Stigma and Regulatory Uncertainty: Proposed Coal Ash Disposal Regulation Effects on U.S. Beneficial Use Markets and Practices

John N. Ward[1]

[1]Citizens for Recycling First, 600 17th Street, Suite 2800 South, Denver, CO 80202

KEYWORDS: regulation, disposal, beneficial use, marketing, barriers

ABSTRACT

One of America's largest recycling industries is suffering because of federal regulations that are neither final nor directly applicable to it. In June 2010, the U.S. Environmental Protection Agency proposed options for regulating coal ash disposal. One of those options would designate coal ash as "hazardous waste" when disposed, but exempt recycling activities from regulation. The surrounding public debate, which generated more than 450,000 formal comments to the EPA, has highlighted liability concerns of coal ash users and stigmatized the material with a steady stream of "toxic" publicity. This paper provides background on coal ash and coal ash recycling, reviews the regulatory and legislative history related to the material, and provides detailed information on the material's actual toxicity and environmental risk. Discussion is also provided concerning the impacts of stigma, regulatory uncertainty, and liability fears on beneficial use markets and industry practices.

Introduction

As America enters the fifth year of vigorous debate over how to regulate coal ash disposal, efforts to promote coal ash recycling are suffering from prolonged regulatory uncertainty and a drumbeat of "toxic" publicity. Users of coal ash are growing increasingly concerned about potential legal liabilities associated with using a material that could be designated as a "hazardous waste" on the property of those who initially produced it. Increased scrutiny by the plaintiff's bar and headlines such as "Fly Ash: This Year's Asbestos?"[1] in insurance publications are adding fuel to the fire.

A now-stalled U.S. Environmental Protection Agency (EPA) rulemaking on coal ash disposal stands at the center of the issue. Legislation to address the issue has begun moving through Congress. Whatever the outcome of both of those proceedings, additional litigation appears likely. Meanwhile, supporters of coal ash recycling are left to deal with a grand unintended consequence: A "hazardous waste" stigma that threatens to undo decades on progress in beneficially utilizing coal ash rather than throwing it away.

[1] National Underwriter P&C, "Fly Ash: This Year's Asbestos?", by William F. Stewart, April 25, 2011

About Coal Ash

Coal is the energy resource responsible for the largest share of America's electricity generation. Although coal's share of the electricity generation mix is expected to decline from 42 percent in 2011 to 35 percent in 2040, the United States will continue to consume large amounts of coal. Because Americans continue to use more electricity every year, renewable and other energy sources will do well just to keep up with increases in demand. The U.S. Department of Energy predicts that in 2040, the United States will consume almost as much coal for electricity generation (984 million tons) as it did in 2011 (999 million tons.) (EIA, 2013)

Consuming that much coal produces large volumes of coal ash — solid materials left over from the combustion process. According to the American Coal Ash Association, about 130 million tons of this material was produced in 2011. (ACAA, 2011)

Coal ash is the unburned and unburnable residuals from the combustion of coal. Coal is naturally present in our environment and was made over millions of years from decayed plant matter in primordial swamps. Minerals were present in the soil and were taken up into the plants as they grew. When the organic matter in the coal is burned, the inorganic minerals are left unburned and make up what we know as coal ash. (ACC, 2009)

Several types of residuals are included in the broad category of "coal ash." They include:

- Fly ash – ash that exits a combustion chamber in the flue gas and is captured by air pollution control equipment, such as electrostatic precipitators, baghouses and wet scrubbers.
- Bottom ash – agglomerated ash particles formed in pulverized coal furnaces that are too large to be carried in the flue gases and impinge on the furnace walls or fall through open grates to an ash hopper at the bottom of the furnace.
- Boiler slag – a molten ash collected at the base of slag tap and cyclone furnaces that is quenched with water and shatters into black, angular particles having a smooth, glassy appearance.
- FGD material – a product of a flue gas desulphurization process typically using a high-calcium sorbent, such as lime or limestone. Sodium-based sorbent and high-calcium coal fly ashes are also used in some FGD systems. The physical nature of these materials varies from a wet thixotropic sludge to a dry powdered material, depending on the process.

About Coal Ash Recycling

In 2011, 43.5 percent of coal ash was beneficially used – or "recycled" – rather than disposed. (ACAA, 2011)

There are many good reasons to view coal ash as a resource, rather than a waste. Recycling it conserves natural resources and saves energy. In some cases, products made with coal ash perform better than products made without it. For instance, coal ash makes concrete stronger and more durable. It also reduces the need to manufacture cement, resulting in significant reductions in greenhouse gas emissions. (ACAA, 2011a)

Decades of experience and numerous successful utilization projects have fostered commercial and governmental acceptance and knowledge of the use of coal ash as construction materials. The principal use of fly ash has been in concrete. Substantial amounts have also been used in structural fills, soil stabilization, asphalt mixes and cement manufacturing. Bottom ash has been used as pavement base, pipe bedding, skid control and in block manufacturing. Boiler slag applications include blasting grits, roofing granules, skid control and as a raw material in cement manufacturing. FGD materials can produce a synthetic gypsum that is used as a direct replacement for mined gypsum in the production of wallboard and/or as a post-kiln additive in cement production. (ACC, 2009) FGD-derived gypsum is also used in agricultural settings as a soil amendment to improve soil performance and reduce runoff of fertilizers. (ACAA, 2012)

In the decade from 1999 to 2009, the United States successfully recycled 519 million tons of coal ash – some 38 percent of the 1.35 billion tons of coal ash produced. Greenhouse gas emissions were decreased by more than 138 million tons during that period through the use of coal fly ash in concrete products. (ACAA, 2011a)

The businesses responsible for achieving this remarkable environmental success are overwhelmingly small businesses. The coal ash recycling industry is separate and distinct from electric utilities that produce coal ash and is comprised of several segments:

- Most utilities engage the services of third party marketers that are responsible for developing customers, providing infrastructure and logistics for delivering ash to users, providing technical support, and managing all business functions related to the sale and use of coal ash. Many of these coal ash marketers are small businesses.

- Additionally, the coal ash recycling industry includes companies that develop and deploy technologies for improving the quality of coal ash in order to ensure it meets industry standards and user specifications. Most of these innovative coal ash technology developers are small businesses.

- Finally, thousands of companies rely on coal ash as an ingredient in the products they manufacture. In some cases, such as the production of concrete, coal ash is a key ingredient used to improve concrete quality while reducing costs. (The National Ready Mixed Concrete Association notes that 85 percent of its 1,500 member companies are small businesses.) In other cases, such as the manufacturing of coal ash bricks or agricultural soil amendments, coal ash is the

primary ingredient. (All of these are small businesses that were created specifically to recycle coal ash.)

In all three categories – marketers, technology providers, and manufacturers – the majority of companies are small businesses with little or no resources to weather prolonged regulatory or legal challenges. (CRF, 2011)

Coal Ash Regulatory, Legislative and Judicial History

The 1980 Bevill Amendment to the Resource Conservation and Recovery Act (RCRA) instructed EPA to "conduct a detailed and comprehensive study and submit a report" to Congress on the "adverse effects on human health and the environment, if any, of the disposal and utilization" of coal ash. In two Reports to Congress (1988 and 1999) EPA recommended that coal ash should not be regulated as a hazardous waste. A 1993 EPA Regulatory Determination found regulation as a hazardous waste "unwarranted." A 2000 EPA Final Regulatory Determination concluded coal ash materials "do not warrant regulation [as hazardous waste] " and that "the regulatory infrastructure is generally in place at the state level to ensure adequate management of these wastes."

So where did the current coal ash "hazardous waste" link come from? Responding to the failure of a Tennessee coal ash disposal facility in December 2008, the EPA proposed options for regulating coal ash disposal in proposed rules issued in June 2010. One of those options called for regulation under Subtitle C of the Resource Conservation and Recovery Act (RCRA), which is the section that covers "hazardous waste." Two things about that proposal are worth noting. First, EPA did not claim that coal ash qualifies as a hazardous waste based on toxicity characteristics. Rather, the agency cited "damage cases" like the Tennessee incident as justification for regulation under Subtitle C. Second, the landfill engineering design criteria EPA proposed under both its "hazardous" (Subtitle C) and "non-hazardous" (Subtitle D) regulatory options were essentially the same. EPA acknowledged that disposing of coal ash in landfills that meet "non-hazardous waste" design criteria is protective of human health and the environment. Note that only regulation under Subtitle C would provide EPA with direct enforcement authority over coal ash disposal that excludes the states. (EPA, 2010)

EPA's proposed coal ash disposal rules attracted unprecedented attention during 2010 in eight public hearings and a public comment period that ended November 19, 2010. More than 450,000 public comments were received. Environmental Non Government Organizations (ENGOs) and a handful of companies that compete with recycled coal ash favored the Subtitle C "hazardous waste" regulatory approach. A large and diverse body of organizations opposed it – including every federal agency (other than EPA) that reviewed the proposal; state environmental regulators, departments of transportation, public service commissions, governors and mayors; utilities; ash recyclers; ash users and building materials standard setting organizations; labor unions; and more.

EPA has not announced a schedule for completing its rulemaking and has no obligation to do so. Inasmuch as the EPA initiated the coal ash rulemaking without any legislative

or judicial mandate or deadline, the Agency is not even compelled to complete the rulemaking that it started. In court filings in late 2012, a senior EPA official declared that the Agency intends to issue a second Notice of Data Availability further expanding the amount of information available in the rulemaking record. The official also resisted calls to set a deadline for completing the rulemaking because deadlines would "result in final agency actions that, in my view, are neither scientifically sound nor legally defensible. Such a schedule would force EPA to take procedural and analytical shortcuts that I believe could seriously jeopardize both the soundness of the action and its legal defensibility." (EPA, 2012)

As the regulatory process grinds to a crawl, coal ash recyclers are faced with mounting concerns over the regulatory uncertainty: Will coal ash disposal be regulated as "hazardous waste" or not? Although EPA's proposed rules would exempt beneficial use of coal ash from regulation at this time, there is widespread concern over potential liabilities in utilizing materials that are regulated as "hazardous waste" on the property of the generators of the materials.

Congress has responded to concerns over the regulatory uncertainty by developing legislation that would create a coal ash disposal regulatory structure led by the states. HR 2273 – the "Coal Residuals Reuse and Management Act" – was approved by the U.S. House of Representatives on October 14, 2011, and was later included in three other House-passed bills over the next year. The U.S. Senate nearly included the proposed coal ash regulations in the 2012 Transportation Bill. Subsequently on August 2, 2012, S 3512 – the "Coal Ash Recycling and Oversight Act of 2012" – was filed by 12 Democrat and 12 Republican Senators as a stand-alone bill. Although the bill was not acted upon before the Congressional session expired, it is expected to be reintroduced in both the House and Senate sometime during 2013.

S 3512 would create a state-administered program for regulating coal ash disposal similar to the program states use to regulate disposal of municipal solid waste (MSW). It includes requirements for groundwater monitoring, lining of landfills, corrective action when environmental damage occurs and structural criteria. A key part of the bill provides that if a state is unable or unwilling to implement the permit program, the federal EPA would have authority to do so.

In 2012, the judicial branch of the federal government was also engaged to address the regulatory uncertainty. A coalition of environmental groups on April 5, 2012, sued the U.S. Environmental Protection Agency in U.S. District Court for the District of Columbia seeking to establish a deadline for completing the coal ash rulemaking. The lawsuit was matched shortly thereafter by similar actions from individual coal ash marketers Headwaters Resources and Boral Material Technologies, who have subsequently pleaded for the court to direct EPA to declare whether it will regulate coal ash as "hazardous waste" or not. The lawsuits were consolidated as *"Appalachian Voices et. Al. vs. Lisa P. Jackson"* and initial pleadings were completed in December 2012. At last report, the judge in the case had delayed a scheduling conference on the matter until April 2013.

Coal Ash Toxicity and Waste Classification

Regardless of the regulatory, judicial or legislative outcomes, coal ash recyclers must now address the “toxic” and “hazardous waste” characterizations that have been attached to the resource by the well-publicized debate.

As noted earlier, coal ash contains trace levels of minerals that were present in soil when the coal was formed. These same minerals are present in soils today.

The Electric Power Research Institute (EPRI) has published a report that compares the levels of minerals in coal ash and in natural materials. (EPRI, 2010a) The study shows that concentrations of minerals in coal ash are comparable to or slightly higher than concentrations of the same minerals in soils in the United States.

In 2012, the American Coal Ash Association published a study utilizing new U.S. Geological Survey data on the constituents of coal ash collected from five power plants in Alaska, Indiana, New Mexico, Ohio, and Wyoming. (ACAA, 2012a) The data showing what metals are present in coal ash were evaluated using scientifically accepted methods for determining human health risks and were compared to residential soil screening levels established by the EPA. The study concluded that the concentrations of metals in the material, with few exceptions, are below environmental screening levels for residential soils and are similar in concentration to common dirt.

In the regulatory world, “hazardous waste” has a very specific meaning that has been taken out of context in the public debate over coal ash. According to EPA regulations, a material is considered “hazardous” for the purposes of disposal if constituents are “leached” from the material at concentrations higher than regulatory-defined levels. The test used to make this determination, called the Toxicity Characteristic Leaching Procedure (TCLP), is meant to mimic the harsh and acidic conditions found in municipal solid waste (MSW) landfills. If something is classified as hazardous using this procedure, it cannot be disposed of in a municipal solid waste landfill and it can be considered for regulation as a “hazardous” waste (40 CFR Part 261.20).

Rarely have samples of coal ash “failed” the TCLP test (EPRI, 2010a), indicating that coal ash does not qualify for regulation as a “hazardous waste” based on its toxicity. Indeed, the EPA reached this conclusion in two Reports to Congress (in 1988 and 1999) and two formal Regulatory Determinations (in 1993 and 2000).

Once again, the sensational word “toxic” has a specific scientific meaning. A substance is considered to be toxic only if it has a way to get out of a material from the environment and into a person or organism in sufficient quantities to cause damage.

For example, one of the elements of concern in coal ash is mercury. But the compact fluorescent light bulbs in our homes contain mercury, also, and in much higher

concentrations than in coal ash[2]. The presence of mercury in coal ash does not make it "toxic" any more than light bulbs are "toxic." To determine if a material poses a "toxic" threat, environmental scientists and regulators perform "risk assessments."

Risk assessment is a process that combines estimates of exposure with estimates of toxicity to identify if a health risk is posed by a specific exposure. Risk assessment can also be used to develop screening levels for constituents in soil in a residential setting (EPA, 2011). These are levels in soil that a child and adult could be exposed to daily without adverse effect. These levels take into consideration both potentially carcinogenic effects and noncarcinogenic effects (i.e., effects other than cancer). These are called screening levels because they are derived for a very generic and universal exposure setting and can be applied anywhere. If concentrations are below these levels, then it is accepted that there is no expectation of adverse effects. However, if concentrations are higher than these levels, it does not mean that there is a risk of adverse effects, only that the specific situation needs to be evaluated in more detail. Thus higher levels can also be without adverse effect, depending on the specific situation.

Other than for arsenic, all of the minerals have concentration ranges in fly ash below the residential soil screening level, or overlapping the screening level (only cobalt and thallium). Of the minerals present in fly ash, arsenic is the only one classified as a carcinogen for the ingestion route of exposure. The risks associated with daily direct ingestion exposure to fly ash over a residential lifetime overlap and are slightly above EPA's target risk range. This type of exposure scenario could only occur if someone lived on top of a fly ash landfill or if all of the soil in their yard was replaced specifically with fly ash. It is also worth noting that even the range of background concentrations of arsenic in soils are above EPA's residential soil screening levels for the one in one million and one in one hundred thousand risk levels. (ACAA, 2011b)

Because arsenic is naturally present in soils, it is also present in the foods that we eat. The U.S. Agency for Toxic Substances and Disease Registry (ATSDR) has estimated the amount of arsenic ingested from a standard diet in the U.S. population (ATSDR, 2007). Using the same assumptions about exposure used by EPA to calculate the residential soils screening levels, and assuming that a child does live on top of a fly ash or a bottom ash landfill, the amount of arsenic that would be ingested from the coal ash has been calculated[3]. The resulting ranges are within or below the range of arsenic exposure from our diet. (ACAA, 2011b) In other words, a person would have to eat a lot of coal ash in order for it to become "toxic."

---

[2] Compact fluorescent light bulbs (CFRs) currently contain approximately 5 milligrams of mercury (NEWMOA, 2008; see the EPA-funded report at http://www.newmoa.org/prevention/mercury/imerc/factsheets/mercuryinproducts.pdf). The maximum amount of mercury detected in the various types of coal ash is 1.5 milligram of mercury, in a kilogram of ash (EPRI, 2010a), though the normal range of mercury in coal ash is much lower than this.

[3] Calculated assuming a child incidentally ingests 200 milligrams of soil or coal ash per day [e.g., for fly ash at the low end of the concentration range: (200 mg coal ash per day) x (22 milligrams arsenic per kilogram of coal ash) ÷ (1,000,000 mg coal ash per kilogram of coal ash) = 0.0044 milligrams of arsenic per day].

The 2012 American Coal Ash Association study utilizing U.S. Geological Survey data performed a health risk based analysis assuming exposure to children living on top of a coal ash pile 24 hours a day. Even under these unrealistic conditions, the metals contained in coal ash do not rise to a level that warrants more than a screening level evaluation using U.S. EPA established guidelines.

As part of its rule-making proposal, EPA published a draft risk assessment for the disposal of coal ash (EPA, 2010a). This risk assessment evaluated the risk of using groundwater as drinking water down gradient of a coal ash disposal unit. EPA made many conservative assumptions when conducting the risk assessment, such that the risk results are much more likely to over-estimate than under-estimate risk to human health and the environment. (This element of the EPA risk assessment has not been noted in the popular press.) Despite this bias, it is instructive to look at the results in more detail.

The highest risk that EPA calculated was for coal ash surface impoundments that contain both coal ash and coal refuse (which is coal that is not suitable to be burned). The predicted drinking water risk is two in one hundred, which is higher than the EPA's target risk range. This number has been used in press releases and in public comments on the rulemaking process to support the need for a "hazardous waste" designation for coal ash. But what does this risk result really mean?

EPA's objective for the risk assessment was to "evaluate, at a national level, risk to individuals who live near WMUs [waste management units] used for CCW [coal ash] disposal." However, the Agency did not achieve this by the way it structured the risk assessment. EPA evaluated 508 coal-fueled electric utility facilities in its risk assessment, and ran 10,000 calculations for each disposal scenario that it evaluated. For each and every one of those scenarios, EPA assumed that someone lived downgradient of the coal ash disposal unit and used shallow groundwater for drinking water. EPA did not acknowledge conditions where exposure would not occur, such as where no one lives downgradient of a coal ash disposal unit, or where municipal water or deep wells may be used for drinking water. EPRI did a detailed evaluation of aerial photos of the 508 facilities that EPA included in their risk assessment (EPRI, 2010c). EPRI found that only 15 percent of the facilities evaluated by EPA had buildings present downgradient from an ash disposal unit that could be residential dwellings. Fewer than 3,000 potential dwellings were identified. Based on US Census data results showing an average of 2.59 persons per household in the U.S. (USCB, 2010), this could be a population of less than 7,770 individuals compared to the U.S. population of over 307 million. If we assume that all of these potential 7,770 individuals live downgradient from an unlined surface impoundment, the scenario with the highest predicted risk of 2 in 100, and assume that they all use shallow groundwater as drinking water, then it can be calculated that 155 individuals could potentially develop cancer. Thus, the "risk to individuals who live near WMUs [waste management units] used for CCW [coal ash] disposal" "at a national level" is 155 in a population of 307 million, not a risk of 2 in 100 as many ENGO communications imply.

To provide further context to EPA's predicted risks and these results, the measured background cancer incidence in the U.S. is 1 in 2 for men and 1 in 3 for women.

Coal Ash Compared to Other Wastes and Waste Management Strategies

EPRI has also published a report that provides a risk-based comparison between leachate generated from MSW landfills and coal ash management units (EPRI, 2010b). From the results presented in that report it can be concluded that the relative health risks associated with leachates from MSW landfills and coal ash management units are similar. One striking difference is that there is only one carcinogen that is a risk driver for the coal ash leachate, while MSW leachate risk drivers comprise over 30 potential carcinogens, including volatile organic compounds, semivolatile organic compounds, PCBs, dioxins and furans and pesticides. Thus, the engineering controls used to successfully manage "non-hazardous" MSW landfills and their contents and the generated leachate under Subtitle D of RCRA can be applied to coal ash management units and be protective of the environment.

While toxicity risks for coal ash and MSW are similar, the EPRI report points out that managing an MSW disposal facility is much more complicated than managing coal ash disposal. Coal ash is typically disposed in "monofills" containing a single, homogenous type of inorganic material. MSW landfills have a wide variety of contents including residential food scraps, yard trimmings, wood, metals, plastics, glass, and other materials. These materials are attractive to "disease vectors," such as vermin and other animals that must be managed at an MSW landfill to prevent the spread of diseases. Furthermore, because of the organic nature of much of the MSW landfill contents, methane gas is produced by the natural breakdown of these contents. Methane is flammable and explosive, as well as a potent greenhouse gas. Controlling for disease vectors and flammable gases are not issues associate with coal ash disposal facilities.

EPA's proposed Subtitle D "non-hazardous" regulations for coal ash disposal would be fully protective of human health and the environment. Also, legislation currently under consideration in Congress would create a coal ash disposal regulatory structure modeled after successful MSW disposal programs.

More than 240 million tons of MSW are generated in the United States each year, compared to approximately 130 million tons of coal ash. States operate effective regulatory programs for the disposal of MSW at more than 1,900 locations and are more than capable of doing the same for coal ash – a material with similar toxicity risks and fewer management problems.

Effects of Stigma and Regulatory Uncertainty on Recycling Markets

Supporters of the "hazardous waste" regulatory approach say that there is no evidence of a stigma associated with the hazardous designation. In fact, just the existence of

EPA's proposal has created a created a stigma that is already affecting the beneficial use of coal ash in at least three ways: (ACAA, 2011b)

Consumers of coal combustion products are beginning to remove the materials from their specifications because of uncertainty regarding the safety of the material or because of concern over potential legal liability from using it. For instance, the Los Angeles Unified School District has prohibited the use of coal fly ash in its concrete "until the EPA confirms fly ash to be a non-hazardous toxic waste." Another example is HR 2273 sponsor Rep. David McKinley himself – who as a civil engineer prior to his election to Congress removed coal fly ash from his concrete specifications because of liability concerns. It is important to remember that it doesn't matter whether health or legal liability concerns are scientifically or legally justified. What matters is that people do not want to take the risks created by the potential "hazardous" designation and they can choose not to use the coal combustion products to avoid those risks. It takes time and money to defend even unjustified lawsuits.

Manufacturers of products that compete with recycled coal ash have been fanning the stigma flames by citing the potential EPA "hazardous waste" designation. This has already occurred in markets for blasting grit, brick manufacturing, lightweight aggregate production, and concrete block manufacturing. One particularly egregious magazine advertisement featured a skull and crossbones for an illustration.

Commercial liability insurance policies have begun to appear that contain exclusions for companies using products that contain fly ash. Examples of this disturbing development – as well as more examples of the other forms of stigma mentioned above – are being collected and made available by Citizens for Recycling First at this website: http://www.recyclingfirst.org/pdfs.php?cat=9

Supporters of the "hazardous waste" designation say that recycling rates will actually increase under a "hazardous waste" designation, citing the experience of a handful of other industrial byproducts. The materials cited by EPA include electric arc furnace dust, electroplating wastewater sludge, chat from lead and zinc mining, used oil, spent etchants and spent solvents. The problem is that none of those materials are anything like coal ash. Most of them actually qualify as a hazardous waste based on their toxicity. (Coal ash does not.) Almost all of them are reprocessed prior to recycling. (Coal ash is not.) Most of them get recycled in industrial processes, often by the same companies that produced the materials in the first place. (Coal ash is distributed for recycling by thousands of other companies in tens of thousands of public and residential locations all over the country.) Many of them are produced and recycled very small quantities. (Coal ash recycling is measured in the millions of tons.)

Supporters of the "hazardous waste" designation say concerns raised by international standard setting organizations such as the American Concrete Institute and ASTM have been somehow unfairly influenced by industry. In fact, these organizations are consensus based institutions whose memberships are comprised of a broad array of representatives from business, government and academe. These institutions place

protection of human health as their top priority. They have rightly raised the concern that it may not be appropriate to allow a material classified by EPA as “hazardous” in codes and standards designed to protect human health. In contrast, some of the same environment activists that criticize the open, consensus-based processes of ASTM and ACI are simultaneously mounting an attack on coal ash in the U.S. Green Building Council’s LEED program – an organization that welcomes them but does not allow consensus participation by product manufacturers.

The EPA’s extensive public comment process during 2010 showed that those who are actually involved in recycling coal ash – from producers to marketers to specifiers to users – are unanimous in the opinion that a “hazardous” designation for coal ash would be disastrous for beneficial use. Proponents of the “hazardous waste” designation are essentially telling these people that they don’t understand their own industry – a recycling industry they have been painstakingly building for the past four decades.

As for the position that higher disposal costs will automatically lead to greater recycling rates, please consider history: In 2000, the recycling rate for coal ash was 30 percent. In 2008, it had increased to 44 percent – a nearly 50 percent increase in less than a decade. Did the cost of disposal increase during that time? No. So what was responsible for this dramatic increase in recycling rates?

Answer: In 2000, the Environmental Protection Agency issued its Final Regulatory Determination that concluded coal ash does **not** warrant regulation as a hazardous waste. That sent a clear signal to producers, marketers and users of coal ash who began to invest more in the infrastructure necessary to support recycling. In 2002, the Environmental Protection Agency accelerated this effort by creating the Coal Combustion Products Partnership, or C^2P^2 program, to actively promote recycling as a preferred alternative to disposal.

Sadly, EPA has now reversed this trend by creating a new era of regulatory uncertainty and by stepping back from its visible support for coal ash recycling. As a result, investments in the infrastructure necessary to support recycling have stalled and recycling rates have plateaued. (ACAA, 2011b)

Coal ash beneficial use rates in 2011 – the most recent year for which statistics are available – remained below 2008 levels for the third consecutive year. (ACAA, 2011) In 2011, 43.50 percent of the 130.1 million tons of coal ash produced was beneficially used. That recycling rate is a slight uptick from 42.50 percent in 2010, but still below the 44.53 percent utilization rate charted in 2008.

Ash utilization also remained down in absolute terms. At the 2008 peak, 60.6 million tons of coal ash was recycled. In 2011, utilization was 4 million tons lower at 56.6 million tons. If the past three years had simply remained equal with 2008’s utilization, America would have seen 14.2 million tons less coal ash disposed in landfills and impoundments.

Conclusion

When science is considered over sound bites, coal ash is neither “hazardous” nor “toxic.” America’s environment would benefit if less time was spent on inflammatory language in press releases and more time enacting meaningful and appropriate disposal regulations.

About the Author

John N. Ward is President of John Ward Inc., a marketing and public affairs consultancy focusing on energy issues. John is chairman of the Government Relations Committee of the American Coal Ash Association and participates in numerous industry groups related to the manufacturing and use of construction materials. He is also chairman of Citizens for Recycling First, an organization opposing any “hazardous waste” designation for coal ash. He was formerly Vice President, Marketing and Government Affairs, for Headwaters Incorporated, a leading provider of pre-combustion and post-combustion clean coal technologies and services. John is a former board member and past president of the American Coal Council. He served on the National Coal Council as appointed by the U.S. Secretary of Energy. He can be reached at wardo@wardo.com.

References

ACAA, 2011. American Coal Ash Association Annual Coal Combustion Product Production and Use Survey. Available at http://acaa.affiniscape.com/displaycommon.cfm?an=1&subarticlenbr=3

ACAA. 2011a. American Coal Ash Association, Executive Director Thomas H.Adams, Testimony before U.S. House Energy & Commerce Subcommittee on Energy and Environment, April 13, 2011.

ACAA. 2011b. American Coal Ash Association, *Ash at Work Magazine*, September 2011, “Coal Ash in Context: Separating Science from Sound Bites As Regulatory and News Media Debates Continue,” By Lisa JN Bradley, Ph.D, DABT, Vice President, AECOM Environment, and John N. Ward, Chairman, American Coal Ash Association Government Relations Committee. Available at http://acaa-usa.org/displaycommon.cfm?an=1&subarticlenbr=66

ACAA. 2012. American Coal Ash Association, *Ash at Work Magazine,* September 2012, “CCPs on the Farm: Why Gypsum is the Hot New (Old) Tool for Agriculture,” By Dan Zinkand et. Al. Available at http://www.acaa-usa.org/associations/8003/files/ASH01-2012.pdf

ACAA. 2012a. American Coal Ash Association, Coal Ash Material Safety – A Health Risk-Based Evaluation of USGS Coal Ash Data from Five US Power Plants, By Lisa JN Bradley, Ph.D, DABT, Vice President, AECOM Environment. Available at

http://www.acaa-usa.org/associations/8003/files/ACAA_CoalAshMaterialSafety_June2012.pdf

ACC. 2009. American Coal Council, "The Value of Coal Combustion Products: An Economic Assessment of CCP Utilization for the US Economy," Revised Second Edition, December 30, 2009, Prepared by John Ward Inc.

ATSDR. 2007. Toxicological Profile for Arsenic. Agency for Toxic Substances and Disease Registry. Available at http://www.atsdr.cdc.gov/toxprofiles/index.asp

CRF. 2011. Citizens for Recycling First, Chairman John N. Ward, Testimony before U.S. House Committee on Small Business, Subcommittee on Oversight, Investigations and Regulations, May 12, 2011.

EIA. 2013. Annual Energy Outlook 2013 Early Release, U.S. Energy Information Administration. Available at http://www.eia.gov/forecasts/aeo/er/index.cfm

EPA. 2010. U.S. Environmental Protection Agency, Coal Combustion Residuals Proposed Rule, June 21, 2010. Available at http://www.epa.gov/wastes/nonhaz/industrial/special/fossil/ccr-rule/index.htm

EPA. 2010a. Human and Ecological Risk Assessment of Coal Combustion Wastes. RIN 2050-AE81. April 2010. U.S. Environmental Protection Agency.

EPA. 2011. Regional Screening Level Table. http://www.epa.gov/region09/superfund/prg/index.html

EPA, 2012. Declaration of Suzanne Rudzinski, Director, EPA Office of Resource Conservation and Recovery, in re: *"Appalachian Voices et. Al. vs. Lisa P. Jackson,"* U.S. District Court for the District of Columbia, Civ. No. 1:12-cv-00523-RBW, October 11, 2012.

EPRI. 2010a. Comparison of Coal Combustion Products to Other Common Materials – Chemical Characteristics. Technical Report 1020556. Electric Power Research Institute. Available at www.epri.com.

EPRI. 2010b. Comparison of Risks for Leachate from Coal Combustion Product Landfills and Impoundments with Risks for Leachate from Subtitle D Municipal Solid Waste Landfill Facilities. Technical Report 1020555. Available at www.epri.com.

EPRI. 2010c. Evaluation of Potential Groundwater Receptors Downgradient of CCR Management Facilities at Coal-Fired Power Plants. Memorandum from Natural Resource Technology dated November 5, 2010. Submitted as Appendix D of Comments submitted to EPA by Utility Solid Waste Activities Group. Available at http://www.uswag.org/pdf/2010/CCR%20Comments/USWAGCCRCommentsAppx.pdf

NEWMOA. 2008. Trends in Mercury Use in Products: Summary of the Interstate Mercury Education & Reduction Clearinghouse (IMERC) Mercury-added Products Database. Northeast Waste Management Officials Association. http://www.newmoa.org/prevention/mercury/imerc/factsheets/mercuryinproducts.pdf

USCB. 2010. QuickFacts. U.S. Census Bureau. Available at: http://quickfacts.census.gov/qfd/states/00000.html

USGS, 2010. The National Geochemical Survey – Database and Documentation. U.S. Geological Survey. http://tin.er.usgs.gov/geochem/doc/home.htm