DEQ	AIR QUALITY DIVISION POLICY AND PROCEDURE		DEPARTMENT OF ENVIRONMENTAL QUALITY
Original Effective Date: May 6, 1997 Revised Date: July 2, 2013 Reformatted Date: July 2, 2013	Subject: Use of Visible Emission Limits Less than 20% Opacity in Permits to Install		Category: ☐ Internal/Administrative ☒ External/Non-Interpretive ☐ External/Interpretive
	Program Name: Air Permits to Install		
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A Department of Environmental Quality (DEQ) Policy and Procedure cannot establish regulatory requirements for parties outside of the DEQ. This document provides direction to DEQ staff regarding the implementation of rules and laws administered by the DEQ. It is merely explanatory; does not affect the rights of, or procedures and practices available to, the public; and does not have the force and effect of law.

INTRODUCTION:

This policy and procedure discusses the use of visible emission limits less than 20% as a condition of a Permit to Install (PTI). It is the experience of the Air Quality Division (AQD) that use of visible emission limits less than 20%, as a condition in a PTI, is appropriate in certain situations, such as, when a source is proposing to limit its potential to emit particulate matter (PM), particulate matter less than 10 microns (PM10), and/or fine particulate matter (PM2.5).

With the advent of the Renewable Operating Permit (ROP) program, the AQD developed Operational Memorandum (Op Memo) No. 14—Use Of Visible Emission Limits Less Than 20% Opacity in Permits. This memorandum was intended to outline how visible emission limits of less than 20% in existing PTIs would be reviewed and rolled into initial ROPs. It also evaluated the use of visible emission limits of less than 20% opacity in New Source Review (NSR) permits for particulate sources. As all initial ROPs have now been issued, the ROP guidance is no longer necessary and has been removed from this Policy and Procedure. Additionally, the examples that were included in Op Memo 14 have now been included as an appendix to this document. The appendix is for reference purposes to identify past practices followed under the guidance outlined in Op Memo 14.

Rule 336.1301 (Rule 301) applies to all sources. As such, each PTI and ROP contains a set of general conditions that include a citation to Rule 301 and its requirements. This citation identifies that a source is allowed 20% opacity, unless precluded by another requirement. It is these instances that are the focus of this Policy and Procedure document.

AUTHORITY:

Rule 301 provides the authority to set opacity limitations and identifies the path to determine the appropriate opacity limit. Rule 301 (1) says, in part:

Except as provided in subrules (2), (3), and (4) of this rule, a person shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of a density greater than the most stringent of the following:

- *(a) A 6-minute average of 20% opacity, except for one 6-minute average per hour of not more than 27% opacity.*
- *(b) A limit specified by an applicable federal new source performance standard.*
- *(c) A limit specified as a condition of a PTI or permit to operate.*

POLICY:

During the evaluation of a PTI application, the permit engineer reviews the information submitted by the applicant and determines the rules and regulations that apply. Rule 301 'Standards for density of emissions' is one of these rules.

It should be recognized that there are situations when an opacity limit that is lower than 20% is included as a condition of a PTI, but the basis for the reduced opacity limit is due to:

1. A federal or state requirement that specifies a lower opacity limit, or

2. When it is not feasible to assign, or determine compliance with, a mass emission limit that is set in accordance with Rule 336.1331(1)(b) (Rule 331(1)(b)) for a fugitive particulate emission source.

In these instances, visible emission limits less than 20% will be reflected as permit conditions with the appropriate applicable requirement(s) identified. Documentation within the permit file will discuss the reason for the reduced visible emission limit contained in the permit.

Additionally, there are instances when a source accepts, or requests, an opacity limit that is more stringent (i.e. lower) than 20% as a condition of a PTI. An example of this type of situation is when a source requests a reduced particulate emission limit in order to restrict its potential to emit. In these situations, a lower opacity limit may be included as a condition of the PTI. This reduced opacity limit can be used as an indicator of compliance with the reduced particulate emission limit. However, if a source requests a reduced particulate emission limit, but not a corresponding reduced opacity limit, then stack testing will most likely be required for the source to demonstrate compliance with the reduced particulate limit. This path provides a source with options and flexibility when evaluating their permitting needs.

PROCEDURES:

PROCESSES THAT DO NOT EMIT, OR HAVE LIMITED POTENTIAL TO EMIT, PARTICULATE MATTER:	
Responsibility	Action
Permit Engineer	A general citation to Rule 336.1301(1)(a), which limits visible emissions to a maximum of 20% opacity, will be included. **NOTE:** Processes that emit air contaminants that can form particulate matter (e.g. volatile organic compounds (VOCs) with low-volatility, high concentration nitric or sulfuric acids) will be treated as emitting particulate matter for the purpose of determining an appropriate visible emissions limit.

PROCESSES WHERE LIMITS LESS THAN 20% OPACITY SHOULD BE SPECIFIED IN PERMITS:

Responsibility	Action
Permit Engineer	A citation to the applicable federal new source performance standard (as specified in Rule 336.1301(1)(b)), which limits visible emissions to a maximum of a specific opacity, will be included in the permit. Per Rule 336.1301(1)(c), which limits visible emissions to the level specified in a condition of a PTI, an opacity limit less than 20% will be used for the following: • Any other applicable federal or state requirement specifying a maximum opacity (e.g., Section 5524(2)); • Fugitive particulate emissions when it is not feasible to assign or determine compliance with a mass emission limitation. Examples include crushing operations, storage piles, etc. Also, a Nuisance Minimization Plan for Fugitive Dust may be necessary. A generic plan is attached to this document for reference purposes. Additionally, there are times when an applicant requests a lower particulate limit and an associated reduced opacity limit due to: • Situations where the applicant is requesting to limit the potential to emit of their particulate emissions for regulatory purposes (e.g., National Ambient Air Quality Standards (NAAQS), Prevention of Significant Deterioration applicability, etc.) by proposing and accepting a particulate emission limitation under 0.10#/1000#. The visible emission rate associated with the particulate limit range shall be as follows: **Particulate Limit Range** / **Visible Emission Limit** (in #/1000# of) / (in grains/dscf) / (in percent opacity) 0.050 or less / 0.026 or less / 10 0.051 to 0.075 / 0.027 to 0.039 / 15 0.076 or greater / 0.040 or greater / 20 Because the lower opacity limit provides a compliance check, particulate emission testing may not be required, or may not be required as frequently. This instance represents an option that is available to a source when evaluating their permitting strategy. It is not mandatory.

PROCESSES THAT EMIT, OR HAVE THE POTENTIAL TO EMIT, PARTICULATE MATTER – LIMIT 20% OPACITY:	
Responsibility	Action
Permit Engineer	A general citation to Rule 336.1301(1)(a), which limits visible emissions to a maximum of 20% opacity, will be included in the permit in lieu of using visible emission limits as a surrogate to: • Insure proper operation of the process equipment or air pollution control equipment; and • A compliance check with the particulate limits contained in the permit. The permit must then contain a condition requiring stack testing to verify the emission limit for those sources with particulate emission limits less than 0.10#/1000# and a 20% opacity limit, unless the applicant can demonstrate, and the AQD concurs, the source/equipment will comply with the required reduced particulate limit at an opacity limit of 20%. In addition to potential stack testing, the permit may contain one or more conditions that directly relate to the proper operation of the process and/or air pollution control equipment. It is important to note that these additional condition(s) may be included for other purposes, such as demonstrating compliance with other applicable requirements. The following are examples of conditions that may be used: • A condition that requires the process not be operated unless the control device is installed and operating properly; • A condition that specifies an operating parameter for the equipment that indicates it is operating properly (e.g. a temperature, a pressure drop, or a flow rate). The condition must also specify appropriate monitoring and recordkeeping for the parameter; • A condition that requires a malfunction abatement plan for the equipment pursuant to Rule 336.1911.

If questions arise as to whether a visible emission limit of less than 20% should be included as a condition of a PTI, the permit engineer should discuss this with their peer reviewer, district staff, and/or their unit supervisor.

DIVISION CHIEF APPROVAL:

G. Vinson Hellwig, Chief

Appendix
Nuisance Minimization Plan
Fugitive Dust

I. Site Roadways / Plant Yard

A. The dust on the site roadways and the plant yard shall be controlled by applications of water, calcium chloride or other acceptable and approved fugitive dust control compounds. Applications of dust suppressants shall be done as often as necessary to meet all applicable emission limits. A record of all watering/dust suppressant applications shall be kept on file and be made available to the AQD upon request.

B. All paved roadways and the plant yards shall be swept as needed between applications.

C. Any material spillage on roads shall be cleaned up immediately.

II. Plant

The drop distance at each transfer point shall be reduced to the minimum the equipment can achieve. The transfer point from the re-circulating belt to the feed belt shall be equipped with an enclosed chute.

III. Storage Piles

A. Stockpiling of all nonmetallic minerals shall be performed to minimize drop distance and control potential dust problems.

B. Stockpiles shall be watered on an as needed basis in order to meet the opacity limit of 5 percent. Equipment to apply water or dust suppressant shall be available at the site or on call for use at the site within a given operating day. A record of all watering/dust suppressant applications shall be kept on file and be made available to the AQD upon request.

IV. Truck Traffic

On-site vehicles shall be loaded to prevent their contents from dropping, leaking, blowing or otherwise escaping. This shall be accomplished by loading so that no part of the load shall come in contact within 6 inches of the top of any side board, side panel or tailgate. Otherwise, the truck shall be tarped.

V. AQD/DEQ Inspection

The provisions and procedures of this plan are subject to adjustment by written notification from the AQD if, following an inspection, the AQD finds the fugitive dust requirements and/or permitted emission limits are not being met.

Appendix
Visible Emissions—Historical Examples

These eleven examples are included for historical reference only.

I. Processes Where Limits Less Than 20% Opacity Should Not Be Included in Permits

A. Boilers

There does not appear to be a good air quality basis for including visible emissions limitations of less than 20% opacity on natural gas, fuel oil, and waste oil-fired boilers. Visible emission limits of less than 20% opacity have in the past been used as a surrogate to assure proper operation of the boiler. However, specifying routine and scheduled maintenance as recommended by the manufacturer is the overriding and more stringent requirement to assure proper operation. Therefore, visible emission conditions of less than 20% opacity should be included as a general citation to Rule 336.1301(1)(a) (Rule 301(1)(a)) in permits to install for natural gas, fuel oil, and waste oil-fired boilers, provided that routine and scheduled maintenance, as well as appropriate monitoring and recordkeeping requirements, are specified as conditions of the permit.

EXCEPTION: For large boilers (generally with a heat input of 250 million BTUs per hour or greater), or for any boiler with a history of compliance problems related to poor operation and maintenance, a detailed malfunction abatement plan should be required as a part of the permit pursuant to Rule 336.1911 (Rule 911). District staff would have the responsibility for determining the acceptability of any malfunction abatement plan required pursuant to Rule 911. District and Permit Section staff should agree early in the PTI review process whether the malfunction abatement plan or the requirement to submit a malfunction abatement plan will be included in a PTI.

B. Paint Spray Booths

There does not appear to be a good air quality basis for including visible emissions limitations of less than 20% opacity on paint spray booths. Historically, permits to install for paint spray booths were issued with a no visible emissions or 0% opacity limit and a requirement that the booth not be operated unless the overspray control system is installed and operating properly. The rationale was that the opacity limit was a surrogate for a mass particulate limit and to protect against nuisance conditions such as deposition. However, except for very large paint lines, currently available overspray control systems, if installed and operated properly, effectively limit particulate emissions from paint spray booths to negligible amounts. It is also likely that, if the overspray systems are not installed and operating properly, nuisance conditions may occur long before visible emissions are detected. For these permits, the key and most stringent permit condition is the requirement to install and operate the overspray control system properly. Therefore, visible emission conditions less than 20% opacity have been replaced with a general citation to Rule 301(1)(a) in permits to install for paint spray booths, provided the

requirement that the booth not be operated unless the overspray control system is installed and operating properly is specified in the permit.

EXCEPTION: For large paint lines (generally with allowed VOC emissions of 100 tons per year or greater), or for any paint line with a history of compliance problems with the requirement to install and properly maintain the overspray control system, a detailed malfunction abatement plan should be required as a part of the permit pursuant to Rule 911. District staff would have the responsibility for determining the acceptability of any malfunction abatement plan required pursuant to Rule 911. District and Permit Section staff should agree early in the PTI review process whether the malfunction abatement plan or the requirement to submit a malfunction abatement plan will be included in a PTI.

C. Thermal or Catalytic Incinerators

There does not appear to be a good air quality basis for including visible emissions limitations of less than 20% opacity on processes utilizing a thermal or catalytic incinerator as an add-on control technology. Visible emission limits less than 20% opacity have, in the past, been used as a surrogate to assure proper operation of the incinerator. However, specifying the operating temperature and retention time of the incinerator is the overriding and more stringent requirement to assure proper operation. Therefore, visible emission conditions of less than 20% opacity have been replaced with a general citation to Rule 301(1)(a) in permits to install for processes utilizing a thermal or catalytic incinerator as an add-on control technology, provided that the minimum operating temperature and retention time of the incinerator, as well as appropriate monitoring and recordkeeping requirements, are specified as conditions of the permit.

EXCEPTION: For large VOC processes utilizing a thermal or catalytic incinerator as an add-on control technology (generally with allowed VOC emissions of 100 tons per year or greater), or for any process with a history of compliance problems with the requirement to install and properly maintain the incinerator, a detailed malfunction abatement plan should be required as a part of the permit pursuant to Rule 911. District staff would have the responsibility for determining the acceptability of any malfunction abatement plan required pursuant to Rule 911. District and Permit Section staff should agree early in the PTI review process whether the malfunction abatement plan or the requirement to submit a malfunction abatement plan will be included in a PTI.

D. Printing Processes

There does not appear to be a good air quality basis for including visible emissions limitations of less than 20% opacity on printing processes. Therefore, visible emission conditions less than 20% opacity have been replaced with a general citation to Rule 301(1)(a) in permits to install for printers.

E. Storage tanks

There does not appear to be a good air quality basis for including visible emissions limitations of less than 20% opacity on gasoline, fuel oil, crude oil, propane, liquid organic chemical, or liquid inorganic chemical storage tanks. If the tank is intact and storing what it's intended to store, there should not be visible emissions at any time. Usually, visible emissions from these tanks would mean that the tank is on fire. The requirement that the tank seals be installed and operating properly is the more stringent, overriding condition in this case. Therefore, visible emission conditions less than 20% opacity have been replaced with a general citation to Rule 301(1)(a) in permits to install for storage tanks, provided that the permit includes conditions regarding the proper installation and operation of tank seals.

EXCEPTION: There are a few chemicals, such as fuming sulfuric acid (SO_3 dissolved in H_2SO_4) that will have a visible plume if the tank is not properly sealed. These need to be addressed on a case-by-case basis.

F. Degreasers

There does not appear to be a good air quality basis for including visible emissions limitations of less than 20% opacity on degreasers. Theoretically, if a degreaser totally malfunctioned and boiled off all of the degreasing solvent in a very short time period, a plume might result, but this is highly unlikely. The primary controlling conditions for a degreaser are 1) to have the appropriate vapor cooling control, e.g., a freeboard chiller, installed and actually providing the intended cooling function; and 2) to have the vapor generating control(s) properly limiting vapor temperature so the solvent will not boil away. Other pertinent requirements for degreasers are spelled out in Rules 336.1708, 336.1709, and 336.1710. Also, degreasers using chlorinated solvents are subject to additional requirements specified by the National Emission Standards for Hazardous Air Pollutants (NESHAP) (40 CFR Part 63 Subpart T). Therefore, visible emission conditions of less than 20% opacity have been replaced with a general citation to Rule 301(1)(a) in permits to install for degreasers, provided that the appropriate operating parameters regarding a freeboard chiller and vapor temperature controls, as well as, those specified in the identified state and federal rules, are specified in the permit.

G. Cold Cleaners

There does not appear to be a good air quality basis for including visible emissions limitations of less than 20% opacity on cold cleaners. Following the requirements of Rule 336.1707 should be sufficient to minimize emissions from these processes. Cold cleaners using chlorinated solvents are subject to additional requirements specified by the NESHAP (40 CFR Part 63 Subpart T). Therefore, visible emission conditions of less than 20% opacity have been replaced with a general citation to Rule 301(1)(a) in permits to install for cold cleaners, provided that the appropriate operating parameters (as specified in the identified state and federal rules) are specified in the permit.

H. Remediation

There does not appear to be a good air quality basis for including visible emissions limitations of less than 20% opacity on ground water air strippers (all types) and soil vapor extraction systems, including air sparing and various forms of bioremediation. Therefore, visible emission conditions of less than 20% opacity have been replaced with a general citation to Rule 301(1)(a) in permits to install for these remediation processes.

EXCEPTION: This does not apply to thermal remediation of soils (i.e., "soil toasters"). These processes should include a 5% opacity limitation pursuant to Rule 336.1225. Seeing a visible emission at the stack would indicate contaminants in the soil that were not accurately disclosed, and/or that the remediation process is not operating properly.

II. Processes Where Limits Less Than 20% Opacity Should Be Retained In Permits

A. Crushers

There is a reasonable air quality basis for including visible emissions limitations of less than 20% opacity on crushers. New crushers are subject to New Source Performance Standard (NSPS) Subpart OOO for non-metallic minerals. This NSPS includes a number of opacity limits less than 20% opacity. The control technology typically employed to comply with the NSPS (e.g., water sprays) can be easily and economically used on existing non-NSPS crushers. Because the emissions from crushing processes are typically fugitive in nature, it is not feasible to assign and determine compliance with a mass emission limitation. Rule 336.1331(b) (Rule 331(b)) requires the DEQ to set particulate emission limits by application based on the "best technically feasible, practical equipment available" for processes not listed in table 31. Therefore, visible emission conditions consistent with NSPS Subpart OOO are used for non-NSPS crushers pursuant to Rule 331(b) in permits to install and are maintained where they appear in any permits being consolidated into an ROP.

B. Fugitive Particulate Emissions Sources

There is a reasonable air quality basis for including visible emissions limitations of less than 20% opacity for fugitive particulate emissions sources. Because the emissions are fugitive, it is not feasible to assign and determine compliance with a mass emission limitation. Rule 331(b) requires the DEQ to set particulate emission limits by application based on the "best technically feasible, practical equipment available" for processes not listed in table 31. Therefore, visible emission conditions less than 20% opacity will continue to be used for fugitive emissions sources pursuant to Rule 331(b) in permits to install and are maintained where they appear in any permits being consolidated into an ROP.

EXCEPTION: If the permit includes a fugitive dust control program pursuant to Section 5524 of the Act or Rule 336.1371 and the underlying requirement in the Act or Rule lists specific actions and does not specify an opacity limit less than 20% opacity, then those actions can be used as enforceable requirements without an accompanying visible emissions condition less than 20% opacity. Section 5524(2) of the Act specifically limits the visible emissions from any road, lot or storage pile to 5% opacity and visible emissions from all other fugitive dust sources to 20% opacity. Rule 336.1371 requires a program, including specific control measures or actions, but does not include specific opacity limits.

C. Processes With Particulate Emission Limits Less Than 0.10 Lbs/1000 Lbs

In most cases, there is a reasonable air quality basis for including visible emissions limitations of less than 20% opacity for processes that have particulate emission limits of less than 0.10 pounds per 1000 pounds of exhaust gases. Rule 331(1)(b) requires the DEQ to set particulate emission limits by application based on the "best technically feasible, practical equipment available" for processes not listed in table 31. Rule 331(1)(c) allows the DEQ to set particulate limits as a condition of a permit. Both Rule 331(1)(b) and (c) often result in a particulate emission limit of less than 0.10 pounds per 1000 pounds. Additionally, sources often request limits of less than 0.10 pounds per 1000 pounds in order to create a "synthetic minor" source or modification and avoid Prevention of Significant Deterioration (PSD) or major non-attainment (NA) review. Also, sources will often request limits of less than 0.10 pounds per 1000 pounds in order to avoid the need to do dispersion modeling for the (NAAQS) and the PSD increments. Rule 301(1)(b) allows the DEQ to set a visible emission limit more stringent than 20% opacity as a condition of a permit. It is the intent of the AQD to set opacity limits such that they are consistent with the particulate limits. This is to allow for a compliance check without always requiring particulate emission testing. Typically, opacity limits have been applied as a "linear function" of the particulate mass emission limits. Historically, this "linear function" assumed a 0 percent opacity for <0.01 pounds per 1000 pounds of gas and 20 percent opacity for 0.10 pounds per 1000 pounds of gas and that there is a linear relationship between those points (e.g., 0.05 pounds per 1000 pounds = 10 percent opacity). AQD has since replaced the use of the "linear function" with the following "rule-of-thumb":

Particulate Limit Range		Visible Emission Limit
(in #/1000# of exhaust gas)	(in grains/dscf)	(in Percent Opacity)
0.010 or less	0.0052	5
0.011 to 0.050	0.0053 to 0.026	10
0.051 to 0.075	0.027 to 0.039	15
0.076 or greater	0.040 or greater	20

Therefore, visible emission conditions of less than 20% opacity should routinely continue to be used for processes that have particulate emission limits of less than 0.10 pounds per 1000 pounds of exhaust gas pursuant to Rule 331(b) and Rule 301(1)(c) in permits to install. Especially where an applicant has requested and agreed to a specific visible emission limit less than 20% opacity in place of periodic particulate testing as a method of demonstrating compliance with a low particulate emission limit which establishes a "synthetic minor" source or modification. Exceptions to these routine cases are discussed below.

EXCEPTION:

1. Where an applicant can show, or where staff have sufficient information to determine that the particulate emissions from the process do not correspond with the rule-of-thumb (i.e., they can comply with the required particulate limit at a higher opacity), then the opacity limit should be adjusted accordingly (up to a maximum of 20% opacity) to reflect the actual relationship between particulate and visible emissions.

2. Where the permit includes a condition that specifies an enforceable operating parameter for the equipment that indicates that it is operating properly or a malfunction abatement plan pursuant to Rule 911 for the process or particulate control equipment, including appropriate monitoring and recordkeeping, then the operating parameter or malfunction abatement plan can be used as the enforceable requirement assuring proper operation without an accompanying visible emission limit less than 20% opacity.