

Microbiologically Generated Mercury Vapor and Methylmercury in Soil Applications of CCBs

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ABSTRACT

A new apparatus and protocol for determining the effect of microbes on coal combustion by-products (CCBs) has been developed by the Coal Ash Research Group at UND EERC. Although this protocol was developed primarily for use with highly alkaline samples, its ultimate usefulness should extend to all materials of interest. The new protocol came about from two primary considerations:

1. Alkaline CCBs have proven to be extremely difficult to buffer in order to encourage the growth of microbes. Artificial methods attempted have included the use of extensive washing and the use of acids in an attempt to neutralize the alkaline constituents of ashes produced from lignitic and subbituminous coals. This protocol appears to overcome these considerations.
2. Alkaline CCBs are often utilized in applications where contact with soil is required. These applications consist of various stabilization scenarios using cementitious ashes as well as agricultural applications and others.

A complete description of the new apparatus and protocol as well as data generated to date will be presented. Additionally, information on experiments designed to neutralize alkaline CCBs using acids and very large volumes will be reported.

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