Hazardous Waste Combustor MACT Rule Workshop

September 13-14, 1999
Hotel Washington
Washington, DC

1

Workshop Sponsored By:

In cooperation with:

2

Welcome/Logistics

Agenda Summary

- Today:
  - Overview of MACT Rule
  - Permitting
- Tomorrow:
  - Testing
  - Compliance/Monitoring
  - Enforcement

3

Overview

a. Introduction
b. History of rule
c. Timetable to meet the standards
d. Standards for INCs, CKs, and LWAKs
e. New vs. existing sources
f. RD & D units
g. Implementation strategy

4

Overview

Introduction to the HWC MACT rulemaking

5

Overview

History of the HWC MACT rulemaking

6

Timetable to meet stds

Year 0 = Effective date, publication date

Year 1 = NICs due

Year 2 = Progress reports due

Year 3 = Compliance date

Year 4 = Max. compliance date for extensions

Standards

- Data base
- Methodology
- Emission Standards

Data Base

- To develop the standards, we compiled an emissions data base with the results from RCRA trial burns and COC tests
- The data base contained reports from all hazardous waste burning cement kilns and LWAKs, and over 100 incinerators

Data Base

- How can worst-case emissions data be used to establish MACT?
  - Only data available
  - Appropriate because MACT performance testing similar to RCRA compliance testing
    - Because operating limits are based on a performance test, sources operate under worst-case conditions

Data Base

- Use of worst-case emissions data to establish MACT--
  - If normal emissions data were used to establish MACT, emission levels under MACT would be limited to levels below current normal levels because:

Database

- Performance test levels would have to be < current normal levels
- Emissions under MACT would have to be < performance test levels because operating limits are based on the performance test

How Were the Standards Established?

- Floor Emission Levels:
  - Existing Sources: MACT stds cannot be less stringent than the average emission control achieved in practice by the best performing 12% of sources
  - New Sources: MACT stds cannot be less stringent than the emission control achieved by the best controlled single source

How Were the Standards Established?

- Floor--
  - Compliance cost to achieve the floor is not a factor
- Beyond-the-Floor Emission Levels
  - If more advanced control technologies are cost-effective, a more stringent BTF standard must be established
    - Cost/ton of emissions reductions drives the decision to establish a BTF standard

How Were the Standards Established?

- Floor Methodology: Technology Approach -- 2 step process
  - 1. Identify the control techniques used by the median of the best performing 12% of sources (MACT pool)
  - 2. Identify the emission level being achieved by sources using the control techniques identified in step 1 (expanded MACT pool)

MACT Control Techniques

- D/F: Control combustion gas temperature at the dry PM APCD; ACI for WHB INCs; Gas temperature control at the kiln exit for LWAKs
- Hg: Feedrate control and, for INCs, wet scrubbing
- SVM, LVM: MACT PM control and feedrate control

MACT Control Techniques

- HCl/Cl2: Feedrate control and, for INCs, wet scrubbing
- PM (Misc metal HAPs): APCD
- CO or HC, DRE (non-D/F organic HAPs): Good combustion practices

Feedrate Control

- MACT control for feedrate based on feedrates normalized by gas flowrate
- MTECs: Maximum Theoretical Emission Concentration in ug/dscm

Feedrate Control

- MACT MTECs based on best feedrate-controlled sources in the aggregate for all metals and chlorine.
  - Ensures MTECs are being achieved in practice simultaneously
  - MACT MTECs are reasonable. They are not based on waste containing de minimis metals or Cl.

Emissions Stds: INCS

- D/F - 0.2 TEQ or 0.4 TEQ < 400 F at PM APCD (BTF for WHBs)
- Hg - 130 ug/dscm
- SVM - 240 ug/dscm
- LVM - 97 ug/dscm
- PM - 0.015 gr/dscf
- HCl /Cl2- 77 ppmv
- DRE - 4 or 6-9's
- CO <100 ppmv or HC <10 ppmv

Emissions Stds: INCS

- Alternative PM std--0.03 gr/dscf-- for sources burning waste w/ de minimis metals
  - Higher PM OK--0.03 gr/dscf-- if using superior feedrate control
  - Nondetect levels of metals other than Hg

Emissions Stds: INCS

- Alternative PM standard-
  - Combined Pb, Cd, and Se emissions must be < SVM stds (240 ug/dscm) assuming metals are present at 1/2 DL and all metals fly.
  - Other metals must be < LVM std (97 ug/dscm)

Emissions Stds: INCS

- Alternative PM std--
  - Source must petition permit officials and receive written approval
  - Permit officials should grant approval provided that detection limits and sampling frequency are reasonable
    - Does source have unreasonably high detection limits for a clean matrix such that emissions (assuming 1/2 DLs) are close to the std?

Emissions Stds: CKs

- D/F - 0.2 TEQ or 0.4 TEQ < 400 F at ESP or FF
- Hg - 120 ug/dscm
- SVM - 240 ug/dscm (BTF)
- LVM - 56 ug/dscm
- PM - 0.15 kg/Mg dry feed (~0.03 gr/dscf), & 20% opacity
- HCl /Cl2- 130 ppmv
- DRE - 4 or 6-9's
- CO <100; or HC <10 (bypass) or <20 (w/o bypass)

Emissions Stds: NHW CKs

- Promulgated in May 1999
  - D/F: Same as for HW CKs
    - HW burning does not affect D/F
  - PM: Same as for HW CKs
    - HW burning does not affect PM
  - Standards for other HAPs not cost-effective
    - Other HAPs currently not controlled
    - No floor

25

Emissions Stds: LWAKs

- D/F - 0.2 TEQ or 0.4 TEQ < 400 F at kiln exit (BTF)
- Hg - 47 ug/dscm
- SVM - 250 ug/dscm (BTF)
- LVM - 110 ug/dscm
- PM - 0.025 gr/dscf
- HCl - 150 ppmv (BTF)
- DRE - 4 or 6-9's
- CO < 100 ppmv or HC < 20 ppmv

26

DRE Std

- Implemented as under RCRA, except that DRE required to be demonstrated only once unless source fires HW at a location other than the normal flame zone
- E.g. CK firing containers at midkiln
  - DRE testing under RCRA oversight may be used in lieu of new testing if it occurred w/in 5 years of deadline for MACT test

27

CO/HC Stds

- If a source elects to comply with the CO std, it must document during performance testing that HC levels are below the std.

28

New Vs. Existing Sources

- Existing sources are sources that were in operation or began Construction or Reconstruction before the date of Proposal - April 19, 1996
- New Sources began C/R after April 19, 1996
- New Sources comply with the "new source" emission standards

29

Construction & Reconstruction

- Construction means the on-site fabrication, erection, or installation of a source.
- Reconstruction means the replacement of components of a source to the extent that the fixed capital cost of the new components exceeds 50% of the fixed capital cost that would be required to construct a comparable new source.

30

Construction & Reconstruction

- Reconstruction
  - Retrofit costs to comply w/ MACT standards are not reconstruction costs
- C/R begins when a source begins the construction process -- the date permit applications are submitted

Compliance Timetable Applicable to New Sources: A

- New Sources that began C/R between 4/19/96 and the publication date of the final rule, and
- Startup after the publication date but before the compliance date
  - Comply with all proposed standards that are less stringent than the final standards

Compliance Timetable Applicable to New Sources: B

- New Sources that began C/R between 4/19/96 and the publication date of the final rule, and
- Startup after the compliance date
  - Comply with all final standards at startup

Compliance Timetable Applicable to New Sources: C

- New Sources that begin C/R following publication of the final rule
  - Must comply with final standards upon startup

Performance Testing for New Sources

- At startup, sources must be in compliance with the appropriate standards (proposed or final)
- Must have Documentation Of Compliance (DOC) in their operating record at startup
- Performance testing follows the normal schedule applicable to all sources

Example

- Began C/R April 1997 and begins operations December 1999
  - Must comply with all the proposed standards that are less stringent (numerically higher) than the final standards at startup
  - Must conduct performance test w/in 6 months of startup and submit the NOC 3 months following completion of the test

Research, Development, & Demonstration Sources

- RD & D sources are exempt
  - Cannot operate for > 1-yr, unless approved
- CAA recognizes that MACT standards for the source category may not be appropriate for RD & D sources
- EPA is developing special standards for RD & D
- HWC RD & D sources remain subject to RCRA section 270.65

Implementation Strategy

- Outreach
- Guidance
- Transition Tracking

Outreach

- Hazardous Waste Combustion (HWC) Permit Writer Workshops
- MACT Workshop
- Conferences

Outreach

- HWC Permit Writer Workshops
  - Held 2 workshops in August 1999
  - Regional and State Regulators
  - Introductory level training in the basics of HWC technology and permitting
  - Included sessions on the MACT rule

Outreach

- MACT Workshop
  - 1 workshop - Today and Tomorrow
  - Public and Regulated Community
  - Overview of the final rule requirements and anticipated implementation activities

Outreach

- Conferences
  - National Technical Workgroup for Mixed Waste Conference
    - Held August 1999
  - Air & Waste Management Association HWC Specialty Conference
    - September 1999

Guidance

- Permitting Toolkit
- Technical Implementation Guidance
- Information access via the Internet

Guidance

- Permitting Toolkit
  - Fact Sheets
    - General rule information
    - Streamlined permit modifications
    - Site-specific risk assessment policy
    - Permit transition
    - NOC/title V interface
    - Title V permitting

Guidance

- Permitting Toolkit
  - Fact Sheets
    - State authorization
    - Grant information
  - Frequently Asked Questions (and answers)
  - Sample permit conditions

Guidance

- Permitting Toolkit
  - Facility transition examples
  - Universe list of HWCs
  - Reference list
  - RCRA and Air program contacts list

Guidance

- Technical Implementation Guidance
  - Notification requirements
  - Performance testing requirements & schedules
  - Compliance monitoring requirements

Guidance

- Technical Implementation Guidance
  - Other compliance requirements (i.e., startup, shutdown and malfunction plan)
  - special provisions (i.e., waivers)
- Your input, today and during development, will help to make this a useful and complete document

Guidance

- Proposed Schedule
  - Permitting Toolkit
    - November 1999
  - Technical Implementation Guidance
    - Spring 2000

Guidance

- Information Access via the Internet
  - All written materials will be available via the Internet
- HWC MACT Web page:
  - www.epa.gov/hwcmact

Tracking

- The transition from RCRA to the CAA will not be automatic.
- As part of our oversight role, we intend to track certain aspects of the transition.
  - This will enable us to determine those transition points that may be problematic and work toward finding solutions.

Permitting Session

Permitting under the HWC MACT rule

a. NIC and progress report
b. Preparation ---Fast Track mods
c. Permit applicability
d. Permit transition
e. NOC/Title V interface
f. Risk assessment policy
g. State authorization

Notice of Intent to Comply

- Sources must certify whether or not they intend to comply with the requirements of the HWC MACT rule

Notice of Intent to Comply

- Certification must be made 1 year following the publication of the final rule (effective date)

55

Notice of Intent to Comply

- Sources that intend to comply must hold a public meeting to discuss their compliance plans prior to submittal of NIC
- The meeting must occur one month following release of draft NIC and 10 months following publication of the Final Rule

56

Progress Report

- Sources intending to comply must submit a progress report 2 years following the publication date

57

Progress Reports

- Sources that do not intend to comply (as stated in their NIC) must cease burning hazardous waste 2 years following the publication date

58

Progress Reports

- The progress report must demonstrate that the source is making sufficient progress towards compliance

59

Progress Reports

- Criteria that are evaluated in the progress report can include
  - Costs and contracts associated with engineering designs and plans
  - Contracts associated with modification plans
  - Internal company budgets allocations
  - Completion of milestones identified in the NIC

60

Permitting under the HWC MACT rule: Overview

- Background
- Permitting Objectives
- Permitting Applicability
- Title V timeline (with respect to the HWC MACT rule requirements)
- "Fast Track" RCRA permit modifications
- Transition from RCRA to title V permitting

Overview

- Continuing role of the SSRA policy
- Subpart X
- State authorization

Background

- RCRA has been the primary statute governing hazardous waste management.
- RCRA obligates EPA to ensure hazardous waste combustors (HWCs) are operated in a manner protective of human health and the environment.

Background

- In addition to this statutory obligation, we committed to the public in our hazardous waste combustion strategy that we would upgrade emissions standards for HWCs.
- RCRA standards governing HWC operations and emissions are ultimately implemented through a RCRA permit.

Background

- Section 112 of the CAA also obligates EPA to establish emissions standards for HWCs.
- Section 112 standards are based on the performance of the Maximum Achievable Control Technology (MACT).
- MACT standards are ultimately implemented through title V permits.

Background

- Our challenge in developing an implementation scheme for the HWC MACT rule…
  - to consolidate the requirements imposed by statutes into a single set of regulations.
  - to implement the new standards through a single permit, to the extent possible.

Permitting Objectives

Objectives in establishing a single permit scheme:

- Maximize flexibility
  - by establishing an approach to regulation and permitting that allows implementing agencies to do what makes the most sense in a given situation.
  - Minimize duplication
  - by limiting the amount of time a source might be potentially subject to overlapping requirements of RCRA and the CAA.

Permitting Objectives

- Our approach to achieving these two objectives was to:
  - place the standards only in 40 CFR part 63, and
  - rely on existing CAA programs, including operating permits issued under title V, to implement the standards.
- In pursuing this approach, we did not want to make any changes to the current title V procedures.

Permitting Applicability

- What does our approach translate to in terms of permit applicability?
- All sources subject to the HWC MACT rule will have to obtain both RCRA and title V permits.
  - Ultimately, each permit will address different aspects of the facility.
  - In general, there should be no duplicative requirements between the two permits.

Permitting Applicability

- RCRA permits will continue to address
  - combustor-specific concerns besides air emission limits and associated operating and monitoring requirements, for example:
    - materials handling
    - site-specific risk-based emissions limits, if necessary

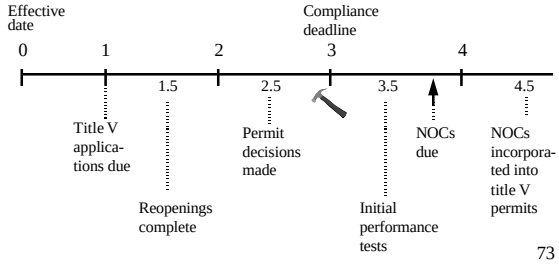
Permitting Applicability

- RCRA permits will also address
  - broader facility requirements, such as
    - corrective action
    - general facility standards (closure, financial responsibility, etc)
  - other hazardous waste management units (tanks, etc)

Permitting Applicability

- Title V permits will address (in addition to all previously applicable requirements)
  - air emissions limits for all HAPs regulated by the HWC MACT rule
  - all associated operating parameters and monitoring requirements documented in the Notification of Compliance
    - If a source already has a title V permit, the initial NOC will be incorporated as a significant permit revision.

Title V Timeline (with respect to HWC MACT)



Permitting Applicability

In summary:

- Title V permits will focus on the combustors' operations, and
- RCRA permits will focus on other basic aspects of hazardous waste management.

Overview (status check)

4 Background
4 Permitting Objectives
4 Permitting Applicability
4 Title V timeline
- "Fast Track" RCRA permit modifications
- Transition from RCRA to Title V

"Fast Track" RCRA Permit Modifications

- Some sources may have to make design or operational changes in order to meet the new standards.
- If they already have RCRA permits, they have to modify their permits before making changes.

"Fast Track" RCRA Permit Modifications

- These mods would normally be designated as RCRA class 2 or 3, which take time.
- Sources must complete the mod process in time to make changes and conduct testing by the 3-year compliance deadline.
- New RCRA permit mod procedures in the Fast Track rule expedite the process.

"Fast Track" RCRA Permit Modifications

- RCRA administrative procedures should not be a barrier to compliance with the new standards.
- Streamlined mod procedures promulgated on a "fast track"
  - States should have time to adopt them before mod requests start coming in.
  - States may implement the new procedures once they adopt them into their state regulations.

"Fast Track" RCRA Permit Modifications

- We amended RCRA § 270.42 to address changes necessary to comply with MACT.
  - Changes are designated as class 1[1]
  - Sources wanting to take advantage of this provision must first complete NIC process
  - Agencies have 90 days to act on mod requests (+ possible 30 day extension)
- Final rule corrects typo from Fast Track Federal Register notice.

"Fast Track" RCRA Permit Modifications

- RCRA class 1 permit mods do not require meeting with the public.
- Requiring sources to complete NIC first balances out lack of public meeting.
  - NIC public meeting requirements patterned after RCRA pre-application meeting.
  - We expect sources to discuss facility mods during NIC public meeting.

Transition from RCRA to title V

- Sources subject to the HWC MACT rule either have or are in the process of obtaining RCRA permits.
- Since we are relying on title V permits as the vehicle under the new rule, sources have to transition from RCRA to title V.
- We establish a framework in the final rule to avoid duplication between the two.

Transition from RCRA to title V

Q: At what point does RCRA "stop"?

A: The short answer

- When a source demonstrates compliance by
  - completing a comprehensive performance test, and
  - submitting an NOC.

Transition from RCRA to title V

- The longer answer is that upon the compliance demonstration:
  - RCRA performance standards in 40 CFR parts 264, 265, and 266 no longer apply.
  - RCRA permitting requirements in 40 CFR 270 no longer apply.
- BUT, RCRA permit conditions continue to apply until they are either removed from the permit or they expire.

Transition from RCRA to title V (sources with RCRA permits)

- Goal in transitioning permitted facilities is to minimize the time a source might be potentially regulated under both statutes.
- Sources may request to have conditions removed from the RCRA permits once they submit their NOC.
- We added a line item to 40 CFR part 270.42 Appendix I to address this situation.

Transition from RCRA to title V (sources with RCRA permits)

- New line item A.8 under the General Permit Provisions to remove permit conditions that are no longer applicable
- New item is designated as class 1[1]
  - Balances the need to retain some regulatory oversight with the goal of minimizing overlap.
  - Provides a fairly streamlined mechanism that does not impose a significant burden.

Transition from RCRA to title V (sources with RCRA permits)

- Provides opportunity for RCRA and CAA program staff to confer before approving removal of conditions.
  - to ensure that the source completed the performance test and submitted an NOC
  - to confirm test results have been reviewed and Finding of Compliance made
  - to determine whether risk-based conditions in the RCRA permit (if any) need to be kept.

Transition from RCRA to title V (sources with RCRA permits)

- Why let conditions come out of one permit before they are incorporated into another?
- To minimize the amount of time sources might potentially be subject to duplicative requirements under two sets of regulations.
  - Revisit title V timeline.
  - If sources have to wait until their NOCs are incorporated into their permits, there would be 9 additional months of overlap.

Transition from RCRA to title V (sources with RCRA permits)

- NOCs contain enforceable operating conditions demonstrated to ensure compliance with the emissions limits.
- Using this as the "transition points" ensures that even though the NOC is not yet in the permit there is no break in regulatory coverage.

Transition from RCRA to title V (sources seeking RCRA permits)

- Some sources are currently in the process of obtaining RCRA permits
  - those operating under RCRA interim status
  - those applying to renew their RCRA permits.
- They remain subject to RCRA permitting requirements until they demonstrate compliance with the new standards.
  - Of course, RCRA permitting requirements for all other aspects will continue to apply.

Transition from RCRA to title V (sources seeking RCRA permits)

- No single national approach to transitioning these sources to title V.
- Timing for their transition depends on a variety of "local" considerations:
  - status of the facility in the RCRA permit process
  - regulatory agency's priorities and schedule
  - level of environmental concern at a given site
  - number of similar facilities in the permitting pipeline.

Transition from RCRA to title V (sources seeking RCRA permits)

- We expect permit writers, in coordination with the source, will balance these considerations.
- In mapping out a site-specific transition scheme, we encourage giving weight to two key factors:
  - Minimizing to the extent practicable the amount of time sources subject to duplicative requirements under RCRA and the CAA.
  - Not having testing under one program unnecessarily delayed to coordinate with testing under the other.

Transition from RCRA to title V (sources seeking RCRA permits)

- Final rule preamble walks through three examples, intended as guidance.
  - Example 1. Facility has submitted a RCRA permit renewal application
  - Example 2. Permitting authority has approved or is close to approving the trial burn plan
  - Example 3. Permitting authority does not anticipate approving trial burn plan, or trial burn not scheduled to occur, until after the NIC is submitted.

Transition from RCRA to title V

In closing…

- Close coordination essential in establishing both smooth transition and long term implementation.
- Regions and States should evaluate best way to implement new standards given their organizational structures, knowledge bases in respective programs, and resources.

Overview (status check)

4 Background
4 Permitting Objectives
4 Permitting Applicability
4 Title V Timeline
4 "Fast Track" RCRA Permit Modifications
4 Transition from RCRA to Title V

Overview (cont…)

- Site-Specific Risk Assessment (SSRA) Policy
  - Pre-MACT Rule SSRA Policy
  - Impact of the HWC MACT Rule & National Risk Assessment
  - Revised SSRA Policy
  - Qualitative Guiding Factors
  - Risk Data Collection
  - Risk-Based Permit Limits

Overview (cont…)

- Subpart X
- State Authorization

Pre-MACT Rule SSRA Policy

- The RCRA omnibus provision requires all RCRA permits include terms and conditions necessary to protect human health and the environment.
- To meet this requirement for HWCs, we strongly recommended in the 1994 Hazardous Waste Combustion Strategy that SSRAs be conducted as part of the RCRA permitting process.

97

Impact of the HWC MACT Rule & National Risk Assessment

- The CAA does not contain an analogous provision to RCRA omnibus.
- To determine if the MACT standards would meet the RCRA protectiveness requirement, we conducted a national multi-pathway risk assessment.
- While comprehensive, the national risk assessment did not address non-dioxin PICs or unique site-specific considerations.

98

Impact of the HWC MACT Rule & National Risk Assessment

- The Risk Assessment did include an analysis of mercury risk.
  - However, that analysis contained significant uncertainties. For example, we did not assess the impact that different background concentrations for mercury would have on the risk results.
  - As a result, while we believe that the HWC MACT standards are generally protective under RCRA, we also believe that conducting a SSRA still may be warranted in some cases.

99

Revised SSRA Policy

- For HWCs subject to the Phase I MACT standards, permitting authorities should evaluate the need for a SSRA on a case-by-case basis.

100

Qualitative Guiding Factors

- We provided a list of qualitative guiding factors in the preamble to assist permitting authorities in determining when a SSRA is necessary.
- The list is not all-inclusive; there may be other factors equally relevant.

101

Qualitative Guiding Factors

- The list includes:
  - site-specific considerations such as the facility's proximity to receptors and unique air dispersion factors
  - identity, quantity and toxicity of possible non-dioxin PICs
  - presence of nearby off-site sources of pollutants

102

Qualitative Guiding Factors

- presence of significant ecological considerations, such as:
  - high background levels of a particular contaminant
  - proximity to a particularly sensitive ecosystem
- volume and type of waste to be burned
- proximity to schools, hospitals, nursing homes, day care centers, parks, community activity centers that would indicate the presence of potentially sensitive receptors

Qualitative Guiding Factors

- presence of other on-site sources of pollutants
- concerns raised by the public.

Risk Data Collection

- If emissions data are not available for a SSRA, a risk burn can be conducted.
- To avoid duplicative testing, however, we encourage coordinating risk testing with MACT performance testing.

Risk-Based Permit Limits

- If a SSRA shows that risk-based permit limits (that are more stringent than those required under MACT) are needed, they would be placed in the RCRA permit.
- However, if a state has an "omnibus-type" provision in its state air statute, it could include the risk-based limits in the title V permit instead.

Risk-Based Permit Limits

- Some states already issue combined or "one-stop" permits covering both the CAA and RCRA requirements.
  - These permits must cite and be enforced under the appropriate statutory authority for each condition.
  - Even states not utilizing the combined permit approach may be able to place the risk-based permit limits in the title V permit provided that the permit cites RCRA authority.

Overview (status check)

4 Background
4 Permitting Objectives
4 Permitting Applicability
4 Title V Timeline
4 "Fast Track" RCRA Permit Modifications
4 Transition from RCRA to Title V

Overview (cont…)

4 SSRA Policy
- Subpart X
- State Authorization

Subpart X

- 40 CFR §264.601 directs permit writers to use the applicable requirements from subparts I through O and AA through CC to develop RCRA permit conditions for miscellaneous units.
- We revised section 264.601 to include the MACT standards (part 63, subpart EEE) in the list of potential applicable requirements.

State Authorization

- Most provisions of the rule are promulgated under the CAA authority in part 63.
- EPA will implement these part 63 standards until they are delegated to the states.
  - Thus, if a state has not received delegation, documents such as the NIC will be submitted to EPA.

State Authorization

- States are not required to adopt the part 63 provisions.
  - However, all states can incorporate and enforce the federal MACT emission limits and operating parameters, since all states have been approved for the title V permitting program.
  - Note that states' title V permitting authority is independent of any delegation for 112(l) standards.

State Authorization

- Other provisions of the rule are promulgated as part of the RCRA program.
- Most of these RCRA provisions are promulgated under HSWA authority, which means that they take effect in all states - both authorized and unauthorized - at the same time, and are implemented by EPA until the state receives authorization.

State Authorization

- Some provisions, notably the changes to the permit modification table, are non-HSWA and will not take effect until states adopt them.

Testing and Compliance Requirements

Presented by
Lawrence Gonzalez
EPA's
Office of Solid Waste
gonzalez.larry@epa.gov

Testing Topics

- **Pre-Test Planning**
- Test Plan Approval
- Waiver of Performance Test
- Feedstream Analysis Plan
- Comprehensive Performance Test
- Confirmatory Performance Test
- Coordination of Testing

Pre-Test Planning

- Early Preparation
  - Notice of Intent to Comply
  - Key Dates
    - Shakedown Timetable
    - Pretesting
    - Testing

Pre-Test Planning Continued

  - Interaction w/ Permitting Official
    - progress report
    - missed milestones
    - new schedules
  - Testing Plan
  - Data in Lieu
  - Announcement of Planned Test
    - 60 days in advance

Testing Topics

✓Pre-Test Planning
- **Test Plan Approval**
- Waiver of Performance Test
- Feedstream Analysis Plan
- Comprehensive Performance Test
- Confirmatory Performance Test
- Coordination of Testing

Test Plan Approval

- Submission to Permitting Official
  - 1 year in advance
  - Approval is not automatic at 9 months
  - Testing must proceed on schedule

Testing Topics

- ✓Pre-Test Planning
- ✓Test Plan Approval
- **Waiver of Performance Test**
- Feedstream Analysis Plan
- Comprehensive Performance Test
- Confirmatory Performance Test
- Coordination of Testing

Waiver of Performance Testing

- Low Feedrate Provision
- Data in Lieu Provision

Waiver of Performance Testing - Low Feedrate

- Low Feedrates of Hg, LVM, SVM, and Cl
  - No Control Assumption
  - Feedrate limits
  - Requires Monitoring to Ensure Continued Compliance

Waivers of Performance Testing - Data in Lieu

- Scope of the Allowance
  - All constituents and standards
  - Purpose of data collection
- Age of the data
- Requirements of the Data
  - QA/QC
  - OPLs

Testing Topics

- ✓Pre-Test Planning
- ✓Test Plan Approval
- ✓Waiver of Performance Test
- **Feedstream Analysis Plan**
- Comprehensive Performance Test
- Confirmatory Performance Test
- Coordination of Testing

Feedstream Analysis Plan

- Interaction with the WAP
- Ensure Compliance with the Standards and Operating Requirements
  - sampling and analytical methods
  - frequency of testing
  - PBMS requirements
- Review
  - Administrator Request

Testing Topics

- ✓Pre-Test Planning
- ✓Test Plan Approval
- ✓Waiver of Performance Test
- ✓Feedstream Analysis Plan
- **Comprehensive Performance Test**
- Confirmatory Performance Test
- Coordination of Testing

Comprehensive Performance Tests

- Purpose
  - To demonstrate compliance with the emission standards
  - determine the operating limits that are placed in the NOC
- Testing Frequency
  - Every 5 years with a 1 month extension following the anniversary date of the previous CPT

Comprehensive Performance Test - Continued

- Operation During Testing
  - Designed to be performed under worst-case operations similar to RCRA trial burns
- Duration of Testing
  - Testing must be completed within 60 days of initiating testing

Comprehensive Performance Test - Continued

- Submission of Test Results
  - submitted to the permitting agency 90 days following completion of the test
  - time extension available

Comprehensive Performance Test - Continued

- Test Failure
  - must cease burning under the mode of operation that failure occurred
  - following failure a source has 720 hours for retesting (renewable)
  - can petition the permitting authority for interim operating conditions to continue operation

Comprehensive Performance Test - Continued

- Waiver of Permit Limits
- Initial Test
  - All DOC and MACT based NOC or Title V permit limits are waived during performance testing
  - RCRA permit limits are not waived unless requested using the temporary authorization provisions

Comprehensive Performance Test - Continued

- Waiver of Permit Limits
- Subsequent Testing
  - All MACT based NOC or Title V permit limits are waived during subsequent performance testing
  - If RCRA omnibus limits are required those limits must be waived by RCRA permit official

133

Testing Topics

✓Pre-Test Planning
✓Test Plan Approval
✓Waiver of Performance Test
✓Feedstream Analysis Plan
✓Comprehensive Performance Test
- **Confirmatory Performance Test**
- Coordination of Testing

134

Confirmatory Tests

- Purpose
  - demonstrate that sources are in compliance with the dioxin standard
- Operations During Testing
  - performed under normal to worst case operations
  - normal is determined by averaging 1 year of data from a sources operating record

135

Confirmatory Tests - Continued

- Frequency of Testing
  - The CT is performed 2.5 years following a comprehensive performance test
- Submission of Test Results
  - submitted to the permitting agency 90 days following completion of the test
- Test Failure
  - dioxin performance test must be performed to establish appropriate operating limits

136

Testing Topics

✓Pre-Test Planning
✓Test Plan Approval
✓Waiver of Performance Test
✓Feedstream Analysis Plan
✓Comprehensive Performance Test
✓Confirmatory Performance Test
- **Coordination of Testing**

137

Coordination of Testing Allowances

- Time Extension
  - following the initial comprehensive test
  - up to 1 year to coordinate or consolidate with required testing

138

Compliance Requirements

Compliance Topics

- **Applicability of the Standards**
- AWFCO Requirements
- Excess Exceedance Reports
- Emergency Safety Vents
- SSMPs
- Combustion System Leaks
- Operation and Maintenance Plans

Applicability of the Standards

- The emission standards and the operating requirements of the HWC MACT rule apply at all times unless a source chooses to comply with alternative standards during periods that HW is not fed to and does not remain in the combustion chamber

Applicability of the Standards Continued

- Sources not complying with the requirements of the HWC MACT rule must comply with all of the requirements of other applicable rules (e.g., the Non-Waste Portland Cement Kiln MACT)
- If there are no other applicable rules in which to comply, the sources may operate un-regulated in non-waste burning mode

Applicability of the Standards Continued

- Sources must identify in the operating record when they switch modes
- Sources must also identify in the NOC the period of time it takes for HW to clear the combustion chamber (residence time calculation - RTC)
- For the purposes of the RTC - residues of HW that adsorb to the combustion chamber walls are not considered remnants of HW

Compliance Topics

- ✓ Applicability of the Standards
- **AWFCO Requirements**
- Excess Exceedance Reports
- Emergency Safety Vents
- SSMPs
- Combustion System Leaks
- Operation and Maintenance Plans

AWFCO requirements

- The rule requires sources to maintain an operational AWFCO system for all periods HW is present in the combustion chamber
- The rule further requires sources to engage in an AWFCO at any time a linked operating limit is exceeded

AWFCO requirements

- Ramp down
  - Sources allowed to rampdown waste feed to the combustor following an exceedance

Compliance Topics

✓Applicability of the Standards
✓AWFCO Requirements
- **Excess Exceedance Reports**
- Emergency Safety Vents
- SSMPs
- Combustion System Leaks
- Operation and Maintenance Plans

Excess Exceedance Report

- The rule requires sources to submit an Excess Exceedance Report when they incur 10 **exceedances** in a 60 day period of their DOC, NOC or permitted operating limits that are linked to the AWFCO system while HW remains in the combustion chamber

Excess Exceedance Report

- Reporting Frequency
  - The 60 day period operates a normal rolling average updated daily until reporting is necessary
  - After reporting the rolling average is started new

Compliance Topics

✓Applicability of the Standards
✓AWFCO Requirements
✓Excess Exceedance Reports
- **Emergency Safety Vents**
- SSMPs
- Combustion System Leaks
- Operation and Maintenance Plans

Emergency Safety Vents

- Operation
  - Venting of gases from the ESV is evidence of an exceedance
- Reporting
  - sources must submit a notification to the permitting agency within 5 days following an opening of the emergency safety vent when HW remains in the combustion chamber

Emergency Safety Vents

- Follow-up Reporting
  - Sources must submit a follow-up report within 30 days explaining the event and steps taken to limit such events in the future

Compliance Topics

- ✓Applicability of the Standards
- ✓AWFCO Requirements
- ✓Excess Exceedance Reports
- ✓Emergency Safety Vents
- **SSMPs**
- Combustion System Leaks
- Operation and Maintenance Plans

Startup, Shutdown and Malfunction Plans

- Preparation
  - SSMPs for the periods when hazardous waste is not present in the combustion chamber during startup and shutdown
  - Sources must also prepare SSMPs for periods when they are burning HW, but following them will not shield them from an exceedance

Compliance Topics

- ✓Applicability of the Standards
- ✓AWFCO Requirements
- ✓Excess Exceedance Reports
- ✓Emergency Safety Vents
- ✓SSMPs
- **Combustion System Leaks**
- Operation and Maintenance Plans

Combustion System Leaks

- The rule replaces the phrase “fugitive emissions” with “combustion system leaks”
- Because CAA regs use “fugitive emissions” in a different context

Combustion System Leaks - Continued

- The rule requires sources to limit combustion system leaks through the same methods employed under current RCRA regulations

Compliance Topics

- ✓ Applicability of the Standards
- ✓ AWFCO Requirements
- ✓ Excess Exceedance Reports
- ✓ Emergency Safety Vents
- ✓ SSMPs
- ✓ Combustion System Leaks
- • **Operation and Maintenance Plans**

Operation and Maintenance Plans

- The rule requires sources to develop an O&M plan that describes the operations of the source and the maintenance schedule that ensures compliant operations

HAZARDOUS WASTE COMBUSTOR MACT RULE OPERATING PARAMETERS AND RELATED ISSUES

DC Workshop- Hotel Washington
September 14, 1999

Overview

- Required Operating Parameters
- Alternative Monitoring
- Site-Specific Batch Feed Restrictions
- Averaging Times
- Establishing Limits
- Detection Limit Issues
- Extrapolation Issues

Required Operating Parameters

- Operating parameters required when CEMS are not used for compliance purposes
- Roughly 34 different operating parameter requirements identified in the MACT rule
- Operating parameters specific to both the pollutant and the combustor/APCD design

REQUIRED OPERATING PARAMETER LIMITS TO ASSURE COMPLIANCE WITH THE EMISSION STANDARD

D/F OPLs

- Combustors with dry APCDs must establish max APCD inlet temp limits
- All combustor designs:
  - Haz waste feedrate at each feed location
    - "feed location" is not defined in rule
  - Min temp for each combustion chamber
  - Max gas flowrate
  - Site specific limits on HW firing systems

D/F OPLs (Cont'd)

- Combustors with carbon injection systems:
  - min carbon feedrate
  - min carrier fluid flowrate nozzle press. drop
  - identification of carbon brand or properties
  - particulate matter OPLs
    - discussed in upcoming slides

D/F OPLs (Cont'd)

- Combustors with carbon beds:
  - max age of each carbon segment
  - identification of carbon brand or properties
  - max temp at inlet or outlet of bed
  - particulate matter operating parameter limits
    - discussed in upcoming slides

D/F OPLs (Cont'd)

- Combustors with catalytic oxidizers:
  - max age of catalyst
  - catalytic metal loading
  - max space-time for the catalyst
  - substrate specification
  - min and max temp at the inlet of the catalyst

D/F OPLs (Cont'd)

- Combustors that use D/F inhibitors:
  - min inhibitor feedrate
  - inhibitor brand or properties

REQUIRED OPERATING PARAMETER LIMITS TO ASSURE COMPLIANCE WITH THE STANDARD

PM OPLs

- Incs must establish a max ash feedrate limit
- All combustors must establish max flue gas flow rate limits
- Combustors with baghouses must establish min and max pressure drop across each cell
- Combustors with ESP or IWS must establish min power input for each field

PM OPLs (Cont'd)

- Combustors with wet scrubbers:
  - min blowdown and min scrubber tank volume;
  - max scrubber water solids content
    - may be monitored with a continuous monitor (turbity or conductivity monitor);
    - may be periodically sampled manually

PM OPLs (Cont'd)

- Combustors equipped with wet scrubbers:
  - min pressure drop
  - min scrubber liquid flowrate max flue gas flowrate; or,
  - min liquid/gas ratio

PM OPLs (Cont'd)

- "High Energy Scrubber" not defined in the rule
  - Examples include venturi, collision, free jet
  - packed bed, spray towers considered to be low energy scrubbers
- PM control devices not identified in the rule
  - OPLs established pursuant to 63.1209(g)(2) or 63.1209(m)(1)(iv)
    - Example- HEPA filter

REQUIRED OPERATING PARAMETER LIMITS TO ASSURE COMPLIANCE WITH THE EMISSION STANDARD

TOTAL CHLORINE OPLs

- All combustors must establish a total Cl feedrate and max flue gas flowrate limit
- Combustors with dry scrubbers:
  - min sorbent feedrate
  - min carrier fluid feedrate nozzle press. drop
  - identification of sorbent brand or properties

TOTAL CHLORINE OPLs (cont'd)

- Combustors with wet scrubbers:
  - min liquid pH
  - min liquid flowrate and max flue gas flowrate min liquid/gas ratio
  - min pressure drop
- Combustors with wet scrubbers must also establish limits on min liquid feed pressure

REQUIRED OPERATING PARAMETER LIMITS TO ASSURE COMPLIANCE WITH THE EMISSION STANDARD

Mercury OPLs

- All combustors must establish max mercury feedrate limits
- Combustors with activated carbon or carbon beds must establish limits identical to those required for D/Fs
- Combustors with wet scrubbers must establish operating limits identical to those required for chlorine

Mercury OPLs

- Rule incorrectly implies min scrubber pH limit must be established to control Hg
  - Max scrubber pH may be appropriate
    - HgCl reduced to elemental Hg^o at high pH
    - Hg^o can then be re-entrained in the flue gas
- May be appropriate to establish a range of acceptable pHs to control both Hg and Cl
- Technical correction being considered

Mercury OPLs (Cont'd)

- Rule incorrectly implies carbon bed age based on manufacturer specs must be confirmed with D/F test
  - Should be confirmed with both Hg and D/F performance tests
- Technical correction being considered

REQUIRED OPERATING PARAMETER LIMITS TO ASSURE COMPLIANCE WITH THE EMISSION STANDARD

SVM/LVM OPLs

- Metal feedrates:
  - Max combined SVM feedrate for all feeds
  - Max combined LVM feedrate for all feeds
  - Max comb. pumpable LVM feedrate - all feeds
- Additionally:
  - Max inlet temperature to any dry APCD
  - Total combined Cl feedrate for all streams
  - PM OPLs previously discussed

REQUIRED OPERATING PARAMETER LIMITS TO ASSURE COMPLIANCE WITH THE STANDARD

DRE OPLs

- Haz waste feedrate at each feed location
- Min temp for each combustion chamber
- Max gas flowrate
- Site specific limits on HW firing systems
  - intended to apply to pumpable waste

Alternative Monitoring

Alternative Monitoring (Cont'd)

- Alternative monitoring approaches allowed for any required operating parameter
  - 63.1209(g)(1) - initiated by source
    - equivalent or better compliance assurance; ,
    - best assures compliance considering technical and economic limitations
    - provision also applies to waiving a limit

Alternative Monitoring (cont.)

- 63.1209(g)(2) - Agency initiated
  - Agency may determine alternative monitoring/ averaging period requirements are necessary to best assure compliance
- Alternative/voluntary use of CEMS not covered under 63.1209(g)
  - Source must petition under 63.8(f)
    - 63.8(f) delegated to Regions

187

Site-Specific Batch Feed Operating Parameters

188

Site-Specific Batch Feed OPLs

- Rule does not require specific operating parameter limits for batch feed
  - Proposed max batch size, feeding frequency, and min oxygen limits
- Site specific batch feed operating limits may be necessary
  - determined on a site-specific basis

189

Site-Specific Batch Feed OPLs (cont.)

- OPLs may be imposed pursuant to 63.1209(g)(2)
- Criteria used by permitting authority:
  - previous compliance history
  - ongoing compliance
    - excessive exceedance report
  - DRE test results
  - system design

190

Averaging Periods

191

Averaging Periods

- All OPLs complied with on a one-hour rolling average basis, except:
  - Hg, SVM, LVM, and ash feedrate limits (twelve-hour rolling averages)
  - For fugitive emission control, all combustors must either:
    - instantaneously maintain combustion zone pressure below ambient; or
    - petition for an alternative means to control fugitive emissions

192

Averaging Periods (cont.)

- Averaging periods chosen to best assure compliance with standards for time periods equivalent to 3 performance test runs
- Metal/ash feed rate linearly related to emissions
- All other operating parameters not linearly related to emissions
  - One-hour averaging periods necessary

Averaging Periods (cont.)

- Regulating Official may determine that shorter averaging periods are necessary to best assure compliance with the emission standards pursuant to 63.1209(g)(2)
- e.g., 10-minute or instantaneous

Establishing Limits

Establishing Limits

- Most OPLs based on levels demonstrated in a comprehensive performance test
- The following are the exceptions, and are based on manufacturer specifications:
  - min and max pressure drop - baghouse cells
  - carrier fluid flowrate/nozzle pressure drop for activated carbon and dry scrubber systems

Establishing Limits (cont.)

- Limits based on manufacturer specifications, continued:
  - min liquid feed pressure - low energy scrubbers
  - min pressure drop - low energy scrubbers
  - max temp - inlet to catalytic oxidizer
  - max catalyst age - catalytic oxidizer
  - activated carbon, dry sorbent, and D/F inhibitor specifications

Detection Limit Issues

Detection Limit Issues

- Non-detect performance test results
  - Combustor locations that do not feed detectable levels of Hg, SVM, LVM, Cl, or ash during perf test require separate feedrate limits
  - Feedrate limit for these locations are "non-detect"
  - Why? Eliminates need to account for non-detects for daily feedrate compliance purposes

Detection Limit Issues (cont.)

- If "nondetect" feed locations feed detectable quantities of metals/Cl/ash, the source is noncompliant unless:
  - the actual total system feedrate is less than the total system feedrate limit; or,
  - the calculated uncontrolled emission rate is less than the emission standard

Detection Limit Issues (cont.)

- For combustor locations other than "non-detect feed locations", rule does not specify how to handle non-detect results for daily compliance with total system feedrate limits
  - Determination made on a site-specific basis
  - we consider half detection limit to be reasonable

Extrapolating Metal Feedrates

Extrapolation

- Rule allows sources to extrapolate metal feedrates demonstrated in perf test
- Agency promotes use of extrapolation:
  - reduces metal emissions during perf test
  - reduces material handling risks/hazards
  - is conservative when done properly

Extrapolation (Cont'd)

- Extrapolation methodology must be submitted with performance test workplan
- Content of extrapolation procedure request:
  - Appropriate physical form and species
  - Extrapolation procedure
  - Spiking protocol
    - locations and methods of measurement
  - Documentation of normal metal feedrate

Extrapolation (Cont'd)

- Normal feedrate estimates allows Agency to determine:
  - Whether test feedrates are at least at normal levels
    - uncertainty with lower feedrates
  - Extrapolated feedrate limit is not excessively higher than normal levels

Extrapolation (Cont'd)

- Extrapolating feedrate limits to levels well above normal not appropriate because:
  - Public perception of feedrate limits
    - assumes source feeds metals at permitted feedrates
  - Uncertainties associated with extrapolation
    - extrapolation multiplies error/uncertainty
  - May be considered contrary to waste minimization/source reduction philosophy

Extrapolation (Cont'd)

- Rule does not specify how to account for uncertainty when extrapolating
  - May be addressed in guidance
- Possible approaches addressing uncertainty:
  - extrapolation based on average or lowest SRE
  - extrapolation based on statistical analysis

Extrapolation (Cont'd)

- Ways to reduce extrapolation uncertainty:
  - Accurate waste analysis
    - accuracy may be increased by limited spiking
    - certified spiking material
    - verifying spiking material
  - Accurate emission sampling
  - Assume feeds contain no metals
    - non-detect and difficult to measure feeds

Continuous Monitoring Systems

Topics

- CEMS
- COMS
- Bag Leak Detectors
- Other CMS

CEMS

- Required CEMS
  - HC or CO
  - Oxygen
- Optional CEMS
  - PM
  - Hg
  - Multimetals
  - HCl and Cl_2

Required CEMS

- HC or CO
  - HC
    - Performance Specification 8A
    - Hourly rolling average, updated each minute
    - Span
      - Single range: 0-100 ppmv. **One-minute avgs of 100 ppmv or greater must be recorded as 500 ppmv**. **OR**
      - Dual range: 0-100 ppmv and 0-500 ppmv.

Required CEMS (Cont'd)

- HC or CO (Cont'd)
  - HC (Cont'd)
    - Why the concern about responses of 100 ppmv or greater?
      - Many monitors may "peg" at 100 ppmv
      - Detectors not calibrated > 100 ppmv
    - Consequences
      - Source may be out of compliance even though detector shows standard not exceeded
      - Source may restart HW feed sooner than would otherwise be allowed; reduces economic disincentive

Required CEMS (Cont'd)

- HC or CO (Cont'd)
  - CO
    - Performance Specification 4B
    - Hourly rolling average, updated each minute
    - Span
      - Dual range: 0-200 ppmv and 0-3,000 ppmv. **One-minute avgs of 3,000 ppmv or greater must be recorded as 10,000 ppmv. OR**
      - Triple range: 0-200 ppmv; 0-3,000 ppmv; and 0-10,000 ppmv.

Required CEMS (Cont'd)

- Oxygen
  - Required only to correct HC or CO readings to 7% oxygen
  - Performance Specification 4B

Optional CEMS

- PM
- Hg
- Multimetals
- HCl and Cl_2

Optional CEMS

- Why would a source elect to use an optional CEMS?
  - Process Control: To get real time information on factors that affect emissions, thus minimizing compliance (e.g., retrofit) costs
  - To reduce the number of enforceable operating parameter limits that are tied to the AWFCO system (i.e., reduce AWFCOs)

Optional CEMS (Cont'd)

- Why would a source elect to use an optional CEMS? (Cont'd)
  - No performance testing for the stnd measured by a CEMS
  - To reduce feedstream S & A costs
  - To enhance public relations
  - As a Supplemental Enforcement Project in lieu of or to reduce penalties

Optional CEMS (Cont'd)

- What are the current disincentives for opting to use CEMS?
  - Credible evidence
  - Source must recommend performance specifications and document that the CEMS provides better compliance assurance than the operating parameter limits.
  - Use proposed performance specs as a point of departure

Optional CEMS (Cont'd)

- How would a source get approval to use an optional CEMS?
  - Section 63.1209(a)(5) says to use section 63.8(f) for approval.
  - Use of a CEMS in lieu of operating limits is a "major" alternative monitoring request and has not been delegated to the States.

Optional CEMS (Cont'd)

- How should a source proceed to gain approval of an optional CEMS?
  - Before purchasing and testing the CEMS, discuss with permitting officials:
    - Enforcement relief during testing phase
    - Demonstration approach
    - Criteria for accepting CEMS data for compliance

Optional CEMS (Cont'd)

- How to proceed (Cont'd)
  - Include these provisions in the alternative monitoring request under 63.8(f)
  - To document that the CEMS is an effective compliance monitor, follow the *procedures* in the proposed Performance Specifications but use the data acceptance criteria values (e.g., r, CI, TI, data availability) you show to be achievable.

Optional CEMS (Cont'd)

- Does the CEMS provide better compliance assurance than the status quo?
  - Compare the uncertainty of the current compliance approach (e.g., operating parameter limits, feedstream S & A) with the measurement uncertainty of the CEMS

Optional CEMS (Cont'd)

- What is the status of the PM CEMS rulemaking?
  - Additional data needed to identify an achievable CEMS-based emission level that is equivalent to the manual method-based standard
  - Can MACT sources achieve the PM stnd using a CEMS

Optional CEMS (Cont'd)

- Status of PM rulemaking (Cont'd)
  - Testing PM CEMS on a MACT INC--DOE's Oak Ridge TSCA INC:
    - Scheduled to begin this Nov-Dec
  - Testing PM CEMS on a MACT CK--Lafarge, Fredonia, KS:
    - Delayed pending additional manual method testing to confirm that the kiln is a MACT kiln

Optional CEMS (Cont'd)

- Status of PM rulemaking (Cont'd)
  - We expect to be analyzing CEMS data on both the INC and CK in 2000 to identify a CEMS-based emission limit.
  - Rulemaking would follow

Optional CEMS (Cont'd)

- Status of PM rulemaking (Cont'd)
  - Considering how to involve stakeholders to identify and resolve issues:
    - How to evaluate CEMS data to identify an achievable emission limit?
      - How to provide an external independent peer review?
    - What EPA flexibility is needed to address concerns about credible evidence?
      - Extended averaging times for the CEMS-based limit?
      - Require compliance with either the CEMS-based limit or the manual method-based stnd, but not both?

Optional CEMS (Cont'd)

- How to involve stakeholders to identify/resolve issues? (Cont'd)
  - Is it necessary to limit PM emissions to performance test levels to ensure compliance with the SVM and LVM standards? What are the implications when a PM CEMS is used?
  - Bottom Line: We want to know ASAP what the issues are and to do whatever is necessary to resolve them.

Outline

+ CEMS
- COMS
- Bag Leak Detectors
- Other CMS

COMS

- Continuous opacity monitoring system (COMS) for cement kilns
  - Part of PM NSPS standard adopted as MACT
  - Compliance based on 6-minute block avg
  - Manual opacity monitoring under Method 9 may be used in lieu of a COMS if source has multiple stacks, a monovent, or if installing a COMS is impracticable.

Bag Leak Detectors

- Bag leak detection for INCs and LWAKs equipped with FFs
  - MACT requirement for all source categories using FFs, unless a COMS is required
  - System must be certified by manufacturer to detect PM at 1.0 milligram per ACM and must provide output of relative PM loadings

Bag Leak Detectors (Cont'd)

  - Vendors of Triboelectric PM monitors claim the instrument is extremely sensitive: 0.1 mg/dscm (0.00005 gr/dscf), or about 0.05 mg/acm.
  - Secondary lead smelter MACT promulgated in 1995 requires detection limit of 1 mg/acm.

Outline

+ CEMS
+ COMS
+ Bag Leak Detectors
- Other CMS

Other CMS

- Must be used to document compliance w/ the operating parameter limits
  - E.g., thermocouples, pressure transducers, flow meters.
- Performance specifications:
  - Must comply w/ manufacturer's specs or recommendations for installation, operation, and calibration of the system

Other CMS (Cont'd)

- Performance specs (Cont'd)
  - Thermocouples: Verify calibration at least once every 3 months
  - Weight measurement devices: Accuracy must be plus/minus 1% ; verify calibration at least once every 3 months
- Must conduct a performance evaluation of CMS as part of the comprehensive performance test (section 63.8(e))

Other CMS (Cont'd)

- Span of non-CEMS CMS cannot be exceeded
  - Span limits must be interlocked with the AWFCO system

HWC MACT WORKSHOP

Operator Training & Certification

Recordkeeping Requirements

Shiva Garg
Phone : 703-308-8459

Operator Training/Certification

- Facility must establish program for each operator responsible for activity affecting emissions
- Operators include
  - Control Room Operators
  - Field Operators
- Program approval by State or EPA
- ASME has a standard for HWI operators

Operator Training/Certification

- Comments received indicate :
  - Certification of all operators too
  . expensive, disruptive and unneeded
  - ASME program not for mtce staff
  - Certification needed for key operators only
- Agency reconsidering on certification of maintenance level operators
-
-

Operator Training/Certification

- MWC incinerators require certification for chief facility operator & shift supervisor only
- Establish site specific operating manual
- ALL operators must take annual training
- Medical waste incinerator rule requires 24 hours annual training for all operators

Recordkeeping Requirements

- Must retain information required to document compliance with subpart EEE
- This includes :
  -- Data recorded by CMS
  -- Copies of all notifications, reports, plans, and other documents

Recordkeeping Cont'd

- Must retain records for 5 years, of which the most recent 2 years must be at source site location
- Data Compression is allowed upon approval (see Sec. 63.1211(e))
  -- Data must be recorded on a less frequent basis than required under 63.1209

ALTERNATIVE STANDARDS
AND
SPECIAL PROVISIONS

ALTERNATIVE STANDARDS

- OVERVIEW
  - Alternative particulate matter standard for incinerators
  - Alternative standards for kilns
    - when standard is unachievable due to raw materials
    - when raw material has nondetect mercury

Alternative PM Standard for Incinerators

Alternative PM Standard for Incinerators

- Rule provides petition process for an alternative particulate matter standard for sources using superior feedrate control of metals
- Alternative standard is 0.030 gr/dscf
- Source must make two demonstrations to be eligible

Alternative PM Standard: Demonstration 1

- Source must have de minimis metals in their feedstreams
- De minimis defined as nondetect metal waste analysis results for all feedstreams
  - applies to all CAA HAP metals except Hg:
    - Semi-volatile metals - Pb, Cd
    - Low volatile metals - As, Be, Cr
    - Remaining CAA metal HAPs - Se, Sb, Co, Mg, Ni

Alternative PM Standard: Demonstration 2

- Source must also demonstrate:
  - cumulative uncontrolled Se, Cd, and Pb emissions are below the semi-volatile metals standard of 240 µg/dscm, and
  - cumulative uncontrolled As, Be, Cr, Sb, Co, Mg, Ni emissions are below the low volatile metals standard of 97 µg/dscm.
  - Sources must assume metals are present at "one-half detection limit values"

–

Alternative PM Standard: Petition Process

- Petition must be submitted
- Petition should include
  - Results of each feedstream analysis
  - Analytical methods used
  - Frequency of analysis
  - Documentation of metals detection limits
  - Calculation of cumulative uncontrolled emission rates for semi- and low volatile metals
-

Alternative PM Standard: Approval of Petition

- Approval must be obtained before a source can operate pursuant to alternative standard
  - applies to interim DOC compliance period
- Feedstreams must be analyzed at least annually to confirm de minimis levels
  - shorter frequency may be deemed appropriate by regulatory official

–

Alternative Standards for Kilns

Alternative Standards for Kilns

- Rule offers two alternative standards for cement kilns and LWAKs
  - Alternative metal/chlorine standard(s) for kilns that cannot achieve standard due to raw material contributions to emissions when using MACT control; and
  - Alternative mercury standard for kilns whose raw material historically has not had detectable levels of mercury.

Alternative Standards for Kilns

- Why provide these alternative stnds?
  - Cannot achieve metals/TCl stnds due to raw material:
    - All sources must be able to achieve stnds using MACT control
    - Control of metals/Cl in raw material not MACT control--impracticable for existing sources
-

Alternative Standards for Kilns

- Why provide these alternative stnds?
  - Nondetect levels of Hg in raw material:
    - Avoids the cost of S & A raw material for Hg at low detection limits for a source that can meet the Hg stnd using MACT control but that has nondetect levels of Hg in raw material
    - Low detection limits are needed to take advantage of the emissions test waiver assuming Hg is uncontrolled
      - Hg in raw material assumed present at 1/2 DT
-

Alternative Standards - Kiln Cannot Achieve Standard While Using MACT

- Rule provides a petition process for alternative metals and/or chlorine standards
  - Source is using MACT control
  - Raw material contributions prevent the kiln from complying with the emission standard
  - Source can seek alternative standard for one or more HAP or HAP groups
-
-

Alternative Standards - Kiln Cannot Achieve Standard While Using MACT

- Format of Alternative Standard
  - Requirement to use MACT control
    - Defined hazardous waste feedrates
    - PM and Chlorine (for LWAKs) controls
  - Other requirements may be recommended by the source or required by the Agency
  - No requirement to sample/analyze raw material
- Source must make three showings to be eligible

Alternative Standards - Kiln Cannot Achieve Standard While Using MACT

- First, source documents it cannot comply with standard because of raw material contributions to emissions while using MACT controls
- Anticipate source will conduct emission test using MACT control to show standard cannot be achieved

Alternative Standards - Kiln Cannot Achieve Standard While Using MACT

- Second, source documents that haz waste semi- and low volatile metals and/or chlorine contributions to emissions are below the emission standard
  - Anticipate source will calculate a system removal efficiency for HAP and estimate contribution to emissions

Alternative Standards - Kiln Cannot Achieve Standard While Using MACT

- Third, kiln documents increased chlorine contributions from haz waste do not significantly increase raw material semi- and/or low volatile metals emissions
  - Anticipate source will conduct two emission tests to make this demonstration
  - Rule does not define "significant"

Alternative Standards - Kiln Cannot Achieve Standard While Using MACT

- What is MACT control for each standard?
  - MACT control for Hg, SVM, LVM and Cl includes, at a minimum, a hazardous waste feedrate limitation, expressed as an MTEC level
    - MTEC = Maximum Theoretical Emission Concentration
    - MACT defining MTECs are different for CKs and LWAKs, and different for existing and new sources
    - See 63.1206(b)(9) and (10) for MTEC levels

Alternative Standards - Kiln Cannot Achieve Standard While Using MACT

- What is MACT control? (cont.)
  - MACT control for semi- and low volatile metals includes particulate matter control to a level below the PM standard
  - MACT chlorine control for LWAKs includes a requirement to achieve a specified removal efficiency
    - existing sources - 85%
    - new sources - 99.6%

Alternative Standards - Kiln Cannot Achieve Standard While Using MACT

- Source must submit petition with required documentation
- Source cannot operate pursuant to alternative standard until approved
  - applies to interim DOC compliance period
- Kiln must reapply for alternative standard consistent with NOC renewals

Alternative Standards:

Mercury is not Present in Raw Materials at Detectable Levels

Alternative Standards - Hg is not Present in Raw Materials at Detectable Levels

- Rule provides a petition process for an alternative mercury standard provided that historically mercury has not been present in the raw material at detectable levels
- determination made on a site-specific basis
  - historical raw material mercury sampling data sufficient
    - not intended to require source to show <u>all</u> previous sampling events resulted in non-detects

Alternative Standards - Hg is not Present in Raw Materials at Detectable Levels

- Format of alternative standard
  - Requirement to use MACT control for mercury which is a hazardous waste mercury feedrate limitation
  - No requirement to sample/analyze mercury content of raw material
    - Source should, however, develop sampling program to use for future alternative standard petitions
-
-

Alternative Standards - Hg is not Present in Raw Materials at Detectable Levels

- Source must submit petition with required documentation
- Source cannot operate under alternative standard until approved by Agency
  - applies to interim DOC compliance period
- Source must reapply for alternative standard consistent with NOC renewals
-
-

SPECIAL PROVISIONS

- Overview
  - Emission averaging allowance for cement kilns
  - Special provisions for kilns with dual stacks and in-line raw mills
  - Special provisions for kilns that feed waste at a location other than the hot end
-
-

Emission Averaging Allowance for Cement Kilns

Emission Averaging Allowance for Cement Kilns

- Emission averaging allowed for compliance demonstrations for:
  - Preheater, preheater/precalciner kilns with dual stacks
    - Emission characteristics may be different for each stack
  - Kilns with in-line raw mills
    - Emission characteristics may be different when raw mill is off-line
-

Emission Averaging Allowance for Cement Kilns

- Why is emissions averaging allowed?
  - Emissions of HAPs can be different in the by-pass vs main stack, and when the in-line raw mill is off vs on
  - Rather than trying to establish separate standards for these situations, the rule allows emissions averaging to ensure that sources can achieve the standards.

Emission Averaging Allowance for Cement Kilns (cont.)

- Dual stack emission averaging methodology
  - Applies only to Hg, SVM, LVM and Cl standards
  - Both stacks must be sampled during test
  - Emission standard compliance may be demonstrated on a "flowrate-weighted average basis", in accoradance with the following equation:
  -
  -

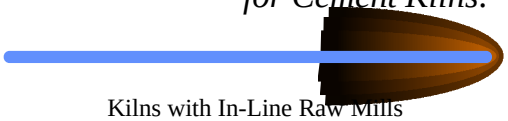
Emission Averaging Allowance for Cement Kilns (cont.)

- $C_{tot} = \{C_{main} \times (Q_{main} / (Q_{main} + Q_{bypass}))\} + \{C_{bypass} \times (Q_{bypass} / (Q_{main} + Q_{bypass}))\}$
  - C_{tot} = gas flowrate-weighted average concentration of the regulated constituent
  - C_{main} = average performance test concentration demonstrated in the main stack
  - C_{bypass} = average performance test concentration demonstrated in the bypass stack
  - Q_{main} = volumetric flowrate of main stack effluent gas
  - Q_{bypass} = volumetric flowrate of bypass effluent gas

Emission Averaging Allowance for Cement Kilns (cont.)

- Dual Stack Averaging Compliance
  - Calculated flowrate-weighted average emission must be below standard
  - Source must develop operating parameters for each stack to ensure emission standard compliance on a 12-hour rolling average
    - Must consider varying flowrates in each stack
    -
-

Emission Averaging Allowance for Cement Kilns:



Kilns with In-Line Raw Mills

Emission Averaging Allowance for Cement Kilns (cont.)

- In-line raw mill emission averaging methodology
  - Applies only to Hg, SVM, LVM, and Cl standards
  - Emissions from both modes of operation must be sampled
  - Emission standard compliance may be demonstrated on a time-weighted average basis in accordance with the following equation:
  -

Emission Averaging Allowance for Cement Kilns (cont.)

- $C_{total} = \{C_{mill\text{-}off} \times (T_{mill\text{-}off} / (T_{mill\text{-}off} + T_{mill\text{-}on}))\} + \{C_{mill\text{-}on} \times (T_{mill\text{-}on} / (T_{mill\text{-}off} + T_{mill\text{-}on}))\}$
- Where:
  - C_{total} = time-weighted average conc. of a regulated constituent considering both raw mill on/off time.
  - $C_{mill\text{-}off}$ = average performance test concentration of regulated constituent with the raw mill off-line.
  - $C_{mill\text{-}on}$ = average performance test concentration of regulated constituent with the raw mill on-line.
  - $T_{mill\text{-}off}$ = time when kiln gases are not routed through the raw mill
  - $T_{mill\text{-}on}$ = time when kiln gases are routed through the raw mill

Emission Averaging Allowance for Cement Kilns (cont.)

- In-line raw mill averaging compliance
  - Compliance with the emission standard must be demonstrated on an annual basis
    - Compliance period is a one-year block average beginning on the day the NOC is effective
- Notification requirements
  - Submitted with performance test workplan
  - Must include historical raw mill down-time and demonstrate source will not exceed standard based on estimated down-time

277

Special Provisions for Kilns with Dual Stacks and In-Line Raw Mills

278

Special Provisions for Kilns with Dual Stacks and In-Line Raw Mills

- Kilns with dual stacks must:
  - Sample each stack
  - Comply with standards in each stack
    - Unless emission averaging is used
  - Establish separate operating limits for each air pollution control device
-

279

Special Provisions for Kilns with Dual Stacks and In-Line Raw Mills (cont.)

- Kilns with in-line raw mills must:
  - Sample emissions when raw mill is on and off
  - Comply with standards for both modes
    - Unless emission averaging is used
  - Establish operating parameter limits for each mode
  - Document in operating record when they switch modes of operation

280

Special Provisions for Kilns with Dual Stacks and In-Line Raw Mills (cont.)

- Transitioning between modes of operation
  - Sources must begin calculating new rolling averages after switching modes
  - If there is a transition period between modes, a source can use its discretion in identifying when it has switched modes

281

Special Provisions for Kilns with Dual Stacks and In-Line Raw Mills (cont.)

- Kilns with both in-line raw mills and dual stacks:
  - No dioxin sampling required when raw-mill off-line
  - No separate dioxin/furan operating limits required for bypass control equipment

282

Kilns that Feed Waste at a Location Other than the Hot End

Kilns that Feed Waste at a Location Other than the Hot End

- Kilns feeding hazardous waste at a location other than the hot-end of the kiln must:
  - Comply with the main stack hydrocarbon standard of 20 ppmv
    - Compliance with CO standard not an option
    - Compliance in bypass not an option
  -
-