Community contaminant prevention - airborne releases

EA9 | Possible point

Glossary

Intent

To prevent contaminant releases to air from products of combustion.

Requirements

Meet California South Coast Air Quality Management District standards for all products of combustion. Do not exceed the emission limits below for products of combustion, as outlined in the following California South Coast Air Quality Management District Rules:

- 1110.2 (Amended February 1, 2008), Emissions from Gaseous- and Liquid-Fueled Internal Combustion Engines
- 1111 (Amended July 8, 1983), NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces
- 1121 (Amended September 3, 2004) Control of Nitrogen Oxides from Residential Type, Natural Gas-Fired Water Heaters
- 1146 (Amended November 17, 2000), Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters
- 1146.1 (Amended May 13, 1994), Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters
- 1146.2 (Amended May 5, 2006), Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters

Equipment Types	Oxides of Nitrogen (NOx)	Volatile Organic Compounds (VOCs)	Carbon Monoxide (CO)
Gaseous and Liquid-Fueled Stationary Engines – Emergency or Standby Power Uses	11[1]ppm	30[1,2]ppm	70[1]ppm
Gaseous and Liquid-Fueled Stationary Engines – Non-Emergency and Non-Standby Power Uses5	0.070 lbs/MW-hr[3] (0.032 kg/MW-hr[3])	0.10 lbs/MW-hr[4] (0.045 kg//MW-hr[4])	0.20 lbs/MW-hr[3] (0.09 kg//MW-hr[3])
Landfill and Digestor Gas-Fired Stationary Engines	bhp>500: ppm = 36 x ECF[1,6]	Landfill Gas: 40[1,2] Digestor Gas: 250 x ECF[1,2,6]	2,000 ppm[1]
Natural-Gas-Fired, Fan-Type Central Furnaces (heating only with input rate less than 175,000 BTUH (51.24 kW), or heating and cooling with cooling rate of less than 65,000 BTUH (19.03 kW))	40 nanograms (calculated as NO_2) per joule of useful heat delivered to the heated space		
Residential Type, Natural Gas-Fired Water Heaters	15 ppm[7] or 10 nanograms (calculated as NO_2) per joule of heat output		
Boilers, Steam Generators, Water Heaters, and Process Heaters (rated heat input capacity less than or equal to 400,000 BTU per hour (117.12 kW))	55 ppm[7] or 40 nanograms (calculated as NO_2) per joule of heat output		
Boilers, Steam Generators, Water Heaters and Process Heaters rated heat input capacity greater than 400,000 BTU per hour (117.12 kW) and less than or equal to 2,000,000 BTU per hour (585.62 kW))	20 ppm7 or 40 nanograms (calculated as NO2) per joule of heat output		400 ppm
Boilers, Steam Generators, Water Heaters, and Process Heaters (rated heat input capacity greater than 2,000,000 BTU per hour (585.62 kW) and less than 5,000,000 BTU per hour (1,464.05 kW))	30 ppm[7] or 0.037 pounds per million BTU of heat input		400 ppm[7]
Boilers, Steam Generators, Water Heaters, and Process Heaters (rated heat input capacity greater than or equal to 5,000,000 BTU per hour (1,464.05 kW))[8,9]	30 ppm[7] or 0.036 pounds per million BTU of heat input		400 ppm[7]

Notes:
1 Parts per million by volume, corrected to 15% oxygen on a dry basis and averaged over 15 minutes.
2 Measured as carbon.
3 The averaging time of the emission standards is 15 minutes.
4 Mass emissions of VOC shall be calculated using a ratio of 16.04 pounds of VOC per lb-mole (7.28 kg of VOC per kilomole) of carbon.
5 Emissions limits shall be subject to adjustment for engines that produce combined heat and electrical power (see Rule 1110.2)
6 ECF is the efficiency correction factor.
7 Parts per million by volume, corrected to 3% oxygen on a dry basis.
8 Capacity Factor greater than 25%.
9 Units with a heat input capacity greater than 40 million BTU per hour (11,712.42 kW) and an annual heat input greater than 200 x 109 BTU per year shall have a continuous in-stack nitrogen oxides monitor or equivalent verification system in compliance with 40 CFR part 60 Appendix B Specification 2.

For engines of 1,000 bhp and greater, install, operate and maintain in calibration a NOX Continuous Emission Monitoring System (CEMS) with data gathering and retrieval capability.