

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Preliminary Draft Staff Report Proposed Amended Rule 1178 – Further Reductions of VOC Emissions from Storage Tanks at Petroleum Facilities

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BACKGROUND

The Governing Board adopted Rule 1178 – Further Reductions of Fugitive VOC Emissions from Storage Tanks at Petroleum Facilities on December 21, 2001, with the purpose of further reducing emissions of volatile organic compounds (VOCs) from storage seals and fittings on storage tanks at petroleum facilities with annual VOC emissions of more than 40,000 pounds (20 tons). Rule 1178 requires the operator at any petroleum facility with annual VOC emissions exceeding 40,000 lbs (20 tons) for emission inventory year 2000 to have installed domed roofs on all external floating roof tanks that contain organic liquids having true vapor pressure (TVP) greater than or equal to 3 psia as reported in the Annual Emission Report (AER) pursuant to Rule 301 – Permit Fees for the emissions inventory year 2000, no later than December 31, 2008 (Phase I).

For any external floating roof tank that was not required to install a domed roof, but subsequently was determined to contain organic liquids having TVP greater than or equal to 3 psia as reported in the AER pursuant to Rule 301 for any emissions inventory year after 2000, the tank operator would be required to install a domed roof no later than two years after becoming subject to the rule (Phase II). The applicability and compliance verification of waste stream tanks and recovered oil tanks is based on a monthly average TVP greater than or equal to 3 psia.

Rule 1178 contains a limited exemption, where in lieu of installing a domed roof on an external floating roof tank subject to Phase II of the rule, an operator could alternatively apply for a South Coast AQMD permit that would limit the TVP of organic liquids stored in the tank to lower than 3 psia. This limited exemption that allowed an operator of a tank with a monthly average true vapor pressure greater than 3 psia to accept a permit condition limiting the vapor pressure ended with Phase I, on December 31, 2008.

REGULATORY HISTORY FOR RULE 1178

Since its adoption, Rule 1178 has been amended twice. The rule was amended in April 2006 to include a provision that allowed the use of alternatives to a slotted membrane fabric drain cover for an external floating roof, provided that it had the equivalent control efficiency. The amendment also clarified the definition of a mechanical shoe primary seal by requiring the use of VOC-impervious fabric to serve as a seal in the vapor space between the shoe seal and the roof. In addition, the amendment also specified guidelines for the distances which internal floating roof tank seals were allowed to be extended into the liquid and outside the liquid stored.

Rule 1178 was also amended in April 2018, and included a provision that incorporated a flexible enclosure system that encapsulates the entire surface of the slotted guide pole and serves as a VOC emission reduction option as outlined in the 2000 U.S. EPA Storage Tank Emission Reduction Partnership Program (STERPP) Agreement. The amendment made the option available for application in certain floating roof tank configurations, including those where the operator had

chosen to conduct radar depth gauging. The amendment clarified the inspection procedures and entries to compliance report forms to include the flexible enclosure system option.

AFFECTED FACILITIES

Rule 1178 applies to all above ground storage tanks that have capacity equal to or greater than 75,000 liters (19,815 gallons), are used to store organic liquids with a TVP greater than 5 mm Hg (0.1 psi) absolute under actual storage conditions, and are located at any petroleum facility that emits more than 40,000 pounds (20 tons) per year of VOC.

PAR 1178 will affect waste water tanks that were not identified previously under Phase I of the rule but subsequently contain organic liquids with a TVP greater than 3 psia as reported on their AER. Rule 1178 defines a waste stream tank as a storage tank containing at least 75% water by volume and some liquid waste stream generated in a manner which contains petroleum liquid, emulsified oil, VOC, or other hydrocarbons. PAR 1178 provides an option to permit such a tank with a condition to limit the TVP of the organic liquids stored in the tank to lower than 3 psia in lieu of complying with the doming requirements. Staff is aware of only one facility with two tanks affected by this amendment.

PUBLIC PROCESS

The development of PAR 1178 was conducted through a public process. A public workshop meeting will be held on September 3, 2020 with the comment period closing on September 17, 2020. The purpose of the public workshop is to present the proposed rule to the general public and stakeholders and to receive any comments related to the proposal.

SUMMARY OF PROPOSAL

In March 2019, a petroleum refining facility located within the jurisdiction of the South Coast AQMD reported on its 2018 AER the emissions for two external floating roof tanks in waste water storage service. While the underlying TVP values were not reported on the face of the AER, the report utilized a TVP value in excess of 3.0 psia. In a case where compliance verification determines the monthly average true vapor pressure is greater than or equal to 3 psia, the operator is required to install domed roofs onto the tanks within two years once the tanks become subject to the rule. The limited exemption provided under Rule 1178 would not apply for a tank that becomes subject to the rule after the end of Phase I (December 31, 2008).

The facility has requested relief from any potential requirement for installation of a domed roof due to safety concerns associated with the enclosure of the tanks' roofs. Specifically, the facility reported that tanks that store waste water may contain hydrogen sulfide contaminants which can

create pyrophoric material.¹ A waste water tank, which is a type of waste stream tank, typically stores water generated from the production of oil or the refining process of oil and that contains contaminants including hydrogen sulfide and ammonia. By definition, a pyrophoric material is capable of igniting spontaneously in air.² The material can accumulate under a domed roof and possibly lead to a fire or explosion. Due to the safety concerns associated with installing a dome on the roof of an external floating roof tank in waste water service, the facility has requested for the option to accept a permitted condition to limit the TVP of the organic liquids stored in the waste water tanks to lower than 3 psia, an option that generally expired for any tanks that would become subject to the rule on December 1, 2008.

Staff has reviewed concerns related to the enclosure of external floating roof tanks in waste water service and agrees that there is a potential safety concern. Proposed Amended Rule 1178 will allow the option for an operator to apply for and accept permit conditions to limit the TVP of the organic liquid stored in waste water tanks where the installation of a domed roof may create a hazard due to the accumulation of pyrophoric material. This is similar to the option that generally expired at the end of Phase I (December 31, 2008), but has been narrowed in scope to only be allowed for tanks with organic liquid stored in waste water where the installation of a domed roof may create a hazard due to the accumulation of pyrophoric material.

Proposed Amended Rule 1178, subparagraph (d)(2)(C) will contain two clauses. Clause (d)(2)(C)(i) contains the existing condition and clause (d)(2)(C)(ii) would provide the permitting option for external floating roof tanks that store waste water. The proposed rule language would read:

- (C) In lieu of complying with the requirements in subparagraph (d)(2)(B):
 - (i) The operator who is subject to Phase I shall accept permit conditions to limit the true vapor pressure of the organic liquids stored in the tanks to lower than 3 psia by the end of Phase I; or
 - (ii) The operator of a waste water tank where the installation of a domed roof may create a hazard due to the accumulation of pyrophoric material who is subject to Phase II shall accept permit conditions to limit the true vapor pressure of the organic liquids stored to lower than 3 psia.

This amendment addresses a specific issue related to concerns regarding the installation of a domed roof on a waste water tank. However, staff recognizes that Rule 1178 will be amended in the future as part of the implementation of Assembly Bill (AB) 617, particularly for areas of concern identified and committed to in the Community Emissions Reduction Plan (CERP) for the communities of Wilmington, Carson, and West Long Beach.

¹ AFPM Process Safety Bulletin – Flammability Hazards of Hydrogen Sulfide Accumulation in Sulfur Tanks by AFPM (American Fuel and Petrochemical Manufacturers); June 2018

² Retrieved from: <https://www.dictionary.com/browse/pyrophoric>

EMISSION REDUCTIONS AND COST EFFECTIVENESS

Staff evaluated potential VOC emission reductions if domes were to be installed on the two tanks versus the implementation of the proposed permit condition to limit the TVP of the material stored in the tank to less than 3 psia. A baseline of emissions at a TVP of 3.26 psia for the material stored in the tanks was used for illustrative purposes and for closely approximating psia values utilized in the 2018 AER. Based on an initial TVP value of 3.26 psia, if domes were to be installed on the two tanks affected by the rule, a reduction of approximately 2 lbs of VOC per day per tank might be estimated. Based on an initial TVP value of 3.26 psia, by implementing the proposed permit condition of limiting the TVP of the material in the tank to less than 3 psia, a reduction of approximately 0.8 lbs of VOC per day per tank is estimated. The proposed amendment would result in approximately 2.4 lbs of VOC per day foregone. Notably, however, the reported emissions for these two tanks of regulatory interest in reporting year 2019 were just 786.2 lbs. of VOC combined, thus making even this amount of suggested foregone VOC an upper bound estimate for any atypical year.

PAR 1178 proposes the option for an operator of a waste water tank where the installation of a domed roof may create a hazard due to the accumulation of pyrophoric material who is subject to Phase II to accept permit conditions to limit the true vapor pressure of the organic liquids stored to lower than 3 psia. The proposed amendment does not result in any increased costs to be incurred. While the tank operator would have to pay for an application to change the condition of the applicable permit, the cost would be less than the application cost to modify the tank to install the dome. While permit conditions would be expected to impose monitoring and recordkeeping requirements, those costs on the facility already imposed by rule requirements under Rule 1178(d)(2)(B) for the facility to keep it established that a tank is not subject to a doming requirement. The proposed rule also does not have any significant effect on air quality. As a result, a cost-effectiveness analysis is not required.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Pursuant to the California Environmental Quality Act (CEQA) and South Coast AQMD's certified regulatory program (Public Resources Code Section 21080.5, CEQA Guidelines Section 15251(I), and South Coast AQMD Rule 110), the South Coast AQMD, as lead agency for the proposed project, will be reviewing PAR 1178 to determine if any potential adverse environmental impacts will occur. Appropriate CEQA documentation will be prepared based on the analysis.

SOCIOECONOMIC ANALYSIS

The proposed amendments to Rule 1178 do not impose any additional costs. Therefore, no socioeconomic analysis is required under California Health and Safety Code Sections 40440.8 and 40728.5.

DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE SECTION 40727

Requirements to Make Findings

California Health & Safety Code Section 40727 requires that the Board make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing and in the staff report. In order to determine compliance with Sections 40727 and 40727.2, a written analysis is required comparing the proposed rule with existing regulations.

The draft findings are as follows:

Necessity

PAR 1178 is necessary to provide operational flexibility to an operator of an external floating roof tank in the service of sour water or recovered oil while addressing safety concerns related to the installation of domed roofs on these types of tanks.

Authority

The South Coast AQMD obtains its authority to adopt, amend, or repeal rules and regulations pursuant to H&SC Sections 39002, 40000, 40001, 40440, 40702, 40725 through 40728, 40920.6, and 41508.

Clarity

PAR 1178 is written or displayed so that its meaning can be easily understood by the persons directly affected by them.

Consistency

PAR 1178 is in harmony with and not in conflict with or contradictory to, existing statutes, court decisions or state or federal regulations.

Non-Duplication

PAR 1178 will not impose the same requirements as any existing state or federal regulations. The proposed amended rules are necessary and proper to execute the powers and duties granted to, and imposed upon, the South Coast AQMD.

Reference

In amending this rule, the following statutes which the South Coast AQMD hereby implements, interprets or makes specific are referenced: H&SC Sections 39002, 40001, 40406, 40702, and 40440(a).

COMPARATIVE ANALYSIS

Under H&SC Section 40727.2, the South Coast AQMD is required to perform a comparative written analysis when adopting, amending, or repealing a rule or regulation. The comparative analysis is relative to existing federal requirements, existing or proposed South Coast AQMD rules and air pollution control requirements and guidelines which are applicable to above ground storage tanks. Because PAR 1178 does not impose a new or more stringent emissions limit or standard, or other air pollution control monitoring, reporting or recordkeeping requirements, a comparative analysis is not required.

INCREMENTAL COST EFFECTIVENESS

California H&S Code Section 40920.6 requires an incremental cost-effectiveness analysis for BARCT rules or emission reduction strategies when there is more than one control option which would achieve the emission reduction objective of the proposed amendments, relative to ozone, CO, SO_x, NO_x, and their precursors. The proposed amendment does not include new BARCT requirements. Therefore, this provision does not apply to the proposed amendment.