

SAN LUIS OBISPO COUNTY AIR POLLUTION CONTROL DISTRICT

**RULE 417 - CONTROL OF FUGITIVE EMISSIONS OF VOLATILE ORGANIC COMPOUNDS**

*(Adopted 2/9/93)*

- A. APPLICABILITY. The provisions of this Rule are applicable to refineries, chemical plants, oil and gas production fields, natural gas processing plants, offshore oil production platforms, and pipeline transfer stations to control fugitive emissions of volatile organic compounds (VOC) from components including but not limited to valves, fittings, pumps, compressors, pressure relief devices, diaphragms, hatches, sight-glasses, meters, open-ended lines, seal packing, and sealing mechanisms.
- B. DEFINITIONS. For the purposes of this Rule, the following definitions shall apply:
1. "APCO": The Air Pollution Control Officer or his/her designee from the Air Pollution Control District.
  2. "Background": A reading expressed as methane on a portable hydrocarbon detection instrument which is taken at least three meters upwind from any components to be inspected and which is not influenced by any specific emission point.
  3. "Chemical Plant": Any facility engaged in producing organic or inorganic chemicals, and/or manufacturing products by chemical processes. Any facility or operation that has 282 as the first three digits in its four digit Standard Industrial Classification (SIC) Code, as defined in the Standard Industrial Classification Manual, is included.
  4. "Closed-vent System": A system that is not open to the atmosphere and is composed of piping, connections, and, if necessary, flow inducing devices that transport gas or vapor from a piece or pieces of equipment to a vapor recovery or disposal system.
  5. "Commercial Natural Gas": A gaseous fuel purchased or transported under a Federal Energy Regulatory Commission or a California Public Utility Commission jurisdictional tariff.
  6. "Component": Any valve, fitting, pump, compressor, pressure relief device, hatch, sight-glass, meter, or open-ended lines. They are further classified as:
    - a. Major component is any 4-inch or larger valve, any 5-hp or larger pump, any compressor, and any 4-inch or larger pressure relief device.
    - b. Minor component is any component which is not a major component.
    - c. Critical component is any component which would require the shutdown of the process unit if these components were shut down. These components

must be identified by the source and approved by the APCO.

7. "Compressor": A device used to compress gasses and/or vapors.
8. "Exempt Compound": A compound identified as methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, 1,1,1-trichloroethane, methylene chloride, trichlorofluoromethane (CFC-11), dichlorodifluoromethane (CFC-12), chlorodifluoromethane (CFC-22), trifluoromethane (CFC-23), trichlorotrifluoroethane (CFC-113), dichlorotetrafluoroethane (CFC-114), chloropentafluoroethane (CFC-115), dichlorotrifluoroethane (HCFC-123), 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124), pentafluoroethane (HFC-125), 1,1,2,2-tetrafluoroethane (HFC-134), tetrafluoroethane (HFC-134a), dichlorofluoroethane (HCFC-141b), chlorodifluoroethane (HCFC-142b), 1,1,1-trifluoroethane (HFC-143a), and 1,1-difluoroethane (HFC-152a), and the following four classes of perfluorocarbon (PFC) compounds:
  - a. cyclic, branched, or linear, completely fluorinated alkanes;
  - b. cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;
  - c. cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and
  - d. saturated perfluorocarbons containing sulfur and with sulfur bonds only to carbon and fluorine atoms.

Perfluorocarbon compounds shall be assumed to be absent from a product or process unless a manufacturer or facility operator identifies the specific compounds and the amounts present in the product or process and provides a validated test method which can be used to quantify and identify these compounds.
9. "Fitting": A component used to attach or connect pipes or piping details, including but not limited to, flanges and threaded connections.
10. "Fugitive Emissions": Any hydrocarbon emissions that are released into the atmosphere from any point other than a stack, chimney, vent, or other functionally equivalent opening.
11. "Gas Processing Plant": A facility engaged in the separation of liquids from field gas and/or fractionation of the liquids into gaseous products, such as ethane, propane, butane, and natural gasoline. Excluded from the definition are compressor stations, dehydration units, sweetening units, field treatment, underground storage facilities, liquified natural gas units, and field gas gathering systems unless these facilities are located at a gas processing plant.
12. "Hatch": Any covered opening system that provides access to a tank or container.

13. "Inaccessible Component": Any component located over fifteen (15) feet above ground when access is required from the ground; or any component located over six (6) feet away from a platform when access is required from the platform.
14. "Leak Minimization": Tightening or adjusting a component for the purpose of stopping or reducing leakage to the atmosphere.
15. "Major Gas Leak": The detection of total gaseous hydrocarbons for any component in excess of 10,000 ppm<sub>v</sub> as methane above background measured according to test procedure in Subsection E.1.
16. "Major Liquid Leak": A visible mist or continuous flow of liquid.
17. "Minor Gas Leak": The detection of total gaseous hydrocarbons for any component in excess of 1,000 ppm<sub>v</sub> but not more than 10,000 ppm<sub>v</sub> as methane above background measured according to test procedure in Subsection E.1.
18. "Minor Liquid Leak": Any liquid leak which is not a major leak and drips liquid organic compounds at the rate of more than three drops per minute or 1 cubic centimeter per minute.
19. "Offshore Oil Production Platform": A unit used in the production of oil and gas that is located offshore within three (3) miles of the shoreline.
20. "Oil and Gas Production Field": A facility at which crude petroleum and natural gas production and handling are conducted, as defined by Standard Industrial Classification code number 1311, Crude Petroleum and Natural Gas.
21. "Pipeline Transfer Station": A facility which handles the transfer or storage of petroleum products or crude petroleum in pipelines.
22. "Platform": Any raised, permanent, horizontal surface that provides access to components.
23. "Polished Rod Stuffing Box (PRSB)": A packing device used on oil and gas production well-heads compressed around a reciprocating rod for the dual purpose of lubricating the polished rod and preventing fluid leaks.
24. "Pressure Relief Device (PRD)": A pressure relief valve or rupture disc.
25. "Pressure Relief Event": A release from a pressure release device resulting when the upstream static pressure reaches the setpoint of the pressure release device. A pressure relief event is not a leak.
26. "Pressure Relief Valve (PRV)": A valve which is automatically actuated by upstream static pressure and used for safety or emergency purposes.

27. "Process Unit": A manufacturing process which is independent of other processes and is continuous when supplied with a constant feed of raw material and sufficient storage facilities for the final product.
28. "Process Unit Shutdown": A work practice or operational procedure that stops production from a process unit or part of a process unit. An unscheduled work practice or operational procedure that stops production from a process unit or part of a process unit for less than twenty-four (24) hours is not a process unit shutdown. The use of spare equipment and technically feasible bypassing of equipment without stopping production are not process unit shutdowns.
29. "Pump": A device used to provide energy for transferring a liquid or gas/liquid mixture through a piping system from a source to a receiver.
30. "Refinery": A facility that processes petroleum, as defined by the Standard Industrial Classification Code number 2911, Petroleum Refining.
31. "Repair": Any corrective action for the purpose of eliminating leaks.
32. "Rupture Disc": A diaphragm held between flanges for the purpose of isolating a volatile organic compound from the atmosphere or from a downstream pressure relief valve.
33. "Seal": Packing gland or other material compressed around a moving rod, shaft, or stem to prevent the escape of gas or liquid.
34. "Unmanned Facility": A remote facility which has no permanent sited personnel and is greater than five (5) miles from the closest manned facility, operated by the same company or corporation.
35. "Unsafe to Monitor Components": Components installed at locations that would prevent the safe inspection or repair of components as defined by OSHA standards, the provisions for worker safety found in 29CFR1910, or a written owner-supplied criteria, approved by the APCO.
36. "Valve": A device that regulates or isolates the fluid flow in a pipe, tube, or conduit by means of an external actuator.
37. "Vapor Control System": Any system not open to the atmosphere intended to collect and reduce volatile organic compound emissions to the atmosphere and is composed of piping, connections, and, if necessary, flow-inducing devices that transport gas or vapor from a piece or pieces of equipment to a vapor recovery or disposal system.
38. "Volatile Organic Compound (VOC)": Any compound containing at least one atom of carbon, except exempt compounds.

### C. EXEMPTIONS

1. The provisions of Subsection D.1.b. shall not apply to pressure relief valves, pumps, and compressors that are equipped with a closed-vent system capable of capturing and transporting any leak to a vapor control system.
2. The provisions of Subsection D.1 shall not apply to the following cases, where the person seeking the exemption shall supply the proof of the applicable criteria to the satisfaction of the APCO:
  - a. Components exclusively handling commercial natural gas.
  - b. Components buried below ground.
  - c. Components, except those at gas processing plants, exclusively handling fluids with a volatile organic compound concentration of 10 percent by weight or less, as determined according to test methods specified in Subsection E.2; or components exclusively handling liquids, if the weight percent evaporated is 10 percent or less at 150EC (302EF), as determined by test methods described in Subsection E.4.
  - d. Components at oil and gas production facilities handling liquids of less than 30 degree API gravity which are located after the point of primary separation of oil and gas provided the separation vessel is equipped with a vapor recovery system and the pressure of the fluid is at atmospheric.
  - e. Components incorporated in lines operating exclusively under negative pressure.
3. One-half inch and smaller fittings which have been demonstrated to the APCO to be leak-free based on an initial inspection in accordance with EPA Reference Method 21.
4. The provisions of this Rule shall not apply to any facility subject to and in compliance with Subpart GGG, Code of Federal Regulations, Title 40, Chapter I, Part 60. The person seeking this exemption shall supply proof of compliance with Subpart GGG and a showing that their compliance program is essentially equivalent to or more stringent than the provisions of Section D of this Rule to the satisfaction of the APCO.

### D. REQUIREMENTS. Effective on February 9, 1994, any person who operates any facility that is subject to this Rule shall comply with the following requirements:

1. Inspection Frequencies.
  - a. i. A leak identified by Subsection D.1 shall be any liquid leak, a visual or audible vapor leak, the presence of bubbles using soap solutions, or a leak identified by the use of a vapor analyzer.

- ii. Any vapor leak which is identified during the inspection of components shall be measured to quantify emission concentrations according to EPA Reference Method 21.
- b.
  - i. All pumps, compressors, and PRVs shall be inspected for leaks once during every eight-hour period or, with written approval of the APCO, once during every operating shift, except for components located at manned and unmanned oil and gas production fields and pipeline transfer stations.
  - ii. All pumps, compressors, PRVs, and PRSBs located at manned oil and gas production fields and pipeline transfer stations shall be inspected for leaks once per day and components located at unmanned facilities shall be inspected once per week.
- c. All components shall be inspected quarterly according to EPA Method 21, except as provided in Subsections D.1.d through D.1.f.
- d.
  - i. All inaccessible components shall be inspected annually according to EPA Method 21.
  - ii. All fittings shall be inspected for leaks according to EPA Method 21 immediately after being placed in service and semi-annually thereafter, except as provided in Subsection D.1.g.
- e. All critical and unsafe to monitor components shall be inspected in accordance with an inspection plan approved by the APCO.
- f. A pressure relief valve shall be inspected according to EPA Reference Method 21 within 3 calendar days after every pressure relief.
- g. The inspection frequency for components, except pumps, compressors, PRVs, and PRSBs, as required in Subsections D.1.c. and D.1.d., may change to an annual inspection, provided all of the following conditions are met:
  - i. All components at the facility have been successfully operated and maintained with no liquid leaks and no major gas leaks exceeding 0.5 percent of the total components inspected per inspection period for twelve consecutive months. For the purpose of Sections D.1.g and D.1.h leaks from PRSBs will not be included in the total count of leaking components.
  - ii. The above is substantiated by documentation and written approval obtained from the APCO.
- h. Any annual inspection frequency approved in Subsection D.1.g shall revert to the inspection frequencies specified in Subsections D.1.c and D.1.d should any liquid leaks and major gas leaks exceed 0.5 percent of the total

components inspected per inspection period.

- i. All leaking components shall be affixed with brightly colored, weatherproof tags showing the date of leak detection. The tags shall remain in place until the components are repaired and reinspected.
2. Equipment Repair. The requirements of this Subsection shall apply in all situations when a leak is detected including those leaks detected by the APCO or his designee and identified to the operator.
    - a. All noncritical components shall be successfully repaired or replaced within the following time periods after detection of the leak according to Table 1, Repair Periods.

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TABLE 1. REPAIR PERIODS

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<u>Type of Leak</u>	<u>Time Period<sup>a</sup></u>	
	<u>Onshore</u>	<u>Offshore</u>
Minor Gas Leak	14 Days	14
Major Gas Leak	5 Days	5
Major Gas Leak over 50,000 ppm	1 Day <sup>b,c</sup>	5
Major Liquid Leak	1 Day <sup>b,c</sup>	5
Minor Liquid Leak	2 Day <sup>b</sup>	5

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<sup>a</sup> Day means a 24 hour period from the time of leak detection.

<sup>b</sup> Unless prohibited by California Occupation Safety and Health Administration (Cal OSHA) standards or 29 CFR 1910.

<sup>c</sup> Components located at oil and gas production facilities or pipeline transfer stations shall be repaired within two (2) days.

- b. Leaks from components shall be immediately minimized to the extent possible to stop or reduce leakage to the atmosphere.
  - c. All leaks from critical and unsafe to monitor components shall be minimized to the extent possible and shall be replaced with Best Available Control Technology (BACT) equipment as determined in accordance with District Rule 204, Requirements, within one year or during the next process unit shutdown, not to exceed two (2) years.
3. Any repaired or replaced component shall be re-inspected in accordance with EPA Method 21 by the operator within 30 days of the repair or replacement.

4. A component or part which incurs five (5) repair actions for a major gas or liquid leak within a continuous twelve-month period shall be replaced with Best Available Control Technology (BACT) equipment as determined in accordance with District Rule 204, Requirements.
5. Open-ended lines and valves located at the end of lines shall be sealed with a blind flange, plug, cap, or a second closed valve at all times except during operation. Operation includes draining or degassing operations, connection of temporary process equipment, sampling of process streams, emergency venting, and other normal operational needs.
6. Hatches shall be closed at all times except during sampling, adding process material, or attended maintenance operations.
7. Equipment Identification
  - a. All major and critical components shall be physically identified (clearly and visibly) for inspection, repair, replacement, and recordkeeping purposes.
  - b. All major, critical, inaccessible, and unsafe to monitor components except fittings shall be clearly identified in diagrams for inspection, repair, replacement, and recordkeeping purposes as approved by the APCO.

#### E. TEST METHODS

1. Measurements of total gaseous hydrocarbon leak concentrations shall be conducted according to EPA Reference Method 21. The analyzer shall be calibrated with methane.
2. The volatile organic compound content of fluids shall be determined using ASTM Methods E 168-88, E 169-87, or E 260-85.
3. Determination of exempt compounds shall be performed in accordance with ASTM D 4457-85. For exempt compounds where no reference test method is available, a facility requesting the exemption shall provide appropriate test methods approved by the APCO and the U.S. Environmental Protection Agency.
4. Determination of evaporated compounds of liquids shall be performed in accordance with ASTM D 86-82.
5. Determination of the API gravity of crude oil shall be performed in accordance with ASTM Method D 287.

#### F. RECORDKEEPING

1. Each facility operator shall maintain an up-to-date inspection log containing, at a minimum, the following:
  - a. Name, location, type of components, and description of any unit where



leaking components are found.

- b. Date of leak detection, emission level (ppm<sub>v</sub>) of leak, and method of leak detection.
  - c. Date and emission level of re-check after leak is repaired.
  - d. Total number of components inspected, and total number and percentage of leaking components found by component types.
2. Records of leaks detected by a quarterly or annual operator inspection, and each subsequent repair and reinspection, shall be submitted to the APCO upon request.
  3. All records of operator inspection and repair shall be maintained at the facility for the previous two (2) year period and made available to the District upon request.
  4. On or before February 1 of each year the operator shall submit to the APCO a report on the previous years inspection and maintenance activities which:
    - a. Summarizes the inspection log entries, and
    - b. Lists all leaking components identified that were not repaired within fifteen (15) days and all leaking components awaiting a unit turnaround for repairs.

#### G. COMPLIANCE SCHEDULE

1. An inspection and maintenance plan for all major, critical, inaccessible, and unsafe to monitor components shall be submitted to the APCO for approval by August 9, 1993. At a minimum, the plan shall include component identification information to ensure:
  - a. that all major and critical components are physically identified, clearly and visibly, for inspection, repair, replacement, and recordkeeping purposes
  - b. that all major, critical, inaccessible, and unsafe to monitor components, except fittings, are clearly identified in diagrams for inspection, repair, replacement, and recordkeeping purposes, and
  - c. that the APCO is notified in writing of any changes in the identification, removal, replacement, or modification of a major component.
2. No later than August 9, 1993, a list of all critical and unsafe to monitor components shall be submitted to the APCO for approval. All changes to the list must be approved by the APCO.
3. No later than February 9, 1994, all facilities shall implement their inspection and maintenance plan and begin inspections in accordance with Section D.
4. The inspection and maintenance plan shall be updated annually, if changes are

made, and submitted to the APCO for approval on or before February 1 of each year. The APCO shall be notified in writing if no changes to the plan are to be submitted.