

Novinda Amended Silicates AS-HgX Determined to be Environmentally Safe for Fly Ash Disposal and Re-Use

Novinda Corporation sells a non-carbon reagent for capture of vapor-phase mercury from the flue gas of coal-fired power plants. This material is an option for utilities to meet the EPA MATS requirement for stack mercury emissions beginning in April of 2015. Amended Silicates AS-HgX consists of a bentonite substrate that is amended with a metal sulfide that acts as the reagent to capture mercury from the flue gas as mercuric sulfide, the most stable form of mercury found in nature as the mineral metacinnabar.

Samples of fly ash and fly ash collected during Novinda product injection at full-scale power plants were tested for pH, Leaching via the TCLP standard (EPA Method 1311), and multiple metals leaching as a function of pH using EPA Method 1313. Tests were conducted by independent laboratories, including Hazen Laboratories and CH2M Hill.

Results

The pH of all ash samples (with and without the Novinda product) were the same, suggesting that the presence of Novinda product will have no impact on ash pond pH.

The TCLP leaching results for all metals in the standard list, including Hg, As, Se, Pb, Cd, Cr, Sb, Cu, P, and Bo, showed that there was little difference in metal leaching with or without the Novinda product, and all metals for all samples were well below the TCLP standard concentration limit.

The EPA Method 1313 was used to determine the leachability of metals (same as those tested using the TCLP) from a fly ash/Novinda Amended Silicates admixture as a function of pH, which provides more information on sequestration of metals in the fly ash with respect to changing pH conditions in landfills and ash ponds.

From the EPA Method 1313 results, it was found that the presence of the Novinda product tended to stabilize the metals in the fly ash more than the baseline fly ash itself. That is, leachate metal concentrations were lower in the fly ash/Amended Silicates admixture than in the neat fly ash samples.

The Novinda product captures mercury from the flue gas and thereby increases the concentration of mercury in the fly ash but does not increase the potential leachability of mercury from the fly ash either in ash ponds, landfills, or when fly ash is used as a substitute for Portland cement.

The Novinda product does not capture other metals from the flue gas, nor does it increase the concentration of other metals in the fly ash admixture, but the Novinda product does stabilize the other metals in the fly ash so that they are less likely to leach. The Novinda product was especially effective at sequestering chromium in the fly ash.

Based on the TCLP, EPA METHOD 1313, and Mass Balance test results, Novinda's Amended Silicates are Completely Safe for the Environment and help stabilize the fly ash in landfills, ash ponds, and for re-use applications as road fill or a replacement for portland cement.