SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Draft Staff Report

Proposed Amended Rule 1175 – Control of Emissions from the Manufacture of Polymeric Cellular (Foam) Products

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Proposed Amended Rule 1175 – Control of Emissions from the Manufacture of Polymeric Cellular (Foam) Products has been developed to address the concerns the U.S. Environmental Protection Agency (U.S. EPA) expressed when they disapproved the September 2007 amendment because of rule deficiencies. The specific deficiencies described by U.S. EPA are as follows:

1. The rule must require demonstration, through source testing approved in writing by the Executive Officer, that the systems and techniques in place at a facility achieve 93% collection and reduction of emissions for source complying with paragraph (c)(5) [was clause (c)(4)(B)(iii)].
2. The rule must clarify that all operational techniques and parameters needed to achieve compliance with paragraph (c)(5) [was clause (c)(4)(B)(iii)] be clearly defined, enforceable through a federally enforceable permit and identified in Rule 1175, where possible.
3. The rule must clarify that all operational techniques and parameters needed to achieve 90% collection and 95% destruction to comply with clauses (c)(4)(B)(i) and (c)(4)(B)(ii) be clearly defined, enforceable through a federally enforceable permit and identified in Rule 1175, where possible.

Staff proposes the following requirements for Proposed Amended Rule 1175:

- Require source testing, approved by the Executive Officer, to demonstrate compliance with clauses (c)(4)(B)(i), (c)(4)(B)(ii) and paragraph (c)(5) [was clause (c)(4)(B)(iii)].
- Require record keeping to verify that all operational techniques and parameters needed to ensure continued utilization of operational techniques used to comply with clauses (c)(4)(B)(i), (c)(4)(B)(ii) and paragraph (c)(5).
- Clarify that the prohibition for methylene chloride and chlorofluorocarbons (CFC) applies to all manufacturing operations subject to the rule excluding those specifically approved as acceptable alternatives under 40 CFR Part 82 Subpart G – Significant New Alternatives Policy Program.
- Correct typographical errors associated with Methods of Analysis.
- Make minor clarifications and editorial corrections to the rule.

The proposed changes are administrative in nature and are not expected to impact emissions or costs.

CHAPTER 1: BACKGROUND

INTRODUCTION

REGULATORY HISTORY

INTRODUCTION

In May 2010, U.S. EPA disapproved a revision to the District portion of the State Implementation Plan because of concerns about VOC emissions from polymeric foam manufacturing operations. The specific deficiencies are described below under Regulatory History.

REGULATORY HISTORY

Rule 1175 was adopted November 3, 1989 and has since been amended three times with the last amendment on September 7, 2007. The rule prohibits the use of chlorofluorocarbons (CFCs), Volatile Organic Compounds (VOCs) and methylene chloride in polymeric cellular foam product operations except for expandable polystyrene molding and extrudable polystyrene foam operations. The rule controls VOC emissions of expandable polystyrene molding operations and extrudable polystyrene foam operations by either requiring control devices to capture VOC emissions or by limiting emissions to 2.4 pounds of VOC emitted per 100 pounds of product produced.

The September 7, 2007 rule amendment allowed for equivalent emissions collection and control by over-controlling the manufacturing emissions, in lieu of controlling their less cost-effective block storage areas. On May 10, 2010, as published in the Federal Register [FR Doc 2010-109121], U.S. EPA announced their disapproval to the amendment. According to U.S. EPA, some rule provisions do not satisfy the requirements of section 110 and part D of the Clean Air Act. Specifically:

1. The rule must require demonstration, through source testing approved in writing by the Executive Officer, that the systems and techniques in place at a facility achieve 93% collection and reduction of emissions for sources complying with clause (c)(4)(B)(iii) [revised to be paragraph (c)(5)].

2. The rule must clarify that all operational techniques and parameters needed to achieve 93% control to comply with paragraph (c)(4)(B)(iii) [revised to be paragraph (c)(5)] must be clearly defined and enforceable through a federally enforceable permit such as a Title V operating permit. Rule 1175 should also be revised where possible to identify these parameters.

3. The rule must clarify that all operational techniques and parameters needed to achieve 90% collection and 95% destruction to comply with paragraphs (c)(4)(B)(i) and (c)(4)(B)(ii) must be clearly defined and enforceable through a federally enforceable

permit such as a Title V operating permit. Rule 1175 should also be revised where possible to identify these parameters.

U.S. EPA also included recommendations to further improve the rule that do not affect their current action. In response to their request, AQMD staff has made minor clarifications and editorial corrections to the rule to enhance the clarity of the rule.

CHAPTER 2: SUMMARY OF PROPOSED AMENDED RULE 1175

OVERVIEW

PROPOSED MODIFICATIONS TO RULE 1175

AFFECTED FACILITIES

OVERVIEW

Staff proposes to address the deficiencies identified by the U.S. EPA. In addition, the rule will incorporate the administrative recommendations included in U.S. EPA's technical support document.

PROPOSED MODIFICATIONS TO RULE 1175

Applicability

A minor clarification is included to make the terms used to describe application operations more consistent. Specifically, the term "Extruded Polystyrene" will be used consistently throughout the rule and associated documentation.

Definitions

The definition for Chlorofluorocarbon had been modified to include previously excluded CFCs: chlorodifluoromethane (HCFC-22), dichlorotrifluoroethane (HCFC-123), tetrafluoroethane (HFC-134a), dichlorofluoroethane (HCFC-141b), chlorodifluoroethane (HCFC-142b) and 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124). All CFCs used in operations subject to Rule 1175 are prohibited unless specifically approved as acceptable alternatives under 40 CFR Part 82 Subpart G – Significant New Alternatives Policy Program.

A definition is included for Extruded Polystyrene (XPS) Foam Operations. These operations were previously included under Expandable Polystyrene (EPS) Molding Operations even though the definition did not adequately describe them. Rather than broadening the definition for Expandable Polystyrene Molding Operations, the new definition is included.

Reprocessed Material has been defined and the definition for Raw Material has been clarified to indicated that the use of regrind recycled, scrap or trim foam may be included as a raw material.

Requirements

The requirements applicable to Extruded Polystyrene (XPS) Foam Operations have been clarified. The requirements are unchanged but the inclusion of the definition necessitates explicitly referencing the new term in paragraphs (c)(1) and (c)(2).

Sources subject to Rule 1175 that utilize a control device to comply with the rule are required to obtain a federally enforceable permit from the District. At the time of permit issuance, the Executive Officer, in writing, will impose specific permit conditions reflecting the necessary parameters needed to achieve this level of control. The specific parameters may include, but

are not limited to, establishing specific temperatures and pressure limits for aging rooms, establishing volumetric flow rates into a control device and requiring a minimum operating temperature for the control device. Failure to maintain the control device in good operating condition, including conditions imposed by the Executive Officer, will be considered a violation of Rule 1175.

Facilities utilizing control equipment to comply with the provisions of the proposed rule will be required to conduct source testing, approved in writing by the Executive Officer, to demonstrate the collection and control efficiency. Such testing is routinely required as part of the permitting process.

The prohibition of using methylene chloride and CFCs has been relocated to subdivision (d) to clarify that the prohibition applies to all polyurethane operations subject to the rule including expandable polystyrene molding operations and extruded polystyrene foam operations. All CFCs used in operations subject to Rule 1175 are prohibited unless specifically approved as acceptable alternatives under 40 CFR Part 82 Subpart G – Significant New Alternatives Policy Program. This will provide consistency between Rule 1175 and federal requirements. At this time the only use of CFCs approved in foam products is HCFC-141b for space vehicle, nuclear, defense and research and development for foreign customers (see Appendix M to Subpart G—Unacceptable Substitutes Listed in the September 30, 2004 Final Rule, Effective November 29, 2004).

Monitoring, Recordkeeping and Reporting Requirements

Records of operations and emission control system parameters shall be maintained for five years to maintain consistency with Title V permit requirements.

Methods of Analysis

Typographical errors are corrected in subdivision (g) of the proposed rule. Specifically, the paragraphs referenced shall be (g)(1) through (g)(4) rather than (g)(6) which does not exist. Also, the alternative methods must be equivalent to the methods that are listed below, rather than above the lead-in language of the rule.

CHAPTER 3: IMPACT ASSESSMENT

INTRODUCTION

EMISSION IMPACT ASSESSMENT

SOCIOECONOMIC IMPACT ASSESSMENT

POTENTIAL ENVIRONMENTAL IMPACTS

DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE 40727

COMPARATIVE ANALYSIS

COMMENTS AND RESPONSES

INTRODUCTION

Rule 1175 applies to polymeric cellular products manufacturing operations and includes but is not limited to expandable polystyrene, extruded polystyrene, polyurethane, isocyanurate and phenolic foam operations. This amendment is an administrative change request by the U.S. EPA and is not expected to affect emission impacts.

EMISSION IMPACT ASSESSMENT

The proposed amendments are administrative in nature and will not impact the emission inventory nor result in any emission reductions.

SOCIOECONOMIC IMPACT ASSESSMENT

The proposed amendments to Rule 1175 do not significantly affect air quality or emission limitations and therefore a socioeconomic impact analysis pursuant to California Health and Safety Code Sections 40440.8 and 40728.5 is not required.

Cost and Cost-Effectiveness

The proposed amendments will not result in additional costs to industry. Source testing and record keeping are routinely required in permit conditions applied to control devices. Since there is no additional cost and no change in emissions, cost effectiveness is not applicable.

Incremental Cost-Effectiveness

Under Health and Safety Code Section 40920.6, the AQMD is required to perform an incremental cost analysis when adopting a Best Available Retrofit Control Technology (BARCT) rule or feasible measure required by the California Clean Air Act. To perform this analysis, the AQMD must (1) identify one or more control options achieving the emission reduction objectives for the proposed rule, (2) determine the cost effectiveness for each option, and (3) calculate the incremental cost effectiveness for each option. To determine incremental costs, the AQMD must "calculate the difference in the dollar costs divided by the difference in the emission reduction potentials between each progressively more stringent potential control option as compared to the next less expensive control option."

Proposed Amended Rule 1175 addresses administrative issues identified by the U.S. EPA. The proposed amended rule does not implement a BARCT rule or a feasible measure required by the California Clean Air Act. Thus an incremental cost analysis is not required.

POTENTIAL ENVIRONMENTAL IMPACTS

CEQA applies only to projects which may have a significant effect on the environment. Staff has reviewed the proposed amendments and, pursuant to CEQA Guidelines § 15002(k)(1) – Three Step Process, has determined that the proposed amendments to Rule 1175 - Control of Emissions from the Manufacture of Polymeric Cellular (Foam) Products are exempt from CEQA pursuant to CEQA Guidelines § 15061(b)(3) – Review for Exemption. If approved by the Governing Board, a Notice of Exemption (NOE) will be prepared for the proposed project pursuant to CEQA Guidelines §15062 – Notice of Exemption, and mailed to the county clerks of Los Angeles, Orange, Riverside, and San Bernardino counties.

DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE 40727

Health and Safety Code Section 40727 requires that prior to adopting, amending or repealing a rule or regulation, the AQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the hearing. The draft findings are as follows:

Necessity – The AQMD Governing Board has determined that a need exists to amend Rule 1175 - Control of Emissions from the Manufacture of Polymeric Cellular (Foam) Products to address the deficiencies identified by the U.S. EPA.

Authority - The AQMD Governing Board obtains its authority to adopt, amend, or repeal rules and regulations from Health and Safety Code Sections 39002, 40000, 40001, 40440, 40441, 40702 and 41508.

Clarity - The AQMD Governing Board has determined that Proposed Amended Rule 1175 - Control of Emissions from the Manufacture of Polymeric Cellular (Foam) Products, is written and displayed so that the meaning can be easily understood by persons directly affected by them.

Consistency - The AQMD Governing Board has determined that Proposed Amended Rule 1175 - Control of Emissions from the Manufacture of Polymeric Cellular (Foam) Products, is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, federal or state regulations.

Non-Duplication - The AQMD Governing Board has determined that Proposed Amended Rule 1175 - Control of Emissions from the Manufacture of Polymeric Cellular (Foam) Products, does not impose the same requirement as any existing state or federal regulation,

and the proposed amendments are necessary and proper to execute the powers and duties granted to, and imposed upon, the AQMD.

Reference - In adopting this regulation, the AQMD Governing Board references the following statutes which the AQMD hereby implements, interprets or makes specific: California Health and Safety Code sections 40001, 40440, and 40702.

COMPARATIVE ANALYSIS

Health and Safety Code Section 40727.2 requires a written analysis comparing the proposed rule with existing federal and AQMD regulations. Federal regulations do not regulate VOC emissions from the manufacture of polymeric cellular (foam) products. However, federal regulations do prohibit the use of certain ozone-depleting substances under section 610(d) of the Clean Air Act (CAA). Specifically, Class I and Class II ozone depleting substances (ODS) including CFCs, halons, carbon tetrachloride and methyl chloroform, methyl bromide and most hydrofluorocarbons (HCFCs). Section 612 of the CAA required EPA to establish the Significant New Alternatives Policy (SNAP) program to evaluate alternatives to ODS making it unlawful to substitute alternatives that present adverse effects to human health or the environment where another alternative has been identified that reduces risk and is available. Under the SNAP program HCFC-124, HCFC-22 and HCFC-142b have been determined to be unacceptable substitutes. HCFC-141b has been determined to be an unacceptable substitute in certain foam blowing applications. The proposed rule will prohibit the use of all CFCs except those specifically approved under the SNAP program. At this time, only the use of HCFC 141b for space vehicle, nuclear, defense and research and development for foreign customers has been approved.

COMMENTS AND RESPONSES

The following comments and AQMD staff responses were in response to the concerns of U.S. EPA staff, from their September 30, 2009 e-mail.

Comment: While Rule 1175 applies to polystyrene foam extrusion operations, it does not explicitly reference these operations as it does polystyrene molding and block making operations. Future revisions should clarify which requirements also apply to polystyrene foam extrusion.

***Staff Response**:* *A definition for Extruded Polystyrene Molding Operations (polystyrene extrusion operations) has been included in the proposed amendments. The proposal also explicitly references provisions applicable to such operations.*

Comment: Please revise paragraph (c)(2) to clarify whether polystyrene foam extrusion may include reprocessed material when demonstrating compliance with the limit of 2.4 pounds VOC per 100 pounds raw material processed.

***Staff Response**:* *The definition for Raw Material will specifically include reprocessed material and paragraph (c)(2) has been clarified to note that Extruded Polystyrene Molding Operations may utilize this alternative compliance option.*

Comment: Note two potential typographical errors in the introductory paragraph of section (f). The first sentence references paragraphs (f)(1) through (f)(6), although the rule ends with (f)(4). The last sentence reads, "…provided the approved alternative method is equivalent to those listed above," but we find no methods listed above.

Staff Response: *The typographical errors have been corrected.*

Comment: In developing the additional compliance option in paragraph (c)(4)(iii) [revised to paragraph (c)(5)], SCAQMD relied on data generated using procedures designed to measure emissions from highway vehicles. In June 2005, EPA supported an expanded polystyrene block molding facility's plan to complete these tests for a separate purpose, and EPA did not expect that the results would be used to support this rule amendment. As a result, we strongly recommend that SCAQMD reevaluate the compliance option in light of: (a) the small number of polystyrene block tests that form the technical basis for the compliance option; and (b) a report released in March 2009 by the Alliance of Foam Packaging Recyclers and EPS Manufacturers Association, entitled "Pentane Emissions Profile for Expanded Polystyrene Foam Manufacturing Industry", which suggests considerably higher emissions during block storage.

Staff Response: *According to the Staff Report for the previous amendment to Rule 1175, the expanded polystyrene block testing "shows that the alternative compliance option is at a minimum equivalent to the current rule and in most cases is superior in terms of emission reduction benefits when compared to the current requirement for capture and destruction of manufacturing and 48-hour storage emissions. In addition, the*

pollution prevention element included in the proposed compliance option, requiring the use of lower pentane bead will further ensure that the proposed alternative provides superior environmental benefit." In the report cited by U.S. EPA, "the type of pentane isomers used in the blowing agent were not identified for the industry data set provided; therefore, the potential effect of the pentane isomers on residual pentane content was not considered. Insufficient support data were provided to quantify any difference in pentane losses on a weight percentage basis due to low pentane or regular pentane beads for like applications and product densities." The District believes that the alternative control option combined with lower pentane bead requirement will not lead to backsliding. The report cited by U.S. EPA does not have any data that contradicts that conclusion because it does not address low pentane beads.

Comment: Is it possible for a facility to utilize multiple compliance options to demonstrate compliance with the rule provisions?

Staff Response: *A facility may utilize multiple compliance options to demonstrate compliance. Facilities seeking such alternatives will be required to submit permit applications for engineering review, source test each scenario requested, accept federally-enforceable permits with critical operation techniques and parameters incorporated into the permit and maintain daily records demonstrating compliance.*

Comment: Is reprocessed material included as raw material?

Staff Response: *Raw material does include reprocessed material such as regrind trim, scrap or recycled materials. The definition for Raw Material has been clarified to include reprocessed material and a definition for Reprocessed Material has been included in the proposed rule.*

Comment: The alternative compliance option under (c)(5) should be available to shape molding operations. Shape molders have similar issues as the block molders do when it comes to product density, inability to construct 48-hour controlled enclosures due to leased property and limited space and the need to process some higher pentane material while processing mostly low-to-mid-range pentane material.

Staff Response: *The data currently provided to demonstrate equivalence is insufficient to make a determination to include shape molding operations under the*

alternative compliance option. Further testing is necessary to establish the collection efficiency of the control equipment and emissions lost during the initial 48 hours of storage. Staff will continue to work with interested parties to determine if the alternative compliance option can be made available to shape molding operations.

Comment: Paragraph (c)(1) prohibits the use of CFCs excluding HCFC-22, HCFC-123, HFC-134a, HCFC-141b, HCFC-142b and HCFC-124. Therefore the rule allows the HCFCs and HFCs listed above. However, the use of HCFC-22, HCFC-124, HCFC-141b and HCFC-142b is in conflict with the ban of these chemicals in some foam manufacturing applications as U.S. EPA-approved foam blowing agents under the SNAP program. We recommend that the District clarifies that Rule 1175 is not in conflict with Federal requirements on prohibited foam blowing agents.

Staff Response: *The proposed rule has been modified to prohibit the use of all CFCs in foam operations except those specifically approved under the SNAP program. This will provide consistency between Rule 1175 and the federal requirements.*

Comment: The Preliminary Staff Report acknowledges that certain HCFCs are not allowed as foam blowing agents by the U.S. EPA. Specifically, the reports states in part:

> Under the SNAP program HCFC-124, HCFC-22 and HCFC-142b have been determined to be unacceptable substitutes. HCFC-141b has been determined to be an unacceptable substitute in certain foam blowing applications. With the exception of expanded polystyrene molding operations, Rule 1175 prohibits the use of CFCs. While the rule is silent regarding the use of CFCs in expanded polystyrene molding operations and HCFC in all applications, there is no direct conflict between Rule 1175 and federal regulations.

The above staff analysis may not be entirely accurate (or perhaps unclear). The rule prohibits CFCs but specifically allows the use of HCFC-22, HCFC-123, HFC-134a, HCFC-141b, HCFC-142b and HCFC-124. We suggest that the District provides additional

clarification on how the rule is not in conflict with U.S. EPA foam blowing agent SNAP regulations.

Staff Response: *We concur that the rule language and analysis provided were unclear regarding the use HCFC-22, HCFC-123, HFC-134a, HCFC-141b, HCFC-142b and HCFC-124. The proposed rule has been modified to prohibit the use of all CFCs in foam operations except those specifically approved under the SNAP program. This will provide consistency between Rule 1175 and the federal requirements.*

REFERENCES

REFERENCES

"Disapproval of State Implementation Plan Revisions, South Coast Air Quality Management District." Federal Register 75:89 (May 10, 2010) p.25775.

Pentane Emissions Profile for Expanded Polystyrene Foam Manufacturing Industry, URS Corporation, March 2009.

Final Staff Report for Proposed Amended Rule 1175 – Control of Emissions from the Manufacture of Polymeric Cellular (Foam) Products, South Coast Air Quality Management District, August 2007.

"Title 40: Protection of Environment, Part 82-Protection of Stratospheric Ozone, Subpart G-Significant New Alternatives Policy Program." Federal Register 59 FR 13147, March 18, 1994, unless otherwise noted.