Release of Ammonia from SCR / SNCR Fly Ashes

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ABSTRACT

One of the goals of the Department of Energy is to increase the utilization of coal utilization byproducts (CUB) to 66% 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 (un-reacted NH_3 which is carried down-stream in the flue gas) can cause elevated levels of NH_3 in the fly ash. The odor alone can be sufficient to adversely affect marketability. 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. This poster describes the column leaching of ammoniated fly ashes. It provides quantitative measurements of the total amount of ammonia released from a selection of ashes and the amount of water needed to exhaust the ammonia supply. It also considers the mobilization of metals caused by the ammonia by comparing the leachate from the as-received fly ash to that obtained after removing the ammonia from the ash. The results are interpreted in terms of the additional environmental load that might be expected as a result of the ammonia slip.

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