

# Compliance Assurance Monitoring

When and How It Applies to Industrial Facilities

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global **environmental** and **advisory** solutions



# CAM Rule Purpose & History



- Developed for the enhanced monitoring and compliance requirements of the CAA;
- 40 CFR §64 finalized in Oct 1997;
- Establishes monitoring criteria that provide reasonable assurance of compliance with applicable CAA requirements;
- All Title V Major Sources are subject;
- Focuses on emission units that rely on control devices to achieve compliance.



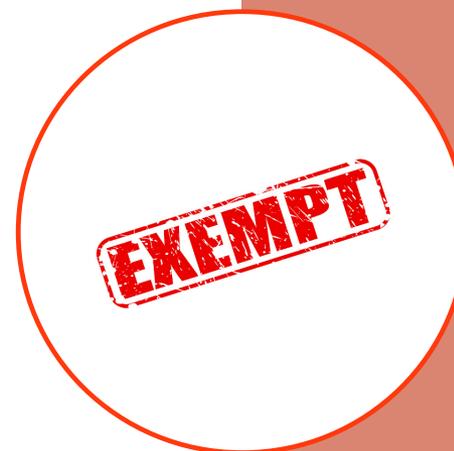
# Applicability

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- Applicability focuses on each “Pollutant-Specific Emissions Unit” (PSEU)
- Applicable if the PSEU:
  - Is located at a facility which is major source required to obtain a Title V permit;
    - 100 tpy of any air pollutant
    - 10 tpy of any HAP, or 25 tpy of aggregate HAPs
    - Lower limits for non-attainment areas
  - Is not subject to an exempt emission limitation or standard;
  - Uses a control device to achieve compliance with such an emission limitation or standard;
  - Has a pre-control PTE  $\geq$  major source threshold; and
  - Is not otherwise exempt.

# Exempt Limitations & Standards

- **Section 111 or 112 limitations or standards proposed after November 15, 1990;**
  - **Broadly speaking: newer NSPS and MACT rules are exempt**
- Stratospheric ozone protection requirements under CAA Title VI;
- Acid Rain Program requirements under sections 404, 405, 406, 407(a), 407(b), or 410 of the CAA;
- Emission limitations or standards or other applicable requirements that apply solely under an approved emissions trading program;
- An emissions cap that meets the requirements specified in 40 CFR §70.4(b)(12) or §71.6(a)(13)(iii);
- **Use of a permitted continuous compliance determination method (cannot assume an emission reduction factor);**
- Municipally-owned backup utility power emissions units.



# When to Submit a CAM Plan

## For Large PSEU:

- Defined as post-control PTE  $\geq$  major source threshold.
- A CAM Plan must be submitted as part of:
  - An initial permit application;
  - A significant permit revision where large PSEU is affected;
  - A renewal application.

## For Other PSEU:

- Defined as pre-control PTE  $\geq$  major source threshold  $>$  post-control PTE.
- A CAM Plan must be submitted as part of:
  - A renewal application.

For new sources, the CAM Plan may not be due with the initial permit application!



# CAM Plan Contents

Indicators to be monitored;

Ranges or design conditions for such indicators;

Performance criteria for monitoring:

- Specifications for obtaining representative data;
- Monitoring frequency;
- Verification procedures to confirm monitor's operational status;
- QA/QC procedures;

Justification for use of parameters, ranges, and monitoring approach;

Performance test data;

Implementation schedule.

Tips:

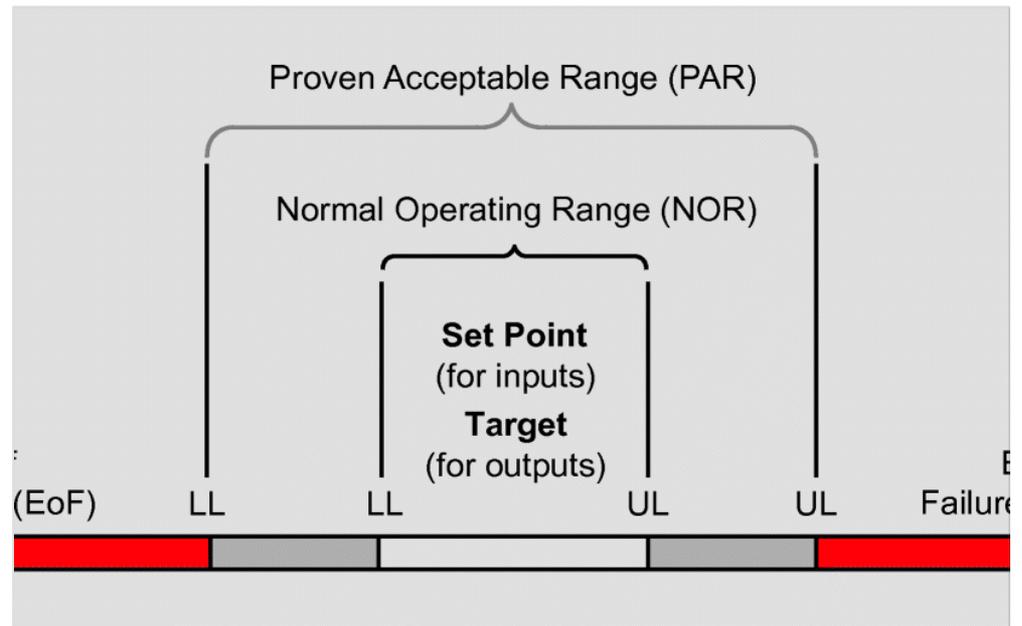
- You may group data for a common control device rather than submit separate monitoring for each emissions unit.
- You may group data for a similar control devices common to one emissions unit rather than submit separate monitoring for each control device.

# Indicators

- Indicators of emission control performance:
  - Direct or predicted emissions measurement, including CEMS, visible emissions or opacity;
  - Process and control device parameters that affect capture or control efficiency (ex: scrubbing liquid flow rate); or
  - Records of testing, inspection and maintenance activities (ex: engineering test to determine pressure drop across baghouse filter as an indicator of capture efficiency).
- Indicators must be monitored to detect any bypass of the control device to the atmosphere (if bypass is available).



# Ranges



- Set operating ranges that provide reasonable assurance of compliance:
  - Set a Proven Acceptable Range based on test results
  - Set range to reflect normal operations for minimizing emissions to the level required to achieve compliance;
  - Set single values/ranges, or multiple levels to define different operating conditions
    - (ex: high and low load);
  - Or set as a function of process variables
    - Pressure drop or temperature range,
    - Operational status (eg, damper position open or closed),
    - Interdependent between multiple indicators.

# Performance Criteria

The monitoring system must be designed to meet the following criteria:

- **Specifications** that obtain representative data (ex: sampling port location, Reference Methods);
- **Verification** procedure to confirm operational status of monitor;
- **Quality assurance and control** practices to ensure data validity;
  - Changes in control device performance should be observable;
- **Frequency** of data monitoring:
  - *Large PSEUs* – Four or more data values equally spaced over each hour, averaged over applicable period.
    - Reduced data collection frequency may be approved as appropriate (ex: fuel analyses);
  - *Other PSEUs* – May be less than required for Large PSEUs, but at least once per 24-hour period (ex: daily Method 22);
- **Data collection** procedure;
- **Averaging period** of data sets.



# Justification

- Justify the proposed elements of monitoring. This may include:
  - Differences from manufacturer recommendations;
  - Supporting materials (ex: engineering manual, EPA or LDEQ publications, etc.);
  - Approved monitoring for similar units;
- Presumptively acceptable monitoring requires no further justification and includes:
  - CEMS;
  - COMS;
  - PEMS;
  - Approved alternative methods pursuant to 40 CFR 75;
  - As identified in guidance by EPA.
- If the monitoring submitted in the CAM Plan requires installation, testing, etc. prior to use, include an implementation plan and schedule for installing and testing
- The CAM Plan must be implemented within 180 days of permit issuance.



# Performance Test Data

- Control device operating parameter data obtained during performance tests should be submitted to justify indicator ranges;
- The test must be conducted under conditions specified by the applicable rule;
- If no conditions are specified, conduct test under conditions representative of maximum emissions under normal operations;
- Test data may be supplemented to justify indicator ranges.
- If no test data exists, submit a test plan and schedule; or
- Submit indicator ranges that rely on engineering assessments and other data.



# Quality Improvement Plan

- The permit should include a requirement to develop and implement a Quality Improvement Plan (QIP) if certain conditions are determined to be met
  - Example: Exceedances or excursion exceeding 5% of operating time
- A QIP must contain the following elements:
  - Must be written and available for inspection
  - Include procedures for evaluating control performance problems
  - Be populated with procedures for conducting corrective actions
    - Improved preventative maintenance
    - Process operation changes
    - Improved control methods, or other appropriate steps
    - More frequent or improved monitoring
- Implement the QIP within 180 days from date of determination



# Example

## EXAMPLE COMPLIANCE ASSURANCE MONITORING PLAN: FABRIC FILTER FOR PM CONTROL

### I. Background

#### A. Emissions Unit

Description: Line 3 Particleboard Sander  
Identification: M2  
Facility: One Facility in Anytown, USA

#### B. Applicable Regulation, Emission Limit, and Monitoring Requirements

Regulation No.: OAR 340-21, permit  
Emission limits:  
Particulate matter: 0.1 gr/dscf, 3 hr avg.  
Monitoring requirements: Visible emissions, periodic monitoring (M22)

#### C. Control Technology

Pulse-jet baghouse operated under negative pressure.

# Example

## EXAMPLE COMPLIANCE ASSURANCE MONITORING PLAN: FABRIC FILTER FOR PM CONTROL

### II. Monitoring Approach

The key elements of the monitoring approach are presented below:

#### A. Indicator

Visible emissions will be used as an indicator.

#### B. Measurement Approach

Visible emissions from the baghouse exhaust will be monitored daily using EPA Reference Method 22-like procedures.

#### C. Indicator Range

The indicator level is no visible emissions.

#### D. QIP Threshold

The QIP threshold is five excursions in a six month reporting period.

#### E. Performance Criteria

Data Representativeness: Measurements are being made at the emission point.

Verification of Operational Status: Not applicable.

QA / QC Practices and Criteria: The observer will be a Method 22 trained observer and follow Method 22-like procedures.

Monitoring Frequency and Data Collection Procedure: A six-minute Method 22-like observation will be performed daily.

# Example

## EXAMPLE COMPLIANCE ASSURANCE MONITORING PLAN: FABRIC FILTER FOR PM CONTROL

### III. Justification

#### A. Background

This facility manufactures particleboard. The pollutant-specific emission unit is the Line No. Sander, which is used to sand the particleboard to the customer's desired thickness. It is controlled by a Western Pneumatic pulse-jet baghouse with 542 bags, which filters approximately 50,000 ft<sup>3</sup> of air from the sander.

#### B. Rationale for Selection of Performance Indicator

Visible emissions was selected as the performance indicator because it is indicative of operation of the baghouse in a manner necessary to comply with the particulate emission standard. When the baghouse is operating properly, there will not be any visible emissions from the exhaust. Any increase in visible emissions indicates reduced performance of a particulate control device, therefore, the presence of visible emissions is used as a performance indicator.

#### C. Rationale for Selection of Indicator Level

The selected indicator range is no visible emissions. When an excursion occurs, corrective action will be initiated, beginning with an evaluation of the occurrence to determine the action required to correct the situation. All excursions will be documented and reported. An indicator range of no visible emissions was selected because: (1) an increase in visible emissions is indicative of an increase in particulate emissions; and (2) a monitoring technique which does not require a Method 9 certified observer is desired. Although RM 22 applies to fugitive sources, the visible/no visible emissions observation technique of RM-22 can be applied to ducted emissions; i.e., Method 22-like observations.

The selected QIP threshold for baghouse visible emissions is 5 excursions in a 6-month reporting period. This level is 3 percent of the total visible emissions observations. If the QIP threshold is exceeded in a semiannual reporting period, a QIP will be developed and implemented.

# CAM in the Permit

- Permits are required to reference the following items from an approved CAM Plan:
  - Monitoring approach (including indicators);
  - Definition of exceedances or excursions;
  - Duty to conduct monitoring;
  - Minimum data availability and averaging period requirements;
  - Milestones for testing, installation, or final verification.



# Questions

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