RULE 212 STORAGE OF ORGANIC LIQUIDS

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502

TEST METHODS

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100 GENERAL

PURPOSE: To limit emissions from storage tanks for organic liquids.

102 APPLICABILITY:

- 102.1 <u>Geographic</u>: The provisions of this rule apply to all of Placer County.
- 102.2 <u>Business Function:</u> This rule applies to any facility where organic liquids having a vapor pressure greater than 25.8 mm Hg (0.5 psia) are placed, stored, or held in any stationary tank, reservoir or other bulk container.

200 DEFINITIONS

- **201 EFFICIENCY:** A comparison of controlled emissions to those uncontrolled emissions which would occur from a fixed or cone roof tank in the same product service without a vapor control system. Baseline emissions shall be calculated using the criteria in API Bulletin 2518.
- **202 EXEMPT COMPOUNDS:** Exempt Compounds are defined in Rule 102, Definitions.
- **EXTERNAL FLOATING ROOF:** A vapor loss control device, consisting of a pontoon-type or double-deck-type cover that rests on the surface of the liquid contents and which is equipped with an approved closure device between the tank shell and roof edge.
- **204 INTERNAL FLOATING ROOF:** A vapor loss control device consisting of a fixed roof with an internal-floating-type cover which prevents the release or emission to the atmosphere of organic vapors or gases at an efficiency equivalent to an approved external floating roof closure device.
- **METALLIC-SHOE-SEAL:** A type of seal used to minimize evaporative losses of organic liquids from a storage tank equipped with an external floating roof. It serves a primary seal, and is constructed with vertical metal plates or "shoes", connected by braces or other devices to the circumference of the floating roof. They are partially immersed in the liquid being stored, and are suspended in such a way that they are forced outward against the inner tank wall.
- **ORGANIC LIQUID:** Any volatile organic compound which contains hydrogen and which would exist as a liquid at actual conditions of use or storage.
- **PRESSURE TANK:** A closed storage tank designed and constructed to (1) operate at internal pressures above one atmosphere, (2) be able to withstand the vapor pressure of the stored liquid under all storage conditions and (3) prevent at all times the loss of such material or its vapor to the atmosphere.
- **RESILIENT-TOROID-SEAL:** A type of seal used to minimize evaporative losses of organic liquids from a storage tank equipped with an external floating roof. It is a toroidal tube, or "donut", made of fabric or other resilient material, that rests on the surface of the stored liquid. It serves as primary seal that minimizes evaporative losses from the tank. The toroid seal may be filled with air, foam, or other resilient material.
- **STORAGE TANK:** Any stationary container, reservoir, or tank used for the storage of organic liquids.
- **210 VAPOR PRESSURE:** The vapor pressure under actual storage conditions as determined by the test methods specified in Section 502.1.

- **211 VAPOR RECOVERY SYSTEM:** A California Air Resources Board (CARB) certified system that collects organic vapors and gases from a storage tank and either returns them to the tank or otherwise processes them to prevent or reduce emissions to the atmosphere.
- **VAPOR TIGHT:** A condition when the concentration of total hydrocarbons does not exceed 10,000 ppm (expressed as methane) above background, as determined by EPA Reference Method 21. Background shall be defined as the ambient concentration of organic compounds determined at least three (3) meters upwind of the potential source and not influenced by any specific emissions source.
- **213 VOLATILE ORGANIC COMPOUNDS (VOC):** Compounds which contain at least one atom of carbon, except for the Exempt Compounds.

300 STANDARDS

- STORAGE TANKS WITH A CAPACITY GREATER THAN 40,000 GALLONS: A person shall not store any organic liquid having a vapor pressure greater than 25.8 mm Hg (0.5 psia), in any storage tank with a capacity greater than 40,000 gallons, unless such tank is (1) a pressure tank maintaining working pressures sufficient at all times to prevent organic vapor or gas loss to the atmosphere, or (2) designed and equipped with one of the vapor loss control devices as specified in Sections 306, 307, and 308 of this rule.
- **STORAGE TANKS WITH A CAPACITY LESS THAN OR EQUAL TO 40,000 GALLONS:** A person shall not store any organic liquid having a vapor pressure greater than 25.8 mm Hg (0.5 psia), in any storage tank with a capacity less than or equal to 40,000 gallons, unless such tank is equipped with one of the following:
 - 302.1 A submerged fill pipe.
 - 302.2 An apparatus of efficiency equal to a submerged fill pipe and which has been approved by the Air Pollution Control Officer.
 - 302.3 One of the vapor loss control devices that complies with the applicable requirements of Sections 306 through 313 of this rule.
- STORAGE TANKS WITH A CAPACITY GREATER THAN 20,000 GALLONS AND LESS THAN OR EQUAL TO 40,000 GALLONS: A person shall not store any organic liquid having a vapor pressure greater than 77.5 mm Hg (1.5 psia) in any storage tank with a capacity greater than 20,000 gallons, but less than or equal to 40,000 gallons, unless such tank is (1) a pressure tank maintaining working pressures sufficient at all times to prevent organic vapor or gas loss to the atmosphere, or (2) designed and equipped with one of the vapor loss control devices as specified in Sections 306 through 313 of this rule.
- ABOVE GROUND STORAGE TANKS WITH A CAPACITY GREATER THAN 10,000 GALLONS AND LESS THAN OR EQUAL TO 20,000 GALLONS: A person shall not store any organic liquid having a vapor pressure greater than 77.5 mm Hg (1.5 psia) in any above ground storage tank with a capacity greater than 10,000 gallons, but less than or equal to 20,000 gallons capacity, unless such tank is (1) equipped with a pressure-vacuum valve which is set to operate at a pressure within 10% of the maximum allowable working pressure of the tank, or at a pressure of at least 25.8 mm Hg (0.5 psia), or (2) equipped with a vapor loss control device as specified in Sections 306 through 313 of this rule.

- ANY STORAGE TANK CONTAINING ORGANIC LIQUIDS WITH A VAPOR PRESSURE GREATER THAN 569 mm Hg (11 psia): A person shall not store organic liquid with a vapor pressure greater than 569 mm Hg (11 psia) in any storage tank unless such tank is (1) a pressure tank maintaining working pressures sufficient at all times to prevent organic vapor or gas loss to the atmosphere, or (2) designed and equipped with a vapor recovery system which meets the requirements of Section 308 of this rule.
- **EXTERNAL FLOATING ROOF:** This vapor loss control device, as defined in Section 203, shall be equipped with a closure device that consists of two seals, one above the other; the one below shall be referred to as the primary seal and the one above shall be referred to as the secondary seal. Seal designs shall be submitted to the Air Pollution Control Officer and shall not be installed or used unless they are approved by the Air Pollution Control Officer as meeting the criteria set forth within this section and the applicable closure requirements of Sections 309 through 313 of this rule.
- **INTERNAL FLOATING ROOF:** This vapor loss control device with a fixed external roof, as defined in Section 205, shall prevent the release or emission to the atmosphere of organic vapors or gases at an efficiency equivalent to a floating roof closure device which meets the applicable requirements of Sections 309 through 313 of this rule.

308 VAPOR RECOVERY SYSTEM:

- 308.1 Any installed vapor recovery system shall be a CARB certified vapor recovery system capable of collecting organic vapors and gases, and shall include a vapor return or disposal system capable of processing such vapors and gases to prevent their emission to the atmosphere, at an efficiency of at least 95 percent by weight, determined in accordance with the applicable test method of Section 502.2.
- 308.2 Any tank gauging or sampling device on a tank vented to the vapor recovery system shall be equipped with a vapor-tight cover which shall be closed at all times except during gauging or sampling.
- 308.3 All piping, valves and fittings shall be constructed and maintained in a vapor-tight condition, as defined in Section 212.

309 CRITERIA FOR METALLIC-SHOE-SEAL CLOSURES:

- 309.1 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 inches) above the stored liquid surface.
- 309.2 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 inches) in the vertical plane above the liquid surface.
- 309.3 There shall be no holes or tears in, or openings through the secondary seal or in the primary seal envelope surrounding the annular vapor space enclosed by the roof edge, stored liquid surface, shoe, and seal fabric.
- 309.4 The secondary seal shall extend from the roof to the tank shell and shall not be attached to the primary seal.

- 309.5 Any roof drain which opens directly into the organic liquid content in the tank shall be provided with a slotted membrane fabric cover, or equivalent, that covers at least 90% of the area of the opening.
- 309.6 All openings in the roof, except pressure-vacuum valves, shall provide a projection below the liquid surface to prevent belching of liquid and to prevent entrained or formed organic vapor from escaping from the liquid contents of the tank and shall be equipped with a cover, seal or lid. The cover, seal, or lid shall at all times be in a closed position, with no measurable gap exceeding 0.32 cm (1/8 in.), except when the device or appurtenance is in use. Pressure-vacuum valves located in the roof shall be set to within ten percent of the maximum allowable working pressure of the roof.
- 310 CRITERIA FOR WELDED TANKS WITH METALLIC-SHOE-SEALS: Any welded tank shell which uses a metallic-shoe-type seal shall meet the following conditions:
 - 310.1 No gap between the tank shell and the primary seal shall exceed 3.8 cm (1-1/2 inches). The cumulative length of all primary seal gaps exceeding 1.3 cm (½ inch) shall be not more than 10% of the circumference; the cumulative length of all primary seal gaps exceeding 0.32 cm (1/8 inch) shall not be more than 40 percent of the circumference. No continuous gap greater than 0.32 cm (1/8 inch) shall exceed 10% of the circumference of the tank.
 - 310.2 No gap between the tank shell and the secondary seal shall exceed 1.3 cm (½ inch). The cumulative length of all secondary seal gaps exceeding 0.32 cm (1/8 inch) shall not exceed 5 percent of the circumference of the tank.
 - 310.3 The secondary seal shall allow easy insertion of probes up to 3.8 cm (1-1/2 inches) in width in order to measure gaps in the primary seal.
- 311 CRITERIA FOR RIVETED TANKS WITH METALLIC-SHOE-SEALS: Any riveted tank shell which uses a metallic-shoe-seal shall meet the following conditions:
 - 311.1 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 not be more than 10% of the circumference.
 - 311.2 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.). No gap between the tank shell and the secondary seal shall exceed 1.3 cm (½ in.). The cumulative length of all secondary seal gaps exceeding 0.32 cm (1/8 in.) shall not be more than 5% of the circumference.
 - 311.3 The secondary seal shall allow easy insertion of probes up to 3.8 cm (1-1/2 inches) in width in order to measure gaps in the primary seal.
- **CRITERIA FOR RESILIENT-TOROID-SEAL:** Any storage tank which uses a resilient-toroid-type seal shall meet the following conditions:
 - 312.1 No gap between the tank shell and the primary seal shall exceed 1.3 cm (½ inch). The cumulative length of all gaps exceeding 0.32 cm (1/8 inch) shall not be more than 5% of the circumference.

- 312.2 No gap between the tank shell and the secondary seal shall exceed 1.3 cm (½ inch). The cumulative length of all gaps exceeding 0.32 cm (1/8 inch) shall not be more than 5% of the circumference.
- 312.3 The secondary seal shall allow easy insertion of probes up to 1.3 cm (½ inch) in width in order to measure gaps in the primary seal.
- There shall be no holes or tears in, or openings through the secondary seal or in the primary seal envelope surrounding the annular vapor space enclosed by the roof edge, stored liquid surface, shoe, and seal fabric.
- 313 CRITERIA FOR WELDED TANKS WITH ZERO GAP SECONDARY SEALS: Any welded tank shell which uses a zero gap secondary seal must meet the following conditions:
 - 313.1 No gap between the tank shell and the primary seal shall exceed 3.8 cm (1-1/2 inches). The cumulative length of all primary seal gaps exceeding 1.3 cm (½ inch) shall be not more than 10% of the circumference and the cumulative length of all primary seal gaps exceeding 0.32 cm (1/8 inch) shall not be more than 40% of the circumference. No continuous gap greater than 0.32 cm (1/8 inch) shall exceed 10% of the circumference of the tank.
 - 313.2 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 inch) shall not exceed 5% of the circumference of the tank, excluding gaps less than 5 cm (1.79 in.) from vertical weld seams.
 - 313.3 The secondary seal must exert a positive pressure against the tank shell such that the seal surface in contact with the tank shell does not pull away from the tank shell more than the gaps allowed in Section 313.2.

400 ADMINISTRATIVE REQUIREMENTS

401 PRIMARY SEAL INSPECTION:

- 401.1 The primary seal envelope shall be made available for unobstructed inspection by the District on an annual basis at four locations selected along its circumference at random by the APCO. If the District detects one or more violations as a result of any such inspection, the District may require such further unobstructed inspection of the primary seal as may be necessary to determine the seal condition for its entire circumference. The District shall also have the authority to require more inspection locations if the inspector suspects the possibility of a cumulative gap criteria violation.
- In addition, for tanks with secondary seals the primary seal envelope shall be made available for inspection by the District prior to the installation of the secondary seal. For tanks with secondary seals installed before June 19, 1979, the primary seal envelope shall be made available for unobstructed inspection by the District for its full length every 5 years after June 19, 1979, except that if the secondary seal is voluntarily removed by the owner or operator prior thereto, it shall be made available for such inspection at that time. The owner or operator shall provide notification to the District no less than 7 working days prior to voluntary removal of the secondary seal.

500 MONITORING AND RECORDS

501 RECORDKEEPING:

- 501.1 A person whose tanks are subject to this Rule shall keep an accurate record of liquids stored in such containers and the vapor pressure ranges of such liquids.
- 501.2 Accurate records of throughput and stock temperature shall also be maintained.
- 501.3 Records shall include the number of organic liquid storage tanks serviced and their respective capacities in gallons.
- 501.4 Records shall be retained for a period of at least 2 years, and shall be retained at least 5 years by sources subject to the requirements of Rule 507, <u>Federal Operating Permit Program</u>, and made available to the Air Pollution Control Officer on request.
- 501.5 In addition to the recordkeeping requirements specified herein, all applicable provisions of Rule 410, <u>Recordkeeping for Volatile Organic Compounds</u> Emissions, shall be met.

502 TEST METHODS

- 502.1 <u>Vapor Pressure Determination:</u> The vapor pressure under actual storage conditions is determined by ASTM method D-2879-83 or ASTM method D-323-82.
- 502.2 <u>Vapor Recovery System Testing:</u> The determination of the overall vapor recovery system efficiency required in Section 308 shall be made using the following test procedures, as applicable:
 - 502.2.1 California Air Resources Board Test Method TP 202.1, "Determination of Emission Factor of Vapor Recovery Systems at Gasoline Bulk Plants".
 - 502.2.2 California Air Resources Board Test Method TP 203.1, "Determination of Emission Factor of Vapor Recovery Systems at Gasoline Terminals".
- 502.3 <u>Vapor-Tight Condition Testing:</u> EPA Reference Method 21 shall be used to test for vapor-tight condition.