

RULE 343. PETROLEUM STORAGE TANK DEGASSING. (Adopted 12/14/1993)

A. Applicability

This rule applies to degassing of any above-ground stationary tank, reservoir, or other container of more than 40,000 gallons (952 bbl) capacity containing any organic liquid having a vapor pressure of more than 2.6 psia or between 20,000 gallons (476 bbl) and 40,000 gallons (952 bbl) capacity storing any organic liquid having a vapor pressure of 3.9 psia or greater at oilfields and pipeline stations. It also applies to degassing of underground tanks with a capacity greater than 500 gallons storing liquids having a vapor pressure greater than 3.9 psia.

B. Exemptions

1. Sections D, E, and F of this rule do not apply to vessels rated and operated to contain normal working pressure of at least 15 psig without vapor loss to the atmosphere. This exemption shall be documented in accordance with Sections G and H of this rule.
2. This rule shall not apply to fixed roof tanks without vapor recovery.

C. Definitions

See Rule 102 for definitions not restricted to interpretation of this rule.

"Alternate test method" A new method for testing that is not referenced in this rule or which involves major changes to a referenced test method.

"bbl" means barrel, a unit of volume equal to 42 US gallons.

"Degassing" is the process of removing organic gases from a stationary tank, reservoir, or other container.

"Liquid Balancing" is a process in which an organic liquid having a vapor pressure subject to this rule is replaced in a floating roof tank by a liquid with a vapor pressure that is not subject to this rule. This is done by removing as much liquid as possible without landing the roof on its internal supports, pumping in the replacement liquid, allowing mixing, removing as much mixture as possible without landing the roof, and repeating these steps until the vapor pressure of the mixture is not subject to this rule.

"Liquid Displacement" is a process by which the headspace vapors that would be released to atmosphere (i.e. by opening of the fixed roof tank after removal of the liquid contents) are reduced by at least 90% by weight through the use of a displacing liquid to push headspace vapors into control equipment, a make up gas to replace vapors during the emptying stroke, and prevention of the return of the displaced vapors into the tank. The displacing fluid may be produced water or a lower volatility liquid that absorbs vapors. The make up gas may be field gas or a non-ROC gas. The steps of the procedure shall be specified in the plan required by Section G of this rule.

"Underground storage tank" means any one or combination of tanks, including pipes connected thereto, which is totally beneath the surface of the ground. Underground tanks do not include those specified as exemptions in California Health and Safety Code Section 25281(x).

"Vapor pressure": The vapor pressure measured as described in Section E.5 of this rule.

D. Requirements -- Emission Reduction

1. A person shall not allow degassing of a subject container unless the emissions are controlled by one of the following methods used in a manner that results in an emission control device efficiency of at least 90%:
 - a. For floating roof tanks, liquid balancing which results in a vapor pressure less than that specified in Section A above. For fixed roof tanks, liquid displacement in accordance with Section E.2.b of this rule.
 - b. Negative pressure displacement and subsequent incineration in a manner approved by the Control Officer.
 - c. A refrigerated condenser which reduces the vapor temperature to minus 100 degrees Fahrenheit or lower, and is capable of handling the displaced vapors.
 - d. Any other control method or control equipment that is at least 90% efficient in reducing reactive organic compound (ROC) emissions in a manner approved by the Control Officer.
2. A person shall not allow degassing of a subject underground container unless the ROC emissions are controlled by a refrigerated condenser operated at minus 100 degrees Fahrenheit or a device that is at least 90% efficient.

E. Requirements -- Calculations and Compliance Methods

1. A person shall not regenerate any spent carbon from a carbon adsorber unless the regeneration is done using equipment having a valid permit to operate issued by the Control Officer, or a valid permit as a Transportable Treatment Unit from the California Department of Toxic Substances Control.
2. Degassing of any container subject to the provisions of section D.1 of this rule shall be done in the following manner:
 - a. Air Displacement - The displaced gas shall remain vented to the refrigerated vapor condenser, or equivalent control system, for a length of time determined by the following relationship:

$$t = \frac{2.3 V}{Q}$$

Where: t = time (hours)
V = the physical volume of the headspace (cubic feet)
Q = flow rate through condenser (ft³/hr); or

- b. Liquid displacement for fixed roof tanks - The tank shall remain vented to the control equipment until 90% of the vapor volume in the tank is displaced into the control equipment by an equal volume of the liquid.

3. Except for emergency cases, the Control Officer shall be notified in writing at least two weeks prior to the start of the emptying operation for the purpose of degassing any above-ground tank subject to this rule.
4. Any condensed liquid shall be handled or disposed of in a manner previously approved in writing by the Control Officer.
5. Vapor pressure of tank contents shall be determined in accordance with the requirements for determining vapor pressure in Rule 325 or 326, whichever rule applies to the tank in question.
6. The test methods used for measuring the emission control device efficiency in section D shall be as follows:
 - a. Measurement of vapor flow through pipes shall be determined by USEPA Method 2A or 2D.
 - b. Measurement of ROC vapor concentration shall be determined by USEPA Method 25A or 25B.
7. The test method used for measuring gaseous organic compounds for section F.2 is USEPA Reference Method 21. The analyzer shall be calibrated with methane.
8. Emission control device efficiency shall be calculated by dividing the difference between the control device inlet and exhaust quantities of hydrocarbons, excluding methane, by said inlet quantity. However, if the control device is a thermal oxidizer, the control efficiency may be calculated according to 40 CFR 60.113b.c.1.i.

F. Requirements - Monitoring and Recordkeeping

1. When refrigeration is used, the tank operator shall monitor the condenser temperature and the flow rate into the condenser at 15 minute intervals. The date, time, duration of and corrective response to any interruption of service to the equipment must also be documented.
2. When carbon adsorption is used, a monitor approved by the Control Officer shall be installed and operated at the vent to determine the concentration of hydrocarbon discharged to the atmosphere. The operator shall record at hourly intervals the concentration at the vent and for each occurrence of breakthrough, the date, time, duration, and corrective action taken.
3. The vapor pressure of the contents of all tanks shall be recorded annually.
4. Within one week of any degassing operation, the operator shall record the following: the date of the degassing, the tanks degassed, and the emission reduction method used, and include with these records any documentation generated from monitoring the degassing process.
5. The operator shall maintain the records required by this rule in a readily accessible location for at least 5 years and shall make copies of the records available to the Control Officer upon oral or written request.

G. Requirements - Reporting

Tank operators shall submit to the District for approval a plan consisting of the list of above-ground tanks with the respective volumes and vapor pressures of the liquid stored in the tanks, and the control measure(s) that will be adopted to comply with the requirements of this rule.

H. Compliance Schedule

1. Not later than September 14, 1994 the tank operator shall submit to the District for approval the written plan required by Section G of this rule.
2. All operations shall be in full compliance not later than December 14, 1994.