Fine PM Test Method

NACA NSR/Permitting Teleconference

1/12/2011

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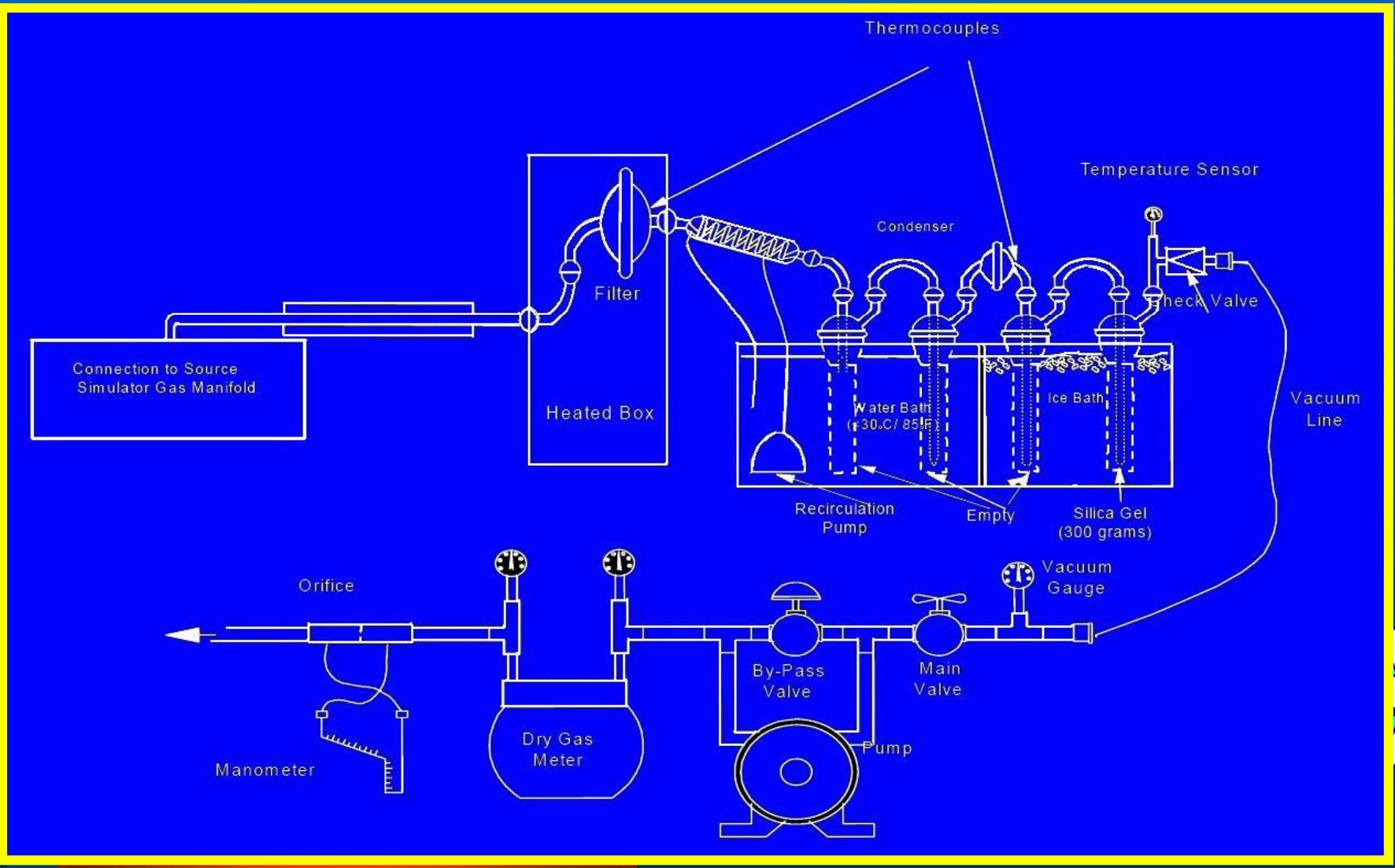
OAQPS/SPPD/MPG

Presentation Topics

- Condensable PM test method
- Particle sizing test method
- Timeline
- Implications of new test methods
- Test method changes from proposal

Dry Impinger Train Layout



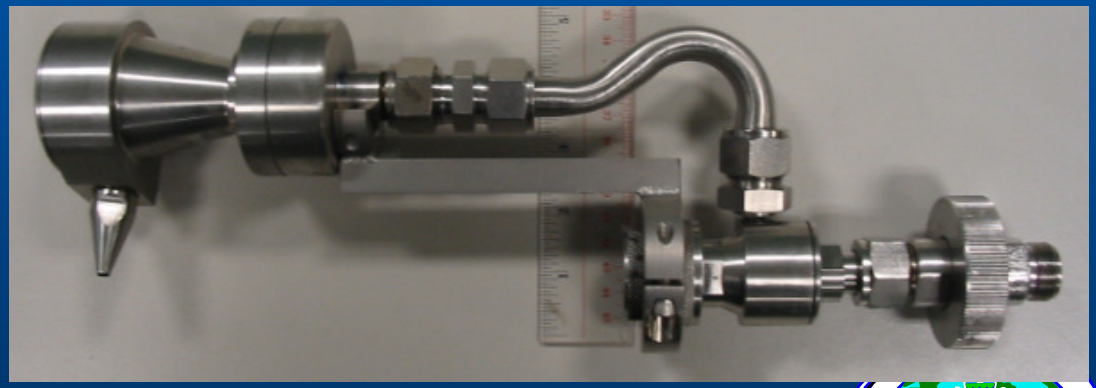
Dry Impinger Method Performance

Run	Organic (mg)	Inorganic (mg)	Filter (mg)	Total
1	0.11	2.23	-0.34	2.34
2	0.15	2.88	-0.06	3.03
3	0.09	1.37	0.00	1.46
4	0.30	1.91	0.00	2.22
5	0.16	1.54	0.07	1.77
6	0.33	2.19	-0.17	2.52
7	0.08	1.18	0.30	1.56
8	0.02	1.87	0.17	2.06
Blank	-0.02	0.21	0.00	0.68
Average	0.16	1.90	0.00	2.12
Std Dev	0.1	0.51	0.17	0.45
MDL	0.31	1.54	0.49	1.36

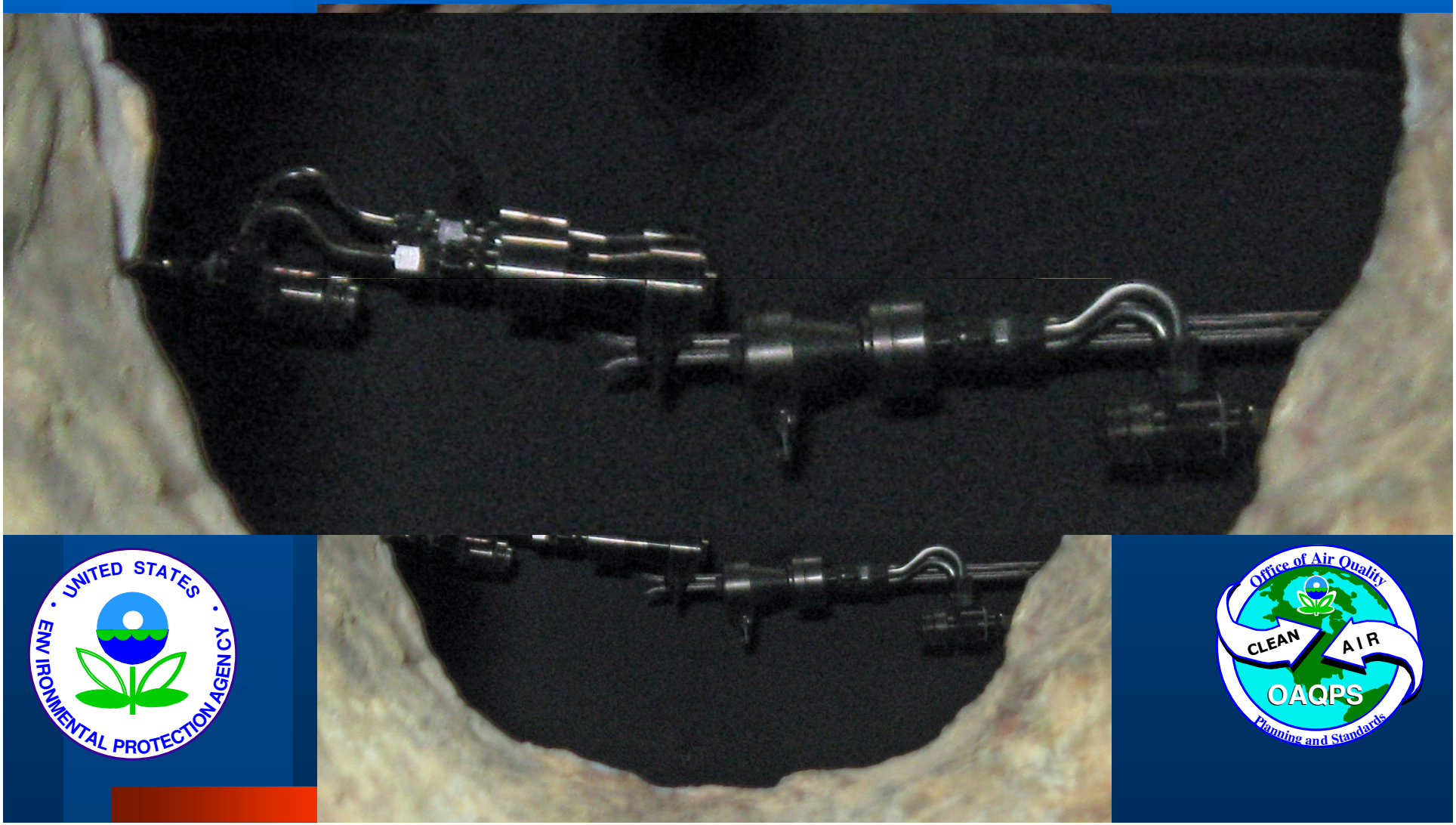
Filterable PM Sizing

- **Method 201A** (1990)

- **Method 201A**
  (2010)

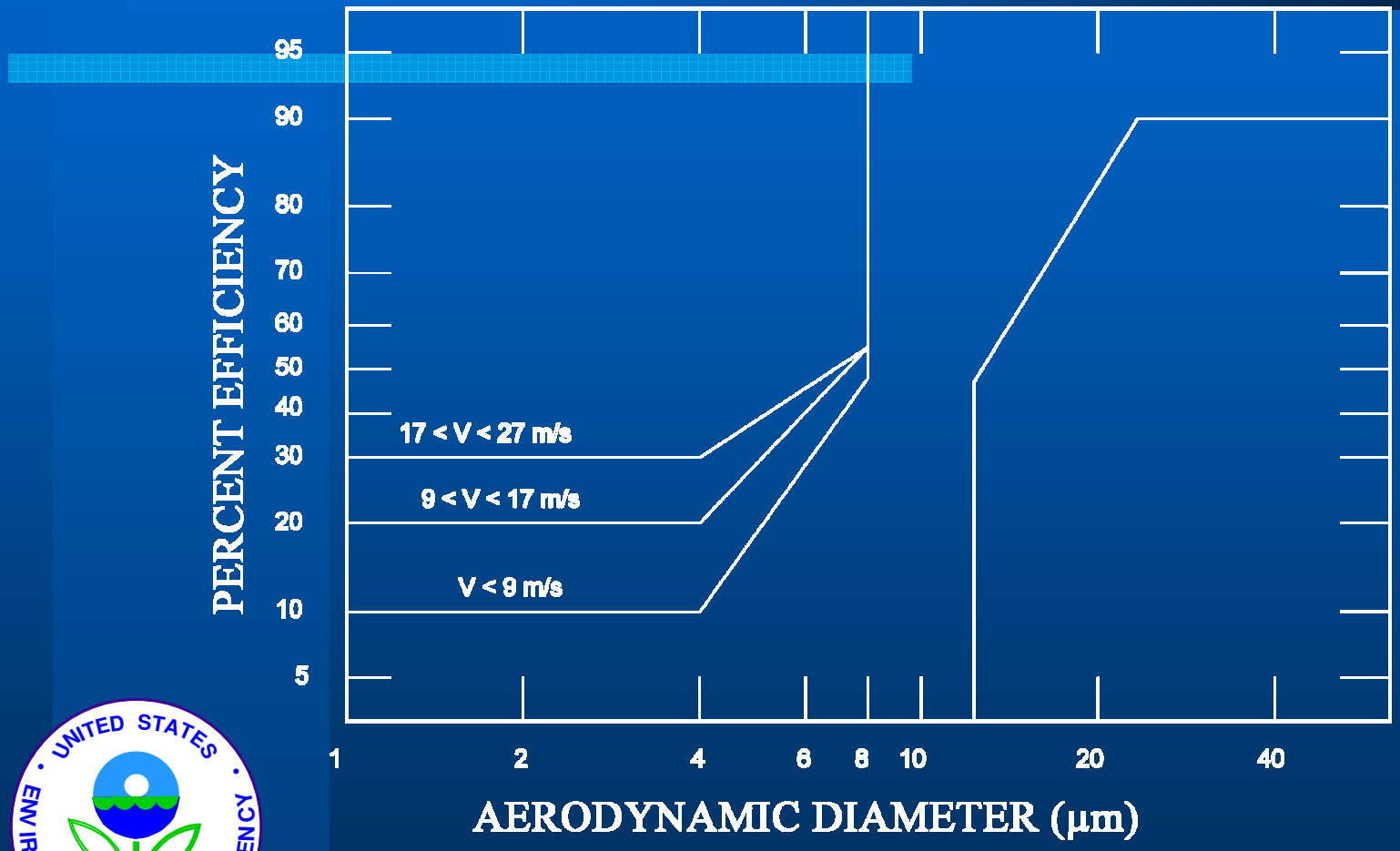


PM_{10} & $PM_{2.5}$ Precision Testing



LE1

Performance Criteria – PM_{10}

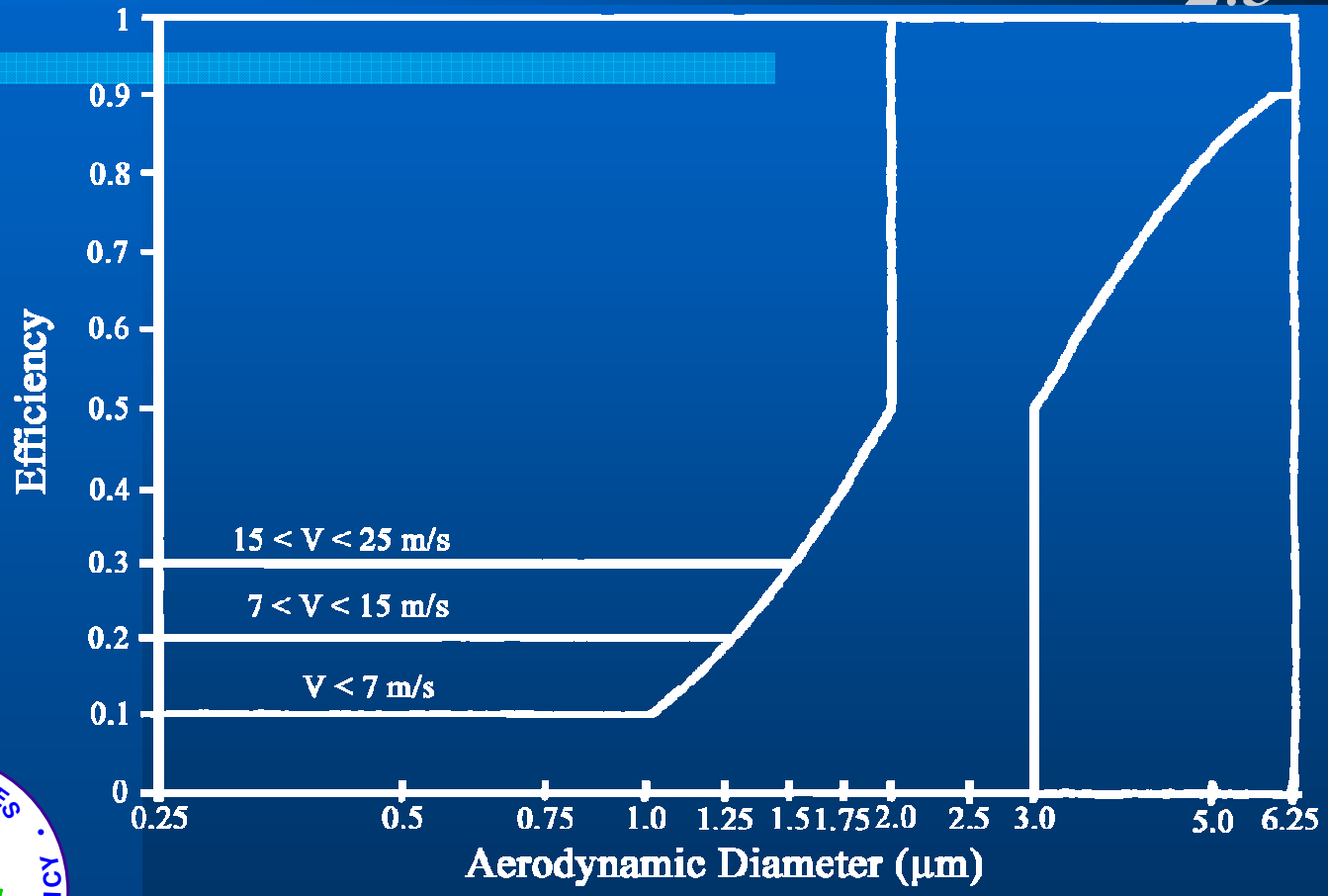


Efficiency Envelope for Alternatives to PM_{10} Cyclone

Slide 7

LE1 What does "performance crtieria" mean? Does this slide represent what the sampling train actually accomplishes? Is this the criteria that other manufacuture's sampling train would have to meet?
Larry Elmore, 1/14/2010

Performance Criteria – $PM_{2.5}$



Efficiency Envelope for Alternatives to $PM_{2.5}$ Cyclone

CPM Precision

Precision Testing Results

- Filterable $PM_{2.5}$ precision ≈ 1 mg
- Total CPM precision ≈ 4 mg
  - Organic CPM precision ≈ 0.5 mg
  - Inorganic CPM precision ≈ 3.5 mg
- H_2SO_4 collection decreases with decreasing concentration
  - Once collected H_2SO_4 is retained
  - H_2SO_4 is good audit material

Timeline and Dates

- **Final PM Implementation Rule**
  - **April 25, 2007**
  - **FR Vol 72, No 79, pg 20586**
- **Proposed Test Methods**
  - **March 25, 2009**
  - **FR Vol 74, No 56, pg 12970**
- **Final Test Methods**
  - **December 21, 2010**
  - **FR Vol 75, No 244, pg 80118**

Recent PM Test Methods Dates

- Signed by the Administrator on Dec 1
- Published in FR on Dec 21
  - Effective date is January 1, 2011
- Extensive Response to Comments
  - Response to major issues in preamble
  - Responses to other issues in RTC document
- Several minor changes from proposal

Changes from proposal (M201A)

- **Added definitions**
  - **Primary PM, PM_{10}, $PM_{2.5}$**
  - **Filterable PM**
  - **Condensable PM**
- **Revised/clarified method applicability**
  - **Small diameter stacks (blockage)**
  - **Wet stacks (water droplets)**
  - **Temperature limitations**
  - **Port size requirements**
  - **Particle sizing (PM_{10} vs $PM_{2.5}$ vs both)**

Changes from proposal (M202)

- **Definitions of Primary PM, PM_{10}, $PM_{2.5}$**
- **Replaced MeCl with hexane**
- **Modified filter media specifications**
- **Added optional glassware preparation**
  - **User determined – requires proof blank**
  - **Bake at 350ºC – no proof blank**
- **Clarified text in several areas**
  - **Terminology (field blanks, proof blank)**
  - **Applicability for wet stacks**
  - **Use of pH indicators**
  - **Requirement to use cleaned glassware**
  - **Nitrogen purge specifications**

$PM_{2.5}$ Regulatory Requirements

- **Clean Air Fine Particle Implementation Rule**
  - **Promulgated April 25, 2007**
  - **January 1, 2011 is critical date for $PM_{2.5}$**
  - **New or revised SIP rules must consider $PM_{2.5}$ in setting limits**
  - **NSR/PSD permits must also consider $PM_{2.5}$ in limits**
  - **Transition period was for development of improved knowledge using improved test method**

Existing use of CPM Methods

- **Most States do not address CPM**
- **Some States address CPM**
  - **States test methods for CPM are inconsistent**
- **Only rules that are new or revised need consider CPM**
- **States do not have to use EPA's test method for acceptance of SIP or NSR/PSD rules**

Implications of considering $PM_{2.5}$

- **States w/o CPM testing now**
  - **$PM_{2.5}$ will need to be addressed in new or revised emissions limits**
  - **Will likely adopt new test methods**
    - **Higher numerical limits do not mean higher emissions**
    - **State will need good information to know where they are and what revised limits will achieve**

Implications of considering $PM_{2.5}$

- **States w/ CPM testing now**
  - **May convince EPA that their rules comply with intent of implementation rule**
  - **May wish to adopt new test method**
    - **Numerical limits will require adjustment**
    - **Adjustment requires careful consideration**
    - **Risk of errors may be greater than for States that are just now adopting CPM testing**

Comments or Questions