

Long-Term Mercury Release from CCBs

David J. Hassett and Loreal V. Heebink

University of North Dakota, Energy & Environmental Research Center, 15 North 23rd Street, Grand Forks, ND 58203

KEYWORDS: CCBs, mercury

ABSTRACT

The release of mercury vapor from coal combustion ash was tested over a time period of 264 days. Six ashes with atypically high levels of total mercury were selected as having potential for releasing measurable amounts of mercury vapor. The ashes selected included two eastern bituminous fly ashes, two South African fly ashes, one Powder River Basin (PRB) fly ash, and one PRB flue gas desulfurization material.

Air was passed through compacted 150-gram aliquots of each sample at 2 mL/min and vented to a gold-coated quartz trap to collect the mercury vapor. The samples were at ambient temperature. In initial experiments, all samples indicated the release of low-picogram levels of mercury after 90 days. No pattern was evident to link the total mercury content to the release of mercury vapor. When the total apparent release of mercury was equated to what would be expected of a full-scale coal-burning power plant ash quantity, the release that would be expected per year equated to less than 1 gram of mercury. Follow-on investigation has indicated that the mercury measured was likely experimental blank and that the coal combustion byproducts (CCBs) were acting as mercury sinks rather than release agents.

This abstract was prepared with the support of U.S. Department of Energy, under Cooperative Agreement No. DE-FC26-98FT40321. However, any opinions, findings, conclusions, or recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of the DOE.