

Strategy for Low-Cost Mercury Control: Using Native Unburned Carbon

Sterling Gray - URS Corporation

McIlvaine Hot Topic - Mercury Sorbent Options

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Strategy Overview

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- Every coal-fired plant has "unburned carbon" or UBC present in the flue gas typically 1-10% of fly ash
- UBC can be an effective sorbent for mercury capture and removal and is essentially "free" and "abundant"
- Effectiveness of UBC can be greatly enhanced when SO₃ removed from gas upstream of APH – the lower the SO₃ the better
- Effectiveness of UBC can be greatly enhanced when flue gas temperature exiting the APH is reduced the lower the temp the better
- SBS Injection[™] can reduce SO₃ to ~1 ppm and allow APH to operate below 250°F exit gas temperature
- Reducing SO₃ and gas temp can increase native mercury capture to over 80% - achieving Hg emissions below MATS limit
- Improved unit efficiency and heat rate offset SBS Injection chemical costs – providing Hg control and net plant O&M savings
- Significant co-removal of HCI and Se can also be achieved

Cost of Carbon Sources

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UBC Loading vs Fly Ash LOI

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UBC Loading ~ 3 x Fly Ash LOI (for 10% fuel ash)

Full-Scale Hg Test Results

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Chloride Removal

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Selenium Removal

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For more information ...

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