Overview of Mercury Monitoring Technologies and Regulatory Requirements

ICAC/MARAMA Mercury CEMS Webinar

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ICAC'S Mission

ICAC gives the air pollution control and monitoring industry a responsible and

responsive presence in Washington, DC and throughout the country.

ICAC'S Mission

ICAC works constructively with state and federal government, business, public and private groups to ensure that our industry and its products are properly represented and understood.

Mid-Atlantic Regional Air Management Association, Inc.

ABMA American Boiler Manufacturers Association

United States Environmental Protection Agency

ACC American Coal Council

NIST

Air & Waste Management Association

Fluid Sealing Association FSA

ISA–The Instrumentation, Systems, and Automation Society

cibo

ICAC Members

- 100 Member Companies
  - Emissions Control Technologies
    - VOC, SO_2, NO_x, PM, Hg, air toxics and greenhouse gases.
  - Emissions Measurement Technologies
    - CEMS, Portables, DAHS, etc.
  - Leading Manufactures of Equipment & Services
- For a current list of ICAC members go to:

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State Mercury Regulations

- At least nineteen states have passed laws or regulations requiring emission reductions,
- Compliance schedules vary (one-phase; two-phase); 2008 to 2012 to 2015 timeframe.
- Some state rules include compliance flexibility if multi pollutant controls applied.
- Percentage reductions from 80 to 95 percent.
- Emission limits (0.25 to 0.6 to1 lb/TBtu input) or output-based limits in lb/GW-hr
- Mercury monitoring requirements in the absence of vacated Part 75 requirements vary widely.

Colorado State Mercury Rule

- Implementation in 2012
- Phase I: 2012 & 2013: 80 % reduction of Hg content of fuel or 0.0174 lb/GWhr annual reduction for two facilities (Pawnee and Rawhide)
- Phase 2: 2014 -2016: 80 % reduction of Hg content of fuel or 0.0174 lb/ GWhr annual reduction for all coal
- Phase 3: 2017 and beyond: 90 % reduction of Hg content of fuel or 0.0087 lb/GWhr annual reduction for all coal

Utility NESHAP: Mercury Monitoring Requirements

- Initial Compliance 30 boiler operating day CEMS data collection
- Continuing Compliance Hg CEMS or sorbent trap monitor
- Proposed certification and QA/QC similar to what was proposed for CAMR
- PS 12A (Hg CEMS) or PS 12B (sorbent trap monitors)
- Some concerns with calibration and measurement accuracy of low levels

Utility NESHAP: Proposed Mercury Emission Limits

- Coal-fired units designed for coal ≥ 8,300 Btu/lb
  - Existing units, 1.2 lb/TBtu
  - New units, 0.0002 lb/GWh
- Coal fired units designed for coal < 8,300 Btu/lb
  - Existing units, 11lb/TBtu (4 lb/TBtu, beyond the floor)
  - New units, 0.02 lb/ GWh

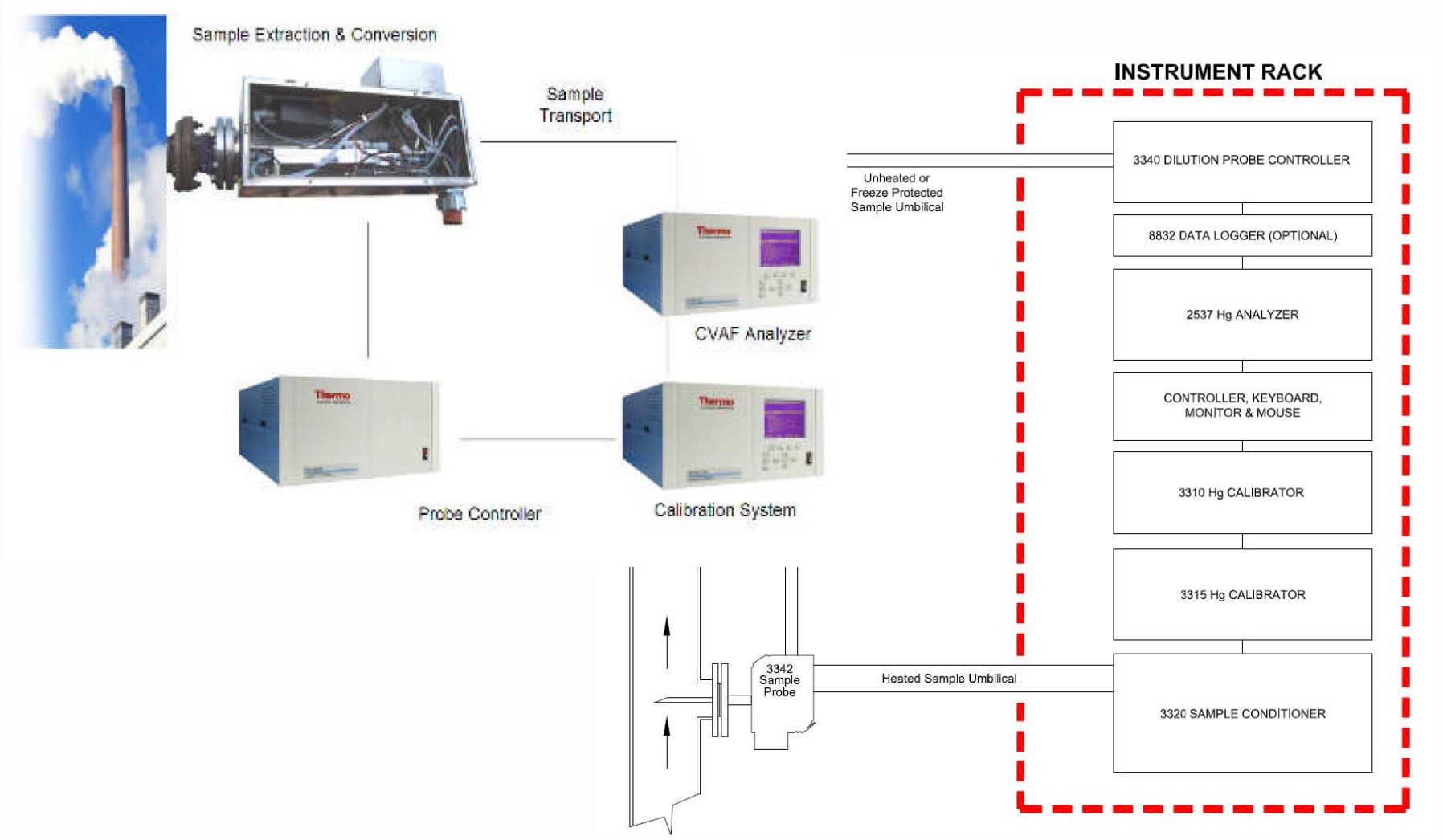
List of Mercury Specific National Emission Standards for Hazardous Air Pollutants (NESHAP)

Rule	Rule Effective Date	Rule Status	Notes:
Portland Cement	11/8/2010	Final Rule	Portions of rule are being litigated
ICI Boilers (major)		Final Rule: Stayed	Re-propose 10/2011 and Final 4/2012
ICI Boilers (area)	5/20/11	Final Rule	
Utility Boiler	TBD	Proposed: 5/3/11	
Gold mine ore processing (area)	2/17/11	Final Rule	
Commercial/ Industrial Waste Incinerators (CISWI)		Final Rule: Stayed	Re-propose 10/2011 and Final 4/2012
Sewage Sludge Incinerators	5/20/11	Final Rule	
Hospital/Medical/Infectious Waste Incinerator	4/6/2010	Final Rule	
Municipal Waste Combustor (large)	11/6/2010	Final Rule	
Iron/ Steel	TBD	Rule Development	

Continuous Mercury Monitoring Technology

- Two forms of continuous mercury monitoring systems (CMMS)
  - Analyzer-based CEMS; and
  - Sorbent Traps (STs)
- Hg CEMS consist of a sample extraction component (probe), a sample conditioning component, an analytical component and a calibration system.
- Sorbent Traps consist of a paired sorbent media traps, moisture removal system, dry gas flow pump and dry gas flow meter.
- There are two leading analytical techniques:
  - AAS (Atomic Absorption Spectroscopy) and AFS (Atomic Fluorescence Spectroscopy)

CMM Schematics



Sorbent Trap

Continuous Mercury Monitoring Technology

- Hg CEMS are analyzers that continuously sample stack gas emissions.
- Hg CEMs offer real-time flue gas mercury concentrations
- Hg CEMs offer reagent feed back optimization for ACI

- STs have lower capital costs ($150K)
- STs are a simple system to operate and maintain
- STs able to measure lower concentrations, however methodology dependent

THANK YOU

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www.icac.com

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