

**San Joaquin Valley
Unified Air Pollution Control District
Permit Services Division**

Visible Emissions From Operations Served By Baghouses

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| Approved By: _____ Signed _____ Seyed Sadredin, Director Permit Services Division | Date: <u>9/16/98</u> . |
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Purpose: To set forth the applicable visible emissions requirements for operations served by baghouse dust collectors.

I. Background:

Baghouse dust collectors are used to control particulate matter emissions from a variety of sources, such as bulk material conveying, screening, milling and drying equipment, agricultural product processing equipment, solid fuel combustion devices, etc. Baghouses generally reduce particulate emissions by more than 99% by weight. The visible emissions limitation of less than 20% opacity in Rule 4101 is an ineffective indicator of proper baghouse performance as most baghouses typically operate with low visible emissions. The California Air Resources Board Compliance Division states in their publication Baghouses, "...with properly operating baghouses, no visible emissions (less than 5 percent opacity) should be the rule." Generally, visible emissions from baghouses greater than 5% opacity are indicative of particulate matter bypassing the filter.

Exceptions include plumes comprised solely of uncombined water vapor, plumes from processes where air contaminants pass through the baghouse in a gaseous state then condense to form particulate, and processes which generate particulate matter in the size range which effectively scatters visible light.

Rule 4101 exempts uncombined water from contributing to visible emissions.

In processes where materials containing hydrocarbons are exposed to elevated temperatures, some constituents may vaporize and pass through the baghouse as a gas but condense in the stack or in the atmosphere as particulate. Solid fuel combustion devices and combustion devices utilizing ammonia or urea injection for NO_x control may exhibit a visible plume upon cooling of the exhaust gas in the stack or atmosphere. The visible plume in these cases is not indicative of poor baghouse performance, but may indicate the exhaust gas should be cooled prior to entering the baghouse or that some other particulate matter control device may be more appropriate.

Some industrial processes, such as portland cement kilns, metallurgical refining, smelting, and melting operations, produce particulate matter predominately in the size range of visible light- 0.4 microns to 0.76 microns. A relatively low emission rate of such particles can exhibit a visible plume because of the light scattering properties of particles this size. A plume greater than 5% opacity is not indicative of either poor baghouse performance or high particulate matter emission rates from such sources.

Rule 2201 requires BACT for most types of newly permitted equipment, and BACT for many types of sources of particulate emissions is a baghouse. An easily employed, inexpensive means of determining that BACT performance is likely being achieved is a determination that visible emissions are less than 5% opacity.

II. Authority:

The District has the authority to impose visible emission limitations on various types of sources. Rule 4101 limits visible emissions from any source whatsoever to as dark or darker than Ringelmann 1 or the corresponding 20% opacity. Rule 2201 [New and Modified Stationary Source Review (NSR)] requires Best Available Control Technology (BACT) be utilized on new and increased emissions of PM₁₀. Rule 4001 [New Source Performance Standards (NSPS)] limits visible emissions from between 0% to 30% opacity from various specified sources. In some cases, the degree of visible emissions from an emissions unit may be an indication of whether compliance with Rules 4201 [Particulate Matter Concentration], 4202 [Particulate Matter - Emission Rate] or 4301 [Fuel Burning Equipment] may be expected. For certain sources, such as locomotives, aircraft, agricultural operations, unconfined abrasive blasting, emergency diesel internal combustion engines used exclusively to operate

drinking water systems, etc., the District is not authorized to impose visible emission limits stricter than state or federal requirements.

III. Policy Statement:

The District has the responsibility and authority to regulate most sources of particulate matter emissions. Because BACT particulate matter emission limits usually result in virtually no detectable visible emissions, a visible emission limit of 5% opacity is an inexpensive, highly reliable means to monitor proper baghouse operation for most sources. Exceptions to such a limit would include sources with detached plumes, sources demonstrated to be in compliance with applicable particulate matter emission limits and technology requirements while exhibiting visible emissions in excess of 5% opacity, and sources subject to overriding federal or state regulations. Therefore, in the absence of any stricter visible emission limitations, a demonstration of compliance at higher visible emission levels, or overriding regulations, one of the following conditions for limiting visible emissions from equipment served by a baghouse shall be incorporated into permit conditions:

- A. Emissions units subject to NSR Rule 2201 (Note: This includes sources triggering BACT or offset requirements, and sources which their emission rate was relied upon in issuance of NSR permits for other units.):

“Visible emissions from baghouse serving (*applicable source operation(s)*) shall not equal or exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District Rule 2201]”.

- B. Emissions units subject to NSPS Rule 4001 visible emissions standards:

“Visible emissions from baghouse serving (*applicable source operation(s)*) shall not equal or exceed (*5% opacity or NSPS limit, whichever is less*)% opacity for a period or periods aggregating more than three minutes in any one hour (*unless NSPS specifies a different period*). [District Rule 4001 or Rule 2201]” . Note that some source operations subject to Rule 4001 (NSPS) have visible emission limits lower than 5% opacity.

C. Emissions units not subject to NSR (see item A) or NSPS:

"Visible emissions from baghouse serving (*applicable source operation(s)*) shall not equal or exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour, unless compliance with Rules 4201 and 4202 has been demonstrated at a higher opacity. [District Rules 4201 and 4202 (rarely Rule 4301)]"

D. Emissions units not subject to NSPS demonstrating compliance with all emission limits at higher visible emissions level:

"Visible emissions from baghouse serving (*applicable source operation(s)*) shall not exceed (*visible emissions during particulate compliance determination*)% opacity for a period or periods aggregating more than three minutes in any one hour. [District Rules 4201 and 4202 (rarely Rule 4301)]"

IV. Test Method:

Compliance with visible emissions limit shall be determined using California Air Resource Board Visible Emissions Evaluator Certification procedures or EPA Method 9.