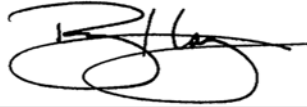


**SAN JOAQUIN VALLEY UNIFIED
AIR POLLUTION CONTROL DISTRICT
COMPLIANCE DEPARTMENT**

COM 2293

APPROVED:



DATE: September 3, 2019

**Ryan Hayashi
Director of Compliance**

TITLE: RULE 4694 – WINERY FERMENTATION AND STORAGE TANKS

**SUBJECT: INSPECTION FOR VOC EMISSIONS OF TANKS INVOLVED IN
THE FERMENTATION AND BULK STORAGE OF WINE**

OBJECTIVE:

To establish uniform District policies and procedures for implementation of Rule 4694 – Winery Fermentation and Storage Tanks.

PURPOSE:

The purpose of Rule 4694 is to minimize fugitive VOC emissions from wine fermentation and bulk storage tanks. The emission requirements of the Rule 4694, adopted December 15, 2005, apply to wineries with Baseline Fermentation Emissions ≥ 10 tons per year of VOC. Later phases of the rule may potentially affect smaller wineries.

POLICY STATEMENT:

District staff will enforce Rule 4694 and permit conditions pertaining to the discharge of VOCs from wine fermentation and bulk storage tanks. The rule requires the submittal of various compliance plans, VOC emission controls, and periodic operator monitoring and recordkeeping. The rule also outlines required emission reductions. Individual sources may have permit conditions that may be more restrictive than Rule 4694 requirements.

BACKGROUND – RULE 4694 REQUIREMENTS:

Rule 4694 recognizes fermentation emissions and storage emissions, as well as transfer operations between tanks during these processes. Fermentation is the action of yeast upon sugar to produce ethyl alcohol. Fermentation begins within a fermenter when the must (freshly pressed grape juice, including skins, seeds, and stems) is inoculated with yeast or when the operator allows

fermentation to begin naturally. Fermentation ends when the operator stops fermentation, when fermentation stops naturally, or when the fermenting juice reaches a sugar content of 4 degrees Brix or less. This process is referred to as primary fermentation. Some wine may undergo secondary fermentation and other post-fermentation processes, such as malolactic fermentation.

During fermentation, Rule 4694 requires that affected facilities achieve 35% emission reductions. The rule offers a menu approach as to how these reductions can be achieved: via installation of control technology, payment of fees toward an off-site mitigation fund, or a market-based approach in which facilities can take advantage of voluntary VOC or NOx emission reductions elsewhere to offset their own fermentation emissions.

Storage requirements begin 60 days after the end of primary fermentation. During storage, tanks must be maintained in a leak-tight condition. Section 3.18 of the rule defines a gas leak as >1,000 ppmv, as methane, above background. The leak tight-requirement does not apply to normal venting through a pressure-vacuum relief valve (PVRV) with a cracking pressure within 10% of the maximum allowable working pressure of the tank. While wine is stored in tanks, the temperature must be maintained at or below 75 degrees Fahrenheit.

DEFINITIONS:

- I. **Uncontrolled Fermentation Emissions (UFE)** – the VOC emissions that occur over the course of a calendar year from the fermentation of must, before emission mitigation.
- II. **Baseline Fermentation Emissions (BFE)** – the UFE averaged over a three-year baseline period.
 - A. A facility may propose its own BFE (BFE Operator). The BFE Operator must be less than or equal to the Potential to Emit (PE) and greater than or equal to the BFE Calculated. If a separate BFE Operator has been proposed, this value is to be used in lieu of the BFE Calculated in preparing and reviewing the plans.
- III. **Required Annual Emission Reductions (RAER)** – The sum of all emission reductions achieved by the operator over the course of a calendar year. RAER consists of:
 - A. **Fermentation Emission Reductions (FER)** – Achieved via emission controls utilized during fermentation.
 - B. **District Obtained Emission Reductions (DOER)** – Achieved via monetary contribution to District mitigation fund.
 - C. **Certified Emission Reductions (CER)** – Achieved via surplus (non-regulatory) VOC and/or NOx reductions from other processes. CER are subject to an offset ratio of 1.2 for off-site reductions (as opposed to 1.0, or no offset ratio, for on-site reductions). The offset ratio gives a slight advantage for offsetting emissions on site, as opposed to acquiring off-site CER.

PROCEDURE:

I. General Inspection

Follow general inspection procedures and guidelines, as defined in **COM 2020 – INSPECTIONS**, to prepare for, conduct, and conclude the inspection.

II. In-house Record Review

Before you conduct the inspection, confirm receipt of the latest plans received by the District in the EDMS database.

Plans required under Section 6.0 of the rule are as follows:

A. Three-Year Compliance Plan (TYCP)

In this plan, the facility must calculate its BFE based on the past three calendar years of red and white wine fermentation throughputs, and show that the RAER achieved by the facility over the next three calendar years will be $\geq 35\%$ of the BFE.

The first TYCP for existing wineries was due on December 1, 2006. TYCPs are due every three years thereafter. TYCPs for affected facilities that have come under permit since adoption of Rule 4694 may be due on different years than TYCPs for existing wineries.

1. Verify that the TYCP was received by December 1 of the year in which it is due.
2. Using the designated spreadsheet and accompanying instructions (Appendix A), verify that the PE value provided in the plan matches the value in the spreadsheet. If these values do not match, contact your supervisor or manager as this may be a non-compliance issue.
3. Update the BFE Calculated by inputting the previous three years of red and white wine fermentation volumes. Verify that these volumes match the fermentation data provided in the previous three Annual Compliance Plan Demonstrations (ACPDs).
4. If the facility has designated a BFE Operator, enter this value and verify that it is greater than or equal to the BFE.
5. Verify that the FER, DOER, and CER acquired by the facility, as described in the plan, are properly accounted for in the spreadsheet. The review requires confirming the actions and operations necessary to generate the DOER and CER, listed in the TYCP and ACPD, are taking place.
6. RAER will be calculated automatically as the sum of the FER, DOER, and CER (multiplied by offset ratio as listed in the TYCP, if applicable) acquired by the facility.

B. Three-Year Compliance Plan Verification (TYCPV)

In this plan, the facility will show that it achieved the appropriate RAER in each of the past three calendar years. If utilizing CER, the facility will show that the required emission reduction commitments were implemented as described above.

The first TYCPV was due by July 1, 2007. TYCPVs are due every three years thereafter.

TYCPVs for affected facilities that have come under permit since adoption of Rule 4694 may be due on different years than TYCPVs for existing wineries. New wineries will be required to meet TYCPV submittal timelines as required by permit condition. Verify that the TYCPV was received by July 1 of the year in which it is due.

1. Verify that the facility has certified that:
 - a. Any control equipment generating FER is installed and operating properly and in accordance with permit conditions;
 - b. Any Air Quality Impact Mitigation Fund (AQIMF) payments to acquire DOER have been made by March 1 of the same year the TYCPV is due; and
 - c. Any emissions reduction commitments to acquire CER have been implemented.

C. Annual Compliance Plan Demonstration (ACPD)

In this demonstration, the facility will calculate its UFE for the previous calendar year. If the UFE is less than or equal to the BFE from the last TYCP, the facility must demonstrate that the RAER achieved was $\geq 35\%$ of the BFE. If the UFE was greater than the BFE, the facility must demonstrate that the RAER achieved was $\geq 35\%$ of the UFE. In this way, if a facility had an especially high-throughput year, causing the UFE to surpass the BFE, then the facility would be held to achieving RAER $\geq 35\%$ of the UFE, not merely the BFE.

The first ACPD was due by March 1, 2008. ACPDs are due annually thereafter.

Section 6.3 and Section 7.0 of the rule both establish the submittal deadline for the ACPD. Section 6.3 requires the ACPD to be submitted by February 1, while Section 7.0 specifies a deadline of March 1. As these dates conflict in the rule, the later March 1 date specified in Section 7.0 shall be utilized for the purpose of implementing and enforcing the ACPD requirement. The February 1 date contained in Section 6.3 previously appeared in the conditions on the facility-wide PTO for facilities subject to Rule 4694. Permit Services administratively updated the affected PTOs to reference the March 1 date. Request Permit Services administratively amend any permits still containing the February 1st compliance date. No enforcement action shall be taken in regards to the aforementioned requirements provided that the facility submits the ACPD by the March 1 compliance date.

A complete review and verification of the data in the ACPD will be performed as follows:

1. Determine that the ACPD was received by March 1.
2. Using the designated spreadsheet and accompanying instructions (Appendix B), enter both the red and white wine fermentation volumes and verify that the UFE matches the UFE reported in the plan.
3. Verify that the BFE or BFE Operator (as appropriate) in the spreadsheet matches the BFE reported in the plan.
4. Verify that the CER and offset ratio in the spreadsheet match the CER and offset ratio reported in the plan.
5. Verify that the Net CER (adjusted for offset ratio) is greater than or equal to the RAER.
6. If RAER amounts are inadequate, the facility must provide additional RAER by May 1.
 - a. Section 6.3.7.2 and Section 7.0 of the rule both establish the deadline for providing

additional RAER if the facility's RAER <35% of the UFE or BFE, as appropriate, for the year covered by the ACPD. Section 6.3.7.2 requires the additional RAER to be provided by April 1 while Section 7.0 specifies a deadline of May 1. As these dates conflict in the rule, the later May 1 date specified in Section 7.0 shall be utilized for the purpose of implementing and enforcing the additional RAER requirement. Therefore, no enforcement action shall be taken in regards to the aforementioned requirements provided that the facility complies with the deadlines specified in Section 7.0 of the rule.

- D. Note that Table 1 – Rule Compliance Schedule presented in Section 7.0 of the rule contains two incorrect section references. Specifically, the reference to Section 6.1.5.3.4 should be 6.1.5.3.5 and Section 6.3.5.2 should be 6.3.7.2.

III. Facility Inspection

- A. Prior to conducting the compliance inspection, confirm TYCP and ACPD reviews have been completed in the appropriate spreadsheet. Verify in EDMS that the TYCPV has been submitted.
- B. Review monitoring records.
1. For each fermentation batch, review records of:
 - a. Total gallons of fermented “must,”
 - b. Uncontrolled fermentation emissions, and
 - c. Fermentation emission reductions.
 2. For each wine storage tank, review weekly records of:
 - a. Wine throughput per tank, and
 - b. Maximum temperature of stored wine for each tank.
 3. Review records of any additional NSR monitoring requirements included in the permit.
 4. If limited by permit condition to a BFE of <10 tpy, review records of red and white wine fermentation throughputs.
 - a. If conducting the inspection prior to receipt of the ACPD (between January 1 and March 1), verify compliance with 10 tpy emission limit by calculating BFE using the following emission factors:
 - Red wine, 6.2 lbs-VOC/1,000 gallons;
 - White wine, 2.5 lbs-VOC/1,000 gallons.
- C. Obtain a list of wine fermentation and storage tanks >250 gallons, noting that some tanks may be used for both functions.
1. Storage requirements do not apply to tanks made primarily of wood or concrete.
 2. Determine tank status and contents. Permits are required for all tanks >250 gallons:
 - a. Undergoing “must-fermentation” to wine;
 - b. Undergoing post-fermentation processing;
 - c. Used for wine storage; and
 - d. Storing non-wine organic liquids, such as ethanol or “spirits.”
- D. Inspect permitted tanks for compliance with Rule 4694 and permit requirements.

1. Wine tanks undergoing fermentation and post-fermentation processes up to 60 days after the end of primary fermentation are not subject to the leak-tight requirement. Therefore, during this period of time, hatches may be open. Nonetheless, document that a PVRV is installed if the tank is also used for wine storage.
 - a. Post-fermentation processes include but are not limited to racking, fining, filtration, centrifugation, ion exchange, tartrate stabilization, and malolactic fermentation.
 - b. Tank hatches may be open during post-fermentation processing and related product transfers, as the leak-tight requirement does not apply.
2. Wine storage tanks ≥ 5000 gallons:
 - a. Wine storage requirements first apply 60 days following the completion of primary fermentation.
 - b. "Import wines" are those produced offsite and arrive at the facility ready for storage. Upon arrival at an affected facility, import wines are subject to the storage requirements of the rule.
 - c. In accordance with EPA Method 21, survey all tanks used for wine storage.
 - d. Survey tanks for gaseous and liquid leaks utilizing the forward-looking infrared (FLIR) camera and a hydrocarbon analyzer per Method 21 and Compliance Policy COM 1151. Possible leak points include but are not limited to tank-top hatches, threaded connections, and PVRVs (on both the vacuum and pressure sides). Rule 4694 defines a gas leak as $>1,000$ ppmv, as methane, above background, measured per Method 21.
 - e. During wine storage, tank hatches must be closed and tanks must be maintained in a gas-tight condition. Open hatches circumvent the purpose of the required PVRV.
 - Hatches may be open when actively transferring wine, but must otherwise be closed and maintained in a gas-tight condition. Active transfer operations include the time between opening the hatch and starting the pump, and the time between shutting down the pump and closing the hatch, provided that these processes are completed within a reasonably expeditious timeframe.
 - Survey all open hatches on wine storage tanks, both utilizing the FLIR camera and in accordance with Method 21. An open hatch observed during storage operations is not an automatic violation, since it is possible that the tank has been cleaned to such an extent that the VOC concentration at the interface of the hatch and atmosphere is below the leak standard in the rule.
3. PVRVs must be permanently labeled with their cracking pressure. The cracking pressure must be set within 10% of the maximum allowable working pressure of the tank.

IV. Post-Inspection Procedure

The following items should be discussed with the owner/operator during the post-interview:

- A. The overall condition of the facility and equipment.
- B. The compliance results of the inspection.
- C. Upcoming facility deadlines.

D. Explain the reason(s) for any NTC or NOV issued.

V. Enforcement Guidelines

- A. NOVs are to be issued for violations of emission standards, monitoring requirements, and recordkeeping requirements that are not covered under Section V.B. of this policy.
- B. NTCs may be issued for first-time late report submittals and minor recordkeeping deficiencies that do not inhibit District staff's ability to make an overall compliance determination, in accordance with Compliance Policy COM 1170 – Notice to Comply and Record of Corrective Action Taken.
 - 1. NOVs are to be issued for subsequent late report submittals and recordkeeping deficiencies, for which prior enforcement action has been taken.
- C. NTCs may be issued for first-time violations of the PVRV labeling requirement.
 - 1. NOVs are to be issued for subsequent violations of this type, for which prior enforcement action has been taken.
- D. NOVs are to be issued for unpermitted equipment.
- E. Other violations not specifically included in this policy may meet the intent of Rule 1180 – Notices to Comply and Compliance Policy COM 1170 and may qualify for a NTC or RCAT. When an inspector believes that a violation not specifically listed in this policy qualifies for a NTC or RCAT, the inspector shall discuss the violation with a supervisor or manager and receive approval prior to issuance of the NTC or RCAT.
 - 1. The list of enforcement actions included immediately above is not inclusive and shall not supersede the enforcement actions described by any other District policy.

VI. Variations, Deviations, and Amendments

Variation, deviations, and/or amendments, including one-time deviations and special-case circumstances, from this policy and/or the work practice standards specified therein require the authorization and approval of the Director of Compliance, or the designee thereof. Permanent changes to this policy and/or the work practice standards specified therein require the revision and re-approval of this policy. While it is the intent of this policy to provide clarification to rule requirements, there may be scenarios not specifically addressed herein. In these stations, staff should request additional guidance and direction from their supervisor or management.

Appendix A

Winery Production Data and Fermentation Emissions 20XX-20XX														
Facility	Facility #	20XX			20XX			20XX			BFE Calc	BFE Operator	RAER tons	
		Red Gal	White Gal	UFE tons	Red Gal	White Gal	UFE tons	Red Gal	White Gal	UFE tons				
Totals:														

Appendix B

