



Sorbent Traps and Mercury CEMS Options: Considerations for Active Mercury Controls

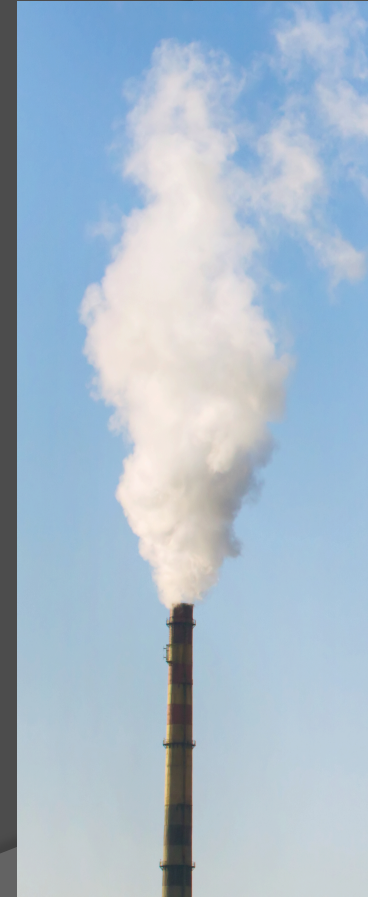
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McIlvaine Hot Topic Hour

May 8, 2014

MATS Summary

- ⦿ Compliance Deadline April 2015
 - Hg emissions limits for Existing Sources:
 - 1.2 lb/TBtu (fuels > 8,300 Btu/lb)
 - 4.0 lb/TBtu (fuels < 8,300 Btu/lb)
- ⦿ Compliance Reporting
 - Continuous monitoring – 30 day rolling avg
 - CEM
 - Sorbent Traps
 - LEE monitoring (if eligible)

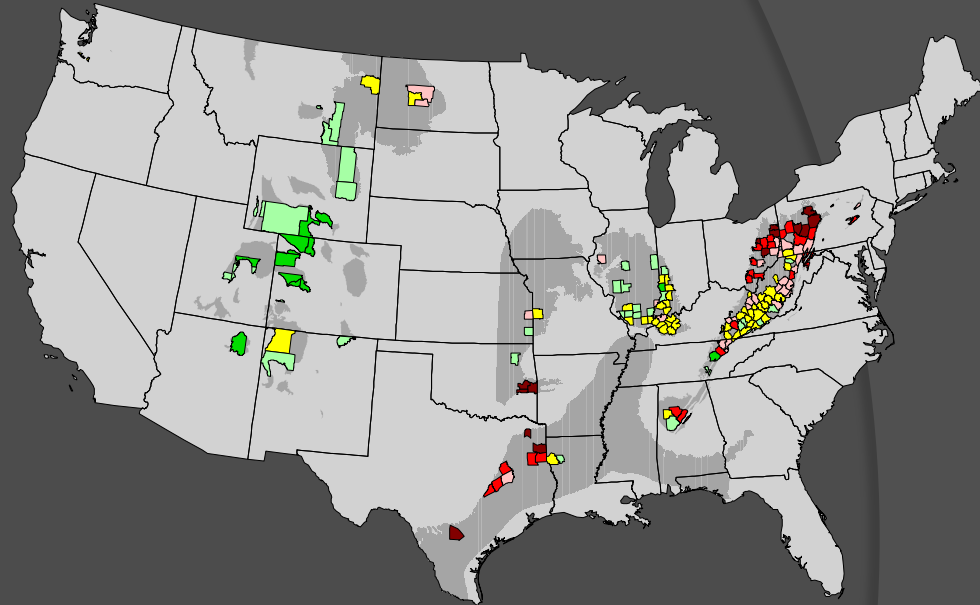


What are you measuring?

- ⦿ Consider how you are reaching the limit
- ⦿ Mercury emissions will depend primarily on the following variables:
 - Fuel composition
 - Boiler load
 - Air Pollution Control Devices
 - Active Mercury Controls

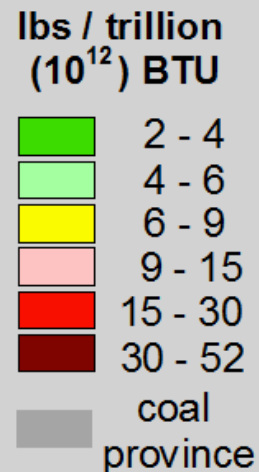
Fuel Composition

- Fuel inputs will significantly change mercury emissions
- Trends are established but fuel can be highly variable
 - Mercury content
 - Sulfur content
 - Chlorine content
 - Ash content and make-up



Mercury

ICR 2 data
commercial coal
by origin county



Boiler Load

- ◎ Boiler Load will significantly change mercury emissions
 - Effects:
 - Fly ash (LOI)
 - Temperatures
 - Fluid dynamics
 - Time for Hg adsorption
 - Mixing with reactants

Air Pollution Control Devices

- Existing APCDs will effect mercury removal
 - NO_x control
 - LOI (boiler controls)
 - NH₃ and temperature
 - Particulate Control
 - Contact time effected by cleaning cycles
 - SO_x control
 - SO₃ and halogen concentration (DSI)
 - Absorption and reemission (WFGD)



Monitoring Options

- ◎ Bottom line: mercury emissions will vary more than other monitored pollutants
 - How do you want to operate your plant?
 - Sorbent Trap System
 - *Passive monitoring*
 - Less expensive
 - Simple to operate and QA/QC
 - Continuous Emission Monitor
 - *Active monitoring*
 - More expensive
 - Requires detailed attention to operate

Monitoring Options

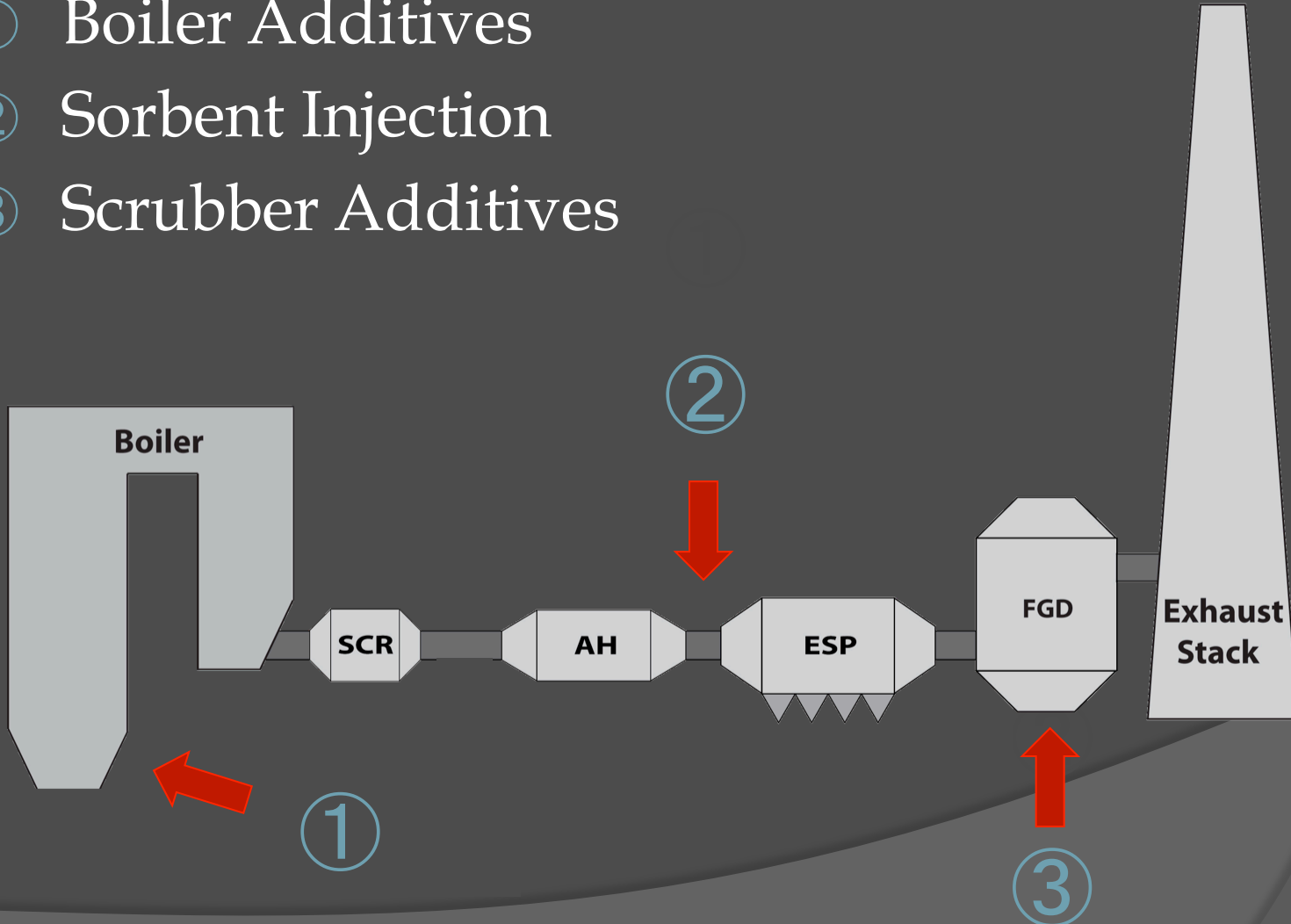
- ⦿ Now add in another factor:

Active mercury Controls

- Highest level of effect on mercury emission
- Will interact with inherent plant operation

Active Mercury Controls

- ① Boiler Additives
- ② Sorbent Injection
- ③ Scrubber Additives



Keeping Track

- ⦿ Continuous mercury monitoring could provide valuable feedback
 - Trends for co-benefits
 - Feedback loops on active controls to modify injection rates with changes to the discussed variables
 - Saves upfront costs
 - Reduces waste
- ★ Must implement proper training and calibration

Example

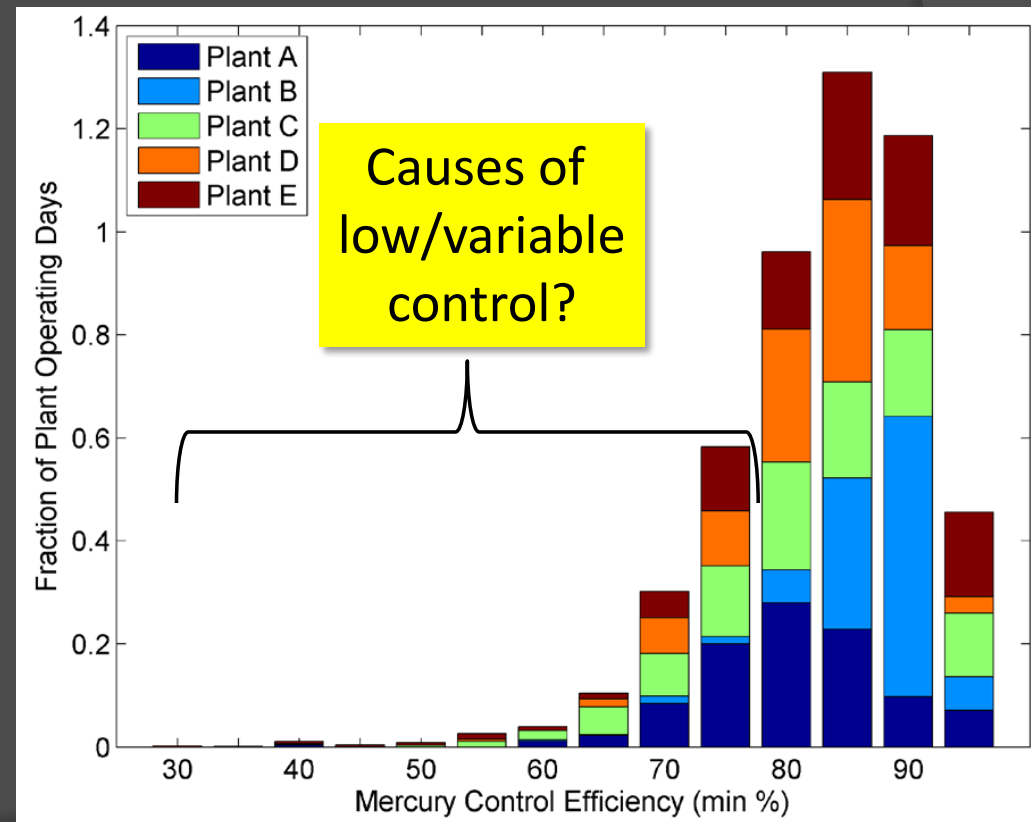
Recent Hot Topic Hour

- Correlate low/variable control to a cause

- Full Load:

- Increased Temp
- Decreased RT
- Increased NH_3

→ Develop a solution





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Superior Mercury
Capture**

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Solutions**

Thank you!

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