

**REGULATION 13
CLIMATE POLLUTANTS
RULE 5
PETROLEUM REFINERY HYDROGEN PLANTS**

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**REGULATION 13
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(Adopted _____, 2020____)

13-5-100 GENERAL

- 13-5-101 Description:** The purpose of this Rule is to limit total organic compounds (TOC) emissions—which includes both methane and organic compounds—from petroleum refinery hydrogen plants.
- 13-5-102 Applicability:** This Rule applies to petroleum refinery hydrogen plants including third parties that produce hydrogen in hydrogen plants and other refinery hydrogen producing operations that are integrated into a petroleum refinery's processes.
- 13-5-103 Exemption, Specific Operations:** Specific operations of methane and/or organic compound emissions already subject to methane and/or organic compound emission requirements in Regulation 8: Organic Compounds, Rule 5: Storage of Organic Liquids; Regulation 8: Organic Compounds, Rule 10: Process Vessel Depressurization, Regulation 8: Organic Compounds, Rule 18: Equipment Leaks; and Regulation 8: Organic Compounds, Rule 28: Episodic Releases From Pressure Relief Devices at Petroleum Refineries and Chemical Plants shall be exempt from this Rule.
- 13-5-104 Limited Exemption, Deaerator Vents and Carbon Dioxide Scrubbing Vents:** Subject to the requirements of Section 13-5-303 that specify when this limited exemption will no longer apply, deaerator vents and carbon dioxide scrubbing vents shall be exempt from the requirements in Section 13-5-300 of this Rule.

13-5-200 DEFINITIONS

- 13-5-201 Atmospheric Vent:** An opening where a gas stream is continuously or periodically discharged during hydrogen plant operations. Atmospheric vents include openings where gas streams are discharged directly to the atmosphere or are discharged to the atmosphere after being routed to a control device or a gas recovery device. For the purposes of this rule, an atmospheric vent may be physically located in any portion of a Petroleum Refinery Hydrogen Plant. For the purposes of this Rule, pressure relief devices, as defined in Regulation 8: Organic Compounds; Rule 28: Episodic Releases from Pressure Relief Devices at Petroleum Refineries and Chemical Plants, Section 8-28-210 are not considered atmospheric vents when operated as designed and properly maintained.
- 13-5-202 Carbon Dioxide Scrubbing Vent:** The atmospheric vent from a device or process unit that adsorbs carbon dioxide from a gas stream.
- 13-5-203 Deaerator Vent:** The atmospheric vent from a device that removes oxygen and other dissolved gases from liquids.
- 13-5-204 Emergency:** A condition at a petroleum refinery beyond the reasonable control of the owner or operator requiring immediate corrective action to restore normal and safe operation that is caused by a sudden, infrequent and not reasonably preventable equipment failure, natural disaster, act of war or terrorism or external power curtailment,

excluding power curtailment due to an interruptible power service agreement from a utility.

- 13-5-205 Existing Petroleum Refinery Hydrogen Plant.** A petroleum refinery hydrogen plant built and operating prior to the adoption of this Rule.
- 13-5-206 Gas Recovery System:** Equipment that captures gases from plant operations during any operations including startups, shutdowns and malfunctions.
- 13-5-207 Hydrogen Plant:** For the purposes of this rule, a petroleum refinery hydrogen plant is a comprehensive petroleum refinery hydrogen operation including, but not limited to, all operations that produce refinery hydrogen, the hydrogen distribution system, including all compression operations, the hydrogen delivery system that delivers hydrogen streams to the process unit consumers, and any disposed, recycled or spent hydrogen streams (or “tail gas”) from the hydrogen consuming process units.
- 13-5-208 Malfunction:** As defined in Regulation 1: General Provisions and Definitions, Section 1-208. [Any unforeseeable failure or malfunction of any air pollution control equipment or operating equipment which causes a violation of any emission standard or limitation prescribed by District, California or federal rules, regulations or laws, where such failure or malfunction:
- 208.1 Is not the result of intent, neglect, or disregard of any air pollution control law, rule or regulation;
 - 208.2 Is not the result of improper maintenance;
 - 208.3 Does not constitute a nuisance;
 - 208.4 Is not an excessively recurrent breakdown of the same equipment.]
- 13-5-209 New Petroleum Refinery Hydrogen Plant.** A hydrogen plant for which construction was initiated after the adoption of this rule. For the purposes of this rule, the initiation of construction is considered the date the APCO receives an application for an Authority to Construct.
- 13-5-210 Organic Compound:** As defined in Regulation 1: General Provisions and Definitions, Section 1-233. [Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate.]
- 13-5-211 Owner or Operator:** A representative of the facility or corporation who possesses sufficient authority to take actions required for compliance with this Rule.
- 13-5-212 Petroleum Refinery:** As defined in Regulation 12: Miscellaneous Standards of Performance; Rule 12 Petroleum Refining Emissions Tracking, Section 12-15-210. [An establishment that is located on one or more contiguous or adjacent properties that processes crude oil to produce more usable products such as gasoline, diesel fuel, aviation fuel, lubricating oils, asphalt or petrochemical feedstocks. Petroleum Refinery processes include separation processes (e.g., atmospheric or vacuum distillation, and light ends recovery), petroleum conversion processes (e.g., cracking, reforming, alkylation, polymerization, isomerization, coking, and visbreaking), petroleum treating processes (e.g., hydrodesulfurization, hydrotreating, chemical sweetening, acid gas removal, and Bay Area Air Quality Management District December 4, 2019 12-15-4 deasphalting), feedstock and product handling (e.g., storage, crude oil blending, non-crude oil feedstock blending, product blending, loading, and unloading), and auxiliary facilities (e.g., boilers, waste water treatment, hydrogen production, sulfur recovery plant, cooling towers, blowdown systems, compressor engines, and power plants).]
- 13-5-213 Refinery Fuel Gas System:** A series of connected piping, valves and control systems from various process units that gather gaseous streams generated by refinery operations, and transports, treats and distributes the collected gaseous streams at suitable compositions and pressures for use as fuel in equipment such as boilers,

furnaces, turbines or other combustion devices. Refinery fuel gas systems include gaseous streams that are collected separately, including flare gas recovery systems, or are otherwise routed to flares, oxidizers, or other abatement devices for destruction. Gaseous streams may contain a blend of methane, natural gas, light hydrocarbons, hydrogen and other miscellaneous organic, inorganic or inert gaseous species.

13-5-214 Shutdown: As defined in Regulation 12 Miscellaneous Standards of Performance; Rule 12 Flares at Petroleum Refineries, Section 12-12-210. [The intentional or unexpected cessation of a petroleum refining process unit or a unit operation within a petroleum refining process unit due to lack of feedstock or the need to conduct periodic maintenance, replacement of equipment, repair or other operational requirements. A process unit includes subsets and components of the unit operation. Subsets and components include but are not limited to reactors, heaters, vessels, columns, towers, pumps, compressors, exchangers, accumulators, valves, flanges, sample stations, pipelines or sections of pipelines.]

13-5-215 Startup: As defined in Regulation 12 Miscellaneous Standards of Performance; Rule 12 Flares at Petroleum Refineries, Section 211. [The initiation of or preparation for operation of a petroleum refining process unit. A process unit includes subsets and components of the unit operation. Subsets and components include but are not limited to reactors, heaters, vessels, columns, towers, pumps, compressors and exchangers.]

13-5-216 Total Organic Compound (TOC): The concentration of organic compounds and methane as indicated by a hydrocarbon analyzer as specified by Section 13-5-601. [Source: Rule 8-18: Equipment Leaks, Section 219]

13-5-300 STANDARDS

13-5-301 Emission Limits for Existing Petroleum Refinery Hydrogen Plants: Effective [five years from the date of adoption], an owner or operator of a petroleum refinery hydrogen plant shall not vent to the atmosphere any emissions containing more than 6.8 kilograms (15 pounds) per day and 300 parts per million by volume (ppmv) TOC, as methane, on a dry basis determined as specified in Section 13-5-601. A source shall be considered in violation of this section if the TOC emissions measured by any of the referenced test methods exceed the standards of this Rule.

13-5-302 Emission Limits for New Petroleum Refinery Hydrogen Plants: An owner or operator of a petroleum refinery hydrogen plant built after the adoption of this rule shall not vent to atmosphere methane waste streams containing more than 0.01 percent (100 ppmv) TOC, as methane by volume on a dry basis determined as specified in Section 13-5-601.

13-5-303 Emission Limits for Deaerator Vents and Carbon Dioxide Scrubbing Vents: Effective [immediately from the date of adoption], if after monitoring TOC emissions in pounds per day and parts per million by volume (ppmv), as methane, on a dry basis, for a period of one year, as required in Section 13-5-502, it is determined that a deaerator vent or carbon dioxide scrubbing vent is not meeting the emission requirements in Section 13-5-301, such vents shall be subject to the requirements in Section 13-5-301. However, any such vents shall not be required to meet the requirements in Section 13-5-301 until five years after the completion of the monitoring period.

13-5-400 ADMINISTRATIVE REQUIREMENTS:

13-5-401 Control Device Requirements for Existing Petroleum Refinery Hydrogen Plants: The owner or operator of an existing petroleum refinery hydrogen plant shall comply with the following requirements provided the hydrogen plant doesn't already comply with the requirements of Section 13-5-301:

- 401.1 Within two calendar years of adoption of this rule, submit a permit application to the APCO for an Authority to Construct and Permit to Operate of a TOC control device to comply with Section 13-5-301 requirements.
- 401.2 Upon receiving an Authority to Construct from the Air District, the owner or operator of a petroleum refinery hydrogen plant shall commence construction of the control device during the next scheduled turnaround; however, such construction shall begin no later than four years after the adoption of this rule.
- 401.3 Within one calendar year of commencing construction of the control device, the owner or operator shall commence operation of the control device to comply with Section 13-5-301 requirements.

13-5-402 Reporting Requirements for Total Organic Compounds Vented from Existing Hydrogen Plants: Should an existing petroleum refinery hydrogen plant with a fully operational TOC control device vent TOC to atmosphere in excess of the standards required by Section 13-5-301 after a control device system becomes operational, the owner or operator shall do the following:

- 402.1 Notify the APCO of the venting occurrence within three business days of the beginning of the occurrence if the TOC emissions exceed limits in Section 13-5-301. The owner or operator shall comply with the TOC emission limits within three business days upon discovery of the venting occurrence.
- 402.2 If notification to the APCO is required pursuant to Section 13-5-402.1, the owner or operator shall report the following information to the APCO: the cause of the occurrence; the date and time of the occurrence; data for the duration of the occurrence; the make, model and type of control device; the operating parameters of the control device including temperature, pressure, flow rate, and concentrations of each constituent in the gaseous stream; and the mass emissions for each constituent in the gaseous stream including TOC. The report is due within ten business days of the conclusion of the TOC gas venting occurrence.

13-5-403 Reporting Requirements for Total Organic Compounds Vented from a New Hydrogen Plant: Should a new petroleum refinery hydrogen plant vent methane gas to atmosphere in excess of the standards required by Section 13-5-302, the owner shall do the following:

- 403.1 Notify the APCO of the venting occurrence within three business days of the beginning of the occurrence. The owner or operator shall comply with the methane emission requirements in Section 13-5-302 within three business days upon discovery of the venting occurrence.
- 403.2 If notification to the APCO is required pursuant to Section 13-5-403.1, the owner or operator shall report the occurrence to the APCO as follows: the cause of the occurrence; the date and time of the occurrence; data for the duration of the occurrence; the make and model and type of control device; the operating parameters of the control device including temperature, pressure, flow rate, and concentrations of each constituent in the gaseous stream; and the mass emissions for each constituent in the gaseous stream including methane and organic compounds combined in total pounds per event. The report is due within ten business days of the conclusion of the hydrogen gas venting occurrence.

13-5-500 MONITORING AND RECORDS

13-5-501 Monitoring Requirements, General: Effective within 12 calendar months from the adoption of this rule, the owner or operator of any petroleum refinery hydrogen plant shall:

- 501.1 Monitor on a daily basis, TOC emissions in total lbs per day and parts per million by volume (ppmv) TOC, as methane, on a dry basis from hydrogen plant atmospheric vents.
- 501.2 Continuously record data of gas composition, temperature, pressure, flow rate and volume in million standard cubic feet per day.

501.3 Convert TOC emissions data into mass emissions, in pounds per day, for both methane and organic compound emissions.

501.4 By the next turnaround and no later than five years, the owner or operator of any petroleum refinery hydrogen plant shall install, operate and maintain in good working order, a sampling port for the purpose of testing emissions from the atmospheric vents. The sampling port location is subject to approval from the APCO.

All records shall be retained for five years and shall be submitted to the APCO upon request.

13-5-502 Monitoring Requirements, Deaerator Vents and Carbon Dioxide Scrubbing Vents: Effective within 12 calendar months from the adoption of this rule, the owner or operator of any petroleum refinery hydrogen plant that operates deaerators or carbon dioxide scrubbing equipment shall:

502.1 Install, operate and maintain in good working order, a gas flowrate meter equipped with a readout and recorder, in deaerator atmospheric vents and carbon dioxide scrubbing vents. Flowrate meter and recorder location is subject to APCO approval.

502.2 Monitor TOC emissions in parts per million by volume (ppmv) TOC, as methane, on a dry basis from deaerator vents and carbon dioxide scrubbing vents on a quarterly basis. Monitoring methodology is subject to APCO approval.

502.3 Continuously record data of gas composition, temperature, pressure, flow rate and volume in million standard cubic feet per day.

502.4 Convert TOC emissions data from deaerator vents and carbon dioxide scrubbing vents to mass emissions in pounds per day for both methane and organic compounds.

502.5 By the next turnaround and no later than five years, the owner or operator of any petroleum refinery hydrogen plant that operates deaerators or carbon dioxide scrubbing equipment shall install, operate and maintain in good working order, a sampling port for the purpose of testing emissions from the atmospheric vents. The sampling port location is subject to approval from the APCO.

All records shall be retained for five years and shall be submitted to the APCO upon request.

13-5-503 Recordkeeping Requirements: The owner or operator of any petroleum refinery hydrogen plant shall keep records of all petroleum refinery hydrogen plant atmospheric venting during normal operating conditions and venting due to startups, shutdowns, malfunctions and emergencies. Records shall include temperature; TOC mass emissions of both methane and organic compounds, in pounds per day; parts per million emissions by volume (ppmv) TOC, as methane, on a dry basis; venting duration; gas composition; volume vented in million standard cubic feet per day (mmscfd); and for any startup, shutdown, malfunction or emergency, the reason for such startup, shutdown, malfunction or emergency.

All records shall be retained for five years and shall be submitted to the APCO upon request.

13-5-600 MANUAL OF PROCEDURES

13-5-601 Determination of Compliance: Emissions of TOC as specified in Section 13-5-301 shall be measured as prescribed by any of the following methods:

601.1 EPA Method 25 or 25A;

601.2 SCAQMD Method 25.3 (modified as approved by APCO) or any other method approved by the APCO.

13-5-602 Monitoring Deaerator Emissions and Carbon Dioxide Scrubbing Emissions: Owners or operators required to comply with Section 13-5-501 of this rule shall use one

of the following prescribed methods to monitor methane emissions from hydrogen plant deaerator atmospheric vents and carbon dioxide scrubbing atmospheric vents:

602.1 EPA Method 25 or 25A;

602.2 SCAQMD Method 25.3 (modified as approved by APCO) or any other method approved by the APCO.