Presentation Overview

- PM Test Method issue
  - PM 2.5 Implementation Rule
    - Proposal
    - Final Rule
- PM Test Method Update
- State Actions
- What should CIBO members do moving forward?

PM 2.5 Test Method Issue

Proposed PM 2.5 Implementation Rule

- Condensables are important
  - Based on current AP-42 data, EPA estimates that 78% of PM 2.5 emissions are condensable.
- Addition of condensables may increase direct PM 2.5 by a factor of 5 or more.
- Condensable PM 2.5 should be included in
  - emission inventories
  - control measures and
  - emission limits
- States must adopt Reference Method 202 and CTM-40 (which uses RM 202) for SIP approval

PM 2.5 Test Method Issue

- PM 2.5 Stack Test Method Problem:
- Measurement of Condensable PM (RM202)
- RM 202 Issues:
- Particulates are created in test method
  - Probe heated to 250 degrees F
  - Gases then condensed in water-filled impingers sitting in ice bath
  - Impinger contents extracted - extract & remaining aqueous fractions dried and weighed
- Artifacts produced by water and air chemistry result in artificially high condensable PM readings.
- Other interferences – SO2, Ammonia - options in methods are insufficient

PM 2.5 Test Method Issue

In implementation proposal, EPA recognized:

- Addition of condensables may increase direct PM 2.5 by a factor of 5 or more.
- Changes in source test methods will require re-evaluation and revision of emission limits.
- NSPS and other emission limits were set based on filterable solids without condensable emissions. A simple factor cannot be applied to all limits to make this correction.
- Most current emission inventories data excludes condensables – few emission factors include them.

PM 2.5 Test Method Issue

PM 2.5 Test methods under development

- CTM – 40 – uses RM 202 for condensables
  - not yet an approved test method
  - practical limitations restrict application
- CTM – 39 – Air Dilution Method
  - under development
  - impractical size
  - research tool only
- ASTM D22.03-W1752 Draft - Air Dilution Method
  - under development
  - not commercially available

PM 2.5 Test Method Issue

Final PM 2.5 Implementation Rule (FR 20586, 20651-59)

- Comment: EPA should allow States to base their initial 2008 SIPs on NOx, SO2 and filterable PM or PM10 (as a surrogate for filterable PM 2.5). During this transition period a source should be able to continue using Method 5, Method 17 or whatever method was used to set the underlying limit contained in the source's permit. It is unrealistic to develop SIP revisions addressing condensable emissions by 4/08.
- Response: EPA agrees a transition period should be allowed to provide time to resolve and adopt appropriate testing procedures for condensable PM emissions, to collect total (filterable and condensable) PM 2.5 emissions data that are more representative of the sources in their areas and develop effective regulations for control of direct PM 2.5 including condensable PM.

PM 2.5 Test Method Issue – Final

Transition Period

- EPA has decided to provide a transition period for developing emissions limits and regulations for condensable PM 2.5
- EPA will not require that emission limits included in the 2008 submittals account for the condensable fraction of direct PM 2.5 and will not require that limits for total direct PM2.5 including condensable PM be established.
- The period of transition for establishing limits for condensable direct PM2.5 will end January 1, 2011.

Emission Limits:

- "When a source implements either of these test methods addressing condensable emissions the State will likely need to revise the source's emission limit to account for those emissions that were previously unregulated."(FR 20632)

PM 2.5 Test Method Issue

Method 202:

- By 12/07 EPA and others will complete work to characterize artifact formation and other uncertainties related to RM 202.
- Result - identification of possible test modifications to minimize uncertainties.
- **By 12/08** EPA will propose changes to Method 202 to measure condensable PM 2.5

CTM 039:

- EPA believes a dilution method will eliminate artifact formation and provide the most accurate quantification of direct PM 2.5.
- EPA will perform additional validation of CTM-39 to characterize precision.
- EPA plans to continue participation in the ASTM D22 committee to develop and publish a dilution sampling method and to encourage approval of this consensus method.

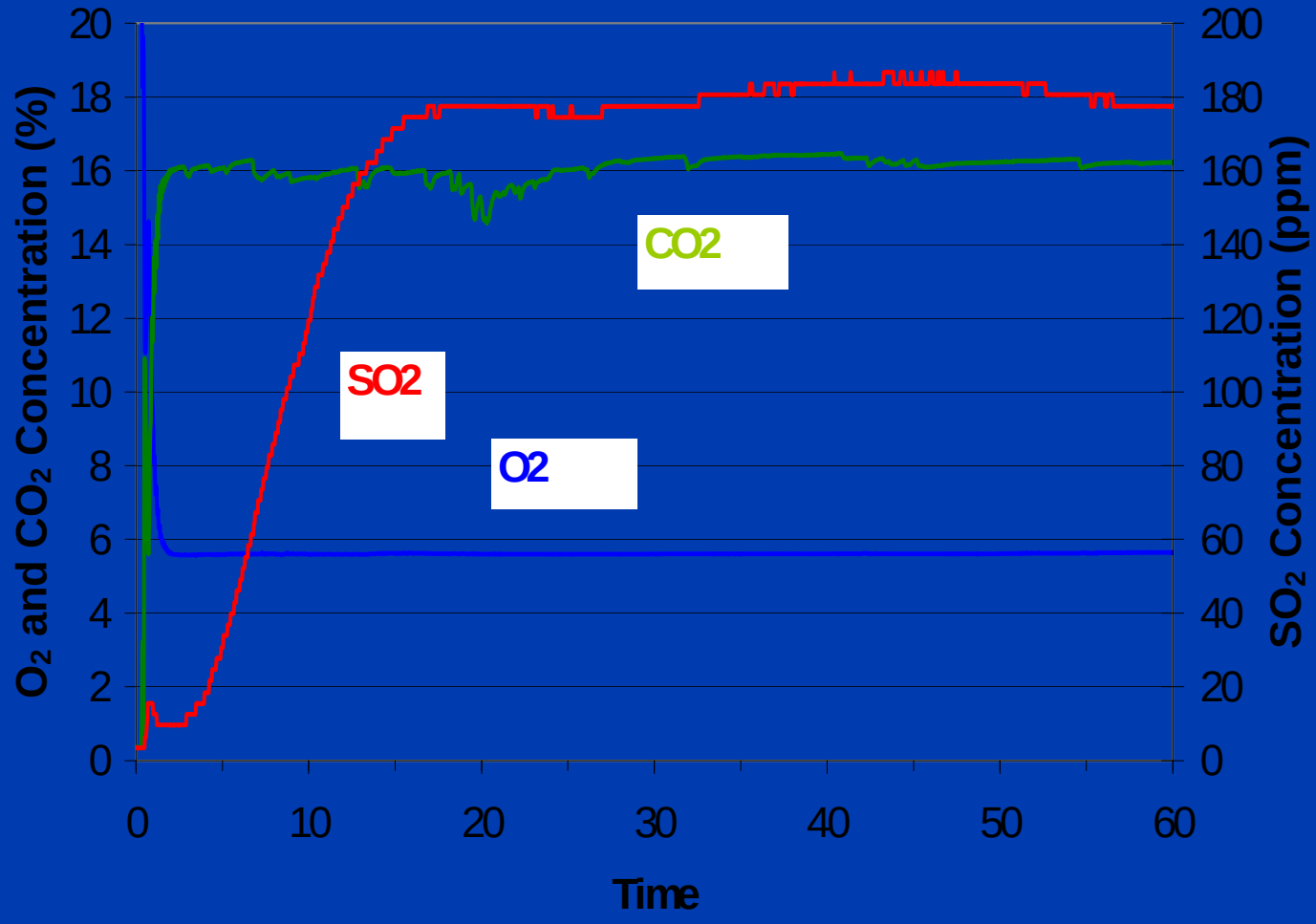
Condensable Emissions Test Improvements

Condensable Particulate Matter ARTIFACTS

- Compounds in the exhaust gas react to create artifacts under RM 202 sampling conditions, which contribute to a positive bias.

  - Example: Combustion sources may contain a significant amount of reactive sulfur under these conditions
    - Oxidation of SO_2 to SO_3
    - NH4HSO4 by-product

Immediate absorption of SO2 in water impingers (RM202)*



*John Richards, AWMA

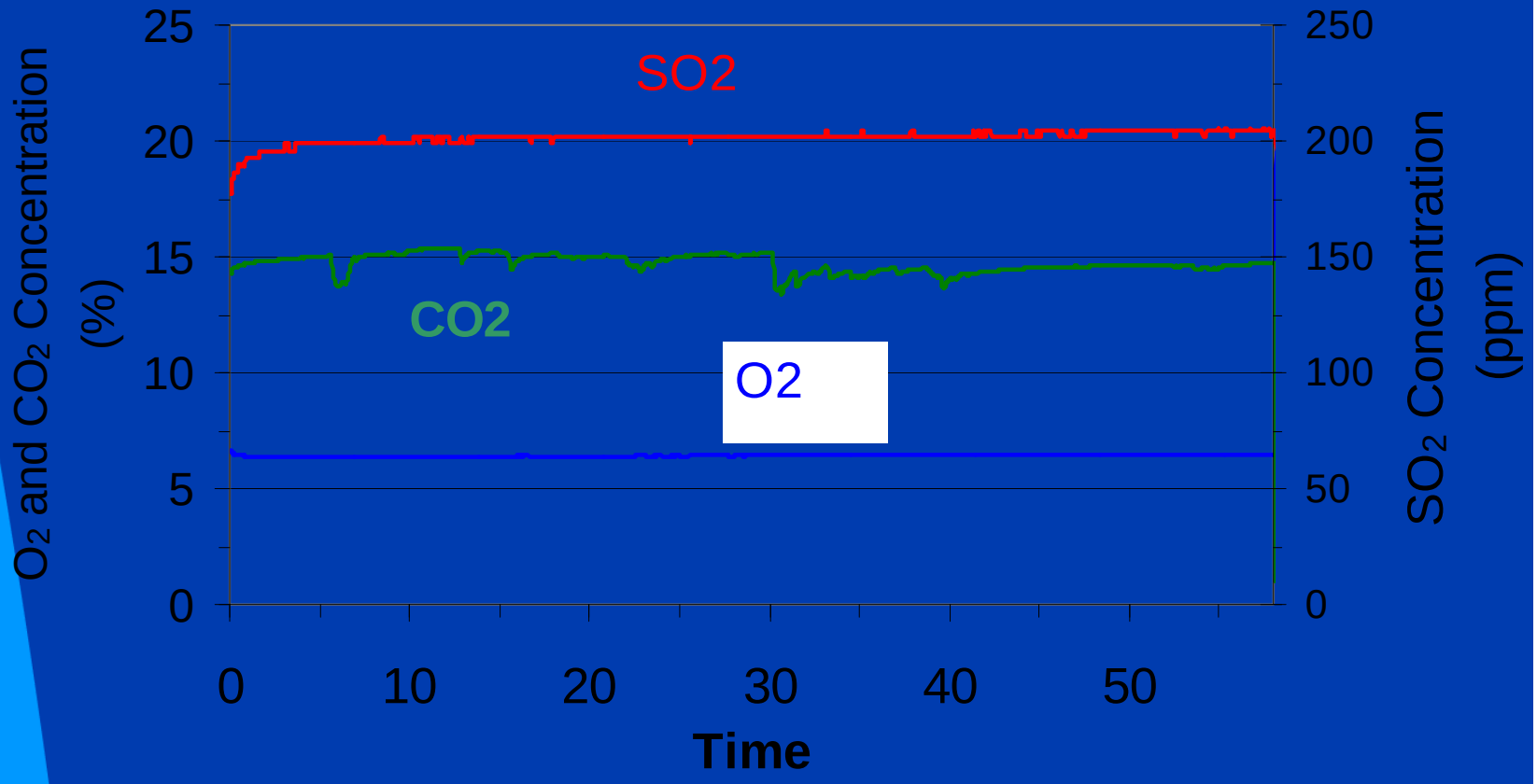
Condensible Particulate Emissions (CPM)

- New Particulate Sampling Method Introduced*
  - Condenser used to cool gases, eliminates water impingers (responsible for artifact formations)
  - Significantly reduces some artifact formations by over 90%
  - Method Hardware easily adaptable to current hardware (cost effective)

* John Richards, AWMA Conference, 11/05

Condenser Method

New Condensable PM Test Method
Eliminate water, eliminate interference*



*John Richards, AWMA

New CPM Method Status

- New CPM Method is defined as OTM28. OTM28 is currently available on EPA website and states are encouraged to use it now.
  - http://www.epa.gov/ttn/emc/prelim/otm28.pdf

- OTM28 is currently under EPA Internal Review.

- The latest “intel” is that EPA expects it to be published in the Federal Register by December, 2008.

Condensable PM and Implementation
What are the States doing?

- $PM_{2.5}$ NSR rule (Effective July 15, 2008) established:
  - General Provisions for NSR (PSD/NNSR)
  - PSD Requirements (PM significance = 10 tpy)
  - Enforcement policy - EPA will not revisit prior applicability determinations for condensables
- EPA established a transition period
  - Transition period will expire January 1, 2011
  - Or earlier if new method adopted
- EPA will not require including condensables for $PM_{2.5}$ or PM_{10} during the transition period
  - Some States may elect to require condensables now - NEED TO EDUCATE THE STATES!

Condensable PM and Implementation – States differ in their approach

- Indiana
  - Requiring condensables for “Information Only”
  - Failing a stack test will not result in enforcement
  - Must test again when new method approved
- Ohio
  - Will not require condensable portion unless part of underlying existing permit limit
    - Otherwise will request for “Information Only”
  - Will not be required to determine permit applicability unless already available

Condensable PM and Implementation – States differ in their approach

- Michigan
  - Will require testing for condensables during transition period
  - Any approved or alternate method may be used (e.g. , method 202 or OTM 28)
  - Test failure using method 202 will not be overlooked
  - It will be up to inspector if NOV is issued
  - Will be required to determine permit applicability
- Check the policy of your local Agency

What Should CIBO Members Do Moving Forward?

- Utilize the new dry impinger method for condensables
  - You may need to educate the state first
  - Should be for “informational” purposes only
- It’s important that credible condensable PM data become part of the state inventories so that the next SIP submittals for PM are based on “real” data (due in 2011)
- Stay tuned for when EPA develops a dilution method which will be the ultimate solution for measuring condensables!

Questions?

Thank you!