Thermal Stability of Mercury Captured by Ash, Part 2

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ABSTRACT

Previously, the thermal stability of mercury captured by ash from a single pulverized coal feed according to location sampled in the collection train of a power plant was studied. In the previous work only representative samples from mechanical and ESP hoppers were sampled and studied. This resulted in insufficient numbers of samples across mechanical and ESP rows to enable the correlation of the thermal stability of Hg versus these capture locations. During this study every mechanical and ESP hopper was sampled as was the feed coal and the economizer. Fractions of the feed coal and each ash sample were heated in a thermal analyzer to maximum temperatures increased sequentially from 100 to 500^{o}C in 100^{o}C increments. The mercury content of the spent material was then determined by analysis of the solids for Hg. This data provided the thermal decomposition temperature of the captured mercury. The total mercury captured by each sample, thermal stability of the mercury in relation to collection site, and correlations between mercury capture and chemical composition of the sample will be discussed. The data showed that mercury was released between 300 – 400^{o}C for most samples. The thermal release of Hg between 300 – 400^{o}C was studied in greater detail by following the Hg release in several samples at 25^{o}C intervals from 300 – 400^{o}C. More mercury was captured in the ESPs with little collected in the mechanical separators.

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