Dry Sorbent Injection for Simultaneous SO2, HCl, and Hg Removal

October 2011
DSI for \(\text{SO}_2\), HCL, and Hg Removal

- Numerous tests completed in 2011 using Dry Sorbent Injection for simultaneous \(\text{SO}_2\), HCl, Hg removal
- EGU MACT Compliance
- CSAPR Compliance
- Other
  - State requirements, consent orders, etc.
SO₂/HCL Tests with High Capacity
VIPER™ Mill Demo Trailer
DSI Demonstration Tests
CASE STUDY 1
SMALL EASTERN BITUMINOUS UNIT
Multipollutant Removal with SBC for E. Bit.

Mercury Emissions Reduced Approx. 40%
Multipollutant Removal with Trona for E. Bit.

Mercury Emissions Reduced Approx. 40%
Multipollutant Removal with DSI

CASE STUDY 2
LARGE PRB UNIT
Multipollutant Removal with SBC for PRB Unit

**SO\textsubscript{2} Removal vs Injection Rate**

- Y-axis: % SO\textsubscript{2} Removal
- X-axis: Injection Rate (lb/hr)

**HCl Removal vs Injection Rate**

- Y-axis: % HCl Removal
- X-axis: Injection Rate (lb/hr)
Multipollutant Removal with DSI

CONCLUSIONS
Conclusions

- Sodium bicarbonate and trona demonstrated as very effective sorbents for simultaneous SO$_2$ and HCl removal
- Although SBC is more effective than trona for SO$_2$ removal, there is no apparent advantage for HCl removal versus trona
- Mercury removal generally is about 40% for E. Bit. coals as a co-benefit of SO$_2$/HCl removal
  - Higher Hg removals require carbon injection
- Mercury removal is very low as a co-benefit of SO$_2$/HCl removal for PRB coals
  - Hg removal requires ACI and/or fuel additives for PRB
  - If fuel additive or halogenated carbon is used upstream of air heater, SBC or trona should be injected downstream of air heater
Thank You!

For Further Information on
Dry Sorbent Injection Systems for SO₂ and HAP Reduction

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