

(September 9, 2008)

**PROPOSED RULE 1147. NO<sub>x</sub> REDUCTIONS FROM MISCELLANEOUS SOURCES**

(a) Purpose and Applicability

The purpose of this rule is to reduce nitrogen oxide emissions from gaseous and liquid fuel fired combustion equipment as defined in this rule. This rule applies to ovens, dryers, dehydrators, heaters, kilns, calciners, furnaces, heated pots, cookers, roasters, fryers, closed and open heated tanks and evaporators, distillation units, degassing units, incinerators, soil remediation units and other combustion equipment with nitrogen oxide emissions that requires a District permit and is not specifically required to comply with a nitrogen oxide emission limit by other District Regulation XI rules. This rule does not apply to solid fuel fired combustion equipment, internal combustion engines subject to District Rule 1110.2, turbines, charbroilers, or boilers, water heaters, thermal fluid heaters and enclosed process heaters subject to District Rules 1109, 1121, 1146, 1146.1, or 1146.2 and equipment subject to District Rules 1111, 1112, 1117, or 1135. This rule applies to manufacturers, distributors, retailers, refurbishers, installers, owners, operators, and maintenance and repair of units subject to this rule.

(b) Definitions

- (1) ANNUAL CAPACITY FACTOR means the ratio of the ANNUAL HEAT INPUT of a unit in a calendar year to the amount of fuel it could have burned if it had operated at the rated heat input capacity for 100 percent of the time during the calendar year.
- (2) ANNUAL HEAT INPUT means the actual amount of heat released by fuels burned in a unit during a calendar year, based on the fuel's higher heating value.
- (3) BTU means British thermal unit or units.
- (4) COMBUSTION MODIFICATION means replacement of a burner(s) or combustion control system(s).
- (5) HEATER means any combustion equipment that is fired with gaseous and/or liquid fuels and which transfers heat from combusted fuel to materials or air contained in the unit or in an adjoining cabinet, container or structure. Heater does not include any boiler or PROCESS HEATER designed to transfer heat to water or process streams that is subject to any

NO<sub>x</sub> emission limits of District Rules 1109, 1146, 1146.1 or 1146.2, and does not include any internal combustion engine or turbine.

- (6) HEAT INPUT means the higher heating value of the fuel to the unit measured as BTU per hour.
- (7) HEAT OUTPUT means the enthalpy of the working fluid output of the unit.
- (8) INDEPENDENT TESTING LABORATORY means a testing laboratory that meets the requirements of District Rule 304, subdivision (k) and is approved by the District to conduct certification testing under the PROTOCOL.
- (9) NO<sub>x</sub> EMISSIONS means the sum of nitrogen oxide and nitrogen dioxide in the flue gas, collectively expressed as nitrogen dioxide.
- (10) PROCESS HEATER means any equipment that is fired with gaseous and/or liquid fuels and which transfers heat from combusted fuel to water or process streams. PROCESS HEATER does not include any furnace, kiln or oven used for melting, heat treating, annealing, drying, curing, baking, cooking, calcining, or vitrifying; or any unfired waste heat recovery heater that is used to recover sensible heat from the exhaust of any combustion equipment.
- (11) PROTOCOL means a South Coast Air Quality Management District approved test protocol for determining compliance with emission limits for applicable equipment.
- (12) RATED HEAT INPUT CAPACITY means the gross HEAT INPUT of the combustion UNIT, which shall be specified on a permanent rating plate attached by the manufacturer to the device and supported by required documentation. If the UNIT has been altered or modified such that its gross HEAT INPUT is higher or lower than the rated HEAT INPUT capacity specified on the original manufacturer's permanent rating plate, the new gross HEAT INPUT shall be considered as the rated HEAT INPUT capacity and shall be specified on a permanent supplemental rating plate attached to the device.
- (13) RESPONSIBLE OFFICIAL means:
  - (A) For a corporation: a president or vice-president of the corporation in charge of a principal business function or a duly authorized person who performs similar policy-making functions for the corporation; or

- (B) For a partnership or sole proprietorship: general partner or proprietor, respectively.
  - (14) THERM means 100,000 BTU.
  - (15) UNIT means any oven, dryer, dehydrator, heater, kiln, calciner, furnace, heated pot, cooker, roaster, fryer, heated tank and evaporator, distillation unit, degassing unit, incinerator, soil remediation units and other combustion equipment with nitrogen oxide emissions requiring a District permit and not specifically required to comply with a NOx emission limit by other District Regulation XI rules. UNIT does not mean any solid fuel fired combustion equipment, internal combustion engine subject to District Rule 1110.2, turbine, charbroiler, or boiler, water heater, thermal fluid heaters or enclosed process heater subject to District Rules 1109, 1121, 1146, 1146.1, or 1146.2 or equipment subject to District Rules 1111, 1112, 1117, or 1135.
- (c) Requirements
- (1) On or after (date of adoption) any person owning or operating a unit subject to this rule shall not operate the unit in a manner that exceeds the applicable nitrogen oxide emission limit specified in Table 1 at the time a District permit is required for operation of a new, relocated or modified unit or, for in-use units, in accordance with the compliance schedule in Table 2, or at the time of a combustion modification.

**Table 1 – NO<sub>x</sub> Emission Limit**

<b>Equipment Category(ies)</b>	<b>Gaseous Fuel Limit</b> (ppm @ 3% O <sub>2</sub> , dry) or (lb/mmBtu heat input)
Asphalt Operations	40 ppm
Degassing, Incinerator, or Soil Remediation > 1200° F <sup>1</sup>	60 ppm or 0.073 lb/mmBtu
Fryer	
Heated Open Tank or Evaporator	
Metal Heat Treating	
Metal Melting Furnace	
Metal or Tar Pot	
Other - Process Temperature > 1200° F	20 ppm or 0.024 lb/mmBtu
Oven, Dehydrator, Dryer, Heater, Kiln, Calciner, Cooker, Roaster or Furnace with Process Temperature ≤ 800° F	

**Table 1 – NO<sub>x</sub> Emission Limit (continued)**

<b>Equipment Category(ies)</b>	<b>Gaseous Fuel Limit</b> (ppm @ 3% O <sub>2</sub> , dry) or (lb/mmBtu heat input)
Degassing, Incinerator, or Soil Remediation ≤ 1200° F <sup>1</sup>	30 ppm or 0.036 lb/mmBtu
Make-Up Air Heater	
Oven, Dehydrator, Dryer, Heater, Kiln, Calciner, Cooker, Roaster or Furnace with Process Temperature > 800 ° F and ≤ 1200° F	
Tenter Frame or Carpet Dryer	
Other Air Heater located outside of building with temperature controlled zone inside building	
Other with Process Temperature ≤ 1200° F	
<b>Equipment Category(ies)</b>	<b>Liquid Fuel Limit</b> (ppm @ 3% O <sub>2</sub> , dry) or (lb/mmBtu heat input)
Units with Process Temperature > 1200° F	60 ppm or 0.080 lb/mmBtu
Units with Process Temperature ≤ 1200° F	40 ppm or 0.053 lb/mmBtu

<sup>1</sup> Emission limit applies when burning 100% natural gas, liquefied petroleum gas, propane or butane.

**Table 2 – Compliance Schedule for In-Use Units**

<b>Equipment Category (ies)</b>	<b>Compliance Date</b>
Combustion modification or change of location for Soil Remediation UNIT	January 1, 2011
Degassing, Evaporator, Incinerator, Tank, or Spray Booth Make-Up Air Heater manufactured prior to 1998	July 1, 2013
Other UNIT manufactured prior to 1986	July 1, 2010
Other UNIT manufactured prior to 1992	July 1, 2011
Other UNIT manufactured prior to 1998	July 1, 2012
Any UNIT manufactured after 1997 excluding Soil Remediation UNIT	July 1 of the year the unit is 15 years old

- (2) Unit age shall be based on the original date of manufacture and determined by:
  - (A) Original manufacturer's identification or rating plate permanently fixed to the equipment. If not available, then;

- (B) Invoice from manufacturer for purchase of equipment. If not available, then;
  - (C) Information submitted to AQMD with prior permit applications for the specific unit. If not available, then;
  - (D) Unit is deemed by AQMD to be 20 years old.
- (3) Owners or operators of units operating with flue gas oxygen concentrations greater than 19% shall use a District approved test protocol to determine compliance with the emission limit specified in Table 1. The test protocol shall be submitted to the District at least 90 days prior to the scheduled test and be approved by the District Source Testing Division.
  - (4) Notwithstanding the requirements of paragraph (c)(1), units with combustion modifications completed prior to (date of adoption) that resulted in replacement of more than 75% of the of the rated heat input capacity shall comply with the applicable emission limit specified in Table 1 of paragraph (c)(1) ten years from the date the modification was performed.
  - (5) The date a combustion modification, as specified in paragraphs (c)(1) and (c)(4), is performed; shall be determined according to subparagraph (c)(2)(B), if not available, then subparagraph (c)(2)(C).
  - (6) Notwithstanding the requirements of paragraph (c)(1), a unit with a District permit to construct or permit to operate, and with a permit emission limit of one pound per day or less of nitrogen oxides on (date of adoption), shall comply with the applicable emission limit specified in Table 1 of paragraph (c)(1) five years later than the applicable compliance date in Table 2 of (c)(1).
  - (7) On or after January 1, 2010, any person owning or operating a unit subject to this rule shall perform combustion system maintenance in accordance with the manufacturer's schedule and specifications as identified in a manual and other written materials supplied by the manufacturer or distributor. The owner or operator shall maintain on site at the facility where the unit is being operated a copy of the manufacturer's and/or distributor's written instructions and retain a record of the maintenance activity for a period of not less than three years. The owner or operator shall maintain on site at the facility where the unit is being operated, for as long as the unit is retained, a copy of the most recent District certification

or District approved source test reports, conducted by an independent third party, demonstrating the specific unit complies with the emission limit. The source test report(s) must identify that the source test was conducted pursuant to a District approved protocol. The model and serial numbers of the specified unit shall clearly be indicated on the source test report(s). The maintenance instructions, maintenance records and the source test report(s) or District certification shall be made available to the Executive Officer upon request.

- (8) On or after January 1, 2010, any person owning or operating a unit subject to this rule shall install and maintain in service non-resettable, totalizing, fuel and time meters for each unit's fuel(s). Owners or operators of a unit with a combustion system that operates at only one firing rate shall install a non-resettable, totalizing, time or fuel meter for each fuel.
- (9) Meters specified in paragraph (c)(8) that require electric power to operate shall be provided a permanent supply of electric power that cannot be unplugged, switched off, or reset except by the main power supply circuit for the building and associated equipment. Any person operating a unit subject to this rule shall not shut off electric power to a unit meter unless the unit is not operating and is shut down for maintenance or safety.
- (10) A unit may be demonstrated to meet the applicable emission limit in Table 1 pursuant to the provisions of subdivisions (d) or (e). A unit shall demonstrate compliance with the emission limit in Table 1 every five years.
- (11) **Compliance by Certification**  
For units that do not allow adjustment of the fuel and combustion air for the combustion system by the owner or operator, and upon approval by the Executive Officer, an owner or operator may demonstrate compliance with the emission limit and demonstration requirement of this subdivision by certification granted to the manufacturer for any model of equipment sold for use in the District. Any unit certified pursuant to subdivision (e) shall be deemed in compliance with the emission limit in Table 1 and demonstration requirement of this subdivision for a period of five years from the date the unit is installed.

(12) Identification of Units

(A) New Manufactured Units

The manufacturer shall display the model number and the rated heat input capacity of the unit complying with subdivision (c) on the shipping container and permanent rating plate. The manufacturer shall also display the District certification status on the shipping container and on the unit when applicable.

(B) Modified Units

A unit with a modified combustion system (new or modified burners) shall display the new rated heat input capacity on a new permanent supplemental rating plate. The gross heat input shall be based on the maximum fuel input corrected for fuel heat content, temperature and pressure. Gross heat input shall be demonstrated by a calculation based on fuel consumption recorded by an in-line fuel meter.

(13) The owner or operator 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. 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. If a unit is modified, the rated heat input capacity shall be calculated pursuant to subparagraph (c)(12)(B). The documentation of rated heat input capacity for modified units shall include the name of the company and person modifying the unit, a description of all modifications, the dates the unit was modified and calculation of rated heat input capacity. The documentation for modified units shall be signed by the highest ranking person modifying the unit.

(d) Compliance Determination

(1) All emission determinations shall be made using a District approved test protocol.

(2) All parts per million emission limits specified in subdivision (c) are referenced at 3 percent volume stack gas oxygen on a dry basis averaged over a period of 15 consecutive minutes or more.

- (3) Compliance with the NO<sub>x</sub> emission limits of subdivision (c) and determination of stack-gas oxygen and carbon dioxide concentrations for this rule shall be determined according to the following procedures:
  - (A) District Source Test Method 100.1 – Instrumental Analyzer Procedures for Continuous Gaseous Emission Sampling (March 1989); or
  - (B) District Source Test Method 7.1 – Determination of Nitrogen Oxide Emissions from Stationary Sources (March 1989); or
  - (C) ASTM Method D6522-00 – Standard Test Method for Determination of Nitrogen Oxides, Carbon Monoxide, and Oxygen Concentrations in Emissions from Natural Gas-Fired Reciprocating Engines, Combustion Turbines, Boilers, and Process Heaters Using Portable Analyzers; or
  - (D) United States Environmental Protection Agency Conditional Test Method CTM-030 – Determination of Nitrogen Oxides, Carbon Monoxide, and Oxygen Emissions from Natural Gas-Fired Engines, Boilers and Process Heaters Using Portable Analyzers; and
  - (E) District 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
  - (F) Any alternative test method determined approved before the test in writing by the Executive Officers of the District, the California Air Resources Board and the United States Environmental Protection Agency.
- (4) Records of source tests shall be maintained for as long as the unit is retained and made available to District 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 (d)(3)(A) through (d)(3)(F) shall constitute a violation of this rule.
- (5) For any operator who chooses the pound per million Btu of heat input compliance option of subdivision (c), NO<sub>x</sub> emissions in pounds per million Btu of heat input shall be calculated using procedures in 40 CFR Part 60, Appendix A, Method 19, Sections 2 and 3.



## (e) Certification

## (1) Unit Certification

For units that do not allow adjustment of the fuel and combustion air for the combustion system by the owner or operator, any manufacturer that distributes for sale or sells units or burner systems for use in the District may elect to apply to the Executive Officer to certify such units or burner systems as compliant with subdivision (c).

## (2) Manufacturer Confirmation of Emissions

Any manufacturer's application to the Executive Officer to certify a model of equipment as compliant with the emission limit and demonstration requirement of subdivision (c) shall obtain confirmation from an independent testing laboratory prior to applying for certification that each unit model complies with the applicable requirements of subdivision (c). This confirmation shall be based upon District approved emission tests of standard model units and a District approved protocol shall be adhered to during the confirmation testing of all units subject to this rule. Emission testing shall comply with the requirements of paragraphs (d)(1) through (d)(5).

## (3) When applying for unit(s) certification, the manufacturer shall submit to the Executive Officer the following:

(A) A statement that the model is in compliance with subdivision (c). The statement shall be signed and dated by the manufacturer's responsible official and shall attest to the accuracy of all statements;

## (B) General Information

- (i) Name and address of manufacturer,
- (ii) Brand name, if applicable,
- (iii) Model number, as it appears on the unit rating plate; and
- (iv) Rated Heat Input Capacity, gross output of burner(s) and number of burners;

(C) A description of each model being certified; and

(D) A source test report verifying compliance with the applicable emission limit in subdivision (c) for each model to be certified. The source test report shall be prepared by the confirming independent testing laboratory and shall contain all of the elements identified in the District approved Protocol for each unit tested.

The source test shall have been conducted no more than ninety (90) days prior to the date of submittal to the Executive Officer.

- (4) When applying for unit certification, the manufacturer shall submit the information identified in paragraph (e)(3) no more than ninety (90) days after the date of the source test identified in subparagraph (e)(3)(D) and at least 120 days prior to the date of the proposed sale and installation of any District certified unit.
  - (5) The Executive Officer shall certify a unit model which complies with the provisions of subdivision (c) and of paragraphs (e)(2), (e)(3), and (e)(4).
  - (6) Certification status shall be valid for four years from the date of approval by the Executive Officer. After the fourth year, recertification shall be required by the Executive Officer according to the requirements of paragraphs (e)(2), (e)(3), and (e)(4).
- (f) Enforcement
- The Executive Officer may inspect distributors, retailers, and installers of units located in the District, and conduct such tests as are deemed necessary to ensure compliance with subdivisions (c) and (e).
- (g) Exemptions
- (1) The provisions of this rule shall not apply to units:
    - (A) subject to the nitrogen oxide limits of District Rules 1109, 1110.2, 1111, 1112, 1117, 1121, 1134, 1135, 1146, 1146.1, or 1146.2; or
    - (B) located at RECLAIM facilities.
  - (2) The provisions of this rule shall not apply to charbroilers.
  - (3) New degassing units, evaporators, incinerators, tanks, and spray booth make-up air heaters installed after (date of adoption) and before January 1, 2011 are exempt from the emission limit in Table 1 until July 1 of the year the unit is 15 years old.
  - (4) New or relocated remediation units installed after (date of adoption) and before January 1, 2011 are exempt from the emission limit in Table 1 until a combustion modification or change of location on or after January 1, 2011.