
**Hg Continuous Emissions Monitoring
Significant Technical Issues
From The Utility Industry Perspective**

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Background

- ◆ Final Hg Rules Require Continuous Hg Monitoring
- ◆ Hg CEMs Will Have Difficulty Passing All Provisions Of Hg Monitoring Rule
 - Performance Specification 12A
 - Method 324
- ◆ EPA Conducting Projects To Further Develop Hg CEMS Procedures
 - And they have some results for this meeting

Technical Issues

- ◆ Precision, Accuracy and Time Lag Associated With OH Wet Chemical Reference Method
- ◆ Lack Of Hg Instrumental Reference Method
- ◆ Availability And Demonstration Of Calibration Techniques For Both Elemental And Oxidized Hg
- ◆ Demonstration Of Oxidized Hg Converter Performance

Technical Issues (cont.)

- ◆ Demonstration Of Calibration Drift And Linearity Of Hg Monitors
- ◆ Quantification Of Lower Measurement Limit
- ◆ Reliability And Operability Of Hg CEMS
- ◆ Performance Of Sorbent Trap (Method 324) Hardware And Analytical Techniques

Many Technical Issues Are Interrelated

Ontario Hydro Reference Method

- ◆ Accuracy & Precision Unknown Below 1 microgram/m³
 - Many units will have Hg concentrations below 1 microgram/m³
- ◆ RATA Tests Will Require 6-7 Days
- ◆ Time Lag of 3-6 Weeks To Obtain Results

***Time Estimates Confirmed
Totally Unacceptable For A CEM Program***

Instrumental Reference Method

- ◆ Must Be Developed Because Of OH Issues
 - OH is fatally flawed because of the time required to do the RATA and the lag in obtaining results
 - Cost is also a factor
 - » Blocked load for a week
 - » 6-7 days of testing
- ◆ Huge Risk And Cost Of RATA Failure
 - Weeks and weeks of substitute data
- ◆ EPA Is Working On An Instrumental Method

Ontario Hydro Reference Method

Paired OH Train and Relative Deviation

Requirement are Fatal Flaws in the Rule

Guarantee Multiple Run Failures and

Discarding Perfectly Good Data

Calibration Procedures

- ◆ Daily Calibration Hallmark Of Past Programs
- ◆ Elemental And Oxidized Hg Calibrations Are Required
 - What equipment and what procedures are to be used?
 - How often?
 - Can the available equipment be used in the field by real people?

Hg⁺² Converter Performance

- ◆ Hg⁺² Converters Will Be Necessary And Have Proven Problematic In Field Programs
 - Many sources will have high percent of Hg⁺²
 - How will the converter efficiency be determined?
See oxidized Hg calibration issue
 - How often should an efficiency test be done?
- ◆ Latest Results Show That Converters Are Still A Problem

Linearity Issues

- ◆ Linearity Issues Have Not Been Carefully Evaluated In The Past
- ◆ How Often Should Linearity Tests Be Done?
- ◆ What Are The Procedures?
 - Elemental or oxidized Hg? Both?
- ◆ Should The Converter Be Included?
 - Surely Not

Reliability And Operability

- ◆ Commercially Available?
 - You can certainly buy one
- ◆ Reliable?
 - Not yet
- ◆ Operable By Plant Technicians?
 - Not known

The Capability And Operability Of Hg CEMS In A Plant Environment Is Yet To Be Documented

Lower Measurement Limit

- ◆ Can The Hg CEMS And OH Perform Adequately At Hg Levels Below 1 microgram/m³?
- ◆ Many Sources Will Have Very Low Hg Levels
 - SCR + scrubber collects significant Hg
- ◆ Demonstration At Low Hg Levels Required
- ◆ What Is The Alternative If Hg CEMS And OH Can't Make The Measurements?

Carbon Trap Method

- ◆ EPRI Developed Carbon Trap Method
- ◆ Collects Long-Term Integrated Sample
- ◆ Very Promising Method
- ◆ Only One Very Complex Analytical Procedure - Others In Development
- ◆ Needs Carbon Trap Specifications, Alternate Analytical Procedures And Hardware Development

Conclusions

*Considerable Research/Development Is
Needed In The Hg CEMS Arena*

*We Will Not Be In The Research Mode When
The Rules Are Effective*

We Will Be Measuring Money

The 1 Microgram Hg Monitor

