Temporal Changes in Fly Ash Composition

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ABSTRACT

Fly ashes are silt sized by-products of coal burning power plants and have many soil-like properties. Fly ashes have been successfully used for improving water retention capacity of sandy soils, as a source of nutrients in crop production and amendments in reclamation of acid mine soils, and a substitute for soil in establishing vegetation on abandoned mine lands. However, the composition of fly ashes is highly variable and there are concerns about introduction of trace elements in the environment. Fly ash samples were collected from 12 power plants in Ohio, West Virginia, and Pennsylvania. Samples were collected every month from these power plants over a period of 24 months. These samples were analyzed for secondary nutrients, their liming potential, and trace element composition. Fly ashes from a specific power plant were very consistent in their liming potential, however, a wide variation was observed in their trace element concentrations. Our experiments showed that although a source of fly ash may be very consistent with respect to the liming properties of the ash, however, trace element concentrations of a fly ash from a single source can vary widely.