

**REGULATION 8  
ORGANIC COMPOUNDS  
RULE 5  
STORAGE OF ORGANIC LIQUIDS  
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**REGULATION 8  
ORGANIC COMPOUNDS  
RULE 5  
STORAGE OF ORGANIC LIQUIDS**

(Adopted January 1, 1978)

**8-5-100 GENERAL**

**8-5-101 Description:** The purpose of this rule is to limit emissions of organic compounds from storage tanks.

Note: New storage tanks may also be subject to Regulation 10 and storage tanks located at bulk plants may also be subject to the requirements of Regulation 8, Rule 6 or Rule 33.

*(Amended 9/4/85; 5/4/88; 1/20/93; 10/18/06)*

**8-5-110 Exemptions:** This rule does not apply to emissions from the following sources:

- 110.1 Storage tanks having a capacity of less than 1.0 m<sup>3</sup> (264 gal).
- 110.2 Any storage tank installed prior to January 4, 1967, which is not used for storage of gasoline to be dispensed to internal combustion engine fuel tanks, and is either of a capacity of less than 7.6 m<sup>3</sup> (2,008 gal), or an underground tank with an offset fill line.
- 110.3 Any above ground gasoline tank of 7.6 m<sup>3</sup> (2,008 gal) or less capacity installed and in service prior to January 9, 1976, and equipped with a submerged fill pipe.

*(Amended 5/4/88; 1/20/93; 11/27/02; 10/18/06)*

**8-5-111 Limited Exemption, Tank Removal From and Return to Service:** The requirements of Sections 8-5-304, 305, 306 and 307 shall not apply to storage tanks during or after tank decommissioning, and shall not apply during temporary removal from service provided that the operator complies with the following requirements:

- 111.1 The operator shall notify the APCO. This notification shall identify the specific requirement for which an exemption is necessary and explain how the planned or performed activities necessarily prevent compliance with those requirements. The notification requirement may be satisfied in one of the following ways:
  - 1.1 Three days prior to such work being done, written notification is received by the APCO; or
  - 1.2 Telephone notification is made to the APCO prior to such work being done, and written notice is received by the APCO within three days after such work has been done.
- 111.2 The tank is in compliance with all applicable requirements of this rule at the time the notification in Section 8-5-111.1 is made.
- 111.3 When the floating roof is resting on the leg supports, the process of filling, emptying, and refilling shall be continuous and shall be accomplished as rapidly as possible.
- 111.4 Vapor recovery shall be used on tanks so equipped during filling and emptying procedures.
- 111.5 Emissions shall be minimized during the period of exemption. If the tank interior is to be opened to the atmosphere through an access hatch or manway, as much product as possible shall be drained from the tank, and degassing equipment and an associated abatement device shall be connected and operated, as required by Section 8-5-328, as soon as possible.
- 111.6 Effective January 1, 2007, if the tank operator discovers that the tank is not in compliance with all applicable requirements of this rule during the exemption period, telephone notification shall be made to the APCO within 24 hours of discovery and a written report that describes the non-compliance and any corrective actions taken shall be submitted within 60 days of discovery. This telephone notification and report are not required for tanks that are subject to deviation reporting requirements in a Major Facility Permit

issued pursuant to Regulation 2, Rule 6. Notification and reporting are not otherwise required when returning a tank to service.

*(Amended 1/20/93; 12/15/99; 11/27/02; 10/18/06)*

**8-5-112 Limited Exemption, Preventative Maintenance and Inspection of Tanks in Operation:** The requirements of Sections 8-5-304, 305, 306, 307.2, 307.3 and 328 shall not apply to storage tanks during preventative maintenance of a vapor control device, tank roof, roof fitting or tank seal; during primary seal inspection; or during removal and installation of a secondary seal provided that the operator complies with the following requirements:

112.1 The operator shall notify the APCO. This notification shall identify the affected tank and the specific requirement for which an exemption is necessary, shall explain how the planned or performed activities necessarily prevent compliance with those requirements, and shall describe the measures to be taken to minimize emissions. For secondary seal installations, the type of installed seal shall be specified. The notification requirement may be satisfied in one of the following ways:

1.1 Three days prior to such work being done, written notification is received by the APCO; or

1.2 Except for secondary seal replacements, which are subject to Section 8-5-112.1.1, telephone notification is made to the APCO prior to such work being done, and written notice is received by the APCO within three days after such work has been done.

112.2 The tank is in compliance with all applicable requirements of this rule at the time the notification in Section 8-5-112.1 is made.

112.3 Product shall be moved neither in nor out of the storage tank and emissions shall be minimized.

112.4 The time of exemption allowed under this section does not exceed 7 consecutive days.

112.5 Effective January 1, 2007, if the tank operator discovers that the tank is not in compliance with all applicable requirements of this rule during the exemption period, telephone notification shall be made to the APCO within 24 hours of discovery and a written report that describes the non-compliance and any corrective actions taken shall be submitted within 60 days of discovery. This telephone notification and report are not required for tanks that are subject to deviation reporting requirements in a Major Facility Permit issued pursuant to Regulation 2, Rule 6.

112.6 Effective June 1, 2007, the tank operator shall keep the following records for at least 24 months after each use of this exemption:

6.1 The affected tank and the date and duration of the exemption;

6.2 The preventative maintenance, inspection or other activity that was performed;

6.3 The specific standards of this rule for which an exemption was necessary; and

6.4 Actions taken to minimize emissions during the exemption period.

*(Adopted 9/4/85; Amended 5/4/88; 1/20/93; 12/15/99; 11/27/02; 10/18/06)*

**8-5-113 Deleted May 4, 1988**

**8-5-114 Deleted May 4, 1988**

**8-5-115 Deleted May 4, 1988**

**8-5-116 Exemption, Gasoline Storage Tanks at Gasoline Dispensing Facilities:** The provisions of this rule shall not apply to any gasoline storage tank located at a gasoline dispensing facility subject to the requirements of Regulation 8, Rule 7.

*(Adopted 1/20/93; Amended 10/18/06)*

**8-5-117 Limited Exemption, Low Vapor Pressure:** The provisions of this rule, except for Section 8-5-307.3, shall not apply to tanks storing organic liquids with a true vapor pressure of less than or equal to 25.8 mm Hg (0.5 psia) as determined by Sections 8-5-602 or 604.

*(Adopted 1/20/93; Amended 11/27/02; 10/18/06)*

**8-5-118 Limited Exemption, Gas Tight Requirement:** The gas tight requirement of Section 8-5-306.2 shall not apply to tanks at facilities that are subject to the requirements of

*(Adopted October 18, 2006)*

- 8-5-119 Limited Exemption, Repair Period:** A tank operator who has implemented an Enhanced Monitoring Program pursuant to Section 8-5-411 and who discovers equipment that fails to meet a requirement listed in Section 8-5-119.1 shall not be deemed in violation of that requirement, provided the operator complies with all of the conditions listed in Sections 8-5-119.2 and 119.3. The period of such an exemption shall not exceed the amount of time necessary to meet the requirement in accordance with Section 8-5-119.2.3. An operator shall not be entitled to this exemption for any violation discovered by the APCO during an APCO-initiated inspection.
- 119.1 The exemption is available only for the following requirements:
- 1.1 Section 8-5-303.1 (good operating condition requirement only), 303.2 (gas tight requirement only);
  - 1.2 Sections 8-5-304.4, 304.5, 304.6, 305.5 and 305.6;
  - 1.3 Section 8-5-306.2;
  - 1.4 Sections 8-5-307.1 and 307.3;
  - 1.5 Sections 8-5-320.3, 320.4.2, 320.4.3, 320.5.2 (gaps only), 320.5.3 and 320.6;
  - 1.6 Sections 8-5-321.1, 321.3.1, 321.3.2, 321.3.3, and 321.4;
  - 1.7 Sections 8-5-322.1, 322.2, 322.3, 322.4, and 322.5.
- 119.2 The following conditions shall be met for the exemption to be available:
- 2.1 The tank operator shall have implemented an Enhanced Monitoring Program in accordance with Section 8-5-411;
  - 2.2 The tank operator shall minimize excess emissions resulting from the failure to meet the requirement as soon as possible, but no later than 8 hours after discovery;
  - 2.3 The tank operator shall bring the tank into compliance with the requirement as soon as possible, but no later than 48 hours after discovery;
  - 2.4 The tank operator shall not move material into or out of the tank until the tank is in compliance with all applicable requirements, except to the extent necessary to make repairs.
- 119.3 The tank operator shall submit a report within 60 days of any use of this exemption. The report shall include the following:
- 3.1 the affected tank and the date and duration of the exemption;
  - 3.2 the repair or other activity that was performed;
  - 3.3 the specific requirements of this rule for which an exemption was necessary; and
  - 3.4 actions taken to minimize emissions during the exemption period.

*(Adopted October 18, 2006)*

**8-5-200 DEFINITIONS**

**8-5-201 Deleted October 18, 2006**

**8-5-202 Storage Tank:** Any container, reservoir, or tank used for the storage of organic liquids, excluding tanks that are permanently affixed to mobile vehicles such as railroad tank cars, tanker trucks or ocean vessels.

*(Adopted 9/4/85; Amended 11/27/02; 10/18/06)*

**8-5-203 Deleted November 27, 2002**

**8-5-204 Organic Liquid:** Any organic compound that exists as a liquid at actual conditions of use or storage.

*(Adopted 9/4/85; Amended 1/20/93)*

**8-5-205 Gasoline:** Any distillate, including aviation gasoline and additives, that has a Reid vapor pressure of four (4.0) pounds or greater.

*(Adopted 9/4/85; Amended 5/4/88, 11/3/21)*

**8-5-206 Gas Tight:** A concentration of organic compounds of less than 100 ppm (expressed as methane) above background, for any point or item, except for pressure relief devices; and less than 500 ppm (expressed as methane) above background, for pressure relief devices only.

*(Adopted 5/4/88; Amended 1/20/93; 11/27/02; 10/18/06)*

- 8-5-207 Approved Emission Control System:** A system for reducing emissions to the atmosphere that consists of a collection system and an abatement device, which is approved in writing by the APCO and achieves the overall abatement efficiency specified in the applicable standards section.  
*(Adopted 1/20/93; Amended 11/27/02)*
- 8-5-208 Degassing:** The process of removing organic gases from a tank.  
*(Adopted January 20, 1993)*
- 8-5-209 External Floating Roof Tank:** An open top tank with a storage vessel cover consisting of a double deck or pontoon single deck that rests upon and is supported by the liquid being contained.  
*(Adopted 1/20/93; Amended 10/18/06)*
- 8-5-210 Internal Floating Roof Tank:** A tank with a floating cover or roof that rests upon or is floated upon the liquid being contained, and that also has a fixed roof on top of the tank shell to shield the floating roof from wind, rain and other elements. An external floating roof tank that has been retrofitted with a geodesic dome or other fixed roof shall be considered to be an internal floating roof tank for the purposes of this rule.  
*(Adopted 1/20/93; Amended 11/27/02; 10/18/06)*
- 8-5-211 True Vapor Pressure:** The vapor pressure of a liquid at storage temperature.  
*(Adopted 1/20/93; Amended 11/27/02)*
- 8-5-212 Organic Compound:** Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate.  
*(Adopted January 20, 1993)*
- 8-5-213 Viewport:** An accessible opening in the fixed roof of an internal floating roof tank that measures at least 0.75 meters (30 inches) on each side or at least 0.75 meters (30 inches) in diameter.  
*(Adopted January 20, 1993)*
- 8-5-214 Gauge Float:** A device to indicate the level of liquid within a tank. The float rests on the liquid surface inside a well in the tank.  
*(Adopted December 15, 1999)*
- 8-5-215 Guidepole:** An anti-rotation device that is fixed to the top and bottom of a tank, passing through a well in a floating roof. Guidepoles may be solid or be equipped with slots or holes for gauging purposes.  
*(Adopted December 15, 1999)*
- 8-5-216 Zero Gap Pole Wiper Seal:** A seal with no gap exceeding 0.06 inches between the guidepole or gauge well and pole wiper seal.  
*(Adopted December 15, 1999)*
- 8-5-217 Decommissioning:** The removal of all organic liquid and gases from a storage tank with the intent of no longer using the tank for storage of organic liquids or gases.  
*(Adopted November 27, 2002)*
- 8-5-218 Stock Change:** The removal of organic liquids from a tank prior to refilling the tank with a different organic liquid.  
*(Adopted November 27, 2002)*
- 8-5-219 Tank Cleaning:** The process of washing or rinsing the interior of a storage tank, or removing sludge, or rinsing liquid from a storage tank.  
*(Adopted November 27, 2002)*
- 8-5-220 Temporary Removal From Service:** The removal of organic liquid from a storage tank for tank cleaning, stock change, tank repair, roof repair, or removal of contaminated stock, followed by return to service.  
*(Adopted November 27, 2002)*
- 8-5-221 Liquid Balancing:** The process of reducing the vapor pressure of the contents of a tank by adding lower-vapor pressure liquid without breaking tank vacuum, and, for floating roof tanks, without landing the floating roof on its supports.  
*(Adopted November 27, 2002)*
- 8-5-222 Pressure Relief Device:** Any device that is used to relieve either positive or negative pressure upstream of the device, or both.  
*(Adopted October 18, 2006)*
- 8-5-223 Pressure Vacuum Valve:** A type of pressure relief device that is used to control breathing losses from a fixed-roof tank by allowing slight positive or negative pressure variations in a tank while preventing the movement of gas into or out of the tank.  
*(Adopted October 18, 2006)*
- 8-5-224 Connection:** Flanged, screwed, or other joined fittings used to connect any piping or

equipment.

(Adopted October 18, 2006)

**8-5-225 Good Operating Condition:** A tank component or related equipment is in good operating condition when it operates as designed without visible breaks, cracks or other defects that result in organic emissions.

(Adopted October 18, 2006)

**8-5-226 Emission Minimization:** Emission minimization required in Sections 8-5-119.2.2 means reducing excess emissions caused by violation of a rule standard to the lowest achievable level using best modern practices while maintaining the associated tank in service.

(Adopted October 18, 2006)

## 8-5-300 STANDARDS

**8-5-301 Storage Tanks Control Requirements:** A person shall not store organic liquid in any storage tank unless such tank is equipped with a vapor loss control device that is specified by the table below for the tank capacity, or for a higher capacity, and for the true vapor pressure of the tank organic liquid contents, or for a higher true vapor pressure.

Tank Capacity	True Vapor Pressure of Tank Organic Contents		
	>0.5 to ≤1.5 psia	>1.5 to <11 psia	≥ 11 psia
≥1.0 m <sup>3</sup> to ≤37.5 m <sup>3</sup> (≥264 gallons to ≤9,906 gallons)	Submerged fill pipe	Submerged fill pipe (underground tank or aboveground non-gasoline tank), pressure vacuum valve, internal or external floating roof	Pressure tank or approved emission control system
>37.5 m <sup>3</sup> to <75 m <sup>3</sup> (>9,906 gallons to <19,803 gallons)	Submerged fill pipe	Submerged fill pipe (underground tank), pressure vacuum valve, internal or external floating roof	Pressure tank or approved emission control system
≥75 m <sup>3</sup> to <150 m <sup>3</sup> (≥19,803 gallons to <39,626 gallons)	Submerged fill pipe	Internal or external floating roof	Pressure tank or approved emission control system
≥150 m <sup>3</sup> (≥39,626 gallons)	Internal or external floating roof	Internal or external floating roof	Pressure tank or approved emission control system

(Amended, Renumbered 9/4/85; Amended 5/4/88; 1/20/93; 12/15/99; Amended, Renumbered 11/27/02; Amended 10/18/06)

**8-5-302 Requirements for Submerged Fill Pipes:** A submerged fill pipe required by Section 8-5-301 must meet either of the following requirements:

302.1 Where the tank is filled from the top, the end of the discharge pipe or nozzle must be totally submerged when the liquid level is 15 cm (6 in.) from the bottom of the tank.

302.2 Where the tank is filled from the side, the discharge pipe or nozzle must be totally submerged when the liquid level is 46 cm (18 in.) from the bottom of the tank.

(Adopted 9/4/85; Amended, Renumbered 11/27/02; Amended 10/18/06)

**8-5-303 Requirements for Pressure Vacuum Valves:** A pressure vacuum valve required by Section 8-5-301 must meet the following requirements:

303.1 The pressure vacuum valve must be set to either at least 90% of the tank's maximum allowable working pressure, or at least 25.8 mm Hg (0.5 psig), and the valve must be in good operating condition.

303.2 The pressure vacuum valve sealing mechanism must remain in a gas tight

condition except when operating pressure exceeds the valve set pressure, or except when the sealing mechanism is vented to a vapor recovery or disposal system that has an overall abatement efficiency of at least 95% by weight.

*(Amended 9/4/85; 5/4/88; 1/20/93; Amended, Renumbered, 11/27/02; Amended 10/18/06)*

**8-5-304 Requirements for External Floating Roof Tanks:** An external floating roof required by Section 8-5-301 must meet the following requirements:

- 304.1 The floating roof fittings must meet the requirements of Section 8-5-320.
- 304.2 The floating roof must be equipped with a primary seal that meets the requirements of Section 8-5-321.
- 304.3 The floating roof must be equipped with a secondary seal that meets the requirements of Section 8-5-322.
- 304.4 The floating roof must rest on the surface of the liquid tank contents and must be in good operating condition. There shall be no liquid tank contents on top of either the primary or secondary seal, or on top of the floating roof (this requirement does not apply to liquid that clings to the inside tank walls as the tank is drained, or to liquid that drips from the tank walls onto the seals).
- 304.5 The tank shell must be in good operating condition with no liquid leakage through the shell.
- 304.6 An external floating roof tank shall not be operated with organic liquid tank contents in any tank pontoon unless the following conditions are met:
  - 6.1 Within 48 hours of discovery of organic liquid in a pontoon, all lids or other openings on the affected pontoon shall be sealed and maintained in a gas tight condition; and
  - 6.2 The next time the tank is removed from service, repairs shall be made on all pontoon leaks on that tank.

*(Amended, Renumbered 9/4/85; Amended 5/4/88; 1/20/93; Amended, Renumbered 11/27/02; Amended 10/18/06)*

**8-5-305 Requirements for Internal Floating Roof Tanks:** An internal floating roof required by Section 8-5-301 must meet the following requirements:

- 305.1 For a tank with seals installed on or before February 1, 1993, the tank must be equipped with one of the following:
  - 1.1 A liquid mounted primary seal, mounted in full contact with the liquid in the annular space between the tank shell and floating roof,
  - 1.2 A metallic shoe primary seal, or
  - 1.3 A vapor mounted primary and a secondary sealIf sections of seal with a total length equal to or greater than the diameter of the tank are replaced at one time, or if sections of seal with a total cumulative length equal to or greater than 50% of the total seal circumference are replaced over time, then the seal shall be considered to be newly installed and subject to Section 8-5-305.2.
- 305.2 For a tank with seals installed after February 1, 1993, the tank must be equipped with a liquid mounted or metallic shoe primary seal that meets the requirements of Section 8-5-321 and a secondary seal that meets the requirements of Section 8-5-322.
- 305.3 Internal floating roof tanks that are placed into service or de-gassed after February 1, 1993 shall be equipped with at least 3 viewports in the fixed roof of the tank. This requirement shall not apply to external floating roof tanks retrofitted with domes or other fixed roofs after February 1, 1993, as long as the dome consists of translucent panels through which sufficient light passes to allow inspection of the floating roof seal.
- 305.4 The floating roof fittings must meet the requirements of Section 8-5-320.
- 305.5 The floating roof must rest on the surface of the liquid tank contents and must be in good operating condition. There shall be no liquid tank contents on top of either the primary or secondary seal, or on top of the floating roof (this requirement does not apply to liquid that clings to the inside tank walls as the tank is drained, or to liquid that drips from the tank walls onto the seals).
- 305.6 The tank shell must be in good operating condition with no liquid leakage through the shell.

*(Amended, Renumbered 9/4/85; Amended 5/4/88; 1/20/93; Amended, Renumbered 11/27/02; Amended 10/18/06)*



- 8-5-306 Requirements for Approved Emission Control Systems:** An Approved Emission Control System required by Section 8-5-301 must meet the following requirements:
- 306.1 It must provide an abatement efficiency of at least 95% by weight, based on a comparison of controlled emissions to those emissions which would occur from a fixed or cone roof tank in the same product service without an approved emission control system, expressed as a percentage. Baseline emissions shall be calculated using the criteria in API Bulletin 2518
  - 306.2 It must be gas tight.

*(Amended 1/20/93; Amended, Renumbered 11/27/02; Amended 10/18/06)*

- 8-5-307 Requirements for Fixed Roof Tanks, Pressure Tanks and Blanketed Tanks:**
- 307.1 Fixed roof tank shells and pressure tank shells must be in good operating condition with no liquid leakage through the shell.
  - 307.2 A pressure tank must maintain working pressures sufficient at all times to prevent organic vapor or gas loss to the atmosphere.
  - 307.3 The sealing mechanism on pressure relief devices located on pressure tanks and on tanks blanketed with organic gases other than natural gas shall be maintained in a gas tight condition except when operating pressure exceeds the valve set pressure, or except when the sealing mechanism is vented to a vapor recovery or disposal system that has an overall abatement efficiency of at least 95% by weight.

*(Adopted 9/4/85; Amended 5/4/88; 1/20/93; Amended, Renumbered 11/27/02; Amended 11/18/06)*

**8-5-310 Deleted May 4, 1988**

**8-5-311 Deleted November 27, 2002**

**8-5-312 Deleted January 20, 1993**

**8-5-313 Deleted January 20, 1993**

**8-5-314 Deleted January 20, 1993**

**8-5-320 Floating Roof Tank Fitting Requirements:** The fittings on any floating roof storage tank subject to Section 8-5-304 or 305 shall meet the following conditions:

- 320.1 Deleted November 27, 2002.
- 320.2 All openings through the floating roof, except pressure relief devices, shall provide a projection below the liquid surface to prevent belching of liquid and reduce escaping organic vapors.
- 320.3 All openings through the floating roof, except floating roof legs, shall be equipped with a gasketed cover, seal or lid, which shall meet either of the following requirements, as applicable, except as provided in Sections 8-5-320.4, 320.5 or 320.6.
  - 3.1 The gasketed cover, seal or lid shall have no measurable gap exceeding 0.32 cm (1/8 in.), except when the opening is in use.
  - 3.2 For inaccessible openings on internal floating roof tanks, there shall be no visible gaps as viewed from the fixed roof manway or viewports, except when the opening is in use.
- 320.4 Solid sampling or gauging wells, and similar fixed projections through a floating roof such as an anti-rotational pipe, shall meet the following conditions:
  - 4.1 The well shall provide a projection below the liquid surface.
  - 4.2 The well shall be equipped with a cover, seal or lid, which shall at all times be in a closed position with no gap exceeding 0.32 cm (1/8 in.), except when the well is in use.
  - 4.3 The gap between the well and the roof shall be added to the gaps measured to determine compliance of the secondary seal and in no case shall exceed 1.3 cm (1/2 in.).
- 320.5 Slotted sampling or gauging wells, and similar fixed projections through a floating roof such as an anti-rotational pipe, shall meet the following conditions:
  - 5.1 The well shall provide a projection below the liquid surface.
  - 5.2 The well on an external floating roof shall be equipped with the following: a sliding cover, a cover gasket, a pole sleeve, pole wiper and an internal float and float wiper designed to minimize the gap between the float and the well, provided that the gap shall in no case exceed 1.3

cm (1/2 in.), or shall be equipped with a well gasket, a zero gap pole wiper seal and a pole sleeve that projects below the liquid surface.

- 5.3 The gap between the well and the roof shall be added to the gaps measured to determine compliance of the secondary seal and in no case shall exceed 1.3 cm (1/2 in.).
- 320.6 Any emergency roof drain shall be provided with a slotted membrane fabric cover, or equivalent, that covers at least 90% of the area of the opening.

*(Amended 9/4/85; 5/4/88; 1/20/93; 12/15/99; 11/27/02; 10/18/06)*

**8-5-321 Primary Seal Requirements:** A person shall not operate a storage tank equipped with a primary seal subject to the requirements of Section 8-5-304 or 305 unless such tank meets the following conditions:

- 321.1 There shall be no holes, tears, or other openings in the primary seal fabric that allow the emission of organic vapors.
- 321.2 The seal shall be either a metallic shoe or a liquid mounted type, except as provided in Section 8-5-305.1.3.
- 321.3 Metallic-shoe-type seals shall be installed so that one end of the shoe extends into the stored liquid and the other end extends a minimum vertical distance of 61 cm (24 in.) for external floating roofs and 18 inches for internal floating roofs above the stored liquid surface. Measurements of the gap between tank shell and seals shall be made around the full circumference of the tank, and measured gaps shall meet the following requirements:
- 3.1 The geometry of the shoe shall be such that the maximum gap between the shoe and the tank shell is no greater than double the gap allowed by the seal gap criteria for a length of at least 46 cm (18 in.) in the vertical plane above the liquid surface.
- 3.2 For welded tanks, no gap between the tank shell and the primary seal shall exceed 3.8 cm (1-1/2 in.). No continuous gap greater than 0.32 cm (1/8 in.) shall exceed 10% of the circumference of the tank. The cumulative length of all primary seal gaps exceeding 1.3 cm (1/2 in.) shall be not more than 10% of the circumference, and the cumulative length of all primary seal gaps exceeding 0.32 cm (1/8 in.) shall be not more than 40% of the circumference.
- 3.3 For riveted tanks, no gap between the tank shell and the primary seal shall exceed 6.4 cm (2-1/2 in.). The cumulative length of all primary seal gaps exceeding 3.8 cm (1-1/2 in.) shall be not more than 10% of the circumference.
- 321.4 For resilient-toroid-seal equipped tanks, no gap between the tank shell and the primary seal shall exceed 1.3 cm (1/2 in.). The cumulative length of all gaps exceeding 0.32 cm (1/8 in.) shall be not more than 5% of the circumference. Measurements of the gap shall be made around the full circumference of the tank.

*(Amended 1/20/93; 12/15/99; 11/27/02; 10/18/06)*

**8-5-322 Secondary Seal Requirements:** A person shall not operate a storage tank equipped with a secondary seal subject to the requirements of Sections 8-5-304 or 305, unless such tank meets the following requirements. In determining compliance with seal gap requirements, measurements of the gap between tank shell and seals shall be made around the full circumference of the tank.

- 322.1 There shall be no holes, tears, or other openings in the secondary seal fabric that allow the emission of organic vapors.
- 322.2 The secondary seal shall allow easy insertion of probes up to 3.8 cm (1-1/2 in.) in width in order to measure gaps in the primary seal.
- 322.3 No gap between the tank shell and the secondary seal shall exceed 1.3 cm (1/2 in.). The cumulative length of all secondary seal gaps exceeding 0.32 cm (1/8 in.) shall be not more than 5% of the circumference of the tank.
- 322.4 For riveted tanks, the secondary seal shall consist of at least two sealing surfaces, such that the sealing surfaces prevent the emission of organic compounds around the rivets. Serrated sealing surfaces are allowable if the length of serration does not exceed 15.2 cm (6 in.).
- 322.5 For welded external floating roof tanks with seals installed after September 4,

1985 or welded internal floating roof tanks with seals installed after February 1, 1993, no gap between the tank shell and the secondary seal shall exceed 1.5 mm (0.06 in.). The cumulative length of all secondary seal gaps exceeding 0.5 mm (0.02 in.) shall be not more than 5% of the circumference of the tank excluding gaps less than 5 cm (1.79 in.) from vertical weld seams. If sections of seal with a total length equal to or greater than the diameter of the tank are replaced at one time, or if sections of seal with a total cumulative length equal to or greater than 50% of the total seal circumference are replaced over time, then the seal shall be considered to be newly installed for the purpose of this section.

322.6 The secondary seal shall extend from the roof to the tank shell and shall not be attached to the primary seal.

*(Amended 1/20/93; 11/27/02; 10/18/06)*

**8-5-323 Deleted January 20, 1993**

**8-5-324 Deleted January 20, 1993**

**8-5-325 Deleted January 20, 1993**

**8-5-326 Deleted May 4, 1988**

**8-5-327 Deleted May 4, 1988**

**8-5-328 Tank Degassing Requirements:** A tank operator shall not open the interior vapor space of a tank subject to this rule to the atmosphere through a hatch or manway, except to connect or disconnect degassing equipment or to conduct tank contents or emissions sampling, unless such tank meets the following conditions:

328.1 For tanks larger than 75 m<sup>3</sup>, the emissions of organic compounds resulting from degassing shall be controlled by an abatement device that collects and processes all organic vapors and gases and has an abatement efficiency of at least 90% by weight. The system shall be operated until the concentration of organic compounds in the tank is less than 10,000 ppm expressed as methane. In order to satisfy this requirement, effective June 1, 2007, the residual organic concentration must be measured to be less than 10,000 ppm as methane for at least four consecutive measurements performed at intervals no shorter than 15 minutes each.

328.2 For all tanks subject to this rule, tank degassing shall not commence after the District predicts an excess of the Federal or State Ambient Air Quality Standard for ozone for the following day, unless emissions resulting from degassing are controlled as required by Section 8-5-328.1.

328.3 Effective June 1, 2007, the tank operator shall provide written notification that is received by the APCO at least 3 days before the start of a degassing operation that is subject to this rule. However, where degassing must be performed on an emergency basis, telephone notification shall be made to the APCO within 8 hours of commencing degassing. This notification shall identify the tanks to be degassed, including their location and the liquid stored in the tanks, the nature of the emergency, and the time and date degassing will commence.

*(Adopted 1/20/93; Amended 11/27/02; 10/18/06)*

**8-5-329 Deleted November 27, 2002**

**8-5-330 Deleted November 27, 2002**

**8-5-331 Tank Cleaning Requirements:** Effective June 1, 2007, tank interior cleaning agents must meet the following requirements, unless all organic vapors and gases emitted during tank cleaning are collected and processed at an abatement device that has an abatement efficiency of at least 90% by weight.

331.1 Agents used to clean tank interiors shall have an initial boiling point greater than 302 degrees F, a true vapor pressure less than 0.5 psia, or a VOC content less than 50 grams per liter.

331.2 Except as allowed in Section 8-5-331.3, steam shall not be used to clean tank interiors at facilities that operate wastewater treatment facilities.

331.3 Steam may be used to remove scale or film from tank interior surfaces only after routine tank cleaning, including sludge removal, has been completed.

*(Adopted October 18, 2006)*

**8-5-332 Sludge Handling Requirements:** Effective June 1, 2007, the operator of a tank shall

place sludge removed from that tank directly into a sludge container that meets the following requirements. This section applies to sludge removed from any tank that was subject to the requirements of this rule at any time since it was last put into service.

332.1 The sludge container shall allow no liquid leakage.

332.2 The sludge container shall have no measurable gap exceeding 1.3 cm (1/2 in.) except when the container is being loaded or unloaded, and except during sludge sampling or treatment.

*(Adopted October 18, 2006)*

## **8-5-400 ADMINISTRATIVE REQUIREMENTS**

**8-5-401 Inspection Requirements for External Floating Roof Tanks:** Tanks subject to the requirements of Section 8-5-304 shall be inspected by the operator as follows:

401.1 The entire circumference of each primary and secondary seal shall be inspected for compliance with the requirements of Sections 8-5-321 and 8-5-322 twice per calendar year at 4 to 8 month intervals, and 4 times per calendar year at 2 to 4 month intervals for tanks subject to enhanced monitoring pursuant to Section 8-5-411. If a new primary or secondary seal is installed, or if a primary or secondary seal is repaired, both seals shall be inspected at the time of the seal installation or repair. Flexible wiper seals shall be inspected when the outer edge of the seal is curved upward.

401.2 Tank fittings shall be inspected for compliance with the requirements of Section 8-5-320 twice per calendar year at 4 to 8 month intervals, and 4 times per calendar year at 2 to 4 month intervals for tanks subject to enhanced monitoring pursuant to Section 8-5-411.

*(Amended 1/20/93; Amended, Renumbered 11/27/02; Amended 10/18/06)*

**8-5-402 Inspection Requirements for Internal Floating Roof Tanks:** Tanks subject to the requirements of Section 8-5-305 shall be inspected by the operator as follows:

402.1 The entire circumference of each primary and secondary seal shall be inspected for compliance with the requirements of Sections 8-5-321 and 8-5-322. The time between inspections shall not exceed 10 years. If a new primary or secondary seal is installed, or if a primary or secondary seal is repaired, both seals shall be inspected at the time of the seal installation or repair. Flexible wiper seals shall be inspected when the outer edge of the seal is curved upward.

402.2 The entire circumference of the outermost seal (secondary seal where so equipped, or primary seal where no secondary seal is required) shall be visually inspected for compliance with the requirements of Sections 8-5-305.1, 8-5-305.2, 8-5-305.3, 8-5-321.1 and 8-5-322.1 twice per calendar year at 4 to 8 month intervals, and 4 times per calendar year at 2 to 4 month intervals for tanks subject to enhanced monitoring pursuant to Section 8-5-411. Flexible wiper seals shall be inspected when the outer edge of the seal is curved upward.

402.3 Tank fittings shall be inspected for compliance with the requirements of Section 8-5-320 twice per calendar year at 4 to 8 month intervals, and 4 times per calendar year at 2 to 4 month intervals for tanks subject to enhanced monitoring pursuant to Section 8-5-411. Standards involving gap measurements shall be checked whenever the tank roof is accessible, but need not be checked more frequently than twice per calendar year, or 4 times per calendar year for tanks subject to enhanced monitoring pursuant to Section 8-5-411.

*(Amended 1/20/93; Amended, Renumbered 11/27/02; Amended 10/18/06)*

**8-5-403 Inspection Requirements for Pressure Relief Devices:** Pressure relief devices, including pressure vacuum valves, shall be inspected by the tank operator for compliance with the following requirements twice per calendar year at 4 to 8 month intervals, and 4 times per calendar year at 2 to 4 month intervals for tanks subject to enhanced monitoring pursuant to Section 8-5-411:

403.1 Pressure vacuum valves: gas tight standards in Section 8-5-303.

403.2 Effective June 1, 2007, for all pressure relief devices except pressure vacuum valves: gas tight standard in Section 8-5-307.3.

*(Adopted 11/27/02; Amended 10/18/06)*

**8-5-404 Inspection, Abatement Efficiency Determination and Source Test Reports:** Within 60 days of any inspection, abatement efficiency determination or source test required by this rule, a report shall be submitted to the APCO that certifies compliance with each individual requirement associated with the inspection, abatement efficiency determination or source test, and that includes data, supported by necessary calculations, to support this certification.

*(Amended, Renumbered 9/4/85; Amended 5/4/88; 1/20/93; 11/27/02; 10/18/06)*

**8-5-405 Deleted October 18, 2006**

**8-5-410 Deleted May 4, 1988**

**8-5-411 Enhanced Monitoring Program:** The operator of a tank that is subject to this rule may implement an Enhanced Monitoring Program by complying with all of the following:

411.1 The tank operator shall submit to the APCO a list of all tanks at a facility that are subject to this rule, and the capacity of each tank. At least 25% of these tanks, but no less than 1 tank at each facility, shall be selected by the operator for enhanced monitoring. The selected tanks shall constitute at least 20% of the total tank capacity at the facility that is subject to this rule. Only external floating roof tanks may be selected for enhanced monitoring unless there are not enough to constitute 25% of the total number of tanks. In this case, other tank types may be selected as necessary to constitute the required number. All tanks selected for enhanced monitoring must be subject to Section 8-5-401, 402 or 403.

411.2 An Enhanced Monitoring Program shall go into effect at a facility after the APCO determines that the criteria in Section 411.1 are satisfied. The specific tanks selected by the operator for enhanced monitoring may be changed at any time by the operator upon written notification to the APCO provided that the criteria in Section 8-5-411.1 continue to be satisfied. An Enhanced Monitoring Program may be discontinued at any time by the operator upon written notification to the APCO.

411.3 The operator shall perform enhanced monitoring as specified in Sections 8-5-401, 402 and 403.

*(Adopted October 18, 2006)*

**8-5-412 Monitoring of Leaking Pontoons:** The operator of a floating roof tank on which a leaking pontoon has been discovered shall inspect the lids and other openings on any leaking pontoon for compliance with the requirements of Section 8-5-304.6.1 once per calendar quarter beginning the quarter after the leaking pontoon is discovered until a repair of the leak is completed.

*(Adopted October 18, 2006)*

## **8-5-500 MONITORING AND RECORDS**

### **8-5-501 Records:**

501.1 A person who operates a tank subject to this rule shall keep an accurate record of the type and amount of liquids stored, type of blanket gases used, and the true vapor pressure ranges of such liquids and gases. These records shall be kept for at least 24 months.

501.2 For internal and external floating roof tanks, a tank operator who replaces all or part of a primary or secondary seal shall keep an accurate record of the length of seal replaced and the date(s) on which replacement occurred. These records shall be kept for at least 10 years.

501.3 Unless otherwise specified, the tank operator shall retain all records required by this rule, and shall retain copies of any report, notification or other submittal required by this rule for at least 24 months.

501.4 The tank operator shall keep engineering data sheets showing setpoints for pressure vacuum valves installed after June 1, 2007.

*(Amended 1/20/93; 11/27/02; 10/18/06)*

**8-5-502 Source Test Requirements:** Any tank operator who uses an Approved Emission Bay Area Air Quality Management District

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Control System or other abatement device to comply with the requirements of this rule shall perform a source test as specified in this section. Source testing, including prior notification of the District, shall be performed in accordance with the Manual of Procedures, Volume IV. This section does not apply to any device that collects all emissions and vents them to a fuel gas collection system for combustion, or to any device that is subject to periodic source testing in accordance with a District permit to operate.

502.1 A tank operator using an Approved Emission Control System or other abatement device to comply with the requirements of Sections 8-5-303.2, 306.1 or 307.3 shall perform a source test on the system verifying operation at the required abatement efficiency at least once in any calendar year in which the system is used to comply with this rule.

502.2 A tank operator using an abatement device to comply with the requirements of Sections 8-5-328.1 or 331 shall:

2.1 Demonstrate that a source test on the system verifying operation at the required abatement efficiency was completed within the 12 months prior to the operator's commencement of use and shall maintain a complete copy of the source test report; or

2.2 Perform such a source test during the operation in question.

*(Adopted 1/20/93; Amended 11/27/02; 10/18/06)*

**8-5-503 Deleted October 18, 2006**

**8-5-600 MANUAL OF PROCEDURES**

**8-5-601 Analysis of Samples, Reid Vapor Pressure:** Samples of organic compounds as specified in this rule shall be analyzed for Reid vapor pressure as prescribed in the Manual of Procedures, Volume III, Lab Method 13 or any other method approved by the APCO.

*(Amended 9/4/85; 5/4/88; 10/18/06; 11/3/21)*

**8-5-602 Analysis of Samples, True Vapor Pressure:** Samples of organic compounds not listed in Table I shall be analyzed for true vapor pressure at the tank storage temperature as prescribed in the Manual of Procedures, Volume III, Lab Method 28 or any other method approved by the APCO.

*(Adopted 9/4/85; Amended 5/4/88; 10/18/06; 11/3/21)*

**8-5-603 Determination of Abatement Efficiency:** Abatement efficiency of an Approved Emission Control System or other abatement device as specified in Section 8-5-502 shall be determined as prescribed in the Manual of Procedures, Volume IV, ST-7 or any other method approved by the APCO. For Approved Emission Control Systems subject to Section 8-5-306.1 only, baseline emissions shall be determined as specified in Section 8-5-306.1.

*(Renumbered 9/4/85; Amended 1/20/93; 11/27/02; 10/18/06; 11/3/21)*

**8-5-604 Determination of Applicability Based on True Vapor Pressure:** Table I shall be used to determine if a storage tank is subject to the requirements of this rule. For organic compounds not listed in Table I, refer to Sections 8-5-601 or 602.

*(Adopted 9/4/85; Amended 5/4/88; 1/20/93; 10/18/06)*

**8-5-605 Deleted October 18, 2006**

**8-5-605 Measurement of Leak Concentrations and Residual Concentrations:** Determination of organic compound concentrations shall be conducted as follows:

605.1 Any instrument used for the measurement of organic compound concentration shall be a combustible gas indicator that meets the specifications and performance criteria of and has been calibrated in accordance with EPA Reference Method 21 (40 CFR 60, Appendix A).

605.2 Measurements of organic compound concentration, except as otherwise specified, shall be conducted in accordance with EPA Reference Method 21 (40 CFR 60, Appendix A). Measurements of residual organic concentration required by Section 8-5-328.1 shall be measured with the instrument probe inlet placed at least 12 inches above the bottom of the tank and above the surface of any sludge material on the bottom of the tank, and at least 12 inches inside the tank measured from the inner surface of the tank wall.

*(Adopted 1/20/93; Amended 11/27/02; 10/18/06)*

**8-5-606 Analysis of Samples, Tank Cleaning Agents**

- 606.1 Initial boiling point shall be determined in accordance with ASTM D-1078-93, or by an alternate method approved in writing by the APCO and U.S. EPA.
- 606.2 True vapor pressure shall be determined in accordance with the Manual of Procedures, Volume III, Method 28, or by an alternate method approved in writing by the APCO and U.S. EPA.
- 606.3 VOC content shall be determined in accordance with the Manual of Procedures, Volume III, Method 31, or by an alternate method approved in writing by the APCO and U.S. EPA.

*(Adopted October 18, 2006)*

**TABLE I\***  
**STORAGE TEMPERATURE VERSUS TRUE VAPOR PRESSURE (TVP)**

	Density (lb/gal)	Reference Gravity API	IBP °F	Max. Temp. °F Not to Exceed	
				0.5 Psia TVP	1.5 Psia TVP
<b>Crude Oils:*</b>		-	-	-	-
San Joaquin Valley	-	-	390	249	-
<b>Middle Distillates:</b>					
Kerosene	-	42.5	350	195	250
Diesel	-	36.4	372	230	290
Gas Oil	-	26.2	390	249	310
Stove Oil	-	23	421	275	340
<b>Jet Fuels:</b>					
JP-1	-	43.1	330	165	230
JP-3	-	54.7	110	-	25
JP-4	-	51.5	150	20	68
JP-5	-	39.6	355	205	260
JP-7	-	44-50	360	205	260
<b>Fuel Oil:</b>					
No. 1	-	42.5	350	195	250
No. 2	-	36.4	372	230	290
No. 3	-	26.2	390	249	310
No. 4	-	23	421	275	340
No. 5	-	19.9	560	380	465
No. 6	-	16.2	625	450	-
<b>Asphalts:</b>					
60-100 pen.	-	-	-	490	550
120-150 pen.	-	-	-	450	500
200-300 pen.	-	-	-	360	420
<b>Organic Compounds:</b>					
Acetone	6.6	47	133	-	35
Acrylonitrile	6.8	41.8	173	30	62
Benzene	7.4	27.7	176	34	70
Carbon Disulfide	10.6	22.1	116	-	10
Carbon Tetrachloride	13.4	-	170	20	63
Chloroform	12.5	-	142	-	40
Cyclohexane	6.5	49.7	177	30	65
1,2 Dichloroethane	10.5	-	180	35	75
Ethyl Acetate	7.5	23.6	171	38	70
Ethyl Alcohol	6.6	47.0	173	55	85
Isopropyl Alcohol	6.6	47.0	181	62	95
Methyl Alcohol	6.6	47.0	148	30	62
Methyl Ethyl Ketone	6.7	44.3	175	30	70
Toluene	7.3	30	231	75	120
Vinylacetate	7.8	19.6	163	30	65

\* True vapor pressure for crude oils should be determined from the specific crude slate.