

Ohio EPA

Division of Air Pollution Control

Engineering Guide #73

Questions:

When should the field office inspectors take visible emission observations? How frequently should these readings be taken? How long must the inspector take the visible emission observations? What information should be included in the form to ensure that the observations will hold up in an enforcement situation? When is it acceptable to forgo visible emission observations for an emissions unit during an inspection? When is it appropriate to use Method 9 and Method 22? When is data reduction other than six-minute averaging used? How is a Method 22 observation properly performed using the modifications to the method in OAC Chapter 3745-17?

Answers:

When should the field office inspectors take visible emission observations? How frequently should these readings be taken?

In general, during compliance monitoring inspections, field office inspectors should conduct visible emissions observations in accordance with Methods 9 or 22 of 40 CFR, Part 60, Appendix A for all non-insignificant and non-registration status emissions units subject to visible emission or opacity limitations. Therefore, the frequency of visible emissions observations coincides with the frequency of facility inspections. This is a minimum frequency. Additional visible emission observations may be taken as a result of a complaint response or surveillance project.

How long must the inspector take the visible emission observations?

In general, Method 9 readings should be taken for *at least* twice as long as the averaging period. For a six-minute average this is 12 minutes. For a three-minute average this is 6 minutes. This generality is meant for determinations of ongoing compliance only. Initial, one-time compliance demonstrations may be required by rule or regulation with specific, required observation periods (e.g., Subpart OOO requires 1 to 3 hours of readings for initial compliance). Initial compliance demonstrations are the responsibility of the facility to perform or have performed.

Method 22 requires that observations occur for one hour plus two mandatory breaks. This can be quite time consuming. Therefore, if after one half hour of readings it doesn't appear that a violation will occur, the field office inspector may consider the half hour of readings sufficient for purposes of compliance monitoring.

What information should be included in the form to ensure that the observations will hold up in an enforcement situation?

Method 9 contains a form for recording observations. All the information on the form should be completed. Instead of leaving a section blank, explain why the information is not present (i.e., unavailable, unknown, etc.). Particular care should be taken to make sure that the observer's position with respect to the sun and compass orientation are clearly documented. It is also important to make sure that the observation conditions do not adversely affect the efficacy of the visible emissions observations. Do not attempt to make observations through glass or any other transparent medium (with the exception of tinted personal glasses used during certification) and do not make observations when the atmospheric visibility is significantly reduced (e.g., 1/4 mile in haze).

When is it acceptable to forgo visible emissions observations for an emissions unit during an inspection?

A field inspector may forgo visual emissions observations under any of the following circumstances:

- The emissions unit is an insignificant or registration status emissions unit. (Each field office may use its discretion in deciding whether to perform readings. Possible reasons for performing readings include (a) an expectation of the presence of visible emissions and (b) visible emission requirements in a PTI or applicable rule.)
- An existing emissions unit is located in an area of the facility where buildings or other obstructions do not allow for proper positioning to take Method 9 readings. It is assumed that new installations will not be constructed with obstructions that will prohibit the proper positioning to take Method 9 readings.
- The emissions unit is "inherently clean" (assumes no complaints or other credible evidence such as videos or photographs that show problems); or the emissions unit is well-controlled, has a very low mass emission rate, and no visible emissions have been observed during past inspections. In these cases, the inspector should simply check for the presence or absence of visible emissions during the inspection. However, if visible emissions are present, visible emissions observations should be performed.
- Facility personnel certified in Method 9 have already conducted observations and the forms have been reviewed.
- The facility has hired outside consultants certified in Method 9 to perform the observations and the forms have been reviewed.
- The emissions unit is equipped with a certified, continuous opacity monitoring system.
- For units venting inside of a building, the inspector should observe the unit operating

inside the building and if no visible emissions are noted, the inspector can forgo Method 9 readings. However, if visible emissions are noted inside of the building, the inspector should perform Method 9 or Method 22 readings, whichever is applicable, at the nearest building egress point.

A field inspector may forgo visual emissions observations under any of the following circumstances during an inspection; however, **follow-up readings are necessary**:

- Weather conditions or sun position prohibit readings at the time of the inspection.
- The inspection occurred at night.
- The emissions unit is not operating at the time of the inspection.
- The inspector is not certified to perform Method 9 readings.
- Safety issues prohibit Method 9 observations at the time of inspection.

When is it appropriate to use Method 9 and Method 22?

Method 9 is used to determine compliance for any limit involving opacity. This method is used for stack or fugitive emissions depending on the applicable emission limit.

Method 22 is used to determine compliance for any limit of “no visible emissions” or any limit allowing a maximum length of time of visible particulate emissions during a specified observation period, usually 1 hour. This method is used predominantly for roadways and storage piles due to the respective limits within OAC rule 3745-17-07(B)(4) through (B)(6). It is also used for other fugitive or stack sources, if required, to determine compliance with a BAT limit or a federal regulation.

Roadways and storage piles are the only fugitive dust sources regulated under OAC Chapter 3745-17, that are subject to a Method 22-based limit from this Chapter. No other fugitive dust source is subject to a limit based upon Method 22 from Chapter 3745-17 [with the exception of facilities with site-specific emission limits such as in OAC rule 3745-17-07(B)(7) for some power plant facilities, OAC rule 3745-17-12 for facilities in Cuyahoga County, or OAC rule 3745-17-13 for facilities in Jefferson County]. However, opacity limits for roadways and storage piles have been established as part of BAT and for specific facilities listed by name in OAC Chapter 3745-17; and Method 9 is the method for determining compliance in such cases.

“No visible emissions” is a limit where compliance must be determined using Method 22. Compliance for a 0% opacity limit must be determined using Method 9. A 0% opacity limit is actually less stringent than a “no visible emissions” limit. When determining compliance with 0% opacity, a couple of readings higher than zero may occur, but as a six-minute average the result may be less than 0.5% (i.e., two readings of 5% would result in 0.4% opacity, as a six-minute average). This would round down to

0% and no violation would have occurred.

When is data reduction other than six-minute averaging used?

The limits must be treated as six-minute averages unless otherwise stated. Method 9 is written to include data reductions using a six-minute averaging procedure. OAC rule 3745-17-07(B)(1) specifies a 20% opacity limit, as a three-minute average, for fugitive emissions. A provision in OAC rule 3745-17-03(B)(3) allows for this by providing the alternative method of data reduction using 12 consecutive 15-second readings, as a three-minute average, for fugitive emissions rather than 24 consecutive 15-second readings, as a six-minute average, for stack emissions.

How is a Method 22 observation properly performed using the modifications to the Method in OAC Chapter 3745-17?

OAC rule 3745-17-03(B)(4) provides for modifications to Method 22 when determining compliance with 3745-17-07(B)(4) through (6). When performing a Method 22 observation, care must be taken to do the following or the readings are not satisfactory to determine compliance:

Take 5 to 10-minute breaks every 15 to 20 minutes of readings as outlined in the method. The time taken for breaks does not count toward the total observation period (usually 1 hour).

Observe roadway dust at one single point, which cannot be changed during the observation. This point must be at a height of approximately 4 feet above the ground as specified in OAC rule 3745-17-03(B)(4).

Do not observe more than one emissions source or egress at a time using Method 22.

It may not be necessary to take a full hour of readings if the limit is exceeded before you reach a full hour. In other words, if the facility is allowed 13 minutes of visible particulate emissions in any 60-minute observation period, when you get to 14 minutes of recorded visible emissions readings during an observation period of less than one hour, you can stop. However, it would be advisable to continue for the full hour in case a math error has occurred or to demonstrate by how much the source has exceeded the standard.