

RULE 61.1. RECEIVING AND STORING VOLATILE ORGANIC COMPOUNDS AT BULK PLANTS AND BULK TERMINALS
(Effective 5/6/77; Rev. Effective 1/10/95)

(a) **APPLICABILITY**

Except as otherwise provided in Section (b), this rule is applicable to the receiving and storage of any volatile organic compound (VOC) in a bulk plant or bulk terminal stationary tank which is used primarily to fill mobile transport tanks.

(b) **EXEMPTIONS** (Rev. Effective 1/10/95)

(1) This rule shall not apply to a stationary tank which is less than 40,000 gallons (150,000 liters) in capacity that :

(i) Is used primarily to fuel motor vehicles; or

(ii) Is used exclusively to store organic compounds that are not volatile organic compounds as defined in Rule 61.0; or

(iii) Is used exclusively for the storage of organic solvents which are liquids at standard conditions and which are to be used as dissolvers, viscosity reducers, reactants, extractants, cleaning agents or thinners and not used as fuels; or

(iv) Is used for the storage of natural gas or propane when not mixed with other volatile organic compounds as defined in Rule 61.0; or

(v) Is used exclusively as a source of fuel for wind machines used for agricultural purposes.

(2) This rule shall not apply to any stationary floating roof tank while the tank is being completely drained and degassed for maintenance, repairs or product changes, nor shall it apply after maintenance, repairs or product changes are completed, while the tank is being refilled to the point where the floating roof or pan floats on the liquid surface. This exemption shall not apply unless the owner/operator of the tank receives written authorization from, and adheres to any conditions specified by the Air Pollution Control Officer. This exemption shall not apply from May 1 through October 31 of every calendar year.

(3) Subsections (c)(1) and (c)(2) shall not apply to fixed roof tanks at bulk plants where the annual bulk plant throughput does not exceed 5,000,000 gallons (18,925 kiloliters) of volatile organic compounds provided such tanks meet the requirements of Subsections (c)(3), (c)(6) and (c)(8). It shall be the responsibility of any person claiming this exemption to maintain separate records of monthly VOC and oxygenated fuel throughputs. These records shall be kept on site for three years and made available to the District upon request.

(c) **STANDARDS** (Rev. Effective 1/10/95)

(1) New tank construction and replacement of rim seals: Except as otherwise provided in Subsection (b)(3) of this rule no person shall store volatile organic compounds in, or transfer such compounds into, any bulk plant or bulk terminal stationary tank which is used primarily to fill mobile transport tanks and which was installed or replaced after November 15, 1979, unless the tank is equipped with best available control technology (BACT) at the time of construction or replacement. No person shall install a rim seal unless the rim seal configuration represents BACT at the time of installation.

(2) Tanks constructed prior to November 15, 1979: Except as otherwise provided in Subsection (b)(3) of this rule, no person shall store volatile organic compounds in, or transfer such compounds into, any bulk plant or bulk terminal stationary tank which is used primarily to fill mobile transport tanks and which was installed on or before November 15, 1979, unless the tank as described in, and meets the requirements of, either (i), (ii) or (iii) below:

(i) Any tank with an external floating roof which has either a pontoon type or double-deck type construction if the tank shell is opened at the top, or an internal floating cover if the tank shell has a fixed roof, shall be equipped as specified below.

Except as otherwise provided for in Subsection (b)(2), both external floating roofs and internal floating covers shall rest on the surface of the liquid contents. (Internal floating covers that are suspended above the liquid surface on floating pontoons are not considered to be resting on the surface of the liquid contents.)

Each external floating roof or internal floating cover shall be equipped with a closure device between the floating roof or cover edge and the tank shell. The closure device shall be one of the types listed in (A), (B), or (C) below and shall meet the design criteria of the type chosen at all liquid levels in the tank. In addition, the requirements of (D), (E) or (F) below shall be met.

(A) External Floating Roof Tank with a Shoe Seal/Secondary Seal Configuration: This type of closure device shall have two seals, one above the other. The lower seal, referred to as the primary seal, shall be of a metallic-shoe type design with a rubber coated fabric, or similar covering, completely enclosing the space between the shoe and the edge of the roof. The upper seal, referred to as the secondary seal, shall consist primarily of a flap made of reinforced rubber, rubber coated fabric, or similar material. The primary and secondary seals shall be designed to follow the contours of the tank shell.

If the secondary seal has gaps greater than 1/16 inch (0.16 cm), gaps between the tank shell and primary seal shall not exceed the following:

(I) There shall be no gap greater than 1 1/2 inches (3.8 cm) in width.

(II) The cumulative length of gaps exceeding 1/2 inch (1.3 cm) in width shall not exceed 10% of the tank circumference.

(III) The cumulative length of gaps exceeding 1/8 inch (0.32 cm) in width shall not exceed 30% of the tank circumference.

(IV) The cumulative length of gaps exceeding 1/16 inch (0.16 cm) in width shall not exceed 60% of the tank circumference.

No continuous gap greater than 1/8 inch (0.32 cm) shall exceed 10% of the circumference of the tank. There shall be no holes, tears, or other openings in the cover which extends between the primary shoe seal and the edge of the floating roof. The geometry of the shoe seal 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 height of at least 18 inches (46 cm) in the vertical plane above the liquid surface.

Gaps between the tank shell and the secondary seal shall not exceed the following:

(I) There shall be no gap greater than 1/2 inch (1.3 cm) in width.

(II) The cumulative length of gaps exceeding 1/8 inch (0.32 cm) in width shall not exceed 5% of the tank circumference.

(III) The cumulative length of gaps exceeding 1/16 inch (0.16 cm) in width shall not exceed 95% of the tank circumference.

The secondary seal shall extend from the roof to the tank shell and shall not be attached to the primary shoe seal. There shall be no holes, tears, or other openings in the secondary seal or seal fabric.

(B) External Floating Roof with a Toroid Seal/Secondary Seal Configuration: This type of closure device shall have two seals, one above the other. The lower or primary seal shall have a resilient toroid configuration (also known as a log or tube seal). The outer surface of the toroid seal shall be designed to prevent capillary action if the seal can become partially submerged in the stored liquid.

Gaps between the tank shell and the primary seal shall not exceed the following:

(I) There shall be no gap greater than 1/2 inch (1.3 cm) in width.

(II) The cumulative length of gaps exceeding 1/8 inch (0.32 cm) in width shall not exceed 5% of the tank circumference.

(III) The cumulative length of gaps exceeding 1/16 inch (0.16 cm) in width shall not exceed 95% of the tank circumference.

There shall be no holes, tears, or other openings in the toroid seal which extend to the stored volatile organic compounds or which allow stored volatile organic compounds to be exposed to the atmosphere.

If there are no gaps exceeding 1/16 inch (0.16 cm) between a partially submerged primary toroid seal and the tank shell, the tank may be equipped with a weather shield in lieu of a secondary seal.

For tanks with resilient toroid primary seals having seal-to-shell gaps greater than 1/16 inch (0.16 cm), the secondary seal shall consist primarily of a flap made of reinforced rubber, rubber coated fabric, or similar material. The secondary seal shall be designed to follow the contours of the tank shell and shall enclose the space above the primary seal between the roof edge and the tank shell.

Gaps between the tank shell and the secondary seal shall not exceed the following:

- (I) There shall be no gap greater than 1/2 inch (1.3 cm) in width.
- (II) The cumulative length of gaps exceeding 1/8 inch (0.32 cm) in width shall not exceed 5% of the tank circumference.
- (III) The cumulative length of gaps exceeding 1/16 inch (0.16 cm) in width shall not exceed 95% of the tank circumference.

There shall be no holes, tears, or other openings in the secondary seal or seal fabric.

(C) Internal Floating Cover with a Toroid Seal Configuration: Only fixed-roof tanks with internal floating covers shall be equipped with this type of closure device consisting of a single toroid rim seal. The closure device shall have at least a single toroid seal. The outer cover of the toroid seal shall be designed to prevent capillary action if the seal can become partially submerged in the stored liquid.

Gaps between the tank shell and the toroid seal shall not exceed the following:

- (I) There shall be no gap greater than 1/2 inch (1.3 cm) in width.
- (II) The cumulative length of gaps exceeding 1/8 inch (0.32 cm) in width shall not exceed 5% of the tank circumference.

(III) The cumulative length of gaps exceeding 1/16 inch (0.16 cm) in width shall not exceed 95% of the tank circumference.

There shall be no holes, tears, or other openings in the seal which extend to the stored volatile organic compounds or which allow stored volatile organic compounds to be exposed to the atmosphere.

(D) Replacement of Rim Seals: Replacement of rim seals after November 15, 1979 on any floating roof or floating cover equipped tank shall incorporate BACT.

(E) Other Structures: Ladders, sampling pipes, and other structures that pass through the floating roof or floating cover shall be equipped with closure devices extending from the roof to the structure. There shall be no gaps greater than 1/8 inch (0.32 cm) between closure devices and structures. Slotted sampling tubes shall be equipped with floating cylinders that average 1/8 inch (0.32 cm) or less annular gap between cylinders and tube walls. All other tank wells used for gauging, sampling standpipes, or other purposes shall be gas tight except when gauging or sampling is taking place.

(F) Highly Volatile Organic Compounds: The above control equipment is not acceptable if the volatile organic compound has a true vapor pressure of 11 pounds per square inch absolute or greater under actual storage conditions. If this paragraph applies, then BACT shall be installed.

(ii) Any fixed roof tank shall be equipped with a vapor control system capable of recovering or disposing of the hydrocarbon vapors generated by storage conditions within the tank and by the transfer of volatile organic compounds into the tank. The control system shall prevent at least 95 percent by weight of the displaced vapors from being released to the atmosphere. Vapors generated due to storage shall be vented through the operating vapor control system.

All tank gauging and sampling devices shall be gas-tight except when gauging or sampling is taking place. No tank shall be opened for gauging or sampling when the pressure in the tank is above atmospheric pressure.

Replacement vapor control systems installed after November 15, 1979 shall employ BACT.

(iii) Any tank not described in (i) or (ii) above shall be equipped with other methods or equipment which are demonstrated, to the satisfaction of the Air Pollution Control Officer, to control hydrocarbon vapors at all tank liquid levels with an effectiveness equivalent to a fixed roof tank vapor control system which meets the requirements of Subsection (c)(2)(ii) of this rule.

(3) Low-throughput Bulk Plants: Fixed roof tanks at bulk plants where the annual bulk plant throughput does not exceed 5,000,000 gallons (18,925 kiloliters) of volatile organic compounds shall meet the following requirements:

(i) All such tanks shall be equipped with a vapor control system which will prevent at least 95 percent by weight of the hydrocarbon vapors displaced from the tanks during their loading and breathing from being released to the atmosphere. This provision does not apply to the control of breathing losses associated with storage if the bulk plant was constructed on or before November 15, 1979; and

(ii) All aboveground tanks shall be equipped with a pressure/vacuum valve approved by the Air Pollution Control Officer and having a minimum pressure relief setting of 8 ounces per square inch, provided that such setting will not exceed the container's safe working pressure; and

(iii) All tank gauging and sampling devices shall be gas tight except when gauging or sampling is taking place. No tanks shall be opened for gauging or sampling when the pressure in the tank is above atmospheric pressure, except for gauging within one-hour prior to a bulk delivery.

(4) Vents: Floating roofs with vapor spaces beneath the roof, and fixed roof tanks without internal floating covers, shall be leak tight except during venting from designated vents. Such vents shall be equipped with automatic pressure/vacuum relief valves approved by the Air Pollution Control Officer, and set at the maximum safe working pressure and vacuum settings.

(5) Openings: All openings in any floating roof or floating cover, except pressure/vacuum valves and hatches on manhole covers, shall provide projections below the liquid surface. The projections shall be designed to prevent belching of liquid and to prevent entrained or foamed volatile organic compounds from escaping from the liquid contents of the tank and shall be equipped with a cover, seal, or lid which shall be gas tight at all times, except when the device or appurtenance is in use. Hatches on manhole covers shall also be gas tight except during sampling, inspection or maintenance. Any emergency roof drain on a floating roof tank must be equipped with a slotted membrane fabric cover, or equivalent, that has no gap greater than 1/8 inch (0.32 cm.).

(6) Leaks: All piping, valves, fittings, and component parts of floating roofs, floating covers, and fixed roof tank vapor recovery systems shall be constructed and maintained so that there are no fugitive vapor or liquid leaks except as otherwise provided for in this rule.

(7) Inspection and Recordkeeping: The primary seal envelope on either external floating roofs or internal floating covers shall be made available for unobstructed inspection by the Air Pollution Control Officer at locations selected at random along its circumference. The Air Pollution Control Officer may require further unobstructed inspection of the primary seal as may be necessary to determine the seal condition for its

entire circumference. A District approved secondary seal which meets the BACT provisions of this rule shall not constitute an obstruction.

The operator of any floating roof bulk storage tank subject to the standards of Subsections (c)(1) and (c)(2) of this rule shall:

- (i) Inspect the outer external floating roof or internal floating cover seal at least once every 90 days to determine ongoing compliance with both the applicable standards of this rule and the Permit to Operate conditions pertaining to the tank; and
- (ii) Inspect the upper surface of the floating roof or cover, from the top of each tank, for signs of liquid VOC leakage at least once every 30 days; and
- (iii) Maintain records of the above inspections and make the records available to the Air Pollution Control Officer for review upon request; and
- (iv) Inspect and, if necessary, repair the rim seals each time the tank is emptied and degassed; and
- (v) Notify the District at least 48 hours in advance each time the tank is being emptied and degassed; and
- (vi) Record, maintain, and make available to the Air Pollution Control Officer, upon request, monthly averages of each stored VOC's Reid or true vapor pressure and storage temperature.

The operator of any fixed roof bulk storage tank subject to Subsections (c)(1) and (c)(2) shall comply with paragraphs (v) and (vi) above.

(8) Maintenance: A maintenance program designed to ensure continuous compliance with the provisions of this rule shall be submitted to the Air Pollution Control Officer by the tank owner for approval within 45 days of a request. The owner shall adhere to the approved maintenance program.

(d) **TEST METHODS** (Effective 1/10/95)

(1) Measurements of Reid vapor pressure of stored VOC's pursuant to Subsection (c)(7)(vi) of this rule shall be conducted in accordance with ASTM Standard Test Method D 323-89. As an alternative, Reid vapor pressure may be calculated using measurements of total vapor pressure conducted in accordance with ASTM Standard Test Method D 5191-93a as approved by EPA.

(2) Calculation of the true vapor pressure of stored VOC's pursuant to Subsections (c)(2)(i)(F) and/or (c)(7)(vi) of this rule shall be conducted in accordance with the District's "Procedures for Estimating the Vapor Pressure of VOC Mixtures" as it exists on January 10, 1995. If the vapor pressure of the liquid mixture, as determined by this

procedure, exceeds the limits specified in Subsection (c)(2)(i)(F), the vapor pressure shall be determined in accordance with ASTM Standard Test Method D2879-86, Vapor Pressure-Temperature Relationship and Initial Decomposition Temperature of Liquids by Isoteniscope.

(3) The control efficiency of a vapor control system required pursuant to Subsection (c)(2)(ii) or (c)(3)(i) shall be determined using a protocol approved by the District and in accordance with either EPA Methods 18 and 25A (40 CFR 60, Appendix A) as they exist on January 10, 1995 or ARB "Procedures for Certification of Vapor Control System for Fixed Roof Storage Tanks at Bulk Plants and Bulk Terminal" as they exist on January 10, 1995, as applicable. An alternative method for determining the control efficiency pursuant to Subsection (c)(2)(ii) or (c)(3)(i) may be used provided such method has been approved, in advance, by the Air Pollution Control Officer, ARB and EPA.