Mercury Release from FGD

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ABSTRACT

Energy & Environmental Research Center (EERC) researchers and U.S. Environmental Protection Agency (EPA) officials agreed that several gaps exist in the information about mercury release (or retention) related to coal combustion byproducts (CCBs). A task focusing on the mercury release from the flue gas desulfurization (FGD) gypsum wallboard-manufacturing process from the point of forced oxidation of the FGD material through the kiln drying process was performed at the EERC. Only 100% FGD gypsum was investigated.

Calcination appears to be the most likely process in the manufacture of FGD wallboard to release mercury because of product temperatures ranging from 150°C to 205°C. Another study indicated that no mercury release was expected at wallboard-curing and drying temperatures of less than 177°C. Laboratory tests are currently being conducted in that study.

Two samples were evaluated in this project. Real-time mercury release using a thermal desorption apparatus showed that mercury release began at approximately 170°C. Trials conducted to simulate the calcining of FGD in flash calcining and kettle processes showed that the potential of mercury release exists. The amount of mercury released from the FGD could be higher by orders of magnitude when a kettle process is used versus a flash calcining process because of the extreme heating time differences.

Little mercury release is expected from the FGD material in the board-drying process. Measurements in real production facilities are essential to developing a true answer to the question of mercury release during FGD gypsum wallboard production.

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