

Release of Ammonium and Mercury from NO_x Controlled Fly Ashes

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ABSTRACT

One of the goals of the Department of Energy is to increase the reuse of coal utilization byproducts (CUB) to 50% by 2010. This will require both developing new markets and maintaining traditional ones such as the use of fly ash in concrete. However, the addition of pollution control devices can introduce side-effects that affect the marketability of the CUB. Such can be the case when NO_x control is achieved using selective catalytic or non-catalytic reduction (SCR or SNCR). Depending on site-specific details, the ammonia slip can cause elevated levels of NH₃ in the fly ash. Disposal of ammoniated fly ash can present environmental concerns related to the amount of ammonia that might be released, the amount of water that might become contaminated, and the extent to which metals might be mobilized by the presence of the ammonia.

Ammonia retained in fly ash appears to be present as either an ammonium salt or as a chemisorbed species. Mercury in the leachates correlated to neither the amount of leachable ammonium nor to the total amount of Hg in the ash. The strongest correlation was between the decreases in the amount of Hg leached with increased LOI.

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