

# Stabilization of FGD Wastewater Using Coal Fly Ash & Lime

**William A. Boivin<sup>1</sup>, Vincent Ogunro, PhD.<sup>2</sup>, and Malind Khire, PhD., PE<sup>2</sup>**

<sup>1</sup>University of North Carolina Charlotte, Infrastructure & Environmental Engineering (INES), EPIC Bldg 9201 University City Blvd, Charlotte, NC 28223

<sup>2</sup>University of North Carolina Charlotte, Civil and Environmental Engineering, EPIC Bldg 9201 University City Blvd, Charlotte, NC 28223

**KEYWORDS:** flue gas desulfurization (FGD), wastewater, stabilization, lime, coal fly ash, coal combustion residuals, CCR

## ABSTRACT

In anticipation of the EPA's proposed "Stream Electric Power Generating Effluent Guidelines", this research focuses on managing the constituents of concern (COCs) in flue gas desulfurization (FGD) purge wastewater. One of the promising management options is the treatment and immobilization of high concentrations of halides and other constituents in the reduced volume of FGD wastewater (brine solution) in fly ash stabilized using lime. Effectiveness of the stabilization/solidification (SS) material may also be improved by rendering the SS material hydrophobic with organo-silane (OS) treatment. The key objective of this study is to assess quantity and quality of the leachate and runoff generated from the OS treated and untreated stabilization/solidification (SS) test beds subjected to field-relevant environmental and climatic conditions. Geotechnical characterization of SS material including hydraulic conductivity, consolidation, and unconfined compression strength tests were performed on samples collected during placement of the test beds. Performance of the test beds with different OS treatment options (untreated, spray-treated with OS, and with the 1/4 inch layer mixed with OS) will be assessed and recommendations on their effectiveness made.

**Submitted for consideration in the 2015 World of Coal Ash Conference, May 5-7, 2015.**