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## Coal Ash Disposal Challenge (Part 2)

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(Editor's Note: This post is the second of a two-part series on coal ash disposal. The first part focused on federal coal ash regulations and this post examines coal ash in Texas.)

Texas is the largest consumer of coal in the U.S. and the second largest producer of coal ash, so the state is very interested in how coal ash is regulated, whether at the state level or nationally. Texas power plants produce over 13 million tons of coal ash each year—if this material were loaded into dump trucks, the line of trucks would stretch from Austin to Boston...and back! And, according to the EPA surface impoundment database, Texas coal ash ponds alone have a combined storage capacity of approximately 401 million cubic feet—enough to fill just over four Dallas Cowboys stadiums.

### Texas Regulation of Coal Ash Disposal

Both options in EPA's proposed rule are intended to reduce the potential danger to human health and the environment from surface runoff or leachate associated with surface impoundments and landfills. Additionally, both options seek to reduce the chance for catastrophic releases from surface impoundments like those at Kingston and North Carolina.

The EPA has highlighted certain areas of regulatory control that have the greatest potential to affect whether releases to groundwater are controlled. These include regulatory designation, permitting requirements, liner requirements, groundwater monitoring requirements, and leachate-collection system requirements.

#### Designation as Nonhazardous Industrial Solid Waste

Texas has adopted by reference the EPA's coal ash exemption under subtitle C of RCRA, which covers hazardous waste—that is, in Texas, coal ash designated for disposal is defined and regulated as a nonhazardous industrial solid waste. The Texas Commission on Environmental Quality (TCEQ) is the delegated authority responsible for implementing RCRA in the state, and its regulations require owners/operators of solid waste management facilities to manage waste in a manner that is protective of human health and the environment. Owners/operators must provide the TCEQ with details regarding the construction and management of disposal facilities, and must have the sites deed-recorded in the counties where they're located.

#### Permitting or Registration

Coal ash disposal is regulated under Texas's solid waste regulatory program, which is applicable to landfills and surface impoundments with no discharge to state water sources. While the solid waste regulatory program generally requires permits, there is an exemption for disposal facilities that only receive coal ash generated on-site. In Texas, a disposal facility is "on-site" if it is within 50 miles of the generating facility and has the same owner/operator.

Disposal facilities that don't require a permit are nevertheless required to register with the Texas Commission on Environmental Quality (TCEQ). The TCEQ registration provides mechanisms for the identification and tracking of coal ash, thereby providing some regulatory oversight. TCEQ uses registration information to determine whether the storage, processing, and disposal of the coal ash are compliant with state regulations that prohibit disposal facilities from polluting water, creating a nuisance, or endangering the public health and welfare. This registration system also allows TCEQ to respond to potential releases.

Surface impoundments with discharge to state water sources are regulated as water pollution control facilities rather than solid waste management units, and are required to obtain a permit under Texas Pollutant Discharge Elimination System (TPDES). Under TPDES permits, seepage from impoundments is considered an unpermitted discharge.

#### Requirements for Liners, Monitoring, and Leachate-Collection

Texas regulations have no liner, monitoring, or leachate-collection requirements for nonhazardous waste disposal facilities, but the TCEQ has published technical guidelines for the owners/operators of such facilities. The guidelines contain recommendations for landfill site selection, the design standards for liner systems, groundwater monitoring, and leachate control systems.

In its comments to the EPA's proposed rule, the TCEQ studied 19 coal-fired utilities in Texas and found that all of the existing surface impoundments were either lined or constructed on in-situ clay (liner materials differ: clay, hypalon, concrete, high-density polyethylene, or other synthetic liners). On the other hand, the EPA's 2010 Regulatory Impact Analysis found that at least seven landfills were unlined (constructed on in-situ clay only). The TCEQ found that 15 of the utilities it looked at were conducting groundwater monitoring.

#### Preventing Catastrophic Releases

With input from experts in the field of dam safety, the EPA has also identified structural integrity factors that could help prevent catastrophic releases from surface impoundments. These factors include: dam design meeting standards and specifications for dams; construction supervision by an engineer and construction certifications; regular reporting during the construction phase; frequent visual inspections by the operator; periodic inspections by regulators; periodic geotechnical/engineering inspections; inundation mapping; and, emergency action plans.

There are no Texas regulations mandating standards to ensure the structural integrity of landfills or surface impoundments. In fact, while the Texas Administrative Code requires new and existing dams be evaluated under standard design guidelines, coal ash surface impoundments are considered "off-channel impoundments," and are exempt under the Texas Water Code.

Fortunately, Texas coal ash impoundments are not especially large or high (similar to the one that failed in Kingston), but there are 31 of them. Of these, a 2011 determination by the EPA found three surface impoundments in a "poor" condition—there were indications of erosion and seepage, no engineering studies showing the structural stability of the impoundments ponds, no records of inspections, and no emergency action plans.

#### Beneficial Use

There are no national regulations for the beneficial use of coal ash; each state has its own regulatory program. In Texas, coal ash that is destined for "beneficial use" is not considered waste, and is therefore not regulated by the state at all. As long as coal ash generators in Texas meet the standards set by the "eight criteria rule," they may recycle coal ash without further state regulation. This is hailed as an effective approach by the TCEQ to reduce the total amount of waste destined for disposal, preserving landfill space. Recycling can also reduce the exploitation of raw materials and reduce impacts such as higher air emissions from mining operations.

As much as 70% of the coal ash generated in Texas is recycled each year, which may be the highest in the nation. Texas has been recognized for its progressive approach to beneficial use programs and policies. In Texas, beneficial uses include concrete, cement, road base, masonry, roofing mats, wallboard, and minefilling. The Texas Department of Transportation (TxDOT) estimates that it consumes 150,000 tons of coal ash material each year in roadway projects.

#### Evaluating Texas Regulations

Some environmentalists say that Texas's regulations governing coal ash disposal are weak, if not among the worst in the nation. An EPA study found that between 1988 and 2005, Texas regulations relaxed liner and groundwater monitoring requirements (some or all requirements were removed). During that same period, there were no changes to permitting or leachate-collection requirements. The only regulatory improvement was to the designation of coal ash destined for disposal (specific requirements were added where none existed or existing requirements were tailored). Additionally, many of the surface impoundments in Texas are getting older, which suggests that tighter regulations may be required—24 ponds are over 20 years old, and 9 of those are over 30 years old.

#### Risks Associated with Coal Ash Disposal in Texas

At least some of the coal-fired power plants in Texas do not use liners or dust controls at their disposal sites, which could eventually result in the harmful release of coal ash toxins to the water or air. For example, residential drinking water wells could be exposed where they are downgradient from a landfill or surface impoundment. In Texas, coal-fired plants are often located adjacent to large bodies of water for cooling purposes. These waters are used for recreational fishing, creating the potential for human uptake of toxins from consumed fish. What's more, anyone living near a coal-fired plant could be exposed to particulate matter blowing off of landfills, through inhalation. This airborne particulate matter can also contaminate the soil on which it settles, resulting in human uptake through consumption of produce. Beef and milk from cattle can be contaminated from their inhalation of contaminated air and their consumption of grain, forage, and silage grown in contaminated soil.

#### Damage Cases in Texas

There have been several instances of serious water contamination in Texas since the late 1970s. Discharges from coal ash impoundments resulted in elevated levels of selenium and other metals in the water and fish at three reservoirs—Martin, Brandy Branch, and Welsh. The levels of selenium were high enough to prompt the Texas Department of Health (TDH) to issue fish consumption advisories for all three reservoirs in 1992. The advisories were in effect for 12 years (lifted in 2004).

Most recently, coal ash has resulted in the contamination of groundwater at the Lower Colorado River Authority Fayette Power Project in La Grange. The power plant is located on Lake Fayette, which is a popular recreational lake for fishing, boating, camping, hiking, biking, and swimming. The power plant was issued a permit authorizing discharge into a tributary under a TPDES permit. However, since 2005 TCEQ has been aware of seepage from the impoundment, which is considered an unpermitted discharge.

Levels of selenium and other metals exceed state standards and have been shown to be moving off-site. In fact, groundwater sampling in 2009 found off-site levels of selenium at more than 4 times the Texas Protective Contamination Levels (PCLs) and federal Maximum Contaminant Levels (MCLs), and cobalt levels at more than three times the PCL. The molybdenum levels exceed the federal Lifetime Health Advisory Level by nearly four times and exceed the PCL in water downgradient of the disposal areas. This violation has prompted the TCEQ to notify two neighborhood landowners that their wells may be contaminated with molybdenum from this site. It's not clear, however, whether TCEQ contacted other property owners in the area, such as farmers or nearby wineries.

#### Risks Associated with Air Contamination

Although there are no proven damage cases of air contamination in Texas associated with the disposal of coal ash, proper fugitive dust controls could ameliorate serious health effects from the inhaling coal ash toxins. For example, the inhalation of hexavalent chromium—a primary toxin present in coal ash particulate matter—has been shown to cause lung cancer.

#### Potential Effects of EPA Rulemaking on Texas Coal Ash Disposal

When and if the EPA proposed RCRA rule is finalized, Texas will face some changes with regards to how it disposes of coal ash.

##### Potential Effects of a RCRA Subtitle C Rule

If the subtitle C approach is adopted, Texas will see changes in how it designates coal ash—it will no longer be considered nonhazardous waste, but special waste. As a result, permitting requirements and dam safety requirements will be imposed, as well as requirements for liners, leachate-collection systems, and groundwater monitoring. Although Texas would still be able to manage and distribute its own permitting program, it would need to meet or exceed requirements set by the EPA under subtitle C. And violations of the new requirements would be enforceable at the national level if the state doesn't choose to pursue enforcement on its own.

The TCEQ has advised the EPA that the subtitle C approach would be duplicative of existing state regulations in many cases—for example, according to the TCEQ almost all of the coal-fired electric utilities in Texas already have TPDES permits and conduct groundwater monitoring, and all land-based disposal units are lined (clay or synthetic). Moreover, the TCEQ has suggested that allowing states to regulate themselves has actually resulted in significant improvements in coal ash waste management practices—the prospect for continued, innovative improvement could be lost if regulated at the national level.

TCEQ has expressed concern about having to revise its regulations, and re-permit disposal units under subtitle C, and has suggested that complying with new requirements under subtitle C would be complex, time consuming, costly, and cause disruption to the regulatory programs already operating. Furthermore, TCEQ has proposed that the EPA should focus on the regulation of unlined or inadequately lined disposal sites.

While the EPA acknowledges that the cost of complying with these new regulations would be tremendous, proponents of federal regulation have asserted that the costs of compliance are not much above costs associated with surface impoundment failures or groundwater contamination from leaching. These costs include clean up and litigation—costs already passed on to the consumer, and which fall disproportionately on low-income communities located near coal ash disposal sites.

##### Beneficial Use Under Subtitle C

Beyond the straightforward effects of having to rewrite state regulations and comply with new requirements, Texas could be adversely effected simply by the designation of coal ash as a special waste under subtitle C. Generators of coal ash and the industries that rely on coal ash to manufacture downstream products have criticized the EPA's belief that the new designation will have no impact on how consumers will view these products. The critique centers around the industry belief that because subtitle C regulates "hazardous waste," that is how consumers will see recycled materials made from coal ash and that they will discontinue using those materials—essentially, coal ash will be "stigmatized" as hazardous. In Texas, such a stigmatization could result in a loss of revenue from the sale of recyclable coal ash, the filling of near-to-capacity disposal sites, the unnecessary consumption of raw materials, and the loss of a ready supply of coal ash for TxDOT projects.

##### Potential Effects of a RCRA Subtitle D Rule

Although either federal approach to regulating coal ash will most likely result in some disruption to the implementation of coal ash regulatory programs, the TCEQ prefers the subtitle D approach, which it says will happen faster at a lower administrative cost. This rule would rely on states to comply with EPA recommendations instead of granting EPA the authority to mandate certain requirements. And, according to the TCEQ, its current technical guides for siting, design, construction, and the operations and management of disposal sites is very similar to the standards proposed by the EPA under subtitle D. Therefore, there would be little if any change to Texas permitting, liner, leachate, and monitoring requirements.

The state would also continue to run its own enforcement programs, although the new regulation would permit citizen suits and EPA enforcement under cases of imminent danger to human health. However, under subtitle D, Texas regulations would need to include minimum dam safety requirements, which they currently do not. Significantly, the designation of coal ash as a nonhazardous waste would not change under the subtitle D approach, allowing Texas to continue its beneficial use programs as they are now. Because of the lower cost and impact of the subtitle D approach, and because coal ash beneficial use would not be affected, the TCEQ has promoted this approach in its comments to the EPA.

- coal, coal ash, epa, RCRA, TCEQ, Texas

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