Frequency of Monitoring (§64.3) (Cont’d)

- "Large" PSEUs
  - for each parameter, collect four or more data values equally spaced over each hour
- "Other" PSEUs
  - some data collection at least once per 24-hour period

Evaluation Factors for CAM
Account for site-specific factors

- Applicability of existing monitoring equipment and procedures
- Ability of the monitoring to account for process and control device operational variability
- Reliability and latitude built into control technology
- Level of actual emissions relative to emission limits

What does a source do with monitoring results?

- Report deviations, excursions, and exceedances in semi-annual monitoring reports
  - date and duration
  - nature of corrective action
- Certify compliance status for each applicable requirement
  - can cross-reference to semi-annual monitoring reports and other reports (e.g. to identify excursions)
Agency Role
Evaluate source’s CAM plan

- If submitted plan is **INADEQUATE**
  - Confer with source regarding needed changes
  - Disapprove submitted plan
    - Formal notice of disapproval
    - Request revised plan by date certain
    - Draft or Final permit must include periodic monitoring
    - Compliance schedule in permit

Agency Role
Evaluate source’s CAM plan (Cont’d)

- If submitted plan is **ADEQUATE**
  - Approve Plan
    - Agency may condition approval on source gathering more data on indicators
  - Include provisions of CAM in permit and in Statement of Basis
  - If testing or equipment installation required, permit must include enforceable schedule with milestones

Agency Role
Issue final permit that includes

- Indicators to be monitored
- Means or device(s) used to measure indicators (e.g. temperature measurement device, VE, CEMS)
- Performance requirements
- Definitions of exceedance or excursion
- Obligation to conduct monitoring, reporting and recordkeeping, Implement QIP if required
Agency Role
Compliance Certification Condition

- Part 70 (§70.6(c)(5)(iii)) revised when Part 64 promulgated
- Certification conditions must “…identify as possible exceptions to compliance any periods during which compliance is required and in which an excursion or exceedance as defined under part 64 of this chapter occurred.”

EPA Role

- Same as with periodic monitoring or other title V monitoring
- Review permits to determine if monitoring is sufficient to assure compliance

Quality Improvement Plan (§64.8)

- Agency or EPA can require
- Permit may specify appropriate threshold, such as an accumulation of exceedances or excursions exceeding 5% of PSEUs operating time
- Implementation of QIP does not shield source from noncompliance with emission limit
Quality Improvement Plan (§64.8) (Cont’d)

- Written QIP available for inspection
- Evaluate performance problems, and then
- Modify QIP to include
  - improved preventive maintenance practice
  - process operation changes
  - improvements to control methods
  - more frequent or improved monitoring

PM Control - Facility X

- Baghouse
- PM emission limit: 0.1 gr/dscf, 3-hr average
- See Table – Next slide

Facility X

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Measurement Approach</th>
<th>Indicator Range</th>
<th>QIP Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>VE</td>
<td>Daily VE Survey</td>
<td>Presence of VE</td>
<td>5 excursions in 6 months</td>
</tr>
<tr>
<td>Pressure Drop</td>
<td>Differential Pressure Gauge</td>
<td>Pressure drop &gt;5 in. H2O</td>
<td>None selected</td>
</tr>
</tbody>
</table>
VOC Control - Facility Y

- Thermal Oxidizer (incinerator)
- VOC emission limit: 95% control
- See Table – Next slide

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Measurement Approach</th>
<th>Indicator Range</th>
<th>QIP Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chamber Temperature</td>
<td>Thermocouple</td>
<td>≥1500 degrees F</td>
<td>7 excursions in 6 months</td>
</tr>
<tr>
<td>Work Practice</td>
<td>Burner Inspection and</td>
<td>Failure to do</td>
<td>None selected</td>
</tr>
<tr>
<td></td>
<td>Maintenance</td>
<td>annual maintenance or daily flame observation</td>
<td></td>
</tr>
</tbody>
</table>

Facility Y

Enforcement Authority §64.7(d)

“Upon detecting an excursion or exceedance, the owner or operator shall restore operation of the pollutant-specific emissions unit (including the control device and associated capture system) to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions.”
Relationship of CAM to Other Title V Monitoring

- PSEUs not subject to CAM are subject to periodic monitoring
- Periodic monitoring similar but less detailed approach than CAM
- Periodic monitoring could be used to develop data to support proposed CAM plan

Review of Key Concepts

- CAM can only apply if PSEU has control device
- New concepts in CAM
  - pre-control PTE
  - PSEU
  - excursion and exceedance
- Data collection to ensure control device operating properly
  - sources that don't address problems subject to enforcement

QUESTIONS?
LESSON 17

Permit Conditions

Lesson Objectives

- Understand the need for permit conditions
- Examine the various types of permit conditions
- Learn how to prepare effective permit conditions

Permit Conditions

- Crucial component of permit
- Define terms of permit “contract”
- Tell permittee:
  - What is allowed
  - What is prohibited
  - What is required
  - When it is required
Permit Conditions (Cont’d)

Necessary to:

- Ensure compliance of all emission units
- Provide operating requirements, information and limits to
  - site personnel
  - agency inspectors

Basis for Permit Conditions

- Applicable regulations
- Compliance demonstration
- Threshold management
- Record keeping & reporting
- Others?

Basis for Permit Conditions (Cont’d)

- Basis for each condition should be stated in:
  - Permit
  - Review document
  - Engineering analysis
  - Statement of basis

3/2/2014
Permit Conditions (Cont’d)

- Must be enforceable
  - For Title V permits, conditions must be “federally enforceable”
  - All conditions must be practically enforceable

Permit Conditions
Enforceable / Credible Evidence

- Practical Enforceability
  - No calendar year limits
  - Long-term limits based on 12 month rolling sum
  - Operation of required control equipment
- Credible evidence
  - Permit conditions cannot limit information
  - Nothing in permit precludes use of any credible evidence

How many conditions?

- No single “right” answer
- No more than are necessary
- Need to examine need for each condition
- Better to divide complex conditions
- Omit conditions that are redundant, unauthorized, or unnecessary
Categories of Permit Conditions

- Standard conditions
- Emission limits
- Compliance demonstration
- Other conditions

Standard Conditions (Boilerplate)

- Conditions in every permit
- Language reviewed many times
- Generally not revised by permit writers
- May differ by type of permit
- May differ by type of emission unit

Standard Conditions (Cont’d) (Boilerplate)

- What boilerplate does your agency use?
Standard Conditions - Examples
- Effective and expiration dates
- Operator Training
- Excess emission reporting
- Transfer of permit
- Severability
- Right of entry

Emission limitations
- Related requirements must also be specified as conditions
  - Averaging time
  - Testing requirements

Compliance Demonstration
- What must the permittee do to demonstrate continuing compliance?
  - Inspect
  - Maintain
  - Test
  - Monitor
  - Keep records
  - Report
Compliance Demonstration (Cont’d)

- Periodic Visible Emission Evaluations (VEE)
- Certified VEE observer on staff
- Stack tests
- Operation and Maintenance (O & M) logs

Miscellaneous Statements

- Generally advisory conditions
- Examples
  - Steps to revise emission limits
  - Notice to permittee that regulation revisions may result in reopening of permit
  - Definitions and abbreviations

Problem Conditions

- Redundant
- Conflicting
- Vague or ambiguous
- Unenforceable
QUESTIONS?

LESSON 18
Permitting Aspects: New Source Performance Standards (NSPS) & Hazardous Air Pollutants (HAPs)

Lesson Objectives
- Review basics of New Source Performance Standards and MACT programs
- Review basics of toxics issues associated with permitting
Why Discuss Emission Standards in Permitting Course

- NSPS, NESHAP, and MACT standards form a baseline for many emission limits
- Also gives minimum recordkeeping and reporting requirements
- Being subject to a standard can bring in permit requirements

Acronyms

- New Source Performance Standards (NSPS)
- National Emission Standards for Hazardous Air Pollutants (NESHAP)
- Maximum Available Control Technology (MACT)

New Source Performance Standards

- CAA Section 111 and 129
- Requires EPA to establish federal emission standards
- Intended to promote use of best technologies
- Since 12/71 – ~105 NSPS adopted
- Codified in 40 CFR 60
NSPS (Cont’d)

- Part 60 also contains “guidelines” for some existing sources – mainly waste incineration

NSPS Format

- Applicability
  - Typically apply to larger equipment
- Emission Standards
  - May be less stringent than your agency’s
  - May not include standards for all pollutants
- Testing and monitoring provisions
- Special provisions or requirements may be different than your agency’s
- Some NSPS standards are “ancient”

National Emission Standards for Hazardous Air Pollutants

- Originally required by 1970 Clean Air Act Amendments
  - Section 112
- Hazardous Air Pollutant:
  - “…reasonably anticipated to increase mortality or cause a serious illness.”
NESHAPS (Cont’d)

- 1973
  - Asbestos
  - Beryllium
  - Mercury
- 1984
  - Vinyl chloride
  - Benzene
  - Radionuclides
  - Arsenic
  - Coke oven emissions

METHODOLOGY WAS SLOW AND CONTROVERSIAL

- Toxic list contains “approximately” 186 to 190 compounds
- A better way to address toxic air emissions needed to be developed
- EPA decided to move to a “control based method”
- Hence the MACT program was developed
- EPA did not have the “statutory ability” to implement the MACT program under the 1970 CAA
- CAA was “opened” by Congress to make additional authority to implement this program.

Maximum Achievable Control Technology

- 1990 Clean Air Act Amendments
- Emission limits based on the best demonstrated technology or practices in similar sources
The emission limit which:
- is not less stringent than that achieved in practice by the best similar source
- reflects the maximum degree of reduction, taking into consideration
  - the cost of achieving such emission reduction
  - any non-air quality health and environmental impacts and energy requirements

The emission limitation reflecting the maximum degree of reduction in emissions considering
- the cost of achieving such emission reduction,
- any non-air quality health and environmental impacts, and
- energy requirements.

The limit must be
- achievable by sources in the category of stationary sources, and
- not be less stringent than the MACT floor.

For new sources
- The emission limitation achieved in practice by the best controlled similar source.

For existing sources
- For source categories with > 30 sources: MACT is the average achieved by the best 12% of the sources, excluding those recently equipped with MACT.
- For source categories with < 30 sources: MACT is the average achieved by the best performing five sources.
### Example MACT Standards

- Ferroalloy Production
- Flexible Polyurethane Foam
- Oil & Natural Gas Production
- Portland Cement
- Cellulose Production
- Large Appliance Coating
- Lead Acid Battery Mfg
- Petroleum Refineries

### Example MACT Standards (Cont’d)

- Primary Aluminum Production
- Pulp and Paper Production
- Wool Fiberglass Manufacturing
- Sewage Sludge Incinerators
- Tire Manufacturing
- Metal Coil Coating
- Natural Gas Transmission
- RICE

### A WORD ABOUT “RESIDUAL MACT”

- A “control based” technology has it’s advantages but it also has some inherent disadvantages
- Advantage: A relatively fast way to reduce the amount of toxic emissions being emitted by regulated sources
- Disadvantage: A threat to human health and the environment may still remain
“HYPOTHETICAL EXAMPLE”

- Example I: A source that emitted 100 tpy of a regulated HAP implements the MACT for its source category resulting in a 90% reduction of the HAP and reducing its HAP emissions to 10 tpy.
- Example II: A facility in the same source category has pre MACT emissions of 1000 tpy of the same HAP, therefore reducing its emission levels to 100 tpy.

“RESIDUAL MACT” (Cont’d)

- At a level of 100 tpy a real threat to human health and the environment may remain.
- Hence “Residual MACT”
- Refinery – fence line monitoring
- Stay tuned for others

Questions
LESSON 19

Compliance & Enforcement Considerations

Lesson Objectives

- Answer question “What is compliance?”
- Explain how to define compliance in permit
- Examine what is required to demonstrate compliance
- Examine the importance of enforcement
- What should the permittee do?
- What can the agency do?

Basis for Compliance

- Basic purpose of a permit term or condition is to tell permit holder
  - What is allowed
  - What is prohibited
  - What is required
  - When it is required
  - How to comply
Compliance vs. Enforcement

- Compliance: The full implementation of requirements
- Enforcement: The set of actions taken by the government to achieve compliance
  - Inspections
  - Negotiations
  - Legal action

NACT 335
- Principles of Compliance and Enforcement

What Constitutes Compliance?

Examples:
- Emission limits being met
- Work practices being observed
- Maintenance being performed
- Hours of operation within limits
- Fuel meeting specifications

Compliance Defined in Permit

- Describe what constitutes compliance and how compliance will be determined
- State who is responsible for demonstrating compliance (or noncompliance)
- What does the permittee need to do to demonstrate to the agency that all the terms of the permit are being fulfilled
- What actions does the permittee need to take if noncompliance is documented or observed
Compliance Defined in Permit (Cont’d)
- Specify those actions in permit conditions
- Define time limits by which compliance must be attained
- Describe evidence required to prove a violation

Compliance Provisions
- Permittee shall not knowingly falsify or render inaccurate any monitoring device or method required by the permit
- The information obtained from the required monitoring can be used directly for enforcement.
- Any credible evidence

Compliance Demonstration
- Surrogate measurements may be useful in demonstrating compliance
  - Temperature
  - Pressure drop
- If relationship can be established, these may be easier, less costly
- Must be reflected in permit
Compliance Demonstration (Cont’d)

- Permittee activities
  - Source tests
  - Continuous emission monitors (CEMs)
  - Logs
    - Fuel/raw material usage
    - Parametric data (temp., pressure drop, VE)
    - Maintenance/repair
- Agency activities
  - Inspections

Compliance Demonstration (Cont’d)

- Compliance demonstration hierarchy
  1. Reference method stack tests
  2. Calibrated (with reference method) CEMS
  3. Calibrated tests on similar units
  4. Non-reference method tests on unit
  5. Non-reference method tests on similar units
  6. Literature data for similar units
  7. AP-42 factors
- Follow Agency Guidelines

Noncompliance

- Noncompliance with any permit condition constitutes a violation of the Clean Air Act and/or State rules and is grounds for
  - Enforcement action
  - Permit termination, revocation and reissuance, or modification
  - Denial of a permit renewal application
Class Discussion - Compliance

- What is meant by the term “compliance”?
- Why must the term “compliance” be defined in a permit for each emission unit and for each emission limitation?
- Is the definition for the term “compliance” negotiable?

Enforcement

- After the permit is issued
- Different than compliance schedule

Importance of Enforcement

- Permitting process meaningless if not appropriately enforced
- Levels “playing field”
- Provides disincentive
- Affords credibility to agency
Enforcement (Cont’d)

- Agency must communicate
- Complex permits may warrant:
  - In house meeting with appropriate enforcement personnel before draft permit is issued
  - A meeting with permittee upon completion of the draft permit
  - A walk-through existing facility with permit writer, enforcement personnel, and facility representatives

Enforcement (Cont’d)

- Permittee responsibilities:
  - Understand the permit
  - If questions, ask the agency
  - Request a meeting if necessary
- If permittee doesn’t understand the permit, compliance will be difficult and enforcement action is likely

Enforcement (Cont’d)

- Agency responsibilities
  - Diligence
  - Periodic inspections
  - Thorough review of records
  - Formal enforcement action if warranted
    - Depends on agency’s enforcement policy
    - Warning
    - Notice of Violation (NOV)
Commencement of Construction

- Important in two different contexts in Pre-Construction PSD Permit
  - Before a Pre-Construction Permit is Issued
  - After a Pre-Construction Permit is issued

Commencement of Construction - Building a New Plant

- Application Preparation
- Agency Review
- Final Permit Issuance
- Land Will Be Laying Idle
- Plant Construction Period

Activities Allowed Before Permit Is Issued

12/18/1978 EPA Memo from Ed Reich interprets 40 CFR 52.21(i) as follows:

- Planning / Preparation
- Ordering of Equipment
- Clearing the Site
- Grading Activities
- On-Site Storage of Equipment and Material
Activities Not Allowed Before Permit Is Issued

- Pouring Foundation
- Installing Building Support
- Paving
- Laying Underground Pipework and Utilities
- Avoiding “Equity In the Ground” argument

Activities Required After Permit Is Issued

- Source is required to “Commence Construction” within 18 months after Permit is issued (40 CFR 52.21(r)(2))
- Avoiding “Yesterday’s BACT”

Commencement of Construction?

What Qualifies as Commencement of Construction after permit is issued?
- Placement, assembly, installation of materials, equipment or facilities as part of ultimate structure of source
- Activities must take place at proposed site and be site-specific
Commencement of Construction Extensions

- Extension beyond 18 months is allowed “upon a satisfactory showing that an extension is justified”
- Jan. 31, 2014 EPA may no longer require a new application, if applicant shows extensive analysis is not needed, on a case-by-case basis
- 2014 EPA Policy in SIP or Agency Policy for state/local/tribal agency issued permit

Penalties

- Should result in behavior change
- Not just cost of doing business
- Should recognize certain factors

Penalty Factors

- Agency should formalize penalty factors
- Economic factors
  - Cost avoided
  - Cost postponed
- Deviation from standard
- Potential for harm
- Length of violation
QUESTIONS?

SUMMARY

Permits

- Permits
  - Permission to Pollute
  - Preconstruction
  - Operating permit
- Who needs permit varies
- Sources can reduce emissions to avoid stringent permit requirements
Federal Permits
- PSD
  - Only major sources
    - Major source is >250 tpy or 100 tpy on list
    - Major modification means a physical change with emissions greater than SER (note source is major if the modification is major on own)
  - Applies in attainment or unclassified areas
  - Requires BACT
    - BACT considers cost
    - Uses Top down approach that identifies all possible options

Federal Permits (Cont'd)
- PSD (Cont'd)
  - PSD applies to criteria pollutants
  - PSD does not require offsets or banking

NSR
- Applies in non-attainment area
- Applies only to Criteria Pollutants
- Requires LAER
  - No consideration of cost
- Offsets Required
  - Are greater than 1 to 1
- Offsets come from shutdowns or over control
- Offsets may be obtained from banks
Title V
- Operating Permit Program
- Covers major sources – generally greater than 100 tpy
- Consolidates all other permit conditions
- May add recordkeeping provisions
- If control equipment may have CAM plan (CAM plan will include CEM)
- CAM plans use reference methods

Title V (Cont’d)
- All permits reviewed by EPA

Tools
- Inventory
  - Used in PSD in increment analysis
  - Mobile sources very large part of inventory
- Dispersion Models
  - Only EPA approved models
  - Estimate air quality impact of sources
  - Can estimate point of maximum concentration more easily than monitoring
  - Uses local met data for input
  - Stack height influences results
EPA Emission Standards
- Provide basis for permit conditions
- NSPS
  - Emission or performance standards
  - Best demonstrated technology considering cost
  - Local standards can be more stringent
- NESHAP
  - In 1970 act
  - Health based approach
  - Not successful

EPA Emission Standards (Cont’d)
- MACT
  - Technology based does consider cost
  - New – based on best demonstrated
  - Existing average of top sources but above MACT floor

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