

# **Partitioning of Metals in a Limestone Forced Oxidation Scrubber System**

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## **ABSTRACT**

The purpose of this study was to characterize both liquid and solid inputs and outputs of a limestone forced oxidized scrubber system for total, dissolved and leachable RCRA metals. Samples were collected under full load operating conditions (1350 MW) during SCR (selective catalytic reduction, i.e. NO<sub>x</sub> control) operation for each of four consecutive weekly sampling events. The unit burns a bituminous coal which averages 2.8% sulfur, 9.5% ash, and a heating value of 12,500 BTUs per pound. The scrubber reagent (limestone) averages 93% calcium carbonate, 4% magnesium carbonate, and >3% silicon dioxide.

Samples included raw water source, liquid and solid fractions of limestone slurry, liquid and solid fractions from each of three absorber modules, liquid and solid fractions from hydrocyclone rejects in the gypsum processing plant, filtrate from the vacuum filter belt and gypsum solids from the vacuum filter belt. Samples were analyzed for total and dissolved RCRA metals of interest and solid fractions (with the exception of the limestone slurry solids) were also subjected to TCLP extract analyses for the eight RCRA metals of interest (arsenic, barium, cadmium, chromium, lead, selenium, silver and mercury).

Results presented will track contributions and partitioning of the metals through the scrubber process which has implications for disposal and utilization of byproducts.

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