



# **Visible Emissions Check Guide (Non-Certified Observer)**

**Clark County Department of Environment and  
Sustainability**

**Division of Air Quality**

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# **VISIBLE EMISSIONS CHECK GUIDE** **(Non-Certified Observer)**

The Clark County Air Quality Regulations (AQRs) require that a facility’s visible emissions be monitored while it is operating to make sure it meets local and federal pollution standards.

This guide tells you how to observe visible emissions and when to bring in a certified Method 9 observer to determine whether facility emissions exceed the standards in the regulations.

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## **Useful Acronyms**

AQR	Clark County Air Quality Regulation	PM	particulate matter
DAQ	Division of Air Quality	PTE	potential to emit
EPA	Environmental Protection Agency	VEC	visible emissions check

## **Definitions**

- *Ambient air* is the part of the atmosphere outside of buildings that the general public has access to.
- *Emissions* are releases of a regulated air pollutant (in particle or gas form) into ambient air.
- *Fugitive dust* is particulate matter that is not collected by a capture system, is “entrained” (suspended) in ambient air, and is caused by human and natural activities—for example, the movement of soils, vehicles, equipment, and wind. Only emissions from sources covered by Section 41 of the AQRs qualify as “fugitive.”
- *Fugitive emissions* are emissions that cannot reasonably be expected to pass through a stack, chimney, vent, or other opening.
- The *line of sight* is the imaginary line between the observer’s position and the source’s emission point.

- The *observation period* is the total time during which observations are made. This is usually six minutes.
- The *opacity* of an emission plume refers to how much light passes through it. A plume with a higher opacity is harder to see through.
- *Regulated pollutants* are airborne substances that the Clean Air Act identifies as being harmful to public health.
- A *stationary source* is any building, structure, facility, or installation that emits (or may emit) any regulated pollutant.
- *Test (or Reference) Method 9* is an approved way to visibly measure pollution in the air. Conducting a Method 9 test requires a certification from the Environmental Protection Agency.

## Requirements

DAQ issues permits to all stationary sources in Clark County that have the potential to release regulated pollutants at levels that are at or above regulatory thresholds. Every permit DAQ issues contains the following requirement:

The permittee must be able to produce observation records on-site to the Control Officer's authorized representative, upon request and without prior notice, during the permittee's hours of operation. [AQR 12.1.4.1(d)(2) & AQR 12.1.4.1(s)]

This means that all stationary sources must have someone at the site who regularly observes visible emissions and records those observations. DAQ representatives may inspect a site and ask for those records at any time. If a source repeatedly has issues complying with emissions standards, the Control Officer may require a certified Visible Emissions Evaluation reader to be present whenever the plant is operating.

AQR Section 25.6.1 requires sources with a permit to report each exceedance of visible emissions standards to DAQ. If a compliance inspector documents visible emissions that are above the standards, DAQ may issue a Notice of Violation with civil penalties.

This guide explains how to check for visible emissions if you are not a Method 9-certified observer.

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## **A. Visible Emissions Check**

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This guide is adapted from the Code of Federal Regulations, Title 40, Part 60, Appendix A, and the California Air Resources Board's *Fundamentals of Enforcement: Visible Emissions Evaluation* handbook. It describes how to perform a visible emissions check in Clark County, Nevada.

### **A.1 Observation Materials**

- Pen or pencil
- Clipboard
- Emissions check form (see sample at end of guide)

### **A.2 Observation Process**

The most important things for establishing a good **line of sight** between the observer and the emission point are:

- (1) the angle of the sun [140°],
- (2) the distance from the observer to the stack (or other emission unit), and
- (3) the observation background.

To determine your position based on the line of sight, you'll need to note:

- Sun position
- Background contrast
- Plume direction
- Plume distance

Observe from a place where the line of sight is at or near a right angle to the wind's direction. This will ensure the most accurate view of the plume's **opacity**.

Answering the following questions will help ensure you're in the best position relative to the sun.

1. Can you see the shadow of either the plume or the emission point on the ground between you and the plume?
  - If yes, the plume is between you and the sun. Change your location.
  - If no, proceed.
2. Is your shadow visible on the ground in front of you?
  - If no, the sun may be in front of you. Change your location.
  - If yes, proceed.

**Sun position.** Stand so the sun is behind you within a 140° horizontal arc. One way to think about this is to imagine you're standing on the center of a clock face. If you place yourself so that the emission point is at 12:00 and the sun is behind you, between approximately 4:00 and 8:00, you'll be in a good position to do your check. Illustrations at the end of this guide will show you the best places to stand.

**Background.** It's easiest to see visible emissions against a contrasting background. Try to observe light plumes against a dark background (a tree or dark-colored object), and dark plumes against a light background (a clear sky or light-colored object). Take into account the whole background, not just the areas directly behind, above, and below the emission point.

### **A.3 Observation Results**

**Normal.** If no emissions are visible, or if visible emissions fall within the opacity standards, use the VEC form to record the observer's name, the facility's location, the date, and the start and stop time of the check. Note on the form the emission unit(s) being observed. Use the unit numbers and descriptions in the DAQ-issued permit.

- Write down a general description of background conditions during the observation (e.g., clear sky, high clouds, mountains, trees, buildings).
- Describe wind conditions (light, moderate, high) and direction.
- Unaltered digital photos and video may be used to record sky conditions, the observer's location relative to the source and the sun, the unit being observed, and the emission points. At least one photo should show the observer's point of view. Pictures meant to show the general environment, including sky conditions and sun position, must be taken within about 15–20 minutes of the observation.

**Abnormal.** If visible emissions appear to exceed an opacity standard, you have two options.

- **Option 1:** Immediately correct the perceived exceedance, then record the first and last name of the person who performed the emissions check, the date the check was performed, the unit(s) observed, and the results of the observation.
- **Option 2:** Call a certified Visible Emissions Evaluation (VEE) reader to perform an EPA Method 9 evaluation. For sources required to have a certified reader on site, the reader shall start Method 9 observations within 15 minutes of the initial observation. For all other sources, the reader shall start Method 9 observations within 30 minutes of the initial observation.

If no opacity exceedance is observed, the certified VEE reader shall record the first and last name of the person who performed the VEE, the date the VEE was performed, the unit(s) evaluated, and the results. A Method 9 VEE form shall be completed for each emission unit that was initially perceived to have exceeded the opacity limit, and the record shall also indicate:

- The cause of the perceived exceedance;
- The color of the emissions; and
- Whether the emissions were light or heavy.

If an opacity exceedance is observed, the certified VEE reader shall take immediate action to correct the exceedance. The reader shall then record the first and last name of the person performing the VEE, the date the VEE was performed, the unit(s) evaluated, and the results. A Method 9 VEE form shall be completed for each reading identified, and the record shall also indicate:

- The cause of the exceedance;
- The color of the emissions;
- Whether the emissions were light or heavy;
- The duration of the emissions; and
- The corrective actions taken to resolve the exceedance.

Any scenario of visible emissions noncompliance can and may lead to enforcement action.

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## **B. Acknowledgement**

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I hereby certify that all employees performing opacity checks to demonstrate compliance with the standards of air quality permit have been trained in accordance with this opacity guide. I understand that a signed copy of this opacity guide must be kept on-site and made available to our employees and the Control Officer (or delegated officials) upon request.

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Signature

Date

Printed Name: \_\_\_\_\_

Source ID#: \_\_\_\_\_

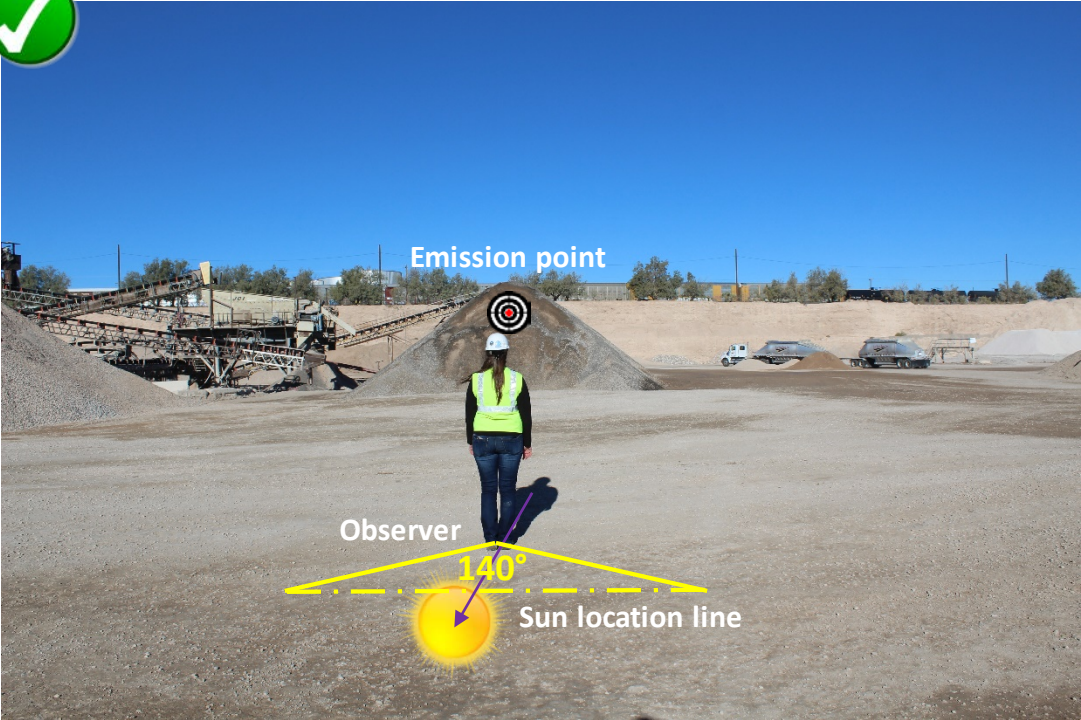
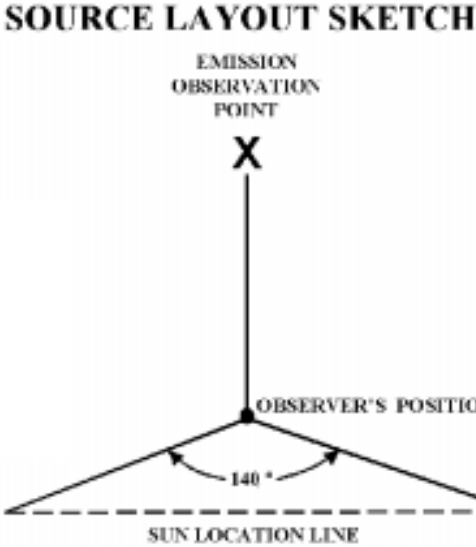
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**C. Sample Form**

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<b>VISIBLE EMISSIONS CHECK FORM</b>	
Company:	
Facility/source address:	
Name of observer:	
Date/time of observation:	
Unit observed:	
Sky conditions:	
Wind speed/direction:	
<b>OBSERVATIONS</b>	

# Line of Sight





# Plume Opacity

The pictures below show emission plumes from a smokestack used to train compliance inspectors. Inspectors are trained to observe plumes of different colors—mostly white and black—and different opacities, from 0 to 100%.

