From Landfills to Oil Fields
The Case for Coal Ash Beneficiation

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The recent ruling by the Washington, DC Court of Appeals mandates that companies, utilities and independent power plant operators who have or are operating coal fired power plants and boilers clean up their legacy coal combustion residual products waste sites. Historically, coal fired power plants had a free ride on how to dispose of their post- firing waste products, typically comprised of bottom ash, fly ash and flue gas desulfurization sludge. Most of these products were disposed of next to the power plants in unlined ash ponds and landfills. Years later, it has been discovered that these large disposal sites are not benign—ash and heavy metals are contaminating nearby groundwater and streams. Recognition of this national problem was finally recognized in the Obama administration's Environmental Protection Agency (EPA) Coal Combustion Residual rules (https://www.epa.gov/coalash). Collectively, the EPA refers to these products as Coal Combustion Residuals, or CCRs.

As a result of the EPA rules, utilities and independent generators across the country are moving to clean up their ash. Duke Energy, Dominion Energy and the Tennessee Valley Authority have announced that they are committed to 100% cleanup of their CCRs. Current plans announced for these cleanups entail the utilities excavating existing ash disposal sites and moving that material simply into lined and monitored landfills. The relocated, redisposed materials will forever be sitting potential as a future source of environmental pollution.

There is an alternative to this short term, kick-the-ball-down-the-road approach. CCRs can be easily mined and turned into beneficial products. For example, for years coal fly ash has been collected and sold into the concrete industry. Most varieties of fly ash improve the performance of concrete so much that more than 40 states require fly ash to be used in highway construction. Another coal generation waste product, flue gas desulfurization sludge, is often collected and turned into gypsum for home construction. Bottom ash is collected, too, and often used in road aggregate construction.

The only thing holding back coal power producers from turning CCRs into beneficial products is political will and economics. In contrast with the United States, Japan requires all CCRs to be converted into beneficial usable products, including those used for embankments, landfill management, land construction, back-filling material, and roadbed materials. The U.S. should follow Japan's example. Coal ash generated from existing operating coal plants and from legacy disposal sites should be viewed as a national asset.

CCRs being converted into proppants for use in the oil and gas industry is a recent, exciting development. The University of Kentucky's Center for Applied Energy Research has published peer reviewed research on mining and converting ponded fly ash, a major CCR target, into useful oil gas proppants

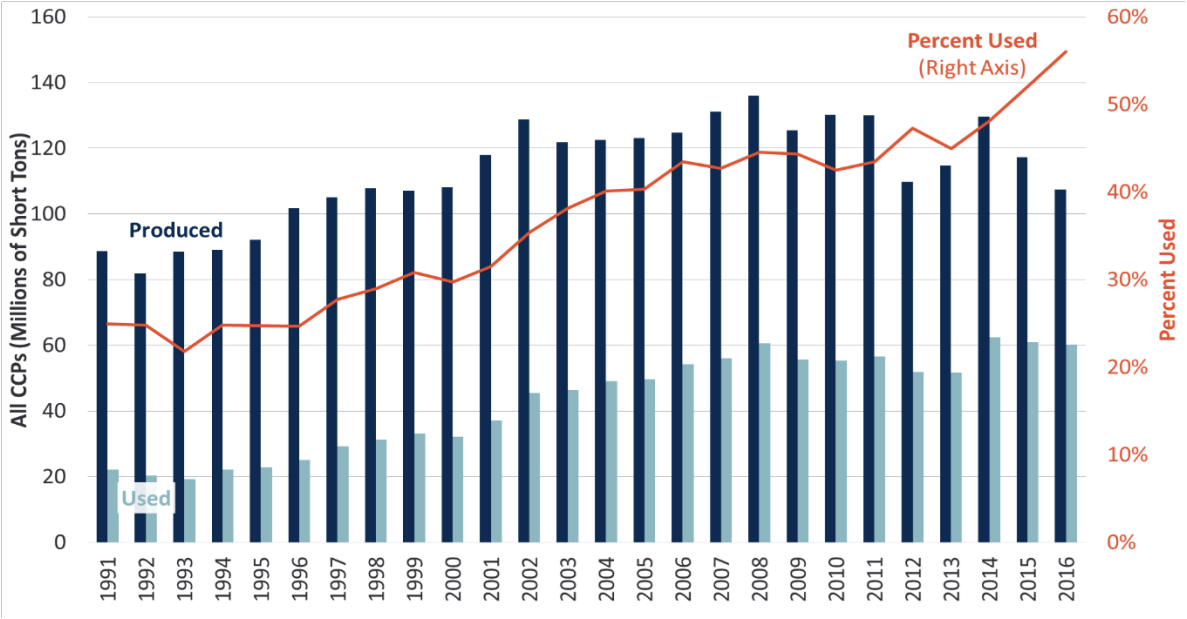
(http://worldofcoalash.org/wp-content/uploads/2018/11/7_tom-robl_beneficiated-fly-ash-as-a-micro-proppant-for-oil-and-gas-production-from-fracking.pdf).

How could we make the recycling of CCRs into a healthy and growing industry? History is a guide. In 2004, the U.S. Congress passed the Section 29 tax credit that promoted the manufacture of synthetic coal from coal fines generated at wash plants associated with coal mining. That incentive, often criticized as being overly generous, resulted in the recycling of millions of tons of very polluting coal fines. Given the national priority of cleaning up existing coal ash disposal sites, it's time to enact a similar tax credit for the beneficiation of CCRs. Congress could enact a tax credit that lists proven products that can be made from existing CCRs and new CCRs created from existing generation.

Using CCRs to create beneficial products is good for the environment and economy. The current wave of coal power plant closings has resulted in a shortage of coal ash for the U.S. construction industry on the order of six million tons per year (http://www.mcall.com/business/energy/mc-despite-glut-of-coal-ash-u-s-is-importing-it-from-other-countries-20170323-story.html). The coal ash shortage is being made up by imports from India and China, where environmental controls are minimal and carbon based transportation costs are not taken into consideration.

All CCPs Production and Use with Percent

The American Coal Ash Association was established in 1968 as a trade organization devoted to recycling the materials created when we burn coal to generate electricity. Our members comprise the world's foremost experts on coal ash (fly ash and bottom ash), and boiler slag, flue gas desulfurization gypsum or "synthetic" gypsum, and other "FGD" materials captured by emissions controls. While other organizations focus on disposal issues, ACAA's mission is to advance the management and use of coal combustion products in ways that are: environmentally responsible; technically sound; commercially competitive; and supportive of a sustainable global community.



As the above graph shows, the quantity of coal ash products continues to fall as power plants shutter, resulting in a dramatic increase in imports.

Supporting the CCR beneficiation industry will greatly reduce the need for energy intensive and land robbing mining of sand and rock. At the same time, employment in the beneficiation industry will grow dramatically. Best of all, future environmental risk will be mitigated, since the products made have been well proven to be both environmentally benign and commercially useful.