change is made or the information regarding the process change is known to the owner or operator, unless the flow rate is less than 0.005 standard cubic meters per minute. This report may be included in the next Periodic Report. A description of the process change shall be included in this report.

(iii) Whenever a process change, as defined in § 63.115(e), is made that causes a Group 2 process vent with a flow rate less than 0.005 standard cubic meter per minute (scmm) to become a Group 2 process vent with a flow rate of 0.005 scmm or greater and a TRE index value less than or equal to 4.0, the owner or operator shall submit a report within 180 days after the process change is made or the information regarding the process change is known to the owner or operator, unless the organic HAP concentration is less than 50 ppmv. This report may be included in the next Periodic Report. A description of the process change shall be submitted with the report.

(iv) Whenever a process change, as defined in § 63.115(e), is made that causes a Group 2 process vent with an organic HAP concentration less than 50 parts per million by volume (ppmv) to become a Group 2 process vent with an organic HAP concentration of 50 ppmv or greater and a TRE index value less than or equal to 4.0, the owner or operator shall submit a report within 180 days after the process change is made or the information regarding the process change is known to the owner or operator, unless the flow rate is less than 0.005 standard cubic meters per minute. This report may be included in the next Periodic Report. A description of the process change shall be submitted with this report.

(8) When § 63.118 refers to § 63.152(f), the recordkeeping requirements in § 63.1439(d) shall apply for the purposes of this subpart.

(9) When §§ 63.115 and 63.116 refer to Table 2 of 40 CFR part 63, subpart F, the owner or operator shall only consider organic HAP as defined in this subpart.

(10) When the provisions of § 63.116(c)(3) and (4) specify that Method 18, 40 CFR part 60, appendix A shall be used, Method 18 or Method 25A, 40 CFR part 60, appendix A may be used for the purposes of this subpart. The use of Method 25A, 40 CFR part 60, appendix A shall comply with paragraphs (f)(10)(i) and (ii) of this section.

(i) The organic HAP used as the calibration gas for Method 25A, 40 CFR part 60, appendix A shall be the single organic HAP representing the largest percent by volume of the emissions.

(ii) The use of Method 25A, 40 CFR part 60, appendix A 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.

§ 63.1426 Process vent requirements for determining organic HAP concentration, control efficiency, and aggregated organic HAP emission reduction for a PMPU.

(a) *Use of a flare.* When a flare is used to comply with § 63.1425(b)(1)(i) (in combination with other control techniques), (b)(2)(i), (c)(1)(i), (c)(3)(i), or (d)(1), the owner or operator shall comply with § 63.1437(c), and is not required to demonstrate the control efficiency for the flare, if the owner or operator chooses to assume a 98 percent control efficiency for that flare, as allowed under paragraph (e)(2)(i) of this section. In order to use only a flare to comply with § 63.1425(b)(1)(i), or to use a flare and apply a control efficiency greater than 98 percent, an owner or operator shall submit a request in accordance with § 63.6(g) in either the Precompliance Report described in § 63.1439(e)(4), or in a supplement to the precompliance report, as described in § 63.1439(e)(4)(vii).

(b) *Exceptions to performance tests.* An owner or operator is not required to conduct a performance test when a combustion, recovery, or recapture device specified in paragraphs (b)(1) through (6) of this section is used to comply with § 63.1425(b), (c), or (d).

(1) A boiler or process heater with a design heat input capacity of 44 megawatts or greater.

(2) A boiler or process heater where the process vent stream is introduced with the primary fuel or is used as the primary fuel.

(3) A combustion, recovery, or recapture device for which a performance

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test was conducted within the preceding 5-year period, using the same Methods specified in this section and either no deliberate process changes have been made since the test, or the owner or operator can demonstrate that the results of the performance test, with or without adjustments, reliably demonstrate compliance despite process changes. The operating parameters reported under the previous performance test shall be sufficient to meet the parameter monitoring requirements in this subpart.

(4) A boiler or process heater burning hazardous waste for which the owner or operator:

(i) Has been issued a final hazardous waste permit under 40 CFR part 270 and complies with the requirements for hazardous waste burned in boilers and industrial furnaces in 40 CFR part 266, subpart H; or

(ii) Has certified compliance with the interim status requirements for hazardous waste burned in boilers and industrial furnaces in of 40 CFR part 266, subpart H.

(5) A hazardous waste incinerator for which the owner or operator has been issued a final permit under 40 CFR part 270 and complies with the requirements for incinerators in 40 CFR part 264, subpart O, or has certified compliance with the interim status requirements for incinerators in 40 CFR part 265, subpart O.

(6) Combustion, recovery or recapture device (except for condensers) performance may be determined by using the design evaluation described in paragraph (f) of this section, provided that the combustion, recovery or recapture device receives less than 10 tons per year (9.1 megagrams per year) of uncontrolled organic HAP emissions from one or more PMPUs, determined in accordance with paragraph (d) of this section. If a combustion, recovery or recapture device exempted from testing in accordance with this paragraph receives more than 10 tons per year (9.1 megagrams per year) of uncontrolled organic HAP emissions from one or more PMPUs, the owner or operator shall comply with the performance test requirements in paragraph (c) of this section and shall submit the test report in the next Periodic Report.

(c) *Determination of organic HAP concentration and control efficiency.* Except as provided in paragraphs (a) and (b) of this section, an owner or operator using a combustion, recovery, or recapture device to comply with an epoxide or organic HAP percent reduction efficiency requirement in § 63.1425(b)(1)(i), (b)(2)(ii), (c)(1)(ii), (c)(3)(ii), or (d)(2); an epoxide concentration limitation in § 63.1425(b)(1)(ii) or (b)(2)(ii); or an annual epoxide emission limitation in § 63.1425(b)(1)(iii) or (b)(2)(iv), shall conduct a performance test using the applicable procedures in paragraphs (c)(1) through (4) of this section. The organic HAP or epoxide concentration and percent reduction may be measured as total epoxide, total organic HAP, or as TOC minus methane and ethane according to the procedures specified. When conducting testing in accordance with this section, the owner or operator is only required to measure HAP of concern for the specific requirement for which compliance is being determined. For instance, to determine compliance with the epoxide emission requirement of § 63.1425(b), the owner or operator is only required to measure epoxide control efficiency or outlet concentration.

(1) *Sampling site location.* The sampling site location shall be determined as specified in paragraphs (c)(1)(i) and (ii) of this section.

(i) For determination of compliance with a percent reduction of total epoxide requirement in § 63.1425(b)(1)(i), (b)(2)(ii), or a percent reduction of total organic HAP requirement in § 63.1425(c)(1)(ii), (c)(3)(ii), or (d)(2), sampling sites shall be located at the inlet of the combustion, recovery, or recapture device as specified in paragraphs (c)(1)(i)(A), (B), and (C) of this section, and at the outlet of the combustion, recovery, or recapture device.

(A) For process vents from continuous unit operations, the inlet sampling site shall be determined in accordance with either paragraph (c)(1)(i)(A)(*1*) or (*2*) of this section.

(*1*) To demonstrate compliance with either the provisions for epoxide emissions in § 63.1425(b) or the provisions for nonepoxide organic HAP emissions from catalyst extraction in § 63.1425(d), the inlet sampling site shall be located

after the exit from the continuous unit operation but before any recovery devices, or

(*2*) To demonstrate compliance with the requirements for nonepoxide organic HAP emissions from the use of nonepoxide organic HAP in making or modifying the product in § 63.1425(c), the inlet sampling site shall be located after all control techniques to reduce epoxide emissions and after the final nonepoxide organic HAP recovery device.

(B) For process vents from batch unit operations, the inlet sampling site shall be determined in accordance with either paragraph (c)(1)(i)(B)(*1*) or (*2*) of this section.

(*1*) To demonstrate compliance with either the provisions for epoxide emissions in § 63.1425(b) or the provisions for nonepoxide organic HAP emissions from catalyst extraction in § 63.1425(d), the inlet sampling site shall be located after the exit from the batch unit operation but before any recovery device.

(*2*) To demonstrate compliance with the requirements for nonepoxide organic HAP emissions in making or modifying the product in § 63.1425(c), the inlet sampling site shall be located after all control techniques to reduce epoxide emissions but before any nonepoxide organic HAP recovery device.

(C) If a process 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, selection of the location of the inlet sampling sites shall ensure the measurement of total organic HAP or TOC (minus methane and ethane) concentrations in all process vent streams and primary and secondary fuels introduced into the boiler or process heater.

(ii) To determine compliance with a parts per million by volume total epoxide or TOC limit in § 63.1425(b)(1)(ii) or (b)(2)(iii), the sampling site shall be located at the outlet of the combustion, recovery, or recapture device.

(2) [Reserved]

(3) *Testing conditions and calculation of TOC or total organic HAP concentration.* (i) Testing conditions shall be as specified in paragraphs (c)(3)(i)(A) through (E) of this section, as appropriate.

(A) Testing of process vents from continuous unit operations shall be conducted at maximum representative operating conditions, as described in § 63.1437(a)(1). Each test shall consist of three 1-hour runs. Gas stream volumetric flow rates shall be measured at approximately equal intervals of about 15 minutes during each 1-hour run. The organic HAP concentration (of the HAP of concern) shall be determined from samples collected in an integrated sample over the duration of each 1-hour test run, or from grab samples collected simultaneously with the flow rate measurements (at approximately equal intervals of about 15 minutes). If an integrated sample is collected for laboratory analysis, the sampling rate shall be adjusted proportionally to reflect variations in flow rate. For gas streams from continuous unit operations, the organic HAP concentration or control efficiency used to determine compliance shall be the average organic HAP concentration or control efficiency of the three test runs.

(B) Testing of process vents from batch unit operations shall be conducted at absolute worst-case conditions or hypothetical worst-case conditions, as defined in paragraphs (c)(3)(i)(B)(*1*) through (*5*) of this section. Worst-case conditions are limited to the maximum production allowed in a State or Federal permit or regulation and the conditions specified in § 63.1437(a)(1). Gas stream volumetric flow rates shall be measured at 15-minute intervals, or at least once during the emission episode. The organic HAP or TOC concentration shall be determined from samples collected in an integrated sample over the duration of the test, or from grab samples collected simultaneously with the flow rate measurements (at approximately equal intervals of about 15 minutes). If an integrated sample is collected for laboratory analysis, the sampling rate shall be adjusted proportionally to reflect variations in flow rate.

(*1*) Absolute worst-case conditions are defined by the criteria presented in paragraph (c)(3)(i)(B)(*1*)(*i*) or (*ii*) of this section if the maximum load is the most challenging condition for the control device. Otherwise, absolute worst-

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case conditions are defined by the conditions in paragraph (c)(3)(i)(B)(*1*)(*iii*) of this section.

(*i*) The period in which the inlet to the control device will contain at least 50 percent of the maximum HAP load (in lbs) capable of being vented to the control device over any 8-hour period. An emission profile as described in paragraph (c)(3)(i)(B)(*3*)(*i*) of this section shall be used to identify the 8-hour period that includes the maximum projected HAP load.

(*ii*) A period of time in which the inlet to the control device will contain the highest HAP mass loading rate capable of being vented to the control device. An emission profile as described in paragraph (c)(3)(i)(B)(*3*)(*i*) of this section shall be used to identify the period of maximum HAP loading.

(*iii*) The period of time when the HAP loading or stream composition (including non-HAP) is most challenging for the control device. These conditions include, but are not limited to the following: periods when the stream contains the highest combined VOC and HAP load described by the emission profiles in paragraph (c)(3)(i)(B)(*3*) of this section; periods when the streams contain HAP constituents that approach limits of solubility for scrubbing media; or periods when the streams contain HAP constituents that approach limits of adsorptivity for carbon adsorption systems.

(*2*) Hypothetical worst-case conditions are simulated test conditions that, at a minimum, contain the highest hourly HAP load of emissions that would be predicted to be vented to the control device from the emissions profile described in paragraph (c)(3)(i)(B)(*3*)(*ii*) or (*iii*) of this section.

(*3*) The owner or operator shall develop an emission profile for the vent to the control device that describes the characteristics of the vent stream at the inlet to the control device under worst case conditions. The emission profile shall be developed based on any one of the procedures described in paragraphs (c)(3)(i)(B)(*3*) (*i*) through (*iii*) of this section, as required by paragraph (c)(3)(i)(B) of this section.

(*i*) The emission profile shall consider all emission episodes that could contribute to the vent stack for a period of time that is sufficient to include all processes venting to the stack and shall consider production scheduling. The profile shall describe the HAP load to the device that equals the highest sum of emissions from the episodes that can vent to the control device in any given period, not to exceed 1 hour. Emissions per episode shall be divided by the duration of the episode only if the duration of the episode is longer than 1 hour, and emissions per episode shall be calculated using the procedures specified in Equation 1:

$$E = \sum_{i=1}^{n} P_i MW_i \times \frac{(V)(t)}{(R)(T)} \times \frac{P_T}{P_T - \sum_{j=1}^{m} \left(P_j \right)} \qquad \text{[Equation 1]}$$

Where:

E = Mass of HAP emitted.
V = Purge flow rate at the temperature and pressure of the vessel vapor space.
R = Ideal gas law constant.
T = Temperature of the vessel vapor space (absolute).
P_i = Partial pressure of the individual HAP.
P_j = Partial pressure of individual condensable VOC compounds (including HAP).
P_T = Pressure of the vessel vapor space.
MW_i = Molecular weight of the individual HAP.
t = Time of purge.

n = Number of HAP compounds in the emission stream.
i = Identifier for a HAP compound.
j = Identifier for a condensable compound.
m = Number of condensable compounds (including HAP) in the emission stream.

(*ii*) The emission profile shall consist of emissions that meet or exceed the highest emissions that would be expected under actual processing conditions. The profile shall describe equipment configurations used to generate

the emission events, volatility of materials processed in the equipment, and the rationale used to identify and characterize the emission events. The emissions may be based on using compounds more volatile than compounds actually used in the process(es), and the emissions may be generated from all equipment in the process(es) or only selected equipment.

(*iii*) The emission profile shall consider the capture and control system limitations and the highest emissions that can be routed to the control device, based on maximum flow rate and concentrations possible because of limitations on conveyance and control equipment (e.g., fans, LEL alarms and safety bypasses).

(*4*) Three runs, each at a minimum of the complete duration of the batch venting episode or 1 hour, whichever is shorter, and a maximum of 8 hours, are required for performance testing. Each run shall occur over the same worst-case conditions, as defined in paragraph (c)(3)(i)(B) of this section.

(*5*) If a condenser is used to control the process vent stream(s), the worst case emission episode(s) shall represent a period of time in which a process vent from the batch cycle or combination of cycles (if more than one cycle is vented through the same process vent) will require the maximum heat removal capacity, in Btu/hr, to cool the process vent stream to a temperature that, upon calculation of HAP concentration, will yield the required removal efficiency for the entire cycle. The calculation of maximum heat load shall be based on the emission profile described in paragraph (c)(3)(i)(B)(*3*) of this section that will allow calculation of sensible and latent heat loads.

(ii) The concentration of either TOC (minus methane or ethane) or total organic HAP (of the HAP of concern) shall be calculated according to paragraph (c)(3)(ii)(A) or (B) of this section.

(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 2:

$$C_{TOC} = \sum_{i=1}^{x} \frac{\left(\sum_{j=1}^{n} C_{ji} \right)}{x} \qquad \text{[Equation 2]}$$

Where:

C_{TOC} = Concentration of TOC (minus methane and ethane), dry basis, parts per million by volume.

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

n = Number of components in the sample.

x = Number of samples in the sample run.

(B) The total organic HAP concentration (C_{HAP}) shall be computed according to Equation 2, except that only the organic HAP species shall be summed.

(iii) The concentration of TOC or total organic HAP shall be corrected to 3 percent oxygen if a combustion device is used.

(A) The emission rate correction factor or excess air, integrated sampling and analysis procedures of Method 3B of 40 CFR part 60, appendix A shall be used to determine the oxygen concentration ($\%O_{2d}$). The samples shall be taken during the same time that the TOC (minus methane or ethane) or total organic HAP samples are taken.

(B) The concentration corrected to 3 percent oxygen shall be computed using Equation 3, as follows:

$$C_c = C_m \left(\frac{17.9}{20.9 - \%O_{2d}} \right) \qquad \text{[Equation 3]}$$

Where:

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

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

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

(4) *Test methods.* When testing is conducted to measure emissions from an affected source, the test methods specified in paragraphs (c)(4)(i) through (iv) of this section shall be used, as applicable.

(i) For sample and velocity traverses, Method 1 or 1A of appendix A of part 60 shall be used, as appropriate, except that references to particulate matter

in Method 1A do not apply for the purposes of this subpart.

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

(iii) The concentration measurements shall be determined using the methods described in paragraphs (c)(4)(iii) (A) through (C) of this section.

(A) Method 18 of appendix A of part 60 may be used to determine the HAP concentration in any control device efficiency determination.

(B) Method 25 of appendix A of part 60 may be used to determine total gaseous nonmethane organic concentration for control efficiency determinations in combustion devices.

(C) Method 25A of appendix A of part 60 may be used to determine the HAP or TOC concentration for control device efficiency determinations under the conditions specified in Method 25 of appendix A of part 60 for direct measurements of an effluent with a flame ionization detector, or in demonstrating compliance with the 20 ppmv standard, the instrument shall be calibrated on methane or the predominant HAP. If calibrating on the predominant HAP, the use of Method 25A of appendix A of part 60 shall comply with paragraphs (c)(4)(iii)(C) (*1*) through (*3*) of this section.

(*1*) The organic HAP used as the calibration gas for Method 25A of appendix A of part 60 shall be the single organic HAP representing the largest percent by volume.

(*2*) The use of Method 25A, 40 CFR part 60, appendix A, 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.

(*3*) The span value of the analyzer shall be less than 100 ppmv.

(iv) Alternatively, any other method or data that have been validated according to the applicable procedures in 40 CFR part 63, appendix A, Method 301 may be used.

(5) *Calculation of percent reduction efficiency.* The following procedures shall

be used to calculate percent reduction efficiency:

(i) Test duration shall be as specified in paragraphs (c)(3)(i) (A) through (B) of this section, as appropriate.

(ii) The mass rate of either TOC (minus methane and ethane) or total organic HAP of the HAP of concern (E_i, E_o) shall be computed.

(A) The following equations shall be used:

$$E_i = K_2 \left(\sum_{j=1}^{n} C_{ij} M_{ij} \right) Q_i \qquad \text{[Equation 4]}$$

$$E_o = K_2 \left(\sum_{j=1}^{n} C_{oj} M_{oj} \right) Q_o$$

Where:

C_{ij}, C_{oj} = Concentration of sample component j of the gas stream at the inlet and outlet of the combustion, recovery, or recapture device, respectively, dry basis, parts per million by volume.

E_i, E_o = Mass rate of TOC (minus methane and ethane) or total organic HAP at the inlet and outlet of the combustion, recovery, or recapture device, respectively, dry basis, kilogram per hour.

M_{ij}, M_{oj} = Molecular weight of sample component j of the gas stream at the inlet and outlet of the combustion, recovery, or recapture device, respectively, gram/gram-mole.

Q_i, Q_o = Flow rate of gas stream at the inlet and outlet of the combustion, recovery, or recapture device, respectively, dry standard cubic meter per minute.

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

(B) Where the mass rate of TOC is being calculated, all organic compounds (minus methane and ethane) measured by Method 18 of 40 CFR part 60, appendix A are summed using Equations 4 and 5 in paragraph (c)(5)(ii)(A) of this section.

(C) Where the mass rate of total organic HAP is being calculated, only the organic HAP species shall be summed using Equations 4 and 5 in paragraph (c)(5)(ii)(A) of this section.

(iii) The percent reduction in TOC (minus methane and ethane) or total organic HAP shall be calculated using Equation 6 as follows:

$$R = \frac{E_i - E_o}{E_i}(100) \qquad \text{[Equation 6]}$$

Where:

R = Control efficiency of combustion, recovery, or recapture device, percent.

E_i = Mass rate of TOC (minus methane and ethane) or total organic HAP at the inlet to the combustion, recovery, or recapture device as calculated under paragraph (c)(5)(ii) of this section, kilograms TOC per hour or kilograms organic HAP per hour.

E_o = Mass rate of TOC (minus methane and ethane) or total organic HAP at the outlet of the combustion, recovery, or recapture device, as calculated under paragraph (c)(5)(ii) of this section, kilograms TOC per hour or kilograms organic HAP per hour.

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

(d) *Determination of uncontrolled organic HAP emissions.* For each process vent at a PMPU that is complying with the process vent control requirements in § 63.1425(b)(1)(i), (b)(1)(iii), (b)(2)(ii), (b)(2)(iv), (c)(1)(ii), or (d)(2) using a combustion, recovery, or recapture device, the owner or operator shall determine the uncontrolled organic HAP emissions in accordance with the provisions of this paragraph, with the exceptions noted in paragraph (d)(1) of this section. The provisions of § 63.1427(c)(1) shall be used to calculate uncontrolled epoxide emissions prior to the onset of an extended cook out.

(1) *Exemptions.* The owner or operator is not required to determine uncontrolled organic HAP emissions for process vents in a PMPU if the conditions in paragraph (d)(1)(i), (ii), or (iii) of this section are met.

(i) For PMPUs where all process vents subject to the epoxide emission reduction requirements of § 63.1425(b) are controlled at all times using a combustion, recovery, or recapture device,

or extended cookout, the owner or operator is not required to determine uncontrolled epoxide emissions.

(ii) For PMPUs where the combination of process vents from batch unit operations associated with the use of nonepoxide organic HAP to make or modify the product is subject to the Group 1 requirements of § 63.1425(c)(1), the owner or operator is not required to determine uncontrolled nonepoxide organic HAP emissions for those process vents if every process vent from a batch unit operation associated with the use of nonepoxide organic HAP to make or modify the product in the PMPU is controlled at all times using a combustion, recovery, or recapture device.

(iii) For PMPUs where all process vents associated with catalyst extraction that are subject to the organic emission reduction requirements of § 63.1425(d)(2) are controlled at all times using a combustion, recovery, or recapture device, the owner or operator is not required to determine uncontrolled organic HAP emissions for those process vents.

(2) *Process vents from batch unit operations.* The uncontrolled organic HAP emissions from an individual batch cycle for each process vent from a batch unit operation shall be determined using the procedures in the NESHAP for Group I Polymers and Resins (40 CFR part 63, subpart U), § 63.488(b)(1) through (9). Uncontrolled emissions from process vents from batch unit operations shall be determined after the exit from the batch unit operation but before any recovery device.

(3) *Process vents from continuous unit operations.* The uncontrolled organic HAP emissions for each process vent from a continuous unit operation in a PMPU shall be determined at the location specified in paragraph (d)(3)(i) of this section, using the procedures in paragraph (d)(3)(ii) of this section.

(i) For process vents subject to either the provisions for epoxide emissions in § 63.1425(b) or the provisions for organic HAP emissions from catalyst extraction in § 63.1425(d), uncontrolled emissions shall be determined after the exit from the continuous unit operation but before any recovery device.

(ii) The owner or operator shall determine the hourly uncontrolled organic HAP emissions from each process vent from a continuous unit operation in accordance with paragraph (c)(5)(ii) of this section, except that the emission rate shall be determined at the location specified in paragraph (d)(3)(i) of this section.

(e) *Determination of organic HAP emission reduction for a PMPU.* (1) The owner or operator shall determine the organic HAP emission reduction for process vents in a PMPU that are complying with §63.1425(b)(1)(i), (b)(2)(ii), (c)(1)(ii), or (d)(2) using Equation 7. The

organic HAP emission reduction shall be determined for each group of process vents subject to the same paragraph (i.e., paragraph (b), (c), or (d)) of §63.1425. For instance, process vents that emit epoxides are subject to paragraph (b) of §63.1425. Therefore, if the owner or operator of an existing affected source is complying with the 98 percent reduction requirement in §63.1425(b)(2)(ii), the organic HAP (i.e., epoxide) emission reduction shall be determined for the group of vents in a PMPU that are subject to this paragraph.

$$RED_{PMPU} = \left(\frac{\sum\limits_{i=1}^{n} \left(E_{unc,\,i}\right)\left(\dfrac{R_i}{100}\right)}{\sum\limits_{i=1}^{n} \left(E_{unc,\,i}\right) + \sum\limits_{j=1}^{m} \left(E_{unc,\,j}\right)} \right) * 100 \qquad \text{[Equation 7]}$$

Where:

RED_{PMPU} = Organic HAP emission reduction for the group of process vents subject to the same paragraph of §63.1425, percent.

$E_{unc,\,i}$ = Uncontrolled organic HAP emissions from process vent i that is controlled using a combustion, recovery, or recapture device, or extended cookout, kg/batch cycle for process vents from batch unit operations, kg/hr for process vents from continuous unit operations.

n = Number of process vents in the PMPU that are subject to the same paragraph of §63.1425 and that are controlled using a combustion, recovery, or recapture device, or extended cookout.

R_i = Control efficiency of the combustion, recovery, or recapture device, or extended cookout, used to control organic HAP emissions from vent i, determined in accordance with paragraph (e)(2) of this section.

$E_{unc,\,j}$ = Uncontrolled organic HAP emissions from process vent j that is not controlled using a combustion, recovery, or recapture device, kg/batch cycle for process vents from batch unit operations, kg/hr for process vents from continuous unit operations.

m = Number of process vents in the PMPU that are subject to the same paragraph of §63.1425 and that are not controlled using a combustion, recovery, or recapture device.

(2) The control efficiency, R_i, shall be assigned as specified below in para-

graph (e)(2)(i), (ii), (iii), or (iv) of this section.

(i) If the process vent is controlled using a flare (and the owner or operator has not previously obtained approval to assume a control efficiency greater than 98 percent in accordance with §63.6(g)) or a combustion device specified in paragraph (b)(1), (2), (4), or (5) of this section, and a performance test has not been conducted, the control efficiency shall be assumed to be 98 percent.

(ii) If the process vent is controlled using a combustion, recovery, or recapture device for which a performance test has been conducted in accordance with the provisions of paragraph (c) of this section, or for which a performance test that meets the requirements of paragraph (b)(3) of this section has been previously performed, the control efficiency shall be the efficiency determined by the performance test.

(iii) If epoxide emissions from the process vent are controlled using extended cookout, the control efficiency shall be the efficiency determined in accordance with §63.1427(e).

(iv) If the process vent is controlled using a flare, and the owner or operator has obtained approval to assume a

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control efficiency greater than 98 percent in accordance with § 63.6(g), the control efficiency shall be the efficiency approved in accordance with § 63.6(g).

(f) *Design evaluation.* A design evaluation is required for those control techniques that receive less than 10 tons per year (9.1 megagrams per year) of uncontrolled organic HAP emissions from one or more PMPU, if the owner or operator has chosen not to conduct a performance test for those control techniques in accordance with paragraph (b)(6) of this section. The design evaluation shall include documentation demonstrating that the control technique being used achieves the required control efficiency under worst-case conditions, as determined from the emission profile described in § 63.1426(c)(3)(i)(B)(*3*)(*i*).

(1) Except for ECO whose design evaluation is presented in paragraph (f)(2) of this section, to demonstrate that a control technique meets the required control efficiency, a design evaluation shall address the composition and organic HAP concentration of the vent stream, immediately preceding the use of the control technique. A design evaluation shall also address other vent stream characteristics and control technique operating parameters, as specified in any one of paragraphs (f)(1)(i) through (vi) of this section, depending on the type of control technique that is used. If the vent stream is not the only inlet to the control technique, the owner or operator shall also account for all other vapors, gases, and liquids, other than fuels, received into the control technique from one or more PMPUs, for purposes of the efficiency determination.

(i) For an enclosed combustion technique used to comply with the provisions of § 63.1425(b)(1), (c)(1), or (d), with a minimum residence time of 0.5 seconds and a minimum temperature of 760 °C, the design evaluation shall document that these conditions exist.

(ii) For a combustion control technique that does not satisfy the criteria in paragraph (f)(1)(i) of this section, the design evaluation shall document the control efficiency and address the characteristics listed in paragraphs (f)(1)(ii)(A) through (C) of this section, depending on the type of control technique.

(A) For a thermal vapor incinerator, in the design evaluation the owner or operator shall consider the autoignition temperature of the organic HAP, shall consider the vent stream flow rate, and shall establish the design minimum and average temperatures in the combustion zone and the combustion zone residence time.

(B) For a catalytic vapor incinerator, in the design evaluation the owner or operator shall consider the vent stream flow rate and shall establish the design minimum and average temperatures across the catalyst bed inlet and outlet.

(C) For a boiler or process heater, in the design evaluation the owner or operator shall consider the vent stream flow rate; shall establish the design minimum and average flame zone temperatures and combustion zone residence time; and shall describe the method and location where the vent stream is introduced into the flame zone.

(iii) For a condenser, in the design evaluation the owner or operator shall consider the vent stream flow rate, relative humidity, and temperature, and shall establish the design outlet organic HAP compound concentration level, design average temperature of the exhaust vent stream, and the design average temperatures of the coolant fluid at the condenser inlet and outlet. The temperature of the gas stream exiting the condenser shall be measured and used to establish the outlet organic HAP concentration.

(iv) For a carbon adsorption system that regenerates the carbon bed directly onsite as part of the control technique (such as a fixed-bed adsorber), in the design evaluation the owner or operator shall consider the vent stream flow rate, relative humidity, and temperature, and shall establish the design exhaust vent stream organic compound concentration level, adsorption cycle time, number and capacity of carbon beds, type and working capacity of activated carbon used for the carbon beds, design total regeneration stream mass or volumetric flow

over the period of each complete carbon bed regeneration cycle, design carbon bed temperature after regeneration, design carbon bed regeneration time, and design service life of the carbon. For vacuum desorption, the pressure drop shall also be included.

(v) For a carbon adsorption system that does not regenerate the carbon bed directly onsite as part of the control technique (such as a carbon canister), in the design evaluation the owner or operator shall consider the vent stream mass or volumetric flow rate, relative humidity, and temperature, and shall establish the design exhaust vent stream organic compound concentration level, capacity of the carbon bed, type and working capacity of activated carbon used for the carbon bed, and design carbon replacement interval based on the total carbon working capacity of the control technique and source operating schedule.

(vi) For a scrubber, in the design evaluation the owner or operator shall consider the vent stream composition, constituent concentrations, liquid-to-vapor ratio, scrubbing liquid flow rate and concentration, temperature, and the reaction kinetics of the constituents with the scrubbing liquid. The design evaluation shall establish the design exhaust vent stream organic compound concentration level and shall include the additional information in paragraphs (f)(1)(vi) (A) and (B) of this section for trays and a packed column scrubber.

(A) Type and total number of theoretical and actual trays.

(B) Type and total surface area of packing for entire column and for individual packed sections, if the column contains more than one packed section.

(2) For ECO, the design evaluation shall establish the minimum duration (time) of the ECO, the maximum pressure at the end of the ECO, or the maximum epoxide concentration in the reactor liquid at the end of the ECO for each product class.

[64 FR 29439, June 1, 1999, as amended at 65 FR 26499, May 8, 2000]

§ 63.1427 Process vent requirements for processes using extended cookout as an epoxide emission reduction technique.

(a) *Applicability of extended cookout requirements.* Owners or operators of affected sources that produce polyether polyols using epoxides, and that are using ECO as a control technique to reduce epoxide emissions in order to comply with percent emission reduction requirements in § 63.1425(b)(1)(i) or (b)(2)(ii) shall comply with the provisions of this section. The owner or operator that is using ECO in order to comply with the emission factor requirements in § 63.1425(b)(1)(iii) or § 63.1425(b)(2)(iv) shall demonstrate that the specified emission factor is achieved by following the requirements in § 63.1431. If additional control devices are used to further reduce the HAP emissions from a process vent already controlled by ECO, then the owner or operator shall also comply with the testing, monitoring, recordkeeping, and reporting requirements associated with the additional control device, as specified in §§ 63.1426, 63.1429, and 63.1430, respectively.

(1) For each product class, the owner or operator shall determine the batch cycle percent epoxide emission reduction for the most difficult to control product in the product class, where the most difficult to control product is the polyether polyol that is manufactured with the slowest pressure decay curve.

(2) The owner or operator may determine the batch cycle percent epoxide emission reduction by directly measuring the concentration of the unreacted epoxide, or by using process knowledge, reaction kinetics, and engineering knowledge, in accordance with paragraph (a)(2)(i) of this section.

(i) If the owner or operator elects to use any method other than direct measurement, the epoxide concentration shall be determined by direct measurement for one product from each product class and compared with the epoxide concentration determined using the selected estimation method, with the exception noted in paragraph (a)(2)(ii) of this section. If the difference between the directly determined epoxide concentration and the calculated epoxide concentration is