

SINGLETON SMOKE SCHOOL

QUICK REFERENCE GUIDE

VOL. 40 CFR PART 60 APPENDIX A EPA FEDERAL REFERENCE METHOD 9

Visible Determination of the Opacity of Emissions

EPA Method 9 is the federally recognized procedure for evaluating visible emissions from industrial stationary sources. It is used to ensure compliance with air quality regulations and facility operating permit conditions.

Smoke School is the required certification program for training and qualifying observers to accurately evaluate and document plume opacity in the field. Certifications are valid for six months under Method 9 guidelines.

The importance of Method 9 lies in its role in determining compliance versus noncompliance. Violations can carry penalties of up to \$38,000 per day, per source, and in some cases may result in temporary plant shutdowns.

By becoming certified, you are investing in the ability to observe, communicate, and take corrective action against excess emissions.

DEFINITION OF OPACITY

Opacity is the degree to which light transmission is reduced by a plume, expressed as a percentage. In practice, it represents how much of the background is obscured from view by the emissions.

KEY GUIDELINES FOR OBSERVERS

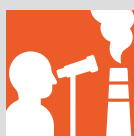
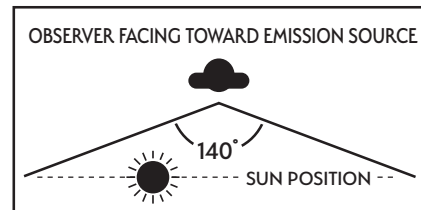
To reduce bias and ensure proper positioning for accurate readings, always follow these 5 principles:



1. SUN

Take a position with the sun at your back 140 degrees horizontally.

Tip: Your shadow should always extend in front of you. If it falls behind you, you're facing the sun which creates enhanced illumination and causes extreme high bias.



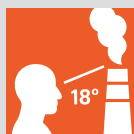
2. OBSERVATION POINT

Evaluate the densest portion across the shortest path of the plume where no water vapor is present.



3. BACKGROUND

Select a contrasting background. **FOR LIGHT PLUMES**, use dark objects (trees, buildings, equipment, silos, etc.). **FOR DARK PLUMES**, the daytime sky is preferred. Low-contrast backgrounds create negative bias.



4. SLANT ANGLE

Keep your vertical slant angle below 18°. Stand at least three times the height of the plume discharge away from the source.

*Maximum observation distance is ¼ mile.

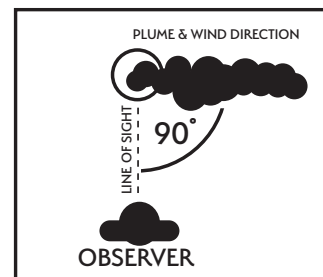
TIP: If you find yourself tilting your head back to see the plume, you are too close.



5. WIND

Position yourself at a right angle to the wind direction.

The plume should pass across your line of sight (left to right/right to left). Plumes folding toward or away from you create a high bias due to overlapping particulates.



For more information regarding EPA Method 9, Method 22, or Method 203, please contact:

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