

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Standard Operating Permit Condition IX – Visible Emissions and Particulate Matter Monitoring Plan for Liquid-Fired Emission Units [SOURCES]

**Permit Condition for Air Quality Permits
Adopted by Reference in 18 AAC 50.346**

April 1, 2002

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Standard Operating Permit Condition IX –Visible Emissions and Particulate Matter Monitoring Plan for Liquid-Fired Emission Units [SOURCES]

Emission Unit [SOURCE] or Stationary Source [Facility] Categories This Condition Applies to:

Conditions IX.1 – IX.4 for visible emissions apply to liquid-fired emission units [SOURCES] subject to the opacity standard of 18 AAC 50.055(a)(1).

Conditions IX.5 – IX.8 apply to diesel engines and liquid-fired turbines subject to 18 AAC 50.055(b)(1).

Standard permit condition IX does not apply to emission units [SOURCES] that are insignificant under 18 AAC 50.326(d)-(i), which could include standby emission units [SOURCES].

The department will use standard permit condition IX in any operating permit unless the department determines that emission unit [SOURCE] or stationary source [FACILITY] specific conditions more adequately meet the requirements of 18 AAC 50.

Circumstances where emission unit [SOURCE] or stationary source [FACILITY] specific conditions more adequately meet 18 AAC 50 include:

1. if the department finds that particulate matter and opacity emissions data available for the emission unit [SOURCE] or for the equipment make and model is sufficient to demonstrate that there is a different relationship between opacity and particulate matter than that used as the basis for standard permit condition IX;
2. emission unit [SOURCE] specific conditions are requested for conditions IX.5 - IX.8 for turbines with very wide stacks;
3. the department determines that a different frequency of visible emissions monitoring is necessary to assure compliance because of the characteristics of the emission unit [SOURCE];
4. the department determines that, to assure that an emission unit [SOURCE] complies with the applicable standard, visible emissions monitoring is necessary during a particular phase of operation.

Permit Wording:

1. **Visible Emissions.** In accordance with 18 AAC 50.055(a)(1), the permittee shall not cause or allow visible emissions, excluding condensed water vapor, emitted from <identify emission units [SOURCES]> to reduce visibility through the exhaust effluent by more than 20 percent averaged over any six consecutive minutes.

2. **Visible Emissions Monitoring.** The Permittee shall observe the exhaust of emission units [SOURCES]<insert emission unit [SOURCE] identification> for visible emissions using either the Method 9 Plan under condition IX.2.1 or the Smoke/No-Smoke Plan under condition IX.2.2. The permittee may change visible-emissions plans for an emission unit [SOURCE] at any time unless prohibited from doing so by condition IX.2.3.

2.1 **Method 9 Plan.** For all 18-minute observations in this plan, observe exhaust, following 40 C.F.R. 60, Appendix A-4, Method 9, adopted by reference in 18 AAC 50.040(a), for 18 minutes to obtain 72 consecutive 15-second opacity observations.

- a. First Method 9 Observation. Observe exhaust for 18 minutes within six months after the issue date of this permit or within 14 calendar days after changing from the Smoke/No-Smoke Plan of condition IX.2.2, whichever is later.
- b. Monthly Method 9 Observations. After the first Method 9 observation, perform 18-minute observations at least once in each calendar month that an emission unit [SOURCE] operates.
- c. Semiannual Method 9 Observations. After observing emissions for three consecutive operating months under condition IX.2.1b, unless a six-minute average is greater than 15 percent and one or more observations are greater than 20 percent, observe emissions at least semiannually for 18 minutes.

Semiannual observations must be taken between four and seven months after the previous set of observations.

- d. Annual Method 9 Observations. After at least two semiannual 18-minute observations, unless a six-minute average is greater than 15 percent and one or more individual observations are greater than 20 percent, observe emissions at least annually.

Annual observations must be taken between 10 and 13 months after the previous observations and must include at least three 18-minute sets of observations.

- e. Increased Method 9 Frequency. If a six-minute average opacity is observed during the most recent set of observations to be greater than 15 percent and one or more observations are greater than 20 percent, then increase or maintain the 18-minute observation frequency for that emission unit [SOURCE] to at least monthly intervals, until the criteria in condition IX.2.1c for semiannual monitoring are met.

2.2 **Smoke/No Smoke Plan.** Observe the exhaust for the presence or absence of visible emissions, excluding condensed water vapor.

- a. Initial Monitoring Frequency. Observe the exhaust during each calendar day that a source operates.
- b. Reduced Monitoring Frequency. After the **emission unit** [SOURCE] has been observed on 30 consecutive operating days, if the **emission unit** [SOURCE] operated without visible smoke in the exhaust for those 30 days, then observe emissions at least once in every calendar month that **an emission unit** [SOURCE] operates.
- c. Smoke Observed. If smoke is observed, either begin the Method 9 Plan of condition IX.2.1 or perform the corrective action required under condition IX.2.3

2.3 **Corrective Actions Based on Smoke/No Smoke Observations.** If visible emissions are present in the exhaust during an observation performed under the Smoke/No Smoke Plan of condition IX.2.2, then the permittee shall either follow the Method 9 plan of condition IX.2.1 or

- a. initiate actions to eliminate smoke from the **emission unit** [SOURCE] within 24 hours of the observation;
- b. keep a written record of the starting date, the completion date, and a description of the actions taken to reduce smoke; and
- c. after completing the actions required under condition IX.2.3a,
 - (i) take Smoke/No Smoke observations in accordance with condition IX.2.2
 - (a) at least once per day for the next seven operating days and until the initial 30 day observation period is completed; and
 - (b) continue as described in condition IX.2.2b; or
 - (ii) if the actions taken under condition IX.2.3a do not eliminate the smoke, or if subsequent smoke is observed under the schedule of condition IX.2.3c(i)(a), then observe the exhaust using the Method 9 Plan unless the department gives written approval to resume observations under the Smoke/No Smoke Plan; after observing smoke and making observations under the Method 9 Plan, the permittee may at any time take corrective action that eliminates smoke and restart the Smoke/No Smoke Plan under condition IX.2.2a.

3. **Visible Emissions Record Keeping.** The permittee shall keep records in accordance with this condition IX.3.

3.1 If using the Method 9 Plan of condition IX.2.1,

- a. the observer shall record
 - (i) the name of the **stationary source** [FACILITY], emission[S] **unit** [SOURCE] and location, **stationary source** [FACILITY] type, observer's name and affiliation, and the date on the Visible Emissions Field Data Sheet <insert reference if the sheet is included in the permit>;
 - (ii) the time, estimated distance to the emissions location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds), plume background, and operating rate (load or fuel consumption rate) on the sheet at the time opacity observations are initiated and completed;
 - (iii) the presence or absence of an attached or detached plume and the approximate distance from the emissions outlet to the point in the plume at which the observations are made;
 - (iv) opacity observations to the nearest five percent at 15-second intervals on the Visible Emissions Observation Record <insert reference if the sheet is included in the permit>; and
 - (v) the minimum number of observations required by the permit; each momentary observation recorded shall be deemed to represent the average opacity of emissions for a 15-second period;
 - b. to determine the six-minute average opacity, divide the observations recorded on the record sheet into sets of 24 consecutive observations; sets need not be consecutive in time and in no case shall two sets overlap; for each set of 24 observations, calculate the average by summing the opacity of the 24 observations and dividing this sum by 24; record the average opacity on the sheet;
 - c. calculate and record the highest 18-consecutive-minute average observed.
- 3.2 If using the Smoke/No Smoke Plan of condition IX.2.2, record the following information in a written log for each observation and submit copies of the recorded information upon request of the department:
- a. the date and time of the observation;
 - b. from Table <cite the appropriate table of **emission units** [SOURCES] contained in the permit>, the ID of the **emission unit** [SOURCE] observed;
 - c. whether visible emissions are present or absent in the exhaust;
 - d. a description of the background to the exhaust during the observation;

- e. if the **emission unit** [SOURCE] starts operation on the day of the observation, the startup time of the **emission unit** [SOURCE];
- f. name and title of the person making the observation; and
- g. operating rate (load or fuel consumption rate).

4. Visible Emissions Reporting. The permittee shall report visible emissions as follows:

- 4.1 include in each **stationary source** [FACILITY] operating report under condition number <insert cross reference to standard permit condition VII - operating reports>:
 - a. which visible-emissions plan of condition IX.2 was used for each **emission unit** [SOURCE]; if more than one plan was used, give the time periods covered by each plan;
 - b. for each **emission unit** [SOURCE] under the Method 9 Plan,
 - (i) copies of the observation results (i.e. opacity observations) for each **emission unit** [SOURCE] that used the Method 9 Plan, except for the observations the permittee has already supplied to the department; and
 - (ii) a summary to include:
 - (a) number of days observations were made;
 - (b) highest six-minute average observed; and
 - (c) dates when one or more observed six-minute averages were greater than 20 percent;
 - c. for each **emission unit** [SOURCE] under the Smoke/No Smoke Plan, the number of days that Smoke/No Smoke observations were made and which days, if any, that smoke was observed; and
 - d. a summary of any monitoring or record keeping required under conditions IX.2 and IX.3 that was not done;
- 4.2 report under condition <insert cross reference to standard permit condition III - excess emissions and permit deviation reports> :
 - a. the results of Method 9 observations that exceed an average 20 percent for any six-minute period; and
 - b. if any monitoring under condition IX.2 was not performed when required, report within three days of the date the monitoring was required.

5. **Particulate Matter Emissions from Diesel Engines and Liquid-Fired Turbines.** In accordance with 18 AAC 50.055(b)(1), the permittee shall not cause or allow particulate matter emitted from <identify emission units [SOURCES]> to exceed 0.05 grains per cubic foot of exhaust gas corrected to standard conditions and averaged over three hours.

6. **Particulate Matter Monitoring for Diesel Engines and Liquid-Fired Turbines.** The permittee shall conduct source tests on diesel engines and liquid-fired turbines, <identify emission units [SOURCES]>, to determine the concentration of particulate matter (PM) in the exhaust of an emission unit [SOURCE] in accordance with this condition IX.6.
 - 6.1 Within six months of exceeding the criteria of condition IX.6.2a or IX.6.2b, either
 - a. conduct a PM source test according to conditions <insert number for conditions in the permit that address the requirements of 18 AAC 50.220 and that reiterate 18 AAC 50.345(l) – (o)>; or
 - b. make repairs so that emissions no longer exceed the criteria of condition IX.6.2; to show that emissions are below those criteria, observe emissions as described in condition IX.2.1 under load conditions comparable to those when the criteria were exceeded.

 - 6.2 Conduct the test according to condition IX.6.1 if
 - a. 18 consecutive minutes of Method 9 observations result in an 18-minute average opacity greater than 20 percent; or
 - b. for an emission unit [SOURCE] with an exhaust stack diameter that is less than 18 inches, 18 consecutive minutes of Method 9 observations result in an 18-minute average opacity that is greater than 15 percent and not more than 20 percent, unless the department has waived this requirement in writing.

 - 6.3 During each one hour PM source test run, observe the exhaust for 60 minutes in accordance with Method 9 and calculate the average opacity that was measured during each one hour test run. Submit a copy of these observations with the source test report.

 - 6.4 The automatic PM source test requirement in condition IX.6.1 and IX.6.2 is waived for an emissions unit if a PM source test on that unit has shown compliance with the PM standard during this permit term.

7. **Particulate Matter Record Keeping for Diesel Engines and Liquid-Fired Turbines.** Within 180 calendar days after the effective date of this permit, the permittee shall record the exhaust stack diameter(s) of emission unit(s) [SOURCE(S)]<list emission unit [SOURCE] ID numbers from the appropriate table in the permit>. Report the stack diameter(s) in the next operating report under condition <insert cross reference to standard permit condition VII - operating reports>.

8. Particulate Matter Reporting for Diesel Engines and Liquid-Fired Turbines. The permittee shall report as follows:

- 8.1 report under condition <insert cross reference to standard permit condition III - excess emissions and permit deviation reports>
 - a. the results of any PM source test that exceeds the PM emissions limit; or
 - b. if one of the criteria of condition IX.6.2 was exceeded and the permittee did not comply with either condition IX.6.1a or IX.6.1b, this must be reported by the day following the day compliance with condition IX.6.1 was required;
- 8.2 report observations in excess of the threshold of condition IX.6.2b within 30 days of the end of the month in which the observations occur;
- 8.3 in each **stationary source** [FACILITY] operating report under condition number <insert cross reference to standard permit condition VII - operating reports>, include
 - a. the dates, **emission unit** [SOURCE] IDs, and results when an observed 18-minute average was greater than an applicable threshold in condition IX.6.2;
 - b. a summary of the results of any PM testing under condition IX.6; and
 - c. copies of any visible emissions observation results (opacity observations) greater than the thresholds of condition IX.6.2, if they were not already submitted.

The following applies to this standard permit condition:

1. condition IX.7 is not necessary in permit renewals for **emission units** [SOURCES] that are unchanged from the previous permit;
2. conditions IX.3.1c and IX.5 - IX.8 apply only to diesel engines or liquid-fired turbines; for other equipment subject to 18 AAC 50.055(b), **emission unit** [SOURCE]specific conditions are necessary.