§ 63.3546 How do I establish the emission capture system and add-on control device operating limits during the performance test?

During the performance test required by §63.3540 and described in §§63.3543, 63.3544, and 63.3545, you must establish the operating limits required by §63.3492 unless you have received approval for alternative monitoring and operating limits under §63.8(f) as specified in §63.3492.

(a) Thermal oxidizers. If your add-on control device is a thermal oxidizer, establish the operating limits according to paragraphs (a)(1) and (2) of this section.

(1) During the performance test, you must monitor and record the combustion temperature at least once every 15 minutes during each of the three test runs. You must monitor the temperature in the firebox of the thermal oxidizer or immediately downstream of the firebox before any substantial heat exchange occurs.

(2) Use the data collected during the performance test to calculate and record the average combustion temperature maintained during the performance test. That average combustion temperature is the minimum operating limit for your thermal oxidizer.

(b) Catalytic oxidizers. If your add-on control device is a catalytic oxidizer, establish the operating limits according to either paragraphs (b)(1) and (2) or paragraphs (b)(3) and (4) of this section.

(1) During the performance test, you must monitor and record the temperature at the inlet to the catalyst bed and the temperature difference across the catalyst bed at least once every 15 minutes during each of the three test runs.

(2) Use the data collected during the performance test to calculate and record the average temperature at the inlet to the catalyst bed and the temperature difference across the catalyst bed at least once every 15 minutes during each of the three test runs.

(3) As an alternative to monitoring the temperature difference across the catalyst bed, you may monitor the temperature at the inlet to the catalyst bed and implement a site-specific inspection and maintenance plan for your catalytic oxidizer as specified in

\[
M_f = Q_{sd} C_c (12) (0.0416) (10^{-6}) \quad \text{(Eq. 1)}
\]

Where:

- \(M_f\) = Total gaseous organic emissions mass flow rate, kg per hour (kg/h).
- \(C_c\) = Concentration of organic compounds as carbon in the vent gas, as determined by Method 25 or Method 25A, ppmvd.
- \(Q_{sd}\) = Volumetric flow rate of gases entering or exiting the add-on control device, as determined by Method 2, 2A, 2C, 2D, 2F, or 2G, dry standard cubic meters/hour (dscm/h).
- 0.0416 = Conversion factor for molar volume, kg-moles per cubic meter (mol/m³) (@ 293 Kelvin (K) and 760 millimeters of mercury (mmHg)).

NOTE: If \(M_f\) is calculated in English units (lb/h), the conversion factor for molar volume is 0.00256 lb-moles per cubic foot (mol/ft³).

(e) For each test run, determine the add-on control device organic emissions destruction or removal efficiency, using Equation 2 of this section.

\[
\text{DRE} = \frac{100 \times (M_{f_i} - M_{f_o})}{M_{f_i}} \quad \text{(Eq. 2)}
\]

Where:

- \(\text{DRE}\) = Organic emissions destruction or removal efficiency of the add-on control device, percent.
- \(M_{f_i}\) = Total gaseous organic emissions mass flow rate at the inlet(s) to the add-on control device, using Equation 1 of this section, kg/h.
- \(M_{f_o}\) = Total gaseous organic emissions mass flow rate at the outlet(s) of the add-on control device, using Equation 1 of this section, kg/h.

(f) Determine the emission destruction or removal efficiency of the add-on control device as the average of the efficiencies determined in the three test runs and calculated in Equation 2 of this section.
During the performance test, you must monitor and record the temperature at the inlet to the catalyst bed at least once every 15 minutes during each of the three test runs. Use the data collected during the performance test to calculate and record the average temperature at the inlet to the catalyst bed during the performance test. That is the minimum operating limit for your catalytic oxidizer.

(4) You must develop and implement an inspection and maintenance plan for your catalytic oxidizer(s) for which you elect to monitor according to paragraph (b)(3) of this section. The plan must address, at a minimum, the elements specified in paragraphs (b)(4)(i) through (iii) of this section.

(i) Annual sampling and analysis of the catalyst activity (i.e., conversion efficiency) following the manufacturer’s or catalyst supplier’s recommended procedures.

(ii) Monthly inspection of the oxidizer system, including the burner assembly and fuel supply lines for problems and, as necessary, adjust the equipment to assure proper air-to-fuel mixtures.

(iii) Annual internal and monthly external visual inspection of the catalyst bed to check for channeling, abrasion, and settling. If problems are found, you must take corrective action consistent with the manufacturer’s recommendations and conduct a new performance test to determine destruction efficiency according to §63.3545.

(c) Regenerative oxidizers. If your add-on control device is a regenerative oxidizer, establish operating limits according to paragraphs (c)(1) and (2) of this section.

(1) You must establish all applicable operating limits according to paragraphs (a) and (b) of this section.

(2) You must submit a valve inspection plan that documents the steps taken to minimize the amount of leakage during the regenerative process. This plan can include, but is not limited to, routine inspection of key parameters of the valve operating system (e.g., solenoid valve operation, air pressure, hydraulic pressure); visual inspection of the valves during internal inspections; and/or actual testing of the emission stream for leakage.

(d) Carbon adsorbers. If your add-on control device is a carbon adsorber, establish the operating limits according to paragraphs (d)(1) and (2) of this section.

(1) You must monitor and record the total regeneration desorbing gas (e.g., steam or nitrogen) mass flow for each regeneration cycle, and the carbon bed temperature after each carbon bed regeneration and cooling cycle for the regeneration cycle either immediately preceding or immediately following the performance test.

(2) The operating limits for your carbon adsorber are the minimum total desorbing gas mass flow recorded during the regeneration cycle, and the maximum carbon bed temperature recorded after the cooling cycle.

(e) Condensers. If your add-on control device is a condenser, establish the operating limits according to paragraphs (e)(1) and (2) of this section.

(1) During the performance test, monitor and record the condenser outlet (product side) gas temperature at least once every 15 minutes during each of the three test runs.

(2) Use the data collected during the performance test to calculate and record the average condenser outlet (product side) gas temperature maintained during the performance test. This average condenser outlet gas temperature is the maximum operating limit for your condenser.

(f) Concentrators. If your add-on control device includes a concentrator, you must establish operating limits for the concentrator according to paragraphs (f)(1) through (7) of this section.

(1) During the performance test, monitor and record the inlet temperature to the desorption/reactivation zone of the concentrator at least once every 15 minutes during each of the three runs of the performance test.

(2) Use the data collected during the performance test to calculate and record the average concentration zone inlet temperature.

(3) During the performance test, monitor and record an indicator(s) of
§ 63.3547 What are the requirements for continuous parameter monitoring system installation, operation, and maintenance?

(a) General. You must install, operate, and maintain each CPMS specified in paragraphs (c), (e), and (f) of this section according to paragraphs (a)(1) through (6) of this section. You must install, operate, and maintain each CPMS specified in paragraphs (b) and (d) of this section according to paragraphs (a)(3) through (5) of this section.

(1) The CPMS must complete a minimum of one cycle of operation for each successive 15-minute period.

(2) You must determine the average of all recorded readings for each successive 3-hour period of the emission capture system and add-on control device operation.

(3) You must record the results of each inspection, calibration, and validation check of the CPMS.

(4) You must maintain the CPMS at all times and have available necessary parts for routine repairs of the monitoring equipment.

(5) You must operate the CPMS and collect emission capture system and add-on control device parameter data at all times that a controlled coating operation is operating, except during monitoring malfunctions, associated repairs, and required quality assurance or control activities (including, if applicable, calibration checks and required zero and span adjustments).

(6) You must not use emission capture system or add-on control device performance for the desorption/reactivation fan operation at least once every 15 minutes during each of the three runs of the performance test.

(2) Calculate and record the average gas volumetric flow rate or duct static pressure for the three test runs for each capture device or system of multiple capture devices. The average gas volumetric flow rate is the minimum operating limit for that specific capture device or system of multiple capture devices. The average duct static pressure is the maximum operating limit for that specific capture device or system of multiple capture devices.

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