

The Fate of Mercury in Flue Gas Desulfurization Byproduct Gypsum Used for Wallboard Production

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ABSTRACT

Oxidized mercury in flue gas can be removed at high efficiency across wet flue gas desulfurization (FGD) systems, and many mercury control strategies for coal fired power plants are based on its capture by wet FGD. The mercury removed by wet FGD is predominately found in the byproduct solids. Most new FGD systems produce gypsum as a salable byproduct, and currently, over 25% of U.S. wallboard is produced from FGD gypsum. This raises an issue: what happens to mercury in FGD gypsum when it is used for wallboard production, particularly when it is calcined (heated to drive off waters of hydration)?

A project co-funded by the U.S. Department of Energy, USG Corporation, and EPRI is measuring actual losses of mercury from FGD gypsums used as feedstock for wallboard production. Five FGD gypsums are being tested at USG wallboard plants. The gypsums were chosen to evaluate effects of coal type, FGD variables, and the presence of selective catalytic reduction (SCR) upstream of the FGD on mercury losses during wallboard production. For each test, a mercury balance based on stack emissions and the mercury content of the feedstock and product will quantify mercury losses. The Ontario Hydro method is being used to quantify stack emissions. The project will also include laboratory simulations of the susceptibility of mercury in wallboard to leach into groundwater in municipal landfills. The project will be completed in the spring of 2005. It is expected that most project results will be available for the presentation and paper.

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