

Is There Fly Ash in Your Future?

By Thomas H. Adams



Those familiar with concrete materials technology are very comfortable with using fly ash as an important supplementary cementitious material (SCM). Improved ultimate compressive and flexural strengths, reduced permeability, and mitigation of alkali-silica reactivity problems are just some of the more widely appreciated benefits. Decades of research and field experience have established fly ash as an important tool in creating more sustainable concrete construction projects.

The U.S. Environmental Protection Agency (EPA), however, may change how the concrete industry regards the use of fly ash going forward. A breach of containment at the Tennessee Valley Authority's Kingston, TN, facility in December of 2008 resulted in 5.5 million yd³ (4.2 million m³) of coal ash spilling into the surrounding properties and into the Emory River. No serious injuries or deaths resulted from the breach. Four homes were severely damaged or destroyed. In response, Senator Barbara Boxer asked Lisa Jackson, President Obama's nominee as EPA Administrator, to review the Kingston event and develop regulations for coal combustion product (CCP) disposal. (Currently, there are no federal regulations for disposal of CCPs.) Jackson made a commitment to propose regulations by the end of 2009.

The EPA can elect to create a regulation under either Subtitle C or Subtitle D of the Resource Conservation and Recovery Act (RCRA) of 1976. Subtitle C is used for "hazardous wastes" and is enforced by the federal government. Subtitle D is used to regulate nonhazardous wastes such as municipal solid waste and is administered by individual states. Should EPA choose the Subtitle C option, fly ash would be considered a "hazardous waste" for disposal purposes. One option discussed for some months would be a "hybrid" approach under which fly ash sent to disposal would be treated as a hazardous waste, but fly ash used in cement and concrete would not be considered hazardous. According to engineers, contractors, concrete producers, and owners contacted by the American Coal Ash Association

(ACAA), this designation for disposal would create a stigma associated with fly ash and cause the industry to turn away from using fly ash for fear of tort exposure for use of a "hazardous waste" in a concrete construction project. The concern is that if fly ash is a hazardous waste when being placed in a landfill, it must be hazardous when used to produce concrete. Getting a jury to make that connection would be fairly easy, according to attorneys who have considered this scenario.

The memory of the litigation known as the "Sulfate Wars" in Southern California only a few years ago is still very fresh. No damage needs to be proven to have waves of litigation coming at any party connected to a project. In regard to the stigma of using a "hazardous waste" in concrete, the best and only way to stay out of court is to refrain from specifying, buying, producing, or owning concrete containing fly ash.

It is interesting that the EPA made determinations in 1993 and 2000 that CCPs did not warrant regulation as a hazardous waste. To date, there has been no new evidence produced to support a reversal of those determinations. The agency must include its risk assessment when the proposed rule is announced. It will be interesting to see the justification for any kind of a Subtitle C rule.

The EPA has stated publically on numerous occasions that the use of fly ash in cement and concrete production is a beneficial use the agency supports. However, the agency does not believe the stigma issue is a real threat to continued use. The ACAA believes the problem with disposal of CCPs can be handled without destroying the beneficial uses of these materials. Industry and numerous state agencies have advised the EPA on how this can be done. If the agency elects to ignore this advice, some startling impacts will include the following:

- the 44% of the 130 million tons of CCPs currently used for beneficial uses will most likely be sent to disposal;
- 15 million tons of CO₂ emissions avoided by use of fly ash in concrete production will be emitted into the atmosphere; and

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- concrete durability will take a major step backwards.

As this article is being written in December 2009, release of a proposed rule is expected by the end of the year. The proposal will be published in the Federal Register as an Advance Notice of Rule Making. Following publication, there will be a public comment period lasting somewhere between 30 and 90 days.

For more information on this issue, please contact the ACAA at info@aca-usa.org.



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