Appendix A to part 63 is amended by adding in numerical order Method 303 as follows:

Appendix A - Test Methods

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METHOD 303--DETERMINATION OF VISIBLE EMISSIONS FROM BY-PRODUCT COKE OVEN BATTERIES

1. Applicability and Principle

1.1 Applicability. This method applies to the determination of visible emissions (VE) from the following by-product coke oven battery sources: charging systems during charging, doors, topside port lids, and offtake systems on operating coke ovens; and collecting mains. In order for the test method results to be indicative of plant performance, the time of day of the run should vary.

1.2 Principle. A certified observer visually determines the VE from coke oven battery sources (the certification procedures are described in section 2). This method does not require that opacity of emissions be determined or that magnitude be differentiated.

1.3 Definitions.

1.3.1 Bench. The platform structure in front of the oven doors.

1.3.2 By-product Coke Oven Battery. A source consisting of a group of ovens connected by common walls, where coal undergoes destructive distillation under positive pressure to produce coke and coke oven gas, from which by-products are recovered.

1.3.3 Charge or Charging Period. The period of time that commences when coal begins to flow into an oven through a topside port and ends when the last oven lid is recapped.

1.3.4 Charging System. An apparatus used to charge coal to a coke oven (e.g., a larry car for wet coal charging systems).

1.3.5 Coke Oven Door. Each end enclosure on the pusher side and the coking side of an oven. The chuck, or leveler-bar, door is considered part of the pusher side door. The coke oven door area includes the entire area on the vertical face of a coke oven between the bench and the top of the battery between two adjacent buck stays.

1.3.6 Coke Side. The side of a battery from which the coke is discharged from ovens at the end of the coking cycle.

1.3.7 Collecting Main. Any apparatus that is connected to one or more offtake systems and that provides a passage for conveying gases under positive pressure from the by-product coke oven battery to the by-product recovery system.

1.3.8 Consecutive Charges. Charges observed successively, excluding any charge during which the observer's view of the charging system or topside ports is obscured.

1.3.9 Damper-off. To close off the gas passage between the coke oven and the collecting main, with no flow

of raw coke oven gas from the collecting main into the oven or into the oven's offtake system(s).

1.3.10 Decarbonization Period. The period of time for combusting oven carbon that commences when the oven lids are removed from an empty oven or when standpipe caps of an oven are opened. The period ends with the initiation of the next charging period for that oven.

1.3.11 Larry Car. An apparatus used to charge coal to a coke oven with a wet coal charging system.

1.3.12 Log Average. Logarithmic average as calculated in section 3.8.

1.3.13 Offtake System. Any individual oven apparatus that is stationary and provides a passage for gases from an oven to a coke oven battery collecting main or to another oven. Offtake system components include the standpipe and standpipe caps, goosenecks, stationary jumper pipes, mini-standpipes, and standpipe and gooseneck connections.

1.3.14 Operating Oven. Any oven not out of operation for rebuild or maintenance work extensive enough to require the oven to be skipped in the charging sequence.

1.3.15 Oven. A chamber in the coke oven battery in which coal undergoes destructive distillation to produce coke.

1.3.16 Push Side. The side of the battery from which the coke is pushed from ovens at the end of the coking cycle.

1.3.17 Run. The observation of visible emissions from topside port lids, offtake systems, coke oven doors, or the charging of a single oven in accordance with this method.

1.3.18 Shed. Structures for capturing coke oven emissions on the coke side or pusher side of the coke oven battery, which route the emissions to a control device or system.

1.3.19 Standpipe Cap. An apparatus used to cover the opening in the gooseneck of an offtake system.

1.3.20 Topside Port Lid. A cover, removed during charging or decarbonizing, that is placed over the opening through which coal can be charged into the oven of a by-product coke oven battery.

1.3.21 Traverse Time. Accumulated time for a traverse as measured by a stopwatch. Traverse time includes time to stop and write down oven numbers but excludes time waiting for obstructions of view to clear or for time to walk around obstacles.

1.3.22 Visible Emissions (VE). Any emission seen by the unaided (except for corrective lenses) eye, excluding steam or condensing water.

2. Observer Certification

2.1 Certification Procedures. This method requires only the determination of whether VE occur and does not require the determination of opacity levels; therefore, observer certification according to Method 9 in appendix A

if use of such set of observations in a calculation under section 3.9 would cause the value of A to be less than 145.

3.9 Log Average. For each day on which a valid daily set of observations is obtained, calculate the daily 30-day rolling log average of seconds of visible emissions from the charging operation for each battery using these data and the 29 previous valid daily sets of observations, in accordance with the following equation:

$$\textit{logarithmic average} = e^{y} - 1 \qquad \text{(Eq. 303-1)}$$

where

e = 2.72,

$$y = \frac{\ln(X_1 + 1) + \ln(X_2 + 1) + \ldots \ln(X_A + 1)}{A}$$

ln = Natural logarithm, and

X_i = Seconds of VE during the i^{th} charge.

A = 150 or the number of valid observations (runs). The value of A shall not be less than 145, except for purposes of determinations under § 63.306(c) [work practice plan implementation] or § 63.306(d) [work practice plan revisions] of this part. No set of observations shall be considered valid for such a recalculation that otherwise would not be considered a valid set of observations for a calculation under this paragraph.

4. Procedure for Determining VE from Coke Oven Door Areas

The intent of this procedure is to determine VE from coke oven door areas by carefully observing the door area from a standard distance while walking at a normal pace.

door, between the masonry brick, buck stay or jamb, or other sources). Record the oven number and make the appropriate notation on the door area inspection sheet (Figure 303-2).

Note: Multiple VE from the same door area (e.g., VE from both the chuck door and the push side door) are counted as only one emitting door, not as multiple emitting doors.

4.3.3 Do not record the following sources as door area VE:

4.3.3.1 VE from ovens with doors removed. Record the oven number and make an appropriate notation under "Comments;"

4.3.3.2 VE from ovens taken out of service. The owner or operator shall notify the observer as to which ovens are out of service. Record the oven number and make an appropriate notation under "Comments;" or

4.3.3.3 VE from hot coke that has been spilled on the bench as a result of pushing.

4.4 Criteria for Acceptance. After completing the run, calculate the maximum time allowed to observe the ovens by the following equation:

$$T = (4 \times D_t) + (10 \times L) \qquad \text{(Eq. 303-2)}$$

where

T = Total time allowed for traverse, seconds;

D_t = Total number of oven doors on the battery; and

L = Number of doors with VE.

4.4.1 If the total traverse time exceeds T, void the run, and conduct another run to satisfy the requirements of § 63.309(c)(1) of this part.

4.5 Calculations for Percent Leaking Doors (PLD). Determine the total number of doors for which observations were made on the coke oven battery as follows:

$$D_{ob} = (2 \times N) - (D_i + D_{no}) \qquad \text{(Eq. 303-3)}$$

where

D_{ob} = Total number of doors observed on operating ovens;

D_i = Number of doors on nonoperating ovens;

D_{no} = Number of doors not observed; and

N = Total number of ovens in the battery.

4.5.1 For each test run (one run includes both the coke side and the push side traverses), sum the number of doors with door area VE. For batteries subject to an approved alternative standard under § 63.305 of this part, calculate the push side and the coke side PLD separately.

4.5.2 Calculate percent leaking doors by using the following equation:

$$PLD = \frac{L_y}{D_{ob}} \times 100 \qquad \text{(Eq. 303-4)}$$

where

PLD = Percent leaking doors for the test run;

L_y = Number of doors with VE observed from the yard; and

D_{ob} = Total number of doors observed on operating ovens.

4.5.3 When traverses are conducted from the bench under sheds, calculate the coke side and the push side separately. Use the following equation to calculate a yard-equivalent reading:

$$L_b = L_s - (N \times 0.06) \qquad \text{(Eq. 303-5)}$$

where

N = Total number of ovens on the battery;

L_b = Yard-equivalent reading; and

L_s = Number of doors with VE observed from the bench under sheds.

If L_b is less than zero, use zero for L_b in Equation 303-6 in the calculation of PLD.

4.5.3.1 Use the following equation to calculate PLD:

$$PLD = \frac{L_b + L_y}{D_{ob}} \times 100 \qquad \text{(Eq. 303-6)}$$

where

PLD = Percent leaking coke oven doors for the run;

L_b = Yard equivalent reading;

L_y = Number of doors with VE observed from the yard on the push side; and

D_{ob} = Total number of doors observed on operating ovens.

Round off PLD to the nearest hundredth of 1 percent and record as the percent leaking coke oven doors for the run.

4.5.3.2 30-day Rolling Average. For each day on which a valid observation is obtained, calculate the daily 30-day rolling average for each battery using these data and the 29

standpipes, and to avoid the poten[illegible] removing a door on an oven that is not dampered off fro[illegible] the main.

5.6.5 Topside Port Lids. Determine the percent leaking topside port lids for each run as follows:

$$PLL = \frac{P_{VE}}{P_{ovn}(N-N_i) - P_{NO}} \times 100 \qquad \text{(Eq. 303-9)}$$

where

PLL = Percent leaking topside port lids for the run;

P_{VE} = Number of topside port lids with VE;

P_{ovn} = Number of ports per oven;

N = Total number of ovens in the battery;

N_i = Number of inoperable ovens; and

P_{NO} = Number of ports not observed.

5.6.5.1 Round off this percentage to the nearest hundredth of 1 percent and record this percentage as the percent leaking topside port lids for the run.

5.6.5.2 30-day Rolling Average. For each day on which a valid daily observation is obtained, calculate the daily 30-day rolling average for each battery using these data and the 29 previous valid daily observations, in accordance with the following equation:

$$PLL(30\text{-}day) = \frac{(PLL_1 + PLL_2 + \ldots + PLL_{30})}{30} \qquad \text{(Eq. 303-10)}$$

5.6.6 Offtake Systems. Determine the percent leaking offtake systems for the run as follows:

VE Exemptions

VE from hot coke spilled on bench

VE from smoldering coal

VE from ovens with doors removed or ovens out of service

Condensing water vapor (Steam)

Other

Door Leaks

Number of runs = 1 per day, 7 days per week

Exceptions approved by Administrator

inclement weather (e.g., rain creates steam that obscures view of battery)
missed day omitted from calculation

How do you tell the difference between coke oven emissions and condensing water vapor (steam)?

Door Leaks
continued

Conduct traverse outside of tracks at steady, normal walking pace

Pace is typically 3 seconds per oven

How do you tell the difference between coke oven emissions and smoldering coal/coke?

Topside Ports

The topside port inspection and the offtake system inspection may be conducted simultaneously

It is not recommended to do the offtake system and topside port inspections simultaneously, but the method does give the inspector the option of doing so. The recommended procedure is to do them separately.

Safety - Topside

Wear respirator
Do not walk backwards
Do not write while walking
Do not step on metal surfaces
Do not step on lids
Do not get run over by the larry car

Carefully review safety procedures with plant personnel.

Topside Port Observation

Wait approximately 5 min after charge to view lids on ovens involved in a charging operation

Count the number of topside ports with VE

multiple VE from same lid = 1 leaking lid

The observer must wait approximately five minutes after a charge to view the lids on ovens involved in the charging operation. The purpose of this is to provide time for the lids to be luted and sealed and to give the water in the sealing material time to evaporate and to reduce the chance that an observer will mistake evaporating water for a leak.

Criteria for Acceptance

Calculate the maximum time allowed to observe the doors

$$T = (4 \text{ sec} \times D_t) + (10 \text{ sec} \times L)$$

Where:

- T = maximum time allowed, sec
- D_t = total # of doors on battery
- L = # of leaking doors on battery

Number of Doors Observed

$$D_{ob} = D_t - (D_i + D_{no})$$

Where:

- D_{ob} = # of doors observed on operating ovens
- D_t = Total # of doors in battery
- D_i = # of doors on nonoperating ovens
- D_{no} = # of doors not observed

Percent Leaking Doors (sheds)

$$PLD = \frac{(L_b + L_y) \times 100}{D_{ob}}$$

Where:

- PLD = percent leaking doors
- L_b = yard equivalent reading
- L_y = # of leaking doors observed from yard on push side
- D_{ob} = total # of doors observed on operating ovens

Percent Leaking Doors

$$PLD = \frac{L_y \times 100}{D_{ob}}$$

Where:

- PLD = percent leaking doors
- L_y = # of leaking doors seen from the yard
- D_{ob} = total # of doors observed on operating ovens

$$PLL = \frac{P_{VE} \times 100}{P_{ovn}(N - N_i) - P_{NO}}$$

- PLL = percent leaking topside ports
- P_{VE} = # of leaking topside ports
- P_{ovn} = # of ports per oven
- N = total # of ovens in battery
- N_i = # of inoperable ovens
- P_{NO} = # of ports not observed

Bench Correction Factor

$$L_b = L_s - (N \times 0.06)$$

Where:

- L_b = yard equivalent reading
- L_s = # of leaking doors observed from bench
- N = total # of ovens
- 0.06 = bench correction factor

$$PLO = \frac{T_{VE} \times 100}{T_{ovn}(N - N_i) + J - T_{NO}}$$

Where:

- PLO = percent leaking offtake systems
- T_{VE} = # of offtake systems with VE
- T_{ovn} = # of offtake systems per oven
- N = total # of ovens in battery
- N_i = total # of inoperable ovens
- T_{NO} = # of offtake systems not observed
- J = # of jumper pipes