2.2 Incinerators

2.2.1 Applicability and Designation of Affected Facility

The affected facility to which the provisions of this source category applies is each incinerator subject to Section 1.1, of the general provisions of this text.

2.2.2 Test Methods and Procedures

(a) In conducting the performance tests required in Section 1.2, the owner or operator shall use as reference methods and procedures the test methods in Appendix A of this text or other methods and procedures as specified in this section, except as provided in Section 1.2(b).

(b) The owner or operator shall determine compliance with the particulate matter standard as follows:

(1) (i) The concentration (c_{12}) of particulate matter, corrected to 12 percent CO_2, shall be computed for each run using the following equation:

$$c_{12} = c_s(12 / \%CO_2)$$

Where:

c_{12} = concentration of particulate matter, corrected to 12 percent CO_2, g/dscm (gr/dscf).

c_s = concentration of particulate matter, g/dscm (gr/dscf).

$\%CO_2$ = CO_2 concentration, percent dry basis.

(ii) For sources subject to mass rate performance standards and/or based on charging rates, use the following formulae:

(A) To convert to mass rate units:

$$E = cQ$$

Where:

E = the mass emission rate, lb./hr.;

c = the concentration of particulate matter, lb./dscf; and

Q = the gas flow rate corrected to standard conditions, dscf/hr.

(B) To convert to the specific units of lbs. particulate/100 lbs. charge, then use the following equation:

$$E_c = \frac{cQ}{R}(100)$$

Where:

E_c = the particulate matter emissions expressed as lbs. particulate/100 lbs. charge;

c and Q same as (b)(1)(ii)(A) above; and

R = the charging rate, lbs. charge/hr.

(2) Method 5 shall be used to determine the particulate matter concentration (c_s) or (c), except that Method 5T shall be used for sources burning types 3, 4, 5 or 6 waste as defined by the Incinerator Institute of America Incinerator Standards (May, 1966) for the determination of the condensable material collected in the impinger portion of the sampling train. The sampling time and sample volume for each run shall be at least 60 minutes and 0.85 dscm (30 dscf).

(3) The emission rate correction factor, integrated or grab sampling and analysis procedure of Method 3B shall be used to determine CO_2 concentration ($\%CO_2$).

(i) The CO_2 sample shall be obtained simultaneously with, and at the same traverse points as, the particulate run. If the particulate run has more than 12 traverse points, the CO_2 traverse points may be reduced to 12 if Method 1 is used to locate the 12 CO_2 traverse points. If individual CO_2 samples are taken at each traverse point, the CO_2 concentration ($\%CO_2$) used in the correction equation shall be the arithmetic mean of the sample CO_2 concentrations at all traverse points.

(ii) If sampling is conducted after a wet scrubber, an "adjusted" CO_2 concentration [$(\%CO_2)_{adj}$], which accounts for the effects of CO_2 absorption and dilution air, may be used instead of the CO_2 concentration determined in this paragraph. The adjusted CO_2 concentration shall be determined by either of the procedures in paragraph (c) of this section.

(c) The owner or operator may use either of the following procedures to determine the adjusted CO_2 concentration.

(1) The volumetric flow rates at the inlet and outlet of the wet scrubber and the inlet CO_2 concentration may be used to determine the adjusted CO_2 concentration [$(\%CO_2)_{adj}$] using the following equation:

$$(\%CO_2)_{adj} = (\%CO_2)_{di}(Q_{di}/Q_{do})$$

Where:

$(\%CO_2)_{adj}$ = adjusted outlet CO_2 concentration, percent dry basis.

$(\%CO_2)_{di}$ = CO_2 concentration measured before the scrubber, percent dry basis.

Q_{di} = volumetric flow rate of effluent gas before the wet

scrubber, dscm/min (dscf/min).

Q_{do} = volumetric flow rate of effluent gas after the wet scrubber, dscm/min (dscf/min).

(i) At the outlet, Method 5 is used to determine the volumetric flow rate (Q_{do}) of the effluent gas.

(ii) At the inlet, Method 2 is used to determine the volumetric flow rate (Q_{di}) of the effluent gas as follows: Two full velocity traverses are conducted, one immediately before and one immediately after each particulate run conducted at the outlet, and the results are averaged.

(iii) At the inlet, the emission rate correction factor, integrated sampling and analysis procedure of Method 3B is used to determine the CO_2 concentration [$(\%CO_2)_{di}$] as follows: At least nine sampling points are selected randomly from the velocity traverse points and are divided randomly into three sets, equal in number of points; the first set of three or more points is used for the first run, the second set for the second run, and the third set for the third run. The CO_2 sample is taken simultaneously with each particulate run being conducted at the outlet, by traversing the three sampling points (or more) and sampling at each point for equal increments of time.

(2) Excess air measurements may be used to determine the adjusted CO_2 concentration [$(\%CO_2)_{adj}$] using the following equation:

$$(\%CO_2)_{adj} = (\%CO_2)_{di}\,[(100 + \%EA_i) / (100 + \%EA_o)]$$

Where:

$(\%CO_2)_{adj}$ = adjusted outlet CO_2 concentration, percent dry basis.

$(\%CO_2)_{di}$ = CO_2 concentration at the inlet of the wet scrubber, percent dry basis.

$\%EA_i$ = excess air at the inlet of the scrubber, percent.

$\%EA_o$ = excess air at the outlet of the scrubber, percent.

(i) A gas sample is collected as in paragraph (c)(1)(iii) of this section and the gas samples at both the inlet and outlet locations are analyzed for CO_2, O_2, and N_2.

(ii) Equation 3B-3 of Method 3B is used to compute the percentages of excess air at the inlet and outlet of the wet scrubber.