Leaching and Attenuation of Boron and Arsenic from Coal Ash used to Fill a Surface Coal Mine in Indiana

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KEYWORDS:

ABSTRACT

Field and laboratory studies are being conducted at Universal Ash site in Indiana to develop scientific understanding of leaching and attenuation characteristics of boron and arsenic from the coal ash used to fill the surface mine pit. This paper will present field-scale monitoring data on concentrations of boron and arsenic in coal ash leachate sampled and analyzed on a quarterly basis for a period of about six years. Coal ash samples were collected from various depths in 2001 and subjected to laboratory leaching tests to measure concentrations of boron and arsenic as well as other constituents found in the ash. The field-scale and laboratory generated results are compared with each other to provide an evaluation of how well the field results support the laboratory derived leachate concentrations data.

This paper will also present laboratory derived values for arsenic and boron attenuation by the mine spoil material obtained from the downgradient area of the ash fill. Concentrations data for arsenic and boron in groundwater monitoring wells along a groundwater flow path have also been collected for the last two years. These data are utilized to provide an assessment of the field-scale attenuation of boron and arsenic using the laboratory derived attenuation coefficients.

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