Life Cycle Based Risk Assessment of Use of Coal Combustion Products in Roadway Construction

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While the United States is not generally lacking in natural aggregates (depending on the location), these materials are still a non-renewable resource whose mining and extraction methods have negative environmental impacts. With the amount of roadways being constructed or repaired throughout the U.S. (as well as Europe and much of the developing world) there is a significant demand for aggregate material that can be met through the use of secondary materials, that if not use would otherwise be land filled. Recycled materials are being used to some extent in some parts of the U.S. and other parts of the world. The use of these materials however is sporadic and there are still significant doubts and uncertainties involved that force environmental protection agencies to significant limit or completely prohibit their use.

Modeling tools are being developed to predict contaminant transport associated with the use of secondary materials in the highway environment. Through the application of these tools in regional, state or site specific scenarios risk analyses can be performed and put into context with other existing or occurring contaminant transfer situations that can assist regulators in making realistic determinations as to the real risk in using the secondary materials. This life cycle type assessment can result in a more standardized risk determination that is based on the application in question, the materials being used, the contaminants in question, the precipitation and infiltration rates and soil composition of the application site.

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