

Technical Support Document
for
EPA's Notice of Proposed Rulemaking

on revisions to the
California State Implementation Plan

as submitted by the California Air Resources Board
for the San Joaquin Valley Unified Air Pollution Control District

EPA's Analysis of
San Joaquin Valley Unified Air Pollution Control District's
Rule 4565, Biosolids, Animal Manure, and Poultry Litter Operations

United States Environmental Protection Agency, Region IX
Air Division

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San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) Rule 4565, Biosolids, Animal Manure, and Poultry Litter Operations

Chronology of Rule Submittal

- The SJVUAPCD Governing Board adopted Rule 4565 on March 15, 2007.
- The California Air Resources Board (CARB) submitted Rule 4565 to EPA on August 24, 2007.
- EPA found CARB’s submittal of Rule 4565 complete on September 17, 2007.
- There are no previous versions of Rule 4565 adopted by SJVUAPCD or approved into the State Implementation Plan (SIP) by EPA.

Background

SJVUAPCD has primary responsibility for regulating air pollution in the San Joaquin Valley (SJV), which is classified as an extreme nonattainment area for the federal eight-hour ozone standard (40 CFR 81.305). Therefore, as required by section 182(b)(2) of the Clean Air Act (CAA), SJVUAPCD must implement Reasonably Available Control Technology (RACT) for all stationary sources with a potential to emit more than 10 tons per year (t/y) of volatile organic compounds (VOC). SJVUAPCD implemented Rule 4565 to satisfy various requirements, including RACT. The District estimates that co-composting facilities that process 8,470-11,200 wet tons per year are large enough to emit more than 10 tons per year.¹

SJVUAPCD’s 8-hour ozone attainment demonstration commits to reduce 0.1 t/d of VOC from biosolid, animal manure and poultry litter operations.² Rule 4565 was also adopted, in part, to reduce these emissions. However, this TSD does not attempt to evaluate whether Rule 4565 has achieved these reductions.

Rule Summary

Rule 4565 is designed to limit VOC emissions from SJV facilities that manage biosolids, animal manure or poultry litter, and includes requirements for landfills, land application and composting/co-composting.

Rule 4565’s core requirements are contained in Section 5. Section 5.1 concerns landfill requirements. Section 5.2 of the rule requires land application mitigation measures. Section 5.3 requires composting and co-composting facilities to select either Class One mitigation measures or Class Two mitigation measures, or a combination of both. Class One mitigation measures do not require add on controls and include practices such as

¹ SJVUAPCD Final Staff Report, Revised Proposed New Rule 4565, March 30, 2007, pg. 5. Henceforth, we refer to this document as SJVUAPCD Final Staff Report.

² SJVUAPCD Final Staff Report, pg. 2.

scraping or sweeping where compostable material is mixed, screened or stored and maintaining minimum oxygen concentrations in active and curing compost piles. Class Two mitigation measures do require add-on controls, and include conducting active or curing composting in aerated static piles³ or in-vessel composting systems⁴ that are vented to a VOC control device, most commonly a bio-filter.

Composting/co-composting facilities with throughput less than 20,000 wet tons per year must implement three Class One mitigation measures. Facilities with throughputs between 20,000 – 100,000 wet tons/year must implement four Class One mitigation measures. Facilities with throughputs above 100,000 wet tons/year must implement either four Class One mitigation measures and one Class Two mitigation measure for active composting, or two Class One mitigation measures and one Class Two mitigation measure for active composting and one Class Two mitigation measure for curing composting.

Sections 5.4, 5.5 and 5.6 contain additional requirements for large composting and co-composting facilities.

Evaluation Criteria

The following criteria were used to evaluate the submitted rule.

1. Enforceability - The Bluebook (*Issues Relating to VOC Regulation Cutpoints, Deficiencies, and Deviations*, EPA, May 25, 1988) and the Little Bluebook (*Guidance Document for Correcting Common VOC & Other Rule Deficiencies*, EPA Region 9, August 21, 2001) were used to help evaluate compliance with the CAA §110(a)(2)(A) requirement for enforceability.
2. Anti-Backsliding – We have evaluated this SIP revision to determine whether it would interfere with any applicable requirement concerning attainment and reasonable further progress (RFP) or any other applicable requirement of the Act (CAA §110(l)) or modify, in a nonattainment area, any SIP-approved control requirement in effect before November 15, 1990 (CAA §193).
3. RACT –CAA Section 182(b)(2) directs extreme nonattainment areas like SJVUAPCD to adopt and submit SIP provisions implementing Reasonably Available Control Technology (RACT) for all stationary sources of VOC that emit more than 10 tons per year of VOC. RACT is “the lowest emission limitation that a particular source (can meet using) control technology that is

³ Section 3.2 defines aerated static piles as a system designed, constructed, maintained, and operated for decomposing organic material in which the material is placed on top of perforated plates or pipes that are connected to blowers that either push or pull air through the piles.

⁴ Section 3.23 defines an in-vessel composting system as a system where all compostable material is inside a negatively-pressurized or positively-pressurized enclosure that is not open to the atmosphere and that is composed of hard-piping, ductwork connections, and, if necessary, flow inducing devices that transport gas or vapor from a piece or pieces of equipment.

reasonably available, considering technological and economic feasibility.”(44 FR 53762, September 17, 1979). CAA Section 172(c)(1) requires nonattainment areas to implement all reasonably available control measures, including such reductions in emissions from existing sources in the area as may be obtained through the adoption, at a minimum, of reasonably available control technology (RACT/RACM), as expeditiously as practicable.

SJVUAPCD must implement RACT/RACM for composting/co-composting facilities that are major sources of ozone precursors. In this proposal, we are only evaluating RACT. Additional control measures for composting/co-composting facilities may be required pursuant to CAA §172(c)(1) if both: (1) additional measures are reasonably available; and (2) these additional reasonably available measures will advance attainment in the area when considered collectively with other reasonable measures. In a separate rulemaking, EPA will take action on the State’s RACM demonstrations for the 8-hour ozone NAAQS based on an evaluation of the control measures submitted as a whole and their overall potential to advance the applicable attainment date in the San Joaquin Valley. See 40 CFR 51.912(d) and 51.1010.

EPA Evaluation

The monitoring, recordkeeping, reporting and other requirements of Rule 4565 are clear and adequate to ensure that the submitted rule can be enforced consistent with CAA §110(a)(2)(A).

Rule 4565 reduces emissions and strengthens the SIP since there is no previous version of the rule in the SIP. Furthermore, it does not undermine other existing SIP provisions. Therefore, we propose to determine that our approval of the submittal would comply with CAA sections 110(l) and 193, because the proposed SIP revision would not interfere with the on-going process for ensuring that requirements for RFP and attainment of the NAAQS are met.

SJVUAPCD’s RACT SIP analysis presents several arguments in support of SJVUAPCD’s conclusion that Rule 4565 adequately implements RACT. These include:

1. There is no federal policy or guidance (e.g., EPA Control Technique or Alternative Control Technology Guidelines) describing reasonably available controls for biosolids, animal manure or poultry litter operations.⁵
2. Only one other agency in the country, the South Coast Air Quality Management District (SCAQMD), has developed analogous requirements for this activity. SCAQMD’s requirements are more stringent than Rule 4565 for larger co-composting facilities and less stringent for smaller co-composting facilities.

⁵ SJVUAPCD, Reasonably Available Control Technology (RACT) Demonstration for Ozone State Implementation Plans (SIP), April 16, 2009, pg. 4-96.

3. There are no known, unsubsidized facilities in the SCAQMD that are subject to SCAQMD's more stringent requirements for in-vessel composting.
4. SCAQMD's more stringent requirements are not cost-effective.

EPA concurs with SJVUAPCD's conclusion that Rule 4565 adequately implements RACT based on the analysis summarized above and considering additional information including:

1. Based on information from SCAQMD, we understand that perhaps only one composting / co-composting source is subject to SCAQMD's stringent requirements to implement add-on controls in the South Coast air basin.⁶
2. The District's staff report estimates a cost effectiveness of \$48,000 to \$150,312 per ton of VOC reduced for add-on controls for composting / co-composting facilities with throughputs of 20,000 – 100,000 wet tons per year.⁷ The staff report also includes other analysis to support its conclusion that these controls are not cost-effective or RACT.⁸
3. SJVUAPCD has provided additional analysis for composting / co-composting facilities that shows that all Class One measures that are reasonable available are being required. We discuss this issue further below.
4. SJVUAPCD has provided additional analysis for composting / co-composting facilities that shows that all Class Two measures that are reasonable available are being required. We discuss this issue further below.
5. Based on our analysis, we have no basis to conclude that additional controls are reasonably available.

Analysis of Composting / Co-composting Measures

Class One Mitigation Measures

Small (throughputs less than 20,000 wet tons per year) and medium (20,000 - 100,000 wet tons per year) facilities are required to select 3 or 4 of the 6 listed Class One mitigation measures. In the 2006 Staff Report, the District states that:

Class One mitigation measures are management practices that have been shown to allow efficient composting. No cost is associated with implementing these practices, since they are inherent in good composting

⁶ While only one source in South Coast is large enough to trigger rule requirements, two sources that are not large enough to trigger requirements also have add-on controls. Email communication from Tuyet-Le Pham, SCAQMD, August 5, 2011.

⁷ SJVUAPCD Final Staff Report, Appendix C, pg. C-6.

⁸ See, e.g., discussion at SJVUAPCD Final Staff Report, Appendix C, pg. C-6, regarding cost estimates for small and medium sized facilities potentially being underestimates.

practice. The Class One mitigation measures have already been implemented by 50% of the facilities with throughputs less than 100,000 wet tons per year (tpy).⁹

Since the District did not associate costs with Class One mitigation measures in 2006, we requested that SJVUAPCD analyze whether it was feasible for small and medium sized facilities to implement additional Class One mitigation measures. The District conducted additional analysis, using information they had collected since initial adoption of the rule. The District concluded that requiring additional mitigation measures for small and medium facilities is too costly and the cost effectiveness goes beyond RACT.¹⁰ They determined that three of the six Class One mitigation measures in Table 2 of the rule had the following costs¹¹:

Cost Effectiveness of Class One Mitigation Measures				
Class One Measures	Small Facility Cost Range (\$/ton-VOC reduced)		Medium Facility Cost Range (\$/ton-VOC reduced)	
	Scrape to ≤ 1"	235,849	471,698	94,340
Cover Active Piles ≥ 6"	17,567	24,099	17,567	19,730
Cover Curing Piles ≥ 6"	158,106	216,894	158,106	177,568

Small facilities do not have to select any of these measures since they can implement the other three on the Class One menu. Medium facilities would be required to select one of the measures in the above table since they are required to select four measures from the Class One menu.

Class Two Mitigation Measures

Rule 4565 section 5.3.3 requires large facilities with throughputs above 100,000 tons to implement at least one Class Two measure, which will require add-on controls, most likely a bio-filter. The rule, however, would allow this measure to apply only to the active composting phase. In contrast, SCAQMD Rule 1133.2 section (d) requires either 70 or 80% overall emission reductions from all parts of the composting process. We requested that SJVUAPCD analyze whether it was feasible for large facilities to control all parts of the composting process. The District conducted additional analysis, and concluded that “requiring all large facilities to implement engineered controls during both the active and curing phases of composting...goes beyond RACT based on the high cost and cost effectiveness evaluation.”¹² The following table summarizes the cost effectiveness of the two different systems of add-on controls for controlling emissions from both the active and curing phases at large facilities.¹³

⁹ SJVUAPCD Final Staff Report, Appendix C, pgs. C-4 and C-5.

¹⁰ See Memorandum from Samir Sheikh, SJVUAPCD, to Andy Steckel, EPA, dated August 17, 2011, pg. 1. Henceforth, we refer to this document as the SJVUAPCD Memorandum.

¹¹ SJVUAPCD Memorandum pg. 11.

¹² SJVUAPCD Memorandum pg. 1.

¹³ SJVUAPCD Memorandum pg. 11.

Cost Effectiveness for Using Add-On Controls for Both Active and Curing Phases At Large Facilities in \$/ton-VOC reduced		
In-vessel Composting System \geq 80% Control for Active and Curing Phases	17,331	21,419
ASP Composting System to \geq 80% Control for Active and Curing Phases	31,512	38,943

Additional Recommendations

The following revisions are not currently the basis for rule disapproval, but are recommended for the next time the rule is amended.

1. SJVUAPCD should continue tracking compliance with SCAQMD Rule 1133.2 and reevaluate SCAQMD's more stringent requirements for in-vessel composting.
2. SJVUAPCD should include the dates of the TMECC test methods included in Section 6.2 of the Rule.
3. SJVUAPCD should assess whether additional references to Attachment A of South Coast Rule 1133.2 will help clarify test method requirements in the rule. Specifically, we recommend inserting language like the following in Section 6.2.3.1:

The control efficiency of a biofilter shall be determined using SCAQMD Method 25.3 (Determination of Low Concentration Non-Methane Non-Ethane Organic Compound Emissions from Clean Fueled Combustion Sources) in combination with a flux chamber as described in SCAQMD Rule 1133.2 Attachment A, or with an alternative methodology that is approved by the APCO and EPA.

EPA Action

The submitted Rule 4565 clearly strengthens the SIP, and fulfils the relevant CAA section 110 and part D requirements. EPA staff recommends approval of Rule 4565 pursuant to CAA §110(k)(3) and §301(a).

References

1. SJVUAPCD Rule 4565, Biosolids, Animal Manure, and Poultry Litter Operations, adopted March 15, 2007.
2. “Final Staff Report for Revised Proposed New Rule 4565 - Biosolids, Animal Manure, and Poultry Litter Operations,” SJVUAPCD, March 30, 2007, and its Appendices.
3. “Issues Relating to VOC Regulation Cutpoints, Deficiencies, and Deviations,” (Bluebook) EPA OAQPS, May 25, 1988.
4. “Guidance Document for Correcting Common VOC & Other Rule Deficiencies,” (Little Bluebook), EPA Region 9, August 21, 2001.
5. Portions of the proposed post-1987 ozone and carbon monoxide policy that concern RACT, 52 FR 45044, November 24, 1987.
6. “State Implementation Plans, General Preamble for the Implementation of Title I of the Clean Air Amendments of 1990,” 57 FR 13498, April 16, 1992.
7. “Preamble, Final Rule to Implement the 8-hour Ozone National Ambient Air Quality Standard,” 70 FR 71612, November 29, 2005.
8. “Reasonably Available Control Technology (RACT) Demonstration for Ozone State Implementation Plans (SIP)” SJVUAPCD, April 16, 2009.
9. Letter from William T. Hartnett to Regional Air Division Directors, “RACT Qs & As – Reasonable Available Control Technology (RACT): Questions and Answers,” EPA, May 18, 2006.
10. SCAQMD Rule 1133.2, Emission Reductions From Co-Composting Operations, adopted January 10, 2003.
11. “Final Staff Report Proposed Rule 1133 – Composting and Related Operations – General Administrative Requirements, Proposed Rule 1133.1 – Chipping and Grinding Activities, Proposed Rule 1133.2 – Emission Reductions from Co-Composting Operations,” SCAQMD, January 10, 2003.