioaccessibility data are relevant in determining beneficial use approvals. CCR characterization should include total analyses and leaching tests for the chemicals of concern (metals mostly). It should evaluate both the raw CCR and how it would be used in the field. For example, if CCRs are to be blended with native soils the impacts to the environment

could be different from its use alone. The total concentrations are relevant for evaluating the risks of direct human exposure to CCRs. Total metals results can be compared to relevant criteria such as soil cleanup objectives or landspreading constituent limits. Recognizing that pH appears to affect leaching of metals, EPA could develop total analysis criteria which conservatively predict leaching under various scenarios. The leaching tests are needed to evaluate the risks to ground and surface waters in a proposed use.

In concert with leachability results, total metals results are relevant in determining how much of a particular substance could ultimately leach out of the CCRs. However, none of this should be done without considering the intended beneficial use.

Whether EPA should fully develop a leaching assessment tool in combination with the Draft SW-846 leaching test methods described in Section I. F. 2 and other tools (e.g., USEPA's Industrial Waste Management Evaluation Model (IWEM)) to aid prospective beneficial users in calculating potential release rates over a specified period of time for a range of management scenarios.

The current TCLP, SPLP, and ASTM do not cover a wide array of uses and applications. A better simplified standard is needed. We understand a new testing methodology under the Leaching Environmental Assessment Framework (LEAF) is being developed. It is our understanding that these improved testing methodologies, which can provide more accurate CCR leaching information under a variety of field conditions, will be incorporated into SW-846 very soon.

It would be helpful if EPA modified the IWEM tool to be more useful in evaluating beneficial uses of CCRs. This stochastic model approach is better for evaluating the wide range of variability that is expected in beneficial use proposals.

Information and data relating to the agricultural use of FGD gypsum, including the submission of historical data, taking into account the impact of pH on leaching potential of metals, the variable and changing nature of CCRs, and variable site conditions.

Based on the survey responses, many States rely on the Department of Agriculture to set application rates. Coal fly ash may exhibit liming characteristics, but in general should not be encouraged for use as a liming agent due to trace mercury and other metals.

One of the largest waste streams generated by coal power electric plants is flue gas desulfurization (FGD). There are several methods for removing sulfur oxide (Sox). One method is a wet scrubber that uses limestone which yields the byproduct called FGD gypsum. The volume of this material is larger than fly and bottom ash combined. EPA should develop guidance for agricultural uses based on sound soil science.

SPECIAL WASTE DESIGNATION

Based on the ASTSWMO survey, 89% (24/27 responses) of the States responding indicated that the term "special waste" would carry similar negative connotations as does the term "hazardous waste." The public would not be convinced that the material was any safer if labeled "special waste" than when using the term hazardous waste. Also, the majority of the States that responded already have the term "special waste" defined either by statute or regulation in terms that may conflict or differ from the proposed CCR definition. Some specific statements:

State comment:

Because the "special waste" designation is similar to the RCRA listed hazardous waste regulations, there are likely to be comparisons to CCR being a listed hazardous waste, whether it is or is not.

State comment:

If EPA regulates CCRs as a "special waste" under Subtitle C, the public would be unable to make the fine-line distinction between "hazardous waste" and "special waste" under Subtitle C.

The Subtitle C approach is inappropriate because it would severely damage, if not eliminate, most beneficial uses of CCRs that are safe and result in saving significant environmental resources. Attempting to allow beneficial use of CCRs under Subtitle C as "special wastes" would not resolve the stigma problem. CCRs would then be known as "special hazardous wastes" and States would have increased opposition to approving safe beneficial uses of CCRs, and may actually be forced to prohibit their use except in very limited cases such as Portland cement manufacturing. It is also not clear if cement manufacturers would even be willing to continue the use of coal fly ash if it has the stigma of a special hazardous waste.

Thus, regulating CCRs under Subtitle C would be a flawed, unnecessary and inappropriate public policy decision by EPA. Should EPA choose to regulate CCRs, ASTSWMO recommends EPA should only regulate the disposal of CCRs under Subtitle D and work with the States on any concerns they have about implementation of the regulations.

STIGMA

There is already a "stigma" attached to beneficial use of CCRs. States have already experienced difficulties in approving uses of CCRs in highway sub-bases, for example. EPA's proposed rule has increased concerns by the public that any use of CCRs is dangerous to their health and would damage the environment. The failure of TVA's coal slurry impoundment was a true environmental disaster needing EPA's attention as well as the States'. But EPA's approach to that problem is an over reach and is generating unnecessary alarm by the public for any uses of coal ash. It appears to be creating the impression that any beneficial use of coal ash poses the similar risks as the TVA slurry impoundment failure. This, of course, is simply incorrect, and EPA should recognize the problems it would create by pursuing a regulatory course for beneficial use of CCRs.

State comment:

One of the State's largest cement manufacturers has said that that it will not use fly ash in its cement clinker production because of the negative implications of listing coal combustion ash as hazardous.

If EPA were to regulate CCRs as a “special waste” under Subtitle C of RCRA, and stigma turns out to be an issue, suggestions on methods by which the Agency could reduce any stigmatic impact that might indirectly arise. We are seeking information on actual instances where “stigma” has adversely affected the beneficial use of CCRs and the causes of these adverse effects.

A measure that EPA could take to mitigate the stigma effect is to drop the provision in the proposed regulation that products made from beneficially-used CCRs could be subject to Subtitle C when disposed. Consumers are not going to buy products that may need to be disposed as hazardous waste if there is a similar product without that potential. Ultimately, such consumer choices would likely cause manufacturers to reduce, rather than increase, their use of CCRs.

The issue of “stigma” and its impact on beneficial uses of CCRs, including more specifics on the potential for procedural difficulties for State programs, and measures that EPA might adopt to try to mitigate these effects.

The “stigma” impact on beneficial uses would be significant. One State offers an example. At present, the State has no established beneficial use for CCRs other than small-scale fill projects. The State also has no hazardous waste landfills so the Subtitle C option would require CCRs to be shipped approximately 1800 miles by truck, barge, and rail to the nearest such landfill at an estimated annual cost of \$17 million (2010 dollars). This would create a significant motivation to find beneficial uses for the CCRs. However, even under the current regulatory scheme, the utility operators have not been able to convince local concrete plants to use CCRs in their concrete. Convincing them would not be any easier with the “hazardous waste” label attached to the CCRs.

In addition, organizations such as ASTM have publicly stated that they could not support a hazardous waste label on CCR, causing concern for certification and use of CCR.

AIR QUALITY

There would be reductions in GHG emissions from the beneficial uses of some CCRs. With the significant concern over climate change, EPA should recognize this benefit when evaluating options for regulating beneficial uses of CCRs. One of the largest byproducts from burning coal is fly ash. This byproduct has been successfully used in making concrete, replacing Portland cement. It is documented that cement kilns are one of the largest emitters of greenhouse gases. Use of fly ash as replacement for cement both results in a productive beneficial use for an existing by-product of energy production in place of producing a separate product, as well as reducing consumption of energy that would be necessary to produce the amount of Portland cement that would be required to off-set the loss of coal ash which can be used in the concrete industry. Therefore, this

beneficial use of coal ash can significantly reduce the potential for global warming. Concrete produced by using fly ash is now considered a green product.

¹ National Academy of Sciences, *Managing Coal Combustion Residues in Mines*; The National Academies Press, Washington, DC, 2006.

² Congressional Research Report entitled “Regulating Coal Combustion Waste Disposal: Issues for Congress”

³ U.S. EPA (2000) Characterization and evaluation of landfill leachate, Draft Report. 68– W6–0068, Sept 2000.

⁴ Data were accepted into the database if they met the following criteria: represented leachate characteristics on an individual sample basis; included at least some information regarding the type of landfill from which the data were collected; were taken from a reliable source; available in an electronic form that could be incorporated into the database without extensive modification or manual data entry.

⁵ EPRI (2006) Characterization of Field Leachates at Coal Combustion Product Management Sites: Arsenic, Selenium, Chromium, and Mercury Speciation, EPRI Report Number 1012578. EPRI, Palo Alto, CA and U.S. Department of Energy, Pittsburgh, PA. See also EPRI (2005) Speciation and Attenuation of Arsenic and Selenium at Coal Combustion By-Product Management Facilities, DOE Award Number: DE-FC26-02NT41590

⁶ National Academy of Sciences, *Managing Coal Combustion Residues in Mines*; The National Academies Press, Washington, DC, 2006.

⁷ Based on disposal rates cited in the proposal from an unidentified DOE survey, 70% of CCRs are disposed on-site and 30% of CCR are disposed off-site.

⁸ Source of data: Appendix C, Regulatory Impact Analysis for EPA’s Proposed RCRA Regulation of Coal Combustion Residues Generated by the Electric Utility Industry

⁹ Assumes that beneficial use continues at the current rate of 45% and that off-site disposal remains 30% which is the rate cited in the proposal from an unidentified DOE survey.

¹⁰ See <http://www.epa.gov/epawaste/hazard/correctiveaction/pdfs/2020fac.pdf>

¹¹ See section 13 of Report on Treatment, Storage & Disposal Facilities (TSDF) for Hazardous, Toxic, and Radioactive Waste, 2006 Update, available at <http://www.environmental.usace.army.mil/TSDF/rp0toc.htm>.

¹² FL Statutes 403.7222- Prohibition of hazardous waste landfills. (2) The Legislature declares that, due to the permeability of the soil and high water table in Florida, future hazardous waste landfills are prohibited. Therefore, the department may not issue a permit pursuant to s. 403.722 for a newly constructed hazardous waste landfill. However, if by executive order the Governor declares a hazardous waste management emergency, the department may issue a permit for a temporary hazardous waste landfill. Any such landfill shall be used only until such time as an appropriate alternative method of disposal can be derived and implemented. Such a permit may not be issued for a period exceeding 6 months without a further declaration of the Governor.

KS Statutes 65-3458. - Burial prohibited; exceptions; procedure. (a) The underground burial of hazardous waste produced by persons generating quantities of such waste greater than those specified in K.S.A. 65-3451 and amendments thereto is prohibited except as provided by order of the secretary of health and environment issued pursuant to this act. (b) (1) The secretary shall decide whether or not an exception to the prohibition against underground burial of hazardous waste shall be granted for a particular hazardous waste. No decision to grant an exception shall be rendered unless it is demonstrated to the secretary that, except for underground burial, no economically reasonable or technologically feasible methodology exists for the disposal of a particular hazardous waste.

¹³ MO Statutes 260.429 - In non-karst areas of the state, the department of natural resources shall not issue a hazardous waste facility permit for a proposed commercial hazardous waste landfill, if such landfill would be located directly over a groundwater divide.

¹⁴ AL Statutes 22-30-5.1(c) - There shall be no more than one commercial hazardous waste treatment facility or disposal site as defined by subdivisions (4) and (14) of Section 22-30-3 situated within any one county of the state.

¹⁵ OK Statutes 27A-2-7-114 A. Except as provided in subsections B and C of this section, no permit shall be issued for the off-site disposal of hazardous waste or for the off-site treatment of hazardous waste by incinerator at a new hazardous waste facility proposed to be located within eight (8) miles of the corporate limits of an incorporated city or town.

NV Statutes 444.8456 - 1. A stationary new or expanding facility for the management of hazardous waste must not be constructed within:

(a) One mile of:

(1) A dwelling, school, church or community center;

(2) An area zoned solely for residential use; etc.

¹⁶ MA Statutes Chapter 21D, Section 5

¹⁷ CT Statutes Chapter 439 Section 22a-20a