

VENTURA COUNTY AIR POLLUTION CONTROL DISTRICT

**RULE 74.7 - FUGITIVE EMISSIONS OF REACTIVE ORGANIC COMPOUNDS (ROC)  
AT PETROLEUM REFINERIES AND CHEMICAL PLANTS**

*(Adopted 5/29/79, Revised 7/3/84, 1/10/89, 10/10/95)*

A. Applicability

The following provisions shall apply to any owner or operator of a chemical plant or a petroleum refinery, as defined in Subsections L.5 and L.26, respectively.

B. Identification Requirements

By April 10, 1996, the owner or operator shall visibly and clearly identify all major and critical components that service gases or liquids that contain any ROC. This identification, which is for inspection, repair, replacement, and recordkeeping purposes, shall consist of labels, tags, or other such system approved by the APCO in writing that enables the District or the operator to locate and identify each individual component.

C. Operation Requirements

1. No person shall use any component if such component is emitting a major gas leak or any major or minor liquid leak. Emissions from any component that has been tagged by the operator (in accordance with Subsection D.4) for repair or that has been repaired and is awaiting reinspection shall not be in violation of this subsection.
2. Open-ended Valves: All open-ended valves shall be equipped with a cap, blind flange, plug, or second closed valve that is attached to the open-ended valve to seal the open end at all times, except during any operations requiring process fluid flow through the open-ended line. If a second closed valve is used, the process side valve shall be closed first, after the completion of any operations requiring flow through the open-ended valve.
3. Sampling Systems: No owner or operator shall cause a major liquid leak to occur while sampling or collecting process fluid. Each sampling system shall collect the purged process fluid for recycle or disposal. Sampling of process fluids into containers shall not be considered a major liquid leak.
4. Hatches: Hatches shall be closed at all times, except during sampling, adding of process materials or attended maintenance operations.
5. Effective April 10, 1996, any component leak that is vented through a stack or contained in any other confined air stream shall be transported in a closed-vent system to a vapor recovery system. The vapor disposal portion of the vapor recovery system shall consist of one of the following:

- a. A system which directs all vapors to a fuel gas system, a sales gas system, or a flare that combusts ROC.
- b. Any other system that processes all vapors and has a ROC vapor destruction or removal efficiency of at least 90 percent, by weight.

D. Inspection Requirements

- 1. The owner or operator shall:
  - a. Physically inspect all accessible operating pumps, compressors, and pressure relief devices (PRDs) in service for leaks and indications of leaks once during every eight-hour operating period or every operating shift, whichever is longer. Any gaseous leak that is identified during this inspection of components shall be measured by EPA Reference Method 21.
  - b. Inspect all PRDs at least quarterly for leaks using EPA Reference Method 21. The period between inspections shall not exceed 110 consecutive days.
  - c. Inspect all components, except PRDs, at least monthly for leaks according to EPA Reference Method 21.
  - d. Inspect all new, replaced or repaired fittings, including flanges and threaded connections, for leaks using EPA Reference Method 21:
    - 1) Immediately after being placed into service, or
    - 2) Within 30 days after being placed into service if a leak detection system that involves pressurization of the system with nitrogen, water or other inert substance, which has been approved in writing by the APCO, is used prior to the fitting being placed into service.
- 2. If a component is found to be not leaking any major gas leak or any major liquid leak for three consecutive monthly inspections using EPA Method 21, then the component shall be inspected not less than quarterly, except for flanges and threaded connections, which shall be inspected not less than annually. The inspection schedule for that component shall revert back to monthly when a subsequent major gas leak or major liquid leak from that component is detected.
- 3. If an operating pump is found to be not leaking any liquid leak for ten consecutive physical inspections, then the operating pump shall be physically inspected not less than weekly. The inspection schedule for that pump shall revert back to every eight-hour operating period or every operating shift, whichever is longer, when a subsequent liquid leak from that pump is detected.

4. Upon detection of a leaking component, a readily visible tag shall be affixed to that component. The tag shall remain in place until the leaking component is repaired, reinspected, and found in compliance with the requirements of this Rule.

If the leak is gaseous, the owner or operator shall include the following on the tag: date and time when the leak is detected; date and time when the leak is measured; and the hydrocarbon concentration (ppmv) using EPA Reference Method 21. This leak measurement shall be performed as soon as possible but no later than 24 hours after detection.

If the leak is liquid, the owner or operator shall include the following on the tag: date and time of leak detection; and whether the leak is minor or major.

E. Repair Requirements

1. The owner or operator shall immediately minimize all component leaks following detection.
2. The owner or operator shall successfully repair, replace, or eliminate all leaks from noncritical components within the time period in accordance with Table 1, Repair Periods. For gaseous leaks, the repair period shall start at the time of leak measurement. For liquid leaks, the repair period shall start at the time of leak detection.

Table 1, Repair Periods

Type of Leak	Period (days) <sup>a</sup>
Minor Gas Leak	14
Major Gas Leak	5
Major Gas Leak over 50,000 ppmv	1 <sup>b</sup>
Minor Liquid Leak	2 <sup>b</sup>
Major Liquid Leak	1

3. The owner or operator shall reduce the ROC concentration of any vapors being emitted from a PRD to a level of no more than 200 ppmv above background as soon as practicable, but no later than 3 days after any emergency release.
4. The owner or operator shall reinspect any repaired or replaced component using EPA Reference Method 21 within 30 days after the repair or replacement.
5. For major gas leaks or major liquid leaks from any critical compressor, pump, PRD or valve, the owner or operator shall replace or retrofit the leaking

<sup>a</sup> Day means a 24 hour period.

<sup>b</sup> Unless prohibited by state safety standards or 29 CFR 1910.

component with one of the control technology options listed in Table 2 or with Best Available Control Technology (BACT) equipment, as approved by the APCO in writing, within one year from the date of leak detection, or during the next critical process unit shutdown, whichever occurs first.

For minor gas leaks or minor liquid leaks from critical components, or for major gas leaks or major liquid leaks from critical components other than compressors, pumps, PRDs or valves, the owner or operator shall successfully repair or replace all leaking components within one year from leak detection or during the next critical process unit shutdown, whichever occurs first.

Within 72 hours of detecting a major gas leak or major liquid leak from a critical compressor, pump, PRD or valve, the operator shall notify the District of the leak(s) unless the operator has already complied with the repair/retrofit requirements of this subsection (E.5).

Table 2  
Component Control Technology Replacement/Retrofit Options

Component	Control Technology Options
Compressor:	<ol style="list-style-type: none"> <li>1. Enclose shaft seals and vent to vapor recovery/disposal.</li> <li>2. Oil film or gas seal.</li> <li>3. Face-type seal.</li> </ol>
Pump:	<ol style="list-style-type: none"> <li>1. Enclose shaft seals and vent to vapor recovery/disposal.</li> <li>2. Sealless pump.</li> <li>3. Double mechanical seals.</li> </ol>
PRD:	<ol style="list-style-type: none"> <li>1. Vent to vapor recovery/disposal.</li> <li>2. Rupture disc.</li> </ol>
Valve:	<ol style="list-style-type: none"> <li>1. Bellows seals.</li> <li>2. Graphite, PFE or PTFE stack chevron seal rings in a live-loaded packing gland.</li> </ol>

6. For a compressor, pump, PRD or valve that incurs 5 repair actions for a major gas or major liquid leak within a continuous 12 month period, the owner or operator shall replace or retrofit the leaking component with one of the control technology options listed in Table 2 or with BACT equipment, as approved by the APCO in writing, within one year from date of leak detection. The operator shall notify the District in writing within 72 hours once a compressor, pump, PRD or valve has had 5 repair actions for a major gas leak or major liquid leak in the previous 12 months unless the operator has already complied with the repair/retrofit requirements of this subsection (E.6).

F. Exemptions

1. A PRD may be exempted from the requirement of Subsection D.1.b if the PRD is inspected annually for leaks in accordance with EPA Reference Method 21 and the PRD is protected by a rupture disc and there are no leaks. The rupture disc shall be replaced no later than 3 days after a pressure release.
2. The identification, operation, and inspection requirements (Sections B, C, and D) shall not apply to the following:
  - a. Pumps, compressors, and PRDs that are equipped with a closed-vent system to a vapor recovery system. The vapor disposal portion of the vapor recovery system shall consist of one of the following:
    - 1) A system which directs all vapors to a fuel gas system, a sales gas system, or a flare that combusts ROC.
    - 2) Any other system that processes all vapors and has a ROC vapor destruction or removal efficiency of at least 90 percent, by weight.
  - b. Underground components.
  - c. One-half inch and smaller stainless steel tube fittings which have been inspected by the operator to be leak-free using EPA Method 21.
  - d. Components in vacuum service.
  - e. The following cases that meet applicable criteria for exemption and are verified in the Operator Management Plan:
    - 1) Components exclusively handling fluids with an ROC concentration of 10 percent by weight or less.
    - 2) Components exclusively handling fluids if the weight percent evaporated is 10 percent or less at 150 degrees Celsius in accordance with Test Method ASTM D86-82.
3. The inspection requirements in Section D shall not apply to facilities having a Standard Industrial Classification (SIC) Code of 2844 and manufacture perfumes, cosmetics or other toiletries.
4. An owner or operator may petition the APCO for exemption from the repair requirements in Subsections E.5 and E.6 by submitting a cost evaluation for retrofitting or replacing a compressor, pump, PRD or valve. Each petition shall include a cost-effectiveness evaluation conducted in accordance with "BACT Cost-Effectiveness Procedures and Screening Levels for Costs," adopted by the

Air Pollution Control Board on December 20, 1988. Any owner or operator requesting this exemption shall pay an exemption evaluation fee in accordance with Rule 44, Exemption Evaluation Fee.

The cost analysis shall be based on the retrofit cost of the component if a retrofit is feasible. If the component cannot be retrofitted, then the following control option with the lower cost shall be used in the cost analysis:

- Component replacement with the lowest cost control technology option that is a designated control for that component from Table 2.
- Enclosing the component seal and venting to a vapor recovery system.

Evidence of costs shall include written bids from vendors, published price lists, or other verifiable cost information. The potential emission reduction from the component retrofit/replacement shall be based on the ROC emissions over the previous 12 months. ROC emissions from a critical process unit shutdown shall be included if those emissions are associated with a critical leaking component. APCO-approved emission factors or source tests shall be used to quantify emissions.

#### G. Operator Management Plan

1. Each operator of a petroleum refinery or chemical plant shall submit an operator management plan to the APCO. The APCO shall determine whether the operator management plan meets the requirements of this rule and notify the operator on the acceptance or rejection of the plan. The operator management plan shall include:
  - a. Identification of each process unit and, by diagram or other location/tracking system, identification of each component (except for flanges and threaded fittings), subject to any requirements of this rule.
  - b. Critical process units and critical components.
  - c. A listing and description of all components for which an exemption is being claimed. Applicable test reports shall be included to qualify the exempt status of each component.
  - d. The inspection schedule to be followed.
  - e. Maintenance procedures and practices that will be taken to affect leak repairs on the various components and equipment subject to this rule.
  - f. Identification and description of any known hazard which may affect the safety of APCD personnel.

2. An existing operator management plan shall be updated no later than April 10, 1996 to include any provision that is needed to show compliance with this rule.

#### H. Recordkeeping

1. Each operator subject to this rule shall maintain an inspection log for component liquid leaks and component gaseous leaks, containing, at a minimum, the following data:
  - a. Name and location of any process unit where leaking components or equipment were found.
  - b. Type of component or equipment, component identifier, and identification of process fluid.
  - c. For gaseous leaks: Date and time of leak detection, date and time of leak measurement, analyzer reading (ppmv) of the leak, and method of leak measurement.
  - d. For liquid leaks: Date and time of leak detection and whether leak is a minor or major leak.
  - e. Date of leak repair and description of repair action.
  - f. Date of recheck and analyzer reading (ppmv) after leak is repaired.
  - g. Identification of leaks from critical components that cannot be repaired until process unit turnaround.
  - h. Total number of components inspected, and total number of leaking components found.
  - i. Maintenance and calibration records of appropriate analyzer used in the EPA Method 21 measurements.
2. The inspection log shall be retained by the operator for a minimum of 2 years after the latest date of an entry.
3. The inspection log shall be made available to APCD personnel upon request.

## I. Reporting

No later than January 30 of each year, each operator subject to this rule shall submit to the APCO a report for the previous year's inspection and maintenance activities which:

1. Includes a copy of the leak detection and repair records for any leak detected during the previous year.
2. Provides an annual update to the Operator Management Plan including any changes to component identifications, component diagrams, exemptions, inspection schedule, or any other changes to the inspection and maintenance program. If no changes to the Plan have occurred over the past 12 months, then the operator shall indicate this in the annual report.

## J. Test Methods

1. Measurement of total organic compounds concentrations (ppmv) from gaseous leaking components shall be performed using EPA Reference Method 21 after the analyzer has been calibrated with methane.
2. The ROC concentration of fluids shall be determined using ASTM E260-91, or updated versions of this method, approved by the EPA and referenced in 40 CFR 60.
3. Determination of the weight percentage of evaporated compounds of liquids shall be performed in accordance with ASTM Method D 86-82.
4. Determination of the control efficiency of any ROC control equipment shall be performed in accordance with EPA Method 25, 25A, or South Coast AQMD Method 25.1.

## K. Violations

The failure of a person to meet any requirement of this Rule shall constitute a violation of this rule. Each leak discovered by District personnel shall constitute a violation of Section C.1 of this Rule.

## L. Definitions

1. "Accessible Component": Any component located less than 15 feet above ground when access is required from the ground, or any component located under 6 feet away from a platform when access is required from the platform.
2. "Agitator": Any device or machine used to stir, shake, mix or blend chemicals.

3. "Appropriate Analyzer": A hydrocarbon analyzer that meets the requirements of EPA Reference Method 21 and is calibrated with methane.
4. "Background": is defined as the reading on an appropriate analyzer determined at least 3 meters up-wind from the component or equipment to be inspected and uninfluenced by any specific emission point.
5. "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, 284, or 286 as the first three digits in their Standard Industrial Classification (SIC) Code as determined from the Standard Industrial Classification Manual published in 1972 (or any more recent update) by the Executive Office of the President, Office of Management and Budget.
6. "Closed-vent system": Any system that is not open to the atmosphere and is composed of piping, connections, and, if necessary, flow-inducing devices that transport gases or vapors from a piece or pieces of equipment to a vapor recovery or disposal system.
7. "Component": Any pump, compressor, pressure relief device, open-ended line, agitator, valve, fitting, flange, connection, diaphragm, hatch, sight glass, meter or other fugitive emission source.
8. "Compressor": Any device used to compress gases and/or vapors.
9. "Critical Component": Any component that would require the shutdown of the associated critical process unit in order to be repaired.
10. "Critical Process Unit": Any process unit that has no standby equipment available, that cannot be bypassed, and where it would be technically infeasible to repair leaks from that process unit without removing it from service.
11. "Critical Process Unit Shutdown": A work practice or operational procedure that stops production from a critical 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 24 hours is not a critical process unit shutdown. The use of spare equipment and technically feasible bypassing of equipment without stopping production are not critical process unit shutdowns.
12. "Fitting": A component used to attach or connect pipes, piping details to other equipment. These components include but are not limited to flanges, threaded connections, and other connectors.
13. "Fugitive Emission Source": A source of fugitive emissions is any equipment that leaks where the emission is not confined to a stack or duct.

14. "Hatch": Any covered opening system that provides access to a tank or container, usually through the top deck.
15. "Leak": A major gas leak, major liquid leak, minor gas leak, or minor liquid leak.
16. "Leak Minimization": Leak minimization means reducing a leak to the lowest achievable level using best modern practices including but not limited to tightening, adjusting, or adding sealing material without shutting down the process which the component serves.
17. "Leak Repair": A leak repair is any corrective action taken for the purposes of reducing a component leak to the lowest achievable level below the applicable minor gas or minor liquid leak standard using best modern practices.
18. "Major Component": Any 4-inch or larger valve, any 5 horsepower or larger pump, any compressor, or any 4 inch or larger pressure relief device.
19. "Major Gas Leak": A major gas leak for any component, except pressure relief devices, means the detection of total gaseous organic compounds in excess of 10,000 ppmv, as methane, above background measured according to the test procedures in Subsection J.1 of this rule.  
  
A major gas leak for a pressure relief device means the detection of total gaseous organic compounds in excess of 200 ppmv as methane above background as measured according the test procedures in Section J.1 of this rule, unless the process pressure exceeds the limit setting specified for the PRD.
20. "Major Liquid Leak": A major liquid leak is a visible mist or cloud or a continuous flow of liquid that contains ROC and that is not a seal oil or other similar lubricant. Sampling of process fluids into containers shall not be considered a major liquid leak.
21. "Minor Component": A minor component is any component that is not a major component.
22. "Minor Gas Leak": A minor gas leak for any component means the detection of total gaseous organic compounds in excess of 1,000 ppmv but not more than 10,000 ppmv, as methane, above background measured according to the test procedures in Subsection J.1 of this rule.
23. "Minor Liquid Leak": Any liquid leak containing ROC that is not a major liquid leak and drips at a rate of more than 3 drops per minute, excluding leaks from seal oil or other similar lubricant.

24. "Owner or Operator": Any person who owns, operates, leases, controls, or supervises an emissions source or air pollution control equipment.
25. "Person": Any individual, corporation, company, partnership, or any other legal entity or their legal representative.
26. "Petroleum Refinery": Any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants, or other products through distillation of petroleum or through redistillation, cracking, rearrangement, or reforming of unfinished petroleum derivatives, as defined in the SIC Code 2911, Petroleum Refining.
27. "Physical Inspection": This means performing a survey to identify signs or evidence of leaking liquid, visible mist, audible leaks, vapor plume, odor or any other indications of a leak.
28. "Pressure Relief Device" (PRD): Any pressure relief valve, rupture disc, or any other equipment designed to relieve pressure within a process line when the static pressure reaches a setpoint.
29. "Pressure Relief Valve": Any valve that is automatically actuated by upstream static pressure, and used for safety or emergency purposes.
30. "Pump": Any device used to transport fluids by the addition of mechanical energy.
31. "Rupture Disc": A diaphragm held between flanges for the purpose of isolating a reactive organic compound from the atmosphere or from a downstream pressure relief valve.
32. "Tag": A tag is a piece of paper, metal or plastic that is attached to something for identification or other information. A tag may also be some other system approved in writing by the APCO that demonstrates to District personnel that the operator has detected a component leak awaiting repair and contains all of the information required to be on tags by this rule.
33. "Vacuum service": In-Vacuum service means that the equipment is operating at an internal pressure that is at least 0.73 in. of Hg below ambient pressure.
34. "Valve": Any device that regulates or isolates the fluid flow in a pipe, tube, or conduit by means of an external actuator.
35. "Vapor Control System": Any 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.