

**REGULATION 9
INORGANIC GASEOUS POLLUTANTS
RULE 7
NITROGEN OXIDES AND CARBON MONOXIDE FROM INDUSTRIAL,
INSTITUTIONAL, AND COMMERCIAL BOILERS, STEAM GENERATORS,
AND PROCESS HEATERS**

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REGULATION 9
INORGANIC GASEOUS POLLUTANTS
RULE 7
NITROGEN OXIDES AND CARBON MONOXIDE FROM INDUSTRIAL,
INSTITUTIONAL, AND COMMERCIAL BOILERS, STEAM GENERATORS,
AND PROCESS HEATERS

(Adopted September 16, 1992)

9-7-100 GENERAL

9-7-101 Description: This rule limits the emissions of nitrogen oxides (NO_x) and carbon monoxide (CO) from industrial, institutional, and commercial boilers, steam generators, and process heaters.

9-7-110 Exemptions: The requirements of this rule shall not apply to the following:

- 110.1 Boilers, steam generators, and process heaters with a rated heat input of 2 million BTU/hour or less, if fired exclusively with natural gas, liquefied petroleum gas, or any combination thereof;
- 110.2 Boilers, steam generators and process heaters with a rated heat input less than 1 million BTU/hour fired with any fuel;
- 110.3 Boilers, steam generators, and process heaters that are used in petroleum refineries;
- 110.4 Boilers used by public electric utilities or qualifying small power production facilities, as defined in Section 228.5 of the Public Utilities Code, to generate electricity;
- 110.5 Waste heat recovery boilers that are used to recover sensible heat from the exhaust of combustion turbines or reciprocating internal combustion engines;
- 110.6 Kilns, ovens, and furnaces used for drying, baking, heat treating, cooking, calcining, or vitrifying.

(Amended July 30, 2008)

9-7-111 Limited Exemption, Low Fuel Usage - Section 9-7-301: The requirements of Section 9-7-301 shall not apply to the use of any boiler, steam generator, or process heater with an annual heat input less than 90,000 therms during each consecutive 12-month period after July 1, 1993, or that accepts a limiting condition in their operating permit to limit the annual heat input to less than 90,000 therms, provided the requirements of Sections 9-7-304 and 504 are satisfied.

(Amended July 30, 2008)

9-7-112 Limited Exemption, Low Fuel Usage: The requirements of Sections 9-7-307 (except as specified below), 311 and 312 shall not apply to the use of any boiler, steam generator, or process heater provided that all of the following conditions are met:

- 112.1 For devices with a rated heat input less than 10 million BTU/hr, the device uses less than 10% of its annual maximum heat capacity in each consecutive 12-month period beginning January 1, 2011 and the requirements of Section 9-7-309 are satisfied;
- 112.2 For devices with a rated heat input of 10 million BTU/hr or more, the device uses less than 10% of its annual maximum heat capacity in each consecutive 12-month period beginning January 1, 2012 and the requirements of Section 9-7-307.10 are satisfied.

An operator of a boiler, steam generator, or process heater that loses eligibility for this exemption by using more than the specified amount of fuel in any consecutive 12-month period shall comply with the applicable standards of Section 9-7-307 within 24 months.

(Adopted July 30, 2008)

9-7-113 Limited Exemption, Natural Gas Curtailment and Testing: The requirements of Section 9-7-307 shall not apply to any boiler, steam generator or process heater while it burns LPG or other non-gaseous fuel during a natural gas curtailment or

during testing to verify readiness for such a curtailment, provided that all of the following conditions are met:

113.1 The device does not burn LPG or other non-gaseous fuel for more than 168 total hours in each consecutive 12-month period, plus 48 hours in each consecutive 12-month period for oil-burn readiness testing or state, federal, or local agency-required performance testing,

113.2 The device does not exceed a NOx exhaust concentration of 150 ppmv, and

113.3 The records specified in Section 9-7-503.3 are maintained.

(Adopted July 30, 2008)

9-7-114 Limited Exemption, Tune-Up: The emission limits of Section 9-7-307 shall not apply during the tune-up of a boiler, steam generator or process heater required by Section 9-7-313. Emissions shall be minimized to the extent possible during the exemption period and the tune-up shall be completed in as little time as necessary.

(Adopted July 30, 2008)

9-7-115 Limited Exemption, Startup and Shutdown: The emission limits of Section 9-7-307 shall not apply during startup and shutdown periods provided that all of the following conditions are met:

115.1 Each startup and shutdown period shall not exceed two hours, unless otherwise allowed in a District Permit to Operate. In no case shall the startup period exceed 12 hours, or the shutdown period exceed 9 hours.

115.2 All emission control systems shall be in operation and emissions shall be minimized, to the extent possible, during startup and shutdown periods.

(Adopted July 30, 2008)

9-7-116 Limited Exemption, Compliance Extension for Facilities Subject to Regulation 9, Rule 9: Boilers, steam generators or process heaters located at the same facility as a turbine that is subject to Regulation 9, Rule 9 and that is modified or replaced to comply with Section 9-9-301.2 of that regulation, shall comply with the requirements of Section 9-7-307 no later than 24 months after the date otherwise specified for compliance in Section 9-7-308.

(Adopted July 30, 2008)

9-7-117 Limited Exemption, Devices Rated 75 MM BTU/hr or Higher Limited to 9 PPMV NOx: The emission limits of Section 9-7-307.6 shall not apply to any boiler, steam generator or process heater that is limited to 9 ppmv NOx or less by a District Permit to Operate in effect on or before July 30, 2008 as long as that permit limit remains in effect.

(Adopted July 30, 2008)

9-7-200 DEFINITIONS

9-7-201 Annual Heat Input: The total heat input of fuels burned by a combustion source during any consecutive 12-month period, as determined from the higher heating value and cumulative annual usage of each fuel.

9-7-202 Annual Maximum Heat Capacity: The amount of heat input that a device would have if it operated at its rated heat input continuously for 365 consecutive days.

(Adopted July 30, 2008)

9-7-203 Boiler or Steam Generator: Any combustion equipment used to produce steam or to heat water.

(Renumbered July 30, 2008)

9-7-204 British Thermal Unit (BTU): The amount of heat required to raise the temperature of one pound of water from 59° to 60°F at one atmosphere.

(Renumbered July 30, 2008)

9-7-205 Digester Gas: Gas derived from the decomposition of organic matter in a digester.

(Adopted July 30, 2008)

9-7-206 Digester Gas-Fired Device: A boiler, steam generator or process heater that fires or co-fires digester gas at least 90% of its operating time, on a calendar year basis.

(Adopted July 30, 2008)

9-7-207 Gaseous Fuel: Any fuel that is a gas at 68°F and one atmosphere.

(Adopted July 30, 2008)

9-7-208 Heat Input: The heat of combustion released due to burning a fuel in a source, using the higher heating value of the fuel. This does not include the sensible heat of incoming combustion air.

- (Renumbered July 30, 2008)*
- 9-7-209 Heat-Input Weighted Average:** The heat input of the gaseous fuel per unit time divided by the total heat input per unit time and the heat input per unit time of the non-gaseous fuel divided by the total heat input per unit time. The calculated fractions are used to calculate the applicable weighted average ppmv emission limit of Section 9-7-301.3.
(Amended, Renumbered July 30, 2008)
- 9-7-210 Higher Heating Value (HHV):** The total heat liberated per mass of fuel burned (BTU per pound), when fuel and dry air at standard conditions undergo complete combustion and all resultant products are brought to their standard states at standard conditions. The HHV is determined as specified in Section 9-7-605.
(Renumbered July 30, 2008)
- 9-7-211 Landfill Gas:** Gas derived from the decomposition of waste in a landfill.
(Adopted July 30, 2008)
- 9-7-212 Landfill Gas-Fired Device:** A boiler, steam generator or process heater that fires or co-fires landfill gas at least 90% of its operating time, on a calendar year basis.
(Adopted July 30, 2008)
- 9-7-213 Load-Following Unit:** A unit that cannot be operated in a base-loaded mode, and that has normal operational load fluctuations and requirements, imposed by fluctuations in the process(es) served by the unit, that exceed the operational response range of a Ultra-Low NO_x burner system operating at 9 ppmv NO_x, as determined by the District and indicated on the device's permit to operate.
(Adopted July 30, 2008)
- 9-7-214 Natural Gas:** Any mixture of gaseous hydrocarbons containing at least 80 percent methane by volume, as determined according to Standard Method ASTM D1945-64.
(Renumbered July 30, 2008)
- 9-7-215 Natural Gas Curtailment:** A shortage in the supply of pipeline natural gas, due solely to supply limitations or restrictions in distribution pipelines by the utility supplying the gas, and not due to the cost of natural gas.
(Adopted July 30, 2008)
- 9-7-216 Nitrogen Oxide (NO_x) Emissions:** The sum of nitric oxide (NO) and nitrogen dioxide (NO₂) in the flue gas, collectively expressed as nitrogen dioxide.
(Renumbered July 30, 2008)
- 9-7-217 Process Heater:** Any combustion equipment that transfers heat from combustion gases to water or process streams. A process heater does not include any kiln, furnace or oven that is used for drying, baking, heat treating, cooking, calcining, or vitrifying. A process heater also does not include a space heating device that is primarily intended to only heat ambient air.
(Amended, Renumbered July 30, 2008)
- 9-7-218 Rated Heat Input:** The heat input capacity specified on the nameplate of the boiler, steam generator or process heater, or the sum of the capacities on the nameplates of the burners in the boiler, steam generator or process heater, whichever is greater.
(Amended, Renumbered July 30, 2008)
- 9-7-219 Shutdown Period:** The period of time during which a unit is taken from an operational to a non-operational status.
(Adopted July 30, 2008)
- 9-7-220 Startup Period:** The period of time during which a unit is brought from a non-operational status to operating temperature, including the time required for the unit's emission control system to reach full operation.
(Adopted July 30, 2008)
- 9-7-221 Therm:** One hundred thousand (100,000) BTU's.
(Renumbered July 30, 2008)
- 9-7-300 STANDARDS**
- 9-7-301 Interim Emission Limits:** No person shall operate a boiler, steam generator or process heater with a rated heat input greater than or equal to 10 million BTU per hour unless the following emission limits are met:
- 301.1 Nitrogen oxide (NO_x) emissions shall not exceed 30 ppmv, dry at 3 percent oxygen when gaseous fuel is used;

- 301.2 Nitrogen oxide (NOx) emissions shall not exceed 40 ppmv, dry at 3 percent oxygen when non-gaseous fuel is used;
- 301.3 Nitrogen oxide (NOx) emissions shall not exceed the heat-input weighted average of the limits in Sections 9-7-301.1 and 301.2 when a combination of gaseous and non-gaseous fuel is used;
- 301.4 Carbon monoxide (CO) emissions shall not exceed 400 ppmv, dry at 3 percent oxygen.

This section shall not apply to any boiler, steam generator, or process heater subject to a NOx or CO emission limit in Section 9-7-307.

(Amended July 30, 2008)

9-7-302 Deleted July 30, 2008

9-7-303 Deleted July 30, 2008

9-7-304 Interim Low Fuel Usage Requirements: No person shall operate any boiler, steam generator or process heater under the limited exemption in Section 9-7-111, or with rated heat input less than 10 million BTU per hour with the capability of firing any non-gaseous fuel, without doing at least one of the following:

- 304.1 Operate in a manner that maintains stack-gas oxygen concentrations at less than or equal to 3 percent by volume on a dry basis; or
- 304.2 Perform an inspection and tune-up at least once every 12 months by a technician in accordance with the procedure specified in Section 9-7-604; or
- 304.3 Meet the emission limits specified in Sections 9-7-301.

(Amended July 30, 2008)

9-7-305 Deleted July 30, 2008

9-7-306 Deleted July 30, 2008

9-7-307 Final Emission Limits: No person shall operate a boiler, steam generator or process heater with a rated heat input listed in the table below that exceeds the corresponding NOx and CO emission limits on or after the corresponding effective date specified in Section 9-7-308. Where more than one NOx limit applies to a device, the device will be subject only to the higher (less restrictive) NOx limit.

Emission Limit	Rated Heat Input (million BTU/hr)	NOx Limit (ppmv)	CO Limit (ppmv)
307.1	>2 to 5	30	400
307.2	>5 to <10	15	400
307.3	10 to <20	15	400
307.4	20 or more, load-following unit	15	400
307.5	20 to <75	9	400
307.6	75 or more	5	400
307.7	10 or more, landfill gas-fired or digester gas-fired device	30	400
307.8	1 or more while firing only non-gaseous fuel	40	400
307.9	1 or more while firing a combination of gaseous and non-gaseous fuel	heat-input weighted average of gaseous & non-gaseous limit	400
307.10	10 or more, while operated under exemption 9-7-112.2	30	400

(Adopted July 30, 2008)

9-7-308 Compliance Schedule: Boilers, steam generators and process heaters subject to the requirements of Section 9-7-307 shall comply with those requirements in accordance with the schedule in the table below.

Section	At least 33% of devices at a single facility	At least 66% of devices at a single facility	100% of devices at a single facility
9-7-307.1	Effective Date: Later of January 1, 2011 OR 10 years after original manufacture date if manufactured prior to January 1, 2011	One year after Effective Date	Two years after Effective Date
9-7-307.2 9-7-307.3	Effective Date: Later of January 1, 2012 OR 10 years after original manufacture date if manufactured prior to January 1, 2012	One year after Effective Date	Two years after Effective Date
9-7-307.4 9-7-307.5 9-7-307.6	Effective Date: Later of January 1, 2012 OR 5 years after original manufacture date if manufactured prior to January 1, 2012	One year after Effective Date	Two years after Effective Date
9-7-307.7 9-7-307.10	July 30, 2008	July 30, 2008	July 30, 2008
9-7-307.8 9-7-307.9	Effective Date: January 1, 2011 for devices with rated input <10 MM BTU/hr; July 30, 2008 for devices with rated input ≥10 MM BTU/hr	One year after Effective Date	Two years after Effective Date

(Adopted July 30, 2008)

9-7-309 Final Low Fuel Usage Requirements: No person shall operate any boiler, steam generator or process heater under the limited exemption in Section 9-7-112.1 without doing at least one of the following:

- 309.1 Operate in a manner that maintains stack-gas oxygen concentrations at less than or equal to 3 percent by volume on a dry basis; or
- 309.2 Perform an inspection and tune-up at least once per calendar year by a technician in accordance with the procedure specified in Section 9-7-604; or
- 309.3 Meet the applicable emission limits in Section 9-7-307.

(Adopted July 30, 2008)

9-7-310 Prohibition of Commerce in Uncertified Devices: No person shall sell, offer for sale, or install any boiler, steam generator or process heater subject to Section 9-7-307.1 or 307.2 unless the device is certified in accordance with Sections 9-7-405 and 406.

(Adopted July 30, 2008)

9-7-311 Insulation Requirements: Effective January 1, 2010, no person shall operate a boiler or steam generator unless the exposed, external surface of the device, including all pipes and ducts heated by the device, does not exceed a temperature of 120°F. This requirement shall not apply to any of the following:

- 311.1 Any device that meets the definition of a high-temperature water boiler in California Code of Regulations, Title 8.
- 311.2 Any surface or appurtenance that must remain un-insulated for safety or operational reasons.
- 311.3 Any surface that has at least one inch of insulation, or that does not exceed a temperature of 140°F with no insulation.
- 311.4 Any surface heated by a source other than the boiler or steam generator, including sunlight.
- 311.5 Any exhaust stack surface.

(Adopted July 30, 2008)

9-7-312 Stack Gas Temperature Limits: Effective January 1, 2011, no person shall operate a boiler or steam generator with a stack gas temperature (downstream of any economizer) that exceeds the indicated maximum temperature:

Heater Design	Maximum Temperature (°F)	
	Gaseous Fuel	Non-Gaseous Fuel
firetube	100°F over saturated steam temperature for steam boiler, 100°F over hot water temperature for hot water boiler OR 250 °F greater than ambient temperature, whichever is higher	100°F over saturated steam temperature for steam boiler, 100°F over hot water temperature for hot water boiler OR 300 °F greater than ambient temperature, whichever is higher
watertube	150°F over saturated steam temperature for steam boiler, 150°F over hot water temperature for hot water boiler OR 250 °F greater than ambient temperature, whichever is higher	150°F over saturated steam temperature for steam boiler, 150°F over hot water temperature for hot water boiler OR 300 °F greater than ambient temperature, whichever is higher

(Adopted July 30, 2008)

9-7-313 Tune-Up Requirements: Effective January 1, 2009, no person shall operate a boiler, steam generator or process heater unless they do at least one of the following each calendar year:

313.1 Operate at less than 10% of its annual maximum heat capacity during the calendar year; or

313.2 Perform an inspection and tune-up at least once per calendar year by a technician in accordance with the procedure specified in Section 9-7-604.

(Adopted July 30, 2008)

9-7-400 ADMINISTRATIVE REQUIREMENTS

9-7-401 Deleted July 30, 2008

9-7-402 Deleted July 30, 2008

9-7-403 Initial Demonstration of Compliance: No person shall operate a boiler, steam generator or process heater that is subject to the requirements of Sections 9-7-307.3, 307.4, 307.5, 307.6 or 309.1 unless an initial source test to verify compliance with these requirements is conducted in accordance with Sections 9-7-601 or 602 within 1 year of the date these requirements are effective. Alternatively, devices subject to Sections 9-7-307.3, 307.4 or 309.1 may be tested using a portable analyzer that meets the specification standards and using the testing protocol in Attachment 1. This section does not apply to any device required to perform verification testing to establish compliance with applicable requirements of Sections 9-7-307.3, 307.4, 307.5, 307.6 or 309.1 in accordance with a District Authority to Construct issued on or after January 1, 2011.

(Amended July 30, 2008)

9-7-404 Registration: Effective January 1, 2011, no person shall operate any boiler, steam generator or process heater subject to Section 9-7-307.1 or 307.2 unless the device is registered in accordance with Regulation 1, Section 410. Any person registering a device shall pay the fees specified in Regulation 3. This registration requirement shall not apply to any device for which the operator holds a District Permit to Operate.

(Adopted July 30, 2008)

9-7-405 Compliance with Emissions Standards – Devices Rated Less Than 10 Million BTU/hr Input: The manufacturer shall obtain confirmation from an independent testing laboratory that each boiler, steam generator or process heater model it sells or distributes for sale into the District that is subject to the requirements of Section 9-7-307.1 or 307.2 has been tested in accordance with the procedures in Sections 9-7-601 and 602. This requirement shall not apply to burner assemblies sold as retrofit packages.

(Adopted July 30, 2008)

9-7-406 Application for Certification:

406.1 Each manufacturer shall submit an application to the APCO for certification of their compliant boiler, steam generator or process heater model. The application must:

- 1.1 Provide the following general information: name and address of manufacturer, brand name, trade name, model number and heat input rating as it appears on the water heater rating plate.
 - 1.2 Provide a description of the model being certified
 - 1.3 Include a complete certification source test report demonstrating that the boiler or water heater model was tested in accordance with procedures in Sections 9-7-601 and 602 and a written statement that the model complies with Section 9-7-307.1 or 307.2 and is tested in accordance with procedures in Sections 9-7-601 and 602.
 - 1.4 Be submitted to the District no more than 90 days after the date of the emissions compliance test conducted in accordance with Section 9-7-405.
 - 1.5 Be submitted to the District no less than 90 days before the first sale or distribution within the District that occurs on or after January 1, 2011, of a boiler, steam generator or process heater model.
- 406.2 After completing review of the application for certification and source test report, the APCO will approve, or will deny approval of the device.
- 406.3 Certification status shall be valid for three years from the date of approval by the APCO. After the third year, recertification shall be required according to the requirements in 9-7-406.

(Adopted July 30, 2008)

9-7-407 Identification: The boiler, steam generator or process heater manufacturer shall display the model number and the certification status of the boiler, steam generator or process heater on the shipping carton and on the rating plate of each unit.

(Adopted July 30, 2008)

9-7-408 Designation of Load-Following Units: To be eligible for the load-following emission standard in section 9-7-307, a unit must be designated a load-following unit by the APCO on the unit Permit to Operate. In order to support this designation, the unit operator shall include the following information with an application for an Authority to Construct or an application for a modification to a Permit to Operate, as specified in Regulation 2:

- 408.1 A description of the processes the unit serves and the normal operational load fluctuations and load requirements imposed on the unit, verifying that the unit cannot be operated in a base-loaded mode.
- 408.2 A detailed report on the design and condition of the unit, burner(s), burner controls, and any other subsystem that may affect the ability of the unit to comply with a 9 ppmv NOx limit, including a verification that the unit is free of air leaks, and is operated within normal design parameters, and is otherwise free of significant design defects and physical defects and is operated within reasonable parameters. This report shall verify that the inability of the unit to comply with a 9 ppmv NOx limit is substantially caused by the system load fluctuations and the limitations of state-of-the-art, commercially-available, 9 ppmv burners and burner controls, rather than any other factor.
- 408.3 Technical data such as steam demand charts or other information to support the description and report described above.

(Adopted July 30, 2008)

9-7-500 MONITORING AND RECORDS

9-7-501 Combinations of Different Fuels: No person shall simultaneously fire combinations of different fuels in a device subject to the requirements of Sections 9-7-301.3 or 307.9 without first installing a non-resettable totalizing fuel meter in each fuel line for each source.

(Amended July 30, 2008)

9-7-502 Deleted July 30, 2008

9-7-503 Records: Any person subject to the requirements of this rule shall keep records of the following:

- 503.1 Documentation verifying tune-ups performed in accordance with Sections 9-7-304.2, 309.2 or 313.2.

- 503.2 In the event that the limited exemption in Section 9-7-113 is invoked, documentation from the natural gas supplier verifying that natural gas was unavailable due to a natural gas curtailment.
 - 503.3 Documentation verifying the hours of equipment testing using non-gaseous fuel, and of total operating hours using non-gaseous fuel during each calendar month.
 - 503.4 The results of any testing required by Sections 9-7-403 or 506.
 - 503.5 Digester gas-fired and landfill gas-fired devices operating under Section 9-7-307.7 shall maintain records of total operating hours and operating hours firing or co-firing digester or landfill gas.
- Such records shall be retained for a minimum of 24 months from date of entry and be made available to District staff upon request.

(Amended July 30, 2008)

9-7-504 Low Fuel Usage - Monitoring and Records: Any person who operates a boilers, steam generator or process heater under the limited exemption of Section 9-7-111_or 112 shall comply with the following requirements:

- 504.1 Operate a non-resettable totalizing meter for each fuel that demonstrates that the source operated at or below the applicable heat input level, or receive APCO approval for using utility service meters, purchase or tank fill records, or any other acceptable methods for measuring the cumulative annual usage of each fuel; and
- 504.2 Have available for inspection by the APCO annual fuel use data and the Higher Heating Value of each fuel used, for the prior consecutive 12-month period. Records shall be maintained and made accessible to the APCO for a period of 24 months from the date the record is made.

An operator of a boiler, steam generator or process heater who claims eligibility for the limited exemption in Section 9-7-111 or 112, but who fails to maintain records to allow verification of fuel usage shall have the burden of proof to establish eligibility for the limited exemption.

(Amended July 30, 2008)

9-7-505 Original Manufacture Date: Any person who operates a boiler, steam generator or process heater that is subject to a standard in Sections 9-7-307.1 through 307.6 and that elects to use an effective date for this standard that is based on the original manufacture date of the device shall make available the original manufacture date of the device on the original manufacturer's identification or rating plate permanently fixed to the device, or else on a copy of the manufacturer's invoice.

(Adopted July 30, 2008)

9-7-506 Periodic Testing: No person shall operate a boiler, steam generator or process heater subject to an emission limit specified in the table below unless they verify compliance with the limit at the specified intervals. Testing shall be performed in accordance with Sections 9-7-601 and 602. Alternatively, devices may be tested using a portable analyzer that meets the specification standards and using the testing protocol in Attachment 1. No person shall operate a device that use non-gaseous fuel unless they perform testing using non-gaseous fuel to verify compliance with Section 9-7-307.8 or 307.9, in addition to testing to verify compliance with any other applicable standard in Section 9-7-307. This section does not apply to any device required to perform periodic testing in accordance with a District Permit to Operate or to any device that verifies compliance with an emission limit with a District-approved continuous emission monitor.

Emission Limit	Testing Interval
9-7-307.3	Every two years (no less than 18 months and no more than 24 months), beginning with the effective date in Section 9-7-308.
9-7-307.4, 9-7-307.5, 9-7-307.6, or 9-7-309.1	Every year (no less than 10 months and no more than 12 months), beginning with the effective date in Section 9-7-308.

9-7-307.8 or 9-7-307.9	Within 60 days of the first use of non-gaseous fuel in any calendar year in which non-gaseous fuel is used. Use of non-gaseous fuel for oil-burn readiness testing or state, federal, or local agency-required performance testing, not exceeding a total of 48 hours in a calendar year, will not trigger periodic testing.
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(Adopted July 30, 2008)

9-7-600 MANUAL OF PROCEDURES

9-7-601 Determination of Nitrogen Oxides: The methods by which samples of exhaust gases are collected and analyzed to determine concentrations of nitrogen oxides are set forth in the District Manual of Procedures, Volume IV, ST-13 A or B.

9-7-602 Determination of Carbon Monoxide and Stack-Gas Oxygen: Compliance with the carbon monoxide emission requirements of Sections 9-7-301 and 307 and the stack-gas oxygen concentration requirement of Sections 9-7-304.1 and 309.1 shall be determined as set forth in the District Manual of Procedures, Volume IV, ST-6 (carbon monoxide) and ST-14 (oxygen).

(Amended July 30, 2008)

9-7-603 Compliance Determination: All emission determinations shall be made in the as-found operating condition, except that no compliance determination shall be established during startup or shutdown.

(Amended July 30, 2008)

9-7-604 Tune-Up Procedures: The tune-up procedure required by Section 9-7-304.2, 309.2 and 313.2 shall be performed in accordance with the procedure set forth in the District Manual of Procedures, Volume I, Chapter 5.

(Adopted 9/15/93; Amended 7/30/08)

9-7-605 Determination of Higher Heating Value: If certification of the Higher Heating Value is not provided by the third-party fuel supplier, it shall be determined by one of the following test methods: (1) ASTM D2015-85 for solid fuels; (2) ASTM D240-87 or ASTM D2382-88 for liquid hydrocarbon fuels; or (3) ASTM D1826-88, or ASTM D1945-81 in conjunction with ASTM D3588-89, for gaseous fuels.

Attachment 1

Portable Analyzer Protocol

Emission readings using a portable analyzer shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15-consecutive-minute sample reading or by taking at least five (5) readings evenly spaced over the 15-consecutive-minute period. If the results of the portable analyzer show that the NO_x or CO emissions from the unit exceed the applicable limits, then the unit shall be source tested no later than 60 days from the date of discovering such exceedance.

Portable Analyzer Specifications

A. **General:** A portable analyzer consists of a sample interface, a gas detector, and a data recorder, and is used to quantitatively analyze stack gas for one or more components. A portable analyzer for CO, O₂, or NO_x shall be considered approved by the District if it adheres to the standards that are set forth in this section, is used in accordance with the standards of this section, and is used in accordance with the manufacturer's specifications. Other portable analyzers and techniques are approvable on a case by case basis.

B. **Definitions:**

Sample interface: That portion of the portable analyzer used for one or more of the following: sample acquisition, sample transport, sample conditioning, or protection of the portable analyzer from the effects of the stack effluent.

Gas detector: That portion of the portable analyzer that senses the gas to be measured and generates an output proportional to the gas concentration.

Data recorder: A strip chart recorder, digital recorder, or any other device used for recording or displaying measurement data from the gas detector output.

Resolution: The smallest increment of output that the gas detector will provide. This value should be reported by the equipment manufacturer.

Error: The maximum standard measurement error over the measurement range. This value should be reported by the equipment manufacturer.

Detection Limit: The lowest concentration of gas that can be detected by the gas detector. This value should be reported by the equipment manufacturer.

Response Time: The amount of time required for the portable analyzer to display 95% of a step change in gas concentration on the data recorder.

C. **Equipment:** The portable analyzer shall adhere to the standards tabulated below for each of the pollutants that it is intended to measure. All values in the table refer to maximum values. In addition to the parameters contained in the table, the minimum upper limit of the measurement range shall be equal to 1.5 times the emission limit for the species being measured.

Detector	Resolution	Error	Detection Limit	Response Time
CO	20 ppm	± 50 ppm	50 ppm	1 min
O ₂	0.5%	± 1.0%	0%	1 min
NO _x	1 ppm	± 1 ppm	5 ppm	1 min

D. **Calibration:** Each gas detector shall be calibrated a minimum of once every six months and all instrument calibration data shall be kept on file with the monthly analyses. If the manufacturer recommends calibration more than once every six months, then the instrument calibration shall follow the manufacturer's recommended interval. Two calibration gases are required, the upper limit calibration gas shall have a concentration of 60-100% of the upper limit of the measurement range and the lower limit calibration gas shall have a concentration from 0-10% of the upper limit of the measurement range. Ambient air may be used as the upper limit calibration gas for O₂ and may be used as the lower limit calibration gas for both

NO_x and CO. The system response time shall be determined during the gas detector calibration. The portable analyzer shall first be purged with ambient air. Calibration gas is then provided to the portable analyzer through a tubing length typically used during analysis. The time necessary for the data recorder to display a concentration equal to 95% of the final steady state concentration shall be recorded as the response time.

E. Measurement:

1. Concentration measurements shall not be taken until the sample acquisition probe has been exposed to the stack gas for at least 150% of the response time. Measurements shall be taken in triplicate.
2. If water vapor is not removed prior to measurement, the absolute humidity in the gas stream must be determined so that the gas concentrations may be reported on a dry basis. If water vapor creates an interference with the measurement of any component, then the water vapor must be removed from the gas stream prior to concentration measurements.
3. The concentration of NO_x is calculated as the sum of the volumetric concentrations of both NO and NO₂. The portable analyzer used to detect NO_x must either convert NO₂ to NO and measure NO, convert NO to NO₂ and measure NO₂, or measure both NO and NO₂. An NO₂ to NO converter is not necessary if data are presented to demonstrate that the NO₂ portion of the exhaust gas is less than 5 percent of the total NO_x concentration.