

Investigation of Hg release associated with FGD materials

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ABSTRACT

This study investigated the potential for mercury (Hg) release to the atmosphere from Flue Gas Desulfurization (FGD) materials using a laboratory gas exchange system, as a function of dark versus light conditions, temperature (25 and 45°C), and wetting and drying; and to water using the Synthetic Precipitation Leaching Procedure (EPA 1312). FGD materials were derived from one facility that burned bituminous coal and used inhibited oxidation for flue gas sulfur removal. Samples were collected from this facility with SCR on and SCR. Samples were also derived from two facilities that utilize bituminous coal and wet limestone forced oxidation. Samples included FGD gypsum that had been washed and dried, and the unwashed material. Mercury fluxes (both deposition and emission) to the air were measured continuously for single and multiple wetting and drying events. Mercury releases to water were quantified for single and multiple leachings of the same sample. Mercury concentrations of the leached materials were quantified prior to and after leaching.

Data developed for FGD material derived from the facility using inhibited oxidation showed that Hg was deposited to the material from the atmosphere when dry and released Hg to air when wet. More Hg was released to the air during multiple wetting and drying events than that deposited from the air when dry for ~ 5 wetting. Repeated leaching resulted in a consistent amount of Hg released over time. Results for experiments using materials derived from forced oxidation will also be presented.

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