

# Compliance Requirements and Title V Integration

## Compliance Requirements and Title V Integration

### ■ Monitoring

- 40 CFR 63.2450(j)-(k). Apply if your control device or selected compliance method requires monitoring.

### ■ Control Device Testing

- 40 CFR 63.2450(d)-(h). Apply if you have control devices.

### ■ Alternative Means of Compliance

- 40 CFR 63.2495 to 63.2505. Apply should you choose to use these provisions instead of Tables 1 through 7.

### ■ Title V Integration

- 40 CFR 70.7(f). Applies for all major sources with Title V permits.

## Monitoring Requirements

### ■ Continuous Emission Monitoring Systems (CEMS)

#### ■ 40 CFR §63.2450(j)

### ■ Follow these if you choose to perform emission monitoring (i.e. the alternative standard)

## Monitoring Requirements

### ■ Continuous Emission Monitoring Systems (CEMS)

#### ■ 40 CFR §63.2450(j)

- Refers to General Provisions (40 CFR 63.8) - some highlights below
  - ◆ One sample per 15 minutes (63.8(c)(4)(ii))
  - ◆ Zero and high-level calibration daily, with corrections required and out-of-control provisions (63.8(c)(6)-(8))
  - ◆ Alternative methods can be approved (63.8(f))
  - ◆ Reduction of data to 1-hour averages must be performed and must have 2 readings per hour when doing calibration, QA or maintenance (63.8(g))

## Monitoring Requirements

### ■ Continuous Emission Monitoring Systems (CEMS)

#### ■ 40 CFR §63.2450(j)

- Refers to NSPS Appendix B for methods (40 CFR 60) (2450(j)(1))
  - ◆ VOC, use of GC, use of FTIR
- Specific calibration gas and reporting requirements
  - ◆ Determine target analytes by process knowledge or screening if using Performance Spec. 9 (GC) or 15 (FTIR) (2450(j)(2)(i))
  - ◆ If meeting Performance Spec. 8 (VOC), calibrate on predominant organic HAP and report as C<sub>1</sub> (2450(j)(2)(ii)-(iii))

## Monitoring Requirements

### ■ Continuous Emission Monitoring Systems (CEMS)

#### ■ 40 CFR §63.2450(j)

- Requires a performance evaluation for each CEM. Results must be included in the Notice of Compliance Status. (2450(j)(3))
- Correct for supplemental gases, if used (2450(j)(5))

## Monitoring Requirements

## ■ Continuous Emission Monitoring Systems (CEMS)

### ■ 40 CFR §63.2450(j)

- Data reduction requirements (2450(j)(4))
  - ◆ For continuous process vents, reduce to operating day averages
  - ◆ For batch process vents, reduce to operating block averages
    - Start to end of batch is one block
  - ◆ If calibrating, QA, or maintenance on CEMS, data valid if have 2 15-minute measurements in one hour
- ◆ Data reduction here is in addition to 63.8(g) requirements.

## Monitoring Requirements

### ■ Continuous Parameter Monitoring Systems (CPMS)

#### ■ 40 CFR §63.2450(k)

#### ■ Follow these provisions if you operate a control device for MON Group 1 vents

## Monitoring Requirements

### ■ Continuous Parameter Monitoring Systems (CPMS)

#### ■ 40 CFR §63.2450(k)

- Refers to 40 CFR 63 Subpart SS for parametric monitoring systems
  - ◆ Flare 987(c)
    - a device (including but not limited to a thermocouple, ultra-violet beam sensor, or infrared sensor) capable of continuously detecting that at least one pilot flame or the flare flame is present.

## Monitoring Requirements

### ■ Continuous Parameter Monitoring Systems (CPMS)

#### ■ 40 CFR §63.2450(k)

- Refers to 40 CFR 63 Subpart SS for parametric monitoring systems
  - ◆ Incinerators, Boilers, And Process Heaters 988(c)
    - Incinerator - temperature in firebox or immediately downstream of firebox
    - Catalytic incinerator - temperatures immediately before and after catalyst bed
    - Boiler < 44 MW (150 MM Btu/hr) - temperature in firebox

## Monitoring Requirements

### ■ Continuous Parameter Monitoring Systems (CPMS)

#### ■ 40 CFR §63.2450(k)

- Refers to 40 CFR 63 Subpart SS for parametric monitoring systems
  - ◆ Absorbers, Condensers, And Carbon Adsorbers Used As Control Device 990(c)
    - Absorber - scrubbing liquid temperature, specific gravity
    - Condenser - condenser exit (product side) temperature
    - Carbon - regeneration steam flow (with totalizer) and carbon bed temperature.

## Monitoring Requirements

### ■ Continuous Parameter Monitoring Systems (CPMS)

#### ■ 40 CFR §63.2450(k)

- Refers to 40 CFR 63 Subpart SS for parametric monitoring systems
  - ◆ Absorbers, Condensers, Carbon Adsorbers And Other Recovery Devices Used As Final Recovery Devices 993(c)

- Absorber - organic monitor or scrubbing liquid temperature and specific gravity
- Condenser - organic monitor or condenser exit (product side) temperature
- Carbon - organic monitor regeneration steam flow (with totalizer) and carbon bed temperature.

## Monitoring Requirements

### ■ Continuous Parameter Monitoring Systems (CPMS)

#### ■ 40 CFR §63.2450(k)

- Refers to 40 CFR 63 Subpart SS for parametric monitoring systems
  - ◆ Halogen Scrubbers And Other Halogen Reduction Devices 994(c)
    - pH monitoring device (or continuous measure of caustic strength)
    - Scrubber influent liquid flow
    - Gas flow (measured or determined by blower design capacity)

## Monitoring Requirements

### ■ Continuous Parameter Monitoring Systems (CPMS)

#### ■ 40 CFR §63.2450(k)

- Whatever parameter value is determined by testing, it becomes an operating limit, and subject to compliance reporting 2450(k)(2)
- Required to record calibration checks and maintenance 2450(k)(1)

## Monitoring Requirements

### ■ Continuous Parameter Monitoring Systems (CPMS)

#### ■ 40 CFR §63.2450(k)

- Can continuously monitor caustic strength instead of pH for scrubbers 2450(k)(3)
- Alternative measurements are available for catalytic incinerators 2450(k)(4)
  - ◆ Inlet temperature and catalytic activity check (annual)

## Monitoring Requirements

### ■ Continuous Parameter Monitoring Systems (CPMS)

#### ■ 40 CFR §63.2450(k)

- No specific QA/QC requirements other than in Subpart SS are required for CPMS; deferred to later amendment of General Provisions
- Must follow manufacturer's specifications or other written procedures for installation, calibration, maintenance and operation 996(c)(1)
- Must ensure ability to immediately repair or replace a CPMS 996(c)(2)

## Monitoring Requirements

### ■ Continuous Parameter Monitoring Systems (CPMS)

#### ■ 40 CFR §63.2450(k)

- Must have verifiable data prior to any performance testing 996(c)(3)
- Must provide representative measurement of the parameter 996(c)(4)
- CPMS must operate when emissions are going to the monitored device 996(c)(5)

## Monitoring Requirements

## ■ Other Monitoring Requirements

- Closed vent systems
  - ◆ Bypass monitoring of flow or use of car-seal/lock-and-key valve 983
- Data Reduction
  - ◆ Hourly averages and reduction to daily or block averages 998b and 2460(c)(4)
  - ◆ Must include data from SSM periods in data reduction 2450(l)

## Control Device Testing Requirements

### ■ 40 CFR §63.2450(d)-(h)

#### ■ Required to be followed if you operate a control device for MON Group 1 vents

- All initial compliance demonstrations, including performance testing results, must be included with the Notification of Compliance Status report, which is due 150 days after the compliance date 2450(g)(5)
  - ◆ This is 30 days less than the Subpart SS timeline in 997(c) and the HON
- Must submit a notification of performance test at least 60 days prior to testing

## Control Device Testing Requirements

### ■ 40 CFR §63.2450(d)-(h)

- All performance testing requirements refer to Section 63.997
  - prior testing results acceptable if conducted with required test methods and process conditions 997(b)
  - must provide safe and adequate access and sampling ports for testing 997(d)
  - for continuous process vents, test at “maximum representative operating conditions” 997(e)
  - 997(e)(1) batch provisions do not apply 2460(c)(2)(ii)
  - sampling sites, gas flow rate, TOC calculation, and percentage reduction calculation 997(e)

## Control Device Testing Requirements

### ■ 40 CFR §63.2450(d)-(h)

- Refers to Subpart SS for testing requirements by type of control device
  - ◆ For control or recovery devices other than flares, meet 63.982(c) testing requirements (2450(d))
    - performance test required for device controlling process vents and high throughput transfer racks 982(c)(2)
      - » testing per 63.997
      - » no testing if RCRA incinerator/boiler/process heater
      - » no testing if boiler/process heater design heat input >44 MW (150 MM Btu/hr)
      - » no testing if vent stream is primary fuel or enters with primary fuel for boiler/process heater

## Control Device Testing Requirements

### ■ 40 CFR §63.2450(d)-(h)

- Refers to Subpart SS for testing requirements by type of control device
  - ◆ For control or recovery devices other than flares, meet 63.982(c) testing requirements (2450(d))
    - design evaluation or performance test for device controlling storage tanks or low throughput transfer racks 982(c)(1)
      - » performance testing is same as for process vents
    - no design evaluation or performance test for device controlling equipment leaks 982(c)(3)

## Control Device Testing Requirements

### ■ 40 CFR §63.2450(d)-(h)

- Refers to Subpart SS for testing requirements by type of control device
  - ◆ For flares, meet 63.982(b) testing requirements (2450(e))
    - compliance assessment 987(b)
      - » observe visible emissions
      - » determine net heating value
      - » determine actual exit velocity

» must have flame or pilot monitors operating

## Control Device Testing Requirements

### ■ 40 CFR §63.2450(d)-(h)

- Refers to Subpart SS for testing requirements by type of control device
  - ◆ For halogen reduction devices, meet 63.994 testing requirements (2450(f))
    - 997 general and specific testing requirements
    - test at inlet and outlet of control device
    - sum of HX and X<sub>2</sub> for determining percentage reduction or outlet concentration

## Control Device Testing Requirements

### ■ 40 CFR §63.2450(d)-(h)

- Performance test conditions and methods have exceptions and additions (2450(g))
  - ◆ Method 3, 3A, 3B for gas MW (2450(g)(1))
  - ◆ Measure moisture with Method 4 (2450(g)(2))
  - ◆ Carbon disulfide measurement and adjustment (2450(g)(3))
  - ◆ Method 320 (FTIR) acceptable (2450(g)(4))

## Control Device Testing Requirements

### ■ 40 CFR §63.2450(d)-(h)

- Design evaluation for small control device (<10 TPY) per Pharmaceutical MACT (40 CFR 63.1257(a)(1)) (2450(h))
  - ◆ evaluation required depends on the type of control device
    - enclosed combustion device
    - thermal or catalytic incinerator
    - boiler or process heater
    - condenser
    - carbon adsorption
    - scrubber

## Control Device Testing Requirements

### ■ Control Device Testing for Batch Processes

#### ■ 40 CFR §63.2460(c)

- Refers to Pharmaceutical MACT for “worst-case” conditions for testing (40 CFR 63.1257(b)(8))
  - ◆ Applies to batch or combined continuous and batch processes 2450(c)(2)
  - ◆ Absolute worst-case
  - ◆ Hypothetical worst-case
  - ◆ Emission profile
    - By process
    - By equipment
    - By capture and control device limitation
- If worst-case condition changes, must redo initial compliance demonstration within 180 days of the change

Emission Profile by Process (63.1257(b)(8)(ii)(A))

Absolute Worst Case (63.1257(b)(8)(i)(A))

Emission Profile by Equipment (63.1257(b)(8)(ii)(B))

Emission Profile by Capture & Control Device  
(63.1257(b)(8)(ii)(C))

## Control Device Testing Requirements

### ■ Control Device Testing for Batch Processes

#### ■ 40 CFR §63.2460(c)

- Special options for a condensers as control device
  - ◆ may calculate controlled emissions per equations in 63.1257(d)(3)(i)(B)
  - ◆ must use modified equation for air dryers controlled by a condenser
- Additional requirements for process condensers

- ♦ must demonstrate proper operation 1257(d)(3)(iii)(B)
  - exhaust gas temperature below boiling point or bubbling point of liquid in vessel; or
  - 99% collection of vaporized material collected
- ♦ can measure liquid temperature in receiver instead of exhaust gas temperature

## Alternative Means of Compliance

### ■ Pollution Prevention (40 CFR 63.2495)

- Available only for processes operating before April 4, 2002
- Applies to a single MCPU
  - ♦ Requires 65% reduction of HAP factor from 3-year baseline (1994-96 or later)
  - ♦ Must reduce HAP and VOC equivalently (if HAP is a VOC)
  - ♦ Same starting and ending point of process
    - Cannot just move parts of process off-site
  - ♦ Any generated HAPs must be accounted for in pollution prevention calculation or controlled according to Tables 1 to 7.

## Alternative Means of Compliance

### ■ Pollution Prevention Example

- HAP Factor (production-indexed HAP consumption factor)
  - ♦ Process consumes 10,000 tons/year of HAP (also VOC)
  - ♦ Process consumes 25,000 tons/year of VOC (not HAP)
  - ♦ Process makes 5,000 tons/year of product
- ♦ HAP factor =  $\frac{10,000}{5,000} = 2.0$
- ♦ VOC factor =  $\frac{25,000}{5,000} = 7.0$

## Alternative Means of Compliance

### ■ Pollution Prevention Example

- HAP Factor (production-indexed HAP consumption factor)
- 65% Reduction Targets
  - ♦ Target HAP factor =  $2.0 \times (1 - 0.65) = 0.7$ 
    - Therefore, can consume only 3,500 tons/year of HAP
      - »  $5,000 \times 0.7 = 3,500$  tons
  - ♦ Target VOC factor =  $7.0 \times (1 - 0.65) = 5.7$

## Alternative Means of Compliance

### ■ Pollution Prevention (40 CFR 63.2495)

- Requires submittal of Demonstration Plan with Precompliance Report
  - ♦ How did you determine HAP or VOC consumption?
  - ♦ How did you determine production?
  - ♦ Provide supporting documentation
- Compliance Demonstration
  - ♦ Monthly if continuous process, combined batch and continuous, or large numbers of batches (>10/mo)
  - ♦ Every 10 batches (if >10/year and <10/mo)
  - ♦ Once every 12 months if <10 batches/year

## Alternative Means of Compliance

### ■ Emissions Averaging (40 CFR 63.2500)

- Can be used for all emission sources except equipment leaks and for process vents with HX, X<sub>2</sub> or PM HAP

- Refers to HON provisions with minor changes to address batch considerations and nomenclature differences from HON (63.150)
  - ◆ All batch process vents from an MCPU are considered as one emission point
  - ◆ Pharmaceutical MACT equations for uncontrolled emissions
  - ◆ MON monitoring, recordkeeping, reporting references
  - ◆ “compliance report” and “storage tank”

## Alternative Means of Compliance

### ■ Emissions Averaging (40 CFR 63.2500)

- Basic concepts
  - ◆ over-controlling of certain sources generates “credits”
  - ◆ under-controlling of other sources generates “debts”
  - ◆ must demonstrate that annual “credits” are greater than or equal to annual “debts”
- Residual risk rules may negate value of emissions averaging in site-specific risk assessment

## Alternative Means of Compliance

### ■ Alternative Standard (control device outlet concentration)

#### ■ 40 CFR 63.2505

- If combustion device,
  - ◆ 20 ppm TOC; and
  - ◆ 20 ppm HX/X<sub>2</sub> HAP or 95% reduction in HX/X<sub>2</sub> HAP
- If non-combustion device,
  - ◆ 50 ppm TOC
  - ◆ 50 ppm HX/X<sub>2</sub> HAP

## Integration of MON with your Title V Permit

### ■ 40 CFR 70.7(f) establishes basic requirements

- If > 3 years left on permit when new applicable requirements are established, must reopen an existing permit
  - ◆ 70.7(f)(1)(i) “Additional applicable requirements under the Act become applicable to a major part 70 source with a remaining permit term of 3 or more years.”
  - ◆ “Such a reopening shall be completed not later than 18 months after promulgation of the applicable requirement.”
- If effective date of the new requirement is beyond permit expiration, do not need to reopen an existing permit

## Integration of MON with your Title V Permit

### ■ 40 CFR 70.7(f) establishes basic requirements

#### ■ Most states follow 70.7(f):

- WV 45 CSR 30-6.6.a.1.A or B “Additional applicable requirements...become applicable to a major source” and “Such a reopening shall be completed not later than eighteen (18) months after promulgation of the applicable requirement.”
- OAC 3745-77-08(D) “Additional applicable requirements under the Act become applicable to a major Title V source” and “Such a reopening shall be completed not later than eighteen months after promulgation of the applicable requirement.”

## Integration of MON with your Title V Permit

### ■ 40 CFR 70.7(f) establishes basic requirements

#### ■ Most states follow 70.7(f):

- 30 TAC122.231 “the promulgation or adoption of a new applicable requirement affecting emission units at the site...” and “Reopenings shall be completed and the permit issued by the executive director not later than 18 months after promulgation or adoption of the applicable requirement.”

- 15A NCAC 02Q.0517 “Additional applicable requirements become applicable to a facility...” and “Any permit reopening...shall be completed or a revised permit issued within 18 months after the applicable requirement is promulgated.

## Integration of MON with your Title V Permit

### ■ 40 CFR 70.7(f) establishes basic requirements

#### ■ Most states follow 70.7(f):

- SC 61-62.70.7(f) - “Additional applicable requirements under the Act become applicable to a major Part 70 source” and “Such a reopening shall be completed not later than 18 months after promulgation of the applicable requirement.”
  - ◆ except in an issued permit, the following phrase is added to the timing statement: “unless the regulation specifically provides for a longer compliance period”.

## Integration of MON with your Title V Permit

### ■ Timing Examples

## Integration of MON with your Title V Permit

### ■ Timing Examples

## Integration of MON with your Title V Permit

### ■ Adding the MON requirements to your permit

- General citations
  - ◆ For making modification of permit after rule promulgated, but details of compliance not set.
    - Add permit condition expressing compliance with MON.
      - » “The permittee shall comply with all applicable requirements of 40 CFR 63 Subpart FFFF by the compliance date of \_\_\_\_\_.”
    - Add permit condition expressing requirement and commitment to submit complete permit modification application within 90 (or other number of) days of completing initial performance demonstrations. This will include all CEMS and CPMS operating limits, etc.
    - This modification counts as “reopening”.

## Integration of MON with your Title V Permit

### ■ Adding the MON requirements to your permit

- All regulatory text included
  - ◆ For meeting MACT provisions after final compliance date.
- Specific citations
  - ◆ For meeting MACT provisions after final compliance date.

## Integration of MON with your Title V Permit

### ■ Construction of Equipment to Comply with MON

- Prepare construction permit applications, if necessary, as soon as possible to meet compliance deadline.
- Construction permit likely will trigger significant modification for Title V permit.