Written testimony of Charles H. Norris before the
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at hearings exploring the question
"How Should the Federal Government Address the Health and Environmental Risks of Coal Combustion Waste?"

I would like to thank Representative Costa and the members of the subcommittee for the opportunity to testify today.

Introduction

The question the subcommittee is exploring carries important, implicit understandings in its phrasing. There is implicit understanding that coal combustion waste (CCW) exists. There is implicit understanding that there are health and environmental risks with CCW. There is implicit understanding that the risks need be addressed. There is implicit understanding that federal action is needed to address the risks. I share the each of those understandings with the author(s) of the question, although I must admit resistance in reaching the last understanding.

My understandings are founded in 5 ½ decades of personal observation, management, and study of CCW. In the 1950s I became responsible for removing, carrying, and dumping the "clinkers" from our coal furnace. They were put to "beneficial use," providing traction and filling ruts on the lane coming up the hill to the farmhouse. In the 1960s, I became painfully aware that even beneficial use of these materials carries risks, as did everyone else who tried to skate on an icy road after the township trucks had spread cinders or who tripped on the cinder track during the hand-off in the mile relay. In the 1960s and 1970s, I was episodically subjected to the rain of fly ash and the taste and feel of sulfur dioxide in my throat when the wind was from the university's power plant in Champaign, Illinois. Since the mid-1980s, a significant portion of my professional career has been the study and evaluation of CCW, now remove from the air, and how best to manage it. My client base through the years has included individuals, coal companies, environmental organizations, power companies, governmental units, and citizens' groups.

My testimony today represents my personal understanding and opinions, and is not intended to represent those of any other individuals or organizations. My opinions and understanding have evolved and should continue to evolve as I learn more. If they don't, I should retire. I am not being paid to be here and my preparation for this hearing is similarly donated, although I am seeking reimbursement of direct travel expenses.

I will organize my testimony today around the implicit understandings in the question before the subcommittee, largely providing technical background on CCW based upon my personal experience. Consistent with the question before the subcommittee, I will use the term "coal combustion waste." Some of my testimony will touch on language; the nomenclature and rhetorical battle over these materials. That battle contributes to the need for federal intervention to reverse the deplorable and deteriorating conditions manifest under some state management practices for CCW and begins to spread to other waste streams. I will illustrate my points with examples from my own experience and have included studies and research with my testimony to

that end. These tend to be lengthy, and some are technically detailed. They are not provided with the expectation that you will fully absorb them. Rather, I hope they will convey the complexity of these materials and of their relationships to and reactions with the environments where they are increasingly placed. Generalization about these materials are difficult, and I hope the supplemental materials help illustrate that.

The difficulty with generalization is seen in the implicit understanding that CCW exists. Certainly the burning coal leaves behind material after combustion; tens of millions of tons of each year. But it's not a single material. There is the first-order classification of these materials as fly ash, bottom ash, flue gas desulfurization (FGD) materials, and boiler slag, each of which is very different. The character and composition of these individual materials are themselves variable. They varies over the range of combustion and pollution abatement technologies that are used. They change as the compositions of the fuels change. They are dependent upon other waste streams that are mixed and co-managed with them. Often, state regulations are broadened to include not just the materials that remain after "coal combustion," but the materials that remain after "fossil fuel combustion." Fossil fuel combustion typically represents a mix of little 50% coal with some other fuel; natural gas, petroleum liquids, wood, wood pulp, shredded tires, auto fluff, etc. There is nothing similar between the FGD sludge produced by a dual-alkaline system working on the stack gases of a pulverized-coal conventional plant burning Wind River Basin coal from Wyoming and the bottom ash from a fluidized bed combustion unit burning 50% coal, 30% gob, and 20% shredded tires. Yet, these two materials, among a host of comparably dissimilar materials, are within the term "coal combustion waste" in the question before the subcommittee, and all need fall under the rubric of federal control.

The challenge at the federal level of addressing health and the environment from risks of this complex of materials does not lie with legislating the detailed management of each material. It lies with producing a framework that provides regulation of each of these materials in a manner that is protective of health and the environment when implemented by state programs. The implementation would be based upon individual CCW characteristics, the nature of its placement and use, the environment of its placement and use, and the time-dependent changes that CCW and the environment work upon each other. The model for this framework is not unlike that of SMCRA or the CWA. I believe producing the framework will be a challenge because such a framework would be a sea change from the approach taken today by some states in response to the systematic hesitation and reluctance of federal regulators to meaningfully regulate these materials.

In the remainder of my comments, I will briefly outline examples of the need for federal intervention based upon what has and is happening under state regulatory programs. I will then provide an outline of issues the federal framework will need to address to be effective. Finally, I will discuss the issues of nomenclature and rhetoric that are driving not only the management of CCW but increasingly undermining the responsible regulation of other wastes streams.

The Need

Placement of CCW in the environment creates environmental damage and human health risks. Not every CCW. Not all placements. Not always without some offsetting benefit. However, documented degradation coincident with the placement of CCW in the environment occurs so frequently, in such a wide range of settings, that there must be the presumption that unacceptable risk to health and the environment will occur as a result of such placement. The frequency of such degradation is particularly disturbing when one considers, first, how rarely

such placement is accompanied by monitoring at times and places capable of detecting a problem, and second, how frequently the some state agencies ignore the degradation and allow it to continue. Too often, there is no agency response to a problem at all or until affected citizens have had to file legal action for relief. Further, under existing and evolving state programs, the characterization of placement sites is being reduced and monitoring of placed CCW is occurring less often and for shorter periods of time. Intervention to prevent risk to health and the environment from degradation is increasingly impossible because there is no observation.

Examples of degradation are readily found despite the paucity of sites with monitoring data that allow evaluation. The following are some representative examples of the variety and range of problems with in-environment placement of CCW:

Fly ash was placed in an open, unlined excavation as permitted landfill disposal adjacent to Town of Pines in Indiana beginning in the 1970s. Leachate from that ash, passing under the residents' houses, ruined their water supply on its way to local drainage to Lake Michigan, forcing them to accept municipal water as a replacement. The site is undergoing an RI/FS under the SuperFund program.

In Maryland, operators of ash disposal pits are today wringing their hands over ruined residential wells, questioning how they could have ever anticipated such problems from benign materials compliantly disposed.

In Illinois, CCW placement as permitted landfill disposal in a dolomite quarry degrades ground water as a result of off-site, third-party changes to the hydrogeology that had been relied upon to contain the waste.

In Pennsylvania, regulators document ground- and surface water contamination at permitted CCW disposal facilities that in cases rely only CCW for containment. Dilution by the receiving body of water is accepted as a response by the agency.

In Colorado, the USEPA fell victim to beneficial use. Uranium tailings at a site within Denver were "stabilized" using CCW with a liming additive. The objective was to allow reburial of the stabilized tailing on-site, rather than expensive transport and disposal at a rad-waste facility. The "beneficial use" effect lasted only a few months before uranium mobility from the site increased beyond the pre-treatment levels, necessitating the transport and landfill disposal of not only the uranium wastes but also the admixed coal combustion materials.

Contamination examples are also common when CCW is placed in coal mines. The Clean Air Task Force (CATF) contracted an exhausting, multi-year study of the contamination at coal mines that placed CCW as part of the Pennsylvania mining program for beneficial use of CCW. That study found in agency permit files data showing CCW contributions to rising contamination at the majority of the sites with sufficient data to make a determination.

Two of the accompanying documents I am providing with my testimony discuss contamination resulting from the placement of CCW in mines. Some of these placements were beneficial-use placement and some simply disposal placement. In my 2003 report "Minefill Practices for Power Plant Wastes, An initial Review and Assessment of the Pennsylvania System," I discuss my preliminary review of 10 mine sites in Pennsylvania that saw to CCW placement and showed subsequent related contamination. Many of these sites were studied in more detail as part of the CATF study mentioned above. The second paper, "Environmental Concerns and Impacts of Power Plant Waste Placement in Mines," was presented in 2004 and published in Proceedings of State Regulation of Coal Combustion By-Product Placement at Mine Sites: A Technical Interactive Forum, Kimery C Vories and Anna Harrington, editors, by U. S. Department of Interior, Office of Surface Mining. This paper discusses eight mine sites in Pennsylvania (some duplicated in the CATF study), West Virginia, Indiana, and New Mexico where CCW placement can be tied to subsequent ground water contamination.

Where data exist than can be assessed, the frequency of contamination from the placement of CCW is attributable largely to weakness in state programs for site characterization waste and waste characterization. The dearth of interpretable data from most sites is attributable to poor site characterization, poor waste characterization and inadequate monitoring. In the discussion of each below, it should be apparent that the three weaknesses are intimately related.

Monitoring

The first requirement to detect the impacts from the placement of CCW in the environment is a monitoring system and program. One cannot document impacts, or lack of impacts, due to CCW placement without a monitoring program that looks for such impacts and a monitoring system that is capable finding such impacts when they occur. Yet, as more and more CCW is placed under programs of beneficial use, there is an ever-expanding population of placement sites with no monitoring.

To detect impacts from the environmental placement of CCW, a monitoring system must monitor the path(es) of contaminant migrating from the placement area. This requires there have been a site characterization that establishes the migration direction(s), including seasonal variations, of contaminants from the placement area via air, surface water, and ground water. Further, since placement of the CCW can modify these flow directions, the characterization needs to describe the medium-specific migration directs that will exist after CCW placement, not merely conditions existing prior to placement.

To detect impacts from the environmental placement of CCW, a monitoring system must be able to detect and identify all contaminants migrating from the placement area. This requires

there have been waste characterization that identifies all mobile concentrations of contaminants from the waste, seasonal variations in the mobile contaminants and their concentrations, and long-term changes in the population of mobile contaminants.

To detect impacts from the environmental placement of CCW, a monitoring location must be active when contaminants from the placement area are moving through the monitoring location. This requires there have been site characterization that is sufficient to project contaminant migration times to a point of observation. It also requires a monitoring program that remains in place long enough for contaminants to reach the monitoring point.

To detect impacts from the environmental placement of CCW, a monitoring system must be able to detect and identify contaminants mobilized by site leachates, whether or not the contaminant is itself released from the placement area. This requires there have been waste characterization and site characterization that is adequate to simulate the reactions between waste leachate and site soil and rock materials in contact with the leachate. For example, one presumed beneficial use for CCW is alkaline addition to areas that have long suffered from acid mine drainage. However, apparently obvious solutions can have unfortunate consequences. I have included another paper with this testimony that illustrates one example. My 2005 paper "Water Quality Impacts from Remediating Acid Mine Drainage with Alkaline Addition" explores the geochemistry that supports observations of arsenic contamination following the use of CCW as an alkaline addition, even when there is no evidence of excessive arsenic in the CCW leachate itself. Alkaline leachate from the CCW mobilizes previously-sequestered arsenic from on-site sediments.

Site characterization

Adequate site characterization is seldom performed prior to approval for environmental placement of CCW. Depending upon the state, no site characterization may be required prior to some beneficial use placement. In other cases, something as simple as establishing the depth to water table prior to placement may be all that is required. Placement for beneficial use does not preclude negative environmental or health impacts, nor ensure that there is even a net improvement when benefits are weighed against negative impacts. Site characterization is as necessary at sites of environmental placement for beneficial use as for disposal.

When the placement activity includes site characterization, that characterization virtually always is of the conditions that exist prior to, not subsequent to waste placement. Seldom does CCW placement leave the hydrologic balance as it existed before placement. As a result, monitoring systems are designed to measure a flow system with no waste in it, not the one with waste present. This inadequacy is dramatically in evidence when considering placement in areas that have been mined or quarried. Coal mines and bedrock quarries typically entail huge dewatering programs. Coal ash placement, reclamation and bond release can occur decades before the mined areas reach full, equilibrium recharge, and during that time ground water is flowing into the void, not from it. The monitoring system, when there is one, is monitoring background water flowing toward the placement area, not water from the placement are and cannot possible convey information about the health or environmental risks associated with the eventual hydrologic system that will finally develop.

Site characterization seldom includes a characterization of the anticipated time-dependent variations of the site hydrogeology. This problem is very commonly observed for placement in coal mines. The Prides Creek Mine example in the previously cited "Environmental Concerns and Impacts of Power Plant Waste Placement in Mines" shows one case. Even when there is an

intra-mine monitoring point that shows the strong temporal variability of water quality and ground water heads, there is no characterization to provide context for those changes.

Waste Characterization

This aspect of the various state-managed CCW programs is so weak as to be nearly meaningless in most states. Typically state programs use the results of the TCLP (toxic characteristics leaching procedure) or the SPLP (synthetic precipitation leaching procedure) as the predictor of the potential for placed CCW to impact health or the environment. This myopic misuse of laboratory index tests is probably the single greatest cause of the disconnect between the contamination that occurs from environmental placement of CCWs and what is promoted by advocates and regulators of the materials.

There is no justification for states to use these index laboratory tests as surrogates for determining likely field leachate for CCWs to be placed. These tests were not developed as predictors of field leachate, they are not designed to produce field leachate, and they have been repeatedly demonstrated incapable of doing so. The National Academies of Science understand this. The USEPA Science Advisory Board understands this. Yet, based upon the results of these inappropriate tests, multi-million ton masses of CCWs are allowed by some states to be placed without confinement and without monitoring in high risk hydrologic environments adjacent to private well users. And, the producers of the coal combustion and the regulators who approve it waste feign surprise or innocense when wells become contaminated.

If waste is to be placed in the environment, whether for disposal or beneficial use, complete and meaningful characterization is quite simply mandatory if the placement is to be protective. That testing, to be adequate for both instantaneous characterization of the waste and the design of the initial monitoring system, should include analyses of grain size and texture, elemental composition, chemical composition, mineralogy, rheology, hydrological properties, initial leachate compositions, and reactive potential with non-waste site soils and rock. Only with such characterization can any benefits be weighed against impacts and risks of placement. And only with such characterization can adequate monitoring be designed to confirm design predictions and measure site performance.

Finally, characterization of the CCW requires consideration of the time factor. The most abundant CCWs are highly reactive. They form in an environment that is completely out of equilibrium with the placement environment. Water is a solvent that carries dissolved contaminants away from the placement area and facilitates reaction with site soils, rock, and water. But it is also a major reactant with the wastes. Fly ash fresh from the burner is not the same material as fly ash that is quenched and sluiced to a pond. Nor is the fly ash that is dredged from the pond the same material as the fly ash in a pit five years after placement. CCWs evolve continually for years.

A test of ash fresh from the burner – whether for composition, mineralogy, texture, strength or leaching – will be different from that same ash after quenching and sluicing, which will be different after placement, which will be different 10, 20 and 50 years after placement. As the in-place ash evolves, so will the composition of the leachate from the ash. Contaminants that were sequestered in the young ash can become mobile the ash matures. Concentration of contaminants can rise, fall, and rise again, depending on the stage and sequences ash weathering. Eventually the glass component of some ashes can devitrify, producing late stage mobility of previously sequestered contaminants.

CCW characterization as performed today in the state programs virtually ignores the time factor and the recognition that ash will ultimately evolve to something quite far from its starting point. This is somewhat ironic with respect to CCW placement in coal mines. State mining regulators would laugh an operator from their offices who seriously proposed to use TCLP or SPLP to evaluate the acid producing potential of mine spoil. Yet, under state programs, those same regulators blithely allow those tests to predict the alkalinity that will be needed from the ash to neutralize delayed acid generation when CCW is used for alkaline addition. The 2002 evaluation I performed for Anker Energy and the West Virginia Highlands Conservancy, described in the attached paper "Assessment of the Anker Energy Corporation proposal for mining and reclamation, Upshur County, West Virginia," undertook a far more detailed evaluation of initial leaching characteristics. That evaluation, confirmed by an on-site pilot study, established that for the ash in question, the bulk of the ash's alkalinity would immediately flush from the placement area, leaving insufficient alkalinity available when acid mine drainage would be generated.

So long as waste characterization is driven by TCLP and SPLP results, there will be no reliability in the predicted results of CCW placement in the environment. And, based upon observed changes proposed and implemented in state programs, including increasing CCW masses in and approvals of unmonitored, unconfined placement for beneficial uses, it is apparent that direction is needed at the federal level.

The Framework

The successful construction of a new framework to address risks associated with CCW will require whole-hearted acceptance of the core element implicit in the question before this subcommittee, that it is appropriate for the federal government to step in to address the problems inherent in the management of these materials. Key elements of that framework are described in this section. Comparable elements of a framework applicable specifically to mine placements are described in the 2003 paper I produced for the USEPA and have attached with my testimony, "Developing Reasonable Rules for Coal Combustion Waste Placement in Mines. Why? When? Where? How?"

General Considerations

CCW is an industrial solid waste. Its placement must be in compliance with solid waste laws, clean air laws, and clean water laws. If it is placed or used in coal mines, placement also must be in compliance with state and federal surface mining and reclamation laws. State policy cannot be less protective than federal law.

Responsibility for the waste and any resulting damage remains with both the waste generator and the operator of the waste placement site.

Regulations must provide enforceable standards of both condition and performance, not merely discretionary guidelines. Oversight of the program must be by professionals trained and knowledgeable in waste disposal law, regulation, policy and practices. CCW placement site operators must demonstrate knowledge of, and the capability to fully implement waste disposal law, regulation, policy and practices.

Regulations must allow for public participation in the approval process, there must be the right of appeal, and cost recovery for successful appeal and citizen enforcement must be included.

Waste Characterization

Each CCW proposed for environmental placement shall be analyzed for grain size and texture, elemental and chemical composition, mineralogy, rheology, and hydrological properties. The constituent list will include all reasonably anticipated constituents of CCW and include tests for total radioactivity and radionuclides with environmental or health standards, and tests for polyaromatic hydrocarbons and other products of incomplete combustion of environmental and health concern.

When multiple CCWs are proposed for placement in a single location, the wastes shall be characterized individually, as above, and as a composited sample proportionate to the masses of the individual waste streams. This applies to both multiple waste streams from a single generator and waste streams from multiple generators.

Leachate Characterization

Prior to permit approval, the placement site operator will demonstrate to the extent possible the composition or limits on composition of the leachate(s) that will form at the site under the conditions of placement. This demonstration may include field testing, laboratory testing (sequential batch tests, column tests, etc.), computer modeling and/or other appropriate methodologies. The analyte list will be the same as for waste characterization.

For each placement area with different waste streams deposited, the placement site operator will install a monitoring well capable of sampling the leachate(s) that form in the field. Field leachate(s) will be sampled and analyzed for the same constituent list as for waste characterization.

Site Characterization

Site characterization will be comparable to that required for solid waste disposal facilities designed for wastes of comparable physical and chemical properties, and will use methodologies and protocols appropriate for solid waste disposal facilities.

Site geology will be characterized sufficiently to demonstrate the structure; bedrock stratigraphy; sediment, soil, spoil, fill, and waste distribution, composition, and texture; and geomorphology that will exist at and under the placement site(s) and in the adjacent areas.

Site hydrogeology will be characterized sufficiently to demonstrate the ground water and surface water systems and exchanges between them before, during and after CCW placement. The site characterization will include determining recharge areas, discharge areas, base flow contributions, hydraulic gradients, dominant flow paths, fluxes, velocities, travel times, physical properties (permeabilities, porosities, pore systems) for each material including CCW, water users and usable water resources, water chemistries, and the range of temporal variations typically experienced and likely to be experienced by any of these parameters. The description of this characterization will include a projection of the post-placement conditions.

Site characterization itself will be performed in a manner that will not be environmentally damaging to areas adjacent to or beneath the placement site(s).

Due to the highly transient stresses that will be imposed upon a placement facility during the construction, use and recovery, the site characterization should be continually updated through the life of the project as more data become available.

Fate and Transport of Leachate

Prior to issuance of the permit, the evolution of the chemistry of expected leachate(s) must be evaluated for each of the dominant flow paths as contact with ground water and migration through soil, and/or rock occurs. If the flow path involves the transport of leachate to a surface water system, the evaluation must include the evolution of the chemistry with respect to reactions with the mixing waters and the gases of the atmosphere. The evaluation will include major-, minor-, and trace-element compositions, and may be based upon field testing, laboratory testing (sequential batch tests, column tests, etc.), computer modeling and/or other appropriate methodologies.

If, after collection, actual field leachate differs significantly from the projected leachate(s), the evaluation(s) will again be performed using the field leachate composition(s).

The impacts of the leachate(s) on biota or on the uses of the water at receptors or compliance points will be evaluated, and the composition of the leachate(s) relative to applicable standards.

Monitoring

Prior to issuance of the permit, air, ground water, and surface water monitoring will be performed that is sufficient to document ambient air, ground water, and surface water quality; surface water quantity; and flux exchanges between ground and surface water for the range of temporal variations typically experienced at the placement site. Methodologies and protocols appropriate for waste disposal facilities will be used.

During the life of the placement operations, ongoing air monitoring of the placement work site and adjacent areas will be done for both dust and fugitive waste. Surface water discharges from the placement site will monitored for the full list of constituents used in characterization. Ground water will be monitored for both heads and chemistry, and surface water monitored for chemistry. The head data will be used to evaluate the validity of the site characterization and water chemistry will be used to verify that the CCW placement operation is not having negative impacts on downgradient or downstream water quality. Methodologies and protocols appropriate for waste disposal facilities will be used.

After placement is completed, ground and surface water monitoring will occur at locations and from wells capable of sampling leachate(s) from the placement site. Post-placement monitoring will continue until it is determined that leachate(s) have reached the wells, that site performance is as predicted in the permit, that the impacts and compositions at compliance points or receptors are within standards or are acceptable in the absence of standards, and are stable. Methodologies and protocols appropriate for waste disposal facilities will be used.

Compliance, Enforcement and Remediation

Compliance standards for each constituent of potential concern must be defined for surface water discharges, base flow discharges, placement-site air quality, fugitive dust off-site, fugitive waste off-site, and ground water.

Enforcement procedures must be defined and in place prior to permit issuance.

Remediation standards and procedures must be defined, and sufficient financial surety to perform necessary site, surface water, or ground water remediation must be demonstrated and maintained until monitoring is no longer required as provided above.

Isolation of Waste

If characterization and fate and transport analyses do not demonstrate that compliance will occur without barriers and or other containment procedures, the CCW placement cannot occur without extra measures to demonstrate compliance with performance requirements.

Informed Consent of Property Owners

Existing property owners must be advised of the following as part of obtaining consent for placement: a) the proposed activity is solid waste placement, b) the CCW will in all likelihood be or contain toxic forming material, c) the location(s), depth(s), and tonnages that may be placed of on the property, d) the source of the CCW(s), e) the composition of the CCW(s) and leachates, and f) that future buyers of the property have the right to disclosure of the CCW placement activity.

If CCW placement occurs at any surface mine, whether pre-law or post-law, the surveyed location, depth, quantity and character of the CCW shall be recorded with the deed for the property. This applies to state, corporate, private or abandoned mined lands.

Nomenclature and Rhetoric

Much time and fury is devoted to the nomenclature associated with the materials that remain after the combustion of coal with or without other fuels, far more time than is necessary or constructive.

> It's coal combustion (CC) waste. It's CC product. It's CC byproduct. It's CC residual. It's not "waste," because it can be reused. Until it is used in a product, it is a waste. It's pejorative to use "waste" and that makes it harder to convince people to reuse it. Euphemistic phraseology lowers the perception of the need for protection. Dumping of these materials should be managed like the disposal of any other waste. It's not being disposed, it's being beneficially used. *Ad nauseam*.

There is a method to the verbal madness, of course. If one defines the vocabulary, one controls the debate. It's why trade organization employees monitor and control even the text of Wikipedia entries on combustion wastes.

Although the policy debate is influenced by the vocabulary, the reality and the science are not. Filling an open, unlined pit in Indiana with fly ash, while calling it landfill disposal, ruined an aquifer and created a SuperFund site. Had it been called beneficial use, it would have still ruined the aquifer and created the SuperFund site. There would be no lower environmental and health risks were it called coal combustion product instead of coal combustion waste. The ill-chosen placement methodology of inappropriate CCW created the problem, not the nomenclature, and changing the labeling does not change the chemistry or the hydrogeology a whit.

However, increased sophistication in language management has changed CCW regulation in Indiana. Because the Pines ash would pass the TCLP/SPLP characterization criteria, placement of Pines-like ash in a Pines-like pit today can be called beneficial use, structural fill. For beneficial-use placement as structural fill, Indiana doesn't require ground water monitoring, the kind of monitoring that ultimately allowed the citizens Pines to document their contamination. The program improvement for industry is that industry can claim a higher rate of

"reuse" of this CCW for exactly the same placement practices. The program improvement for Indiana is that it needn't see a problem. And neither industry nor Indiana has to deal with a SuperFund site. If the next Pines is to be avoided, its citizens need help from Washington.

Don't mistake these comments as a criticism focused on Indiana or of pit-filling. Recently, in Virginia, several millions of tons of a CCW source that created contamination problems at a controlled, monitored, on-site landfill was approved for the "beneficial use" of sculpting rolling terrain for a golf course. The placement is without containment, without leachate collection, and without the monitoring of a disposal facility than could detect a problem. The site characterization consisted of determining the elevation of the water table pre-project, not after completion of the placement. The waste characterization was by TCLP and/or SPLP. It is in compliance with Virginia regulations. Media and citizen concern over the disconnect of problems at a permitted waste disposal facility and open placement in a neighborhood led to this spring to testing of residential wells adjacent to the placement area. The initial, limited testing by the city, not the Commonwealth, identified problematic concentrations in some wells of boron, a common contaminant in fly ash. Further evaluations are continuing by citizens and by the city.

Time and further evaluation will tell if the golf course is an early-stage Pines. But, the evolution so far is eerily similar to that at Pines. Local investigation finds a water problem with citizens' drinking water. Regulators assure that the placement in the neighborhood of a waste with a history of problems was done in compliance with their regulations. "But, what about the water?" "The waste placement complies." Something isn't right, and needs to be fixed.

In an absence of meaningful direction and oversight at the federal level, state regulation has entered a race to the bottom with respect to regulatory control over placement of CCW. The definitions of "beneficial use" are expanding and the criteria of a waste to qualify are relaxing. There is a concomitant relaxation of management controls, waste and site characterization, and monitoring. The cycle creates the statistical illusion of increased "reuse" while setting up long-term environmental and health problems in state after state; in mines, gravel pits, quarries, or simply fills. Increasing, the public is blind to the development of problems. And, as one state relaxes the controls yet further, others competitively follow.

As the acceptance of the beneficial use approach deepens at the state level, documentation of the problems becomes increasingly difficult because there are no monitoring data. One actually hears the argument in favor of beneficial use that there are no problems seen at beneficial-use sites, unlike waste disposal sites. My grandson, by age three, knew that covering his eyes didn't make spilled juice go away. It is sophistry to argue that no evidence of impacts, as the result of not looking for impacts, is affirmative evidence of no impacts. Yet that is just what some proponents of environmental placement of CCWs suggest.

There is another problem developing out of the CCW management approach that, while unrelated directly to CCW, will be impacted by the actions of this committee. Until credibility is brought to the regulation of coal combustion materials, there will be increasing collateral damage as well. State regulators are being approached by industry to implement the beneficial-use approach to other waste stream, particularly with respect to the misuse of the result of TCLP and SPLP. Functionally, the argument becomes, "If I can control the chemistry of a handful my waste for the eighteen hours of your lab test, I should be allowed to place my waste in the environment, without containment and without monitoring, just like you allow for CCW, for a beneficial use." The argument is even being extended by one Illinois company for delisting of at least one listed RCRA hazardous waste.

Conclusion

A rose by any other name still has its thorns. Labeling an environmental placement of CCW a beneficial use does not reduce damage that may be done or the risk to health and the environment. If a CCW has a legitimate beneficial impact, one that can demonstrated and quantified, do so, and analyze the entire costs and risks of the placement, and compare that with quantified benefits. Maybe for a particular placement, the benefit is projected to exceed the impacts and increased risk to health and the environment. Even when so, stewardship of the placement is critical to verify nothing was done that wasn't projected. But that approach is not the approach today, and the shift will have to come with federal involvement.

As a society, we used federal action to reduce the health and environmental risks of the physical and chemical rain from the stacks decades ago. For most of us, the air improved, and with it, the environment and our health. But the toxins don't go away; we just capture them. Just as a federal framework was needed then to guide states in addressing risks to health and the environment by dispersing these materials, it is needed again to address the risks from the same material, now accumulated instead of dispersed.

Again, thank you.