

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

**RULE 8-18 - ORGANIC COMPOUNDS: EQUIPMENT LEAKS**

*(Adopted: October 1, 1980) (Amended: July 15, 1981; March 17, 1982; September 3, 1986; September 6, 1989; March 4, 1992; January 7, 1998; November 27, 2002; January 21, 2004; September 15, 2004)*

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**REGULATION 8**  
**ORGANIC COMPOUNDS**  
**RULE 18**  
**EQUIPMENT LEAKS**

(Adopted October 1, 1980)

**8-18-100 GENERAL**

**8-18-101 Description:** The purpose of this Rule is to limit emissions of organic compounds and methane from leaking equipment at petroleum refineries, chemical plants, bulk plants and bulk terminals including, but not limited to: valves, connectors, pumps, compressors, pressure relief devices, diaphragms, hatches, sight-glasses, fittings, sampling ports, meters, pipes, and vessels.

*(Amended 3/17/82; 3/4/92; 1/7/98; 1/21/04, 9/15/04)*

**8-18-110 Exemption, Controlled Seal Systems and Pressure Relief Devices:** The provisions of this Rule shall not apply to seal systems and pressure relief devices vented to a vapor recovery or disposal system which reduces the emissions of organic compounds from the equipment by 95% or greater as determined according to Section 8-18-603.

*(Amended, Renumbered 1/7/98; Amended 1/21/04)*

**8-18-111 Exemption, Small Facilities:** The provisions of this rule shall not apply to facilities which have less than 100 valves or less than 10 pumps and compressors. Such facilities are subject to the requirements of Regulation 8, Rule 22.

*(Adopted 3/4/92; Amended, Renumbered 1/7/98)*

**8-18-112 Exemption, Bulk Plant and Terminal Loading Racks:** The provisions of this rule shall not apply to those connections at the interface between the loading rack and the vehicle being loaded.

*(Adopted 3/4/92; Amended, Renumbered 1/7/98)*

**8-18-113 Limited Exemption, Initial Boiling Point:** The provisions of Sections 8-18-400 shall not apply to equipment which handle organic liquids having an initial boiling point greater than 302° F.

*(Adopted 3/4/92; Amended, Renumbered 1/7/98)*

**8-18-114 Limited Exemption, Research and Development:** The provisions of Sections 8-18-401, 402 and 502 shall not apply to research and development plants which produce only non-commercial products solely for research and development purposes.

*(Adopted 3/4/92; Amended, Renumbered 1/7/98)*

**8-18-115 Limited Exemption, Storage Tanks:** The provisions of this rule shall not apply to appurtenances on storage tanks including pressure relief devices, which are subject to requirements contained in Regulation 8, Rule 5: Storage of Organic Liquids.

*(Adopted January 7, 1998)*

**8-18-116 Limited Exemption, Vacuum Service:** The provisions of Sections 8-18-400 and 502 shall not apply to equipment in vacuum service.

*(Amended January 7, 1998)*

**8-18-117 Limited Exemption, Visual Inspection:** The provisions of Section 8-18-403 shall not apply to days when a facility is not staffed.

*(Amended, Renumbered January 7, 1998)*

**8-18-117 Deleted January 7, 1998**

**8-18-200 DEFINITIONS**

**8-18-201 Background:** The ambient concentration of total organic compounds determined at least 3 meters (10 feet) upwind from the equipment to be inspected and not influenced by any specific emission point as indicated by a hydrocarbon analyzer specified by Section 8-18-501.

*(Amended March 4, 1992)*

**8-18-202 Bulk Plants and Terminals:** A distribution facility which is subject to Regulation 8, Rule 6, 33 or 39.

*(Amended, Renumbered January 7, 1998)*

- 8-18-203 Chemical Plant:** Any facility engaged in producing organic or inorganic chemicals and/or manufacturing products by chemical processes. Any facility or operation that has 325 as the first three digits in the North American Industrial Classification Standard (NAICS) code. Chemical plants may include, but are not limited to the manufacture of: industrial inorganic and organic chemicals; plastic and synthetic resins, synthetic rubber, synthetic and other man made fibers; drugs; soap, detergents and cleaning preparations, perfumes, cosmetics and other toilet preparations; paints, varnishes, lacquers, enamels and allied products; agricultural chemicals; safflower and sunflower oil extracts; re-refining.  
*(Amended, Renumbered 1/7/98; Amended 1/21/04)*
- 8-18-204 Connection:** Flanged, screwed, or other joined fittings used to connect any piping or equipment.  
*(Amended, Renumbered 1/7/98; Amended 1/21/04)*
- 8-18-205 Equipment:** All components including, but not limited to: valves, pumps, compressors, pressure relief devices, diaphragms, hatches, fittings, sampling ports, pipes, plugs, open-ended lines, gages or sight-glasses.  
*(Amended, Renumbered January 7, 1998)*
- 8-18-206 Inaccessible Equipment:** Any equipment located over 13 feet above the ground when access is required from the ground; or any equipment located over 6.5 feet away from a platform when access is required from a platform.  
*(Amended, Renumbered January 7, 1998)*
- 8-18-207 Inspection:** The determination of the concentration of total organic compounds leaking from equipment using EPA Reference Method 21 as required by Section 8-18-501.  
*(Amended, Renumbered January 7, 1998)*
- 8-18-208 Leak:** The concentration of total organic compounds above background, expressed as methane, as measured 1 centimeter or less from the leak using EPA Reference Method 21 in accordance with Section 8-18-602.  
*(Amended, Renumbered 1/7/98; 1/21/04)*
- 8-18-209 Leak Minimization:** Reducing the leak to the lowest achievable level using best modern practices and without shutting down the process the equipment serves.  
*(Renumbered 3/17/82; Amended 3/4/92; 1/7/98)*
- 8-18-210 Leak Repair:** The tightening, adjustment, or addition of material, or the replacement of the equipment, which reduces the leakage to the atmosphere below the applicable standard in Section 8-18-300.  
*(Renumbered 3/17/82; Amended 3/4/92; 1/7/98)*
- 8-18-211 Liquid Leak:** Dripping of liquid at a rate of greater than 3 drops per minute and a concentration of total organic compounds greater than the applicable leak standard in Section 8-18-300.  
*(Amended, Renumbered January 7, 1998)*
- 8-18-212 Organic Compound:** Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate.  
*(Amended, Renumbered January 7, 1998)*
- 8-18-213 Petroleum Refinery:** Any facility that processes petroleum products as defined in North American Industrial Classification Standard Number 32411, Petroleum Refining.  
*(Amended, Renumbered January 7, 1998)*
- 8-18-214 Pressure Relief Device:** The automatic pressure-relieving device actuated by the static pressure upstream of the device including, but not limited to pressure relief valves and rupture disks.  
*(Amended, Renumbered January 7, 1998)*
- 8-18-215 Process Unit:** A manufacturing process which is independent of other processes and is continuous when supplied with a constant feed or raw materials and has sufficient storage facilities for product.  
*(Amended, Renumbered January 7, 1998)*
- 8-18-216 Quarter:** One of the four consecutive 3-month divisions of the calendar year beginning on January 1.  
*(Amended, Renumbered January 7, 1998)*
- 8-18-217 Reinspection:** Any inspection following the minimization or repair of leaking equipment.  
*(Amended, Renumbered January 7, 1998)*

- 8-18-218 Rupture Disc:** The thin metal diaphragm held between flanges.  
*(Amended, Renumbered January 7, 1998)*
- 8-18-219 Total Organic Compounds:** The concentration of organic compounds and methane as indicated by a hydrocarbon analyzer as specified by Section 8-18-501.  
*(Amended, Renumbered 1/7/98; Amended 1/21/04)*
- 8-18-220 Turnaround:** The scheduled shutdown of a process unit for maintenance and repair work.  
*(Amended, Renumbered January 7, 1998)*
- 8-18-221 Valve:** Any device that regulates the flow of process material by means of an external actuator acting to permit or block passage of liquids or gases.  
*(Amended, Renumbered January 7, 1998)*
- 8-18-222 Weephole:** A drain hole in the discharge horn of a pressure relief device.  
*(Adopted January 7, 1998)*
- 8-18-223 Deleted January 7, 1998**
- 8-18-224 Deleted January 7, 1998**
- 8-18-225 Major Leak:** Any leak that cannot be minimized below a concentration of 10,000 parts per million (ppm) total organic compounds, expressed as methane.  
*(Adopted January 21, 2004)*

**8-18-300 STANDARDS**

- 8-18-301 General:** Except for valves, pumps and compressors, connections and pressure relief devices subject to the requirements of Sections 8-18-302, 303, 304, 305 and 306, a person shall not use any equipment that leaks total organic compounds in excess of 100 ppm unless the leak has been discovered by the operator, minimized within 24 hours and repaired within 7 days.  
*(Amended 7/15/81; 3/17/82; 9/6/89; 3/4/92; 1/7/98)*
- 8-18-302 Valves:** A person shall not use any valve that leaks total organic compounds in excess of 100 ppm unless one of the following conditions is met:
- 302.1 If the leak has been discovered by the operator, minimized within 24 hours and repaired within 7 days; or
  - 302.2 If the leak has been discovered by the APCO, repaired within 24 hours; or
  - 302.3 The valve meets the applicable provisions of Section 8-18-306.  
*(Adopted 3/4/92; Amended 1/7/98; 1/21/04)*
- 8-18-303 Pumps and Compressors:** A person shall not use any pump or compressor that leaks total organic compounds in excess of 500 ppm unless one of the following conditions is met:
- 303.1 If the leak has been discovered by the operator, minimized within 24 hours and repaired within 7 days; or
  - 303.2 If the leak has been discovered by the APCO, repaired within 24 hours; or
  - 303.3 The pump or compressor meets the applicable provisions of Section 8-18-306.  
*(Adopted 3/4/92; Amended 1/7/98; 1/21/04)*
- 8-18-304 Connections:** A person shall not use any connection that leaks total organic compounds in excess of 100 ppm unless one of the following conditions is met:
- 304.1 If the leak has been discovered by the operator, minimized within 24 hours and repaired within 7 days; or
  - 304.2 If the connection is inspected as required by Section 8-18-401.6 and the leak has been discovered by the APCO, repaired within 24 hours; or
  - 304.3 The connection meets the applicable provisions of Section 8-18-306.  
*(Adopted 3/4/92; Amended 1/7/98; 1/21/04)*
- 8-18-305 Pressure Relief Devices:** A person shall not use any pressure relief device that leaks total organic compounds in excess of 500 ppm unless the leak has been discovered by the operator, minimized within 24 hours and repaired within 15 days; or if the leak has been discovered by the APCO, repaired within 7 days.  
*(Amended January 7, 1998)*
- 8-18-306 Non-repairable Equipment:** Any valve, connection, pressure relief device, pump or compressor which cannot be repaired as required by Section 8-18-302, 303 or 305, shall comply with the following conditions:

- 306.1 The valve, connection, pressure relief device, pump or compressor is repaired or replaced within 5 years or at the next scheduled turnaround, whichever date comes first.
- 306.2 Effective July 1, 2004, the number of individual pieces of equipment awaiting repair does not exceed the percentages of the total population for each equipment type expressed in the table below or 1 piece of equipment.

<b>Equipment</b>	<b>Total Number of Non-repairable Equipment Allowed (%)</b>
Valves (including Valves with Major Leaks) and Connections as allowed by Section 8-18-306.3	0.30% of total number of valves
Valves with Major Leaks as allowed by Section 8-18-306.4	0.025% of total number of valves
Pressure Relief Devices	1.0% of total number of pressure relief devices
Pumps and Compressors	1.0% of total number of pumps and compressors

- 306.3 A connection that leaks in excess of 100 ppm and no greater than 10,000 ppm can be considered non-repairable equipment pursuant to Section 8-18-306 provided each non-repairable connection is considered as two valves toward the total number of non-repairable equipment allowed.
- 306.4 Effective July 1, 2004, a valve with a major leak may not be considered non-repairable equipment pursuant to Section 8-18-306 for more than 45 days after leak discovery, unless the mass emission rate has been measured in accordance with Section 8-18-604 and has been determined to be less than 15 pounds per day. The APCO shall be notified no less than 96 hours prior to conducting measurements required by this section.

*(Adopted 3/4/92, Amended 1/7/98; 1/21/04)*

**8-18-307 Liquid Leak:** A person shall not use any equipment that leaks liquid as defined in Section 8-18-211, unless the leak has been discovered by the operator, minimized within 24 hours and repaired within 7 days.

*(Adopted 3/4/92; Amended 1/7/98)*

**8-18-308 Alternate Compliance:** The requirements of Sections 8-18-301, 302, 303, 304, 305, 306 and 307 shall not apply to any facility which complies with an alternative emission reduction plan that satisfies all the requirements in Sections 8-18-405 and 406.

*(Adopted January 7, 1998)*

#### **8-18-400 ADMINISTRATIVE REQUIREMENTS**

**8-18-401 Inspection:** Any person subject to this Rule shall comply with the following inspection requirements:

- 401.1 All connections that have been opened during a turnaround shall be inspected for leaks within 90 days after start-up is completed following a turnaround.
- 401.2 Except as provided under Subsection 8-18-401.3, 404, 405, and 406 all valves, pressure relief devices, pumps or compressors subject to this Rule shall be inspected quarterly.
- 401.3 Inaccessible valves and pressure relief devices subject to this Rule shall be inspected at least once a year.
- 401.4 Any equipment subject to this Rule may be inspected at any time by the APCO.
- 401.5 Any equipment found to have a leak in excess of the standard in Section 8-18-300 shall be reinspected within 24 hours after leak repair or minimization.
- 401.6 Any connection that is inspected annually or that is part of an APCO and EPA approved connection inspection program is subject to the provisions of Subsection 8-18-304.2.
- 401.7 Any pressure relief device equipped with a weep hole shall be inspected quarterly at the outlet of the weep hole if the horn outlet is inaccessible.

- 401.8 Any pressure relief device that releases to the atmosphere shall be inspected within 5 working days after the release event.
- 401.9 Effective July 1, 2004, any valve placed on the non-repairable list shall be inspected at least once per quarter.
- 401.10 Effective July 1, 2004, the mass emission rate of any valve with a major leak placed on the non-repairable list in accordance with Section 8-18-306 shall be determined at least once per calendar year. The APCO shall be notified no less than 96 hours prior to conducting the measurements required by this section.

*(Amended 3/17/82; 9/3/86; 9/6/89; 3/4/92; 1/7/98; 1/21/04)*

**8-18-402 Identification:** Any person subject to this Rule shall comply with the following identification requirements:

- 402.1 All valves, pressure relief devices, pumps and compressors shall be identified with a unique permanent identification code approved by the APCO. This identification code shall be used to refer to the valve, pressure relief device, pump or compressor location. Records for each valve, pressure relief device, pump or compressor shall refer to this identification code.
- 402.2 All equipment with a leak in excess of the applicable leak limitation in Section 8-18-300 shall be tagged with a brightly colored weatherproof tag indicating the date the leak was detected.

*(Amended 3/4/92; 1/7/98)*

**8-18-403 Visual Inspection Schedule:** All pumps and compressors subject to this rule shall be visually inspected daily for leaks. If a leak is observed, the concentration of organic compounds shall be determined.

*(Renumbered January 7, 1998)*

**8-18-404 Alternative Inspection Schedule:** The inspection frequency for valves may change from quarterly to annually provided all of the conditions in Subsection 404.1 and 404.2 are satisfied.

- 404.1 The valve has been operated leak free for five consecutive quarters; and
- 404.2 Records are submitted and approval from the APCO is obtained.
- 404.3 The valve remains leak free. If a leak is discovered, the inspection frequency will revert back to quarterly.

*(Adopted January 7, 1998)*

**8-18-405 Alternate Emission Reduction Plan:** Any person may comply with Section 8-18-308 by developing and submitting an alternate emission reduction plan to the APCO that satisfies all of the following conditions:

- 405.1 The plan shall contain all information necessary to establish, document, measure progress and verify compliance with an emission reduction level set forth in this rule.
- 405.2 All emission reductions must be achieved solely from equipment and connections subject to this rule.
- 405.3 Public notice and a 60-day public comment period shall be provided.
- 405.4 Following the public comment period, the plan shall be submitted to and approved in writing by the EPA, Region IX prior to the APCO approval of the plan.
- 405.5 An alternate emission reduction plan must provide for emission reductions equal to or greater than required by the specific limits in this rule.

*(Adopted 1/7/98; Amended 11/27/02)*

**8-18-406 Interim Compliance:** A facility is subject to the limits contained in Sections 8-18-301, 302, 303, 304, 305, 306 and 307 until receipt of the written approvals of both the APCO and the EPA of an Alternate Emission Reduction Plan that complies with Section 8-18-405.

*(Adopted 1/7/98; Amended 11/27/02)*

## **8-18-500 MONITORING AND RECORDS**

**8-18-501 Portable Hydrocarbon Detector:** Any instrument used for the measurement of organic compounds shall be a combustible gas indicator that has been approved by the APCO and meets the specifications and performance criteria of and has been calibrated in accordance with EPA Reference Method 21 (40 CFR 60, Appendix A).

*(Amended 3/17/82; 9/6/89; 3/4/92)*

**8-18-502 Records:** Any person subject to the requirements of this rule shall maintain records that provided the following information:

- 502.1 For equipment subject to Section 8-18-402.1, the equipment identification code, equipment type and the location of the equipment.
- 502.2 The date of all inspections and reinspections and the corresponding leak concentrations measured as specified by Section 8-18-401.
- 502.3 Records shall be maintained for at least 5 years and shall be made available to the APCO for inspection at any time.
- 502.4 Records of all non-repairable equipment subject to the provisions of Section 8-18-306 shall be maintained, and contain the equipment identification code, equipment type, equipment location, leak concentration measurement and date, the duration the equipment has been on the non-repairable list, any mass emission rate determination and date the determination was made, last process unit turnaround date, and total number of non-repairable equipment awaiting repair.

*(Adopted 3/4/92; Amended 1/7/98; 1/21/04)*

**8-18-503 Reports:** Any person subject to the requirements of this rule shall submit the information to the District:

- 503.1 Records of all non-repairable equipment subject to the provisions of Section 8-18-306 shall be submitted to the District quarterly and contain the equipment identification code, equipment type, equipment location, leak concentration measurement and date, the duration the equipment has been on the non-repairable list, any mass emission rate determination, date the determination was made, last process unit turnaround date, and total number of non-repairable equipment awaiting repair.
- 503.2 An inventory of the total numbers of valves, pressure relief devices, pumps and compressors and connections to which this rule applies shall be submitted to the District at least once a year.

*(Adopted January 21, 2004)*

## **8-18-600 MANUAL OF PROCEDURES**

**8-18-601 Analysis of Samples:** Samples of organic compounds as defined in Section 8-18-113 shall be analyzed for Initial Boiling Point as prescribed in ASTM D-1078- 98 or ASTM D-86.

*(Adopted 3/17/82; Amended 3/4/92; 1/7/98)*

**8-18-602 Inspection Procedure:** Inspections of equipment shall be conducted as prescribed by EPA Reference Method 21 (40 CFR 60, Appendix A).

*(Adopted 9/6/89; Amended 3/4/92; 1/7/98)*

**8-18-603 Determination of Control Efficiency:** The control efficiency as specified by Section 8-18-110 shall be determined by any of the following methods: 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. A source shall be considered in violation if the emissions of organic compounds measured by any of the referenced test methods exceed the standards of this rule.

*(Amended, Renumbered 1/7/98; Amended 1/21/04)*

**8-18-604 Determination of Mass Emissions:** The mass emission determination as specified by Section 8-18-306 shall be made using any of the following methods: 1) EPA Protocol for Equipment Leak Emission Estimates, Chapter 4, Mass Emission Sampling, (EPA-453/R-95-017) November, 1995 or 2) a method determined to be equivalent by the EPA and approved by the APCO.

*(Adopted 1/7/98; Amended 1/21/04)*