

**2.62 Synthetic Organic Chemical Manufacturing Industry (SOCMI) - Air Oxidation Unit Processes****2.62.1 Applicability and Designation of Affected Facility**

- (a) The provisions of this source category apply to each affected facility designated in paragraph (b) of this section that has been required to demonstrate compliance where these procedures are applicable.
- (b) The affected facility is any of the following:
  - (1) Each air oxidation reactor not discharging its vent stream into a recovery system.
  - (2) Each combination of an air oxidation reactor and the recovery system into which its vent stream is discharged.
  - (3) Each combination of two or more air oxidation reactors and the common recovery system into which their vent streams are discharged.
- (c) Each affected facility that has a total resource effectiveness (TRE) index value greater than 4.0 is exempt from all provisions of this source category except for 2.62.3(f), 2.62.4(h) and 2.62.4(k).

**2.62.2 Monitoring of Emissions and Operations**

- (a) The owner or operator of an affected facility that uses an incinerator to seek to comply with the TOC emission limit shall install, calibrate, maintain, and operate according to manufacturer's specifications the following equipment:
  - (1) A temperature monitoring device equipped with a continuous recorder and having an accuracy of  $\pm 1$  percent of the temperature being monitored expressed in degrees Celsius or  $\pm 0.5^{\circ}\text{C}$ , whichever is greater.
    - (i) Where an incinerator other than a catalytic incinerator is used, a temperature monitoring device shall be installed in the firebox.
    - (ii) Where a catalytic incinerator is used, temperature monitoring devices shall be installed in the gas stream immediately before and after the catalyst bed.
  - (2) A flow indicator that provides a record of vent stream flow to the incinerator at least once every hour for each affected facility. The flow indicator shall be installed in the vent stream from each affected facility at a point closest to the inlet of each incinerator and before being joined with any other vent stream.
- (b) The owner or operator of an affected facility that uses a flare to seek to comply with §60.612(b) shall install, calibrate, maintain, and operate according to manufacturer's specifications the following equipment:
  - (1) A heat sensing device, such as an ultra-violet sensor or thermocouple, at the pilot light to indicate the continuous presence of a flame.
  - (2) A flow indicator that provides a record of vent stream flow to the flare at least once every hour for each affected facility. The flow indicator shall be installed in the vent stream from each affected facility at a point closest to the flare and before being joined with any other vent stream.

- (c) The owner or operator of an affected facility that uses a boiler or process heater to seek to comply with §60.612(a) shall install, calibrate, maintain and operate according to the manufacturer's specifications in the following equipment:
- (1) A flow indicator that provides a record of vent stream flow to the boiler or process heater at least once every hour for each affected facility. The flow indicator shall be installed in the vent stream from each air oxidation reactor within an affected facility at a point closest to the inlet of each boiler or process heater and before being joined with any other vent stream.
  - (2) A temperature monitoring device in the firebox equipped with a continuous recorder and having an accuracy of  $\pm 1$  percent of the temperature being measured expressed in degrees Celsius or  $\pm 0.5^{\circ}\text{C}$ , whichever is greater, for boilers or process heaters of less than 44 MW (150 million BTU/hr) heat input design capacity.
  - (3) Monitor and record the periods of operation of the boiler or process heater if the design input capacity of the boiler is 44 MW (150 million BTU/hr) or greater. The records must be readily available for inspection.
- (d) The owner or operator of an affected facility that seeks to demonstrate compliance with the TRE index value limit specified under §60.612(c) shall install, calibrate, maintain, and operate according to manufacturer's specifications the following equipment, unless alternative monitoring procedures or requirements are approved for that facility by the Director.
- (1) Where an absorber is the final recovery device in a recovery system:
    - (i) A scrubbing liquid temperature monitoring device having an accuracy of  $\pm 1$  percent of the temperature being monitored expressed in degrees Celsius or  $0.5^{\circ}\text{C}$ , whichever is greater, and a specific gravity monitoring device having an accuracy of 0.02 specific gravity units, each equipped with a continuous recorder.
    - (ii) An organic monitoring device used to indicate the concentration level of organic compounds exiting the recovery device based on a detection principle such as infra-red, photoionization, or thermal conductivity, each equipped with a continuous recorder.
  - (2) Where a condenser is the final recovery device in a recovery system:
    - (i) A condenser exit(product side) temperature monitoring device equipped with a continuous recorder and having an accuracy of  $\pm 1$  percent of the temperature being monitored expressed in degrees Celsius or  $0.5^{\circ}\text{C}$ , whichever is greater.
    - (ii) An organic monitoring device used to indicate the concentration level of organic compounds exiting the recovery device based on a detection principle such as infra-red, photoionization, or thermal conductivity, each equipped with a continuous recorder.
  - (3) Where a carbon adsorber is the final recovery device in a recovery system:
    - (i) An integrating steam flow monitoring device having an accuracy of 10 percent,

and a carbon bed temperature monitoring device having an accuracy of  $\pm 1$  percent of the temperature being monitored expressed in degrees Celsius or  $\pm 0.5^{\circ}\text{C}$ , whichever is greater, both equipped with a continuous recorder.

- (ii) An organic monitoring device used to indicate the concentration level of organic compounds exiting the recovery device based on a detection principle such as infra-red, photoionization, or thermal conductivity, each equipped with a continuous recorder.
- (e) An owner or operator of an affected facility seeking to demonstrate compliance with the standards specified under §60.612 with control devices other than an incinerator, boiler, process heater, or flare; or recovery devices other than an absorber, condenser, or carbon adsorber shall provide to the Director information describing the operation of the control device or recovery device and the process parameter(s) which would indicate proper operation and maintenance of the device. The Director may request further information and will specify appropriate monitoring procedures or requirements.

### 2.62.3 Test Methods and Procedures

- (a) For the purpose of demonstrating compliance, all affected facilities shall be run at full operating conditions and flow rates during any performance test.
- (b) The following methods in Appendix A to this text, except as provided under Section 1.2(b), shall be used as reference methods to determine compliance with the emission limit or percent reduction efficiency specified.
  - (1) Method 1 or 1A, as appropriate, for selection of the sampling sites. The control device inlet sampling site for determination of vent stream molar composition or TOC (less methane and ethane) reduction efficiency shall be prior to the inlet of the control device and after the recovery system.
  - (2) Method 2, 2A, 2C, or 2D, as appropriate, for determination of the volumetric flow rates.
  - (3) The emission rate correction factor, integrated sampling and analysis procedure of Method 3 shall be used to determine the oxygen concentration (%O<sub>2d</sub>) for the purposes of determining compliance with the 20 ppmv limit. The sampling site shall be the same as that of the TOC samples and the samples shall be taken during the same time that the TOC samples are taken.

The TOC concentration corrected to 3 percent O<sub>2</sub> (C<sub>c</sub>) shall be computed using the following equation:

$$C_c = C_{TOC} \frac{17.9}{20.9 - \%O_{2d}}$$

where:

- C<sub>c</sub> = Concentration of TOC corrected to 3 percent O<sub>2</sub>, dry basis, ppm by volume.
- C<sub>TOC</sub> = Concentration of TOC (minus methane and ethane), dry basis, ppm by volume.
- %O<sub>2d</sub> = Concentration of O<sub>2</sub>, dry basis, percent by volume.

- (4) Method 18 to determine concentration of TOC in the control device outlet and the concentration of TOC in the inlet when the reduction efficiency of the control device is to be determined.

(i) The sampling time for each run shall be 1 hour in which either an integrated sample or four grab samples shall be taken. If grab sampling is used, then the samples shall be taken at 15-minute intervals.

- (ii) The emission reduction (R) of TOC (minus methane and ethane) shall be determined using the following equation:

$$R = \frac{E_i - E_o}{E_i} \times 100$$

where:

R = Emission reduction, percent by weight.

E<sub>i</sub> = Mass rate of TOC entering the control device, kg TOC/hr.

E<sub>o</sub> = Mass rate of TOC discharged to the atmosphere, kg TOC/hr.

- (iii) The mass rates of TOC (E<sub>i</sub>, E<sub>o</sub>) shall be computed using the following equations:

$$E_i = K_2 \left( \sum_{i=1}^n C_{ij} M_{ij} \right) Q_i$$

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

where:

C<sub>ij</sub>, C<sub>oj</sub> = Concentration of sample component "j" of the gas stream at the inlet and outlet of the control device, respectively, dry basis ppm by volume.

M<sub>ij</sub>, M<sub>oj</sub> = Molecular weight of sample component "j" of the gas stream at the inlet and outlet of the control device, respectively, g/g-mole (lb/lb-mole).

Q<sub>i</sub>, Q<sub>o</sub> = Flow rate of gas stream at the inlet and outlet of the control device, respectively, dscm/min (dscf/hr).

K<sub>2</sub> = Constant, 2.494 x 10<sup>-6</sup> (1/ppm) (g-mole/scm) (kg/g) (min/hr), where standard temperature for (g-mole/scm) is 20°C.

- (iv) The TOC concentration (C<sub>TOC</sub>) is the sum of the individual components and

shall be computed for each run using the following equation:

$$C_{TOC} = \sum_{i=1}^n C_j$$

where:

$C_{TOC}$  = Concentration of TOC (minus methane and ethane), dry basis, ppm by volume.

$C_i$  = Concentration of sample components in the sample.

$n$  = Number of components in the sample.

- (c) When a flare is used to seek to comply with the standard, the flare shall comply with the requirements of Section 1.7.
- (d) The following test methods in Appendix A to this part, except as provided under Section 1.2(b), shall be used for determining the net heating value of the gas combusted.
- (1) (i) Method 1 or 1A, as appropriate, for selection of the sampling site. The sampling site for the vent stream flow rate and molar composition determination prescribed in 2.62.3(d) (2) and (3) shall be, except for the situations outlined in paragraph (d)(1)(ii) of this section, prior to the inlet of any control device, prior to any post-reactor dilution of the stream with air, and prior to any post-reactor introduction of halogenated compounds into the vent stream. No transverse site selection method is needed for vents smaller than 4 inches in diameter.
- (ii) If any gas stream other than the air oxidation vent stream from the affected facility is normally conducted through the final recovery device.
- (A) The sampling site for vent stream flow rate and molar composition shall be prior to the final recovery device and prior to the point at which the nonair oxidation stream is introduced.
- (B) The efficiency of the final recovery device is determined by measuring the TOC concentration using Method 18 at the inlet to the final recovery device after the introduction of any nonair oxidation vent stream and at the outlet of the final recovery device.
- (C) This efficiency is applied to the TOC concentration measured prior to the final recovery device and prior to the introduction of the nonair oxidation stream to determine the concentration of TOC in the air oxidation stream from the final recovery device. This concentration of TOC is then used to perform the calculations outlined in 2.62.3(d) (4) and (5).
- (2) The molar composition of the process vent stream shall be determined as follows:
- (i) Method 18 to measure the concentration of TOC including those containing halogens.

- (ii) ASTM D1946-77 (incorporation by reference as specified in Section 1.6 of this text) to measure the concentration of carbon monoxide and hydrogen.
- (iii) Method 4 to measure the content of water vapor.
- (3) The volumetric flow rate shall be determined using Method 2, 2A, 2C, or 2D, as appropriate.
- (4) The net heating value of the vent stream shall be calculated using the following equation:

$$H_T = K_1 \left( \sum_{j=1}^n C_j H_j \right)$$

where:

$H_T$  = Net heating value of the sample, MJ/scm, where the net enthalpy per mole of gas is based on combustion at 25°C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20°C, as in the definition of  $Q_s$  (off gas flow rate).

$K_1$  = Constant,  $1.740 \times 10^{-7}$

$$\frac{(1) \text{ (g - mole) (MJ)}}{\text{ppm} \quad \text{scm} \quad \text{kcal}}$$

where

standard temperature for

$$\frac{\text{(g - mole)}}{\text{scm}}$$

is 20°C.

$C_j$  = Concentration of compound  $j$  in ppm, as measured for organics by Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946-77 (incorporated by reference as specified in Section 1.6 of this text) as indicated in 2.62.3(d)(2).

$H_j$  = Net heat of combustion  $j$ , kcal/g-mole, based on combustion at 25°C and 760mm Hg. The heats of combustion of vent stream components would be required to be determined using ASTM D2382-76 (incorporation by reference as specified in Section 1.6 of this text) if published values are not available or cannot be calculated.

- (5) The emission rate of TOC in the process vent stream shall be calculated using the following equation:

$$E_{TOC} = K_2 \left( \sum_{j=1}^n C_j M_j \right) Q_s$$

where:

$E_{TOC}$	=	Emission rate of TOC in the sample, kg/hr.
$K_2$	=	Constant, $2.494 \times 10^{-6}$ (1/ppm) (g-mole/scm) (kg/g) (min./hr.), where standard temperature for (g-mole/scm) is 20°C.
$C_j$	=	Concentration on a basis of compound j in ppm as measured by Method 18 as indicated in 2.62.3(d)(2).
$M_j$	=	Molecular weight of sample j, g/g-mole.
$Q_s$	=	Vent stream flow rate (scm/min) at a standard temperature of 20°C.

(6) The total process vent stream concentration (by volume) of compounds containing halogens (ppmv, by compound) shall be summed from the individual concentrations of compounds containing halogens which were measured by Method 18.

(e) For purposes of complying with §60.612(c), the owner or operator of a facility affected by this source category shall calculate the TRE index value of the vent stream using the equation for incineration in paragraph (e)(1) of this section for halogenated vent streams. The owner or operator of an affected facility with a nonhalogenated vent stream shall determine the TRE index value by calculating values using both the incinerator equation in paragraph (e)(1) of this section and the flare equation in paragraph (e)(2) of this section and selecting the lower of the two values.

(1) The TRE index value of the vent stream controlled by an incinerator shall be calculated using the following equation:

$$TRE = \frac{I}{E_{TOC}} \left[ a + b(Q_s)^{0.88} + c(Q_s) + d(Q_s)(H_T) + e(Q_s)^{0.88}(H_T)^{0.88} + f(Y_s)^{0.5} \right]$$

(i) where for a vent stream flow rate (scm/min) at a standard temperature of 20°C that is greater than or equal to 14.2 scm/min:

TRE	=	TRE index value.
$Q_s$	=	Vent stream flow rate (scm/min), at a standard temperature of 20°C.
$H_T$	=	Vent stream net heating value (MJ/scm), where the net enthalpy of combustion per mole of vent stream is based on combustion at 25°C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20°C, as in the definition of $Q_s$ .
$Y_s$	=	$Q_s$ for all vent stream categories listed in Table 1 except for Category E vent streams where $Y_s = (Q_s)(H_T)/3.6$ .
$E_{TOC}$	=	Hourly emissions of TOC reported in kg/hr.

a, b, c, d, e, and f are coefficients.

The set of coefficients which apply to a vent stream shall be obtained from Table 1.

(ii) Where for a vent stream flow rate (scm/min) at a standard temperature of 20°C that is less than 14.2 scm/min:

$$TRE = \text{TRE index value.}$$

$$Q_s = 14.2 \text{ scm/min.}$$

$$H_T = (\text{FLOW})(\text{HVAL})/14.2.$$

Where the following inputs are used:

$$\text{FLOW} = \text{Vent stream flow rate (scm/min), at a standard temperature of } 20^\circ\text{C.}$$

$$\text{HVAL} = \text{Vent stream net heating value (MJ/scm), where the net enthalpy per mole of vent stream is based on combustion at } 25^\circ\text{C and } 760 \text{ mm Hg, but the standard temperature for determining the volume corresponding to 1 mole is } 20^\circ\text{C as in the definition of } Q_s.$$

$$Y_s = 14.2 \text{ scm/min for all vent stream categories listed in Table 1 except for Category E vent streams, where } Y_s = (14.2)(H_T)/3.6.$$

$$E_{\text{TOC}} = \text{Hourly emissions of TOC reported in kg/hr.}$$

a, b, c, d, e, and f are coefficients.

The set of coefficients that apply to a vent stream can be obtained from Table 1.

(2) The equation for calculating the TRE index value of a vent stream controlled by a flare is as follows:

**Table 1. Air Oxidation TRE Coefficients for Vent Streams Controlled by an Incinerator**

Design Category A1. For Halogenated Process Vent Streams, if  $0 \leq \text{Net Heating Value (MJ/scm)} \leq 3.5$ :

$Q_s = \text{Vent Stream Flow rate (scm/min)}$	a	b	c	d	e	f
$14.2 \leq Q_s \leq 18.8$	19.18370	0.27580	0.75762	-0.13064	0	0.01025
$18.8 < Q_s \leq 699$	20.00563	0.27580	0.30387	-0.13064	0	0.01025
$699 < Q_s \leq 1400$	39.87022	0.29973	0.30387	-0.13064	0	0.01449
$1400 < Q_s \leq 2100$	59.73481	0.31467	0.30387	-0.13064	0	0.01775
$2100 < Q_s \leq 2800$	79.59941	0.32572	0.30387	-0.13064	0	0.02049
	99.46400	0.33456	0.30387	-0.13064	0	0.02291



2800 < $Q_s$ ≤ 3500						
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Design Category A2. For Halogenated Process Vent Streams, if Net Heating Value > 3.5 MJ/scm:

$Q_s$ = Vent Stream Flow rate (scm/min)	a	b	c	d	e	f
14.2 ≤ $Q_s$ ≤ 18.8	18.84466	0.26742	-0.20044	0	0	0.01025
18.8 < $Q_s$ ≤ 699	19.66658	0.26742	-0.25332	0	0	0.01025
699 < $Q_s$ ≤ 1400	39.19213	0.29062	-0.25332	0	0	0.01449
1400 < $Q_s$ ≤ 2100	58.71768	0.30511	-0.25332	0	0	0.01775
2100 < $Q_s$ ≤ 2800	78.24323	0.31582	-0.25332	0	0	0.02049
2800 < $Q_s$ ≤ 3500	97.76879	0.32439	-0.25332	0	0	0.02291

Design Category B. For Halogenated Process Vent Streams, if  $0 \leq$  Net Heating Value (MJ/scm)  $\leq$  0.48:

$Q_s$ = Vent Stream Flow rate (scm/min)	a	b	c	d	e	f
14.2 ≤ $Q_s$ ≤ 1340	8.54245	0.10555	0.09030	-0.17109	0	0.01025
1340 < $Q_s$ ≤ 2690	16.94386	0.11470	0.09030	-0.17109	0	0.01449
2690 < $Q_s$ ≤ 4040	25.34528	0.12042	0.09030	-0.17109	0	0.01775

Design Category C. For Nonhalogenated Process Vent Streams, if  $0.48 <$  Net Heating Value (MJ/scm)  $\leq$  1.9:

$Q_s$ = Vent Stream Flow rate (scm/min)	a	b	c	d	e	f
14.2 ≤ $Q_s$ ≤ 1340	9.25233	0.06105	0.31937	-0.16181	0	0.01025
1340 < $Q_s$ ≤ 2690	18.36363	0.06635	0.31937	-0.16181	0	0.01449
2690 < $Q_s$ ≤ 4040	27.47492	0.06965	0.31937	-0.16181	0	0.01775

Design Category D. For Nonhalogenated Process Vent Streams, if  $1.9 <$  Net Heating Value (MJ/scm)  $\leq$  3.6:

$Q_s$ = Vent Stream Flow rate (scm/min)	a	b	c	d	e	f
$14.2 \leq Q_s \leq 1180$	6.67868	0.06943	0.02582	0	0	0.01025
$1180 < Q_s \leq 2370$	13.21633	0.07546	0.02582	0	0	0.01449
$2370 < Q_s \leq 3550$	19.75398	0.07922	0.02582	0	0	0.01775

Design Category E. For Nonhalogenated Process Vent Streams, if Net Heating Value >3.6 MG/scm:

$Y_s$ = Dilution Flow rate (scm/min) = $(Q_s)(H_T)/3.6$	a	b	c	d	e	f
$14.2 \leq Q_s \leq 1180$	6.67868	0	0	-0.00707	0.02220	0.01025
$1180 < Q_s \leq 2370$	13.21633	0	0	-0.00707	0.02412	0.01449
$2370 < Q_s \leq 3550$	19.75398	0	0	-0.00707	0.02533	0.01775

$$TRE = \frac{T}{E_{TOC}} [a(Q_s) + b(Q_s)^{0.8} + c(Q_s)(H_T) + d(E_{TOC}) + e]$$

where:

- TRE = TRE index value.
- $E_{TOC}$  = Hourly emission rate of TOC reported in kg/hr.
- $Q_s$  = Vent stream flow rate (scm/min) at a standard temperature of 20°C.
- $H_T$  = Vent stream net heating value (MJ/scm) where the net enthalpy per mole of offgas is based on combustion at 25°C and 760 mm Hg, but the standard temperature for determining the volume corresponding to 1 mole is 20°C as in the definition of  $Q_s$ .

a, b, c, d, and e are coefficients.

The set of coefficients that apply to a vent stream shall be obtained from Table 2.

**Table 2. Air Oxidation Processes TRE Coefficients for Vent Streams Controlled by a Flare**

	a	b	c	d	e
$H_T < 11.2$ MJ/scm	2.25	0.288	-0.193	-0.0051	2.08

H <sub>T</sub> >11.2 MJ/scm	0.309	0.619	-0.0043	-0.0034	2.08
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- (f) Each owner or operator of an affected facility seeking to comply with §60.610(c) or §60.612(c) shall recalculate the TRE index value for that affected facility whenever process changes are made. Some examples of process changes are changes in production capacity, feedstock type, or catalyst type, or whenever there is replacement, removal, or addition of recovery equipment. The TRE index value shall be recalculated based on test data, or on best engineering estimates of the effects of the change to the recovery system.
- (1) Where the recalculated TRE index value is less than or equal to 1.0, the owner or operator shall notify the Director within 1 week of the recalculation and shall conduct a performance test according to the methods and procedures required by §2.62.3 to determine compliance with §60.612(a). Performance tests must be conducted as soon as possible after the process change but no later than 180 days from the time of the process change.
- (2) Where the initial TRE index value is greater than 4.0 and the recalculated TRE index value is less than or equal to 4.0, but greater than 1.0, the owner or operator shall conduct a performance test in accordance with Section 1.2 and §2.62.3 and shall comply with §2.62.2, §2.62.3, and §2.62.4. Performance tests must be conducted as soon as possible after the process change but no later than 180 days from the time of the process change.

#### 2.62.4 Reporting and Recordkeeping Requirements

- (a) [Reserved]
- (b) Each owner or operator subject to the provisions of this source category shall keep up-to-date, readily accessible records of the following data measured during each performance test, and also include the following data in the report of the initial performance test required under Section 1.2. Where a boiler or process heater with a design heat input capacity of 44 MW (150 million BTU/hour) or greater is used to comply with §60.612(a), a report containing performance test data need not be submitted, but a report containing the information of 2.62.4(b)(2)(i) is required. The same data specified in this section shall be submitted in the reports of all subsequently required performance tests where either the emission control efficiency of a control device, outlet concentration of TOC, or the TRE index value of a vent stream from a recovery system is determined.
- (1) Where an owner or operator subject to this source category seeks to demonstrate compliance through use of either a thermal or catalytic incinerator:
- (i) The average firebox temperature of the incinerator (or the average temperature upstream and downstream of the catalyst bed for a catalytic incinerator), measured at least every 15 minutes and averaged over the same time period of the performance testing; and
- (ii) The percent reduction of TOC determined as specified in 2.62.3(b) achieved by the incinerator, or the concentration of TOC (ppmv, by compound) determined as specified in 2.62.3(b) at the outlet of the control device on a dry basis corrected to 3 percent oxygen.
- (2) Where an owner or operator subject to the provisions of this source category seeks to

demonstrate compliance through use of a boiler or process heater:

- (i) A description of the location at which the vent stream is introduced into the boiler or process heater; and
  - (ii) The average combustion temperature of the boiler or process heater with a design heat input capacity of less than 44 MW (150 million BTU/hr) measured at least every 15 minutes and averaged over the same time period of the performance testing.
- (3) Where an owner or operator subject to the provisions of this source category seeks to comply through the use of a smokeless flare, flare design (i.e., steam-assisted, air-assisted, or nonassisted), all visible emission readings, heat content determinations, flow rate measurements, and exit velocity determinations made during the performance test, continuous records of the flare pilot flame monitoring, and records of all periods of operations during which the pilot flame is absent.
- (4) Where an owner or operator seeks to demonstrate compliance with §60.612(c):
- (i) Where an absorber is the final recovery device in a recovery system, the exit specific gravity (or alternative parameter which is a measure of the degree of absorbing liquid saturation, if approved by the Director), and average exit temperature of the absorbing liquid, measured at least every 15 minutes and averaged over the same time period of the performance testing (both measured while the vent stream is normally routed and constituted), or
  - (ii) Where a condenser is the final recovery device in a recovery system, the average exit (product side) temperature, measured at least every 15 minutes and averaged over the same time period of the performance testing while the vent stream is normally routed and constituted.
  - (iii) Where a carbon adsorber is the final recovery device in a recovery system, the total steam mass flow measured at least every 15 minutes and averaged over the same time period of the performance test (full carbon bed cycle), temperature of the carbon bed after regeneration (and within 15 minutes of completion of any cooling cycle(s), and duration of the carbon bed steaming cycle (all measured while the vent stream is normally routed and constituted), or
  - (iv) As an alternative to 2.62.4(b)(4)(i), (ii) or (iii), the concentration level or reading indicated by the organic monitoring device at the outlet of the absorber, condenser, or carbon adsorber measured at least every 15 minutes and averaged over the same time period of the performance testing while the vent stream is normally routed and constituted.
  - (v) All measurements and calculations performed to determine the TRE index value of the vent stream.
- (c) Each owner or operator subject to the provisions of this source category shall keep up-to-date, readily accessible continuous records of the equipment operating parameters specified to be monitored under 2.62.2(a) and (c) as well as up-to-date, readily accessible records of periods of operation during which the parameter boundaries established during the most recent performance test are exceeded. The Director may at any time require a report of these data.

Where a combustion device is used by an owner or operator seeking to demonstrate compliance with §60.612(a) or (c), periods of operation during which the parameter boundaries established during the most recent performance tests are exceeded are defined as follows:

- (1) For thermal incinerators, all 3-hour periods of operation during which the average combustion temperature was more than 28°C (50°F) below the average combustion temperature during the most recent performance test at which compliance was determined.
  - (2) For catalytic incinerators, all 3-hour periods of operation during which the average temperature of the vent stream immediately before the catalyst bed is more than 28°C (50°F) below the average temperature of the vent stream during the most recent performance test at which compliance was determined. The owner or operator also shall record all 3-hour periods of operation during which the average temperature difference across the catalyst bed is less than 80 percent of the average temperature difference of the device during the most recent performance test at which compliance was determined.
  - (3) All 3-hour periods of operation during which the average combustion temperature was more than 28°C (50°F) below the average combustion temperature during the most recent performance test at which compliance was determined for boilers or process heaters with a design heat input capacity of less than 44 MW (150 million BTU/hr.).
  - (4) For boilers or process heaters, whenever there is a change in the location at which the vent stream is introduced into the flame zone as required.
- (d) Each owner or operator subject to the provisions of this source category shall keep up-to-date, readily accessible continuous records of the flow indication specified under 2.62.2(a)(2), (b)(2), and (c)(1), as well as up-to-date, readily accessible records of all periods when the vent stream is diverted from the control device or has no flow rate.
- (e) Each owner or operator subject to the provisions of this source category who uses a boiler or process heater with a design heat input capacity of 44 MW or greater to comply shall keep an up-to-date, readily accessible record of all periods of operation of the boiler or process heater. (Examples of such records could include records of steam use, fuel use, or monitoring data collected pursuant to other State or Federal regulatory requirements).
- (f) Each owner or operator subject to the provisions of this source category shall keep up-to-date, readily accessible continuous records of the flare pilot flame monitoring specified in 2.62.2(b), as well as up-to-date, readily accessible records of all periods of operations in which the pilot flame is absent.
- (g) Each owner or operator subject to the provisions of this source category shall keep up-to-date, readily accessible continuous records of the equipment operating parameters specified to be monitored under 2.62.2(c) as well as up-to-date, readily accessible records of periods of operation during which the parameter boundaries established during the most recent performance test are exceeded. The Director may at any time require a report of these data. Where the owner or operator seeks to demonstrate compliance with §60.612(c), periods of operation during which the parameter boundaries established during the most recent performance tests are exceeded are defined as follows:
- (1) Where an absorber is the final recovery device in a recovery system, and where an organic monitoring device is not used:

- (i) All 3-hour periods of operation during which the average absorbing liquid temperature was more than 11 °C (20 °F) above the average absorbing liquid temperature during the most recent performance test, or
  - (ii) All 3-hour periods of operation during which the average absorbing liquid specific gravity was more than 0.1 unit above, or more than 0.1 unit below, the average absorbing liquid specific gravity during the most recent performance test (unless monitoring of an alternative parameter, which is a measure of the degree of absorbing liquid saturation, is approved by the Director, in which case he or she will define appropriate parameter boundaries and periods of operation during which they are exceeded).
- (2) When a condenser is the final recovery device in a recovery system, and where an organic monitoring device is not used, all 3-hour periods of operation during which the average exit (product side) condenser operating temperature was more than 6 °C (11 °F) above the average exit (product side) operating temperature during the most recent performance test.
- (3) Where a carbon adsorber is the final recovery device in a recovery system and where an organic monitoring device is not used:
  - (i) All carbon bed regeneration cycles during which the total mass steam flow was more than 10 percent below the total mass steam flow during the most recent performance test, or
  - (ii) All carbon bed regeneration cycles during which the temperature of the carbon bed after regeneration [and after completion of any cooling cycle(s)] was more than 10 percent greater than the carbon bed temperature (in degrees Celsius) during the most recent performance test.
- (4) Where an absorber, condenser, or carbon adsorber is the final recovery device in the recovery system and an organic monitoring device approved by the Director is used, all 3-hour periods of operation during which the average concentration level or reading of organic compounds in the exhaust gases is more than 20 percent greater than the exhaust gas organic compound concentration level or reading measured by the monitoring device during the most recent performance test.
- (h) Each owner or operator subject to the provisions of this source category and seeking to demonstrate compliance with §60.612(c) shall keep up-to-date, readily accessible records of:
  - (1) Any changes in production capacity, feedstock type, or catalyst type, or of any replacement, removal or addition of recovery equipment or air oxidation reactors;
  - (2) Any recalculation of the TRE index value performed pursuant to 2.62.3(f);
  - (3) The results of any performance test performed pursuant to the methods and procedures required by 2.62.3(d).
- (i) Each owner and operator subject to the provisions of this source category is exempt from the quarterly reporting requirements contained in Section 1.4(c) of the General Provisions.
- (j) Each owner or operator that seeks to comply with the requirements of this source category shall

submit to the Director semiannual reports of the following information. The initial report shall be submitted within 6 months after the initial start-up date.

- (1) Exceedances of monitored parameters recorded under 2.62.4(c) and (g).
- (2) All periods recorded under 2.62.4(d) when the vent stream is diverted from the control device or has no flow rate.
- (3) All periods recorded under 2.62.4(e) when the boiler or process heater was not operating.
- (4) All periods recorded under 2.62.4(f) in which the pilot flame of the flare was absent.
- (5) Any recalculation of the TRE index value, as recorded under 2.62.4(h).

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<sup>1</sup>Code of Federal Regulations, Title 40, Part 60.