

(Adopted July 7, 1989)(Amended December 7, 1990)  
(Amended May 13, 1994)

**RULE 1173. FUGITIVE EMISSIONS OF VOLATILE ORGANIC COMPOUNDS**

(a) Purpose

This rule is intended to control volatile organic compounds leaks from valves, fittings, pumps, compressors, pressure relief devices, diaphragms, hatches, sight-glasses, and meters at refineries, chemical plants, oil and gas production fields, natural gas processing plants, and pipeline transfer stations.

(b) Definitions:

For the purpose of this rule the following definitions shall apply:

- (1) BACKGROUND is the ambient concentration of volatile organic compounds in the air determined at least one (1) meter upwind of the component to be inspected.
- (2) CHEMICAL PLANT is 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 Standard Industrial Classification Code as defined in the Standard Industrial Classification Manual is included.
- (3) COMMERCIAL NATURAL GAS is a mixture of gaseous hydrocarbons, with at least 80 percent methane, and less than 10 percent by weight volatile organic compounds, determined according to test methods specified in subparagraph (g)(2).
- (4) COMPONENT is any valve, fitting, pump, compressor, pressure relief device, diaphragm, hatch, sight-glass, and meter. 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.
- (5) COMPRESSOR is a device used to compress gases and/or vapors by the addition of energy, and includes all associated components used for connecting and sealing purposes.

- (6) EXEMPT COMPOUNDS are any of the following compounds:
- (A) Group I (General)
- trifluoromethane (HFC-23)
  - pentafluoroethane (HFC-125)
  - 1,1,2,2-tetrafluoroethane (HFC-134)
  - tetrafluoroethane (HFC-134a)
  - 1,1,1-trifluoroethane (HFC-143a)
  - 1,1-difluoroethane (HFC-152a)
  - chlorodifluoromethane (HCFC-22)
  - dichlorotrifluoroethane (HCFC-123)
  - 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124)
  - dichlorofluoroethane (HCFC-141b)
  - chlorodifluoroethane (HCFC-142b)
  - cyclic, branched, or linear, completely fluorinated alkanes
  - cyclic, branched, or linear, completely fluorinated ethers with no unsaturations
  - cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations
  - sulfur-containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine
- (B) Group II
- methylene chloride
  - 1,1,1-trichloroethane (methyl chloroform)
  - trifluoromethane (FC-23)
  - trichlorotrifluoroethane (CFC-113)
  - dichlorodifluoromethane (CFC-12)
  - trichlorofluoromethane (CFC-11)
  - dichlorotetrafluoroethane (CFC-114)
  - chloropentafluoroethane (CFC-115)
- The use of Group II compounds and/or carbon tetrachloride may be restricted in the future because they are toxic, potentially toxic, upper-atmosphere ozone depleters, or cause other environmental impacts. By January 1, 1996, chlorofluorocarbons (CFC), 1,1,1-trichloroethane (methyl chloroform), and carbon tetrachloride will be phased out in accordance with the Code of Federal Regulations Title 40, Part 82 (December 10, 1993).
- (7) FACILITY is a refinery, chemical plant, oil and gas production field, natural gas processing plant, or pipeline transfer station.

- (8) FIELD GAS means feed stock gas entering the natural gas processing plant.
- (9) FITTING is a component used to attach or connect pipes or piping details, including but not limited to flanges and threaded connections.
- (10) GAS LEAK is one of the following:
  - (A) MAJOR GAS LEAK FOR ANY COMPONENT EXCEPT FOR A PRESSURE RELIEF DEVICE is the detection of gaseous volatile organic compounds in excess of 10,000 ppm as methane above background measured according to test procedures in subparagraph (h)(1).
  - (B) MINOR GAS LEAK FOR ANY COMPONENT EXCEPT FOR A PRESSURE RELIEF DEVICE is the detection of gaseous volatile organic compounds in excess of 1,000 ppm but not more than 10,000 ppm as methane above background measured according to test procedures in subparagraph (h)(1).
  - (C) MAJOR GAS LEAK FOR A PRESSURE RELIEF DEVICE is the detection of gaseous volatile organic compounds in excess of 200 ppm as methane above background measured according to test procedures in subparagraph (h)(1).
- (11) HATCH is any covered opening system that provides access to a tank or container, usually through the top deck.
- (12) INACCESSIBLE COMPONENT is any component located over five meters above ground when access is required from the ground; or any component located over two meters away from a platform when access is required from the platform; or any component which would require the elevation of a monitoring personnel higher than two meters above permanent support surfaces.
- (13) INSPECTION is either of the following:
  - (A) OPERATOR INSPECTION is a survey of components by the operator for the purpose of determining compliance with this rule.
  - (B) DISTRICT INSPECTION is a survey of components by District personnel or their representatives.
- (14) LIQUID LEAK is the dripping of liquid volatile organic compounds at the rate of more than three drops per minute.

- (15) LUBRICATING FLUID is a fluid that provides lubrication of moving parts in a pump, including barrier fluids.
- (16) NATURAL GAS PROCESSING PLANT is a facility engaged in the separation of natural gas liquids from field gas and/or fractionation of the liquids into natural gas 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, liquefied natural gas units, and field gas gathering systems unless these facilities are located at a natural gas processing plant.
- (17) OIL AND GAS PRODUCTION FIELD is a facility on which crude petroleum and natural gas production and handling are conducted, as defined in the Standard Industrial Classification Manual as Industry No. 1311, Crude Petroleum and Natural Gas.
- (18) PIPELINE TRANSFER STATION is a facility which handles the transfer and storage of petroleum products or crude petroleum in pipelines.
- (19) PLATFORM is any raised, permanent, horizontal surface for the purpose of gaining access to components.
- (20) PRESSURE RELIEF DEVICE (PRD) is a pressure relief valve or a rupture disc.
- (21) PRESSURE RELIEF VALVE (PRV) is a valve which is automatically actuated by upstream static pressure, and used for safety or emergency purposes.
- (22) PUMP is a device used to transport fluids by the addition of energy, and includes all associated components used for connecting or sealing purposes.
- (23) REFINERY is a facility that processes petroleum, as defined in the Standard Industrial Classification Manual as Industry No. 2911, Petroleum Refining.
- (24) REPAIR is any of the following:
  - (A) ON-SITE REPAIR is corrective action for the purpose of eliminating leaks and which is not a significant repair.
  - (B) SIGNIFICANT REPAIR is corrective action for the purpose of eliminating leaks involving the temporary removal or taking out of service of a component.

- (25) RUPTURE DISC is a diaphragm held between flanges for the purpose of isolating a volatile organic compound from the atmosphere or from a downstream pressure relief valve.
- (26) VALVE is a device that regulates or isolates the fluid flow in a pipe, tube, or conduit by means of an external actuator; including flanges, flange seals, and other components used for attachment or sealing.
- (27) VOLATILE ORGANIC COMPOUND (VOC) is any volatile compound containing the element carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and exempt compounds.

(c) Leak Control Requirements

- (1) Any liquid leak or gas leak of over 50,000 ppm detected by District inspection shall constitute a violation of this rule.
- (2) Any major gas leak detected by District inspection, within any continuous 24-hour period, and numbering in excess of the Leak Thresholds for that component listed below in Table 1, shall constitute a violation of this rule.

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TABLE 1. LEAK THRESHOLDS

Component	<u>Max. No. of Leaks</u>	<u>Max. No. of Leaks</u>
	(200 or less components inspected)	(over 200 components inspected)
Valves	1	0.5% of number inspected
Pumps	2	1% of number inspected
Compressors	1	1
PRDs	1	1
Other Components	1	1

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The maximum number of leaks in Table 1 shall be rounded upwards to the nearest integer, where required.

- (3) 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 operations requiring process fluid flow through the open-ended line.

**(d) Identification Requirements**

- (1) All major components shall be physically identified clearly and visibly for inspection, repair, replacement, and recordkeeping purposes.
- (2) All minor components shall be clearly identified in Piping and Instrumentation (P&I) flow diagrams, and/or grouped together functionally for inspection, repair, replacement, and recordkeeping purposes.
- (3) Any change(s) in major component identification shall require prior written approval from the Executive Officer's designee.

**(e) Operator Inspection Requirements**

- (1) All accessible pumps, compressors, and pressure relief devices shall be audio-visually inspected once during every eight-hour operating period, except for unmanned oil and gas production fields, and unmanned pipeline transfer stations.
- (2) All accessible components shall be inspected quarterly.
- (3) All inaccessible components shall be inspected annually.
- (4) A pressure relief device shall be inspected within 14 calendar days after every functional pressure relief.
- (5) The inspection frequency for accessible components, except pumps and compressors, at a facility, as required in subparagraph (e)(2), may change from quarterly to annually, provided all of the following conditions are met.
  - (A) All accessible components, except pumps and compressors, at that facility have been successfully operated and maintained with no liquid leaks and with major gas leaks within the Leak Thresholds for such components listed in Table 1, for five consecutive quarters; and
  - (B) The above is substantiated by documentation and submitted for written approval from the Executive Officer's designee.
- (6) The annual inspection frequency for all accessible, components, except pumps and compressors, if approved in subparagraph (e)(5), shall revert to quarterly, should the annual inspection or District inspection show any liquid leak or major gas leaks in excess of the Leak Thresholds for such components listed in Table 1.

(f) Maintenance Requirements

- (1) A component shall be repaired or replaced within the following time period after detection of the leak by operator inspection or District inspection, according to Table 2, Repair Periods.

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TABLE 2. REPAIR PERIODS

<u>Type of Leak</u>	<u>Time Period</u>
Minor Gas Leak	14 Calendar Days
Major Gas Leak	5 Calendar Days
Gas Leak over 50,000 ppm	1 Calendar Day
Liquid Leak	1 Calendar Day

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- (2) The repaired or replaced component shall be subjected to operator inspection within 30 days of the repair or replacement.
- (3) A component or parts thereof shall be replaced with Best Available Control or Retrofit Technology (BACT or BARCT), or vented to an air pollution control device approved by the Executive Officer's designee, after it has been subjected to five significant repair actions for a liquid leak or a major gas leak within a continuous twelve-month period.
- (4) The reporting provisions of Rule 430 shall not be applicable to components being repaired or replaced under the provisions of this rule, except compressors.

(g) Recordkeeping Requirements

- (1) Records of leaks detected by quarterly or annual operator inspection, and subsequent repair and reinspection, shall be submitted to the Executive Officer's designee, within 30 or 60 days, respectively. Such records shall be submitted on standard forms specified by the District and shall contain all information required on the form.

(h) Test Methods

- (1) Measurements of gaseous volatile organic compound leak concentrations shall be conducted according to EPA Reference Method 21 using an appropriate analyzer calibrated with methane at a distance of 1 cm or less from the source.

- (2) The volatile organic compound content of fluids shall be determined using ASTM methods E-168, E-169, or E-260, or any other alternative test method approved in advance as a source-specific State Implementation Plan revision by the United States Environmental Protection Agency and the California Air Resources Board, and authorized by the Executive Officer's designee.
  - (3) All records of operator inspection and repair shall also be maintained at the facility for a period of two (2) years and made available to the District staff on request.
- (i) **Compliance Schedule**  
All facilities shall be in compliance with this rule by February 1, 1991.
- (j) **Other Rules and Regulation Applicability**
- (1) Affected facilities shall comply with the provisions of Rules 466, 466.1, and 467 until February 1, 1991, or until compliance with this rule is achieved, whichever is earlier.
  - (2) In case of conflict between the provisions of this rule and any other rule, the provisions of the rule which more specifically applies to the subject shall prevail.
- (k) **Exemptions**  
The provisions of this rule 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 Executive Officer's designee:
- (1) Components which present a safety hazard for inspection as documented and established in a safety manual or policy, previously, or with the prior written approval of the Executive Officer's designee except that these components shall be monitored for leaks when it is safe to do so. Upon detection of a leak, component(s) shall be repaired or replaced as soon as the repairs or replacement can be carried out safely.
  - (2) Components being repaired or replaced within the specified repair or replacement period, as given in Table 2.
  - (3) Components exclusively handling commercial natural gas.



- (4) Components exclusively handling fluids with a VOC concentration of ten percent by weight or less, determined according to test methods specified in subparagraph (h)(2).
- (5) Components incorporated in lines, while operating under negative pressures.
- (6) Components totally contained or enclosed such that there are no VOC emissions into the atmosphere.
- (7) Lubricating fluids.
- (8) Components buried below ground.
- (9) Components handling liquids exclusively, if the weight percent evaporated is ten percent or less at 150°C, as determined by ASTM Method D-86.
- (10) Pressure vacuum valves on storage tanks.