

§ 65.158

40 CFR Ch. I (7–1–10 Edition)

minimize the delay; and identify a date by which the owner or operator proposes to conduct the performance test. The performance test shall be conducted as soon as practicable after the force majeure occurs.

(x) The decision as to whether or not to grant an extension to the performance test deadline is solely within the discretion of the Administrator. The Administrator will notify the owner or operator in writing of approval or disapproval of the request for an extension as soon as practicable.

(xi) Until an extension of the performance test deadline has been approved by the Administrator under paragraphs (c)(1)(viii), (c)(1)(ix), and (c)(1)(x) of this section, the owner or operator of the affected facility remains strictly subject to the requirements of this part.

(2) The Administrator may require an owner or operator to conduct performance tests and compliance determinations at the regulated source at any time when the action is authorized by section 114 of the Act.

(d) *Performance testing facilities.* If required to do performance testing, the owner or operator of each new regulated source and, at the request of the Administrator, the owner or operator of each existing regulated source, shall provide performance testing facilities as specified in the following:

(1) Sampling ports adequate for test methods applicable to such source. This includes, as applicable, the following requirements:

(i) Constructing the air pollution control system such that volumetric flow rates and pollutant emission rates can be accurately determined by applicable test methods and procedures; and

(ii) Providing a stack or duct free of cyclonic flow during performance tests as demonstrated by applicable test methods and procedures;

(2) Safe sampling platform(s);

(3) Safe access to sampling platform(s);

(4) Utilities for sampling and testing equipment; and

(5) Any other facilities that the Administrator deems necessary for safe and adequate testing of a source.

[65 FR 78285, Dec. 14, 2000, as amended at 72 FR 48942, Aug. 27, 2007; 72 FR 73626, Dec. 28, 2007]

§ 65.158 Performance test procedures for control devices.

(a) *General procedures.* Where §§ 65.145 through 65.155 require, or the owner or operator elects to conduct, a performance test of a control device or a halogen reduction device, an owner or operator shall comply with the requirements of (a)(1) through (3) of this section, as applicable.

(1) Performance tests shall be conducted at maximum representative operating conditions for the process unless the Administrator specifies or approves alternate operating conditions. During the performance test, an owner or operator may operate the control or halogen reduction device at maximum or minimum representative operating conditions for monitored control or halogen reduction device parameters, whichever results in lower emission reduction. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test.

(2) Performance tests shall be conducted and data shall be reduced in accordance with the test methods and procedures set forth in this subpart, in each relevant standard, and, if required, in applicable appendices of 40 CFR parts 51, 60, 61, and 63 unless the Administrator allows revisions to the test methods as specified in one or more of the following five paragraphs:

(i) The Administrator specifies or approves, in specific cases, the use of a test method with minor or intermediate changes in methodology; or

(ii) The Administrator approves the use of a major change to a test method, the results of which the Administrator has determined to be adequate for indicating whether a specific regulated source is in compliance; or

(iii) Intermediate and major changes to a test method shall be validated using the applicable procedures of Method 301 of appendix A of 40 CFR part 63; or

(iv) The Administrator waives the requirement for the performance test as provided in §65.157(b)(2) because the owner or operator of a regulated source has demonstrated by other means to the Administrator's satisfaction that the regulated source is in compliance with the relevant standard; or

(v) The Administrator approves the use of an equivalent method.

(3) Each performance test shall consist of three separate runs using the applicable test method. Except as provided in paragraphs (a)(3)(i) and (ii) of this section, each run shall be conducted for at least 1 hour and under the conditions specified in this section. For the purpose of determining compliance with an applicable standard, the arithmetic mean of results of the three runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the three runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances beyond the owner or operator's control, compliance may, upon the Administrator's approval, be determined using the arithmetic mean of the results of the two other runs.

(i) For control devices that are used to control emissions from high-throughput transfer racks, and that are capable of continuous vapor processing but do not handle continuous emissions or emissions from high-throughput transfer racks that load simultaneously from multiple loading arms, each run shall represent at least one complete tank truck or tank car loading period during which regulated materials are loaded, and samples shall be collected using integrated sampling or grab samples taken at least four times per hour at approximately equal intervals of time, such as 15-minute intervals.

(ii) For intermittent vapor processing systems used for controlling high-throughput transfer rack emissions that do not handle continuous emissions or multiple loading arms of a high-throughput transfer rack that load simultaneously, each run shall represent at least one complete control device cycle, and samples shall be collected using integrated sampling or

grab samples taken at least four times per hour at approximately equal intervals of time, such as 15-minute intervals.

(b) *Test methods.* Where §§65.145 through 65.155 require, or the owner or operator elects to conduct, a performance test of a control device or a halogen reduction device, an owner or operator shall conduct that performance test using the procedures in paragraphs (b)(1) through (4) of this section, as applicable. The regulated material concentration and percent reduction may be measured as either total regulated material or as TOC (minus methane and ethane) according to the procedures specified.

(1) Method 1 or 1A of appendix A of 40 CFR part 60 as appropriate, shall be used for selection of the sampling sites.

(i) For determination of compliance with a percent reduction requirement of total regulated material or TOC, sampling sites shall be located at the inlet of the control device as specified in the following and at the outlet of the control device:

(A) For process vents, the control device inlet sampling site shall be located after the final product recovery device.

(B) If a vent stream is introduced with the combustion air or as a secondary fuel into a boiler or process heater with a design capacity less than 44 megawatts (150 million British thermal units per hour), selection of the location of the inlet sampling sites shall ensure the measurement of total regulated material or TOC (minus methane and ethane) concentrations, as applicable, in all vent streams and primary and secondary fuels introduced into the boiler or process heater.

(ii) For determination of compliance with the 20 parts per million by volume total regulated material or TOC limit in §65.63(a)(2), §65.83(a)(1), and 40 CFR 60.562-1(a)(1)(i)(A), the sampling site shall be located at the outlet of the control device.

(2) The gas volumetric flow rate shall be determined using Method 2, 2A, 2C, or 2D of appendix A of 40 CFR part 60, as appropriate.

(3) To determine compliance with the 20 parts per million by volume total regulated material or TOC (minus

methane and ethane) limit, the owner or operator shall use Method 18 of appendix A of 40 CFR part 60 to measure either TOC minus methane and ethane or total regulated material, as applicable. Alternatively, any other method or data that have been validated according to the applicable procedures in Method 301 of appendix A of 40 CFR part 63 may be used. Method 25A may be used for transfer racks as detailed in paragraph (b)(3)(iv) of this section. The procedures specified in paragraphs (b)(3)(i) through (iv) of this section shall be used to calculate parts per million by volume concentration, corrected to 3 percent oxygen.

(i) Except as provided in paragraphs (a)(3)(i) and (ii) of this section, the

minimum sampling time for each run shall be 1 hour in which either an integrated sample or a minimum of four grab samples shall be taken. If grab sampling is used, then the samples shall be taken at approximately equal intervals in time, such as 15 minute intervals during the run.

(ii) The concentration of either TOC (minus methane or ethane) or total regulated material shall be calculated according to the following two paragraphs, as appropriate:

(A) The TOC concentration (C_{TOC}) is the sum of the concentrations of the individual components and shall be computed for each run using Equation 158-1 of this section:

$$C_{REG, \text{ or } C_{TOC}} = \sum_{i=1}^x \frac{\left(\sum_{j=1}^n C_{ji} \right)}{x} \quad (\text{Eq. 158-1})$$

Where:

$C_{REG, \text{ or } C_{TOC}}$ = Concentration of total regulated material or concentration of TOC (minus methane and ethane), dry basis, parts per million by volume.

x = Number of samples in the sample run.

n = Number of components in the sample.

C_{ji} = Concentration of sample components j of sample i , dry basis, parts per million by volume.

(B) The total regulated material (C_{REG}) shall be computed according to equation 158-1 of this section except that only the regulated species shall be summed. Where the regulated material is organic HAP's, the list of organic HAP's provided in table 2 of 40 CFR part 63, subpart F, shall be used.

(iii) The concentration of TOC or total regulated material, as applicable, shall be corrected to 3 percent oxygen if a combustion device is the control device.

(A) The emission rate correction factor (or excess air) integrated sampling and analysis procedures of Method 3B of appendix A of 40 CFR part 60 shall be used to determine the oxygen concentration. The sampling site shall be the same as that of the regulated mate-

rial or organic compound samples, and the samples shall be taken during the same time that the regulated material or organic compound samples are taken.

(B) The concentration corrected to 3 percent oxygen (C_c) shall be computed using Equation 158-2 of this section:

$$C_c = C_m \left(\frac{17.9}{20.9 - \%O_{2d}} \right) \quad (\text{Eq. 158-2})$$

Where:

C_c = Concentration of TOC or regulated material corrected to 3 percent oxygen, dry basis, parts per million by volume.

C_m = Concentration of TOC (minus methane and ethane) or regulated material, dry basis, parts per million by volume.

$\%O_{2d}$ = Concentration of oxygen, dry basis, percentage by volume.

(iv) Method 25A of appendix A of 40 CFR part 60 may be used for the purpose of determining compliance with the 20 parts per million by volume limit specified in § 65.83(a)(1) for transfer racks. If Method 25A of appendix A of 40 CFR part 60 is used, the following procedures shall be used to calculate the concentration of organic compounds (C_{TOC}):

(A) The principal organic HAP in the vent stream shall be used as the calibration gas.

(B) The span value for Method 25A of appendix A of 40 CFR part 60 shall be between 1.5 and 2.5 times the concentration being measured.

(C) Use of Method 25A of appendix A of 40 CFR part 60 is acceptable if the response from the high-level calibration gas is at least 20 times the standard deviation of the response from the zero calibration gas when the instrument is zeroed on the most sensitive scale.

(D) The concentration of TOC shall be corrected to 3 percent oxygen using the procedures and equation in paragraph (b)(3)(iii) of this section.

(4) To determine compliance with a percent reduction requirement, the owner or operator shall use Method 18 of appendix A of 40 CFR part 60; alternatively, any other method or data that have been validated according to the applicable procedures in Method 301 of appendix A of 40 CFR part 63 may be used. Method 25A of appendix A of 40 CFR part 60 may be used for transfer racks as detailed in paragraph (b)(4)(v) of this section. Procedures specified in paragraphs (b)(4)(i) through (v) of this section shall be used to calculate percent reduction efficiency.

(i) Except as provided in paragraphs (a)(3)(i) and (ii) of this section, the minimum sampling time for each run shall be 1 hour in which either an integrated sample or a minimum of four grab samples shall be taken. If grab sampling is used, then the samples shall be taken at approximately equal intervals in time, such as 15-minute intervals during the run.

(ii) The mass rate of either TOC (minus methane and ethane) or total regulated material (E_i , E_o) shall be computed as applicable.

(A) Equations 158-3 and 158-4 of this section shall be used:

$$E_i = K_2 \left(\sum_{j=1}^n C_{ij} M_{ij} \right) Q_i \quad (\text{Eq. 158-3})$$

$$E_o = K_2 \left(\sum_{j=1}^n C_{oj} M_{oj} \right) Q_o \quad (\text{Eq. 158-4})$$

Where:

E_i , E_o = Emission rate of TOC (minus methane and ethane) (E_{TOC}) or emission rate of total organic HAP (E_{HAP}) in the sample at the inlet and outlet of the control device, respectively, dry basis, kilogram per hour.

K_2 = Constant, 2.494×10^{-6} (parts per million)⁻¹ (gram-mole per standard cubic meter) (kilogram per gram) (minute per hour), where standard temperature (gram-mole per standard cubic meter) is 20 °C.

n = Number of components in the sample.

C_{ij} , C_{oj} = Concentration on a dry basis of organic compound j in parts per million by volume of the gas stream at the inlet and outlet of the control device, respectively. If the TOC emission rate is being calculated, C_{ij} and C_{oj} include all organic compounds measured minus methane and ethane; if the total organic HAP emissions rate is being calculated, only organic HAP are included.

M_{ij} , M_{oj} = Molecular weight of organic compound j , gram per gram-mole, of the gas stream at the inlet and outlet of the control device, respectively.

Q_i , Q_o = Process vent flow rate, dry standard cubic meter per minute, at a temperature of 20 °C, at the inlet and outlet of the control device, respectively.

(B) Where the mass rate of TOC is being calculated, all organic compounds (minus methane and ethane) measured by Method 18 of appendix A of 40 CFR part 60 are summed using equations 158-3 and 158-4 of this section.

(C) Where the mass rate of total regulated material is being calculated, only the species comprising the regulated material shall be summed using equations 158-3 and 158-4 of this section. Where the regulated material is organic HAP's, the list of organic HAP's provided in table 2 of 40 CFR part 63, subpart F, shall be used.

(iii) The percent reduction in TOC (minus methane and ethane) or total regulated material shall be calculated using Equation 158-5 of this section:

$$R = \frac{E_i - E_o}{E_i} (100) \quad (\text{Eq. 158-5})$$

Where:

R = Control efficiency of control device, percent.

E_i = Mass rate of TOC (minus methane and ethane) or total regulated material at the inlet to the control device as calculated under paragraph (b)(4)(ii) of this section, kilograms TOC per hour or kilograms regulated material per hour.

§ 65.158

40 CFR Ch. I (7-1-10 Edition)

E_o = Mass rate of TOC (minus methane and ethane) or total regulated material at the outlet of the control device, as calculated under paragraph (b)(4)(ii) of this section, kilograms TOC per hour or kilograms total regulated material per hour.

(iv) If the vent stream entering a boiler or process heater with a design capacity less than 44 megawatts (150 million British thermal units) is introduced with the combustion air or as a secondary fuel, the weight-percent reduction of total regulated material or TOC (minus methane and ethane) across the device shall be determined by comparing the TOC (minus methane and ethane) or total regulated material in all combusted vent streams and primary and secondary fuels with the TOC (minus methane and ethane) or total regulated material exiting the combustion device, respectively.

(v) Method 25A of appendix A of 40 CFR part 60 may also be used for the purpose of determining compliance with the percent reduction requirement for transfer racks.

(A) If Method 25A of appendix A of 40 CFR part 60 is used to measure the concentration of organic compounds (C_{TOC}), the principal regulated material in the vent stream shall be used as the calibration gas.

(B) An emission testing interval shall consist of each 15-minute period during the performance test. For each interval, a reading from each measurement shall be recorded.

(C) The average organic compound concentration and the volume measurement shall correspond to the same emissions testing interval.

(D) The mass at the inlet and outlet of the control device during each testing interval shall be calculated using Equation 158-6 of this section:

$$M_j = F K V_s C_t \quad (\text{Eq. 158-6})$$

Where:

M_j = Mass of organic compounds emitted during testing interval j , kilograms.

$F = 10^{-6}$ = Conversion factor, (cubic meters regulated material per cubic meters air) * (parts per million by volume)⁻¹.

K = Density, kilograms per standard cubic meter regulated material. You may use 659 kilograms per standard cubic meter regulated material. (Note: The density term cancels out when the percent reduction is calculated. Therefore, the density used has

no effect. The density of hexane is given so that it can be used to maintain the units of M_j .)

V_s = Volume of air-vapor mixture exhausted at standard conditions, 20 °C and 760 millimeters of mercury (30 inches of mercury), standard cubic meters.

C_t = Total concentration of organic compounds (as measured) at the exhaust vent, parts per million by volume, dry basis.

(E) The organic compound mass emission rates at the inlet and outlet of the control device shall be calculated as follows:

$$E_i = \frac{\sum_{j=1}^n M_{ij}}{T} \quad (\text{Eq. 158-7})$$

$$E_o = \frac{\sum_{j=1}^n M_{oj}}{T} \quad (\text{Eq. 158-8})$$

Where:

E_i, E_o = Mass flow rate of organic compounds at the inlet (i) and outlet (o) of the control device, kilograms per hour.

n = Number of testing intervals.

M_{ij}, M_{oj} = Mass of organic compounds at the inlet (i) or outlet (o) during testing interval j , kilograms.

T = Total time of all testing intervals, hours.

(c) *Halogen test method.* An owner or operator using a halogen scrubber or other halogen reduction device to control halogenated vent streams in compliance with § 65.63(b)(1) for process vents, or § 65.83(b)(1) for transfer racks, who is required to conduct a performance test to determine compliance with the control efficiency or emission limits for hydrogen halides and halogens, as specified in § 65.154(b), shall comply with the following procedures:

(1) For an owner or operator determining compliance with the percent reduction of total hydrogen halides and halogens, sampling sites shall be located at the inlet and outlet of the scrubber or other halogen reduction device used to reduce halogen emissions. For an owner or operator determining compliance with the less than 0.45 kilogram per hour (0.99 pounds per hour) outlet emission limit for total hydrogen halides and halogens, the sampling site shall be located at the outlet of

the scrubber or other halogen reduction device and prior to any releases to the atmosphere.

(2) Except as provided in paragraph (a)(2) of this section, Method 26 or Method 26A of appendix A of 40 CFR part 60 shall be used to determine the concentration, in milligrams per dry standard cubic meter, of total hydrogen halides and halogens that may be present in the vent stream. The mass emissions of each hydrogen halide and halogen compound shall be calculated from the measured concentrations and the gas stream flow rate.

(3) To determine compliance with the percent removal efficiency, the mass emissions for any hydrogen halides and halogens present at the inlet of the halogen reduction device shall be summed together. The mass emissions of the compounds present at the outlet of the scrubber or other halogen reduction device shall be summed together. Percent reduction shall be determined by comparison of the summed inlet and outlet measurements.

(4) To demonstrate compliance with the less than 0.45 kilogram per hour (0.99 pound per hour) outlet emission limit, the test results must show that the mass emission rate of total hydrogen halides and halogens measured at the outlet of the scrubber or other halogen reduction device is below 0.45 kilogram per hour (0.99 pound per hour).

§ 65.159 Flare compliance determination and monitoring records.

(a) *Conditions of flare compliance determination records.* Upon request, the owner or operator shall make available to the Administrator such records as may be necessary to determine the conditions of flare compliance determinations performed pursuant to § 65.147(b).

(b) *Flare compliance determination records.* When using a flare to comply with this subpart, record the following information for each flare compliance determination performed pursuant to § 65.147(b):

(1) Flare design (*i.e.*, steam-assisted, air-assisted, or nonassisted);

(2) All visible emission readings, heat content determinations, flow rate measurements, and exit velocity deter-

minations made during the flare compliance determination; and

(3) All periods during the flare compliance determination when all pilot flames are absent or, if only the flare flame is monitored, all periods when the flare flame is absent.

(c) *Monitoring records.* Each owner or operator shall keep up to date and readily accessible hourly records of whether the flare flame or pilot flame monitors are continuously operating during the hour and whether the flare flame or at least one pilot flame is continuously present during the hour. For transfer racks, hourly records are required only while the transfer vent stream is being vented.

(d) *Compliance records.* (1) Each owner or operator shall keep records of the times and duration of all periods during which the flare flame and all the pilot flames are absent. This record shall be submitted in the periodic reports as specified in § 65.166(c).

(2) Each owner or operator shall keep records of the times and durations of all periods during which the flare flame or pilot flame monitors are not operating.

§ 65.160 Performance test and TRE index value determination records.

(a) *Availability of performance tests records.* Upon request, the owner or operator shall make available to the Administrator such records as may be necessary to determine the conditions of performance tests performed pursuant to § 65.148(b), § 65.149(b), § 65.150(b), § 65.151(b), § 65.152(b), § 65.154(b), or § 65.155(b).

(b) *Nonflare control device and halogen reduction device performance test records.* Each owner or operator subject to the provisions of this subpart shall keep up-to-date, readily accessible records of the data specified in paragraphs (b)(1) through (3) of this section, as applicable, measured during each performance test performed pursuant to § 65.148(b), § 65.149(b), § 65.150(b), § 65.151(b), § 65.152(b), § 65.154(b), or § 65.155(b), and also include that data in the Initial Compliance Status Report as specified in § 65.164(a). The same data specified in paragraphs (b)(1) through (3) of this section, as applicable, shall