

RULE 1147.1

NO_x REDUCTIONS FROM AGGREGATE DRYERS

(a) Purpose

The purpose of this rule is to reduce emissions of oxides of nitrogen (NO_x) while limiting carbon monoxide (CO) from gaseous fuel-fired aggregate dryers.

(b) Applicability

This rule applies to owners or operators of gaseous fuel-fired aggregate dryers with NO_x emissions greater than or equal to one pound per day with a rated heat input greater than 2,000,000 BTU per hour.

(c) Definitions

- (1) AGGREGATE MATERIAL means particulate materials used in construction and industrial manufacturing, including recycled concrete, recycled asphalt, and quarried materials such as sand, gravel, and crushed stone.
- (2) AGGREGATE DRYER means any combustion equipment fired with gaseous fuel used to reduce or minimize the moisture content of aggregate material, including dryers, rotary dryers, fluidized bed dryers and rotary kilns.
- (3) BTU means British thermal unit or units.
- (4) COMBUSTION SYSTEM MODIFICATION means any modification of burner(s) or heating unit that contains:
 - (A) Burner(s), or burner(s) fuel system;
 - (B) Combustion air supply; or
 - (C) Combustion control system that changes the rated heat input capacity of the burner(s) or heating unit.
- (5) COMBUSTION SYSTEM REPAIR means repairing or refurbishing, without resulting in a combustion system modification or combustion system replacement, the following components of an aggregate dryer:
 - (A) Burner(s) or heating unit that contains a burner(s), or burner(s) fuel system; or
 - (B) Combustion air supply, or combustion control system.
- (6) COMBUSTION SYSTEM REPLACEMENT means the substituting of a burner(s) or a heating unit that includes a burner(s).
- (7) FORMER RECLAIM FACILITY means a facility, or any of its successors, that was in the Regional Clean Air Incentives Market program as of January 5, 2018,

as established in Regulation XX, that has received a final determination notification, and is no longer in the RECLAIM program.

- (8) HEAT INPUT means the higher heating value of the fuel to the unit measured as BTU per hour. The higher heating value is the total heat liberated per mass of fuel combusted, expressed as BTUs per pound of cubic feet, when fuel and dry air at standard conditions undergo complete combustion and all resulting products are brought to their standard states at standard conditions.
 - (9) NON-RECLAIM FACILITY means a facility, or any of its successors, that was not in the Regional Clean Air Incentives Market program as of January 5, 2018, as established in Regulation XX.
 - (10) OXIDES OF NITROGEN (NO_x) EMISSIONS means the sum of nitric oxides and nitrogen dioxides emitted, collectively expressed as nitrogen dioxide emissions.
 - (11) PROTOCOL means a South Coast AQMD approved test protocol for determining compliance with emission limits for applicable equipment.
 - (12) RATED HEAT INPUT CAPACITY means the maximum gross heat input of the unit specified on a permanent rating plate attached by the manufacturer to the unit. If the unit has been altered or modified, the new gross heat input as specified in subparagraph (h)(2)(B) shall be considered as the rated heat input capacity.
 - (13) RECLAIM FACILITY means a facility, or any of its successors, that was in the Regional Clean Air Incentives Market program as of January 5, 2018, as established in Regulation XX.
- (d) Emission Requirements
- (1) Until an owner or operator of an aggregate dryer at a non-RECLAIM facility is required to meet the applicable NO_x and CO emission limits specified in subparagraph (d)(3)(B) or (d)(4)(B), the owner or operator shall not operate the aggregate dryer such that the NO_x emissions exceed a limit of 40 ppm, corrected to 3% oxygen, dry.
 - (2) Until an owner or operator of an aggregate dryer at a former RECLAIM facility is required to meet NO_x and CO emission limits in subparagraph (d)(3)(B) or (d)(4)(B), the owner or operator shall not operate the aggregate dryer such that the NO_x emissions exceed a limit of 102 ppm, corrected to 3% oxygen, dry.

- (3) An owner or operator of an aggregate dryer at a non-RECLAIM, RECLAIM, or former RECLAIM facility without a South Coast AQMD permit that limits NOx emissions to 40 ppm or less at 3% oxygen, dry, established by July 1, 2022 shall:
 - (A) For a burner that is 12 years of age or older, as determined pursuant to subdivision (e), beginning January 1, 2022 or every January 1 thereafter, submit a permit application by the date specified in Table 1 to meet the NOx and CO limits specified in subparagraph (d)(3)(B); and
 - (B) No later than the compliance date specified in Table 1, not operate the aggregate dryer such that the NOx concentration limit of 30 ppm at 3% oxygen, dry, and the CO concentration limit of 1000 ppm at 3% oxygen, dry, are exceeded.

Table 1 – Compliance Schedule for Aggregate Dryers Without a Permit Limit of 40 ppm or Less by July 1, 2022

Equipment Category	Permit Application Submittal Date	Compliance Date
Aggregate Dryer with burners installed prior to January 1, 2010	July 1, 2022	No later than 18 months after Permit to Construct is issued
Aggregate Dryer with burners installed on or after January 1, 2010	July 1 of the following calendar year after the burner reaches 12 years of age	No later than 18 months after Permit to Construct is issued

- (4) An owner or operator of an aggregate dryer at a non-RECLAIM, RECLAIM, or former RECLAIM facility with a South Coast AQMD permit that limits NOx emissions to 40 ppm or less at 3% oxygen, dry, established by July 1, 2022 shall:
 - (A) For a burner that is 32 years of age or older, as determined pursuant to subdivision (e), beginning January 1, 2023, or every January 1 thereafter, submit a permit application by the date specified in Table 2 to meet the NOx and CO limits specified in subparagraph (d)(4)(B); and
 - (B) No later than the compliance date in Table 2, not operate the aggregate dryer such that the NOx concentration limit of 30 ppm at 3% oxygen, dry, and the CO concentration limit of 1000 ppm at 3% oxygen, dry, are exceeded.

Table 2 –Compliance Schedule for Aggregate Dryers With a Permit Limit of 40 ppm or Less by July 1, 2022

Equipment Category	Permit Application Submittal Date	Compliance Date
Aggregate Dryer with permit limit at or below 40 ppm by July 1, 2022	July 1 of the following calendar year after the burner reaches 32 years of age	No later than 18 months after Permit to Construct is issued

- (5) An owner or operator that elects to permanently shutdown an aggregate dryer no later than 36 months after the permit application submittal date pursuant to subparagraph (d)(3)(A) or (d)(4)(A) shall not be required to submit a permit application pursuant to paragraph (d)(3) or (d)(4) provided:
 - (A) On or before the permit application for the aggregate dryer is required to be submitted pursuant to paragraph (d)(3) or (d)(4), notify the Executive Officer in writing that the aggregate dryer will be shutdown no later than 36 months after the permit application submittal date pursuant to paragraph (d)(3) or (d)(4); and
 - (B) No later than 36 months after the permit application submittal date pursuant to paragraph (d)(3) or (d)(4), the owner or operator shall:
 - (i) Surrender the South Coast AQMD permit to operate for the aggregate dryer; and
 - (ii) Disconnect and blind the fuel line for the aggregate dryer.
- (6) An owner or operator that submitted a notification pursuant to subparagraph (d)(5)(A) that elects not to permanently shutdown the aggregate dryer shall:
 - (A) Submit a permit application to the Executive Officer no later than 12 months after the date a permit application is due pursuant to paragraph (d)(3) or (d)(4); and
 - (B) No later than 12 months after the Permit to Construct is issued, meet the NOx and CO emission limits specified in subparagraph (d)(3)(B) or (d)(4)(B).
- (7) An owner or operator of an aggregate dryer that meets the requirements specified in paragraph (i)(1), that fails to demonstrate NOx emissions of less

than one pound per day pursuant to Rule 1147 – NO_x Reductions from Miscellaneous Sources, shall comply with the emission limits specified in subparagraph (d)(3)(B) in accordance with the schedule specified in paragraph (d)(3) or the following, whichever is later:

- (A) For a burner installed prior to January 1, 2010, as determined pursuant to subparagraphs (e)(1)(A) through (e)(1)(C), submit a permit application to meet the NO_x and CO limits specified in subparagraph (d)(3)(B) no later than 180 days from the date the aggregate dryer failed to demonstrate NO_x emissions of less than one pound per day; and
 - (B) No later than 18 months after Permit to Construct is issued, not operate the aggregate dryer such that the emission limits specified in subparagraph (d)(3)(B) are exceeded.
- (8) An owner or operator of an aggregate dryer with a South Coast AQMD permit that limits NO_x emissions to 40 ppm or less at 3% oxygen, dry, established by July 1, 2022, that exceeds a permitted NO_x concentration of 40 ppm or less before the burner reaches 32 years, shall meet the NO_x and CO emission limits specified in subparagraph (d)(3)(B) in accordance with the schedule specified in paragraph (d)(3) or the following, whichever is later:
- (A) For a burner installed prior to January 1, 2010, as determined pursuant to subparagraphs (e)(1)(A) through (e)(1)(C), submit a permit application to meet the NO_x and CO limits specified in subparagraph (d)(3)(B) no later than 180 days from the date an aggregate dryer failed to demonstrate emissions in accordance to a South Coast AQMD permit; and
 - (B) No later than 18 months after Permit to Construct is issued, not operate the aggregate dryer such that the emission limits specified in subparagraph (d)(3)(B) are exceeded.
- (9) An owner or operator of an aggregate dryer complying with paragraph (d)(3) or (d)(4) that fails to submit permit application by the date specified in paragraph (d)(3) or (d)(4), shall meet the NO_x and CO emission limits specified in subparagraph (d)(3)(B) or (d)(4)(B) no later than 30 months after the permit application submittal date pursuant to paragraph (d)(3) or (d)(4).
- (e) Burner Age Determination

- (1) An owner or operator shall determine the burner age referenced in paragraphs (d)(3) and (d)(4) based on the 12 month period prior to January 1 of each year using the original installation date as determined by the:
 - (A) Invoice from the manufacturer for purchase and installation of the burner;
 - (B) Original manufacturer's identification or rating plate permanently fixed to the equipment;
 - (C) Information submitted to the South Coast AQMD with prior permit applications for the specific burner.
 - (D) Information regarding the burner included in the South Coast AQMD permit; or
 - (E) Original burner serial number provided by the burner manufacturer indicating date of manufacture.
 - (2) In absence of the information specified in paragraph (e)(1), the burner age will be deemed by the South Coast AQMD to be 32 years old as of January 1, 2022.
- (f) Monitoring
- (1) An owner or operator of an aggregate dryer subject to paragraph (d)(3) or (d)(4) shall:
 - (A) Submit a source test protocol to the Executive Officer for approval no later than 90 days prior to the scheduled source test;
 - (B) Conduct a source test to demonstrate compliance with emission limits specified in subparagraphs (d)(3)(B) or (d)(4)(B) using an Executive Officer approved source test protocol on or before 90 days of receipt of written approval; and
 - (C) Conduct a source test to demonstrate compliance with the NO_x and CO emission limits specified in subparagraph (d)(3)(B) or (d)(4)(B) no later than the compliance date specified in paragraph (d)(3) or (d)(4).
 - (2) An owner or operator of an aggregate dryer with a previously approved protocol used to comply with paragraph (f)(1), can use the previously approved protocol if the burner or aggregate dryer has not been altered in a manner that requires a permit modification and if the permit emission limits have not changed since the previous test.
 - (3) An owner or operator of an aggregate dryer shall demonstrate compliance with the NO_x and CO emission limits specified in subparagraph (d)(3)(B) or

- (d)(4)(B) and determine stack-gas oxygen and carbon dioxide concentrations using a South Coast AQMD approved contractor under the Laboratory Approval Program according to the following procedures:
- (A) South Coast AQMD Source Test Method 100.1 – Instrumental Analyzer Procedures for Continuous Gaseous Emission Sampling (March 1989);
 - (B) South Coast AQMD Source Test Method 10.1 – Carbon Monoxide and Carbon Dioxide by Gas Chromatograph/Non-Dispersive Infrared Detector (GC/NDIR) – Oxygen by Gas Chromatograph-Thermal Conductivity (GC/TCD) (March 1989); or
 - (C) Any alternative test method submitted in writing to, and pre-approved by, the Executive Officers of the South Coast AQMD, the California Air Resources Board and the United States Environmental Protection Agency.
- (4) An owner or operator of an aggregate dryer shall conduct source tests pursuant to paragraph (f)(1) to demonstrate compliance with the applicable NO_x and CO emission limit requirements in subparagraphs (d)(3)(B) or (d)(4)(B):
- (A) For an aggregate dryer with a rated heat input capacity lower than 10 million Btu per hour, conduct source testing every 5 calendar years, but no earlier than 54 calendar months after the previous source test;
 - (B) For an aggregate dryer with a rated heat input capacity greater than or equal to 10 million Btu per hour and less than 40 million BTU per hour, conduct source testing every 3 calendar years, but no earlier than 30 calendar months after the previous source test; or
 - (C) For an aggregate dryer with a rated heat input capacity greater than or equal to 40 million Btu per hour:
 - (i) Conduct source testing every calendar year, but no earlier than 6 calendar months after the previous source test; or
 - (ii) If the aggregate dryer has not operated for at least 6 consecutive calendar months, conduct a source test no later than 90 days after the date of resumed operation and maintain monthly fuel usage using a non-resettable fuel meter to demonstrate that the aggregate dryer has not been operated for at least 6 consecutive calendar months.

- (5) Source test reports, including a description of the equipment tested, shall be submitted to the Executive Officer within 60 days of completion of the test.
 - (6) Beginning January 1, 2023 or when the burner becomes 15 years of age, determined pursuant to subdivision (e), whichever is later, an owner or operator of an aggregate dryer at a non-RECLAIM, RECLAIM or former RECLAIM facility opting to comply with paragraph (d)(4) shall demonstrate compliance with the NO_x emission limits of 40 ppm or lower specified in a South Coast AQMD Permit in accordance with paragraph (f)(1), on the schedule specified in paragraph (f)(4) until the aggregate dryer meets the NO_x and CO emission limits in subparagraph (d)(4)(B).
 - (7) If a source test pursuant to paragraph (f)(1) was conducted within 12 months prior to the compliance determination required in paragraph (f)(6), an owner or operator of an aggregate dryer subject to paragraph (f)(6) may use that source test to comply with paragraph (f)(1).
 - (8) Provided the emissions test set forth in this paragraph is conducted within the same schedule as the compliance determination required in paragraph (f)(4), an owner or operator of an aggregate dryer may use the following emissions test to comply with paragraph (f)(4):
 - (A) Periodic monitoring or testing of a unit as required in a Title V permit pursuant to Regulation XXX, or
 - (B) Relative accuracy testing for continuous emissions monitoring verification pursuant to Rule 218.2 and Rule 218.3.
- (g) Recordkeeping and Reporting
- (1) The owner or operator of an existing continuous in-stack emissions monitor or equivalent verification system located at a non-RECLAIM or former RECLAIM facility prior to August 6, 2021 shall retain the system and comply with the requirements specified in Rules 218.2 and 218.3.
 - (2) The owner or operator of any aggregate dryer located at a non-RECLAIM or former RECLAIM facility subject to paragraph (g)(1) shall use a rolling averaging time of 60 minutes corrected to 3% oxygen, dry, to demonstrate compliance with the NO_x emission limits specified in paragraphs (d)(1), (d)(2), (d)(3), or (d)(4).
 - (3) Records of source tests shall be maintained for five years and shall be made available to South Coast AQMD personnel upon request. Emissions determined

to exceed any limits established by this rule through the use of any of the test methods specified in subparagraphs (f)(4)(A) through (f)(4)(C) shall constitute a violation of this rule .

- (4) RECLAIM facilities must continue to comply with reporting requirements pursuant to Regulation XX until such time that the facility becomes a Former RECLAIM facility.
- (h) Labeling Requirements
- (1) An owner or operator of an aggregate dryer shall display the model number and rated heat input capacity of the unit burner on a permanent rating plate.
 - (2) Labeling of Modified Aggregate Dryers
The owner or operator of a modified aggregate dryer shall:
 - (A) Display the new rated heat input capacity on a new permanent supplemental rating plate installed in an accessible location on the unit or burner; and
 - (B) Calculate gross heat input based on maximum fuel input corrected for fuel content, temperature, pressure, and fuel consumption recorded by an in-line fuel meter by the manufacturer or installer.
 - (3) The owner or operator of an aggregate dryer shall maintain on site a copy of all documents identifying the unit's rated heat input capacity for as long as the unit is retained on-site. The rated heat input capacity shall be identified by a manufacturer's or distributor's manual or invoice and a permanent rating plate attached to the unit.
 - (4) Any owner or operator of a burner or unit modified or replaced shall retain on-site and make available upon request by the Executive Officer, the following documentation:
 - (A) Heat input capacity calculated with the method specified in subparagraph (h)(2)(B);
 - (B) Name of the company and person modifying or replacing the burner or unit;
 - (C) Description of all modifications made to the burner or unit; and
 - (D) Date the burner or aggregate dryer was modified or replaced.
- (i) Exemptions

- (1) The provisions of this rule shall not apply to aggregate dryers with daily NO_x emissions of less than one pound per day pursuant to methods specified in Rule 1147 – NO_x Reductions from Miscellaneous Sources.
- (2) The provisions of this rule shall not apply to tunnel dryers subject to Rule 1147 – NO_x Reductions from Miscellaneous Sources.